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Education

John Marshall Law School, LL.M.,
1989

The Albany Law School of Union
University, J.D., 1975

Rensselaer Polytechnic Institute,
B.S.Ch.E., 1972

Admissions

1975, Illinois

1976, New York

1984, Ohio

1988, Texas

Registered to practice before the
United States Patent and Trademark
Office, Reg. No. 27, 299

Kenneth R. Adamo

Ken Adamo is the owner of the Law Office of KRAdamo. Ken has extensive trial experience as lead counsel in jury and nonjury cases before state and federal courts and before the United States International Trade Commission, as well as *ex parte* and post-grant PTAB experience in the U.S. Patent and Trademark Office. He has had substantial experience as lead counsel in arbitrations and other alternative dispute resolution proceedings, and actively practices before the U.S. Court of Appeals for the Federal Circuit, having appeared in over 45 appeals to date.

In 2011, Ken was named to *IAM Patent Litigation 250 - The World's Leading Patent Litigators*, ranked as a top attorney in the "Individuals - U.S. International Trade Commission," and, as a Band 1 lawyer in "Individuals - Illinois" and "Individuals - National" categories. He was recognized as a "true leader and luminary trial lawyer" who is "sharp and extremely effective both in federal district court litigation and before the ITC." In 2012, in *IAM's The World's Leading Patent Practitioners 1000*, he was again named a top attorney in Individuals - US International Trade Commission, and was named to Gold Band Individuals - Litigation in Illinois. In 2013, he continued in the *LAM 1000* publication as a Gold Band Individual - Litigation in Illinois, being described as "a 'brash and bold winner' who secures superb results for clients." In 2014 and 2015, Ken maintained those rankings (as he did thru 2019), with *IAM* saying he's a "Nationally renowned trial lawyer . . . [who] has a tremendous amount of energy and is a commanding presence in the courtroom" and "is a polished trial lawyer with extensive district court, ITC, appellate, alternative forum and Patent Trial and Appeal Board (PTAB) experience." In 2016, *IAM* noted that "You can't be too dazzled by the depth and strength of the firm's bench of first-chair trial lawyers. Ken Adamo is another big name in the group; he litigates high-stakes cases across the IP spectrum and excels at all levels and in all forums, including the ITC and PTAB". *IAM 1000 - The World's Leading Patent Professionals 2017*, named Ken as a best-in-class advocate: "Ken practiced patent litigation well before it came into vogue, and has unrivalled experience and a rare depth of substantive patent law knowledge. He takes the time to get to know your business and goals, and will protect your interests zealously. He does a good job training and developing new talent for the next generation of representation for his clients - a lot of senior lawyers take their eye off that particular ball, but not Ken." Among his peers, he is lauded as a "laser-focused, high-energy lawyer who does an awful lot of work without ever getting flustered." In *IAM 1000 - The World's Leading Patent Professionals 2018 / 2019*, Ken was again praised for his courtroom practice: "[Ken] Adamo's name resonates with the business elite, not only because of its synonymy with trial and appellate excellence, but also its association with integrity, commercial expertise and encyclopedic patent law knowledge".

Who's Who Legal Patents 2014, 2015, and 2016, named him as one of its Most Highly Regarded Individuals, saying that "the 'phenomenal' Kenneth Adamo . . . is widely acknowledged as a 'frontrunner' of US patent litigation. He regularly appears as lead counsel before state and federal courts and before the International Trade Commission, and recently acted in high profile infringement cases for clients including IBM, Samsung . . .".

IP Stars Illinois 2017 noted that a peer said that Ken is "a very strong patent litigator and very good in the courtroom," adding that "even though he has a New York lawyer personality, he does well in the East Texas courtroom," and, further, that he is "very strategic in how he approaches cases and has a good understanding of the technology so it's easy for him to simplify."

The 2017 edition of *Chambers USA, America's Leading Lawyers for Business*, ranked Ken Band 1 Individuals - Patents in Illinois for the seventh consecutive year, noting that he is "incredibly seasoned, very experienced," and "has an encyclopaedic understanding of patent law." The 2019 edition, ranking him Band 1 in Illinois for the ninth consecutive year, noted sources describing him as "one of the best patent trial lawyers in the US".

In *Chambers Global, The World's Leading Lawyers for Business 2016*, sources say Ken "brings an incredible understanding of the law and a depth of experience that few, if any, other practitioners can offer." In 2010, *Chambers* ranked Ken as a Star Performer in Ohio and Band 1 in Texas, with clients remarking that he "has unparalleled stature as a patent litigator and is 'incredibly smart with a strong presence that makes him very persuasive to a judge and jury.'" "He's got the energy, the eye for detail and the courtroom presence - he's just a superb trial lawyer".

Major representations in intellectual property litigation as lead counsel have included U.S. federal court and ITC cases for Citicorp, CQG, IBM, JP Morgan Chase, MediaTek, Procter & Gamble, Otter Products, Samsung, TEL, Texas Instruments, TSMC, and Xilinx.



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Biography of Christopher Lisiewski

Christopher Lisiewski works in all areas of intellectual property law, including patents, trademarks, copyrights and unfair competition. He works with clients in obtaining, maintaining and enforcing their intellectual property portfolios. Chris also litigates patent, trademark, copyright, trade secret and unfair competition cases, and counsels clients on protection of and contractual issues regarding intellectual property.

Chris's prosecution experience includes foreign and domestic patent prosecution, foreign and domestic patent portfolio management, and filing and assisting clients in U.S. Patent Office proceedings such as appeals, re-examinations and *inter partes* reviews. He is experienced in a broad range of technologies such as computer technology, business methods, block trade technology, and medical software and devices. He also has experience in trademark prosecution and trademark proceedings in diverse industries such as food products and restaurants, retail clothing, industrial materials and healthcare.

Chris is a member of the New York Intellectual Property Law Association where he serves on the PTAB Committee.

Chris holds a J.D. from Fordham University School of Law and a B.S. in human biology with honors from Brown University. While at Brown, he was elected as a member of Sigma Xi, the scientific research honor society.

Full biography at <https://www.arelaw.com/professional/clisiewski/>



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Biography of Charles R. Macedo

Charles R. Macedo, a physicist by training, uses his comprehensive patent experience to tackle the most important and complex developments affecting IP strategy today, including subject matter eligibility under 35 U.S.C. § 101, divided infringement under § 271, and navigating PTAB and PTO proceedings. He has been counsel on amicus briefs to the Supreme Court in the influential subject matter eligibility cases decided in the past few years, including *Alice*, *Mayo*, *Myriad*, and *Bilski*.

Mr. Macedo is considered an authority on IP issues, and writes prolifically and lectures regularly as he tracks and analyzes in real time the most important developments affecting IP strategy and litigation. He is consistently at the forefront of complex and emerging patent issues in the financial services and transaction processing industries. Clients ranging from international banks, broker dealers and new business ventures call on Mr. Macedo to develop patent strategies, prepare patents, assert rights and defend against infringement claims.

He holds bachelor's and master's degrees in physics from The Catholic University of America and a law degree from Columbia Law School, all with honors. He was the sole law clerk to Hon. Daniel M. Friedman of the U.S. Court of Appeals for the Federal Circuit, 1989–1990. The recipient of the prestigious AIPLA Robert C. Watson Award, Mr. Macedo is included in *Super Lawyers*, *IP Stars* and *Million Dollar Verdict*. He also was a member of the Editorial Board for the *American Intellectual Property Law Association Quarterly Journal* and currently serves on the Editorial Board for *Journal of Intellectual Property Law and Practice* published by Oxford University Press.

Full biography at <http://www.arelaw.com/professional/cmacedo/>



Brian P. Murphy
Haug Partners LLP

Brian Murphy is a partner at Haug Partners in New York City.

From September 2013 through September 2017, Mr. Murphy served as an Administrative Patent Judge at the Patent Trial and Appeal Board (“PTAB”) of the U.S. Patent & Trademark Office in Alexandria, Virginia. During that time, he presided over nearly 200 post grant review trial proceedings (*Inter Partes* Review, Post Grant Review, and Covered Business Method Review). As a PTAB trial judge he presided over interlocutory discovery and motion proceedings, heard oral argument, and drafted numerous substantive decisions. For three years he also served as a Lead Judge on the PTAB leadership team, which included management, supervision, and mentoring of Administrative Patent Judges trained in the biotechnology, pharmaceutical, and chemical arts. Prior to joining PTAB, Mr. Murphy was a patent attorney in New York City with nearly 30 years of experience trying and litigating major patent cases in federal district courts and the International Trade Commission.

Mr. Murphy’s practice includes acting as counsel or a consultant with clients and counsel involved in PTAB post grant trial proceedings, district court litigation, and Federal Circuit appeals. He provides strategic advice, conducts mock oral arguments, acts as an expert witness, conducts IP due diligence, and is a trained mediator. Mr. Murphy has particular expertise in Hatch-Waxman patent litigation.



MOCK PTAB HEARING: HOW TO HANDLE DIFFICULT ISSUES THAT COME UP DURING A PTAB TRIAL

November 10, 2020

1:30 p.m. E.T.

Charles R. Macedo, Esq.

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PTAB Committee Co-Chair

Kenneth R. Adamo, Esq.

Principal Attorney &

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Brian Murphy, Esq.

Partner &

PTAB Committee Member

Christopher Lisiewski, Esq.

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Intellectual Property Law

DISCLAIMER

The following presentation reflects the personal opinions of its authors and does not necessarily represent the views of their respective clients, partners, employers or of the New York Intellectual Property Law Association, the PTAB Committee or its members. Additionally, the following content is presented solely for the purposes of discussion and illustration, and does not comprise, nor is not to be considered, as legal advice.

Factual Background

(Facts modeled after *KSR International Co. v. Teleflex Inc.*)

Petitioner KSR International Company (“Petitioner” or “KSR”) is a Canadian company and a manufacturer and supplier of automotive components, including adjustable pedal systems, to the automotive industry.

Patent Owner Teleflex Incorporated (“Patent Owner” or “Teleflex”) is a Delaware corporation and a manufacturer and supplier of adjustable pedal systems that the automotive industry uses in automobile platforms.

Petitioner KSR and Patent Owner Teleflex are direct competitors.

This IPR involves position-adjustable vehicle pedal assemblies, comprising of gas and brake pedals, that a motor vehicle driver uses to actuate the motor vehicle's fuel and brake systems. The pedal assembly may also include a clutch pedal if the vehicle is equipped with a manual transmission.

According to Petitioner, the '565 Patent is invalid because it would have been obvious to a “person of ordinary skill in the art” (“POSITA”) of designing pedal systems to combine an adjustable pedal system with an electronic pedal position sensor to work with electronically controlled engines increasingly being used in motor vehicles.

Pre-Hearing Conference

Exhibit 1020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KSR INTERNATIONAL,
Petitioner,

v.

TELEFLEX INC.,
Patent Owner.

Case IPR2020-1456987
Patent No. 6,237,565 B2

**SUPPLEMENTAL EXPERT DECLARATION OF JANE DOE
IN FURTHER SUPPORT OF PETITION FOR *INTER PARTES* REVIEW
OF CLAIM 4 OF U.S. PATENT NO. 6,237,565**

KSR EXHIBIT 1020

Exhibit 1020 – Petitioner’s Supplemental Expert Declaration

Exhibit 1020 includes a supplemental Expert Declaration that Petitioner included with Petitioner’s Reply to Patent Owner’s Response briefing as rebuttal evidence to refute Patent Owner’s arguments.

Petitioner never introduced this evidence with the initial Petition for *Inter Partes* Review. Petitioner first raised this evidence in Petitioner’s Reply to Patent Owner’s Response. The exhibit is extremely argumentative.

Exhibit 1005

June 30, 2001

Dear KSR International Company,

I write to notify you that Teleflex Incorporated ("Teleflex") recently obtained U.S. Patent No. 6,237,565, entitled "Adjustable pedal assembly with electronic throttle control" on May 29, 2001. A copy of the '565 Patent is enclosed as Exhibit A. The '565 Patent covers a simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle.

Teleflex has learned that your company is selling a brake product that comes within the claims of the '565 Patent. We understand that these brakes are manufactured and/or sold by you.

The '565 Patent describes a position-adjustable pedal assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal. We assume your pedal assembly uses an electronic pedal sensor, since there is no other practical way in which your pedal could be designed without one.

We have studied the construction of this brake product and it is our opinion that this and any brake products of similar construction infringe the '565 Patent as each of the elements claimed in the '565 Patent are present in this brake product sold by your company.

Under the Patent Act it is unlawful to make, use, offer to sell or sell any patented invention within the United States or to import into the United States any patented invention during the term of the patent therefor. Accordingly, Teleflex demands that you immediately cease and desist the sale of the infringing gloves.

If you have any questions regarding the '565 Patent, please contact our in-house counsel.

Best regards,

Teleflex CEO

KSR EXHIBIT 1005

Exhibit 1005 – Teleflex's Notice Letter

Exhibit 1005 is Patent Owner's notice letter of infringement of the '565 Patent to Petitioner after the patent issued.

Petitioner previously included this letter during briefing, and the substance describes the invention of the '565 Patent, which Patent Owner does not dispute.

The '565 Patent describes a position-adjustable pedal assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal. We assume your pedal assembly uses an electronic pedal sensor, since there is no other practical way in which your pedal could be designed without one.

Petitioner's Argument

Patent-At-Issue



US006237565B1

(12) **United States Patent**
Engelgau

(10) **Patent No.:** US 6,237,565 B1
(45) **Date of Patent:** *May 29, 2001

(54) **ADJUSTABLE PEDAL ASSEMBLY WITH ELECTRONIC THROTTLE CONTROL**

5,056,742 10/1991 Sakurai 244/235

(75) **Inventor:** Steven J. Engelgau, Royal Oak, MI (US)

Primary Examiner—John Kwon
(74) *Attorney, Agent, or Firm*—Howard & Howard

(73) **Assignee:** Teleflex Incorporated, Plymouth Meeting, PA (US)

(57) **ABSTRACT**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

A vehicle control pedal apparatus (12) includes a support (18) adapted to be mounted to a vehicle structure (20) and an adjustable pedal assembly (22) having a pedal arm (14) that is moveable in fore and aft directions with respect to the support (18). A pivot (24) pivotally supports the adjustable pedal assembly (22) with respect to the support (18) and defines a pivot axis (26). The control pedal apparatus (12) further includes an electronic throttle control (28) attached to the support (18) for controlling an engine throttle (30). The apparatus (12) is characterized by the electronic throttle control (28) being responsive to the pivot (24) for providing a signal (32) that corresponds to pedal arm position as the pedal arm (14) pivots about the pivot axis (26) between rest and applied positions. Thus, the control pedal apparatus (12) can adjust pedal arm position in fore and aft directions without having to move the electronic throttle control unit (28) along with the pedal arm (14). Additionally, the electronic throttle control (28) is responsive to the pivot (24) about which the adjustable pedal assembly (22) rotates.

(21) **Appl. No.:** 09/643,422

(22) **Filed:** Aug. 22, 2000

Related U.S. Application Data

(63) Continuation of application No. 09/236,975, filed on Jan. 26, 1999, now Pat. No. 6,109,241.

(51) **Int. Cl. 7** F02D 1/00

(52) **U.S. Cl.** 123/399; 74/560

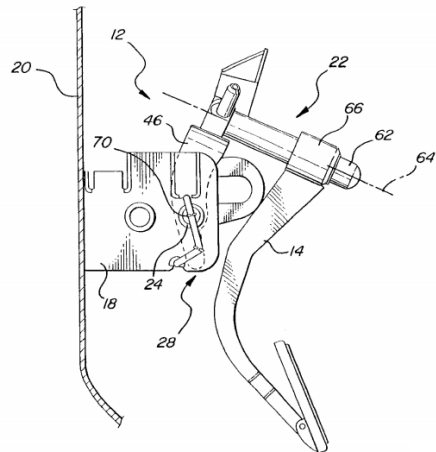
(58) **Field of Search** 123/399; 74/560

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,470,570 9/1984 Sakurai et al. 244/235

4 Claims, 4 Drawing Sheets



PETDX0001

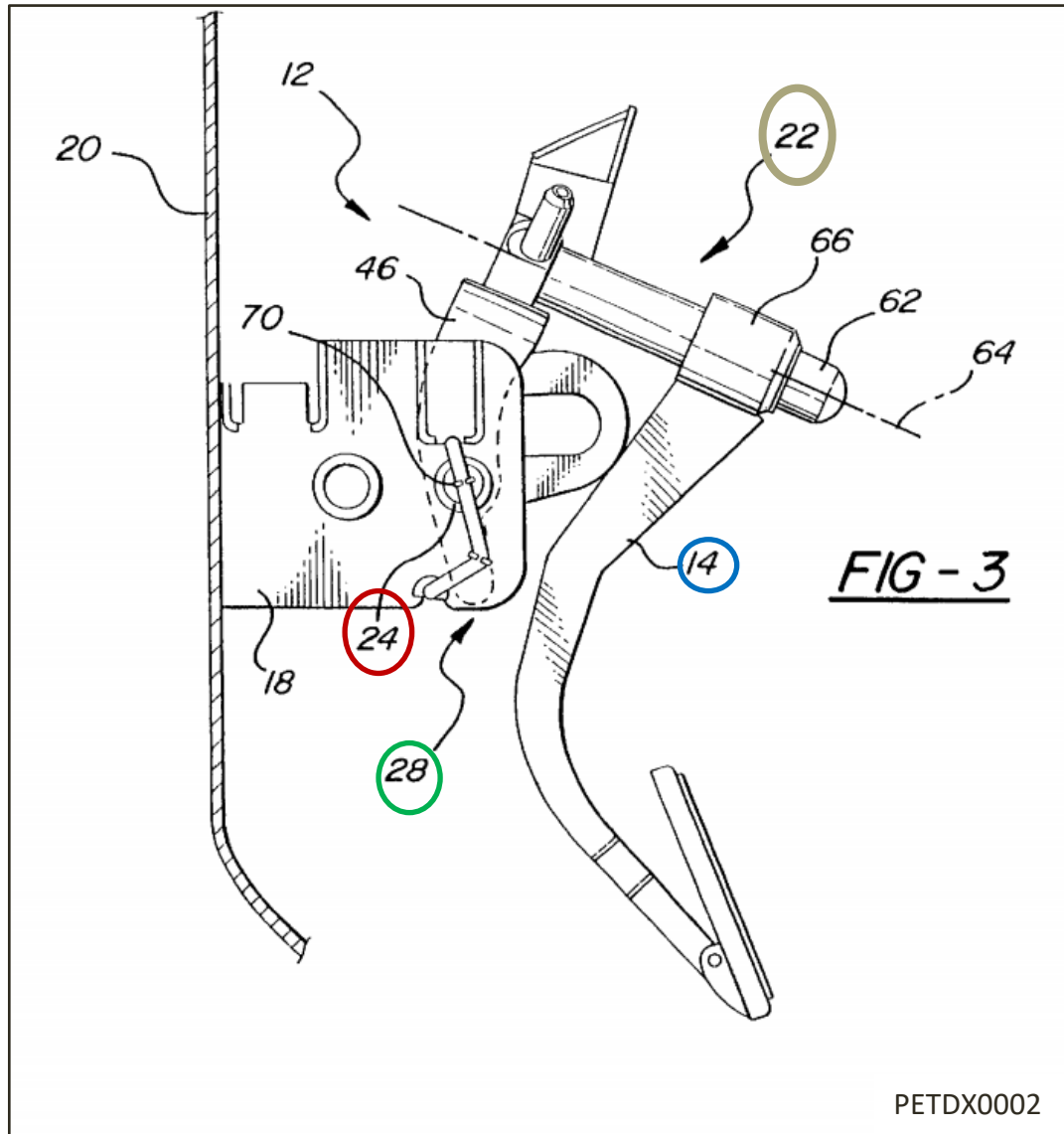
U.S. Patent No. 6,237,565

Adjustable pedal assembly with electronic throttle control (the “’565 Patent” or the “Engelgau Patent”)

The invention disclosed in the ’565 Patent is described in the patent’s specification as a “simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle.”

The ’565 Patent describes a position-adjustable pedal assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal.

Patent-At-Issue



U.S. Patent No. 6,237,565

**Adjustable pedal assembly with electronic throttle control
(the “’565 Patent” or the “Engelgau Patent”)**

Claim 4 of the ’565 Patent

A vehicle control pedal apparatus (12) comprising:

a support (18) adapted to be mounted to a vehicle structure (20);

an **adjustable pedal assembly (22)** having a **pedal arm (14)** moveable in fore and aft directions with respect to said support (19);

a **pivot (24)** for pivotally supporting **said adjustable pedal assembly (22)** with respect to said support (18) and defining a pivot axis (26); and

an electronic control (2) attached to said support (18) for controlling a vehicle system;

said apparatus (12) characterized by **said electronic control (28)** being responsive to said **pivot (24)** for providing signal (32) that corresponds to pedal arm position as said pedal arm (14) pivots about said pivot axis (26) between rest and applied positions wherein the position of **said pivot (24)** remains constant while **said pedal arm (14)** moves in fore and aft directions with respect to **said pivot (24)**.

’565 patent, col. 6, lines 17-36.

Reference A

U.S. Patent No. 5,010,782

Position adjustable pedal assembly (the "782 Patent" or the "Asano Patent")

Asano discloses a position adjustable pedal assembly pivotally mounted on a support member. A pedal arm moves forward and backward along a guide member by way of a screw drive mechanism depending on the driver's desired pedal position. The position of the support pivot remains constant while the pedal arm moves forward and backward along the guide member. The design also discloses an attachment for a mechanical throttle cable, the cable being responsive to the pivoting motion of the pedal assembly caused by depression of the accelerator pedal.

United States Patent [19]

Asano et al.

[11] Patent Number: 5,010,782

[45] Date of Patent: Apr. 30, 1991

[54] POSITION ADJUSTABLE PEDAL ASSEMBLY

[75] Inventors: Yasushi Asano; Yoshimasa Kataumi, both of Shizuoka, Japan

[73] Assignee: Fuji Kiko Company, Ltd., Tokyo, Japan

[21] Appl. No.: 386,401

[22] Filed: Jul. 28, 1989

[30] Foreign Application Priority Data

Jul. 28, 1988 [JP] Japan 63-188774
Jul. 28, 1988 [JP] Japan 63-188775
Jul. 28, 1988 [JP] Japan 63-188776
Jul. 28, 1988 [JP] Japan 63-188777

[51] Int. Cl.⁵ G05G 1/14

[52] U.S. Cl. 74/512; 74/513;

74/560

[58] Field of Search 74/512, 513, 560, 522,

74/561, 562

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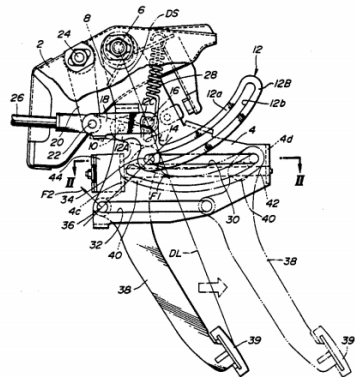
0256466 2/1988 European Pat. Off. 74/512
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Primary Examiner—Vinh T. Luong
Attorney, Agent, or Firm—Ronald P. Kananen

[57] ABSTRACT

In a position adjustable pedal assembly for a vehicle, a pedal pad position is adjustable in a longitudinal direction of the vehicle. A lever is connected to a stationary bracket for a pivotal movement about a pivot axis and is formed with a linear track extending in the vehicular longitudinal direction. A pedal arm is provided with a pedal pad at its lower end and with a guide member at its upper end and is connected to the lever for the pivotal movement with the lever in response to a depression force applied to the pedal pad. An adjust lever is provided on the lever for a relative movement to the lever and is formed with an arc-shaped track. The relative movement of the adjust lever is caused when the guide member moves within the linear track and simultaneously within the arc-shaped track while the pedal pad position is adjusted. The adjust lever is provided with a connecting member which is movable within another arc-shaped track in response to the relative movement of the adjust lever. Accordingly, when the pedal pad position is adjusted to move the guide member, the relative movement of the adjust lever is caused to vary a position of the connecting member corresponding to a magnitude of the movement of the guide member, i.e., corresponding to the variation in a distance from the pivot axis to the pedal pad. The depression force is applied to a vehicle operation system through the connecting member.

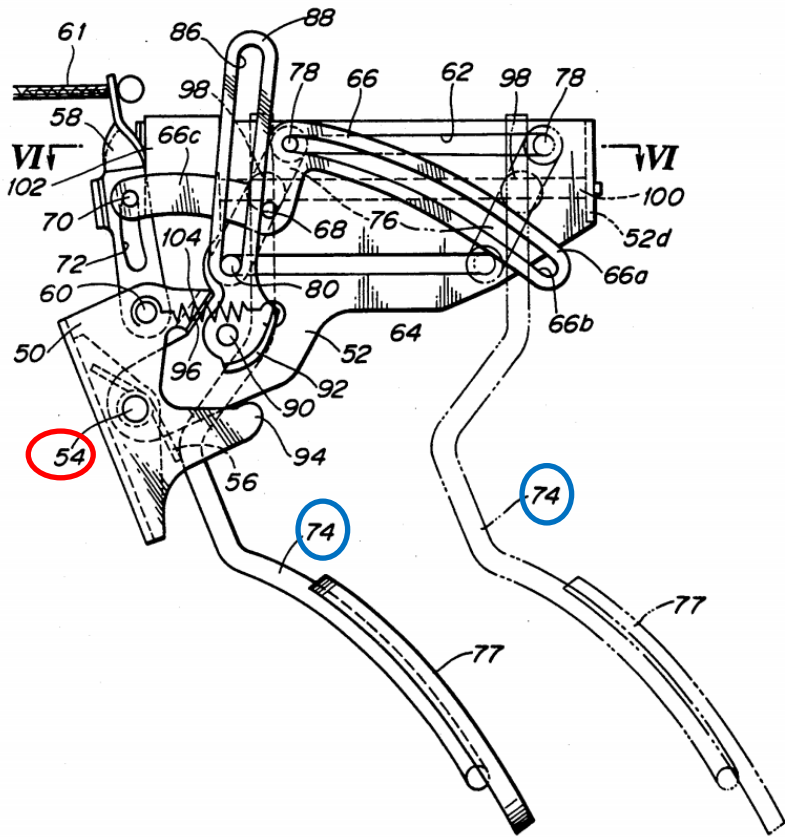
12 Claims, 7 Drawing Sheets



PETDX0003

Reference A

FIG. 5



PETDX0004

U.S. Patent No. 5,010,782

Position adjustable pedal assembly (the “782 Patent” or the “Asano Patent”)

Asano teaches a stationary bracket 50 is fixed to a dash panel of the vehicle body. A lever 52 is pivotably connected to the stationary bracket 50 by a **pivot pin 54** (i.e., a first pivot axis).

An operating lever 58 is pivotably connected to the stationary bracket 50 by means of a pivot pin 60 at its lower end and is connected to an operating wire 61 at its upper end. The adjust lever 66 has another arc-shaped section 66c which extends in the forward direction and is provided at its forward end with a slide pin 70 (i.e., a connecting member). A radius of curvature of the arc-shaped hole 72 is the same as a distance between the center of the pin 68 and the center of the slide pin 70 so as to prevent the operating lever 58 from pivoting about the pivot pin 60 when the adjust lever 66 is pivoted about the pin 68 for adjusting the pedal position.

A screw nut 98 (i.e., a driven member) is fixed to the bracket 76 and a corresponding screw rod 100 (i.e., a drive member) is rotatably mounted to the front and back walls 52c and 52d. The screw nut 98 is guided by the rotation of the screw rod 100 to move along the screw rod 100. This movement of the screw nut 98 causes the bracket 76, i.e. **the pedal arm 74** along with the pedal pad 77 to move along the screw rod 100, with the slide pins 78 and 80 each moving within the corresponding hole 62 or 64 between its forward and rearward ends.

This covers all aspects of the '565 Patent except for the electronic control (28) being responsive to said pivot (24) .

Reference B

U.S. Patent No. 5,385,068

Electronic accelerator pedal assembly with pedal force sensor (the “068 Patent” or the “White Patent”)

White teaches a modular sensor (17) attached to the pedal support bracket (11), adjacent to the pedal and engaged with the pivot shaft (13) about which the pedal rotates

These modular pedal position sensors (17) teach the advantage of using a pedal position sensor that is engaged with the pivot shaft of an accelerator pedal to send an electronic signal to an electronic throttle control based on the degree the pivot shaft turns in response to depression of the accelerator pedal.

United States Patent [19]

White et al.



US005385068A

[11] Patent Number: 5,385,068

[45] Date of Patent: Jan. 31, 1995

[54] ELECTRONIC ACCELERATOR PEDAL ASSEMBLY WITH PEDAL FORCE SENSOR

[75] Inventors: James E. White, Warsaw; John Zdanys, Jr., Elkhart, both of Ind.

[73] Assignee: CTS Corporation, Elkhart, Ind.

[21] Appl. No.: 993,141

[22] Filed: Dec. 18, 1992

[51] Int. Cl.⁶ G05G 1/14

[52] U.S. Cl. 74/512; 74/513;

74/560

[58] Field of Search 74/512, 513, 514, 560, 74/523, 533, 535

[56] References Cited

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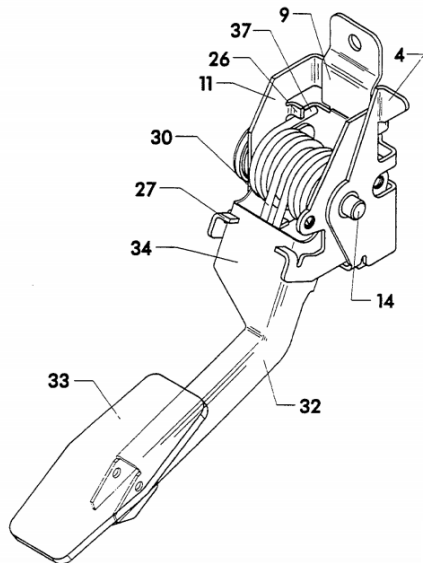
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4,958,607	9/1990	Lundberg	74/513 X
4,976,166	12/1990	Davis et al.	74/512
5,010,782	4/1991	Asano et al.	74/513 X
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5,153,321	7/1992	Hering et al.	123/399
5,211,072	5/1993	Barlas et al.	74/535 X
5,217,094	6/1993	Walter et al.	74/535 X

Primary Examiner—Vinh T. Luong
Attorney, Agent, or Firm—Albert W. Watkins

[57] ABSTRACT

A pedal bracket assembly translates pedal motion into a first switching motion without change of position being sensed by a position sensor. Additional pedal motion does not further change the switch position, but is translated into motion sensed by the position sensor. In this way, the switching function and position transducer functions are maintained independent one from the other, while allowing the two functions to be combined into a single sensor assembly.

7 Claims, 3 Drawing Sheets



PETDX0005

Obviousness Analysis

'565 Patent	Reference A	Reference B
A vehicle control pedal apparatus (12) comprising:	X	
a support (18) adapted to be mounted to a vehicle structure (20);	X	
an adjustable pedal assembly (22) having a pedal arm (14) moveable in force [sic] and aft directions with respect to said support (19);	X	
a pivot (24) for pivotally supporting said adjustable pedal assembly (22) with respect to said support (18) and defining a pivot axis (26); and	X	
<u>an electronic control</u> (28) attached to said support (18) for controlling a vehicle system;		X
said apparatus (12) characterized by <u>said electronic control (28) being responsive to said pivot</u> (24) [i.e., a sensor] for providing signal (32) that corresponds to pedal arm position as said pedal arm (14) pivots about said pivot axis (26) between rest and applied positions wherein the position of said pivot (24) remains constant while said pedal arm (14) moves in fore and aft directions with respect to said pivot (24).		X

KSR Factors

Rationales for Combining the Petal Assembly of Asano (Reference A), with the electronic control (modular sensor 17) of White (Reference B):

- (1) Combining prior art elements according to known methods to yield predictable results;
- (2) Simple substitution of one known element for another to obtain predictable results;
- (3) Use of known technique to improve similar devices (methods, or products) in the same way;
- (4) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- (5) “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (6) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- (7) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 418 (2007).

Patent Owner's Argument

THANK YOU

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**The next PTAB Committee (via Zoom) will be held on Tuesday,
December 1, 2020 at 4 p.m ET. Please join us for our discussion
and holiday celebration.**



Warning

As of: October 28, 2020 12:48 AM Z

[Teleflex Inc. v. KSR Int'l Co.](#)

United States District Court for the Eastern District of Michigan, Southern Division

December 12, 2003, Decided ; December 12, 2003, Filed

CASE NO. 02-74586

Reporter

298 F. Supp. 2d 581 *; 2003 U.S. Dist. LEXIS 22606 **

TELEFLEX INCORPORATED, and TECHNOLOGY HOLDING COMPANY, Plaintiffs, v. KSR INTERNATIONAL CO., Defendant.

Subsequent History: **[**1]**

Vacated by, Remanded by [Teleflex, Inc. v. KSR Int'l Co.](#), 119 Fed. Appx. 282, 2005 U.S. App. LEXIS 176 (Fed. Cir., 2005)

Affirmed by, On remand at [Teleflex, Inc. v. KSR Int'l Co.](#), 2007 U.S. App. LEXIS 16051 (Fed. Cir., June 20, 2007)

Disposition: Defendant's Motion for Summary Judgment of Invalidity granted. Plaintiffs' Ex Parte Motion for Oral Argument denied. Plaintiffs' complaint dismissed with prejudice.

Core Terms

pedal, assembly, sensor, patent, electronic, pivot, invention, teachings, throttle, skill, patent-in-suit, Infringement, arm, inventor, Invalidity, mounted, shaft, endeavor, modular, accelerator, cable-actuated, comprising, constant, aft, undisputed, fore, position-adjustable, bracket, driver, trucks

Case Summary

Procedural Posture

Plaintiff patent holders sued defendant competitor alleging that the competitor's adjustable pedal assemblies infringed, inter alia, on their patent concerning a position-adjustable vehicle pedal assembly. The competitor moved for summary judgment of invalidity. The patent holders moved for oral argument, and for summary judgment of infringement.

Overview

The competitor claimed that the patent was drafted so broadly as to render it an obvious combination of an adjustable pedal assembly and pedal position sensor already well known in the art. The court held that the competitor proved by clear and convincing evidence that the patent was invalid for obviousness under [35 U.S.C.S. § 103\(a\)](#). The court found that the relevant prior art conformed to the time limitations of [35 U.S.C.S. § 102\(a\)](#) and [\(b\)](#), that the prior art was analogous to the patent, and that the prior art was within the patent's field of endeavor. The court further found that the prior art taught every limitation contained in the patent claim, with the exception of the limitation referring to an electronic pedal position sensor, and that a person with ordinary skill in the art with full knowledge of the prior art and the modular pedal position sensors would be motivated to combine the two references. The court finally found that a finding of obviousness was further supported by the prosecution history of the patent, and that the evidence of the patent's commercial success was insufficient to overcome the competitor's clear and convincing evidence of obviousness.

Outcome

Summary judgment of invalidity was granted for the competitor. The remaining motions were denied.

LexisNexis® Headnotes

Civil Procedure > ... > Summary
Judgment > Supporting Materials > General
Overview

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > General
Overview

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > Genuine
Disputes

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of
Law > Materiality of Facts

[HN1](#) Summary Judgment, Supporting Materials

Summary judgment is appropriate only if the answers to interrogatories, depositions, admissions, and pleadings combined with the affidavits in support show that no genuine issue as to any material fact remains and the moving party is entitled to a judgment as a matter of law. [Fed. R. Civ. P. 56\(c\)](#). A genuine issue of material fact exists when there is sufficient evidence favoring the non-moving party for a jury to return a verdict for that party.

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of
Law > Appropriateness

Civil Procedure > ... > Summary
Judgment > Evidentiary Considerations > Scintilla
Rule

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > General
Overview

[HN2](#) Entitlement as Matter of Law, Appropriateness

In application of the summary judgment standard, the court must view all materials supplied, including all pleadings, in the light most favorable to the non-moving party. If the evidence is merely colorable or is not significantly probative, summary judgment may be granted.

Civil Procedure > ... > Summary
Judgment > Burdens of Proof > General Overview

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > Genuine
Disputes

[HN3](#) Summary Judgment, Burdens of Proof

On a motion for summary judgment, the moving party bears the initial responsibility of informing the court of the basis for its motion and identifying those portions of the record that establish the absence of a genuine issue of material fact. Once the moving party has met its burden, the nonmoving party must go beyond the pleadings and come forward with specific facts to demonstrate that there is a genuine issue for trial. [Fed. R. Civ. P. 56\(e\)](#).

Civil Procedure > ... > Summary
Judgment > Opposing Materials > General
Overview

Civil Procedure > Judgments > Summary
Judgment > General Overview

Civil Procedure > ... > Summary
Judgment > Burdens of Proof > General Overview

Civil Procedure > ... > Summary
Judgment > Burdens of Proof > Movant Persuasion
& Proof

Civil Procedure > ... > Summary
Judgment > Motions for Summary
Judgment > General Overview

[HN4](#) Summary Judgment, Opposing Materials

On a motion for summary judgment, the non-moving party must do more than show that there is some abstract doubt as to the material facts. It must present significant probative evidence in support of its opposition to the motion for summary judgment in order to defeat the motion for summary judgment.

Patent Law > ... > Specifications > Description Requirement > General Overview

Patent Law > Claims & Specifications > General Overview

Patent Law > Infringement Actions > Claim Interpretation > General Overview

Patent Law > US Patent & Trademark Office Proceedings > Reissue Proceedings > General Overview

[HN5](#) Specifications, Description Requirement

Although the specification is useful for interpretation of patent claims, it is the claims that actually measure the invention.

Patent Law > ... > Defenses > Patent Invalidity > Presumption of Validity

Patent Law > ... > Defenses > Patent Invalidity > General Overview

[HN6](#) Patent Invalidity, Presumption of Validity

A patent is presumed valid. [35 U.S.C.S. § 282](#). Therefore, a party challenging the validity of a patent bears the burden of proving facts that establish invalidity by clear and convincing evidence.

Patent Law > Nonobviousness > Elements & Tests > Claimed Invention as a Whole

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Evidence > Inferences & Presumptions

[HN7](#) Elements & Tests, Claimed Invention as a Whole

Under [35 U.S.C.S. § 103](#), prior art invalidates a patent for obviousness when the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. [35 U.S.C.S. § 103\(a\)](#).

Patent Law > Nonobviousness > Evidence > Fact & Law Issues

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN8](#) Evidence, Fact & Law Issues

An obviousness inquiry under [35 U.S.C.S. § 103](#) ultimately presents a question of law based on several underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the prior art and the claimed invention; and (4) the extent of any objective indicia of non-obviousness.

Civil Procedure > ... > Summary Judgment > Entitlement as Matter of Law > Genuine Disputes

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Civil Procedure > ... > Summary Judgment > Entitlement as Matter of Law > Materiality of Facts

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN9](#) [↓] **Entitlement as Matter of Law, Genuine Disputes**

The central inquiry under [35 U.S.C.S. § 103](#) is whether the combined teachings of the prior art, taken as a whole, would have rendered the claimed invention obvious to one of ordinary skill in the art.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN10](#) [↓] **Elements & Tests, Prior Art**

Under the first element of the Graham test for patent obviousness, the court must determine the scope and content of the prior art.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN11](#) [↓] **Elements & Tests, Prior Art**

For purposes of the first element of the Graham test for patent obviousness, the scope of prior art is only that art which is analogous. Analogous art is art that is not too remote to be treated as prior art. In addition, a prior art reference is analogous if it is from the same field of endeavor, even if it addresses a different problem, or, if not within the same field, if the reference is reasonably pertinent to the particular problem with which the inventor is involved.

Patent Law > Nonobviousness > Evidence > Fact & Law Issues

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN12](#) [↓] **Evidence, Fact & Law Issues**

For purposes of the first element of the Graham test for patent obviousness, the determination of relevant prior art is a question of fact.

Patent Law > Anticipation & Novelty > Elements

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN13](#) [↓] **Anticipation & Novelty, Elements**

For purposes of the first element of the Graham test for patent obviousness, relevant prior art is further defined by [35 U.S.C.S. § 102\(a\)](#) and [\(b\)](#), which limit the time frame within which prior art can be found.

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN14](#) [↓] **Nonobviousness, Elements & Tests**

See [35 U.S.C.S. § 102\(a\)](#), [\(b\)](#).

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN15](#) [↓] **Elements & Tests, Prior Art**

For purposes of the first element of the Graham test for patent obviousness, determining relevant prior art, however, involves determining the scope of the inventor's field of endeavor before turning to the question of the nature of the problem confronting the inventor. The United States Court of Appeals for the Federal Circuit has explained that the determination that a reference is from a non-analogous art is two-fold. First, the court decides if the reference is within the field of the inventor's endeavor. If it is not, the court proceeds to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN16](#) **Elements & Tests, Prior Art**

For purposes of the first element of the Graham test for patent obviousness, an inquiry into the problem facing the inventor only arises if the alleged prior art is not within the inventor's same field of endeavor. Furthermore, if the alleged prior art exists in the inventor's field of endeavor, it constitutes relevant prior art regardless of the problem addressed.

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN17](#) **Specifications, Enablement Requirement**

The second element in the Graham test for patent obviousness requires determining the level of ordinary skill in the pertinent art. Ascertaining the level of ordinary skill in the art is necessary for maintaining objectivity in the obviousness inquiry. Factors to consider include the educational level of the inventor, the educational level of those who work in the relevant industry, and the sophistication of the technology involved.

Patent Law > Nonobviousness > Elements & Tests > Claimed Invention as a Whole

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN18](#) **Elements & Tests, Claimed Invention as a Whole**

The third element in the Graham test for patent obviousness requires the determination of any differences between the teachings found in the prior art and the claimed invention, from the vantage point of a hypothetical person with ordinary skill in the art. The claims of the patent-in-suit must be considered as a whole. It is the claims, not the particular embodiments that must be the focus of the obvious inquiry.

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > ... > Specifications > Description Requirement > General Overview

Patent Law > Infringement Actions > General Overview

Patent Law > Infringement Actions > Claim Interpretation > Construction Preferences

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > US Patent & Trademark Office Proceedings > Reissue Proceedings > General Overview

[HN19](#) **Subject Matter Jurisdiction, Appeals**

For purposes of the third element in the Graham test for patent obviousness, the United States Court of Appeals for the Federal Circuit has expressed the significance of claims in defining an invention: the claims of the patent provide the concise formal definition of the invention. They are the numbered paragraphs which particularly point out and distinctly claim the subject matter which the applicant regards as his invention. It is to these wordings that one must look to determine whether there has been infringement. Courts can neither broaden nor narrow the claims to give the patentee something different than what he has set forth. No matter how great the temptations of fairness or policy making,

courts do not rework claims; they only interpret them.

Tests > General Overview

Patent Law > ... > Claim Language > Elements & Limitations > Alternative Limitations

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN20](#) **Elements & Limitations, Alternative Limitations**

For purposes of the third element in the Graham test for patent obviousness, while it is entirely proper to use the specification of the patent to interpret what the patentee meant by a word or phrase in a claim, adding to the claim an extraneous limitation appearing in the specification is improper.

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN21](#) **Specifications, Enablement Requirement**

For purposes of the third element in the Graham test for patent obviousness, review of prior art is not limited to claims asserted in the prior art. Differences between prior art and the claimed invention are ascertained by interpretation of the teachings of the prior art and of the claims of the patent. In other words, a prior art reference must be considered in its entirety in an obviousness inquiry and must include a full appreciation of what such reference fairly suggests to one of ordinary skill in the art.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > General Overview

Patent Law > Nonobviousness > Elements &

[HN22](#) **Elements & Tests, Prior Art**

For purposes of the third element in the Graham test for patent obviousness, the claims of the patent-in-suit are the starting point for determining any differences between the patent-in-suit and the prior art.

Civil Procedure > Trials > Jury Trials > Province of Court & Jury

Patent Law > Infringement Actions > Claim Interpretation > General Overview

[HN23](#) **Jury Trials, Province of Court & Jury**

Claim construction is a question of law for the court to resolve. Some courts routinely hold Markman hearings to determine the proper interpretation of claim language. This procedure is not always necessary, however.

Patent Law > Infringement Actions > Claim Interpretation > General Overview

[HN24](#) **Infringement Actions, Claim Interpretation**

Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy. Claim construction may occasionally be necessary in obviousness determinations, when the meaning or scope of technical terms and words of art is unclear and in dispute and requires resolution in order to determine obviousness.

Civil Procedure > ... > Summary Judgment > Entitlement as Matter of Law > General Overview

Estate, Gift & Trust Law > Wills > Beneficiaries > Elections

Patent Law > Infringement Actions > Claim Interpretation > General Overview

Patent Law > Infringement Actions > Summary

Judgment > General Overview

[HN25](#) **Summary Judgment, Entitlement as Matter of Law**

For patent claim construction purposes, the court bases its decision on the plain, ordinary, and undisputed language of the claim and any ambiguities will be resolved against the party moving for summary judgment.

Patent Law > ... > Claim Language > Elements & Limitations > Alternative Limitations

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN26](#) **Elements & Limitations, Alternative Limitations**

It is improper to import extraneous limitations from the specification of a patent to avoid a finding of obviousness.

Patent Law > Nonobviousness > Evidence > General Overview

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN27](#) **Nonobviousness, Evidence**

The fact that prior art teachings teach the invention disclosed in a patent claim does not render their combination obvious, unless there is some motivation or suggestion to combine the prior art teachings, either in the prior art itself, or by reasonable inference from the nature of the problem, or from the knowledge of those of ordinary skill in the art.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Real Property Law > Environmental Regulations > Indoor Air & Water Quality

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN28](#) **Elements & Tests, Prior Art**

For purposes of patent obviousness, the incentive to combine prior art references can come from the prior art itself or be reasonably inferred from the nature of the problem to be solved, leading inventors to look to references related to solutions to that problem.

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN29](#) **Graham Test, Secondary Considerations**

The final element of the Graham test for patent obviousness requires ascertaining the extent of any objective indicia of non-obviousness. These so-called secondary considerations include commercial success, long-felt need, failure of others, skepticism and unexpected results. In some cases, such evidence is the most probative of obviousness.

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN30](#) **Graham Test, Secondary Considerations**

Secondary considerations do not control the patent obviousness inquiry. In other words, secondary considerations are but a part of the totality of the evidence that is used to reach the ultimate conclusion of obviousness.

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

Patent Law > Nonobviousness > Elements & Tests > General Overview

Rodger D Young, Steven C Susser, David J Poirier, Young & Susser, Southfield, MI USA.

[HN31](#) **Graham Test, Secondary Considerations**

For purposes of patent obviousness, commercial success is relevant only if it flows from the merits of the claimed invention. In other words, the party asserting commercial success must prove a nexus between the commercial success and the claimed invention.

For Technology Holding Company, Teleflex, Incorporated, Intervenor-PLAINTIFF: Rodger D Young, Steven C Susser, Young & Susser, Southfield, MI USA.

For KSR International, Incorporated, DEFENDANT: James W Dabney, Pennie & Edmonds, New York, NY USA.

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

For KSR International, Incorporated, DEFENDANT: L Pahl Zinn, Dickinson Wright, Kenneth J McIntyre, Detroit, MI USA.

Patent Law > Nonobviousness > Elements & Tests > General Overview

For Technology Holding Company, MOVANT: Rodger D Young, Steven C Susser, Young & Susser, Southfield, MI USA.

[HN32](#) **Graham Test, Secondary Considerations**

For purposes of patent obviousness, information solely on numbers of units sold is insufficient to establish commercial success.

Judges: PRESENT: HONORABLE LAWRENCE P. ZATKOFF, CHIEF UNITED STATES DISTRICT JUDGE.

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Opinion by: LAWRENCE P. ZATKOFF

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

Opinion

Patent Law > Nonobviousness > Evidence > Inferences & Presumptions

[HN33](#) **Subject Matter Jurisdiction, Appeals**

For purposes of patent obviousness, the United States Court of Appeals for the Federal Circuit has found that the fact that a patentee did not offer evidence of any other secondary consideration warrants giving less weight to an argument based on commercial success. Commercial success is an indication of nonobviousness that must be considered in a patentability analysis.

[*583] OPINION AND ORDER

AT A SESSION of said Court, held in the United States Courthouse, in the City **[**2]** of Detroit, State of Michigan, on 12 DEC 2003

PRESENT: THE HONORABLE LAWRENCE P. ZATKOFF

CHIEF UNITED STATES DISTRICT JUDGE

Counsel: For Teleflex, Incorporated, PLAINTIFF:

I. INTRODUCTION

This matter is before the Court on Plaintiffs' *Ex Parte* Motion for Oral Argument, Plaintiffs' Motion for

Summary Judgment of Infringement and Defendant's Motion for Summary Judgment of Invalidity. All motions have been fully briefed by the parties. The Court finds that the parties have adequately set forth the relevant law and facts, and that oral argument would not aid in the disposition of the instant motion. See *E.D. MICH. L.R. 7.1(e)(2)*. Accordingly, Plaintiffs' motion for oral argument is DENIED and the Court ORDERS that the motions be decided on the briefs submitted. For the reasons stated below, Defendant's Motion for Summary Judgment of Invalidity is GRANTED and Plaintiffs' Motion for Summary Judgment of Infringement is DENIED as moot.

II. BACKGROUND

Plaintiffs filed a three-count Complaint on November 18, 2002, alleging the following:

Count I Infringement of United States Patent No. 6,237,565 (hereinafter "'565" or the "Engelgau patent");

Count II Infringement of [**3] United States Patent No. 6,305,239 (hereinafter "'239"); and

Count III Infringement of United States Patent No. 6,374,695 (hereinafter "'695").

See Complaint. On August 11, 2003, however, the Court ordered, with stipulation, dismissal of Count II and Count III. Thus, the only remaining infringement claim relates to the '565 patent, (Count I). The '565 patent describes and claims a position-adjustable vehicle pedal assembly that allows the driver of a vehicle to adjust the pedal assembly to achieve greater driving comfort. The pedal assembly incorporates an electronic pedal position sensor for use in vehicles sold with electronically [*584] controlled engine and braking systems that require the use of an electronic sensor. Plaintiffs contend that two of Defendant's adjustable pedal assemblies infringe on claim 4 of the '565 patent.

A. Facts and Procedural History

Plaintiff Teleflex Incorporated (hereinafter "Teleflex") is a Delaware corporation and a manufacturer and supplier of adjustable pedal systems that the automotive industry uses in automobile platforms. Plaintiff Technology Holding Corporation (hereinafter "THC") is a Delaware subsidiary of Plaintiff [**4] Teleflex and is the current assignee of the '239, '695, and '565 patents. Defendant KSR International Company (hereinafter "KSR") is a

Canadian company and a manufacturer and supplier of automotive components, including adjustable pedal systems, to the automotive industry. Plaintiff Teleflex and Defendant KSR are direct competitors.

This action involves position-adjustable vehicle pedal assemblies, comprising of gas and brake pedals, that a motor vehicle driver uses to actuate the motor vehicle's fuel and brake systems. The pedal assembly may also include a clutch pedal if the vehicle is equipped with a manual transmission. Defendant has offered evidence that adjustable pedal assemblies have been produced since the 1970's. It is undisputed that earlier adjustable pedal assemblies were designed to work in vehicles using cable-actuated throttle controls. In vehicles using cable-actuated throttle controls, depression of the vehicle's gas pedal causes a cable to actuate a carburetor or fuel injection unit, thereby increasing the amount of fuel and air entering the engine. It is also undisputed that in the mid-1990's, however, increasing numbers of vehicles sold in the United States [**5] were manufactured with computer controlled engines requiring the use of "electronic throttle controls" (hereinafter "ETC's"), instead of cable-actuated throttle controls. Unlike a cable-actuated throttle control, ETC's require the use of an electronic sensor to read the position of the gas pedal and vary the engine speed based on the position of the gas pedal. According to Defendant, ETC's allow improved traction control, simplified cruise controls, and greater use of on-board computer systems to improve fuel efficiency and reduce emissions.¹

Defendant alleges that in mid-1998, it was chosen by Ford to supply adjustable pedal [**6] systems for the Ford Crown Victoria, Mercury Grand Marquis, and Lincoln Town Car lines, commencing with the 2001 model year. According to Defendant, the Ford engines installed in these vehicles use cable-actuated throttle controls and, accordingly, the adjustable pedal assemblies supplied by Defendant included cable-attachment arms. Defendant alleges that it was awarded U.S. Patent No. 6,151,986 for the design of the adjustable pedal systems supplied to Ford commencing with the 2001 model year. It has not been alleged that

¹ Defendant alleges that ETC's require the use of an electronic sensor to communicate pedal input to the ETC in order to vary engine speed. Defendant refers to that electronic sensor as a "potentiometer" or "pedal position sensor." Plaintiff refers to the sensor as an "electronic control." To avoid any confusion, the Court will refer to the electronic sensor as a "pedal position sensor."

this design infringes on any of Plaintiffs' patents.

Defendant further alleges that in mid-2000, it was chosen by General Motors to supply adjustable pedal assemblies for the Chevrolet and GMC light truck lines, commencing with the 2003 model year. Unlike the cable-actuated Ford engines, the General Motors engines installed in the 2003 light truck lines require the use of an [*585] ETC. Defendant alleges that to be compatible with the General Motors engines, it supplied its adjustable pedal assemblies with an off-the-shelf pedal position sensor that had previously been used in 1994 and later Chevrolet and GMC pick-up trucks with optional diesel engines. Defendant [**7] alleges that it has patents pending for this design. Plaintiffs allege that this design, i.e., an adjustable pedal assembly incorporating an electronic pedal position sensor, infringes on their adjustable pedal assembly patents. By letter dated March 28, 2001, Plaintiff Teleflex stated the following to Defendant:

We understand that you have made several proposals to General Motors Corporation based on an adjustable pedal product in combination with an electronic throttle control Teleflex believes that any supplier of a product that combines an adjustable pedal with an electronic throttle control necessarily employs technology covered by one or more of the above Teleflex patents and applications.

Willemsen Dec., at Ex. 2. After failing to persuade Defendant enter into a "royalty arrangement," Plaintiff Teleflex filed the present patent infringement action on November 18, 2002.

Before filing its Complaint on November 18, 2002, however, Plaintiff Teleflex assigned the '239, '695 and '565 patents to Plaintiff THC, a subsidiary corporation. On April 2, 2003, Defendant moved to dismiss the action for lack of subject matter jurisdiction because at that point, Plaintiff [**8] THC was not a party to the case. Defendant argued that Plaintiff Teleflex lacked standing to sue for infringement because the patents had been assigned to Plaintiff THC. The Court denied Defendant's motion as to the '565 patent finding that an exclusive license granted to Plaintiff Teleflex by Plaintiff THC afforded Plaintiff Teleflex sufficient rights in the patent to satisfy the standing requirement, notwithstanding the absence of Plaintiff THC from the action. Plaintiff Teleflex did not, however, attach sufficient documentation to prove that it had been granted an exclusive license for the '239 and '695 patents and the Court ordered the parties to show cause as to whether such exclusive licenses had been granted

to Plaintiff. Instead of responding to the order to show cause, the parties stipulated to the dismissal of the '239 and '695 patents, Plaintiffs dedicating both patents to the public under [35 U.S.C. § 253](#). Thus, the only remaining patent-in-suit is the '565 patent, invented by Steven Englegau on February 14, 1998. The parties also stipulated to the joinder of Plaintiff THC on September 26, 2003, and Plaintiff THC has agreed to be bound by all of [**9] the papers filed by Plaintiff Teleflex in this action.

Plaintiffs allege that two of Defendant KSR's adjustable pedal systems being produced for the General Motors GMT-800 and GMT-360 vehicle platforms literally infringe on each requirement of claim 4 of the '565 patent. Defendant argues that its adjustable pedal assemblies do not infringe on the '565 patent. Moreover, according to Defendant, the '565 patent is invalid because it would have been obvious to someone with ordinary skill in the art of designing pedal systems to combine an adjustable pedal system with an electronic pedal position sensor to work with electronically controlled engines increasingly being used in motor vehicles. The Court finds Defendant's invalidity argument persuasive and because it disposes of the case only Defendant's Motion for Summary Judgment of Invalidity will be addressed.

III. LEGAL STANDARD

[HN1](#)^[↑] Summary judgment is appropriate only if the answers to interrogatories, depositions, [*586] admissions, and pleadings combined with the affidavits in support show that no genuine issue as to any material fact remains and the moving party is entitled to a judgment as a matter of law. See [FED. R. Civ. P. 56\(c\)](#) [**10] . A genuine issue of material fact exists when there is "sufficient evidence favoring the non-moving party for a jury to return a verdict for that party." [Anderson v. Liberty Lobby, Inc.](#), 477 U.S. 242, 249, 91 L. Ed. 2d 202, 106 S. Ct. 2505 (1986) (citations omitted). [HN2](#)^[↑] In application of this summary judgment standard, the Court must view all materials supplied, including all pleadings, in the light most favorable to the non-moving party. See [Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.](#), 475 U.S. 574, 587, 89 L. Ed. 2d 538, 106 S. Ct. 1348 (1986). "If the evidence is merely colorable or is not significantly probative, summary judgment may be granted." [Anderson](#), 477 U.S. at 249-50 (citations omitted).

[HN3](#)^[↑] The moving party bears the initial responsibility

of informing the Court of the basis for its motion and identifying those portions of the record that establish the absence of a genuine issue of material fact. See [Celotex Corp. v. Catrett, 477 U.S. 317, 323, 91 L. Ed. 2d 265, 106 S. Ct. 2548 \(1986\)](#). Once the moving party has met its burden, the nonmoving party must go beyond the pleadings and come **[**11]** forward with specific facts to demonstrate that there is a genuine issue for trial. See [FED. R. Civ. P. 56\(e\); Celotex, 477 U.S. at 324](#). [HN4](#)[↑] The non-moving party must do more than show that there is some abstract doubt as to the material facts. It must present significant probative evidence in support of its opposition to the motion for summary judgment in order to defeat the motion for summary judgment. See [Moore v. Philip Morris Cos., 8 F.3d 335, 339-40 \(6th Cir. 1993\)](#).

IV. ANALYSIS

A. Claim 4 of the '565 Patent

The invention disclosed in the '565 patent is described in the patent's specification as a "simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle." See '565 patent, col. 2, lines 2-4, attached to Plaintiffs' Response Brief, at Ex. J. [HN5](#)[↑] Although the specification is useful for interpretation of claims, it is the claims that actually measure the invention. See [W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1548 \(Fed. Cir. 1983\)](#) (citations omitted). Claim 4 of the **[**12]** '565 patent broadly claims the following:

A vehicle control pedal apparatus (12) comprising:

a support (18) adapted to be mounted to a vehicle structure (20);

an adjustable pedal assembly (22) having a pedal arm (14) moveable in fore [sic] and aft directions with respect to said support (19);

a pivot (24) for pivotally supporting said adjustable pedal assembly (22) with respect to said support (18) and defining a pivot axis (26); and

an electronic control (2) attached to said support (18) for controlling a vehicle system;

said apparatus (12) characterized by said electronic control (28) being responsive to said pivot (24) for providing signal (32) that corresponds to pedal arm position as said pedal arm (14) pivots about said

pivot axis (26) between rest and applied positions wherein the position of said pivot (24) remains constant while said pedal arm (14) moves in fore and aft directions with respect to said pivot (24).

'565 patent, col. 6, lines 17-36.

According to the above-quoted language, claim 4 of the '565 patent describes a **[*587]** position-adjustable pedal assembly with an electronic pedal position sensor attached to the **[**13]** support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal. Plaintiffs allege that this feature results in a pedal assembly that is less expensive, less complex, and more compact than its predecessors. Defendant, however, argues that claim 4 is drafted so broadly as to render the "invention" an obvious combination of an adjustable pedal assembly and pedal position sensor already well known in the art.

B. Obviousness

[HN6](#)[↑] A patent is presumed valid. See [35 U.S.C. § 282](#). Therefore, a party challenging the validity of a patent bears the burden of proving facts that establish invalidity by clear and convincing evidence. See [Moba, B.V. v. Diamond Automation, Inc., 325 F.3d 1306, 1319 \(Fed. Cir. 2003\)](#). [HN7](#)[↑] Under [35 U.S.C. § 103](#), prior art invalidates a patent for obviousness when the "subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. **[**14]** " [35 U.S.C. § 103 \(a\)](#). [HN8](#)[↑] An obviousness inquiry under [section 103](#) ultimately presents a question of law based on several underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the prior art and the claimed invention; and (4) the extent of any objective indicia of non-obviousness. See [Graham v. John Deere Co., 383 U.S. 1, 17-18, 15 L. Ed. 2d 545, 86 S. Ct. 684 \(1966\)](#); [Winner Int'l Royalty Corp. v. Wang, 202 F.3d 1340, 1348 \(Fed. Cir. 2000\)](#). Moreover, [HN9](#)[↑] the central inquiry under [section 103](#) is "whether the combined teachings of the prior art, taken as a whole, would have rendered the claimed invention obvious to one of ordinary skill in the art." [In re Napier, 55 F.3d 610, 613 \(1995\)](#). Defendant argues that claim 4 is invalid for obviousness in light of the relevant prior art at the time of the invention. Plaintiffs argue that genuine issues of material fact exist that preclude summary

judgment on the issue of obviousness.

1. The Scope and Content of the Prior Art

[**15] [HN10](#) Under the first element of the *Graham* test for obviousness, the Court must determine the scope and content of the prior art. [HN11](#) The scope of prior art is only that art which is analogous. See [In re Clay, 966 F.2d 656, 658-59 \(Fed. Cir. 1992\)](#). Analogous art is art that is not "too remote to be treated as prior art." [In re Clay, 966 F.2d at 657](#). In addition, a prior art reference is analogous if it is from the same "'field of endeavor,' even if it addresses a different problem, or, if not within the same field, if the reference is 'reasonably pertinent' to the particular problem with which the inventor is involved." [In re Conte, 36 Fed. Appx. 446, 450, 2002 WL 1216965, *4 \(Fed. Cir. 2002\)](#) (citing [In re Clay, 966 F.2d at 658-59](#)). [HN12](#) The determination of relevant prior art is a question of fact. [In re Clay, 966 F.2d at 658](#).

[HN13](#) Relevant prior art is further defined by [35 U.S.C. §§ 102 \(a\) and \(b\)](#), which limit the time frame within which prior art can be found. [Sections 102 \(a\) and \(b\)](#) provide:

[HN14](#) A person shall be entitled to a patent unless -

- (a) the invention was known [**16] or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention [*588] thereof by the applicant for patent, or
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.

According to interrogatory answers served by Plaintiff Teleflex, the inventions claimed in the '565 patent were made on February 14, 1998. Under [section 102 \(a\)](#), the prior art of the '565 patent includes any analogous patents or printed publications issued prior to February 14, 1998. Furthermore, the '565 patent issued from a "continuation" application that claimed priority to a "parent" application filed January 26, 1999. Thus, under [section 102\(b\)](#), the prior art of the '565 patent also includes any analogous products that were in public use or on sale in the United States on or before January 26, 1998, a year prior to the application date of the [**17]

'565 patent. It is undisputed that the prior art alleged by Defendant conform to the time limitations of [35 U.S.C. §§ 102 \(a\) and \(b\)](#).

In fact, Plaintiffs' only dispute the relevance of one prior art reference asserted by Defendant, U.S. Patent No. 5,010,782 (hereinafter "Asano"). Like the patent-in-suit, Asano discloses a position adjustable pedal assembly. The pedal assembly is pivotally mounted on a support which is connected to the vehicle. A pedal arm moves forward and backward along a guide member by way of a screw drive mechanism. The position of the support pivot remains in a constant position while the pedal arm moves forward and backward along the guide member. Depression of the foot pedal causes the pedal assembly to pivot and actuate a cable operated throttle control. Plaintiffs argue that because Asano depicts a complex pedal assembly design, an inventor presented with Engelgau's problem of how to design a less complex and less expensive adjustable pedal assembly "would shun Asano." See Plaintiff Teleflex's Response Brief, at 20. Defendant responds by arguing that none of the features that allegedly make the [**18] '565 patent less complex or less expensive are claimed in claim 4 of the invention. Therefore, according to Defendant, the alleged features that make the patent-in-suit less complex or less expensive are legally irrelevant.

Each party asserts that relevant art is defined by the nature of the problem confronting the would-be inventor. See [Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 716 \(Fed. Cir. 1991\)](#); [Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1535 \(Fed. Cir. 1983\)](#). [HN15](#) Determining relevant prior art, however, involves determining the scope of the inventor's "field of endeavor" before turning to the question of the nature of the problem confronting the inventor. As the Federal Circuit explained in *In re Wood*:

The determination that a reference is from a nonanalogous art is ... two-fold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

[**19] [In re Wood, 599 F.2d 1032, 1036 \(Fed. Cir. 1979\)](#). Thus, [HN16](#) an inquiry into the problem facing the inventor only arises if the alleged prior art is not within the inventor's same field of endeavor. Furthermore, if the alleged prior art exists in the inventor's field of endeavor, it constitutes relevant prior art "regardless of the problem addressed." [In re Clay,](#)

[966 F.2d at 658-59.](#)

The Court finds that Asano is within Engelgau's field of endeavor. Engelgau's field of endeavor is the position-adjustable pedal assembly area of the automotive [*589] component industry. Engelgau admits in his affidavit that before designing the '565 patent he "was generally aware of the various designs in the fields of fixed and adjustable pedal assemblies as well as electronic controls." Plaintiff's Response Brief, at Ex. A. Furthermore, references in the first paragraph of the background section of the patent-in-suit to position-adjustable pedal assemblies in general, apart from their use with electronic pedal position sensors or electronic throttle controls, supports a finding that cable-actuated position-adjustable pedal assemblies such as Asano are within Engelgau's [**20] field of endeavor. See [In re Wood, 599 F.2d at 1036](#) (finding that reference in the patent's specification to a field of art encompassing the alleged prior art supported a finding that the alleged prior art was within the inventor's field of endeavor.) Accordingly, the Court finds Asano to be analogous prior art to the '565 patent.

Other than Asano, Plaintiffs have not disputed that the prior art cited by Defendant is analogous. The Court finds the following to be analogous prior art and sufficient to establish obviousness by clear and convincing evidence:

1. U.S. Patent No. 5,010,782 filed July 28, 1989 (hereinafter "Asano");
2. U.S. Patent No. 5,998,892 filed September 4, 1996 (hereinafter "'892");
3. U.S. Patent No. 5,408,899 filed June 13, 1993 (hereinafter "'899");
4. U.S. Patent No. 5,241,936 filed September 9, 1991 (hereinafter "'936");
5. U.S. Patent No. 5,460,061 filed September 17, 1993 (hereinafter "Redding");
6. U.S. Patent No. 5,063,811 filed July 9, 1990 (hereinafter "Smith");
7. Various modular self-contained pedal position sensors, including [**21] U.S. Patent No. 5,385,068 filed December 18, 1992 (hereinafter "'068") and the "503 series" pedal position sensor manufactured by CTS Corporation; and
8. A non-position adjustable pedal assembly

installed in certain 1994 Chevrolet pick-up trucks comprising of a CTS 503 Series pedal position sensor attached to the pedal assembly support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates in operation.

The Court will briefly describe each of the above prior art.

a. The Asano patent

As the Court previously described, Asano discloses a position adjustable pedal assembly pivotally mounted on a support member. A pedal arm moves forward and backward along a guide member by way of a screw drive mechanism depending on the driver's desired pedal position. The position of the support pivot remains constant while the pedal arm moves forward and backward along the guide member. The design also discloses an attachment for a mechanical throttle cable, the cable being responsive to the pivoting motion of the pedal assembly caused by depression of the accelerator pedal.

b. The [**22] '892 and '899 patents

The '892 and '899 patents disclose electronic pedal position sensors. Each patent teaches the desirability of electronic throttle controls and electronic connections, as distinguished from mechanical throttle controls and mechanical connections, between vehicle accelerator pedals and engine throttles.

c. The '936 patent

The '936 patent disclose a non-adjustable pedal assembly incorporating a pedal [*590] position sensor. The '936 patent teaches the desirability of placing the pedal position sensor inside the vehicle's passenger compartment mounted on the pedal support member adjacent to a vehicle's accelerator pedal, rather than in a vehicle's engine compartment.

D. The Redding patent

The Redding patent discloses an adjustable accelerator pedal assembly in which the accelerator pedal arm slides back and forth along a guide member, but in contrast to Asano and the patent-in-suit, the accelerator pedal pivot moves during pedal adjustment.

e. The Smith patent


The Smith patent discloses an electronic pedal position

sensor attached to an accelerator pedal support bracket and engaged with a pivot shaft. **[**23]** During the prosecution history of the '565 patent, the Patent Examiner held the combination of Redding and Smith to be obvious.

f. The 503 Series pedal position sensor used in certain 1994 Chevrolet pick-up trucks and the pedal position sensor described in the '068 patent.

These modular pedal position sensors teach the advantage of using a pedal position sensor that is engaged with the pivot shaft of an accelerator pedal to send an electronic signal to an electronic throttle control based on the degree the pivot shaft turns in response to depression of the accelerator pedal. In the case of the pedal assembly in certain 1994 Chevrolet pick-up trucks, the modular 503 Series pedal position sensor is mounted to the pedal assembly's support bracket and engaged with the pedal's pivot shaft. The 503 Series pedal position sensor and the pedal position sensor disclosed in the '068 patent will hereinafter collectively be referred to as "the modular pedal position sensors." As previously stated, the Court finds all of the above described prior art to be relevant and analogous to the patent-in-suit.



ii. The Level of Ordinary Skill in the Art

[24]** [HN17](#)  The second element in the *Graham* test for obviousness requires determining the level of ordinary skill in the pertinent art. See [Graham, 383 U.S. at 17-18](#). Ascertaining the level of ordinary skill in the art is necessary for maintaining objectivity in the obviousness inquiry. See [Ryko, 950 F.2d at 719](#). Factors to consider include the educational level of the inventor, the educational level of those who work in the relevant industry, and the sophistication of the technology involved. See [id.](#)


The parties' experts dispute the level of ordinary skill in the art of designing adjustable pedal assemblies. Plaintiff's expert, Professor Clark J. Radcliffe, argues that "a person of ordinary skill in the art would be one with an undergraduate degree in mechanical engineering (or an equivalent amount of industry experience) who has familiarity with pedal control systems for vehicles." See Plaintiff's Response Brief, at Ex. H, P 7. Defendant's expert, Larry Willemsen, argues that a person of ordinary skill in the art would have had "a minimum of two (2) years of college level training in mechanical engineering and two-three years' work **[**25]** experience spanning at least one complete pedal design 'cycle.'" Willemsen Decl., at P 20. The

Court finds little difference between these two positions. Furthermore, Defendant has agreed to adopt Professor Radcliffe's understanding of the level of ordinary skill in the art to the extent it differs from Mr. Willemsen's. Therefore, the Court finds the level of ordinary skill in **[*591]** the art to be a hypothetical person with an undergraduate degree in mechanical engineering or an equivalent amount of industry experience who has familiarity with pedal control systems for vehicles.

iii. Differences Between the Prior Art and the Claimed Invention

[HN18](#)  The third element in the *Graham* analyses requires the determination of any differences between the teachings found in the prior art and the claimed invention, from the vantage point of a hypothetical person with ordinary skill in the art. See [Graham, 383 U.S. at 17-18](#); [Velander v. Garner, 348 F.3d 1359, 2003 WL 22494519, * 20 \(Fed. Cir. 2003\)](#). The claims of the patent-in-suit must be considered "as a whole." **[**26]** [W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1547-48 \(Fed. Cir. 1983\)](#). It is "the claims, not [the] particular embodiments [that] must be the focus of the obvious inquiry." [Jackson Jordan, Inc. v. Plasser American Corp., 747 F.2d 1567, 1578 \(Fed. Cir. 1984\)](#). [HN19](#)  The Federal Circuit has expressed the significance of claims in defining an invention:

The claims of the patent provide the concise formal definition of the invention. They are the numbered paragraphs which particularly point out and distinctly claim the subject matter which the applicant regards as his invention. It is to these wordings that one must look to determine whether there has been infringement. Courts can neither broaden nor narrow the claims to give the patentee something different than what he has set forth. No matter how great the temptations of fairness or policy making, courts do not rework claims. They only interpret them.

[E.I. Du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433 \(Fed. Cir. 1988\)](#) (quoting **[**27]** [Autogiro Co. of America v. United States, 181 Ct. Cl. 55, 384 F.2d 391, 395-96 \(1967\)](#)) (internal quotations and alterations omitted). Thus, [HN20](#)  while it is entirely proper to use the specification of the patent to interpret what the patentee meant by a word or phrase in a claim, adding to the claim an extraneous limitation appearing in the specification is improper. See [E. I. Du Pont de Nemours & Co., 849 F.2d at 1433](#) (citations omitted).

[HN21](#) [↑] Review of prior art, however, is not limited to claims asserted in the prior art. Differences between prior art and the claimed invention are "ascertained by interpretation of the *teachings* of the prior art and of the *claims* of the patent." CHISUM ON PATENTS, § 5.03[5], 5-239 (2003) (emphasis added). In other words, a prior art reference must be considered in its entirety in an obviousness inquiry and must include a "full appreciation of what such reference fairly suggests to one of ordinary skill in the art." [W.L. Gore, 721 F.2d at 1550](#).

[HN22](#) [↑] The claims of the patent-in-suit are the starting point for determining any differences between the patent-in-suit and the prior art. **[**28]** [HN23](#) [↑] Claim construction is a question of law for the Court to resolve. See [Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 \(Fed. Cir. 1995\)](#). Some courts routinely hold *Markman* hearings to determine the proper interpretation of claim language. This procedure is not always necessary, however. See e.g. [Rogers v. Desa Int'l Inc., 166 F. Supp. 2d 1202, 1204 \(E.D. Mich. 2001\)](#). The subject matter of the '565 patent is not technologically or linguistically complex. Furthermore, neither party disputes any language of claim 4 in the context of Defendant's motion for invalidity. Accordingly, the Court finds a *Markman* hearing to be unnecessary. See [Rogers, 166 F. Supp. 2d at 1205](#).

In addition, the Court is not faced with disputed claim language to resolve. See **[*592]** [U.S. Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1568 \(Fed. Cir. 1997\)](#). As the court in *U.S. Surgical Corp.* stated:

[HN24](#) [↑] Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination **[**29]** of infringement. It is not an obligatory exercise in redundancy. Claim construction may occasionally be necessary in obviousness determinations, when the meaning or scope of technical terms and words of art is unclear and in dispute and requires resolution in order to determine obviousness

[U.S. Surgical Corp., 103 F.3d at 1568](#). Accordingly, [HN25](#) [↑] the Court will base its decision on the plain, ordinary, and undisputed language of claim 4 and any ambiguities will be resolved against the moving party. See [Electronic Planroom, Inc. v. McGraw-Hill Companies, 135 F. Supp. 2d 805, 832 \(E.D. Mich. 2001\)](#).

As described above, claim 4 of the '565 patent broadly discloses the following: an adjustable pedal assembly comprising of a support member with a pivot supporting the pedal assembly with respect to the support member, the pivot remaining in constant position while the pedal moves in fore and aft directions with respect to the pivot. The '565 patent further discloses an electronic pedal position sensor attached to the support member and being responsive to the pivot of the pedal assembly for providing a signal to the engine based on the position **[**30]** of the pedal as the pedal assembly pivots about its pivot axis.

The Court finds little difference between the teachings of the prior art and claims of the patent-in-suit. Asano teaches the structure and function of each of the claim 4 limitations, except those relating to an electronic pedal position sensor. Specifically, Asano teaches an adjustable pedal assembly pivotally mounted on a support bracket with the pedal moving in a fore and aft directions with respect to the support and the pivot remaining in a constant position during movement of the pedal arm. Thus, Asano "fairly suggests" the same mechanical assembly design asserted in claim 4 of the patent-in-suit. [W.L. Gore, 721 F.2d at 1550](#).

Plaintiffs argue that Asano is vastly different from the patent-in-suit. This may be a correct observation based on the preferred embodiment of each patent; however, none of the structural features asserted in claim 4, with the exception of the electronic pedal position sensor, result in an invention that is structurally different from Asano. As Defendant correctly points out, [HN26](#) [↑] it would be improper to import extraneous limitations from the specification of the **[**31]** '565 patent to avoid a finding of obviousness. See [E.I. Du Pont de Nemours & Co., 849 F.2d at 1433](#). Accordingly, the Court finds that Asano teaches every limitation contained in claim 4, with the exception of the limitation referring to an electronic pedal position sensor.

The electronic pedal position sensor asserted in claim 4, however, is fully disclosed by other prior art references. Both the 503 Series pedal position sensor and the '068 patent teach an electronic pedal position sensor being responsive to the pedal pivot shaft and causing a signal to be sent to the engine to increase or decrease engine speed based on the rotation of the pivot shaft. In other words, the 503 Series pedal position sensor and the pedal position sensor disclosed in the '068 patent are designed to be responsive to a pedal's pivot shaft in the same manner as the electronic pedal position sensor described in claim 4 of the '565 patent. Accordingly,

prior art expressly teaches both the pivotally mounted pedal assembly and the electronic [*593] pedal position sensor asserted in claim 4.

a. Suggestion to combine

[**32] [HN27](#)[↑] The fact that Asano and the modular pedal position sensors teach the invention disclosed in claim 4 does not render their combination obvious, however, unless there is "some motivation or suggestion to combine the prior art teachings," either in the prior art itself, or by reasonable inference from the nature of the problem, or from the knowledge of those of ordinary skill in the art. See [Al-Site Corp., v. VSI Int'l, Inc., 174 F.3d 1308, 1324 \(Fed. Cir. 1999\)](#); see also [Yamanouchi Pharmaceutical Co., Ltd., v. Danbury Pharmacal, Inc., 231 F.3d 1339, 1343 \(Fed. Cir. 2000\)](#) ("The suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness."); [ACS Hospital Sys., Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577 \(Fed. Cir. 1984\)](#) ("Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination.") It is undisputed that in the mid-1990's more cars required the use of an electronic device, such as a pedal position sensor, to communicate [*33] driver inputs to an electronically managed engine. It is also undisputed that adjustable pedal assemblies have existed in the art since the late 1970's. Clearly it was inevitable that adjustable pedal assemblies would be joined with an electronic device to work in conjunction with modern electronically controlled engines. This fact is displayed in the prior art by Rixon '593, which discloses an adjustable pedal assembly operating in conjunction with an electronic throttle control. See Plaintiffs' Response Brief, at Ex. L. According to one of Plaintiffs' experts, Timothy Andresen, unlike the patent-in-suit, Rixon '593 discloses an adjustable pedal assembly with an electronic sensor that is not attached to the pedal mounting bracket and moves during pedal adjustment. See Andresen Decl., at PP 5-6. Andresen states that placing the electronic sensor "where it moves during pedal adjustment can be undesirable due to the potential for electrical connector wire fatigue failure and/or insulation abrasion." *Id.* at P 6. It is undisputed that Engelgau sought to improve on this design. See Plaintiff's Response Brief, at Ex. J, Col. 1, lines 43-52. According to Andresen, Engelgau's [*34] mounting of the electronic pedal position sensor to the pedal assembly support bracket separated the pedal adjustment movement from the electronic sensor. Andresen Decl. at P 7. Andresen

argues that this is the "critical feature" of the design that would not have been obvious to someone familiar with the state of art. See Andresen Decl. at P 7. It is also this feature which, according to Andresen, "optimizes package space requirements, minimizes weight, and simplifies the overall design." *Id.* at P 9. Thus, the issue is whether something in the prior art suggests combining the teachings of Asano, a pedal assembly in which the pivot does not move with pedal adjustment, with the teachings of the various modular pedal position sensors known in the art to solve the problem of designing a less expensive, less complex and more compact design.²

[**35] [HN28](#)[↑] [*594] The incentive to combine prior art references can come from the prior art itself or be reasonably inferred from the "nature of the problem to be solved, leading inventors to look to references related to solutions to that problem." [Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573 \(Fed. Cir. 1996\)](#). According to Plaintiff's experts, prior art such as the Rixon '593 suffered from being too complex because the pedal position sensor is located in the pedal housing and its fore and aft movement with the adjustment of the pedal could cause problems with wire failure. Thus, the solution to the problem required an electronic control that does not move with the pedal arm while the pedal arm is being adjusted by the driver. The Court finds that a person with ordinary skill in the art with full knowledge of Asano and the modular pedal position sensors such as the CTS 503 Series would be motivated to combine the two references to avoid the problems with Rixon '593.

In addition, the fact that Asano and the modular pedal position sensors both relate to the art of vehicle pedal

² Plaintiffs' experts agree that the alleged novelty of the '565 patent is found in the fact that the electronic control is mounted to the pedal assembly support member and responsive to the pivotal motion of the pedal pivot shaft. See Radcliffe Decl. at P 15; Andresen Decl. at P 5-7. This feature is asserted in claim 4. In addition, however, Plaintiffs argue that the problem of designing a less complex, less expensive, and more compact design was also solved by the simplified adjustable pedal assembly disclosed in the preferred embodiment of the '565 patent. Plaintiffs make the argument in an attempt to distinguish Asano. This argument, however, is unavailing because, as the Court noted above, claim 4 contains none of the limitations that allegedly make the preferred embodiment of the pedal assembly structurally less complex than the Asano pedal assembly. See [E. I. Du Pont de Nemours & Co., 849 F.2d at 1433](#) (citations omitted).

systems is a factor suggesting their combination. See **[**36]** [In re Harmon](#), 42 C.C.P.A. 921, 222 F.2d 743, 746, 1955 Dec. Comm'r Pat. 233 (C.C.P.A. 1955) ("That the references would have suggested doing what appellant has done to anyone skilled in the art seems beyond doubt since both references relate to coating"); [In re Marx](#), 43 C.C.P.A. 880, 232 F.2d 638, 640, 1956 Dec. Comm'r Pat. 260 (C.C.P.A. 1956) ("since both patents relate to the same art, it would readily have occurred to one having cognizance of the features of the references that it might be desirable to [combine them]."); [Display Technologies, Inc. v. Paul Flum Ideas, Inc.](#), 282 F.3d 1340, 60 Fed. Appx. 787, 794 (Fed. Cir. 2002) ("The district court did not err in combining the prior art references in this case. The [prior art references] all are within the same field of gravity-fed beverage dispensers.") Furthermore, the prior art contains express teachings with respect to the desirability of attaching pedal position sensor to the support member of a pedal assembly with the sensor being responsive to the pedal's pivot shaft in the same manner as the invention claimed in the **[**37]** '565 patent. See U.S. Patent No. 5,063,811 to Smith (hereinafter "Smith"), attached to Defendant's Reply Brief, at Ex. 5. Smith reveals a rotary potentiometer, which provides basically the same function as the 503 Series pedal position sensor, attached to a fixed support member and responsive to the pedal's pivot shaft. Additionally, Smith contains express teachings as to the desirability of attaching an electronic control to a support member in order to avoid the wire failure problems identified with Rixon '593 and allegedly solved by the patent-in-suit: "The wiring to the electrical components must be secure from the possibility of chafing which will eventually result in electrical failure. Thus, the pedal assemblies must not precipitate any motion in the connecting wires themselves" *Id.* at Col. 1, lines 33-38. Accordingly, the Court finds that Defendant has offered sufficient evidence of a suggestion to combine a pivotally mounted adjustable pedal assembly with an off-the-shelf modular pedal position sensor to solve the problem of designing a less expensive, less complex, and more compact adjustable pedal assembly for use with electronically controlled vehicles.

[38]** **[*595]** A finding of obviousness is further supported by the prosecution history of the patent-in-suit. Defendant points out that during prosecution of the '565 patent before the Patent and Trademark Office, the Examiner rejected a claim similar to claim 4 as an obvious combination of prior art. Specifically, the Examiner cited Redding for its disclosure of an adjustable pedal assembly comprising of a pedal

movable in fore and aft directions on a pivotally movable guide rail mounted to a support member. The Examiner cited Smith for its disclosure of an electronic pedal position sensor attached to a pedal assembly support member, which the Examiner described as "old and well known in the art." See Office Action of November 13, 2000, attached to Defendant's Reply Brief, at Ex. 3. The Examiner stated his obviousness conclusion in the following manner:

Since the prior art [sic] references are from the field of endeavor, the purpose disclosed by Brown [sic] would have been recognized in the pertinent art of Redding. Therefore it would have been obvious at the time the invention was made to provide the device of Redding with the electronic throttle control means attached **[**39]** to a support member as taught by Smith.

Id. at 3.

Claim 4 of the '565 patent was allowed by the Examiner, however, because of an added structural limitation, "wherein the position of said pivot (24) remains constant while said pedal arm (14) moves in fore and aft directions with respect to said pivot (24)." '565 patent, col. 6, lines 33-36. Adding this structural limitation distinguished the patent-in-suit from Redding because the pedal pivot described in Redding does not remain constant while the pedal arm moves in fore and aft directions. Asano, however, discloses a pivot that does remain in a constant position while the pedal arm moves back and forth. Thus, the Court finds persuasive Defendant's argument that if Asano had been cited to the Examiner, he would have found the combination of Asano and Smith to be obvious, just as he found the combination of Redding and Smith to be obvious.

i. Secondary Considerations

HN29[↑] The final element of the *Graham* test for obviousness requires ascertaining the extent of any objective indicia of non-obviousness. See **[**40]** [Graham](#), 383 U.S. at 17-18. These so-called "secondary considerations" include commercial success, long-felt need, failure of others, skepticism and unexpected results. See [3M v. Johnson & Johnson Orthopaedics, Inc.](#), 976 F.2d 1559, 1573 (Fed. Cir. 1992). In some cases, such evidence is the most probative of obviousness. See [Richardson-Vicks, Inc. v. Upjohn Co.](#), 122 F.3d 1476, 1483 (Fed. Cir. 1997) (citing [Stratoflex](#), 713 F.2d at 1538). **HN30**[↑] Secondary considerations, however, do not control the obviousness inquiry. See

Richardson-Vicks, 122 F.3d at 1483 (citing Newell Cos. v. Kenney Mfg. Co., 864 F.2d 757, 768 (Fed. Cir. 1988)). In other words, secondary considerations "are but a part of the 'totality of the evidence' that is used to reach the ultimate conclusion of obviousness." See Richardson-Vicks, 122 F.3d at 1483.

Plaintiffs argue that the commercial success of the design depicted in the Engelgan patent supports a finding of non-obviousness. HN31 Commercial success, however, "is relevant only if it flows from the merits of the *claimed* invention. **[**41]** " Sjolund v. Musland, 847 F.2d 1573, 1582 (Fed. Cir. 1988). In other words, the party asserting commercial success must prove a nexus between the commercial success and the claimed invention. See Simmons Fastener Corp. v. Illinois Tool Works, Inc., 739 F.2d 1573, 1575 (Fed. Cir. 1984).

Plaintiffs offer the declaration of Plaintiff Teleflex's Director of Pedal Engineering, **[*596]** Charles Meier. See Plaintiffs' Response Brief, at Ex. M. According to Mr. Meier, the "adjustable pedal assembly design referenced in the Engelgau patent has been placed in Ford's U-137/P-131 program." *Id.* at P 3. Furthermore, according to Mr. Meier, Plaintiff Teleflex has "shipped approximately 150,000.00 adjustable pedal units to Ford for the U-137/P-131 program." *Id.* at P 5. The Court finds this evidence insufficient to overcome Defendant's strong showing of obviousness.

Plaintiff has offered an overall sales figure for the adjustable pedal assembly design "referenced in the Engelgau patent." *Id.* at P 3. As Defendant correctly notes, the pedal assembly design referenced in the Engelgau patent describes two embodiments, one comprising of a optional **[**42]** "cable attachment member 78" for use with engines utilizing a cable-actuated throttle control, and a second comprising of an "electronic throttle control 28." The embodiment comprising of a "cable attachment member 78" is not protected by claim 4. Without knowing what amount, if any, of the 150,000.00 units allegedly sold incorporated an electronic throttle control protected by claim 4, it is impossible to gauge the commercial success of the invention. Furthermore, even if the Court was presented with enough evidence to find some or all of the unit sales to be of a pedal assembly protected by claim 4, the evidence would still amount to simple sales figure with no evidence of nexus. See Kansas Jack, Inc. v. Kuhn, 719 F.2d 1144, 1151 (Fed. Cir. 1983) (upholding the district court's invalidity ruling and holding the patent obvious when "the evidence of commercial success

consisted solely of the number of units sold"); In re Baxter Travenol Labs, 952 F.2d 388 (Fed. Cir. 1991) (citing Kansas Jack, Inc., 719 F.2d at 1151) HN32 ("information solely on numbers of units sold is insufficient to establish commercial success.")

[43]** In addition, Plaintiffs have not attempted to offer evidence of any other secondary consideration, such as long-felt need or failure of others. HN33 The Federal Circuit has found that this fact warrants giving less weight to an argument based on commercial success. See Merck & Co. v. Biocraft Laboratories, Inc., 874 F.2d 804, 809 (Fed. Cir. 1989) ("Commercial success is an indication of nonobviousness that must be considered in a patentability analysis ... but in the circumstances of this case, where it is the only such indication, it is insufficient to render Merck's claimed invention nonobvious."). Therefore, the Court finds the evidence of commercial success insufficient to overcome Defendant's clear and convincing evidence of obviousness.

5. Conclusion

Accordingly, the Court finds that a hypothetical person with an undergraduate degree in mechanical engineering or an equivalent amount of industry experience who has familiarity with pedal control systems for vehicles would have found it obvious to attach a modular pedal position sensor to Asano's support member, with the pedal position sensor being responsive to the pedal assembly's pivot shaft. Therefore, **[**44]** claim 4 of the '565 is invalid for obviousness. See 35 U.S.C. § 103(a).

V. CONCLUSION

For the reasons set forth above, Defendant's Motion for Summary Judgment of Invalidity is GRANTED. Plaintiffs' *Ex Parte* Motion for Oral Argument is DENIED. Plaintiffs' Motion for Summary Judgment of Infringement is DENIED as moot.

IT IS SO ORDERED.

Dated: 12 DEC 2003

LAWRENCE P. ZATKOFF

CHIEF UNITED STATES DISTRICT JUDGE

JUDGMENT

IT IS ORDERED AND ADJUDGED that pursuant to the Court's Opinion and Order dated 12 DEC 2003, Plaintiffs' Complaint is DISMISSED WITH PREJUDICE.

Dated at Detroit, Michigan, this 12 day of DEC 2003.

APPROVED:

LAWRENCE P. ZATKOFF

CHIEF UNITED STATES DISTRICT JUDGE

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Warning

As of: October 28, 2020 12:48 AM Z

[Teleflex, Inc. v. KSR Int'l Co.](#)

United States Court of Appeals for the Federal Circuit

January 6, 2005, Decided

04-1152

Reporter

119 Fed. Appx. 282 *; 2005 U.S. App. LEXIS 176 **

TELEFLEX, INCORPORATED and TECHNOLOGY HOLDING COMPANY, Plaintiffs-Appellants, v. KSR INTERNATIONAL CO., Defendant-Appellee.

Notice: **[**1]** THIS DECISION WAS ISSUED AS UNPUBLISHED OR NONPRECEDENTIAL AND MAY NOT BE CITED AS PRECEDENT. PLEASE REFER TO THE RULES OF THE FEDERAL CIRCUIT COURT OF APPEALS FOR RULES GOVERNING CITATION TO UNPUBLISHED OR NONPRECEDENTIAL OPINIONS OR ORDERS.

Subsequent History: Later proceeding at *KSR Int'l Co. v. Teleflex, Inc.*, 546 U.S. 808, 126 S. Ct. 327, 163 L. Ed. 2d 41, 2005 U.S. LEXIS 5490 (2005)

US Supreme Court certiorari granted by, Motion granted by *KSR Int'l Co. v. Teleflex, Inc.*, 126 S. Ct. 2965, 165 L. Ed. 2d 949, 2006 U.S. LEXIS 4912 (U.S., 2006)

Reversed by, Remanded by [KSR Int'l Co. v. Teleflex Inc.](#), 127 S. Ct. 1727, 167 L. Ed. 2d 705, 2007 U.S. LEXIS 4745 (U.S., 2007)

Prior History: [Teleflex Inc. v. KSR Int'l Co.](#), 298 F. Supp. 2d 581, 2003 U.S. Dist. LEXIS 22606 (E.D. Mich., 2003)

Disposition: Vacated and remanded.

Core Terms

pedal, assembly, electronic, patent, teachings, skill, pivot, invention, solved, bracket, genuine, wire, arm, invalidity, constant, teaching-suggestion-motivation, nonmovant, mounted, movant, vacate

Case Summary

Procedural Posture

Plaintiff patentee sought review of a decision of the United States District Court for the Eastern District of Michigan, which granted summary judgment in favor of defendant, accused infringer, after determining that the claim at issue was invalid by reason of obviousness.

Overview

The claim at issue in the patent related to an adjustable pedal assembly for use with automobiles having engines that are controlled electronically with a device known as an electronic throttle control (the electronic control). The claim specifically provided an assembly where the electronic control was mounted to the support bracket of the assembly. The district court granted summary judgment to the accused, finding that the claim was invalid due to obviousness. The court found that the district court did not apply the correct teaching-suggestion-motivation test, because the district court did not make findings as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with the knowledge to make the combination in the manner claimed. Applying the

appropriate analysis, the court found that genuine issues of material fact existed, so that summary judgment of obviousness was not proper.

Outcome

The court vacated the district court's grant of summary judgment and remanded the matter to the district court for further proceedings.

LexisNexis® Headnotes

Civil Procedure > ... > Summary
Judgment > Burdens of Proof > Movant Persuasion
& Proof

Evidence > Burdens of Proof > Burdens of
Production

Patent Law > ... > Defenses > Inequitable
Conduct > General Overview

Civil Procedure > Judgments > Summary
Judgment > General Overview

Civil Procedure > Appeals > Summary Judgment
Review > General Overview

Civil Procedure > Appeals > Summary Judgment
Review > Standards of Review

Civil Procedure > ... > Summary
Judgment > Burdens of Proof > General Overview

Civil Procedure > ... > Summary
Judgment > Burdens of Proof > Nonmovant
Persuasion & Proof

Civil Procedure > Judgments > Summary
Judgment > Evidentiary Considerations

Civil Procedure > ... > Summary
Judgment > Motions for Summary

Judgment > General Overview

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > General
Overview

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > Genuine
Disputes

Civil Procedure > Judgments > Relief From
Judgments > General Overview

Civil Procedure > Appeals > Standards of
Review > De Novo Review

Patent Law > Infringement Actions > Summary
Judgment > General Overview

Patent Law > Infringement Actions > Summary
Judgment > Appeals

Patent Law > Jurisdiction & Review > Subject
Matter Jurisdiction > Appeals

[HN1](#) **Burdens of Proof, Movant Persuasion & Proof**

The United States Court of Appeals for Federal Claims reviews a district court's grant of summary judgment de novo. In a patent case, as in any other, summary judgment may be granted when there are no disputed issues of material fact, or when the non-movant cannot prevail on the evidence submitted when viewed in a light most favorable to it. The movant carries the initial burden of proving that there are no genuine issues of material fact. If the movant shows a prima facie case for summary judgment, then the burden of production shifts to the nonmovant to present specific evidence indicating there is a genuine issue for trial. When ruling on a motion for summary judgment, all of the nonmovant's evidence is to be credited, and all justifiable inferences are to be drawn in the nonmovant's favor. Where the evidence is conflicting or credibility determinations are required, the judgment should be vacated rather than reversed, and the case should be remanded for further proceedings.

Evidence > Burdens of Proof > Clear & Convincing
Proof

Patent Law > Infringement Actions > Burdens of

Proof

Patent Law > Infringement Actions > General Overview

Patent Law > ... > Defenses > Patent Invalidity > General Overview

Patent Law > ... > Defenses > Patent Invalidity > Grounds

Patent Law > ... > Defenses > Patent Invalidity > Presumption of Validity

Patent Law > Infringement Actions > Summary Judgment > Claim Evaluation

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent

Law > Nonobviousness > Evidence > Inferences & Presumptions

[HN2](#) **Burdens of Proof, Clear & Convincing Proof**

In the context of patent infringement, the grant of summary judgment of invalidity for obviousness must be done on a claim by claim basis. Because patents are presumed valid, the accused infringer must prove by clear and convincing evidence that each claim that is challenged cannot reasonably be held to be non-obvious. Clear and convincing evidence exists when the movant places in the mind of the ultimate fact finder an abiding conviction that the truth of its factual contentions are highly probable.

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > ... > Claims > Claim Language > Duplication & Multiplicity

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Elements &

Tests > Claimed Invention as a Whole

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent

Law > Nonobviousness > Evidence > General Overview

Patent Law > Nonobviousness > Evidence > Fact & Law Issues

Patent Law > Nonobviousness > Evidence > Prima Facie Obviousness

[HN3](#) **Elements & Tests, Ordinary Skill Standard**

A patent claim is obvious, and thus invalid, when the differences between the claimed invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. [35 U.S.C. § 103](#). While obviousness is ultimately a legal determination, it is based on several underlying issues of fact, namely: (1) the scope and content of the prior art; (2) the level of skill of a person of ordinary skill in the art; (3) the differences between the claimed invention and the teachings of the prior art; and (4) the extent of any objective indicia of non-obviousness. When obviousness is based on the teachings of multiple prior art references, the movant must also establish some suggestion, teaching, or motivation that would have led a person of ordinary skill in the art to combine the relevant prior art teachings in the manner claimed. The nonmovant may rebut a prima facie showing of obviousness with evidence refuting the movant's case or with other objective evidence of nonobviousness.

Patent

Law > Nonobviousness > Evidence > General Overview

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > Hindsight

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN4](#) **Nonobviousness, Evidence**

The reason, suggestion, or motivation to combine prior art references may be found explicitly or implicitly: 1) in the prior art references themselves; 2) in the knowledge of those of ordinary skill in the art that certain references, or disclosures in those references, are of special interest or importance in the field; or 3) from the nature of the problem to be solved, leading inventors to look to references relating to possible solutions to that problem. The case law for the United States Court of Appeals for the Federal Circuit makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN5](#) Specifications, Enablement Requirement

The United States Court of Appeals for the Federal Circuit has consistently held that a person of ordinary skill in the art must not only have had some motivation to combine the prior art teachings, but some motivation to combine the prior art teachings in the particular manner claimed. Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.

Patent Law > Nonobviousness > Evidence > General Overview

Patent Law > ... > Specifications > Enablement Requirement > General Overview

Patent Law > Infringement Actions > General Overview

Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals

Patent Law > Nonobviousness > General Overview

Patent Law > Nonobviousness > Elements & Tests > Hindsight

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN6](#) Nonobviousness, Evidence

In the context of an obviousness defense to an infringement claim, the nature of the problem to be solved may, under appropriate circumstances, provide a suggestion or motivation to combine prior art references. However, the test requires that the nature of the problem to be solved be such that it would have led a person of ordinary skill in the art to combine the prior art teachings in the particular manner claimed. The United States Court of Appeals for Federal Claims has recognized this situation when two prior art references address the precise problem that the patentee was trying to solve.

Evidence > ... > Presumptions > Exceptions > Statutory Presumptions

Patent Law > Anticipation & Novelty > Elements

Patent Law > ... > Defenses > Patent Invalidity > Presumption of Validity

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Evidence > Inferences & Presumptions

Patent Law > Remedies > Damages > Measure of Damages

[HN7](#) Exceptions, Statutory Presumptions

In the context of a patent infringement claim, a court's task is not to speculate as to what an examiner might have done if confronted with a piece of prior art. Rather, a court must make an independent obviousness determination, taking into account the statutory presumption of patent validity. Where the factual bases of an examiner's decision to allow a claim have been undermined--as in other cases where prior art not before the examiner is brought to light during litigation--

a court's responsibility is not to speculate what a particular examiner would or would not have done in light of the new information, but rather to assess independently the validity of the claim against the prior art under [35 U.S.C.S. §§ 102](#) or [103](#). Such determination must take into account the statutory presumption of patent validity.

Civil Procedure > ... > Summary
Judgment > Entitlement as Matter of Law > General
Overview

[HN8](#) Summary Judgment, Entitlement as Matter of Law

At the summary judgment stage of a proceeding, it is improper for a district court to make credibility determinations.

Judges: Before MAYER, * SCHALL, and PROST, Circuit Judges.

Opinion by: SCHALL

Opinion

[*283] SCHALL, *Circuit Judge*.

DECISION

Teleflex Incorporated and Technology Holding Company (collectively, "Teleflex") sued KSR International Co. ("KSR") in the United States District Court for the Eastern District of Michigan for infringement of U.S. Patent No. 6,237,565 B1 ("the '565 patent"). On December 12, 2003, the district court granted summary judgment in favor of KSR, after determining that claim 4 of the '565 patent, the sole claim at issue, was invalid by reason of obviousness. [Teleflex Inc. v. KSR Int'l Co., 298 F. Supp. 2d 581 \(E. D.](#)

[Mich. 2003](#)). Teleflex now appeals the district court's decision. For the reasons set forth below, we *vacate* the grant of summary judgment and *remand* the case to the district court for further proceedings.

DISCUSSION

[**2] I.

Claim 4 of the '565 patent relates to an adjustable pedal assembly¹ for use with automobiles having engines that are controlled electronically with a device known as an electronic throttle control. As such, [*284] the assembly of claim 4 incorporates an electronic pedal position sensor (referred to in claim 4, and throughout this opinion, as an "electronic control"). The electronic control is responsive to the pedal pivot and thereby generates an electrical signal corresponding to the relative position of the gas pedal between the rest and applied positions. Claim 4 specifically provides for an assembly wherein the electronic control is mounted to the support bracket of the assembly. This configuration avoids movement of the electronic control during adjustment of the pedal's position on the assembly. Claim 4 reads:

A vehicle control pedal apparatus (12) comprising:

a support (18) adapted to be mounted to a vehicle structure (20);

an adjustable pedal assembly (22) having a pedal arm (14) moveable in force [sic] and aft directions with respect to said support (18);

a pivot (24) for pivotally supporting said adjustable pedal assembly (22) with respect to said [**3] support (18) and defining a pivot axis (26); and

an electronic control (28) attached to said support (18) for controlling a vehicle system;

said apparatus (12) characterized by said electronic control (28) being responsive to said pivot (24) for providing a signal (32) that corresponds to pedal arm position as said pedal arm (14) pivots about said pivot axis (26) between rest and applied positions wherein the position of said pivot (24)

* Judge Haldane Robert Mayer vacated the position of Chief Judge on December 24, 2004.

¹ An adjustable pedal assembly (e.g., gas, break, or clutch) allows the location of the pedal to be adjusted to accommodate a particular driver's height.

remains constant while said pedal arm (14) moves in fore and aft directions with respect to said pivot (24).

The numbers in claim 4 correspond to the numbers in Figure 2 of the '565 patent.

The specification of the '565 patent indicates that prior art pedal assemblies incorporating an electronic control suffered from being too bulky, complex, and expensive to manufacture. See '565 patent, col. 1, ll. [**4] 48-53. It was this problem that the '565 patent set out to address. See *id.* col. 2, ll. 2-5.

Teleflex sued KSR in the Eastern District of Michigan, alleging that KSR's adjustable pedal assembly infringed claim 4 of the '565 patent. KSR moved for summary judgment of invalidity of claim 4 based on obviousness under [35 U.S.C. § 103](#). The district court granted KSR's motion after determining that claim 4 was obvious in view of a combination of prior art references. Teleflex timely appealed the district court's decision. We have jurisdiction pursuant to [28 U.S.C. § 1295\(a\)\(1\)](#).

II.

HN1 [↑] This court reviews a district court's grant of summary judgment *de novo*. [TorPharm Inc. v. Ranbaxy Pharms., Inc.](#), [336 F.3d 1322, 1326 \(Fed. Cir. 2003\)](#). "In a patent case, as in any other, summary judgment may be granted when there are no disputed issues of material fact, ... or when the non-movant cannot prevail on the evidence submitted when viewed in a light most favorable to it." [Knoll Pharm. Co. v. Teva Pharms. USA, Inc.](#), [367 F.3d 1381, 1383 \(Fed. Cir. 2004\)](#). The movant carries the initial burden of proving that there [**5] are no genuine issues of material fact. [Celotex Corp. v. Catrett](#), [477 U.S. 317, 322-24, 106 S. Ct. 2548, 91 L. Ed. 2d 265 \(1986\)](#). If the movant shows a *prima facie* case for summary judgment, then the burden of production shifts to the nonmovant to present specific evidence indicating there is a genuine issue for trial. [Anderson v. Liberty Lobby, Inc.](#), [477 U.S. 242, 250, 106 S. Ct. 2505, 91 L. Ed. 2d 202 \(1986\)](#). "When ruling on a motion for summary judgment, all of the nonmovant's evidence is to be credited, and all justifiable inferences are to be [**285] drawn in the nonmovant's favor." [Caterpillar Inc. v. Deere & Co.](#), [224 F.3d 1374, 1379 \(Fed. Cir. 2000\)](#). "Where the evidence is conflicting or credibility determinations are required, the judgment should be vacated rather than reversed, and the case should be remanded for further proceedings." [Jones v. Hardy](#), [727 F.2d 1524, 1531 \(Fed. Cir. 1984\)](#).

HN2 [↑] "The grant of summary judgment of invalidity

for obviousness must be done on a claim by claim basis." [Knoll Pharm.](#), [367 F.3d at 1383](#). Because patents are presumed valid, "the accused infringer must prove [**6] by clear and convincing evidence that each claim that is challenged cannot reasonably be held to be non-obvious." *Id.*; see also [Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH](#), [139 F.3d 877, 881 \(Fed. Cir. 1998\)](#). Clear and convincing evidence exists when the movant "places in the mind of the ultimate fact finder an abiding conviction that the truth of its factual contentions are 'highly probable.'" [Colorado v. New Mexico](#), [467 U.S. 310, 316, 104 S. Ct. 2433, 81 L. Ed. 2d 247 \(1994\)](#).

HN3 [↑] A patent claim is obvious, and thus invalid, when the differences between the claimed invention and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." [35 U.S.C. § 103](#); see also [Graham v. John Deere Co.](#), [383 U.S. 1, 14, 86 S. Ct. 684, 15 L. Ed. 2d 545 \(1966\)](#); [In re Dembiczak](#), [175 F.3d 994, 998 \(Fed. Cir. 1999\)](#). While obviousness is ultimately a legal determination, it is based on several underlying issues of fact, namely: (1) the scope and content of the prior art; (2) the level of skill of a person [**7] of ordinary skill in the art; (3) the differences between the claimed invention and the teachings of the prior art; and (4) the extent of any objective indicia of non-obviousness. See [Graham](#), [383 U.S. at 17-18](#). When obviousness is based on the teachings of multiple prior art references, the movant must also establish some "suggestion, teaching, or motivation" that would have led a person of ordinary skill in the art to combine the relevant prior art teachings in the manner claimed. See [Tec Air, Inc. v. Denso Mfg. Mich. Inc.](#), [192 F.3d 1353, 1359-60 \(Fed. Cir. 1999\)](#); [Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.](#), [75 F.3d 1568, 1572 \(Fed. Cir. 1996\)](#). The nonmovant may rebut a *prima facie* showing of obviousness with evidence refuting the movant's case or with other objective evidence of nonobviousness. See [WMS Gaming, Inc. v. Int'l Game Tech.](#), [184 F.3d 1339, 1359 \(Fed. Cir. 1999\)](#).

HN4 [↑] "The reason, suggestion, or motivation to combine [prior art references] may be found explicitly or implicitly: 1) in the prior art references themselves; 2) in the knowledge of those of ordinary skill in the art that certain [**8] references, or disclosures in those references, are of special interest or importance in the field; or 3) from the nature of the problem to be solved, 'leading inventors to look to references relating to possible solutions to that problem.'" [Ruiz v. A.B.](#)

Chance Co., 234 F.3d 654, 665 (Fed. Cir. 2000) (quoting Pro-Mold, 75 F.3d at 1572). "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." Dembiczak, 175 F.3d at 999; see also Ruiz, 234 F.3d at 665 (explaining that the temptation to engage in impermissible hindsight is especially strong with seemingly simple mechanical inventions). This is because "combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight." [*286] Dembiczak, 175 F.3d at 999. HNS [↑] Therefore, we have consistently held that a person [*9] of ordinary skill in the art must not only have had some motivation to combine the prior art teachings, but some motivation to combine the prior art teachings in the particular manner claimed. See, e.g., In re Kotzab, 217 F.3d 1365, 1371 (Fed. Cir. 2000) ("Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination *in the manner claimed*." (emphasis added)); In re Rouffet, 149 F.3d 1350, 1357 (Fed. Cir. 1998) ("In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination *in the manner claimed*." (emphasis added)).

III.

On appeal, Teleflex argues that we should vacate the district court's grant of summary judgment and remand the case because the district court committed multiple errors in its obviousness determination. First, Teleflex urges that the district court erred as a matter of law by combining prior art references based on an incorrect teaching-suggestion-motivation [*10] test. Second, it contends that genuine issues of material fact still remain as to whether a person of ordinary skill in the art would have considered it obvious to combine prior art in the manner stated in claim 4. Finally, Teleflex argues that the district court erred by not properly considering the commercial success of Teleflex's patented assembly and by failing to give adequate deference to the patentability determination of the U.S. Patent and Trademark Office ("PTO").

KSR responds that the district court did apply the correct teaching-suggestion-motivation test, and that,

under that test, the court correctly concluded that no genuine issues of material fact existed so as to prevent the grant of summary judgment. KSR contends that the district court properly discounted the declarations of Teleflex's experts because their opinions were based on mere legal conclusions. KSR also contends that the district court properly dismissed Teleflex's evidence of commercial success because Teleflex failed to establish a nexus between commercial success and the claimed invention. Finally, KSR argues that the district court gave proper deference to the PTO.

We agree with Teleflex that the district [*11] court did not apply the correct teaching-suggestion-motivation test. We also agree that, under that test, genuine issues of material fact exist, so as to render summary judgment of obviousness improper. For these reasons, we vacate the decision of the district court and remand for further proceedings consistent with this opinion.

IV.

After comparing the teachings of the prior art with claim 4 of the '565 patent, the district court concluded that, at the time of the invention, all of the limitations of claim 4 existed in the prior art. The court explained that U.S. Patent No. 5,010,782, issued to Asano et al. ("the Asano patent"), disclosed all of the structural limitations of claim 4 with the exception of the electronic control. Teleflex, 298 F. Supp. 2d at 592 ("Asano teaches an adjustable pedal assembly pivotally mounted on a support bracket with the pedal moving in a fore and aft directions with respect to the support and the pivot remaining in a constant position during movement of the pedal arm."). Electronic controls were [*287] well known in the prior art. *Id.* Consequently, after finding a person of ordinary skill in the art would have been motivated to combine [*12] Asano and electronic control references, the district court granted KSR's motion for summary judgment of invalidity by reason of obviousness.

The district court based its finding of a suggestion or motivation to combine largely on the nature of the problem to be solved by claim 4 of the '565 patent. *Id.* at 593-94. The court determined from the patent's specification that the invention of the '565 patent was intended to "solve the problem of designing a less expensive, less complex and more compact [assembly] design." *Id.* at 593. The court then explained that U.S. Patent No. 5,819,593, issued to Rixon et al. ("the Rixon

'593 patent"), ² also "suffered from being too complex because the pedal position sensor is located in the pedal housing and its fore and aft movement with the *adjustment* of the pedal could cause problems with wire failure. Thus, the solution to the problem required an electronic control that does not move with the pedal arm while the pedal arm is being adjusted by the driver." *Id. at 594*. The court then concluded that "a person with ordinary skill in the art with full knowledge of Asano and the modular pedal **[**13]** position sensors would be motivated to combine the two references to avoid the problems with Rixon '593." *Id.*

The district court also found an express teaching to attach the electronic control to the support bracket of a pedal assembly based on the disclosure of U.S. Patent No. 5,063,811, issued to Smith et al. ("the Smith patent"). The court explained that Smith teaches the use of a "rotary potentiometer ... attached to a fixed support member and responsive **[**14]** to the pedal's pivot shaft." *Id.* Moreover, the court stated that Smith provided express teachings as to the desirability of attaching the electronic control to a fixed support member in order to avoid the wire failure problems disclosed in the Rixon '593 patent and solved by the '565 patent: "The wiring to the electrical components must be secure from the possibility of chafing which will eventually result in electrical failure. Thus, the pedal assemblies must not precipitate any motion in the connecting wires themselves" *Id.* (quoting the Smith patent, col. 1, ll. 33-38).

Finally, the district court explained that the prosecution history of the '565 patent bolstered its finding of a suggestion or motivation to combine the Asano and electronic control references. The court explained that the patent examiner initially rejected the '565 patent in view of the teachings of U.S. Patent No. 5,460,061, issued to Redding et al. ("the Redding patent"), and the Smith patent. The examiner stated that the Redding patent disclosed the assembly structure of claim 4 and that Smith disclosed the electronic control attached to the assembly support structure. The patentee overcame

²As explained by the district court, the Rixon '593 patent teaches the combination of an electronic control with an adjustable pedal assembly. The Rixon '593 patent and claim 4 differ, however, in that the electronic control of Rixon is attached to the pedal housing instead of the support bracket. See *Teleflex, 298 F. Supp. 2d at 594*. The electronic control of the Rixon reference consequently moves during adjustment of the pedal assembly. *Id.* The electronic control of claim 4 does not move during adjustment of the pedal assembly.

the **[**15]** rejection, the court explained, by adding the limitation requiring the position of the assembly's pedal pivot to remain constant during adjustment of the assembly. (The position of the pedal pivot of the Redding patent does not remain constant during adjustment of the assembly position.) **[*288]** However, the Asano patent discloses an assembly where the position of the pivot remains constant during adjustment of the pedal assembly. Therefore, the district court reasoned, had Asano been cited to the patent examiner, the examiner would have rejected claim 4 as obvious in view of the Asano and Smith patents. *Id. at 595*.

We agree with Teleflex that the district court's analysis applied an incomplete teaching-suggestion-motivation test in granting KSR summary judgment. This is because the district court invalidated claim 4 of the '565 patent on obviousness grounds without making "findings as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the] invention to make the combination in the manner claimed." *Kotzab, 217 F.3d at 1371*. Under our case law, whether based on the nature **[**16]** of the problem to be solved, the express teachings of the prior art, or the knowledge of one of ordinary skill in the art, the district court was required to make specific findings as to whether there was a suggestion or motivation to combine the teachings of Asano with an electronic control in the particular manner claimed by claim 4 of the '565 patent. See *Kotzab, 217 F.3d at 1371*; *Rouffet, 149 F.3d at 1357*. That is, the district court was required to make specific findings as to a suggestion or motivation to attach an electronic control to the support bracket of the Asano assembly.

The district court correctly noted that *HN6*[↑] the nature of the problem to be solved may, under appropriate circumstances, provide a suggestion or motivation to combine prior art references. However, the test requires that the nature of the problem to be solved be such that it would have led a person of ordinary skill in the art to combine the prior art teachings in the particular manner claimed. See *Rouffet, 149 F.3d at 1357*. We have recognized this situation when two prior art references address the precise problem that the patentee was trying to solve. **[**17]** See *Ruiz v. A.B. Chance Co., 357 F.3d 1270 at 1276* ("This record shows that the district court did not use hindsight in its obviousness analysis, but properly found a motivation to combine because the two references address precisely the same problem of underpinning existing structural foundations."). In this case, the Asano patent does not address the same problem as the '565 patent. The

objective of the '565 patent was to design a smaller, less complex, and less expensive electronic pedal assembly. The Asano patent, on the other hand, was directed at solving the "constant ratio problem."³ The district court's reliance on the problems associated with the Rixon '593 patent similarly fails to provide a sufficient motivation to combine. This is because the Rixon '593 patent does not address the problem to be solved by the '565 patent; rather, it suffers from the problem. The court did not explain how suffering from the problem addressed by the '565 patent would have specifically motivated one skilled in the art to attach an electronic control to the support bracket of the Asano assembly.

[18]** Neither do we agree with the district court's reliance on the express teachings of the Smith patent. This is because the statement in the Smith patent that "the pedal assemblies must not precipitate any motion in the connecting wires," does not necessarily go to the issue of motivation to attach the electronic control on the support bracket of the pedal assembly. In other words, solving the problem of wire **[*289]** chafing is a different task than reducing the complexity and size of pedal assemblies. What is more, the Smith patent does not relate to adjustable pedal assemblies; therefore, it does not address the problem of wire chafing in an adjustable pedal assembly.

Our view of the case is not altered by the '565 patent's prosecution history. That is because [HN7](#)[↑] a court's task is not to speculate as to what an examiner might have done if confronted with a piece of prior art. Rather, a court must make an independent obviousness determination, taking into account the statutory presumption of patent validity. See [TorPharm, 336 F.3d at 1329-30](#) ("Where the factual bases of an examiner's decision to allow a claim have been undermined--as in other cases where prior art not before **[**19]** the examiner is brought to light during litigation--a court's responsibility is not to speculate what a particular examiner would or would not have done in light of the new information, but rather to assess independently the validity of the claim against the prior art under [section 102](#) or [section 103](#). Such determination must take into account the statutory presumption of patent validity.").⁴

³The constant ratio problem refers to the problem of creating an assembly where the force required to depress the pedal remains constant irrespective of the position of the pedal on the assembly. See Asano patent, col. 1, l. 48 - col. 2, l. 13.

⁴Noting Teleflex's argument that the district court did not give adequate deference to the PTO, we do not discern anything in


We also agree with Teleflex that the presence of genuine issues of material fact rendered summary judgment inappropriate. KSR, in the first instance, failed to make out a *prima facie* case **[**20]** of obviousness. The only declaration offered by KSR--a declaration by its Vice President of Design Engineering, Larry Willemsen--did not go to the ultimate issue of motivation to combine prior art, i.e. whether one of ordinary skill in the art would have been motivated to attach an electronic control to the support bracket of the assembly disclosed by Asano. Mr. Willemsen did state that an electronic control "could have been" mounted on the support bracket of a pedal assembly. (Willemsen Decl. at P33, 36, 39.) Such testimony is not sufficient to support a finding of obviousness, however. See, e.g., [In re Deuel, 51 F.3d 1552, 1559 \(Fed. Cir. 1995\)](#) ("'Obvious to try' has long been held not to constitute obviousness."). Mr. Willemsen also provided the following as a "specific motivation to combine" an electronic control with an adjustable pedal assembly:

An increasing number of vehicles sold in the United States came equipped with electronic throttle control systems because such systems offered various operational advantages over cable-actuated throttle control systems In order to function in a vehicle whose engine incorporated an electronic throttle **[**21]** control, the adjustable pedal assembly ... would have had to be coupled to an electronic pedal position sensor.

(Willemsen Decl. at P34, 37, 39.) This statement may be factually correct. However, the issue is not whether a person of skill in the art had a motivation to combine the electronic control with an adjustable pedal assembly, but whether a person skilled in the art had a motivation to attach the electronic control to the support bracket of the pedal assembly.

In addition, Teleflex offered two declarants--Clark J. Radcliffe, Professor of Mechanical Engineering at Michigan State University; and Timothy L. Andresen, a former engineer at Ford Motor Company and McDonnell-Douglas Corporation **[*290]** --in rebuttal of the declaration of Mr. Willemsen. Mr. Radcliffe stated, *inter alia*, that "the location of the electronic control" (Radcliffe Decl. at P15) in claim 4 "was a simple,

the record indicating the district court failed to properly defer to the PTO. Nevertheless, we reiterate that, on remand, the district court must independently assess the evidence and determine whether KSR has provided clear and convincing evidence indicating invalidity of claim 4 by reason of obviousness.

elegant, and novel combination of features," (Radcliffe Decl. at P16) as opposed to the Rixon '593 patent's attachment of the electronic control to the assembly housing, which was both electrically and mechanically complex (Radcliffe Decl. at P17). Mr. Andresen also stated that the non-obviousness of claim **[**22]** 4 was reflected in Rixon's choice to mount the electronic control to the assembly housing instead of the assembly's support bracket. (Andresen Decl. at P5.) [HN8](#)  At the summary judgment stage of a proceeding, it is improper for a district court to make credibility determinations. See, e.g., [Jones, 727 F.2d at 1531](#). Therefore, by crediting KSR's expert declarant and discrediting the two declarants offered by Teleflex, the district court erred as a matter of law.

V.

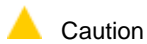
In sum,

(1) We hold that, in granting summary judgment in favor of KSR, the district court erred as a matter of law by applying an incomplete teaching-suggestion-motivation test to its obviousness determination. The correct standard requires a court to make specific findings showing a teaching, suggestion, or motivation to combine prior art teachings in the particular manner claimed by the patent at issue.

(2) Under this standard, we hold that genuine issues of material fact exist as to whether a person of ordinary skill in the art would have been motivated, at the time the invention was made, to attach an electronic control to the support structure of the pedal assembly disclosed by the Asano patent.

[23]** (3) We consequently *vacate* the decision of the district court and *remand* the case for further proceedings on the issue of obviousness, and, if necessary, proceedings on the issues of infringement and damages.

Each party shall bear its own costs.



Caution

As of: October 28, 2020 12:48 AM Z

[KSR Int'l Co. v. Teleflex Inc.](#)

Supreme Court of the United States

November 28, 2006, Argued ; April 30, 2007, Decided

No. 04-1350

Reporter

550 U.S. 398 *; 127 S. Ct. 1727 **; 167 L. Ed. 2d 705 ***; 2007 U.S. LEXIS 4745 ****; 82 U.S.P.Q.2D (BNA) 1385; 75 U.S.L.W. 4289; 20 Fla. L. Weekly Fed. S 248

KSR INTERNATIONAL CO., Petitioner v. TELEFLEX INC. et al.

Subsequent History: [****1] On remand at *Teleflex, Inc. v. KSR Int'l Co.*, 228 Fed. Appx. 988, 2007 U.S. App. LEXIS 16051 (Fed. Cir., June 20, 2007)

Prior History: ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT.

[Teleflex, Inc. v. KSR Int'l Co.](#), 119 Fed. Appx. 282, 2005 U.S. App. LEXIS 176 (Fed. Cir., 2005)

Disposition: Reversed and remanded.

Core Terms

pedal, patent, sensor, skill, pivot, electronic, assembly, teachings, throttle, invention, solve, taught, computer-controlled, infringed, driver, mounted, patentee, modular, rigid, predictable, innovation, technology, inventors, constant, bracket, upgrade, wire, arm

Case Summary

Procedural Posture

Respondent, licensees of a patent, alleged that petitioner, a competitor, infringed the licensees' patent for an accelerator pedal assembly for vehicles, but the competitor asserted that the patent claim in dispute was invalid as obvious under [35 U.S.C.S. § 103](#). Upon the grant of a writ of certiorari, the competitor appealed the judgment of the U.S. Court of Appeals for the Federal Circuit which reversed a summary judgment of patent invalidity.

Overview

To satisfy customer needs, the competitor modified its design for an adjustable pedal system for vehicles with cable-actuated throttles by adding a modular sensor to make the system compatible with vehicles using computer-controlled throttles. The licensees contended that the competitor infringed the patent claim of a position-adjustable pedal assembly with an electronic pedal position sensor attached a fixed pivot point. The U.S. Supreme Court unanimously held that the patent claim was invalid as obvious since mounting an available sensor on a fixed pivot point of the competitor's pedal was a design step well within the grasp of a person of ordinary skill in the relevant art, and the benefit of doing so was obvious. The marketplace created a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for doing so. Further, the problem to be solved by the patent claim did not limit its application as prior art, the competitor's showing that it was obvious to try a combination of elements sufficiently supported the finding of obviousness, and the claim was the result of ordinary skill and common sense rather than innovation.

claimed subject matter was obvious, the claim is invalid under [§ 103](#).

Outcome

The judgment reversing the summary judgment of invalidity was reversed, and the case was remanded for further proceedings.

Patent Law > ... > Defenses > Patent Invalidity > Presumption of Validity

[HN3](#) Patent Invalidity, Presumption of Validity

By direction of [35 U.S.C.S. § 282](#), an issued patent is presumed valid.

LexisNexis® Headnotes

Patent Law > Nonobviousness > General Overview

[HN1](#) Patent Law, Nonobviousness

[35 U.S.C.S. § 103](#) forbids issuance of a patent when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

[HN2](#) Elements & Tests, Prior Art

Under [35 U.S.C.S. § 103](#), the scope and content of prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent examiner, conducts this analysis and concludes the

Patent Law > Nonobviousness > Elements & Tests > Predictability

[HN4](#) Elements & Tests, Predictability

A patent for a combination which only unites old elements with no change in their respective functions obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men. This is a principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

Patent Law > Nonobviousness > Elements & Tests > Predictability

[HN5](#) Elements & Tests, Predictability

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, [35 U.S.C.S. § 103](#) likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. A court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN6](#) [↓] Nonobviousness, Elements & Tests

Rejection of a patent on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support a legal conclusion of obviousness. However, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN7](#) [↓] Elements & Tests, Prior Art

A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Patent Law > ... > Elements & Tests > Graham Test > Secondary Considerations

[HN8](#) [↓] Graham Test, Secondary Considerations

The obviousness analysis in the patent context cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and

may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

Patent Law > Nonobviousness > Elements & Tests > Manner of Conception

Patent Law > Nonobviousness > Elements & Tests > Predictability

[HN9](#) [↓] Elements & Tests, Manner of Conception

In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under [35 U.S.C.S. § 103](#). One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

[HN10](#) [↓] Elements & Tests, Ordinary Skill Standard

A problem motivating a patentee may be only one of many addressed by the patent's subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art.

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

[HN11](#) [↓] Elements & Tests, Ordinary Skill Standard

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under [35 U.S.C.S. § 103](#).

Patent Law > Nonobviousness > Elements & Tests > Hindsight

[HN12](#) Elements & Tests, Hindsight

In a patent obviousness case, a factfinder must be aware of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning. Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under U.S. Supreme Court case law nor consistent with it.

Patent Law > Nonobviousness > Evidence > Fact & Law Issues

Patent Law > Infringement Actions > Summary Judgment > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN13](#) Evidence, Fact & Law Issues

In considering summary judgment on a question of patent obviousness, a district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact. That is not the end of the issue, however. The ultimate judgment of obviousness is a legal determination. Where the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors, summary judgment is appropriate.

Constitutional Law > Congressional Duties & Powers > Copyright & Patent Clause

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN14](#) Congressional Duties & Powers, Copyright & Patent Clause

As progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise

patents might stifle, rather than promote, the progress of useful arts. [U.S. Const. art. I, § 8, cl. 8](#). These premises lead to the bar on patents claiming obvious subject matter established by case law and codified in [35 U.S.C.S. § 103](#). Application of the bar must not be confined within a test or formulation too constrained to serve its purpose.

Lawyers' Edition Display

Decision

[***705] Company that added modular sensor to its automobile-accelerator-pedal system held entitled to summary judgment in infringement action by holder of license for patent covering assembly with electronic sensor, as pertinent claim was "obvious" within meaning of [35 U.S.C.S. § 103](#).

Summary

Procedural posture: Respondent, licensees of a patent, alleged that petitioner, a competitor, infringed the licensees' patent for an accelerator pedal assembly for vehicles, but the competitor asserted that the patent claim in dispute was invalid as obvious under [35 U.S.C.S. § 103](#). Upon the grant of a writ of certiorari, the competitor appealed the judgment of the U.S. Court of Appeals for the Federal Circuit which reversed a summary judgment of patent invalidity.

Overview: To satisfy customer needs, the competitor modified its design for an adjustable pedal system for vehicles with cable-actuated throttles by adding a modular sensor to make the system compatible with vehicles using computer-controlled throttles. The licensees contended that the competitor infringed the patent claim of a position-adjustable pedal assembly with an electronic pedal position sensor attached a fixed pivot point. The U.S. Supreme Court unanimously held that the patent claim was invalid as obvious since mounting an available sensor on a fixed pivot point of the competitor's pedal was a design step well within the grasp of a person of ordinary skill in the relevant art, and the benefit of doing so was obvious. The marketplace created a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for doing so. Further, the problem to be solved by the patent claim did not limit its application as prior

550 U.S. 398, *398; 127 S. Ct. 1727, **1727; 167 L. Ed. 2d 705, ***705; 2007 U.S. LEXIS 4745, ****1; 82 U.S.P.Q.2D (BNA) 1385, *****1385

art, the competitor's showing that it was obvious to try a combination of elements [***706] sufficiently supported the finding of obviousness, and the claim was the result of ordinary skill and common sense rather than innovation.

Outcome: The judgment reversing the summary judgment of invalidity was reversed, and the case was remanded for further proceedings.

Headnotes

PATENTS § 19.1 > PATENTABILITY -- OBVIOUSNESS OF SUBJECT MATTER > Headnote:

[LEdHN\[1\]](#) [1]

[35 U.S.C.S. § 103](#) forbids issuance of a patent when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

PATENTS § 19 PATENTS § 19.1 > PATENTABILITY -- MECHANICAL SKILL -- OBVIOUSNESS OF SUBJECT MATTER > Headnote:

[LEdHN\[2\]](#) [2]

Under [35 U.S.C.S. § 103](#), the scope and content of prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid under [§ 103](#).

EVIDENCE § 333 > PATENT -- PRESUMPTION OF VALIDITY > Headnote:

[LEdHN\[3\]](#) [3]

By direction of [35 U.S.C.S. § 282](#), an issued patent is presumed valid.

PATENTS § 37 > PATENTABILITY -- COMBINATION OF OLD ELEMENTS > Headnote:

[LEdHN\[4\]](#) [4]

A patent for a combination which only unites old elements with no change in their respective functions obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men. This is a principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

[***707]

PATENTS § 50 > PATENTABILITY -- OBVIOUSNESS OF IMPROVEMENT > Headnote:

[LEdHN\[5\]](#) [5]

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, [35 U.S.C.S. § 103](#) likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. A court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

PATENTS § 19.1 > PATENTABILITY -- OBVIOUSNESS OF SUBJECT MATTER > Headnote:

[LEdHN\[6\]](#) [6]

Rejection of a patent on obviousness grounds cannot be

550 U.S. 398, *398; 127 S. Ct. 1727, **1727; 167 L. Ed. 2d 705, ***707; 2007 U.S. LEXIS 4745, ****1; 82 U.S.P.Q.2D (BNA) 1385, *****1385

sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support a legal conclusion of obviousness. However, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

PATENTS § 19.1 > PATENTABILITY -- COMPOSITION OF ELEMENTS -- OBVIOUSNESS > Headnote:
[LEdHN\[7\]](#) [7]

A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

PATENTS § 19.1 > PATENTABILITY -- OBVIOUSNESS OF TECHNIQUES OR COMBINATIONS -- SCIENTIFIC LITERATURE > Headnote:
[LEdHN\[8\]](#) [8]

The obviousness analysis in the patent context cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known

elements, deprive prior inventions of their value or utility.

PATENTS § 19.1 > PATENTABILITY -- SUBJECT MATTER -- DETERMINATION WHETHER OBVIOUS > Headnote:
[LEdHN\[9\]](#) [9]

In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under [35 U.S.C.S. § 103](#). One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

[***708]

PATENTS § 19.1 > PATENTABILITY -- OBVIOUSNESS > Headnote:
[LEdHN\[10\]](#) [10]

A problem motivating a patentee may be only one of many addressed by the patent's subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art.

PATENTS § 19 PATENTS § 19.1 > PATENTABILITY -- ORDINARY SKILL -- OBVIOUSNESS > Headnote:
[LEdHN\[11\]](#) [11]

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under [35 U.S.C.S. § 103](#).

PATENTS § 19.1 > PATENTABILITY -- OBVIOUSNESS

> Headnote:

[LEdHN\[12\]](#) [12]

In a patent obviousness case, a factfinder must be aware of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning. Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under U.S. Supreme Court case law nor consistent with it.

SUMMARY JUDGMENT AND JUDGMENT ON PLEADINGS

§ 5 > PATENTABILITY -- OBVIOUSNESS OF CLAIM --

SUMMARY JUDGMENT > Headnote:

[LEdHN\[13\]](#) [13]

In considering summary judgment on a question of patent obviousness, a district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact. That is not the end of the issue, however. The ultimate judgment of obviousness is a legal determination. Where the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors, summary judgment is appropriate.

PATENTS § 17 PATENTS § 19.1 > PATENTABILITY -- ORDINARY INNOVATION -- OBVIOUS SUBJECT MATTER

> Headnote:

[LEdHN\[14\]](#) [14]

As progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. *U.S. Const. art. I, § 8, cl. 8*. These premises lead to the bar on patents claiming obvious subject matter established by case law and codified in [35 U.S.C.S. § 103](#). Application of the bar must not be confined within a test or formulation too constrained to serve its purpose.

Syllabus

[1387] [*709]** To control a conventional automobile's speed, the driver depresses or releases the gas pedal, which interacts with the throttle via a cable or other mechanical link. Because the pedal's position in the footwell normally cannot be adjusted, a driver wishing to be closer or farther from it must either reposition himself in the seat or move the seat, both of which can be imperfect solutions for smaller drivers in cars with deep footwells. This prompted inventors to design and patent pedals that could be adjusted to change their locations. The Asano patent reveals a support structure whereby, when the pedal location is **[****2]** adjusted, one of the pedal's pivot points stays fixed. Asano is also designed so that the force necessary to depress the pedal is the same regardless of location adjustments. The Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

In newer cars, computer-controlled throttles do not operate through force transferred from the pedal by a mechanical link, but open and close valves in response to electronic signals. For the computer to know what is happening with the pedal, an electronic sensor must translate the mechanical operation into digital data. Inventors had obtained a number of patents for such sensors. The so-called '936 patent taught that it was preferable to detect the pedal's position in the pedal mechanism, not in the engine, so the patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. The Smith patent taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad. Inventors had also patented self-contained modular sensors, which can be **[****3]** taken off the shelf and attached to any mechanical pedal to allow it to function with a computer-controlled throttle. The '068 patent disclosed one such sensor. Chevrolet also manufactured trucks using modular sensors attached to the pedal support bracket, adjacent to the pedal and engaged **[***710]** with the pivot shaft about which the pedal rotates. Other patents disclose electronic sensors attached to adjustable pedal assemblies. For example, the Rixon patent locates the sensor in the pedal footpad, but is known for wire chafing.

After petitioner KSR developed an adjustable pedal system for cars with cable-actuated throttles and

obtained its '986 patent for the design, General Motors Corporation (GMC) chose KSR to supply adjustable pedal systems for trucks using computer-controlled throttles. To make the '986 pedal compatible with the trucks, KSR added a modular sensor to its design. Respondents (Teleflex) hold the exclusive license for the Engelgau patent, claim 4 of which discloses a position-adjustable pedal assembly with an electronic pedal position sensor attached to a fixed pivot point. Despite having denied a similar, broader claim, the [1388] U. S. Patent and Trademark Office (PTO) had allowed [****4] claim 4 because it included the limitation of a fixed pivot position, which distinguished the design from Redding's. Asano was neither included among the Engelgau patent's prior art references nor mentioned in the patent's prosecution, and the PTO did not have before it an adjustable pedal with a fixed pivot point. After learning of KSR's design for GMC, Teleflex sued for infringement, asserting that KSR's pedal system infringed the Engelgau patent's claim 4. KSR countered that claim 4 was invalid under [§ 103](#) of the Patent Act, which forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art."

[Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18, 86 S. Ct. 684, 15 L. Ed. 2d 545](#), set out an objective analysis for applying [§ 103](#): "[T]he scope and content of the prior art are . . . determined; differences between the prior art and the claims at issue are . . . ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness [****5] of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." While the sequence of these questions might be reordered in any particular case, the factors define the controlling inquiry. However, seeking to resolve the obviousness question with more uniformity and consistency, the Federal Circuit has employed a "teaching, suggestion, or motivation" (TSM) test, under which a patent claim is only proved obvious if the prior art, the problem's nature, or the knowledge of a person having ordinary skill in the art reveals some motivation or suggestion to combine the prior art teachings.

The District Court granted KSR summary judgment. After reviewing pedal design history, the Engelgau

patent's scope, and the relevant prior art, the court considered claim 4's validity, applying *Graham's* framework to determine whether under summary-judgment standards KSR had demonstrated that claim 4 was obvious. The court found "little difference" between the prior art's teachings and claim 4: [****6] Asano taught everything contained in the claim except [***711] using a sensor to detect the pedal's position and transmit it to a computer controlling the throttle. That additional aspect was revealed in, e.g., the '068 patent and Chevrolet's sensors. The court then held that KSR satisfied the TSM test, reasoning (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to Rixon's chafing problems by positioning the sensor on the pedal's fixed structure, which could lead to the combination of a pedal like Asano with a pedal position sensor.

Reversing, the Federal Circuit ruled the District Court had not applied the TSM test strictly enough, having failed to make findings as to the specific understanding or principle within a skilled artisan's knowledge that would have motivated one with no knowledge of the invention to attach an electronic control to the Asano assembly's support bracket. The Court of Appeals held that the District Court's recourse to the nature of the problem to be solved was insufficient because, unless the prior art references [****7] addressed the precise problem that the patentee was trying to solve, the problem would not motivate an inventor to look at those references. The appeals court found that the Asano pedal was designed to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted, whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. The Rixon pedal, said the court, suffered from chafing but was not designed to solve that problem and taught nothing helpful to Engelgau's purpose. Smith, in turn, did not relate to adjustable pedals and did not necessarily go to the issue of motivation to attach the electronic control on the pedal assembly's support bracket. So interpreted, the court held, the patents would not have led a person of ordinary skill to put a sensor on an Asano-like pedal. That it might have been obvious to try that combination was likewise irrelevant. Finally, the court held that genuine issues of material fact precluded summary judgment.

Held:

The Federal Circuit addressed the obviousness

question in a narrow, rigid manner that is inconsistent with [§ 103](#) and this Court's precedents. KSR provided convincing [****8] evidence that mounting an available sensor on a [1389] fixed pivot point of the Asano pedal was a design step well within the grasp of a person of ordinary skill in the relevant art and that the benefit of doing so would be obvious. Its arguments, and the record, demonstrate that the Engelgau patent's claim 4 is obvious. Pp. 11-24.

1. *Graham* provided an expansive and flexible approach to the obviousness question that is inconsistent with the way the Federal Circuit applied its TSM test here. Neither [§ 103's](#) enactment nor *Graham's* analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. See [Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.](#), 340 U.S. 147, 152, 71 S. Ct. 127, 95 L. Ed. 162, 1951 Dec. Comm'r Pat. 572 Such a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. See, e.g., [United States v. Adams](#), 383 U.S. 39, 50-52, 86 S. Ct. 708, 15 L. Ed. 2d 572, 174 Ct. Cl. 1293 When a work is available in one field, design incentives and other market forces [***712] can prompt variations of it, either in the same field or in another. If a person [****9] of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, [§ 103](#) likely bars its patentability. Moreover, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill. A court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. Following these principles may be difficult if the claimed subject matter involves more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. To determine whether there was an apparent reason to combine the known elements in the way a patent claims, it will often be necessary to look to interrelated teachings of multiple patents; to the effects of demands known to the design community or present in the marketplace; and to the background knowledge possessed by a person having ordinary skill in the art. To facilitate review, this analysis should [****10] be made explicit. But it need not seek out precise teachings directed to the challenged claim's specific subject matter, for a court can consider the inferences and

creative steps a person of ordinary skill in the art would employ. Pp. 11-14.

(b) The TSM test captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art. Although common sense directs caution as to a patent application claiming as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does. Inventions usually rely upon building blocks long since uncovered, and claimed discoveries almost necessarily will be combinations of what, in some sense, is already known. Helpful insights, however, need not become rigid and mandatory formulas. If it is so applied, the TSM test is incompatible with this Court's precedents. The diversity of inventive pursuits and of modern technology counsels against confining the obviousness analysis [****11] by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasizing the importance of published articles and the explicit content of issued patents. In many fields there may be little discussion of obvious techniques or combinations, and market demand, rather than scientific literature, may often drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, for patents combining previously known elements, deprive prior inventions of their value or utility. Since the TSM test was devised, the Federal Circuit doubtless has applied it in accord with these principles in many cases. There is no necessary inconsistency between the test and the *Graham* analysis. But a court errs where, as here, it transforms general principle into a rigid rule limiting the obviousness inquiry. Pp. 14-15.

(c) The flaws in the Federal Circuit's analysis relate mostly to its [***713] narrow conception of the obviousness inquiry consequent in its application of the TSM test. The Circuit first erred in holding that courts and patent examiners should look only to the problem the patentee was trying [****12] to solve. Under the correct analysis, any need or problem known in the field and addressed by the patent can provide a reason for combining the elements in the [1390] manner claimed. Second, the appeals court erred in assuming that a person of ordinary skill in the art attempting to solve a problem will be led only to those prior art elements designed to solve the same problem. The court wrongly concluded that because Asano's primary purpose was

solving the constant ratio problem, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. It is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle. Regardless of Asano's primary purpose, it provided an obvious example of an adjustable pedal with a fixed pivot point, and the prior art was replete with patents indicating that such a point was an ideal mount for a sensor. Third, the court erred in concluding that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. [****13] When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. Finally, the court drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. Rigid preventative rules that deny recourse to common sense are neither necessary under, nor consistent with, this Court's case law. Pp. 15-18.

2. Application of the foregoing standards demonstrates that claim 4 is obvious. Pp. 18-23.

(a) The Court rejects Teleflex's argument that the Asano pivot mechanism's design prevents its combination with a sensor in the manner claim 4 describes. This argument was not raised before the District Court, and it is unclear whether it was raised before the Federal Circuit. Given the significance of the District Court's finding that combining Asano with a pivot-mounted pedal position sensor fell within claim 4's scope, it is apparent that Teleflex would [****14] have made clearer challenges if it intended to preserve this claim. Its failure to clearly raise the argument, and the appeals court's silence on the issue, lead this Court to accept the District Court's conclusion. Pp. 18-20.

(b) The District Court correctly concluded that when Engelgau designed the claim 4 subject matter, it was obvious to a person of ordinary skill in the art to combine Asano with a pivot-mounted pedal position sensor. There then was a marketplace creating a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for doing so. The Federal Circuit considered the issue too

narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones used in the Chevrolet trucks and [***714] disclosed in the '068 patent. The proper question was whether a pedal designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to upgrading Asano with a sensor. For such a designer starting with Asano, the question was where to attach the sensor. The '936 patent taught [****15] the utility of putting the sensor on the pedal device. Smith, in turn, explained not to put the sensor on the pedal footpad, but instead on the structure. And from Rixon's known wire-chafing problems, and Smith's teaching that the pedal assemblies must not precipitate any motion in the connecting wires, the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious such point is a pivot point. The designer, accordingly, would follow Smith in mounting the sensor there. Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Teleflex has not shown anything in the prior art that taught away from the use of Asano, nor any secondary factors to dislodge the determination that claim 4 is obvious. Pp. 20-23.

3. The Court disagrees with the Federal Circuit's holding that genuine issues of material fact precluded summary judgment. The ultimate judgment of obviousness is a legal determination. *Graham, 383 U.S., at 17, 86 S. Ct. 684, 15 L. Ed. 2d 545*. Where, as here, the [****16] prior art's content, the patent claim's scope, and the level of ordinary skill in the art are not in material dispute and the claim's obviousness [1391] is apparent, summary judgment is appropriate. P. 23.

119 Fed. Appx. 282, reversed and remanded.

Counsel: James W. Dabney argued the cause for petitioner.

Thomas G. Hungar argued the cause for the United States, as amicus curiae, by special leave of court.

Thomas C. Goldstein argued the cause for respondents.

550 U.S. 398, *398; 127 S. Ct. 1727, **1727; 167 L. Ed. 2d 705, ***714; 2007 U.S. LEXIS 4745, ****16; 82 U.S.P.Q.2D (BNA) 1385, *****1385

[How. 248, 13 L. Ed. 683 \(1851\)](#), and its progeny. See [383 U.S., at 15-17, 86 S. Ct. 684, 15 L. Ed. 2d 545](#). The analysis is objective:

Judges: Kennedy, J., delivered the opinion for a unanimous Court.

Opinion by: KENNEDY

Opinion

[*405] [*1734] Justice **Kennedy** delivered the opinion of the Court.

Teleflex Incorporated and its subsidiary Technology Holding Company--both referred to here as Teleflex--sued KSR International Company for patent infringement. The patent at issue, United States Patent No. 6,237,565 B1, is entitled "Adjustable [*406] Pedal Assembly With Electronic Throttle Control." Supp. App. 1. The patentee is Steven J. Engelgau, and the patent is referred to as "the Engelgau patent." Teleflex holds the exclusive license to the patent.

Claim 4 of the Engelgau patent describes a mechanism for combining an electronic sensor with an adjustable automobile pedal so the pedal's position can be transmitted to a computer that controls the throttle in the vehicle's engine. When Teleflex accused KSR of infringing the Engelgau patent by adding an electronic sensor to one of KSR's previously [****17] designed pedals, KSR countered that claim 4 was invalid under the Patent Act, [35 U.S.C. § 103 \(2000ed. and Supp. IV\)](#), because its subject matter was obvious.

[HN1\[↑\]](#) [LEdHN\[1\]\[↑\]](#) [1][Section 103\(a\)](#) forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having [***715] ordinary skill in the art to which said subject matter pertains."

In [Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 86 S. Ct. 684, 15 L. Ed. 2d 545 \(1966\)](#), the Court set out a framework for applying the statutory language of [§ 103](#), language itself based on the logic of the earlier decision in [Hotchkiss v. Greenwood, 52 U.S. 248, 11](#)

[HN2\[↑\]](#) [LEdHN\[2\]\[↑\]](#) [2]"Under [§ 103](#), the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations [****18] as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." [Id., at 17-18, 86 S. Ct. 684, 15 L. Ed. 2d 545](#).

[*407] While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls. If a court, or patent examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid under [§ 103](#).

Seeking to resolve the question of obviousness with more uniformity and consistency, the Court of Appeals for the Federal Circuit has employed an approach referred to by the parties as the "teaching, suggestion, or motivation" test (TSM test), under which a patent claim is only proved obvious if "some motivation or suggestion to combine the prior art teachings" can be found in the prior art, the nature of the problem, or the knowledge of a person having ordinary skill in the art. See, e.g., [Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1323-1324 \(CA Fed. 1999\)](#). KSR challenges that [***1735] test, or at least its application in this case. See [119 Fed. Appx. 282, 286-290 \(CA Fed. 2005\)](#). [****19] Because the Court of Appeals addressed the question of obviousness in a manner contrary to [§ 103](#) and our precedents, we granted certiorari, [548 U.S. 902, 126 S. Ct. 2965, 165 L. Ed. 2d 949 \(2006\)](#). We now reverse.

A

In car engines without computer-controlled throttles, the accelerator pedal interacts with the throttle via cable or other mechanical link. The pedal arm acts as a lever rotating around a pivot point. In a cable-actuated throttle

control the rotation caused by pushing down the pedal pulls a cable, which in turn pulls open valves in the carburetor or fuel injection unit. The wider the valves open, the more fuel and air are released, causing combustion to increase and the car to accelerate. When the driver takes his foot off the pedal, the opposite occurs as the cable is released and the valves slide closed.

In the 1990's it became more common to install computers in cars to control engine operation. Computer-controlled [*408] throttles open and close valves in response to electronic signals, not through force transferred from the pedal by a mechanical link. Constant, delicate [1392] adjustments of air and fuel mixture are possible. The computer's rapid processing of factors beyond the pedal's position improves [****20] [***716] fuel efficiency and engine performance.

For a computer-controlled throttle to respond to a driver's operation of the car, the computer must know what is happening with the pedal. A cable or mechanical link does not suffice for this purpose; at some point, an electronic sensor is necessary to translate the mechanical operation into digital data the computer can understand.

Before discussing sensors further we turn to the mechanical design of the pedal itself. In the traditional design a pedal can be pushed down or released but cannot have its position in the footwell adjusted by sliding the pedal forward or back. As a result, a driver who wishes to be closer or farther from the pedal must either reposition himself in the driver's seat or move the seat in some way. In cars with deep footwells these are imperfect solutions for drivers of smaller stature. To solve the problem, inventors, beginning in the 1970's, designed pedals that could be adjusted to change their location in the footwell. Important for this case are two adjustable pedals disclosed in U.S. Patent Nos. 5,010,782 (filed July 28, 1989) (Asano) and 5,460,061 (filed Sept. 17, 1993) (Redding). The Asano patent reveals a [****21] support structure that houses the pedal so that even when the pedal location is adjusted relative to the driver, one of the pedal's pivot points stays fixed. The pedal is also designed so that the force necessary to push the pedal down is the same regardless of adjustments to its location. The Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

We return to sensors. Well before Engelgau applied for his challenged patent, some inventors had obtained

patents involving electronic pedal sensors for computer-controlled [*409] throttles. These inventions, such as the device disclosed in U.S. Patent No. 5,241,936 (filed Sept. 9, 1991) ('936), taught that it was preferable to detect the pedal's position in the pedal assembly, not in the engine. The '936 patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. U.S. Patent No. 5,063,811 (filed July 9, 1990) (Smith) taught that to prevent the [***1736] wires connecting the sensor to the computer from chafing and wearing out, and to avoid grime and damage from the driver's foot, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's [****22] footpad.

In addition to patents for pedals with integrated sensors inventors obtained patents for self-contained modular sensors. A modular sensor is designed independently of a given pedal so that it can be taken off the shelf and attached to mechanical pedals of various sorts, enabling the pedals to be used in automobiles with computer-controlled throttles. One such sensor was disclosed in U.S. Patent No. 5,385,068 (filed Dec. 18, 1992) ('068). In 1994, Chevrolet manufactured a line of trucks using modular sensors "attached to the pedal assembly support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates in operation." [298 F. Supp. 2d 581, 589 \(ED Mich. 2003\)](#).

The prior art contained patents involving the placement of sensors on adjustable pedals as well. For example, U.S. Patent No. 5,819,593 (filed Aug. 17, 1995) (Rixon) discloses an adjustable pedal assembly with an [***717] electronic sensor for detecting the pedal's position. In the Rixon pedal the sensor is located in the pedal footpad. The Rixon pedal was known to suffer from wire chafing when the pedal was depressed and released.

This short account of pedal and sensor technology leads [****23] to the instant case.

B

KSR, a Canadian company, manufactures and supplies auto parts, including pedal systems. Ford Motor Company hired [*410] KSR in 1998 to supply an adjustable pedal system for various lines of automobiles with cable-actuated throttle controls. KSR developed an adjustable mechanical pedal for Ford and obtained U.S. Patent No. 6,151,986 (filed July 16, 1999) ('986) for the design. In 2000, KSR was chosen by General Motors Corporation (GMC or GM) to supply adjustable pedal systems for Chevrolet and GMC light trucks that used

550 U.S. 398, *410; 127 S. Ct. 1727, **1736; 167 L. Ed. 2d 705, ***717; 2007 U.S. LEXIS 4745, ****23; 82 U.S.P.Q.2D (BNA) 1385, *****1385

engines with computer-controlled throttles. To make the '986 pedal compatible with the trucks, KSR merely took that design and added a modular sensor.

Teleflex is a rival to KSR in the design and manufacture of adjustable pedals. As noted, it is the exclusive licensee of the Engelgau patent. Engelgau filed the patent application on August 22, 2000, as a continuation of a previous [1393] application for U.S. Patent No. 6,109,241, which was filed on January 26, 1999. He has sworn he invented the patent's subject matter on February 14, 1998. The Engelgau patent discloses an adjustable electronic pedal described in the specification as a "simplified vehicle control [****24] pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle." Engelgau, col. 2, ll. 2-5, Supp. App. 6. Claim 4 of the patent, at issue here, describes:

"A vehicle control pedal apparatus comprising:
 "a support adapted to be mounted to a vehicle structure;
 "an adjustable pedal assembly having a pedal arm moveable in for[e] and aft directions with "respect to said support;
 "a pivot for pivotally supporting said adjustable pedal assembly with respect to said support and defining a pivot axis; and
 "an electronic control attached to said support for controlling a vehicle system;

"said apparatus characterized by said electronic control being responsive to said pivot for providing a signal that corresponds to pedal arm position as said pedal arm pivots [*411] about said pivot [**1737] axis between rest and applied positions wherein the position of said pivot remains constant while said pedal arm moves in fore and aft directions with respect to said pivot." *Id.*, col. 6, ll. 17-36, Supp. App. 8 (diagram numbers omitted).

We agree with the District Court that the claim discloses "a position-adjustable pedal [****25] assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal." [298 F. Supp. 2d, at 586-587.](#)

Before issuing the Engelgau patent the U. S. Patent and Trademark Office (PTO) rejected one of the patent claims that was similar to, but [****718] broader than, the present claim 4. The claim did not include the requirement that the sensor be placed on a fixed pivot

point. The PTO concluded the claim was an obvious combination of the prior art disclosed in Redding and Smith, explaining:

"Since the prior ar[t] references are from the field of endeavor, the purpose disclosed . . . would have been recognized in the pertinent art of Redding. Therefore it would have been obvious . . . to provide the device of Redding with the . . . means attached to a support member as taught by Smith." [Id., at 595.](#)

In other words Redding provided an example of an adjustable pedal, and Smith explained how to mount a sensor on a pedal's support structure, and the rejected patent claim merely put these two teachings together.

[****26] Although the broader claim was rejected, claim 4 was later allowed because it included the limitation of a fixed pivot point, which distinguished the design from Redding's. *Ibid.* Engelgau had not included Asano among the prior art references, and Asano was not mentioned in the patent's prosecution. Thus, the PTO did not have before it an adjustable [*412] pedal with a fixed pivot point. The patent issued on May 29, 2001, and was assigned to Teleflex.

Upon learning of KSR's design for GM, Teleflex sent a warning letter informing KSR that its proposal would violate the Engelgau patent. "Teleflex believes that any supplier of a product that combines an adjustable pedal with an electronic throttle control necessarily employs technology covered by one or more" of Teleflex's patents. [Id., at 585.](#) KSR refused to enter a royalty arrangement with Teleflex; so Teleflex sued for infringement, asserting KSR's pedal infringed the Engelgau patent and two other patents. *Ibid.* Teleflex later abandoned its claims regarding the other patents and dedicated the patents to the public. The remaining contention was that KSR's pedal system for GM infringed claim 4 of the Engelgau patent. [****27] Teleflex has not argued that the other three claims of the patent are infringed by KSR's pedal, nor has Teleflex argued that the mechanical adjustable pedal designed by KSR for Ford infringed any of its patents.

C

The District Court granted summary judgment in KSR's favor. After reviewing the pertinent history of pedal design, the scope of the Engelgau patent, and the relevant prior art, the court considered the validity of the contested claim. [HN3\[↑\]](#) [LEdHNJ3\[↑\]](#) [3] By direction of [35 U.S.C. § 282](#), an issued patent is presumed valid.

550 U.S. 398, *412; 127 S. Ct. 1727, **1737; 167 L. Ed. 2d 705, ***718; 2007 U.S. LEXIS 4745, ****27; 82 U.S.P.Q.2D (BNA) 1385, *****1385

The District Court applied *Graham's* framework to determine [1394] whether under summary-judgment standards KSR had overcome the presumption and demonstrated that claim 4 was obvious in light of the prior art in existence when [**1738] the claimed subject matter was invented. See [§ 103\(a\)](#).

The District Court determined, in light of the expert testimony and the parties' stipulations, that the level of ordinary skill in pedal design was "an undergraduate degree in mechanical engineering (or an equivalent amount of industry experience) [and] familiarity with pedal control systems for [*413] vehicles." [298 F. Supp. 2d, at 590](#). The court then set forth the [****28] relevant prior art, including the patents and pedal designs described above.

[**719] Following *Graham's* direction, the court compared the teachings of the prior art to the claims of Engelgau. It found "little difference." [298 F. Supp. 2d, at 590](#). Asano taught everything contained in claim 4 except the use of a sensor to detect the pedal's position and transmit it to the computer controlling the throttle. That additional aspect was revealed in sources such as the '068 patent and the sensors used by Chevrolet.

Under the controlling cases from the Court of Appeals for the Federal Circuit, however, the District Court was not permitted to stop there. The court was required also to apply the TSM test. The District Court held KSR had satisfied the test. It reasoned (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to the wire chafing problems in Rixon, namely, locating the sensor on the fixed structure of the pedal. This could lead to the combination of Asano, or a pedal like it, with a pedal position sensor.

The conclusion that the [****29] Engelgau design was obvious was supported, in the District Court's view, by the PTO's rejection of the broader version of claim 4. Had Engelgau included Asano in his patent application, it reasoned, the PTO would have found claim 4 to be an obvious combination of Asano and Smith, as it had found the broader version an obvious combination of Redding and Smith. As a final matter, the District Court held that the secondary factor of Teleflex's commercial success with pedals based on Engelgau's design did not alter its conclusion. The District Court granted summary judgment for KSR.

With principal reliance on the TSM test, the Court of

Appeals reversed. It ruled the District Court had not been strict enough in applying the test, having failed to make [*414] "finding[s] as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the] invention' . . . to attach an electronic control to the support bracket of the Asano assembly." [119 Fed. Appx., at 288](#) (quoting [In re Kotzab, 217 F.3d 1365, 1371 \(CA Fed. 2000\)](#); brackets in original). The Court of Appeals held that the District Court was [****30] incorrect that the nature of the problem to be solved satisfied this requirement because unless the "prior art references address[ed] the precise problem that the patentee was trying to solve," the problem would not motivate an inventor to look at those references. [119 Fed. Appx., at 288](#).

Here, the Court of Appeals found, the Asano pedal was designed to solve the "constant ratio problem"--that is, to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted--whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. *Ibid.* As for Rixon, the court explained, that pedal suffered from the problem of wire chafing but was not designed to solve it. In the court's view Rixon did not teach anything helpful to Engelgau's purpose. Smith, in turn, did not relate to adjustable pedals and did not "necessarily go to the issue of motivation [**1739] to attach the electronic control on the support bracket of the pedal assembly." *Ibid.* When the patents were interpreted in this way, the Court of Appeals held, they would not have led a person of ordinary skill to put a sensor on the sort of pedal described in Asano.

[**720] [****31] That it might have been obvious to try the combination of Asano and a sensor was likewise irrelevant, in the court's view, because "[o]bvious to try" has long been held not to constitute obviousness." [Id., at 289](#) (quoting [In re Deuel, 51 F.3d 1552, 1559 \(CA Fed. 1995\)](#)).

The Court of Appeals also faulted the District Court's consideration of the PTO's rejection of the broader version of claim 4. The District Court's role, the Court of Appeals explained, was not to speculate regarding what the PTO might [*415] have done had the Engelgau patent mentioned Asano. Rather, the court held, the District Court was obliged first to [1395] presume that the issued patent was valid and then to render its own independent judgment of obviousness based on a review of the prior art. The fact that the PTO had rejected the broader version of claim 4, the Court of

550 U.S. 398, *415; 127 S. Ct. 1727, **1739; 167 L. Ed. 2d 705, ***720; 2007 U.S. LEXIS 4745, ****31; 82 U.S.P.Q.2D (BNA) 1385, *****1385

Appeals said, had no place in that analysis.

The Court of Appeals further held that genuine issues of material fact precluded summary judgment. Teleflex had proffered statements from one expert that claim 4 "was a simple, elegant, and novel combination of features," [119 Fed. Appx., at 290](#), compared to Rixon, [****32] and from another expert that claim 4 was nonobvious because, unlike in Rixon, the sensor was mounted on the support bracket rather than the pedal itself. This evidence, the court concluded, sufficed to require a trial.

II

A

We begin by rejecting the rigid approach of the Court of Appeals. Throughout this Court's engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here. To be sure, *Graham* recognized the need for "uniformity and definiteness." [383 U.S., at 18, 86 S. Ct. 684, 15 L. Ed. 2d 545](#). Yet the principles laid down in *Graham* reaffirmed the "functional approach" of [Hotchkiss, 52 U.S. 248, 11 How. 248, 13 L. Ed. 683](#). See [383 U.S., at 12, 86 S. Ct. 684, 15 L. Ed. 2d 545](#). To this end, *Graham* set forth a broad inquiry and invited courts, where appropriate, to look at any secondary considerations that would prove instructive. [Id., at 17, 86 S. Ct. 684, 15 L. Ed. 2d 545](#).

Neither the enactment of [§ 103](#) nor the analysis in *Graham* disturbed this Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. For over a half century, [****33] the Court has held that [HN4\[↑\]](#) [LEdHN\[4\]\[↑\]](#) [4] a "patent for a combination [****416] which only unites old elements with no change in their respective functions . . . obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men." [Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., 340 U.S. 147, 152-153, 71 S. Ct. 127, 95 L. Ed. 162, 1951 Dec. Comm'r Pat. 572 \(1950\)](#). This is a principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Three cases decided after *Graham* illustrate the application of this doctrine.

In [United States v. Adams, 383 U.S. 39, 40, 86 S. Ct. 708, 15 L. Ed. 2d 572, 174 Ct. Cl. 1293 \(1966\)](#), a

companion case to *Graham*, the Court considered the obviousness of a "wet battery" that varied from [****721] prior designs in two ways: [****1740] It contained water, rather than the acids conventionally employed in storage batteries; and its electrodes were magnesium and cuprous chloride, rather than zinc and silver chloride. The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one [****34] element for another known in the field, the combination must do more than yield a predictable result. [383 U.S., at 50-51, 86 S. Ct. 708, 15 L. Ed. 2d 572, 174 Ct. Cl. 1293](#) It nevertheless rejected the Government's claim that Adams' battery was obvious. The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. [Id., at 51-52, 86 S. Ct. 708, 15 L. Ed. 2d 572, 174 Ct. Cl. 1293](#) When Adams designed his battery, the prior art warned that risks were involved in using the types of electrodes he employed. The fact that the elements worked together in an unexpected and fruitful manner supported the conclusion that Adams' design was not obvious to those skilled in the art.

In [Anderson's-Black Rock, Inc. v. Pavement Salvage Co., 396 U.S. 57, 90 S. Ct. 305, 24 L. Ed. 2d 258 \(1969\)](#), the Court elaborated on this approach. The subject matter of the patent before the Court was a device combining two pre-existing elements: a radiant-heat [****417] burner and a paving machine. The device, the Court concluded, did not create some new synergy: The radiant-heat burner functioned just as a burner was expected to function; and the paving machine did [****35] the same. The two in combination did no more than they would in separate, sequential operation. [Id., at 60-62, 90 S. Ct. 305, 24 L. Ed. 2d 258](#). In those circumstances, "while the combination of old elements performed a useful function, it added nothing to the nature and quality of the radiant-heat burner already patented," and the patent failed under [§ 103. Id., at 62, 90 S. Ct. 305, 24 L. Ed. 2d 258](#) (footnote omitted).

Finally, in [Sakraida v. AG Pro, Inc., 425 U.S. 273, 96 S. Ct. 1532, 47 L. Ed. 2d 784 \(1976\)](#), the Court derived from the precedents the conclusion that when a patent "simply arranges old elements with each performing the same function it had been known to perform" and yields no [1396] more than one would expect from such an arrangement, the combination is obvious. [Id., at 282, 96 S. Ct. 1532, 47 L. Ed. 2d 784](#).

The principles underlying these cases are instructive

550 U.S. 398, *417; 127 S. Ct. 1727, **1740; 167 L. Ed. 2d 705, ***721; 2007 U.S. LEXIS 4745, ****35; 82 U.S.P.Q.2D (BNA) 1385, *****1385

when the question is whether a patent claiming the combination of elements of prior art is obvious. [HN5](#) [↑] [LEdHN5](#) [↑] [5] When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For [****36] the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson's-Black Rock* are illustrative--a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Following these principles may be [***722] more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement. [*418] Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having [**1741] ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis [****37] should be made explicit. See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) ([HN6](#) [↑] [LEdHN6](#) [↑] [6] "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

B

When it first established the requirement of demonstrating a teaching, suggestion, or motivation to combine known elements in order to show that the combination is obvious, the Court of Customs and Patent Appeals captured a helpful insight. See *Application of Bergel*, 292 F.2d 955, 956-957, 48 C.C.P.A. 1102, 1961 Dec. Comm'r Pat. 504 (1961). As

is clear from cases such as *Adams*, [HN7](#) [↑] [LEdHN7](#) [↑] [7] a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation [****38] the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity [*419] will be combinations of what, in some sense, is already known.

Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the TSM test is incompatible with our precedents. [HN8](#) [↑] [LEdHN8](#) [↑] [8] The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection [****39] to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

In the years since the Court of Customs and Patent Appeals set forth the [***723] essence of the TSM test, the Court of Appeals no doubt has applied the test in accord with these principles in many cases. There is no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis. But when a court transforms the general principle into a [1397] rigid rule that limits the obviousness inquiry, as the Court of Appeals did here, it errs.

C

The flaws in the analysis of the Court of Appeals relate for the most part to the court's narrow conception of the obviousness inquiry reflected in its application of the TSM test. [HN9](#) [↑] [LEdHN9](#) [↑] [9] In determining whether the subject matter of a patent claim is obvious,

550 U.S. 398, *419; 127 S. Ct. 1727, **1741; 167 L. Ed. 2d 705, ***723; 2007 U.S. LEXIS 4745, ****39; 82 U.S.P.Q.2D (BNA) 1385, *****1385

neither the particular motivation nor the avowed purpose of the **[**1742]** patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under [§ 103](#). One of the ways **[*420]** in which a patent's subject matter can be proved obvious is **[****40]** by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

The first error of the Court of Appeals in this case was to foreclose this reasoning by holding that courts and patent examiners should look only to the problem the patentee was trying to solve. [119 Fed. Appx., at 288](#). The Court of Appeals failed to recognize that [HN10](#) [LEdHN10](#) [10] the problem motivating the patentee may be only one of many addressed by the patent's subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

The second error of the Court of Appeals lay in its assumption that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem. *Ibid.* The primary purpose of Asano was solving the constant ratio problem; so, the court concluded, **[****41]** an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. *Ibid.* Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. Regardless of Asano's primary purpose, the design provided an obvious example of an adjustable pedal with a fixed pivot point; and the prior art was replete with patents indicating that a fixed pivot point was an ideal mount for a sensor. The idea that a designer hoping to make an adjustable electronic pedal would ignore Asano because Asano was designed to solve the constant **[*421]** ratio problem makes little sense. A person of ordinary skill is also a person of ordinary creativity, not an automaton.

The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was "[o]bvious to try." [Id., at 289](#) (internal

quotation marks omitted). [HN11](#) [LEdHN11](#) [11] When there is a design need or market pressure to solve a problem **[****42]** and there are a finite number of identified, predictable **[***724]** solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under [§ 103](#).

The Court of Appeals, finally, drew the wrong conclusion from the risk of courts and patent examiners falling prey to hindsight bias. [HN12](#) [LEdHN12](#) [12] A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See [Graham, 383 U.S., at 36, 86 S. Ct. 684, 15 L. Ed. 2d 545](#) (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "guard against slipping into use of hindsight" (quoting [Monroe Auto Equip. Co. v. Heckethorn Mfg. & Supply Co., 332 F.2d 406, 412 \(CA6 1964\)](#))). Rigid preventative rules that deny factfinders recourse to common sense, however, are **[**1743]** neither necessary under our case law nor consistent with it.

We note the **[****43]** Court of Appeals has since elaborated a broader conception of the TSM test than was applied in the instant matter. See, e.g., [DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co., 464 F.3d 1356, 1367 \(CA Fed. 2006\)](#) ("Our suggestion test is in actuality quite flexible and not only permits, but *requires*, consideration of common knowledge and common sense"); [Alza Corp. v. Mylan Labs., Inc., 464 F.3d 1286, 1291 \(2006\)](#) ("There is flexibility in our obviousness jurisprudence because a motivation **[*422]** may be found *implicitly* in the prior art. We do not **[1398]** have a rigid test that requires an actual teaching to combine . . ."). Those decisions, of course, are not now before us and do not correct the errors of law made by the Court of Appeals in this case. The extent to which they may describe an analysis more consistent with our earlier precedents and our decision here is a matter for the Court of Appeals to consider in its future cases. What we hold is that the fundamental misunderstandings identified above led the Court of Appeals in this case to apply a test inconsistent with our patent law decisions.

III

When we apply the standards we have **[****44]**

550 U.S. 398, *422; 127 S. Ct. 1727, **1743; 167 L. Ed. 2d 705, ***724; 2007 U.S. LEXIS 4745, ****44; 82 U.S.P.Q.2D (BNA) 1385, *****1385

explained to the instant facts, claim 4 must be found obvious. We agree with and adopt the District Court's recitation of the relevant prior art and its determination of the level of ordinary skill in the field. As did the District Court, we see little difference between the teachings of Asano and Smith and the adjustable electronic pedal disclosed in claim 4 of the Engelgau patent. A person having ordinary skill in the art could have combined Asano with a pedal position sensor in a fashion encompassed by claim 4, and would have seen the benefits of doing so.

A

Teleflex argues in passing that the Asano pedal cannot be combined with a sensor in the manner described by claim 4 because of the design of Asano's pivot mechanisms. See Brief for Respondents 48-49, and n 17. Therefore, Teleflex reasons, even if adding a sensor to Asano was obvious, that does not establish that claim 4 encompasses obvious subject matter. This argument was not, however, [***725] raised before the District Court. There Teleflex was content to assert only that the problem motivating the invention claimed by the Engelgau patent would not lead to the solution of combining Asano with a sensor. See Teleflex's Response [****45] to KSR's Motion [*423] for Summary Judgment of Invalidity in No. 02-74586 (ED Mich.), pp 18-20, App. 144a-146a. It is also unclear whether the current argument was raised before the Court of Appeals, where Teleflex advanced the nonspecific, conclusory contention that combining Asano with a sensor would not satisfy the limitations of claim 4. See Brief for Plaintiffs-Appellants in No. 04-1152 (CA Fed.), pp 42-44. Teleflex's own expert declarations, moreover, do not support the point Teleflex now raises. See Declaration of Clark J. Radcliffe, Ph.D., Supp. App. 204-207; Declaration of Timothy L. Andresen, *id.*, at 208-210. The only statement in either declaration that might bear on the argument is found in the Radcliffe declaration:

"Asano . . . and the Rixon . . . are complex mechanical linkage-based devices that are expensive to produce and assemble and difficult to package. It is exactly these difficulties with prior art designs that [Engelgau] resolves. The use of an adjustable pedal with a single pivot reflecting pedal position combined with an electronic control mounted between the [**1744] support and the adjustment assembly at that pivot was a simple, elegant, and novel combination [****46] of features in the Engelgau'565 patent." *Id.*, at 206, P 16.

Read in the context of the declaration as a whole this is best interpreted to mean that Asano could not be used to solve "[t]he problem addressed by Engelgau'565[:] to provide a less expensive, more quickly assembled, and smaller package adjustable pedal assembly with electronic control." *Id.*, at 205, P 10.

The District Court found that combining Asano with a pivot-mounted pedal position sensor fell within the scope of claim 4. [298 F. Supp. 2d, at 592-593](#). Given the significance of that finding to the District Court's judgment, it is apparent that Teleflex would have made clearer challenges to it if it intended to preserve this claim. In light of Teleflex's failure [*424] to raise the argument in a clear fashion, and the silence of the Court of Appeals on the issue, we take the District Court's conclusion on the point to be correct.

B

The District Court was correct to conclude that, as of the time Engelgau designed the subject matter in claim 4, it was obvious to a person of ordinary skill to combine Asano with a pivot-mounted pedal position sensor. There then existed a marketplace that created a strong [****47] incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for achieving this advance. The Court of Appeals considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a [1399] modular sensor similar to the ones used in the Chevrolet truckline and disclosed in the '068 patent. The District Court employed this narrow inquiry as well, though it reached the correct result nevertheless. The proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, [***726] would have seen a benefit to upgrading Asano with a sensor.

In automotive design, as in many other fields, the interaction of multiple components means that changing one component often requires the others to be modified as well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its [****48] own pre-existing model led KSR to design the pedal now accused of infringing the Engelgau patent.

For a designer starting with Asano, the question was

where to attach the sensor. The consequent legal question, then, is whether a pedal designer of ordinary skill starting with Asano would have found it obvious to put the sensor on [*425] a fixed pivot point. The prior art discussed above leads us to the conclusion that attaching the sensor where both KSR and Engelgau put it would have been obvious to a person of ordinary skill.

The '936 patent taught the utility of putting the sensor on the pedal device, not in the engine. Smith, in turn, explained to put the sensor not on the pedal's footpad but instead on its support structure. And from the known wire-chafing problems of Rixon, and Smith's teaching that "the pedal assemblies must not precipitate any motion in the connecting wires," Smith, col. 1, ll. 35-37, Supp. App. 274, the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious nonmoving point on the structure from which a sensor can [**1745] easily detect the pedal's position is a pivot point. The designer, accordingly, would follow Smith [****49] in mounting the sensor on a pivot, thereby designing an adjustable electronic pedal covered by claim 4.

Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Following similar steps to those just explained, a designer would learn from Smith to avoid sensor movement and would come, thereby, to Asano because Asano disclosed an adjustable pedal with a fixed pivot.

Teleflex indirectly argues that the prior art taught away from attaching a sensor to Asano because Asano in its view is bulky, complex, and expensive. The only evidence Teleflex marshals in support of this argument, however, is the Radcliffe declaration, which merely indicates that Asano would not have solved Engelgau's goal of making a small, simple, and inexpensive pedal. What the declaration does not indicate is that Asano was somehow so flawed that there was no reason to upgrade it, or pedals like it, to be compatible with modern engines. Indeed, Teleflex's own declarations [*426] refute this conclusion. Dr. Radcliffe states that [****50] Rixon suffered from the same bulk and complexity as did Asano. See *id.*, at 206. Teleflex's other expert, however, explained that Rixon was itself designed by adding a sensor to a pre-existing mechanical pedal. See *id.*, at 209. If Rixon's base pedal was not too flawed to upgrade, then Dr. Radcliffe's declaration does not show Asano was either. Teleflex

may have made a plausible argument that Asano is inefficient as compared [***727] to Engelgau's preferred embodiment, but to judge Asano against Engelgau would be to engage in the very hindsight bias Teleflex rightly urges must be avoided. Accordingly, Teleflex has not shown anything in the prior art that taught away from the use of Asano.

Like the District Court, finally, we conclude Teleflex has shown no secondary factors to dislodge the determination that claim 4 is obvious. Proper application of [Graham](#) and our other precedents to these facts therefore leads to the conclusion that claim 4 encompassed obvious subject matter. As a result, the claim fails to meet the requirement of [§ 103](#).

We need not reach the question whether the failure to disclose Asano during the prosecution of Engelgau voids the presumption of validity given [****51] to issued patents, for claim 4 is obvious despite the presumption. We nevertheless think it appropriate to note that the rationale underlying the presumption--that the PTO, in its expertise, has approved the claim--seems much diminished here.

[1400] IV

A separate ground the Court of Appeals gave for reversing the order for summary judgment was the existence of a dispute over an issue of material fact. We disagree with the Court of Appeals on this point as well. To the extent the court understood the *Graham* approach to exclude the possibility of summary judgment when an expert provides a conclusory affidavit addressing the question of obviousness, it misunderstood the role expert testimony plays in the analysis. [HN13](#)^[↑] [LEdHN13](#)^[↑] [13] [*427] In considering summary judgment on that question the district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact. That is not the end of the issue, however. The ultimate judgment of obviousness is a legal determination. [Graham, 383 U.S., at 17, 86 S. Ct. 684, 15 L. Ed. 2d 545](#). Where, as here, the content of the prior art, the scope of the patent [**1746] claim, and the level of ordinary skill in the art are not in material dispute, and [****52] the obviousness of the claim is apparent in light of these factors, summary judgment is appropriate. Nothing in the declarations proffered by Teleflex prevented the District Court from reaching the careful conclusions underlying its order for summary judgment in this case.

* * *

550 U.S. 398, *427; 127 S. Ct. 1727, **1746; 167 L. Ed. 2d 705, ***727; 2007 U.S. LEXIS 4745, ****52; 82 U.S.P.Q.2D (BNA) 1385, *****1385

We build and create by bringing to the tangible and palpable reality around us new works based on instinct, simple logic, ordinary inferences, extraordinary ideas, and sometimes even genius. These advances, once part of our shared knowledge, define a new threshold from which innovation starts once more. And [HN14](#) [LEdHN\[14\]](#) [14] as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. See [U.S. Const., Art. I, § 8, cl. 8](#). These premises led to the bar on patents claiming obvious subject matter established in *Hotchkiss* and codified in [§ 103](#). Application of the bar must not be confined within a test or formulation too constrained to serve its purpose.

KSR provided convincing evidence that mounting a modular [\[****53\]](#) sensor on a fixed pivot point of the Asano pedal was a design step well within the [\[***728\]](#) grasp of a person of ordinary skill in the relevant art. Its arguments, and the record, demonstrate that claim 4 of the Engelgau patent is obvious. In rejecting the District Court's rulings, the Court of Appeals [\[*428\]](#) analyzed the issue in a narrow, rigid manner inconsistent with [§ 103](#) and our precedents. The judgment of the Court of Appeals is reversed, and the case is remanded for further proceedings consistent with this opinion.

It is so ordered.

References

[35 U.S.C.S. § 103](#)

Chisum on Patents §§ 5.02-5.04, 11.06 (Matthew Bender)

L Ed Digest, Patents § 19.1

L Ed Index, Patents

Supreme Court's views as to what is patentable subject matter under federal law as "process," "machine," "manufacture," or "composition of matter." [65 L. Ed. 2d 1197](#).



US006237565B1

(12) **United States Patent**
Engelgau

(10) **Patent No.:** **US 6,237,565 B1**
(45) **Date of Patent:** ***May 29, 2001**

(54) **ADJUSTABLE PEDAL ASSEMBLY WITH ELECTRONIC THROTTLE CONTROL**

5,056,742 10/1991 Sakurai 244/235

(75) Inventor: **Steven J. Engelgau**, Royal Oak, MI (US)

Primary Examiner—John Kwon
(74) *Attorney, Agent, or Firm*—Howard & Howard

(73) Assignee: **Teleflex Incorporated**, Plymouth Meeting, PA (US)

(57) **ABSTRACT**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

A vehicle control pedal apparatus (12) includes a support (18) adapted to be mounted to a vehicle structure (20) and an adjustable pedal assembly (22) having a pedal arm (14) that is moveable in fore and aft directions with respect to the support (18). A pivot (24) pivotally supports the adjustable pedal assembly (22) with respect to the support (18) and defines a pivot axis (26). The control pedal apparatus (12) further includes an electronic throttle control (28) attached to the support (18) for controlling an engine throttle (30). The apparatus (12) is characterized by the electronic throttle control (28) being responsive to the pivot (24) for providing a signal (32) that corresponds to pedal arm position as the pedal arm (14) pivots about the pivot axis (26) between rest and applied positions. Thus, the control pedal apparatus (12) can adjust pedal arm position in fore and aft directions without having to move the electronic throttle control unit (28) along with the pedal arm (14). Additionally, the electronic throttle control (28) is responsive to the pivot (24) about which the adjustable pedal assembly (22) rotates.

(21) Appl. No.: **09/643,422**

(22) Filed: **Aug. 22, 2000**

Related U.S. Application Data

(63) Continuation of application No. 09/236,975, filed on Jan. 26, 1999, now Pat. No. 6,109,241.

(51) **Int. Cl.**⁷ **F02D 1/00**

(52) **U.S. Cl.** **123/399; 74/560**

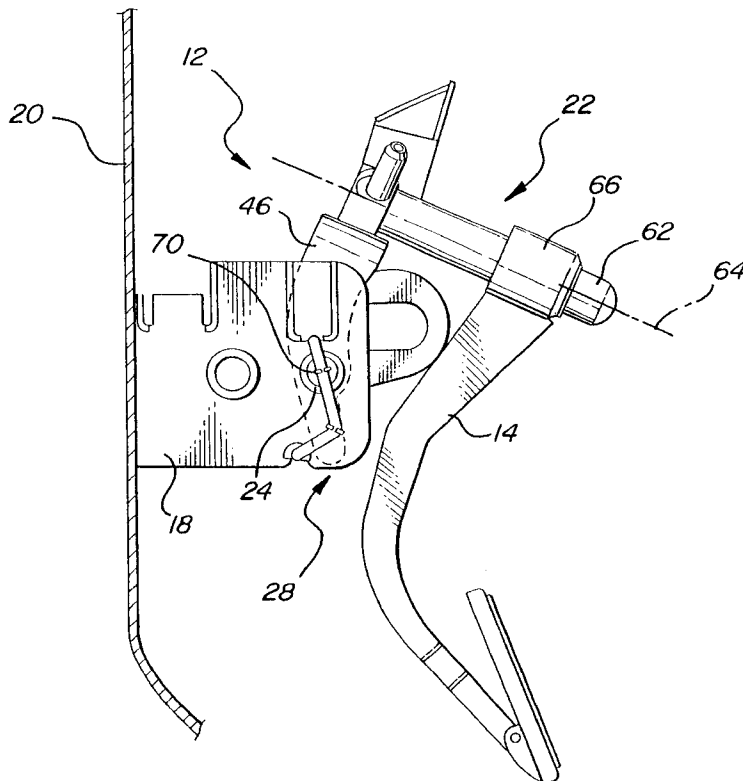
(58) **Field of Search** **123/399; 74/560**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,470,570 9/1984 Sakurai et al. 244/235

4 Claims, 4 Drawing Sheets



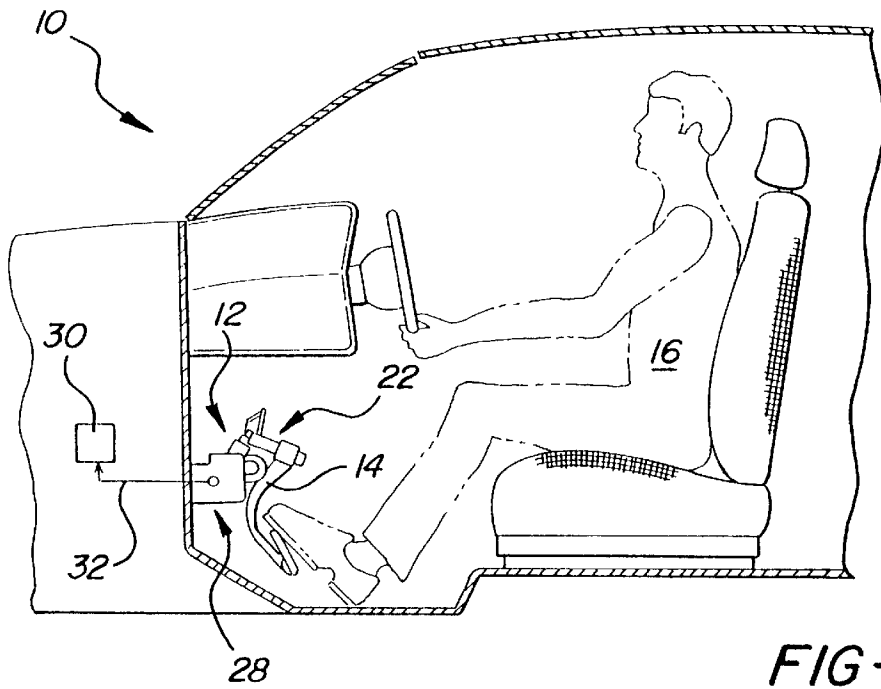


FIG-1

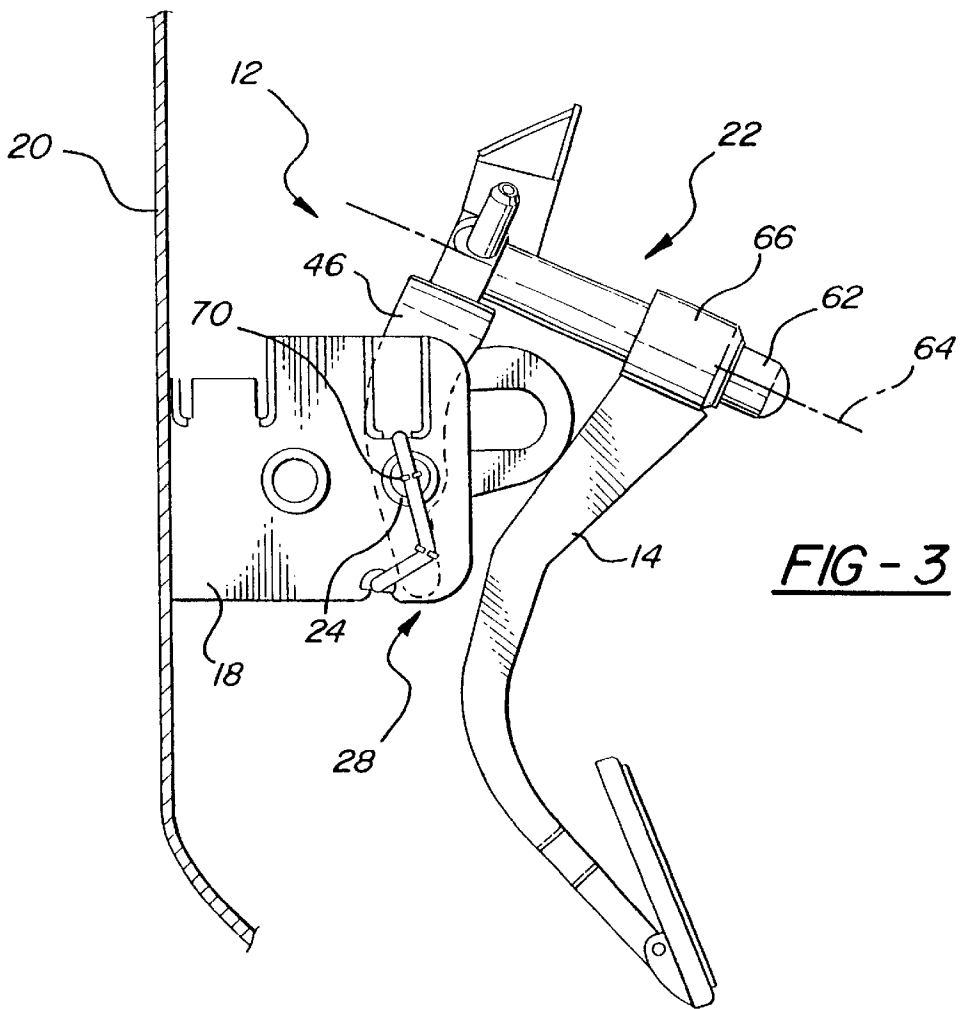
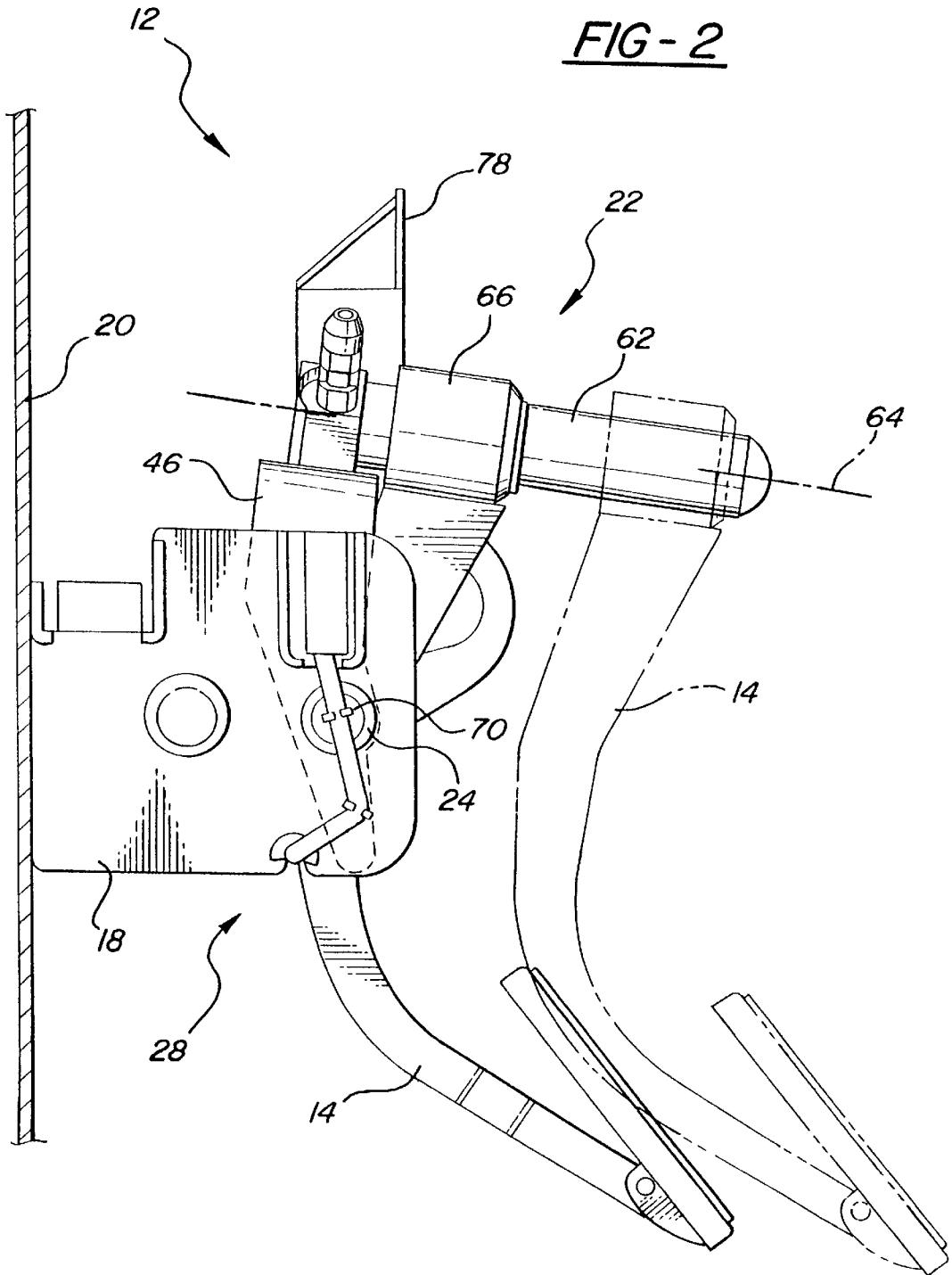


FIG-3

FIG - 2



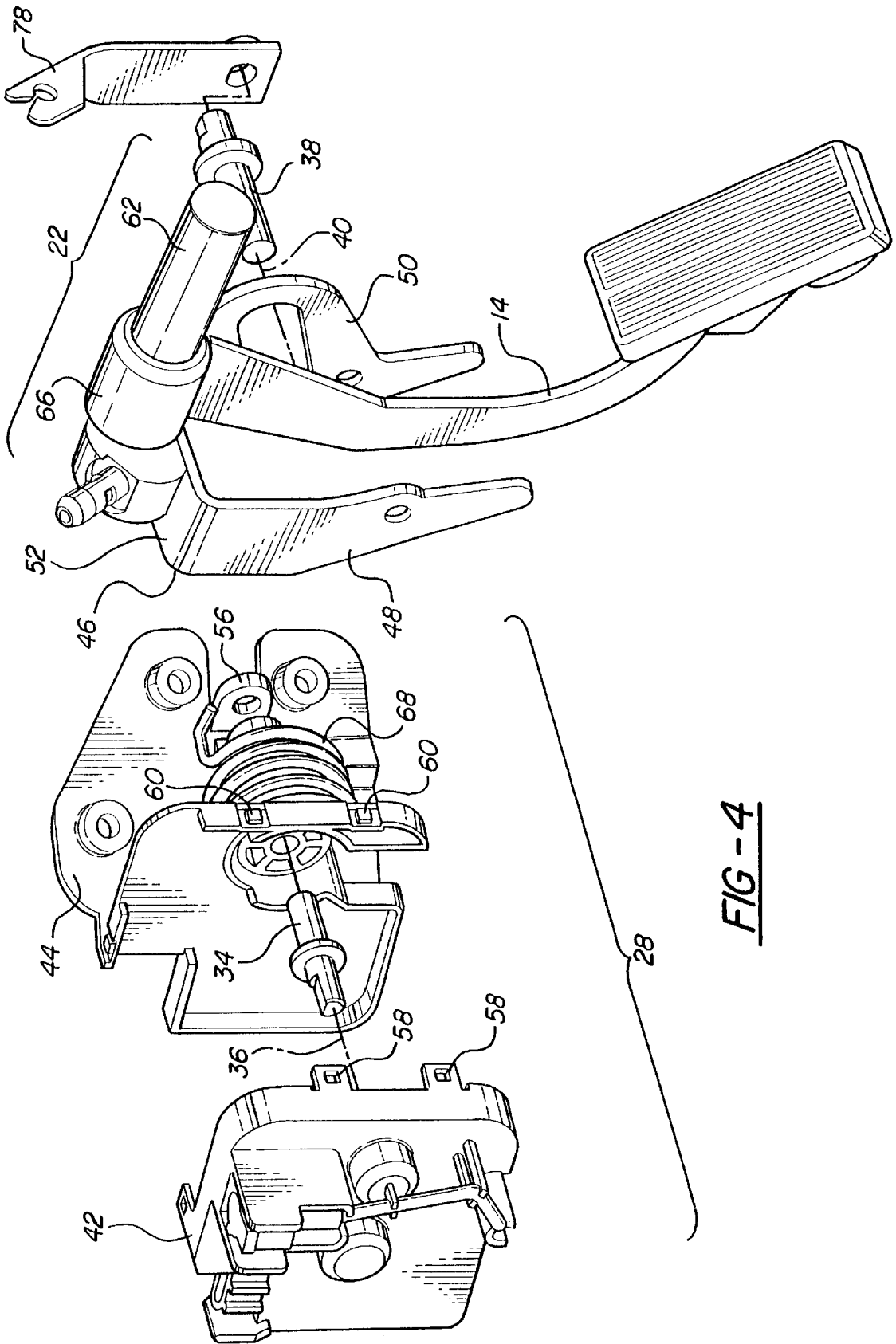


FIG - 4

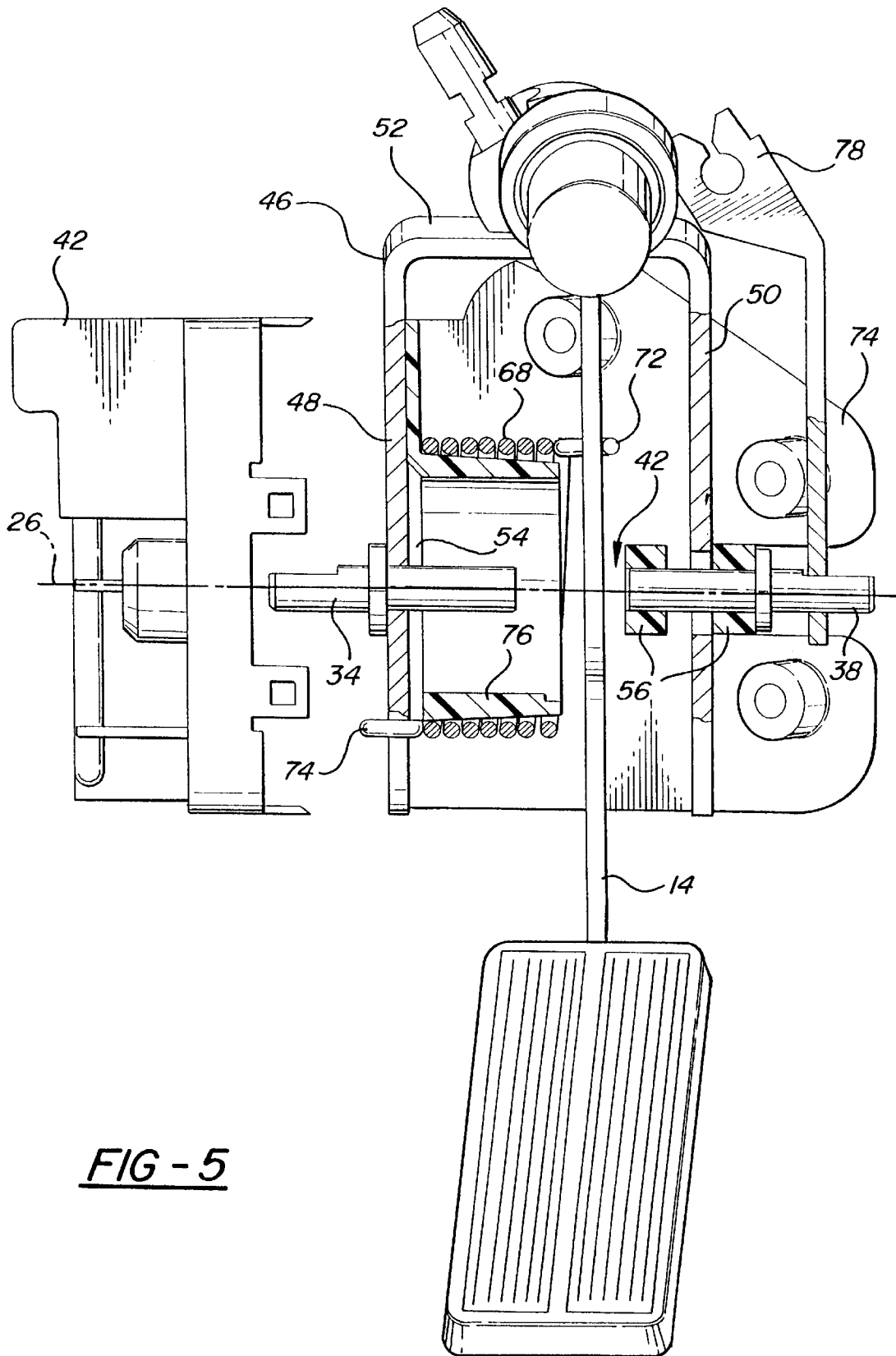


FIG - 5

1

ADJUSTABLE PEDAL ASSEMBLY WITH ELECTRONIC THROTTLE CONTROL

RELATED APPLICATION

This application is a continuation of application Ser. No. 09/236,975, filed Jan. 26, 1999, U.S. Pat. No. 6,109,241.

TECHNICALLY FIELD

The subject invention relates to vehicle control pedal assembly having an adjustment mechanism for moving a pedal arm in fore and aft directions and an electronic throttle control for controlling an engine throttle. Specifically, the pedal assembly includes a pivot about which the adjustment mechanism rotates when the pedal arm is actuated and which provides input to the electronic throttle control for providing a signal that corresponds to pedal arm position.

BACKGROUND OF THE INVENTION

Pedal assemblies are used in vehicles to control the movement of the vehicle. For example, a vehicle driver applies a force to an accelerator pedal to move the pedal from a rest position to an applied position. In the applied position, the accelerator pedal typically actuates an engine throttle, which controls the acceleration and speed of the vehicle. Often these pedal assemblies include an adjustment apparatus that allows the position of a pedal arm and/or a pedal pad to be moved with respect to the driver. This allows the pedal assembly to accommodate drivers of various heights. Thus, the adjustment apparatus allows the pedal assembly to be moved closer to the driver when the driver is short and allows the pedal assembly to be moved further away from the driver when the driver is tall. Examples, of adjustable pedal assemblies are shown in U.S. Pat. Nos. 5,460,061 and 5,632,183 all assigned to the assignee of the subject invention.

Additionally, adjustable pedal assemblies can include an electronic throttle control assembly for a drive-by-wire system. The electronic throttle control assembly is used to generate an electrical signal that corresponds to the position of the accelerator pedal. The electronic throttle control assembly replaces traditional mechanical linkages between the pedal arm and the engine throttle. One such adjustment apparatus used with an electronic throttle control is shown in U.S. Pat. No. 5,819,593 assigned to the assignee of the present invention.

When a vehicle control pedal assembly includes both an adjustment apparatus and an electronic throttle control, the pedal assembly can be complex with a great number of parts. These control pedal assemblies can be expensive, time consuming to assemble, and require a significant amount of packaging space.

SUMMARY OF THE INVENTION AND ADVANTAGES

A vehicle control pedal apparatus includes a support adapted to be mounted to a vehicle structure and an adjustable pedal assembly with a pedal arm that is moveable in fore and aft directions with respect to the support. A pivot pivotally supports the adjustable pedal assembly with respect to the support and defines a pivot axis. The control pedal apparatus further includes an electronic throttle control attached to the support for controlling an engine throttle. The apparatus is characterized by the electronic throttle control being responsive to the pivot for providing a signal corresponding to pedal arm position as the pedal arm pivots

2

about the pivot axis between rest and applied positions. Accordingly, the subject invention provides a simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle.

BRIEF DESCRIPTION OF THE DRAWINGS

Other advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is a side view of a vehicle, partially in cross-section, including the subject pedal assembly,

FIG. 2 is a side view of the subject pedal assembly showing a pedal arm in fore and aft positions;

FIG. 3 is a side view of the subject pedal assembly in a pivoted position;

FIG. 4 is an exploded view of the pedal assembly shown in FIG. 3; and

FIG. 5 is a front view, partially in cross-section, of the pedal assembly shown in FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the Figures, wherein like numerals indicate like or corresponding parts throughout the several views, a vehicle **10** with a control pedal apparatus **12** is shown in FIG. 1. The control pedal apparatus **12** includes a pedal arm **14** that can be adjusted in fore and aft directions with respect to the vehicle **10** by a driver **16**. This adjustment capability allows the pedal arm **14** to be positioned to accommodate drivers **16** of various heights.

The vehicle control pedal apparatus **12** includes a support **18** adapted to be mounted to a vehicle structure **20** such as a firewall or dash member, for example. The support **18** can be a bracket, housing, or other structural support member known in the art. The support **18** can be a unitary member that is attached directly to the vehicle structure **20** or the support **18** can be comprised of a plurality of support members, one of which is attached to the vehicle structure **20**.

As shown in FIGS. 2 and 3, the control pedal apparatus **12** further includes an adjustable pedal assembly **22** with a pedal arm **14** that is moveable in fore and aft directions with respect to the support **18**. In FIG. 2, the pedal arm **14** is shown in the furthest adjustment position in the fore direction in solid lines and in the furthest adjustment position in the aft direction in dashed lines. The adjustable pedal assembly **22** preferably includes an electric motor (not shown) for controlling the movement of the pedal arm **14** in the fore and aft directions, as is well known in the art. The adjustable pedal assembly **22** can be any of various adjustable pedal assemblies known in the art. For example, the adjustable pedal assembly **22** could be similar to the adjustable pedal assembly in U.S. Pat. No. 5,632,183 assigned to the assignee of the present invention and incorporated herein by reference.

A pivot **24** pivotally supports the adjustable pedal assembly **22** with respect to the vehicle structure **20** and defines a pivot axis **26** (shown in FIG. 5). The pivot **24** is preferably comprised of a first pivot member **34** defining a first pivot member axis **36** and a second pivot member **38** defining a second pivot member axis **40**. The first **36** and second **40** pivot member axes are collinear to define the pivot axis **26**.

While two pivot members **34**, **38** are preferred a single pivot could be used or additional pivot members could be used to provide additional pivotal support.

The first **34** and second **38** pivot members are longitudinally spaced apart from one another to define a clearance space **42** for the pedal arm **14** as the pedal arm **14** pivots about the pivot axis **26**. Thus, when the pedal arm **14** is moved from a rest position to an applied position, as shown in FIG. 3, the pedal arm **14** can move between the first **34** and second **38** pivot members without coming into contact with the pivot members **34**, **38**. If only a single pivot member is used, the clearance space **42** between pivot members is not needed.

The control pedal apparatus **12** also includes an electronic throttle control mechanism **28** attached to the vehicle structure **20** for controlling an engine throttle **30** shown schematically in FIG. 1. The electronic throttle control **28** is responsive to the pivot **24** and provides a signal **32** that corresponds to pedal arm position as the pedal arm **14** pivots about the pivot axis **26** between rest and applied positions. Thus, the signal **32** will vary as the pedal arm **14** moves from the rest position to the applied position. The electronic throttle control mechanism **28** can be any of various electronic throttle control mechanisms known in the art, as the one described in U.S. Pat. No. 5,819,593 assigned to the assignee of the present invention and incorporated herein by reference.

The electronic throttle control **28** is preferably responsive to the first pivot member **34** to provide the signal **32** that corresponds to pedal arm position. The second pivot member **38** preferably provides pivotal balance for the pedal arm **14** as the pedal arm **14** pivots about the pivot axis **26**. It should be understood however that the electronic throttle control **28** could also be mounted on the opposite side of the control pedal assembly **12** such that the second pivot member **38** provides input to produce the signal **32** while the first pivot member **34** provides additional balance for the pedal arm **14** as it pivots.

The electronic throttle control mechanism **28** preferably includes a first housing portion **42** and a second housing portion **44**, shown in FIG. 4. In the preferred embodiment the housing portions **42**, **44** partially serve as the support **18** for the control pedal apparatus **12** and are fixed relative to the vehicle structure **20**. The adjustable pedal assembly **22** is supported on a bracket **46** that is mounted to the housing portions **42**, **44**. The second housing portion **44** includes a first pivotal support **54** and a second pivotal support **56**. The first pivotal support **54** receives the first pivot member **34** and the second pivotal support **56** receives the second pivot member **38**. As discussed above, the first **34** and second **38** pivot members form the pivot **24** about which the pedal arm **14** pivots.

The bracket **46** includes a first leg **48** and a second leg **50** that extend downwardly from a central base member **52**. While the bracket **46** is shown with two legs **48**, **50**, the bracket **46** could also be configured to have only a single leg or could have additional leg members. The bracket **46** need only provide partial support for the adjustable pedal assembly **22**.

The bracket **46** is partially installed within the second housing member **44** such that the first pivotal support **54** is adjacent to the first leg **48** and the second pivotal support **56** is adjacent to the second leg **50**. The first housing portion **42** is attached to the second housing portion near the first pivotal support **54** to enclose the electronic throttle control **28**. The first housing portion **42** preferably includes tab

receivers **58** for snap fit attachment to tabs **60** located on the second housing portion **44**.

The bracket **46** pivots about the pivot axis **26** when a force is applied to the pedal arm **14** to move the pedal arm **14** from the rest to the applied position. The electronic throttle control **28** is fixed with respect to the vehicle structure **20** such that the pedal arm **14** moves in fore and aft directions with respect to the electronic throttle control **28** and with respect to the vehicle structure **20**. Thus, the adjustable pedal assembly **22** pivots with respect to the vehicle structure **20** and moves the pedal arm **14** in fore and aft directions with respect to the vehicle structure **20**, while the electronic throttle control **28** remains fixed with respect to the vehicle structure **20**. In other words, the pedal arm **14** moves independently from the electronic throttle control **28**. Additionally, the pedal arm **14** moves in fore and aft directions with respect to the pivot **24**.

The adjustable pedal assembly **22** includes a guide rod **62** for supporting the pedal arm **14** and which defines a longitudinal axis **64**. The pedal arm **14** moves in the fore and aft directions along the longitudinal axis **64**. The longitudinal axis **64** is perpendicular to the pivot axis **26**. Thus, the guide rod **62** is rotatable about the pivot axis **26** along with the bracket **46** when the pedal arm **14** pivots about the pivot axis **26**.

The adjustable pedal assembly **22** further includes a bearing member **66** for slidably supporting the pedal arm **14** on the guide rod **62**. The bearing member **66** is preferably a bushing, however, other bearing members well known in the art can be used. In the preferred embodiment, an electric motor is used to drive a screw drive mechanism housed within the guide rod **62**, which causes the bearing member **66** and the pedal arm **14** to move along the guide rod **62**.

The control pedal apparatus **12** also includes a resilient member **68**, shown in FIG. 5, which reacts between the pedal arm **14** and the bracket **46** for providing resistance as the pedal arm **14** is moved from the rest position to the applied position. This resistance provides a "feel" **16** as the pedal arm **14** pivots that corresponds to the feel that a driver experiences in pedal assembly having a cable assembly as part of a mechanical link to the engine throttle **30**. The resilient member **68** is preferably a coil spring with a spring center **70** that is concentric with the pivot **24**. The spring **68** has a first spring end **72** engaging the pedal arm **14** and a second spring end **74** engaging the bracket **46**. In addition to providing resistance as the pedal arm **14** is moved to the applied position, the spring **68** returns the pedal arm **14** to the rest position after a force applied to the pedal arm **14** has been removed.

The spring **68** is supported by a cylindrical portion **76** that extends inwardly from the second housing portion **44** of the electronic throttle control **28**, toward the pedal arm **14**. Thus, the cylindrical portion **76** is located between the pedal arm **14** and the first leg **48** of the bracket **46**.

While the spring **68** is shown as a coil spring that is supported about pivot **24**, other spring configurations known in the art could also be used. Also, the spring **68** could be located at a position other than about pivot **24**. The main function of the spring **68** is to act upon the pedal arm **14** to provide a feel to the driver as the pedal arm **14** pivots.

A cable attachment member **78** can optionally be supported on one of the pivot members **34**, **38** to support a cable assembly for attachment to the engine throttle **30**. This configuration would be used in place of the electronic throttle control **28**; i.e., the configuration is used with a pedal assembly having a mechanical link to the throttle.

5

The control pedal apparatus **12** of the subject invention provides both an adjustment apparatus **22** and an electronic throttle control **28** in an assembly that requires less packaging space and which requires fewer components than prior art control pedals. This reduces overall assembly time and reduces material costs. The control pedal apparatus **12** provides the additional benefits of having a single pivot (**24**) to pivotally support the pedal arm **14** in addition to providing input to the electronic throttle control **28**. Thus, the control pedal apparatus **12** allows adjustment of the pedal arm **14** in fore and aft directions without having to move the electronic throttle control unit **28** along with the pedal arm **14**, and the electronic throttle control **28** is responsive to the pivot **24** about which the adjustable pedal assembly **22** rotates.

The invention has been described in an illustrative manner, and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, wherein reference numerals are merely for convenience and are not to be in any way limiting, the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. An adjustable pedal assembly for a vehicle comprising; a support (**18**) for mounting to a vehicle structure; an adjustable pedal assembly (**22**) having a guide member (**62**) rotatably supported by said support (**18**) for pivotal movement about a pivot axis (**26**); and a pedal arm (**14**) supported on said guide member (**62**) for rectilinear movement in fore and aft directions relative to said support (**18**), said guide member (**62**) and said pivot axis (**26**) between various adjusted positions; an electronic control (**28**) supported on said support (**18**) and responsive to pivotal movement of said pedal arm (**14**) and said guide member (**62**) about said pivot axis (**26**),

6

said electronic control (**28**) being fixed relative to said support (**18**) such that said pedal arm (**14**) moves in fore and aft directions with respect to said electronic control (**28**), said electronic control (**28**) being responsive to pivotal movement of said guide member (**62**) about said pivot axis (**26**) for providing a signal (**32**) that corresponds to pedal arm (**14**) position as said pedal arm (**14**) pivots said guide member (**62**) about said pivot axis (**26**).

2. An assembly as set forth in claim **1** wherein said pedal arm (**14**) is in sliding engagement with said guide member (**62**) and extends from said guide member (**62**) to lower pad end.

3. An assembly as set forth in claim **2** including a drive for moving said pedal arm (**14**) along said guide member (**62**).

4. A vehicle control pedal apparatus (**12**) comprising: a support (**18**) adapted to be mounted to a vehicle structure (**20**);

an adjustable pedal assembly (**22**) having a pedal arm (**14**) moveable in fore and aft directions with respect to said support (**18**);

a pivot (**24**) for pivotally supporting said adjustable pedal assembly (**22**) with respect to said support (**18**) and defining a pivot axis (**26**); and

an electronic control (**28**) attached to said support (**18**) for controlling a vehicle system;

said apparatus (**12**) characterized by said electronic control (**28**) being responsive to said pivot (**24**) for providing a signal (**32**) that corresponds to pedal arm position as said pedal arm (**14**) pivots about said pivot axis (**26**) between rest and applied positions wherein the position of said pivot (**24**) remains constant while said pedal arm (**14**) moves in fore and aft directions with respect to said pivot (**24**).

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,237,565 B1
DATED : May 29, 2001
INVENTOR(S) : Steven J. Engelgau

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 6,

Line 21, please change "force" to -- fore --.

Signed and Sealed this

Fourth Day of February, 2003

A handwritten signature in black ink, appearing to read "James E. Rogan", written over a horizontal line.

JAMES E. ROGAN
Director of the United States Patent and Trademark Office

[54] **POSITION ADJUSTABLE PEDAL ASSEMBLY**

[75] **Inventors:** Yasushi Asano; Yoshimasa Kataumi, both of Shizuoka, Japan

[73] **Assignee:** Fuji Kiko Company, Ltd., Tokyo, Japan

[21] **Appl. No.:** 386,401

[22] **Filed:** Jul. 28, 1989

[30] **Foreign Application Priority Data**

Jul. 28, 1988 [JP]	Japan	63-188774
Jul. 28, 1988 [JP]	Japan	63-188775
Jul. 28, 1988 [JP]	Japan	63-188776
Jul. 28, 1988 [JP]	Japan	63-188777

[51] **Int. Cl.⁵** G05G 1/14

[52] **U.S. Cl.** 74/512; 74/513; 74/560

[58] **Field of Search** 74/512, 513, 560, 522, 74/561, 562

[56] **References Cited**

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Primary Examiner—Vinh T. Luong
Attorney, Agent, or Firm—Ronald P. Kananen

[57] **ABSTRACT**

In a position adjustable pedal assembly for a vehicle, a pedal pad position is adjustable in a longitudinal direction of the vehicle. A lever is connected to a stationary bracket for a pivotal movement about a pivot axis and is formed with a linear track extending in the vehicular longitudinal direction. A pedal arm is provided with a pedal pad at its lower end and with a guide member at its upper end and is connected to the lever for the pivotal movement with the lever in response to a depression force applied to the pedal pad. An adjust lever is provided on the lever for a relative movement to the lever and is formed with an arc-shaped track. The relative movement of the adjust lever is caused when the guide member moves within the linear track and simultaneously within the arc-shaped track while the pedal pad position is adjusted. The adjust lever is provided with a connecting member which is movable within another arc-shaped track in response to the relative movement of the adjust lever. Accordingly, when the pedal pad position is adjusted to move the guide member, the relative movement of the adjust lever is caused to vary a position of the connecting member corresponding to a magnitude of the movement of the guide member, i.e., corresponding to the variation in a distance from the pivot axis to the pedal pad. The depression force is applied to a vehicle operation system through the connecting member.

12 Claims, 7 Drawing Sheets

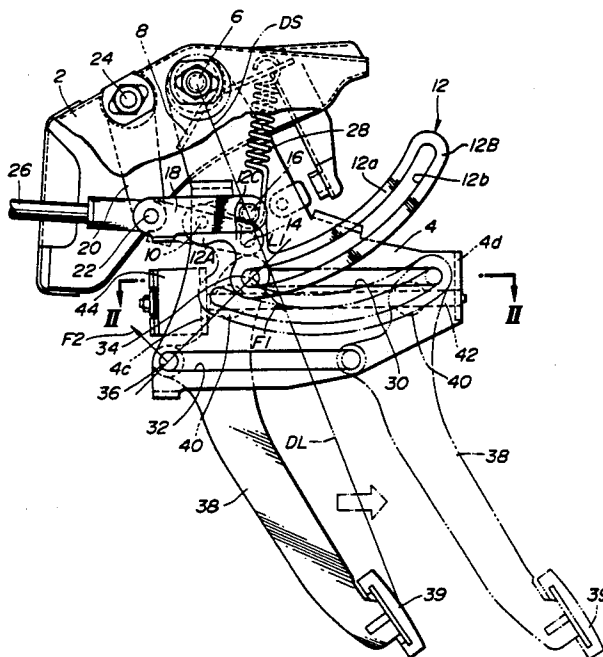


FIG. 1

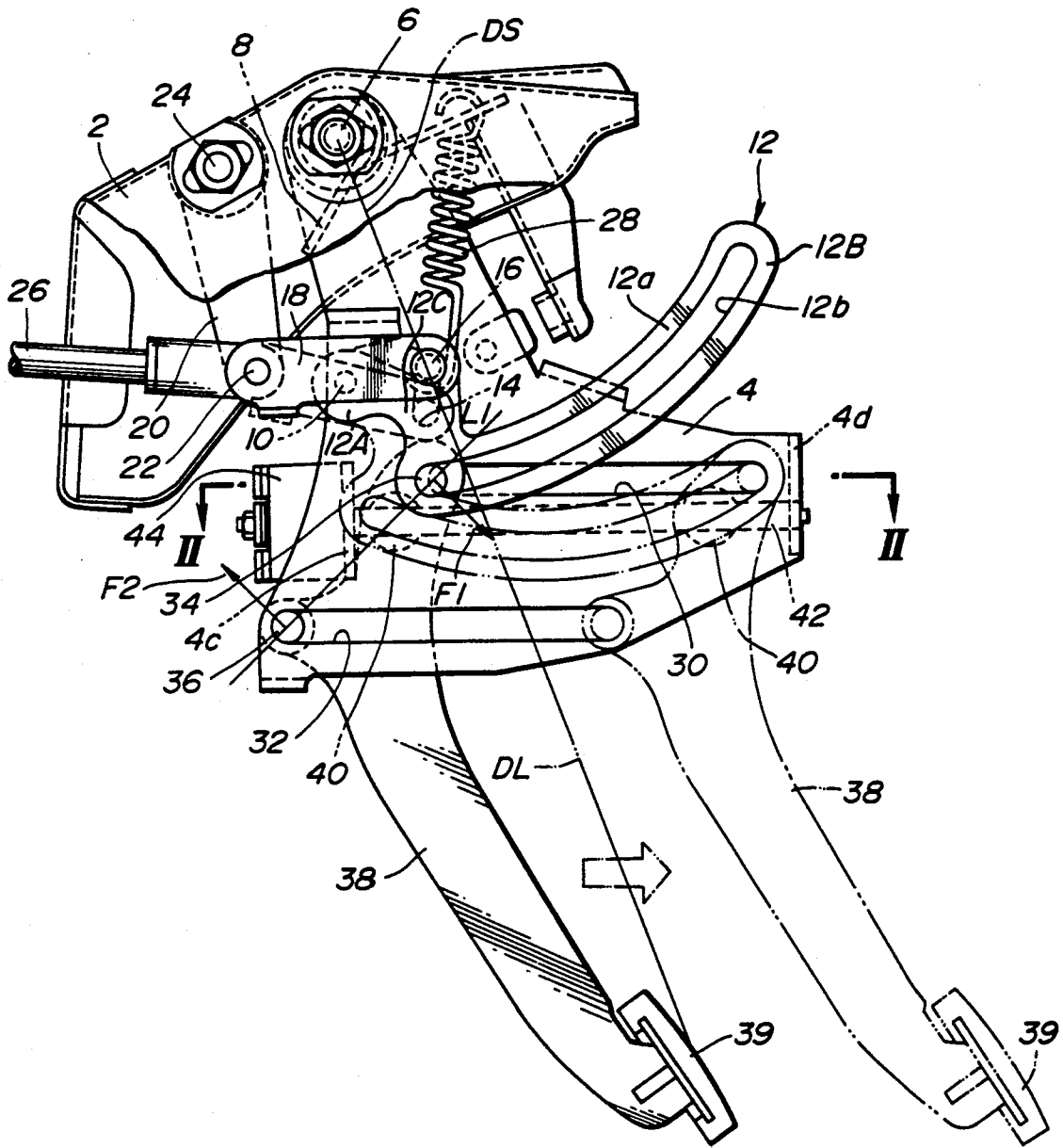


FIG. 2

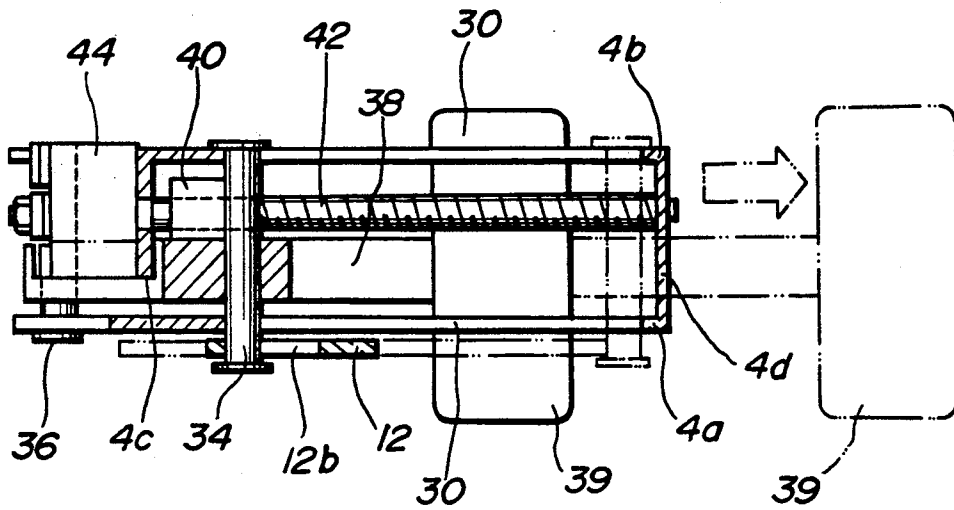


FIG. 6

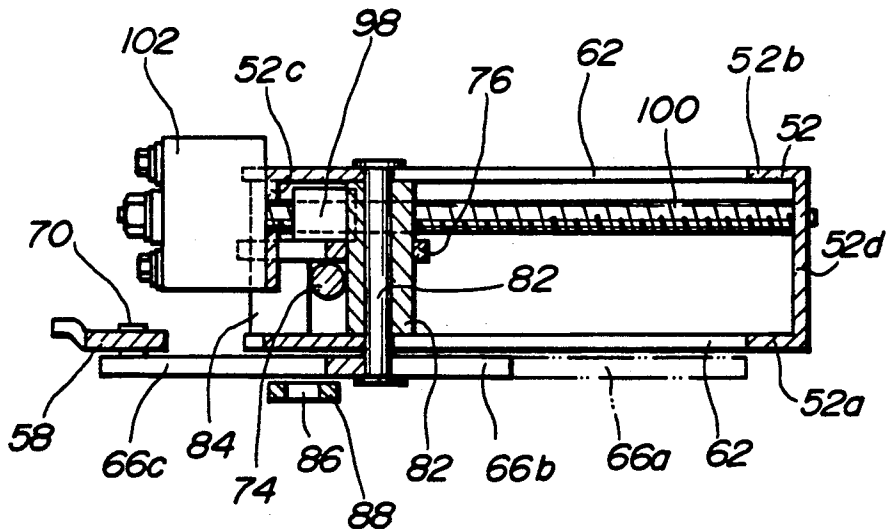
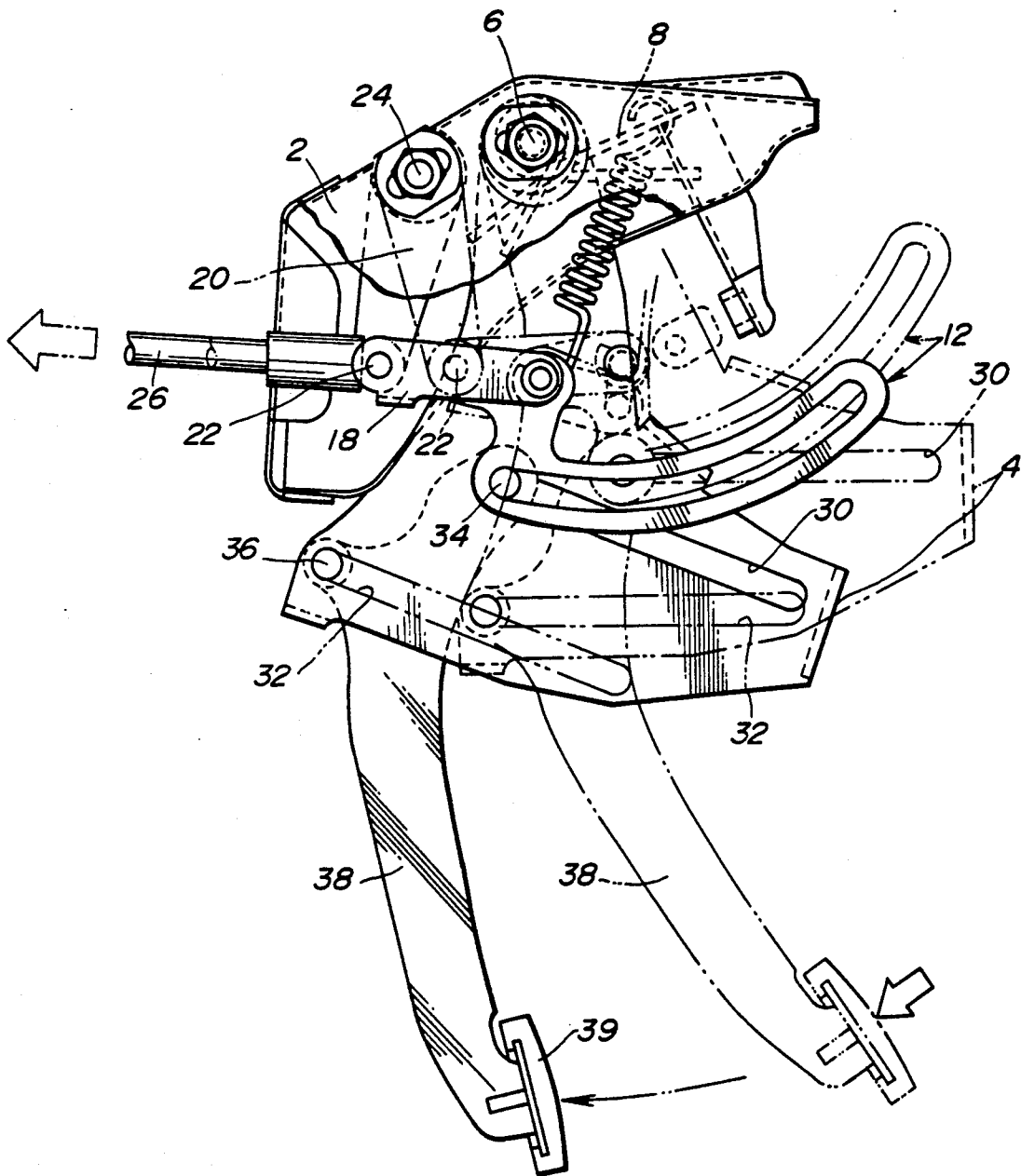


FIG. 3



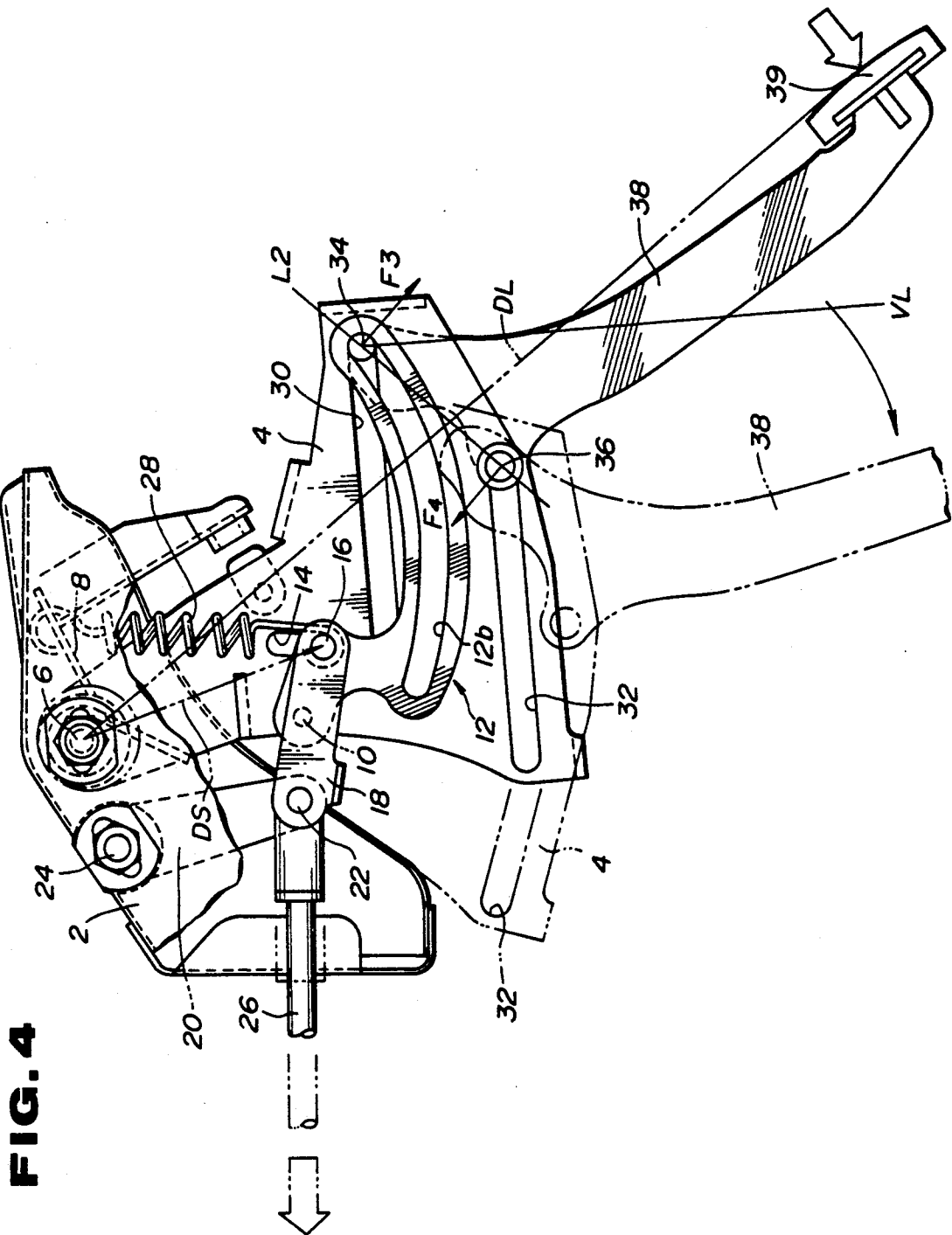


FIG. 5

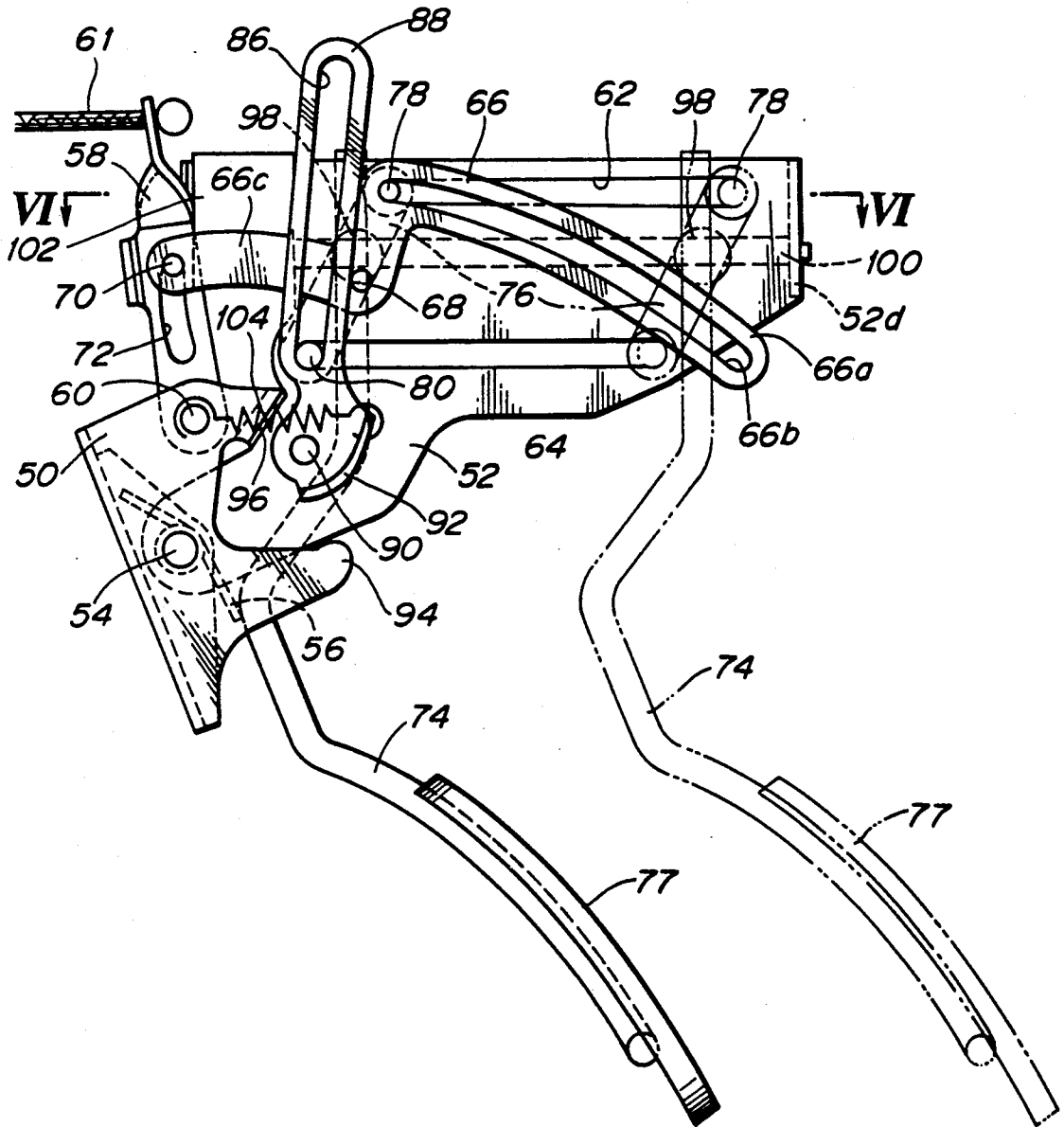


FIG. 7

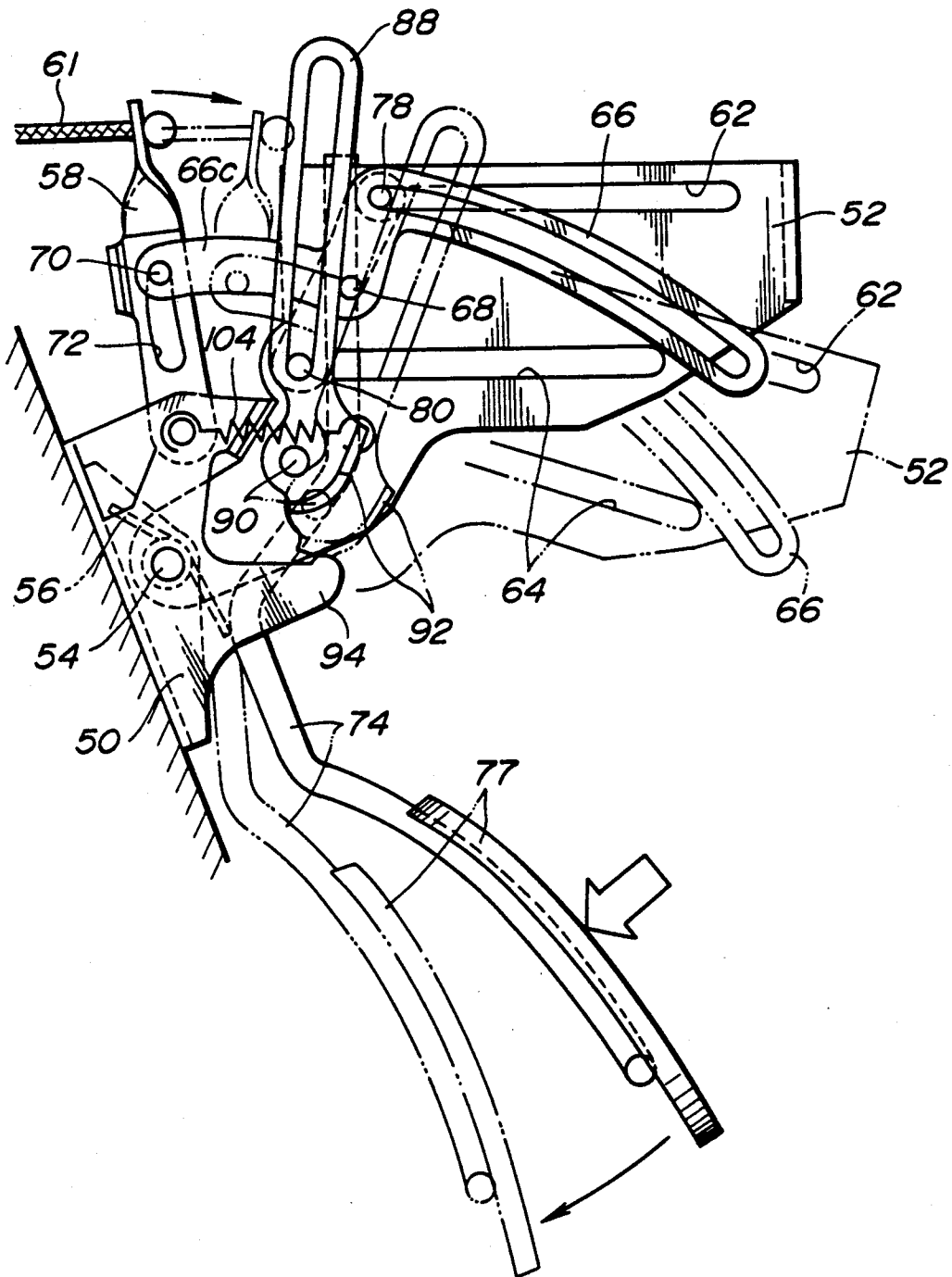
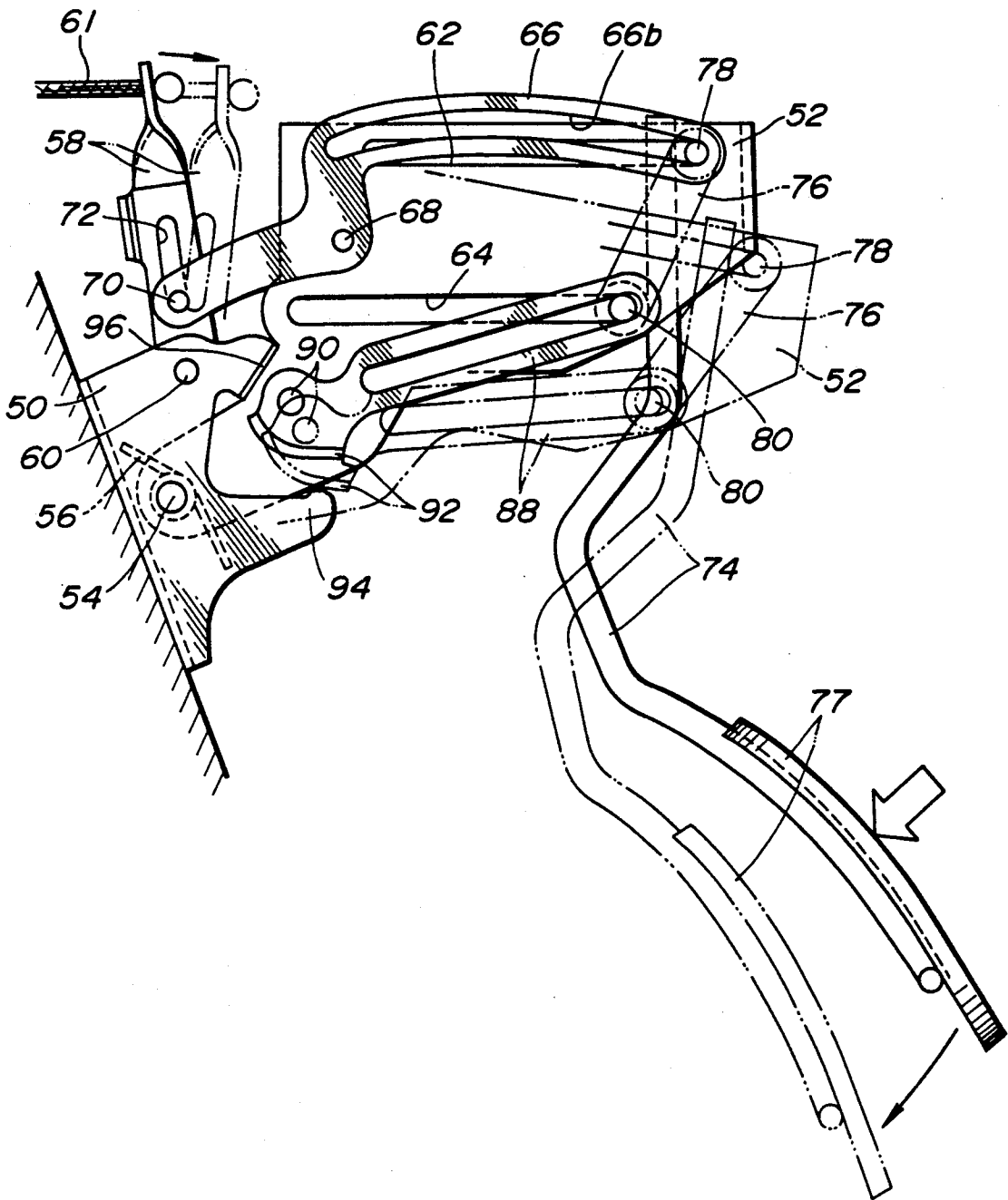


FIG. 8



POSITION ADJUSTABLE PEDAL ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a position adjustable pedal assembly for a vehicle. More specifically, the present invention relates to an automotive position adjustable pedal assembly to be used such as for brake, accelerator and clutch pedals, wherein a position of the pedal is adjustable in the forward and rearward directions of the vehicle.

2. Description of the Background Art

There has been proposed a pedal assembly which enables a driver to adjust a position of the pedal in the forward and rearward directions of the vehicle according to his or her height. This is required since if the driver's seat is adjusted forwardly or rearwardly to match his or her height, the visual field is varied corresponding to the seat position, which is not preferable in view of safety as well as the driving comfortable. Further, if the driver's seat is moved rearwardly, the leg space for a passenger sitting on the rear seat becomes inevitably narrow. Accordingly, there have been required such a pedal assembly which makes it possible to adjust the position of the pedal forwardly and rearwardly.

In the conventional pedal assembly, however, there arises a problem of a variation in force applied to an operating member which is connected to a vehicle operation system, such as a braking system, an engine throttle valve or a clutch system, according to a position of a pedal pad between its adjustable range. Specifically, if an amount or a distance of pivotal displacement of the pedal pad, i.e. of displacement of the pedal pad in the circumferential direction caused by the depression of the pedal pad by the driver is the same, the force applied to the operating member varies according an adjusted position of the pedal pad due to change in a length of a lever between its pivot axis at its upper end and a pedal pad at its lower end where the depression force is applied by the driver.

This variation forces the driver to operate the pedal pad differently according to the adjusted pedal pad position.

SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to provide a pedal assembly for a vehicle which enables a position of a pedal pad such as a brake pedal pad, an accelerator pedal pad and a clutch pedal pad to be adjusted forwardly and rearwardly of the vehicle, i.e. in a longitudinal direction of the vehicle, wherein a force applied to an operating member which transmits the applied force to a vehicle operation system such as a braking system, an engine throttle valve and a clutch system, is held substantially constant under the same pivotal displacement distance of the pedal pad caused by a driver's depression action of the pedal, irrespective of the adjusted pedal pad position.

Another object of the present invention is to provide a position adjustable pedal assembly, wherein a required depression force or leg power for depressing the pedal pad by the same distance is maintained substantially constant, irrespective of the adjusted pedal pad position.

A further object of the present invention is to provide a position adjustable pedal assembly, wherein a full depression displacement distance of the pedal pad in the

circumferential direction is held substantially constant by using adjustable stopper means, irrespective of the adjusted pedal position.

A still further object of the present invention is to provide a position adjustable pedal assembly, wherein a reaction force applied to components of the pedal assembly in the direction along a length of the vehicle, i.e. in the longitudinal direction of the vehicle to be generated in response to the depression force applied to the pedal pad by the driver is considerably reduced so as to attain the strength of the pedal assembly as well as smooth pedal operation feelings.

To accomplish the above-mentioned and other objects, according to one aspect of the present invention, a position adjustable pedal assembly for a vehicle comprises a stationary bracket fixed to a vehicle body, a lever pivotably connected to the stationary bracket about a pivot axis, a pedal arm with a pedal pad at its lower end, the pedal arm being connected to the lever so as to pivot about the pivot axis along with the lever in response to a depression force applied to the pedal pad, first means provided between the lever and the pedal arm for adjusting a position of the pedal pad in a longitudinal direction of the vehicle, second means for transmitting the depression force from the lever to a vehicle operation system, third means provided between the lever and said second means, for varying a point of application of the depressed force relative to said second means from said lever according to an adjusted pedal pad position.

According to a second aspect of the present invention, the third means varies the point of application of the depressed force relative to the second means from the lever in response to variation in a distance between the first pivot axis and a center of the pedal pad.

According to a third aspect of the present invention, the position adjustable pedal assembly may further include spring means connected to the stationary bracket at its one end and to the lever at its other end, the spring means stretching or compressing in response to the variation of the distance so as to change its spring force applied to the lever and the pedal arm, the change of the spring force absorbing variation in a required depression force to be applied to the pedal pad, the variation of the required depression force being caused by the variation of the distance.

According to a fourth aspect of the present invention, the position adjustable pedal assembly may further include stopper means provided on the lever, the stopper means having an engaging portion of a shape which has a predetermined curvature, said engaging portion being pivotable according to an adjusted pedal pad position so as to contact with the stationary bracket to prevent a pivotal movement of the lever about the pivot axis exceeding a predetermined value in response to a constant pivotal displacement distance of the pedal pad from its non-depressed position irrespective of the adjusted pedal pad position, the predetermined curvature of the engaging portion being non-constant therealong.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood more fully from the detailed description given hereinbelow and from the accompanying drawings of the preferred embodiment of the invention, which are given by way of example only, and are not intended to be limitative of the present invention.

In the drawings:

FIG. 1 is a side elevation showing a position adjustable pedal assembly according to a first preferred embodiment of the present invention,

FIG. 2 is a sectional view taken along the line II—II of FIG. 1,

FIG. 3 is a side elevation for showing the operation of the position adjustable pedal assembly of FIG. 1, wherein the pedal pad position is adjusted to its foremost position,

FIG. 4 is a side elevation for showing the operation of the position adjustable pedal assembly of FIG. 1, wherein the pedal pad position is adjusted to its rear-most position,

FIG. 5 is a side elevation showing a position adjustable pedal assembly according to a second preferred embodiment of the present invention,

FIG. 6 is a sectional view taken along the line VI—VI of FIG. 5,

FIG. 7 is a side elevation for showing the operation of the position adjustable pedal assembly of FIG. 5, wherein the pedal pad position is adjusted to its foremost position, and

FIG. 8 is a side elevation for showing the operation of the position adjustable pedal assembly of FIG. 5, wherein the pedal pad position is adjusted to its rear-most position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A first preferred embodiment of a position adjustable pedal assembly will be described with reference to FIGS. 1 to 4, wherein the pedal assembly is applied to a brake pedal.

In FIGS. 1 and 2, a stationary bracket 2 is fixed to a dash panel of a vehicle body. A lever 4 generally of a triangular shape is pivotably connected at its upper end to the stationary bracket 2 with a pivot pin 6 (i.e., a first pivot axis). As can be seen from FIG. 2, the lever 4 is generally of a hollow cubic shape having a right side wall 4a, a left side wall 4b, a front wall 4c and a back wall 4d. A return spring 8 is wound onto the pivot pin 6 for urging the lever 4 counterclockwise in FIG. 1 when a depression force is applied by a driver to push the lever 4 clockwise in FIG. 1. A pin 10 is fixedly provided on the right side wall 4a of the lever 4 for pivotably supporting an adjust lever 12. The adjust lever 12 includes a first portion 12A extending generally in a forward direction of the vehicle, a second portion 12B extending generally in a rearward direction of the vehicle and a third portion 12C extending generally vertically to connect the first and second portions 12A and 12B. The lever 4 is formed with a pair of first arc-shaped holes or slots 14 (i.e., a first arc-shaped track) at the right and left side walls 4a and 4b. A first slide pin 16 (i.e., a connecting member) is inserted into the arc-shaped holes 14 for pivotably supporting the adjust lever 12 and one end of a link member 18 on the right side wall 4a. The other end of the link member 18 is pivotably connected to an auxiliary lever 20 through a pivot pin 22 (i.e., a second pivot axis). The auxiliary lever 20 is in turn pivotably connected to the stationary bracket 2 through a pivot pin 24. A brake operating rod 26 is pivotably connected at its one end to the pin 22 to be operated in synchronism with displacement of the link member 18. The operating rod 26 is connected at its other end to a vehicle operation system such as a braking system (not shown).

A tension spring 28 is connected at its lower end to the first slide pin 16 and at its upper end to the stationary bracket 2. In FIG. 1, the tension spring 28 is in a balanced position supporting a weight applied to the first slide pin 16. Accordingly, the return spring 8 is not energized when no depression force is applied to the lever 4. The adjust lever 12 is generally of a Z-shape and is formed with a second arc-shaped hole or slot 12b (i.e., a second arc-shaped track) at its arc-shaped elongate section 12a. A radius of curvature of the arc-shaped hole 12b is not constant therealong, which will be described later.

The right side wall 4a of the lever 4 is formed with a pair of first and second elongate holes or slots 30 and 32 (i.e., the first and second linear tracks) which extend in parallel to each other in the longitudinal direction of the vehicle. Forward ends as well as rearward ends of the elongate holes 30 and 32 are not vertically aligned, respectively, which will be described later. As can be seen from FIG. 2, the left side wall 4b of the lever 4 is also formed with a pair of holes which just correspond to the elongate holes 30 and 32 formed in the right side wall 4a. Second and third slide pins 34 and 36 (i.e., the first and second guide member) are slidably inserted into the elongate holes 30 and 32 of the right and left side walls 4a and 4b, respectively. A pedal arm 38 is inserted into the lever 4 between the right and side walls 4a and 4b and is supported by the slide pins 34 and 36 at different locations. The slide pin 34 further extends through the arc-shaped hole 12b of the adjust lever 12. The pedal arm 38 is provided with a pedal pad 39 at its lower end.

A screw nut 40 (i.e., a driven member) is fixed to the pedal arm 38 and a corresponding screw rod 42 (i.e., a drive member) is rotatably mounted to the front and back walls 4c and 4d. The screw nut 40 is of a cylindrical shape and formed with a threaded hole through which the screw rod 42 extends so as to be engaged with each other. An electric motor 44 is fixed to the front wall 4c and is connected to the screw rod 42 for actuating same. Specifically, the motor 44 is energized to rotate in the normal or reverse direction in response to the driver's switching operation. This rotation of the motor causes the screw rod 42 to rotate in the same direction with the motor 42. The screw nut 40 is guided by the rotation of the screw rod 42 to move along the screw rod 42. This movement of the screw nut 40 causes the pedal arm 38 along with the pedal pad 39 to move along the screw rod 42, with the slide pins 34 and 36 each moving within the corresponding hole 30 or 32 between its forward and rearward ends, as shown in FIG. 1 by the solid and dotted lines.

Now the operation of the first preferred embodiment will be described hereinbelow.

FIG. 3 shows the operation of the position adjustable pedal assembly, wherein the pedal pad 39 is adjusted to its foremost position. Specifically, the slide pins 34 and 36 are positioned at the forward ends of the elongate holes 30 and 32, respectively, and the slide pin 34 is also positioned at the forward end of the arc-shaped hole 12b. When the pedal pad 39 is depressed by the driver, as shown by the solid line in FIG. 3, the pedal arm 38 and the lever 4 pivot about the pivot pin 6 as one integral unit in the clockwise direction. This causes the link member 18 to move forwardly so as to rotate the auxiliary lever 20 about the pivot pin 24 in the clockwise direction. Accordingly, the pin 22 is displaced forwardly to push the operating rod 26 also forwardly so

as to transmit the depressed force applied to the brake pedal pad 39 to the vehicle operation system (not shown) through the operating rod 26.

It is to be noted that since a line L1 is inclined at a predetermined angle to the vertical line VL, force F1 and F2 is applied to the slide pins 34 and 36 as shown in FIG. 1 in response to the depressing force applied to the brake pedal pad 39. Accordingly, the force which is to be applied to the slide pins 34 and 36 in a longitudinal direction of the elongate holes 30 and 32 is considerably reduced. On the other hand, if the slide pins 34 and 36 are vertically aligned, the force F1 and F2 is applied to the slide pins 34 and 36 in the direction along the length of the elongate holes 30 and 32. Accordingly, the strength of the assembly becomes less and the operation of the pedal pad 39 becomes jerky since the slide pin 34 is not engaged with any member in the direction along the force F1.

When the brake pedal pad 39 is released from the depression force, the pedal arm 38 and the lever 4 return to the initial position as one integral unit by means of the energized force of the return spring 8 as shown by the dotted line in FIG. 3.

In order to adjust the pedal position away from the foremost position as shown in FIG. 3 to, for example, the rearmost position, the electric motor 44 is energized to rotate in the normal direction by operating the switch (not shown), which causes the screw rod 42 to rotate in the same direction. Accordingly, the screw nut 40 moves along the screw rod 42 rearwardly to slide the slide pins 34 and 36 within the corresponding elongate holes 30 and 32 also rearwardly, as shown by the solid line in FIG. 4 wherein the pedal position is adjusted to its rearmost position. Simultaneously, the slide pin 34 slides within the arc-shaped hole 12b from its forward end to its rearward end, which causes the adjust lever 12 to pivot about the pin 10 in the clockwise direction. This pivotal movement of the adjust lever 12 causes the support pin 16 to move downward within the arc-shaped hole 14. Simultaneously, the link member 18 pivots about the pin 22 in the clockwise direction, which, however, does not cause the auxiliary lever 20 to pivot about the pivot pin 24, i.e. the pin 22 does not move so that no force is applied to the operating rod 26 since a radius of curvature of the arc-shaped hole 14 is the same as a distance between the center of the pin 22 and the center of the support pin 16.

As described before, the radius of curvature of the arc-shaped hole 12b is not constant therealong. Specifically, the radii of curvature of the arc-shaped hole 12b are selected such that when the first slide pin 16 moves downward or upward within the arc-shaped hole 14 in response to the sliding movement of the slide pin 34 within the arc-shaped hole 12b toward its rearward end or its forward end, respectively, a ratio of a distance DS to a distance DL is maintained constant, wherein the distance DS is a distance between the center of the pivot pin 6 and the center of the first slide pin 16 and the distance DL is a distance between the center of the pivot pin 6 and the center of the pedal pad 39. This ratio is maintained constant irrespective of the position of the slide pin 34 within the arc-shaped hole 12b. Accordingly, the force applied to the operating rod 26 and the required depression force or the leg power are kept constant irrespective of the adjusted pedal position under a condition that a distance of the pivotal displacement of the pedal pad 39 from the non-depressed position is the same.

Though the change in the distance DL causes a change in its center of gravity, which varies the required depression force or leg power, this variation is absorbed by means of the tension spring 28 which stretches or compressed according to the position of the first slide pin 16.

As seen from FIG. 4, when the pedal pad 39 is depressed by the driver, the pedal arm 38 and the lever 4 pivot about the pivot pin 6 as one integral unit in the clockwise direction to move the link member 18 forward. Simultaneously, the pin 22 moves forward and the auxiliary lever 20 pivots about the pivot pin 24, so that the applied depression force is transmitted to the operating rod 26.

As seen from FIG. 4, a line L2 is inclined at the predetermined angle to the vertical line VL and force F3 and F4 is applied to the slide pins 34 and 36, respectively. This arrangement provides the same effect as described before with reference to FIGS. 1 and 3.

When the pedal pad 39 is released from the depression force, the pedal arm 38 and the lever 4 return to the initial or the non-depressed position as shown by the solid line by means of the energized force of the return spring 8.

In order to return the pedal arm 38 to the position as shown by the solid line in FIG. 1, the electric motor 44 is energized to rotate in the reverse direction.

Now a second preferred embodiment of the position adjustable pedal assembly will be described with reference to FIGS. 5 to 8, wherein the pedal assembly is applied to an accelerator pedal.

In FIGS. 5 and 6, a stationary bracket 50 is fixed to a dash panel of the vehicle body. A lever 52 is pivotably connected to the stationary bracket 50 by a pivot pin 54 (i.e., a first pivot axis). As can be seen from FIG. 6, the lever 52 is generally of a hollow cubic shape having a right side wall 52a, a left side wall 52b, a front wall 52c and a back wall 52d. A return spring 56 is wound onto the pivot pin 54 for urging the lever 52 counterclockwise in FIG. 5 when a depression force is applied by the driver to push the lever 52 in the clockwise direction.

An operating lever 58 is pivotably connected to the stationary bracket 50 by means of a pivot pin 60 at its lower end and is connected to an operating wire 61 at its upper end. The operating wire is in turn connected to a throttle valve of a vehicle operation system (not shown). The lever 52 is formed with a pair of elongate holes 62 and 64 (i.e., a first and second linear tracks) just as in the first preferred embodiment. An adjust lever 66 is pivotably mounted to the lever 52 by means of a pin 68 which is fixed to the right side wall 52a of the lever 52. The adjust lever 66 is generally of a reversed-Z-shape and is formed with an arc-shaped hole or slot 66b (i.e., a second arc-shaped track) at its arc-shaped section 66a. A radius of curvature of the arc-shaped hole 66b is not constant, which will be described later. The adjust lever 66 has another arc-shaped section 66c which extends in the forward direction and is provided at its forward end with a slide pin 70 (i.e., a connecting member) which engages with an arc-shaped hole or slot 72 (i.e., a first arc-shaped track). A radius of curvature of the arc-shaped hole 72 is the same as a distance between the center of the pin 68 and the center of the slide pin 70 so as to prevent the operating lever 58 from pivoting about the pivot pin 60 when the adjust lever 66 is pivoted about the pin 68 for adjusting the pedal position, which will be described later.

A pedal arm 74 is inserted into the lever 52 between the right and left side walls 52a and 52b and is provided with a bracket 76 at its upper portion. The pedal arm 74 is provided with an accelerator pedal pad 77. The bracket 76 is fixed to the pedal arm 74 and is provided with a pair of slide pins 78 and 80 (i.e., the first and second guide member) at its upper and lower ends, respectively. Collars 82 and 84 are placed between the bracket 76 and the corresponding slide pins 78 and 80 as shown in FIG. 6. The slide pin 78 is inserted through the elongate holes 62 of the lever 52 and further through the arc-shaped hole 66b of the adjust lever 66. The slide pin 80 is inserted through the elongate holes 64 of the lever 52 and further through an elongate hole 86 formed in a stopper lever 88 which is pivotably connected to the lever 52 through a pivot pin 90. The elongate hole 86 is long enough to allow the slide pin 80 to move within the elongate hole 64 between its forward and rearward ends. The stopper lever 88 is formed with an engaging portion 92 at a side opposite to the elongate hole 86 with respect to the pivot pin 90. The engaging portion 92 is engageable with an arc-shaped projection 94 of the stationary bracket 50, which projection 94 is formed at a lower rearward end of the stationary bracket 50. The engagement of the engaging portion 92 with the arc-shaped projection 94 prevents a clockwise pivotal movement of the lever 52 exceeding a predetermined value which is caused by the depression force applied by the driver. Curvature of the engaging portion 92 is not constant therealong. Specifically, the curvature of the engaging portion 92 is selected such that the engaging portion 92 engages with the arc-shaped projection 94 to stop the clockwise pivotal movement of the lever 52 exceeding the predetermined value in response to a constant distance of the pivotal displacement of the pedal pad 77 irrespective of the adjusted position of the pedal pad 77. The stationary bracket 50 is further formed with a stopper projection 96 at its upper rearward end. The stopper projection 96 is engageable with a corresponding forward end of the lever 52 so as to prevent a counterclockwise pivotal movement of the lever 52 exceeding a predetermined value.

A screw nut 98 (i.e., a driven member) is fixed to the bracket 76 and a corresponding screw rod 100 (i.e., a drive member) is rotatably mounted to the front and back walls 52c and 52d. The screw nut 98 is of a cylindrical shape and formed with a threaded hole through which the screw rod 100 extends so as to be engaged with each other. An electric motor 102 is fixed to the front wall 52c and is connected to the screw rod 100 for actuating same. Specifically, the motor 102 is energized to rotate in the normal or reverse direction in response to the driver's switching operation. This rotation of the motor causes the screw rod 100 to rotate in the same direction with the motor 102. The screw nut 98 is guided by the rotation of the screw rod 100 to move along the screw rod 100. This movement of the screw nut 98 causes the bracket 76, i.e. the pedal arm 74 along with the pedal pad 77 to move along the screw rod 100, with the slide pins 78 and 80 each moving within the corresponding hole 62 or 64 between its forward and rearward ends, as shown in FIG. 5 by the solid and dotted lines.

A tension spring 104 is connected to the pivot pin 60 at its forward end and to the stopper lever 88 at its rearward end. The tension spring 104 is in a balanced

position supporting a weight applied to the tension spring 104.

Now the operation of the second preferred embodiment will be described hereinbelow.

FIG. 7 shows the operation of the position adjustable pedal assembly, wherein the pedal pad 77 is adjusted to its foremost position. Specifically, the slide pins 78 and 80 are positioned at the forward ends of the elongate holes 62 and 64, respectively, and the slide pin 78 is also positioned at the forward end of the arc-shaped hole 66b. When the pedal pad 77 is depressed by the driver, as shown by the dotted line in FIG. 7, the pedal arm 74 and the lever 52 pivot about the pivot pin 54 as one integral unit in the clockwise direction. Simultaneously, the adjust lever 66 pulls the operating lever 58 so that the operating lever 58 pivots about the pivot pin 60 in the clockwise direction to pull the operating wire 61 in the rearward direction, which in turn operates the throttle valve of the vehicle operation system (not shown).

When the clockwise pivotal movement of the lever 52 and the pedal arm 74 exceeds the predetermined value, the engaging portion 92 of the stopper lever 88 engages with the arc-shaped projection 94 of the stationary bracket 50 to prevent the further pivotal movement of the lever 52 and the pedal arm 74. On the other hand, when the depression force is released, the lever 52 and the pedal arm 74 pivot about the pivot pin 54 counterclockwise by means of the energized force of the return spring 56 to return to the initial position as shown by the solid line in FIG. 7.

In order to adjust the pedal position away from the foremost position as shown in FIG. 7 to, for example, the rearmost position, the electric motor 102 is energized to rotate in the normal direction by operating the switch (not shown), which causes the screw rod 100 to rotate in the same direction. Accordingly, the screw nut 98 moves along the screw rod 100 rearwardly to slide the slide pins 78 and 80 through the bracket 76 within the corresponding elongate holes 62 and 64 also rearwardly, as shown by the solid line in FIG. 8 wherein the pedal position is adjusted to its rearmost position. Simultaneously, the slide pin 78 slides within the arc-shaped hole 66b from its forward end to its rearward end, which causes the adjust lever 66 to pivot about the pin 68 in the counterclockwise direction. This pivotal movement of the adjust lever 66 causes the slide pin 70 to move downward within the arc-shaped hole 72. The sliding movement of the slide pin 70 within the arc-shaped hole 72 does not cause the operating lever 58 to pivot about the pivot pin 60 so that no force is applied to the operating wire 61 since a radius of curvature of the arc-shaped hole 72 is the same as a distance between the center of the slide pin 70 and the center of the pivot pin 68.

As described before, the radius of curvature of the arc-shaped hole 66b is not constant therealong. Specifically, the radii of curvature of the arc-shaped hole 66b are selected such that when the slide pin 70 moves downward or upward within the arc-shaped hole 72 in response to the sliding movement of the slide pin 78 within the arc-shaped hole 66b toward its rearward end or its forward end, respectively, a distance between the center of the pivot pin 60 and the center of the slide pin 70 becomes in reverse proportion to a distance between the center of the pivot pin 54 and the center of the pedal pad 77. Accordingly, the force applied to the operating wire 61 and the required depression force or the leg

power are kept constant irrespective of the adjusted pedal position under a condition that a distance of the pivotal displacement of the pedal pad 77 from the non-depressed position is the same.

As the slide pin 80 moves rearward within the elongate hole 64, the stopper lever 88 starts to pivot about the pivot pin 90 in the clockwise direction, which causes the engaging portion 92 also to pivot about the pivot pin 90. As described before, the curvature of the engaging portion 92 is not constant therealong. Specifically, the curvature of the engaging portion 92 is selected to allow the engaging portion 92 to contact with the arc-shaped projection 94 when the pedal pad 77 performs a pivotal displacement of a predetermined constant distance from the non-depressed position of the pedal pad 77, irrespective of an adjusted pedal position.

As seen from FIG. 8, when the pedal pad 77 is depressed by the driver, the pedal arm 74 and the lever 52 pivot about the pivot pin 54 as one integral unit in the clockwise direction to actuate the operating lever 58 through the adjust lever 66. Accordingly, the operating lever 58 pivots about the pivot pin 60 clockwise to pull the operating wire 61 rearwardly, so that the throttle valve of the vehicle operation system is in turn actuated. The pivotal movement of the lever 52 and the pedal arm 74 exceeding the predetermined value is prevented by means of the engagement between the engaging portion 92 and the arc-shaped projection 94. When the pedal pad 77 is released from the depression force, the pedal arm 74 and the lever 52 pivot about the pivot pin 54 counterclockwise to return to the initial or non-depressed position as shown by the solid line in FIG. 8 by means of the energized force of the return spring 56. A further counterclockwise movement is prevented by means of the engagement between the stopper projection 96 and the forward end of the lever 52.

In order to return the pedal arm 74 to the position as shown by the solid line in FIG. 5, the electric motor 102 is energized to rotate in the reverse direction.

As in the first preferred embodiment, the center of the slide pin 78 and the center of the slide pin 80 are not vertically aligned, which can provide the same effect as described in the first preferred embodiment.

It is to be understood that the invention is not to be limited to the embodiments described above, and that various changes and modifications may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A position adjustable pedal assembly for a vehicle comprising:

a stationary bracket fixed to a stationary portion of the vehicle;

a lever connected to said stationary bracket for a pivotal movement relative to said stationary bracket about a first pivot axis;

a pedal arm with a pedal pad at its lower end, said pedal arm connected to said lever for pivotal movement with said lever as one integral unit in response to a depression force applied to the pedal pad;

pedal position adjusting means including a drive member and a driven member, said drive member adapted to be activated by a vehicle driver's operation, said driven member mounted on said pedal arm to be selectively driven by said drive member to move in a longitudinal direction of the vehicle

along with said pedal arm relative to said lever so as to adjust a position of the pedal pad in the longitudinal direction of the vehicle;

an adjust lever provided on said lever, said adjust lever being allowed a relative movement to said lever and having a connecting member which is adapted to move within a first arc-shaped track in response to the relative movement of said adjust lever;

a second arc-shaped track formed on said adjust lever;

a first linear track formed on said lever and extending in the longitudinal direction of the vehicle;

a first guide member provided on said pedal arm, said first guide member adapted to move within said first linear track, and simultaneously within said second arc-shaped track formed on said adjust lever when said pedal arm is driven to move in the longitudinal direction of the vehicle via said pedal position adjusting means, said movement of the first guide member changing a distance from said first pivot axis to said pedal pad corresponding to a magnitude of the movement of said first guide member and simultaneously allowing said relative movement of the adjust lever to change a position of said connecting member within said first arc-shaped track corresponding to said magnitude of the movement of said first guide member; and

operating member means connected to said connecting member for receiving therefrom the depression force applied to said pedal pad via said pedal arm and said lever and for transmitting said depression force to a vehicle operation system to operate same.

2. The position adjustable pedal assembly as set forth in claim 1, wherein said relative movement of the adjust lever changes the position of said connecting member to provide a predetermined ratio relationship between said distance and a distance from said first pivot axis to said connecting member.

3. The position adjustable pedal assembly as set forth in claim 2, wherein said drive member includes a screw rod rotatably supported on said lever and extending in parallel to said first linear track, and said driven member includes a nut fixed to said pedal arm and having a threaded hole therethrough which receives said screw rod therethrough for mutual engagement therebetween, said nut being allowed to move in the longitudinal direction of the vehicle along with said pedal arm when said screw rod is actuated to rotate.

4. The position adjustable pedal assembly as set forth in claim 2, wherein said connecting member includes a first slide pin connected to said adjust lever, and said first arc-shaped track includes a first arc-shaped slot formed in said lever, said first slide pin being allowed to slide within said first arc-shaped slot in response to said relative movement of the adjust lever.

5. The position adjustable pedal assembly as set forth in claim 4, wherein said first pivot axis is provided at an upper end of said lever, and said first arc-shaped slot is oriented substantially in a vertical direction to provide said predetermined ratio relationship in which a ratio between said distance from the first pivot axis to the pedal pad and said distance from the first pivot axis to the first slide pin is maintained constant irrespective of an adjusted position of the pedal pad which is adjusted by said pedal position adjusting means.

11

6. The position adjustable pedal assembly as set forth in claim 5, further comprising spring means connected to said stationary bracket at its upper end and to said first slide pin at its lower end, said spring means stretching or compressing in response to said movement of said first slide pin within said first arc-shaped slot so as to change its spring force applied to said pedal pad via said slide pin, said lever and said pedal arm, said change of the spring force absorbing variation in a required depression force to be applied to said pedal pad, said variation in the required depression force being caused by variation in said distance from the first pivot axis to the pedal pad due to the adjustment of the pedal pad position via said pedal position adjusting means.

7. The position adjustable pedal assembly as set forth in claim 5, wherein said operating member means includes a link member and an operating rod, said link member being connected to said first slide pin at its rearward end and connected to said operating rod at its forward end for a pivotal movement relative to said operating rod about a second pivot axis, and wherein said first arc-shaped slot has a radius of curvature which is the same as a distance from the first slide pin to said second pivot axis for preventing displacement of the operating rod while the first slide pin moves within said first arc-shaped slot due to the adjustment of said pedal pad by means of said pedal position adjusting means.

8. The position adjustable pedal assembly as set forth in claim 7, wherein radii of curvature of said second arc-shaped track formed on said adjust lever are preselected to maintain said distance ratio to be constant irrespective of a position of said first guide member within said second arc-shaped track.

9. The position adjustable pedal assembly as set forth in claim 8, wherein said first guide member is a second slide pin which is fixed to said pedal arm at its portion opposite to said pedal pad, and said first linear track is a first linear slot which is formed in said lever, and wherein said second slide pin is engaged into said first linear slot and further into said second arc-shaped slot formed in said adjust lever.

10. The position adjustable pedal assembly as set forth in claim 9, further comprising a second guide member in a form of a third slide pin fixed to said pedal arm below said second slide pin, said second and third slide pins being vertically disaligned from each other, and a second linear track in a form of a second linear slot formed in said lever below said first linear slot, said first and second linear slots extending in parallel to each other vertically disaligned from each other, said third slide pin being engaged into said second linear slot for a sliding movement therewithin when said pedal arm is driven to move in the longitudinal direction of the vehicle.

11. A position adjustable pedal assembly for a vehicle comprising:

- a stationary bracket fixed to a stationary portion of the vehicle;
- a lever connected to said stationary bracket for a pivotal movement relative to said stationary bracket about a first pivot axis;
- a pedal arm with a pedal pad at its lower end, said pedal arm connected to said lever for pivotal movement with said lever as one integral unit in

12

response to a depression force applied to the pedal pad;

pedal position adjusting means including a drive member and a driven member, said drive member adapted to be activated by a vehicle driver's operation, said driven member mounted on said pedal arm to be selectively driven by said drive member to move in a longitudinal direction of the vehicle along with said pedal arm relative to said lever so as to adjust a position of the pedal pad in the longitudinal direction of the vehicle;

an adjust lever being generally of a Z-shape having a first portion extending generally in a forward direction of the vehicle, a second portion extending generally in a rearward direction of the vehicle and a third portion extending generally vertically to connect said first and second portions, said first portion being connected to said lever at its forward end for a pivotal movement relative to said lever and being connected to a first slide pin at its rearward end, said first slide pin engaging into a first arc-shaped slot formed in said lever for sliding movement therewithin in response to the pivotal movement of said first portion, said second portion being formed with a second arc-shaped slot having a predetermined curvature;

operating member means including a link member and an operating rod, said link member being pivotally connected to said first slide pin at its rearward end and pivotably connected to said operating rod at its forward end for receiving the depression force from said first slide pin and for transmitting the depression force to said operating rod to operate a vehicle operation system; and

said pedal arm provided with a second slide pin at its upper portion which is inserted into a first elongate slot formed in said lever and extending in the longitudinal direction of the vehicle, and into said second arc-shaped slot such that when said second slide pin slides within said first elongate slot and said second arc-shaped slot in the longitudinal direction of the vehicle so as to adjust the pedal pad position, the cooperation of the second slide pin and the second arc-shaped slot forces said first slide pin to slide within said first arc-shaped slot so as to vary a point of application of the depressed force relative to said link member via said first slide pin, said first arc-shaped slot having a predetermined curvature such that the sliding movement of said first slide pin within said first arc-shaped slot is prevented from displacing said operating rod.

12. The position adjustable pedal assembly as set forth in claim 11, wherein said lever is further formed with a second elongate slot below said first elongate slot, said second elongate slot extending in parallel to said first elongate slot, forward and rearward ends of said first and second elongate slots are vertically disaligned, respectively, and said pedal arm is further provided with a third slide pin below said second slide pin, said third slide pin being inserted into said second elongate slot for sliding movement therewithin, said second and third slide pins being vertically disaligned from each other.

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White et al.

[45] Date of Patent: **Jan. 31, 1995**

[54] **ELECTRONIC ACCELERATOR PEDAL ASSEMBLY WITH PEDAL FORCE SENSOR**

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[73] Assignee: **CTS Corporation, Elkhart, Ind.**

[21] Appl. No.: **993,141**

[22] Filed: **Dec. 18, 1992**

[51] Int. Cl.⁶ **G05G 1/14**

[52] U.S. Cl. **74/512; 74/513; 74/560**

[58] Field of Search **74/512, 513, 514, 560, 74/523, 533, 535**

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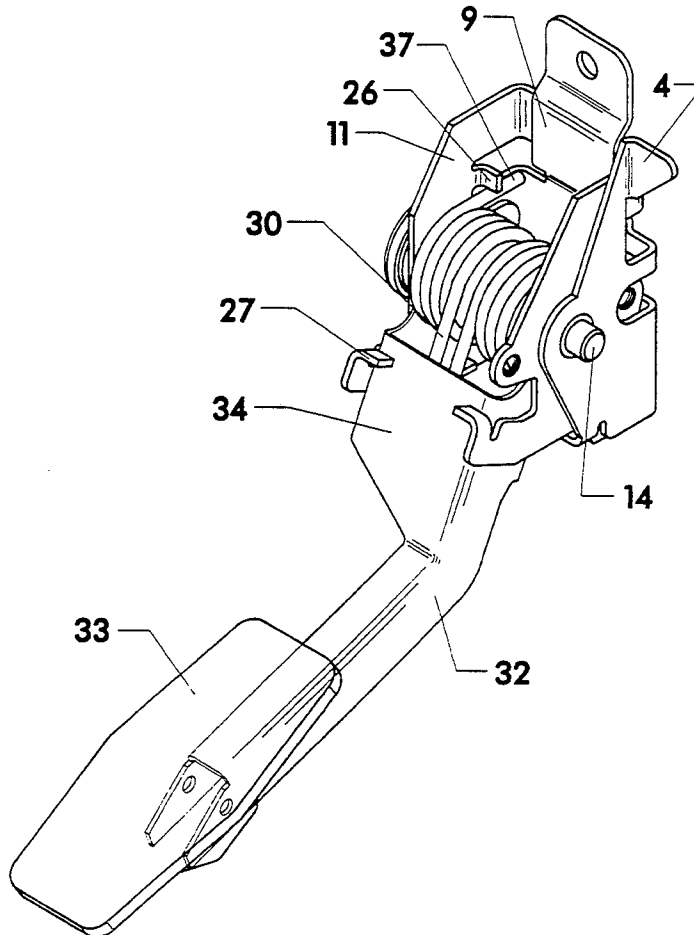
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[57] **ABSTRACT**

A pedal bracket assembly translates pedal motion into a first switching motion without change of position being sensed by a position sensor. Additional pedal motion does not further change the switch position, but is translated into motion sensed by the position sensor. In this way, the switching function and position transducer functions are maintained independent one from the other, while allowing the two functions to be combined into a single sensor assembly.

7 Claims, 3 Drawing Sheets



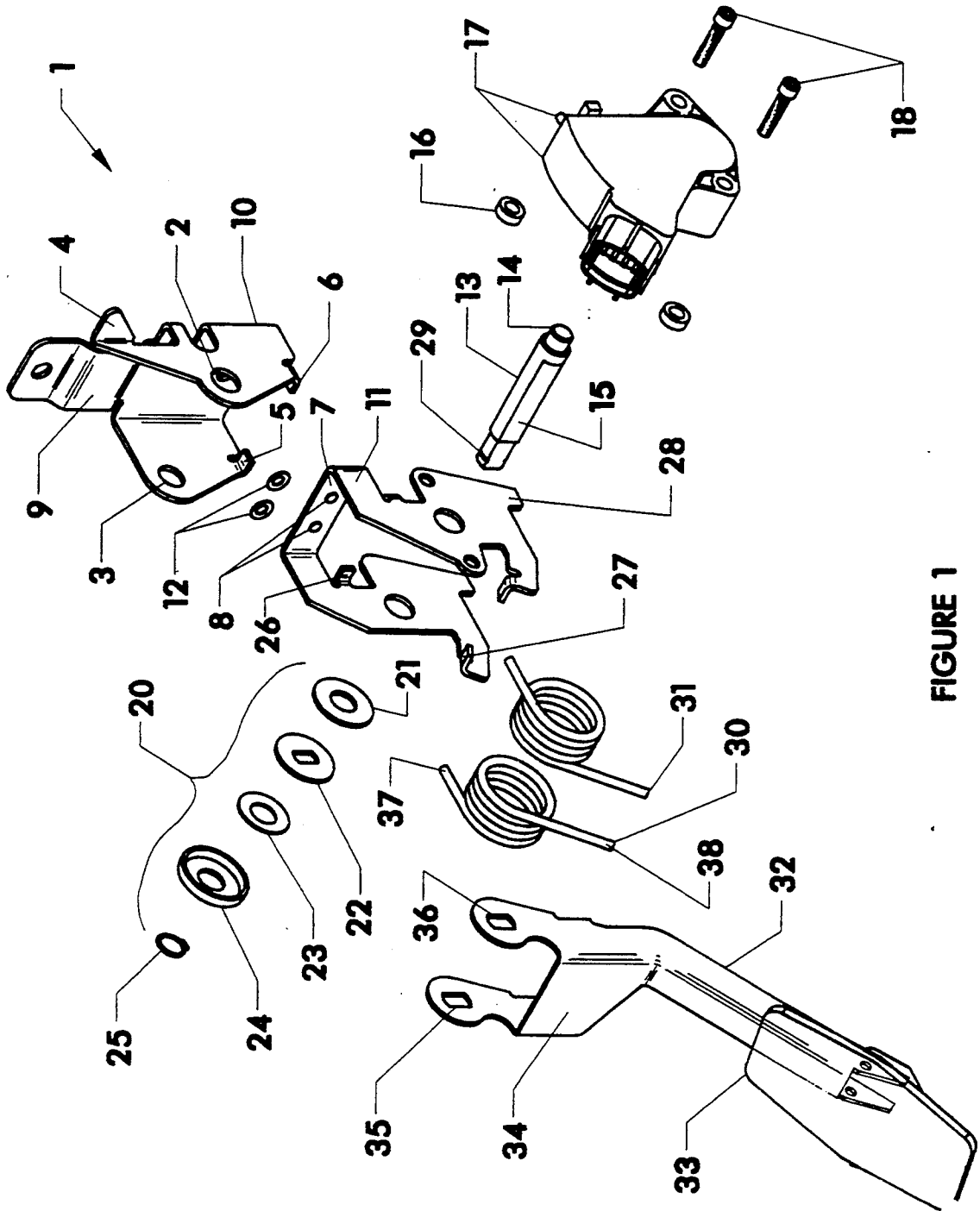


FIGURE 1

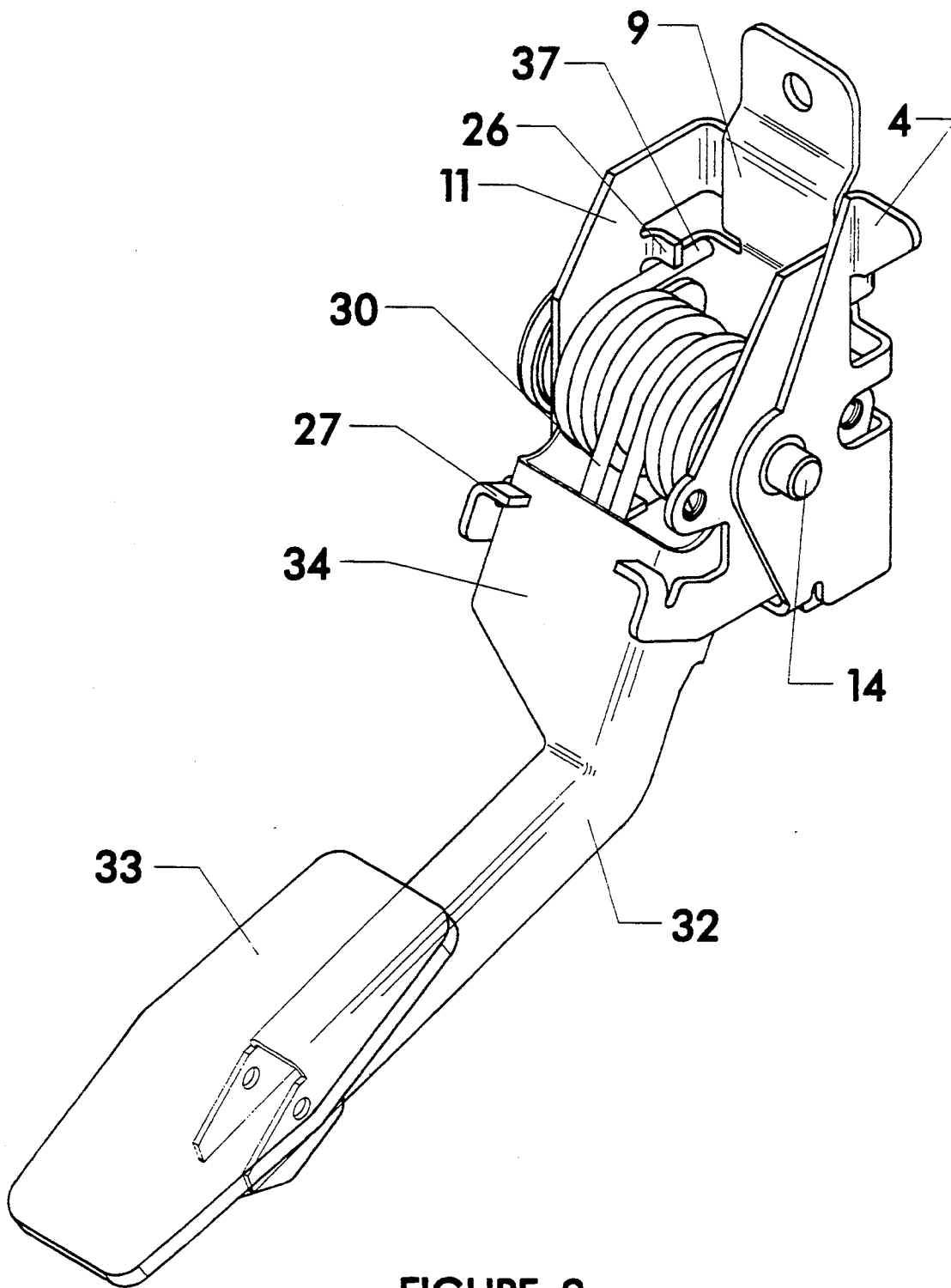


FIGURE 2

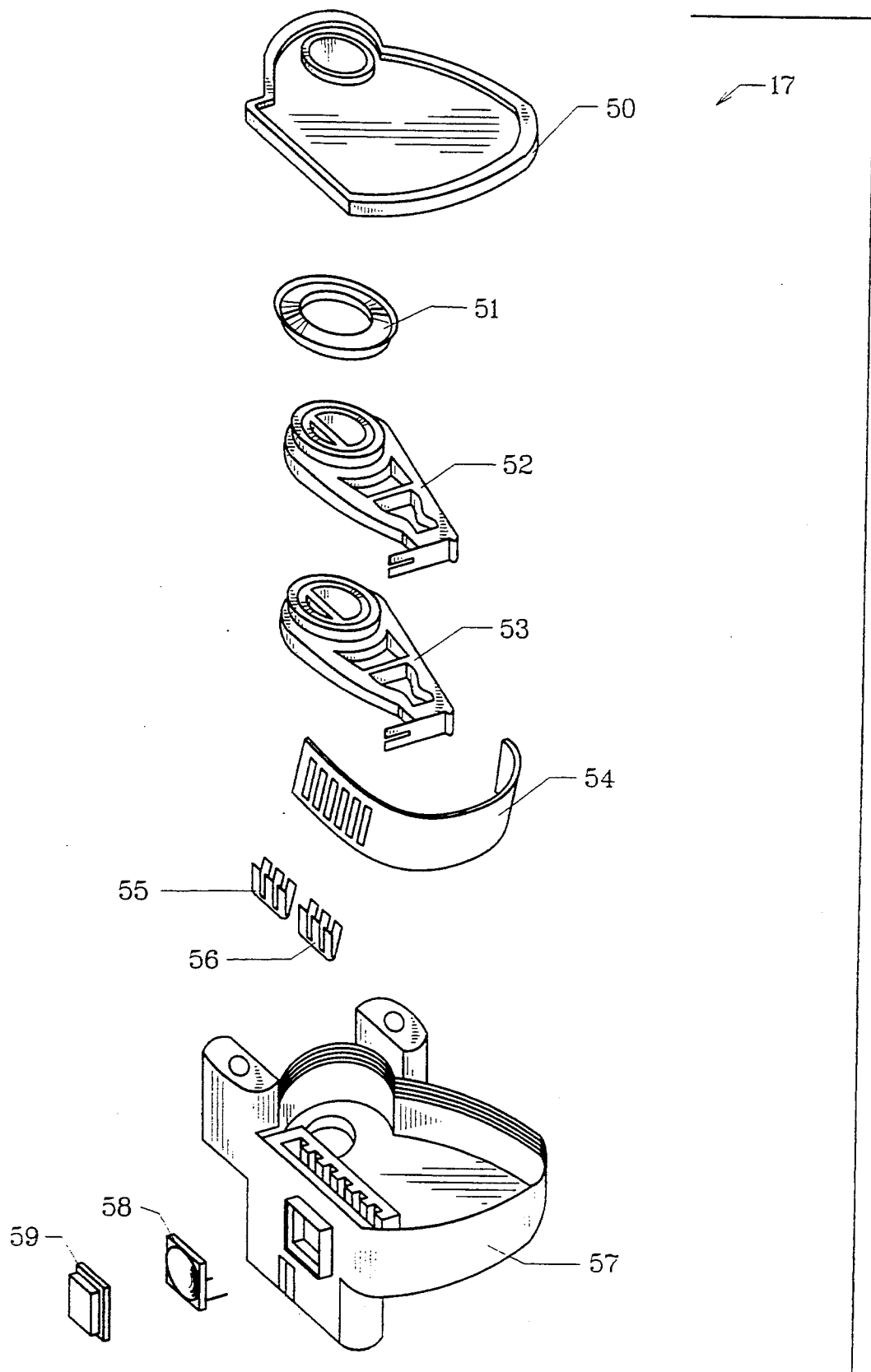


FIGURE 3

ELECTRONIC ACCELERATOR PEDAL ASSEMBLY WITH PEDAL FORCE SENSOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains generally to pedal brackets and more specifically to bracket structures cooperatively mated with electrical devices such as position sensors and force sensors.

2. Description of the Related Art

In the control of motors and machinery there are a number of interfaces that have been proposed through the years. These interfaces have sought to ease man's ability to perform the functions required in the operation of the machines with as little extraneous action and hardware as possible. In this way, an operator may perform as many functions as possible with minimal hinderance and with maximum control. That way, safety and efficiency are at a maximum.

One way of controlling a machine is with the use of pedals. These pedals allow input to the machine by use of an operator's foot, while simultaneously keeping hands free for other typically more complex tasks. These pedals are found in a variety of machines including pianos, sewing machines, and motive equipment such as automobiles and trucks.

The pedals used to control these devices in some cases are mechanical, typically incorporating a cable or various gears and other transmission devices to convert the limited rotary motion available from the pedal into useful mechanical motion to control the machine. Other pedals incorporate some type of position sensor that converts the mechanical position into an electrical signal. In the field of locomotion, particularly pertaining to automobiles and trucks, a mechanical bracket using a cable, often referred to as a Bowden cable, is the standard method for controlling the throttle of internal combustion engines. These pedal assemblies have a desirable feel and functionality and, with a few refinements, are extremely reliable. This type of pedal assembly defines many pedals today.

As noted above, through time there have been a number of attempts at different types of pedal devices to control machines. One major attempt has been to introduce an electrical linkage between the pedal and the device to be controlled. This is desirable since the gear assemblies are bulky, expensive and limited due to their inherent size to those applications where the pedal is very close to the controlled device. Mechanical linkages are not particularly flexible and are prone to sticking or binding. While the Bowden cable has proved generally reliable, the penetration of moisture and other contaminants may still cause the cable to bind. A cable less prone to failure is more expensive and bulky, and still inherently limited.

One early attempt at an electrical throttle controller is illustrated in U.S. Pat. No. 2,192,714. Therein, the throttle valve of an internal combustion engine could be controlled either by foot using a pedal or by hand using a knob. A second construction, illustrated for use with a forklift, is disclosed in U.S. Pat. No. 4,047,145. This second construction offers an ability to adjust the device for variances in manufacturing and performance among various assemblies.

More recently, there have been proposed devices that offer added safety features. This appeal is readily understood in view of the potential for harm of a several tone

vehicle irreversibly set to full throttle. Even momentary loss of control, such as might occur with the false transmission of acceleration while in a line at a stoplight, may result in substantial damage. There has been sought a way to offer the desirable feel of the Bowden cable while improving reliability to ensure the safety of an operator and associated equipment. Heretofore, such a combination of features was not available for a price competitive with the Bowden cable.

In an effort to obtain the desired reliability, dual functions have been proposed in the prior art. The first of these is a pedal force switch or, performing a similar function, an idle validation switch. Exemplary patents illustrating such a combination are U.S. Pat. Nos. 5,133,225 and 4,869,220. However, each of these prior art patents forces movement of the position sensor to occur together with activation of the switch. Such a limitation does not allow for totally separate and independent functioning of the two devices and can lead to undetected failure modes. As noted, such undetected failure modes can cause much damage and may even lead to fatalities. The present invention seeks to overcome the limitation of the prior art.

SUMMARY OF THE INVENTION

The present invention overcomes the limitations of the prior art by incorporating a dual pivot structure into the pedal assembly. A first bracket provides rigid support for the entire pedal assembly and has extending therethrough a generally cylindrical shaft. About this shaft a second rotary moving bracket is supported that carries a combination of springs, hysteresis assembly, position sensor and force switch. The switch and sensor, while carried in one package, are actuated independently one from another, providing a ready way to validate correct operation of each device.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates by exploded view a preferred embodiment of the entire pedal assembly.

FIG. 2 illustrates the preferred embodiment in an assembled view ready for mounting.

FIG. 3 illustrates by exploded view a preferred embodiment of a pedal position sensor combined with a pedal force switch.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates the preferred embodiment of the electronic accelerator pedal assembly, by exploded view for clarity. The entire assembly 1 is supported by rigid pedal mounting bracket 10 that is affixed by bolt of other similar fastening structure to a suitable support such as bulkhead of an automobile (not illustrated). Rigid bracket 10 should be firmly supported so as to not move relative to the support. Rigid bracket 10 has coaxial openings 2 and 3 therein which receive shaft 13 therethrough. Between openings 2 and 3 and similarly supported upon shaft 13 is moving bracket 11. Moving bracket 11 has a U-shaped surface 7 interconnecting like surfaces of moving bracket 11. Formed into U-shaped surface 7 are two locating dimples 8 which serve to locate Belleville spring washers 12. These Belleville washers 12 are retained between U-shaped surface 7 and rigid bracket 10 at the slightly contoured or shaped region 9. To build the assembly 1, moving bracket 11 is positioned with torsion spring retention tabs 26 on the

surface of shaped region 9 closest to coaxial openings 2 and 3. U-shaped surface 7 with dimples 8 and belleville spring washers 12 are then slid over the side of shaped region 9 so as to interact therewith on the surface of region 9 away from openings 2 and 3. Once assembled, a viewer looking from the angle of FIG. 1 will not be able to see U-shaped region 7, dimples 8 and belleville washers 12 due to shaped region 9 blocking the view.

Similarly supported upon shaft 13 is pedal arm 32, carrying therewith pedal pad 33. Not illustrated is the pivot pin and spring commonly associated with the pedal pad, allowing pedal pad 33 to pivot on arm 32, as these form no material part of the invention. Pedal arm 32 is carried upon shaft 13 through coaxial openings 35 and 36. Openings 35 and 36 are illustrated as generally rectangular in shape so as to engage flats 15 of shaft 13. Rotation of pedal arm 32 about shaft 13 therefore will also rotate shaft 13. The nature of the interconnections is not limiting, and may take any desirable form including but not limited to mating geometries, welded or brazed connections, or similar arrangements. This particular rectangular mating relationship between openings 35 and 36 and shaft 13 is preferred due to ease of manufacture and replacement.

Carried about shaft 13, but not generally engaged therewith, and also between openings 35 and 36 are the two torsion springs 30 and 31. A first end 37 of torsion spring 30 will press against tab 26 when spring 30 is installed, under slight compressive force. A second end 38 of spring 30 will press against the side of flat 34 not visible in FIG. 1, thereby forcing flat 34 of pedal arm 32 against stop 27. Torsion spring 31 is similarly installed. Duplication of function is achieved in the structure through the use of spring 31 with spring 30 and two spring washers 12. Failure of one of the pairs, or even one torsion spring and one spring washer will not disable the assembly. However, one or more springs could be used. Duplication is preferred.

Also carried on shaft 13 is the mechanical hysteresis mechanism 20 that produces the feel of the Bowden cable familiar to automobile drivers. Friction pad 21 mounts against bracket 10 and serves to provide a controlled friction with washer 22. Washer 22 is illustrated with a mating geometry similar to openings 35 and 36, so as to be rotated simultaneous with shaft 13. Rotary motion of shaft 13 is thereby retarded somewhat by the friction between washer 22 and pad 21, wherein pad 21 remains substantially anchored with bracket 10. Belleville spring washer 23, cap 24 and retaining ring 25 combine to maintain force through washer 22 and against pad 21. Flat 15 does not extend the full length of shaft 13, and at the termination nearest drive 14 allows shaft 13 to engage against the opening through bracket 11. This counterbalances the force applied on shaft 13 by belleville spring washer 23. Drive 14 engages with position sensor 17 to rotate drive arms 52 and 53 (shown in FIG. 3) upon rotation of shaft 13 relative to moving bracket 11. Position sensor 17 is retained to moving bracket 11 through bolts 18 and is therefore only actuated upon rotation of shaft 13 relative to moving bracket 11.

FIG. 2 shows assembly 1 ready for installation. Like elements are so numbered where visible. The completed assembly 1 as illustrated might be installed along the bulkhead dividing a passenger compartment from an engine area in an automotive or truck application, or might be installed upon a structure specifically built to provide rigid support for assembly 1.

FIG. 3 illustrates a preferred embodiment for the combined position sensor and switch assembly 17. As shown, the complete assembly 17 is generally surrounded by housing 57 and cover 50. Therein may also reside seal 51 to prevent the entry of foreign elements otherwise detrimental to the assembly, and drive arms 52 and 53. These drive arms are adapted to be pressed directly onto shaft 13 at drive 14, for direct mechanical engagement and rotation therewith. Alternatively, there may be additional structure as known in the prior art and not illustrated herein to provide for positive coupling therebetween. While there are two drive arms 52 and 53 illustrated, note that there may be any number from one or more, although two is preferred for duplication of function and yet low cost. The interconnections between drive arms 52 and 53 and shaft drive 14 are not illustrated in great detail and will be well known to one of ordinary skill. Exemplary patents, though not the only ones, are U.S. Pat. Nos. 4,355,293, 4,621,250 and 4,693,111 incorporated herein by reference. These drive arms 52 and 53 may be designed to mate one with the other and rest upon a rotary bearing surface at the base of housing 57. The mating features are not illustrated herein, through one or ordinary skill will recognize that mating concentric cylinders coaxial with the shaft 13 would provide one means of accomplishing the function. Drive arms 52 and 53 might be combined into one rigid structure and may have two contacts at the ends thereof. Other suitable structures are well known to those of ordinary skill in the art as noted above.

For the sake of illustration, flexible element 54 similar to that shown in U.S. Pat. No. 4,355,293 is retained in place by features not shown in housing 57 and pressure wedges 55 and 56. Attached on a side of housing 57 and forming the novel feature of assembly 17 is a switch 58 enclosed by actuator 59. Prior art switch and sensor combinations rely upon the same rotational shaft to actuate both the position sensor and the switch. In some instances the switch is even formed as a separate very short resistor element upon the same flexible film as the sensor. This type of assembly is inherently limited for several important reasons. Using the shaft to actuate both position and sensing functions forces the position sensor to travel a certain limited distance prior to switch actuation. This movement either is indicated as a change or non-zero position by the position sensor. Even where there is a large area of conductive patterned for the position sensor to slide upon during switch actuation, the conductive does have finite resistance and a change in resistance will be conveyed. Further, if the shaft should bind with the sensor, there is no way to verify whether there is intent to actuate the shaft. In some prior art applications, there has been an effort to separately package the switch and the sensor. This results in a more expensive package and spreads wiring over a greater distance—exposing the assembly to greater risk of damage or external interference.

Switch 58 is illustrated herein as a dome switch, but other types of switches and even electronic switching devices such as Hall effect sensors are contemplated. Similarly, other constructions of sensors are also contemplated and very much within the scope of this invention. The fact that switch actuator 59, radially disposed from shaft 13, is actuated without rotation of shaft 13 relative to assembly 17 is very important to this invention.

In operation of assembly 1, torsion springs 30 and 31 are under slight compressive force when no pressure is

applied to pedal pad 33. Upon application of a small force upon pad 33, indicative of demand for throttle in the application of this invention to automobile accelerators, the force is transmitted through a second end 38 of torsion spring 30 to the first end 37 and into moving bracket 11. This causes moving bracket 11 to rotate on shaft 13 relative to rigid bracket 10, thereby compressing belleville washers 12 which have a lower compressive force than torsion springs 30 and 31. At this time, there is no compression of torsion springs 30 and 31. Dimples 8 are most preferably formed to be no larger than the thickness of the thinnest portion of spring washers 12, so to not interfere with the operation of the moving bracket 11 and belleville spring washers 12.

Compression or flattening of belleville spring washers 12 causes the entire moving bracket 11 and all parts supported thereon to rotate slightly relative to rigid bracket 10. This slight rotation is sensed by a switch 58 mounted on the side of sensor 17 and best illustrated in FIG. 3. The rotation causes housing 57 to move away from lip 4 of bracket 10. Actuator 59 normally is pressed tightly against lip 4 by the force of belleville spring washers 12. Movement of housing 57 away from lip 4 releases pressure from switch 58 to cause a switching action to occur. This switching action occurs regardless of whether the remainder of sensor 17 is operational, bound up, or otherwise non-functional, provided electrical connection exists. In this way, demand for throttle may be sensed independent of pedal position.

Since sensor 17 is retained to moving bracket 11 through bolts 18, no change in position relative to housing 57 occurs in position sensor drive arms 52 and 53 until shaft 13 rotates relative to moving bracket 11.

While the foregoing details what is felt to be the preferred embodiment of the invention, no material limitations to the scope of the claimed invention is intended. Further, features and design alternatives that would be obvious to one of ordinary skill in the art are considered to be incorporated herein. The scope of the

invention is set forth and particularly described in the claims hereinbelow.

We claim:

1. A bracket assembly carrying an actuator means comprising:
 - a means for supporting a moving bracket means and locating a rotational axis, said moving bracket means occupying a first position relative to said supporting means when no force is applied to said actuator means;
 - a connecting means connecting said actuator means to said moving bracket means, said connecting means operative upon application of a first force to said actuator means to move said moving bracket means relative to said support to a second position without relative movement between said actuator and said moving bracket means, and upon application of a second force greater in magnitude than said first force to said actuator to rotate said moving bracket to said second position without relative movement between said actuator and said moving bracket means, and to subsequently move said actuator means relative to said moving bracket means; said moving bracket means and said supporting means spaced from each other by a spring means.
2. The bracket assembly of claim 1 wherein said spring means comprises a belleville washer.
3. The bracket assembly of claim 1 wherein said connecting means comprises a resilient means.
4. The bracket assembly of claim 1 wherein said connecting means comprises a resilient means.
5. The bracket assembly of claim 4 wherein said resilient means requires more force to deform than said spring means.
6. The bracket assembly of claim 1 wherein said spring means is spaced from said actuator means by said moving bracket means.
7. The bracket assembly of claim 1 wherein said actuator means comprises a pedal.

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Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

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This Practice Note discusses key milestones in post-grant patentability challenges at the US Patent and Trademark Office under the Leahy-Smith America Invents Act (AIA). It reviews typical timelines and procedures at key milestones in inter partes review (IPR), post-grant review (PGR), and covered business method (CBM) patentability challenges before the Patent Trial and Appeal Board (PTAB).

A party may not petition for CBM review after September 15, 2020 under the AIA's CBM sunset provision. The PTAB will review petitions filed before that date and continue existing CBM proceedings (see 37 C.F.R. § 42.300(d)).

Since the Leahy-Smith America Invents Act (AIA) went into effect in September 2012, accused patent infringers have a robust set of options available at the US Patent and Trademark Office (USPTO) to challenge issued patents before the Patent Trial and Appeal Board (PTAB). These challenges include:

- *Inter partes* review (IPR).
- Post-grant review (PGR).
- The transitional program for covered business method patent review (CBM), a subset of PGR.

As these proceedings become standard practice in patent disputes, understanding the typical timelines and procedures of a trial before the PTAB is essential. This Note discusses typical timelines and procedures and highlights important milestones in IPR, PGR, and CBM proceedings.

For more information on the PTAB's trial practice rules, see [Practice Note, PTAB Trial Practice Rules](#).

For a collection of representative PTAB decisions, see [Practice Note, USPTO America Invents Act Trial Tracker \(PTAB\)](#).

For a discussion of key aspects and differences between IPR, PGR, and CBM proceedings, see [Practice Note, USPTO Post-Prosecution Patentability Proceedings](#).

For a discussion on appealing PTAB rulings, see [Practice Note, Appealing Patent Trial and Appeal Board Final Written Decisions](#).

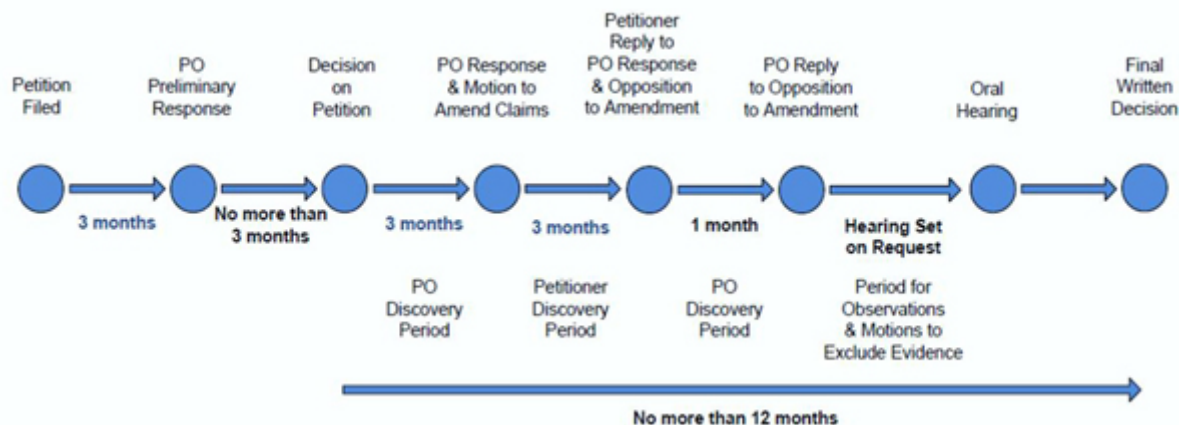
Typical Timelines for IPR, PGR, and CBM Proceedings

As part of implementing the AIA, in 2012 the USPTO issued final trial rules and a trial practice guide to provide guidance on the timelines, procedures, and trial practice for post-issuance patent challenges under the AIA (see 77 Fed. Reg. 48612 (Aug. 14, 2012) (37 C.F.R. §§ 42.1 to 42.80) and 77 Fed. Reg. 48756 (Aug. 14, 2012).) The USPTO updated the trial practice guide in August 2018 and July 2019, and published a consolidated Trial Guide in November, 2019 (see [Consolidated Trial Practice Guide](#)).

The 2012 trial guide includes the following representative timeline of an IPR, PGR, and CBM proceeding:



Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings



(77 Fed. Reg. at 48757.)

While the PTAB may deviate from this timeline in certain cases, it provides a useful guide and illustration of the key milestones of a PTAB proceeding.

Except where otherwise specified, the procedure for a CBM proceeding tracks that of a PGR proceeding (37 C.F.R. § 42.300(a)).

Length of Proceedings

Under the AIA, a PTAB proceeding is intended to move quickly. The AIA requires that the PTAB issue a final written decision on the patentability of any challenged claim within one year of instituting a trial. However, for good cause, the PTAB may extend this one-year statutory period by up to six months (37 C.F.R. §§ 42.100(c), 42.200(c), and 42.300(c)).

The PTAB generally adheres strictly to the one-year limit, but the one-year time limit:

- Does not begin until the PTAB issues a decision on whether to institute a trial (see T-0: Decision on Institution). This effectively extends a typical proceeding by up to six months, which is the typical amount of time the PTAB takes to decide whether to institute a trial (see Pre-Institution Proceedings).
- May be adjusted by the PTAB in the case of joinder of multiple proceedings (37 C.F.R. §§ 42.100(c), 42.200(c), and 42.300(c)).
- Applies only to proceedings before the PTAB. If a party appeals a PTAB final written decision to the US Court of Appeals for the Federal Circuit (Federal

Circuit), the entire review process may last several years, including:

- 18 to 24 months for the PTAB proceeding, including a request for rehearing of the PTAB's final written decision; and
- at least one year for an appeal before the Federal Circuit, which does not take into account other delays in the appeal process, such as requests for rehearing and rehearing en banc, as well as petitions for certiorari to the US Supreme Court or remands back to the PTAB (see Rehearing and Appeal to the Federal Circuit).

The PTAB does not issue a certificate confirming patentability or cancelling challenged claims until all proceedings, including any appeals, are exhausted (see Issuance of Certificate).

Pre-Institution Proceedings

Pre-institution milestones in an IPR, PGR, or CBM proceeding include:

- Filing the petition for review (see T-6 Months: The Petition).
- The parties' initial disclosures (see T-6 Months to T-3 Months: Initial Disclosures).
- The patent owner's optional preliminary response to the petition (see T-3 Months: The Patent Owner's Preliminary Response (Optional)).
- The PTAB's decision on whether to institute a trial of the challenged claims (see T-0: Decision on Institution).

T-6 Months: The Petition

Petition Filed



The first step to commence any IPR, PGR, or CBM is filing a petition identifying challenged claims and grounds of the patentability challenge. The petition's content is critical because it defines the broadest scope of the patentability challenge. The PTAB is unlikely to consider any unpatentability ground or supporting evidence not included in the petition.

Petition Timing

An **IPR** petition may only be filed:

- For a patent having an effective filing date on or after March 16, 2013 (a patent filed under the AIA's "first-inventor-to-file" patent system), the later of:
 - nine months after the patent's issue date; or
 - the termination of any PGR of the patent.
- After the patent's issue date for a patent having an effective filing date before March 16, 2013 (a patent filed under the pre-AIA "first-to-invent" patent system).

(37 C.F.R. § 42.102(a).)

A **PGR** petition may only be filed within nine months after the patent's issue or reissue date for a first-inventor-to-file patent (37 C.F.R. § 42.202(a)). First-to-invent patents are not eligible for PGR.

CBM is no longer available as of September 16, 2020, though the PTAB will review existing petitions and continue existing CBM proceedings (37 C.F.R. § 42.300(d)).

Filing Limitations: The Declaratory Judgment Bar

The PTAB cannot institute an IPR, PGR, or CBM review if the petitioner or real party in interest has already filed a declaratory judgment action challenging the validity of one or more of the challenged patent's claims (see 35 U.S.C. §§ 315(a), 325(a); AIA § 18 (PL 112-29, § 18, 125 Stat 284 (2011)); *Securebuy, LLC v. CardinalCommerce Corp.*, 2014 WL 1691559 (PTAB Apr. 25, 2014); and 37 C.F.R. § 42.302(c)).

The declaratory judgment bar is not triggered by a:

- Counterclaim or affirmative defense of invalidity in response to the patent owner's infringement claim.
- Suit for declaratory judgment of non-infringement.

(See, for example, *Ariosa Diagnostics v. Isis Innovation Ltd.*, 2013 WL 2181162 (PTAB Feb. 12, 2013).)

After the Federal Circuit's *Click-to-Call* decision regarding the Section 315(b) one-year time bar (see Filing Limitations: The IPR One-Year Bar), a PTAB panel held that voluntary dismissal with prejudice of a declaratory judgment action challenging the patent's validity triggers the Section 315(a) bar (*Cisco Systems, Inc. v. Chrimar Systems, Inc.*, Case No. IPR2018-01511 (PTAB Jan. 31, 2019) citing *Click-to-Call Techs., LP v. Ingenio, Inc.*, 2018 WL 3893119 (Fed. Cir. Aug. 16, 2018) vacated on other grounds by *Thryv, Inc. v. Click-to-Call Techs., Inc.*, 2020 WL 1906544 (Apr. 20, 2020) (35 U.S.C. § 314(d) prohibits appeal of PTAB time bar decision under 35 U.S.C. § 315(b))).

Filing Limitations: The IPR One-Year Bar

The PTAB cannot institute an IPR based on a petition filed more than one year after the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the challenged patent (35 U.S.C. § 315(b)). If the patent owner has served multiple complaints asserting the challenged patent against the petitioner, the PTAB will consider the first complaint's service date to determine whether the one-year bar has been triggered (see *Apple Inc. v. VirnetX*, 2013 WL 8595302 (PTAB Dec. 13, 2013)).

The one-year bar is not triggered if the infringement complaint was filed with a court, but not served on the petitioner, more than one year before the IPR petition (see *Motorola Mobility LLC v. Arrouse*, 2013 WL 2023657 (PTAB Jan. 30, 2013)). On the other hand, the one-year bar is triggered even if the earlier district court action, in which the petitioner was served with a complaint for patent infringement more than one year before filing its petition, was:

- Voluntarily dismissed without prejudice (*Click-to-Call Technologies, LP v. Ingenio, Inc.*, 2018 WL 3893119 (Fed. Cir. Aug. 16, 2018) vacated on other grounds by *Thryv, Inc. v. Click-to-Call Techs., Inc.*, 2020 WL 1906544 (Apr. 20, 2020) (35 U.S.C. § 314(d) prohibits appeal of PTAB time bar decisions under 35 U.S.C. § 315(b))); see also *Luminara Worldwide, LLC v. Iancu*, 2018 WL 3892991 (Fed. Cir. Aug. 16, 2018)).
- Involuntarily dismissed without prejudice (*Bennett Regulator Guards, Inc. v. Atlanta Gas Light Co.*, 2018 WL 2018 WL 4653673 (Fed. Cir. September 28, 2018)).
- Dismissed with prejudice (see *Universal Remote Control, Inc. v. Universal Elecs., Inc.*, 2013 WL 5947708 (PTAB Aug. 26, 2013)).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- Brought by a party without standing or when pleading is otherwise deficient (see *GoPro, Inc. v. 360Heros, Inc.*, 2019 WL 3992792 (PTAB Aug. 23, 2019)(precedential)).
- Dismissed without prejudice for lack of personal jurisdiction (see *Infiltrator Water Techs., LLC, v. Presby Patent Trust*, 2018 WL 4773425 (PTAB Oct. 1, 2018) (precedential)).

“[T]he IPR petitioner bears the ultimate burden of persuasion to show that its petitions are not time-barred under § 315(b) based on a complaint served on an alleged real party in interest more than one year earlier.” With respect to the burden of production, “an IPR petitioner’s initial identification of the real parties in interest should be accepted unless and until disputed by a patent owner.” In order for a patent owner to sufficiently raise the issue, “a patent owner must produce *some* evidence that tends to show that a particular third party should be named a real party in interest.” “A mere assertion that a third party is an unnamed real party in interest, without any support for that assertion, is insufficient to put the issue in dispute.” (*Worlds Inc. v. Bungie, Inc.*, 2018 WL 4262564, *4 (Fed. Cir. 2018) (emphasis in original).)

In *Ventex Co., Ltd. v. Columbia Sportswear North America, Inc.*, the Board addressed factors it will consider when determining whether a real party in interest or privy triggers the Section 315(b) time bar (2019 WL 764130 (PTAB Jan. 24, 2019)(precedential)). Citing the Federal Circuit’s decision in *Applications in Internet Time, LLC v. RPX Corporation*, 897 F.3d 1336 (Fed. Cir. 2018), the Board found that the petitioner’s customer, who had entered into supply and manufacture agreements with the petitioner, was a real party in interest and privy, triggering the bar. For more information, see [Legal Update, Petitioner’s Customer is Real Party in Interest and in Privy with Petitioner Under Section 315\(b\): PTAB](#).

In *Power Integrations, Inc. v. Semiconductor Components Industries, LLC*, the Federal Circuit held that the Board must consider any real party in interest and privy relationships arising after the petition’s filing but before institution, not just up until the petition’s filing date (2019 WL 2454857 (Fed. Cir. Jun. 13, 2019)). There, the petition was time barred because a merger agreement created a real party in interest relationship between the petitioner and an otherwise time-barred third party just four days before institution.

In *Mayne Pharma v. Merck Sharp & Dohme*, however, the Federal Circuit held that the PTAB did not commit reversible error for not applying the time bar where the petitioner failed to identify a real party in interest—its

parent company (2019 WL 2553514 (Fed. Cir. Jun. 21, 2019)). The court reasoned that despite the USPTO’s guidance that it would not permit correcting non-clerical errors in a petition without changing the filing date (80 Fed. Reg. 50,720, 50,721 (Aug. 20, 2015), the PTAB did not err in not changing the filing date and applying the bar because the petitioner did not act in bad faith and the petitioner’s parent company agreed to be bound by any estoppel under Section 315(e).

Filing Limitations: No Same-Party or Issue Joinder

In *Facebook, Inc. v. Windy City Innovations, LLC*, the Federal Circuit overruled the PTAB’s precedential opinion order in *Proppant Express Investments, LLC v. Oren Technologies, LLC*, 2019 WL 1283948 (PTAB Mar. 13, 2019), holding that the clear and unambiguous language of 35 U.S.C. § 315(c) does **not** authorize the PTAB to join:

- A person to a proceeding in which that person is already a party (same-party joinder).
- New issues, including issues that would otherwise be time-barred (issue joinder).

(953 F.3d 1313 (Fed. Cir. 2020).) For more information, see [Legal Update, Section 315\(c\) is Limited to Joining New Parties to Existing IPRs: Federal Circuit](#).

On September 4, 2020, the Federal Circuit denied *en banc* rehearing but issued a modified panel opinion that:

- Confirmed that 35 U.S.C. § 315(c) prohibits same-party and issue joinder.
- Held that 35 U.S.C. § 314(d) **does not preclude** appellate review of a PTAB joinder decision because it is a “separate and subsequent decision” to the institution decision. The Board must:
 - first, determine whether the joinder petition warrants institution, including application of the 35 U.S.C. § 315(b) time bar, which is non-appealable; and
 - second, if instituted, determine whether joinder is appropriate.

(2020 WL 5267975 (Fed. Cir. Sep. 4, 2020).)

Filing Limitations: Forum Selection Clause

The ability to file an IPR petition may also be limited by contract. In *Dodocase Vr, Inc. v. Merchsource, LLC*, the Federal Circuit affirmed the district court’s grant of a preliminary injunction ordering the defendant to withdraw its petitions for IPR and PGR based on a forum selection clause in the parties’ patent license agreement in which the defendant-petitioner agreed not to challenge the

licensed patent's validity, and that any disputes would be litigated in California courts (767 Fed. Appx. 930 (Fed. Cir. 2019) (non-precedential)). Merchsource petitioned for en banc review on May 20, 2019.

The Mandatory Notice Requirement

The petition must include a list of mandatory notices identifying:

- Each real party in interest.
- Any other related judicial or administrative matter that may affect or be affected by a decision in the proceeding.
- Lead and back-up counsel. Lead counsel may designate more than one back-up counsel (37 C.F.R. § 42.10(a)), but should carefully identify back-up counsel because the PTAB may expect any identified back-up counsel to fill in if lead counsel is unavailable.
- Service information.

(37 C.F.R. § 42.8.)

The patent owner must file the same mandatory notices with the PTAB within 21 days of service of the petition (37 C.F.R. § 42.8(a)(2)).

If the information listed in a party's mandatory notices changes, the party must file revised mandatory notices with the PTAB within 21 days of the change (37 C.F.R. § 42.8(a)(3)).

The PTAB also has permitted a petitioner to update its mandatory notices without according the petition a new filing date where the update occurred before institution and was made in good faith without prejudice to the patent owner (see *Adello Biologics LLC v. Amgen Inc.*, PGR2019-00001, Paper 11 (PTAB Feb. 14, 2019)(precedential).)

Petition Content

Unlike a typical patent infringement complaint, a petition for IPR, PGR, or CBM review requires more than notice pleading. Absent good cause, the PTAB strictly limits the petitioner to the patentability challenge grounds identified in the petition and the specific bases supporting those grounds. The petition therefore should conspicuously include detailed arguments and all evidence supporting the patentability challenges in the first instance, to the extent possible. For example, when raising obviousness challenges, the petitioner must provide adequate support regarding a motion to combine references (see, for example, *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-00582, Paper 34 (PTAB Aug. 5,

2019) (informative)). The PTAB has generally not been receptive to arguments:

- Buried in a footnote or an expert declaration (see, for example, *Cisco Sys., Inc. v. C-Cation Techs., LLC*, 2014 WL 4352301, at *5-6 (PTAB Aug. 29, 2014) (declining to consider arguments incorporated from expert declaration)).
- In claim charts, which the PTAB may reject if they include proposed construction, statements of law, or detailed obviousness arguments. The PTAB has held, however, that citing an expert declaration in a claim chart, without more, is acceptable (see, for example, *Google Inc. v. Visual Real Estate, Inc.*, IPR2014-01338, Paper 3 (PTAB Sept. 2, 2014)).

A petitioner generally must file a separate petition for each patent challenged. Each petition must include:

- A statement of the precise relief requested.
- A full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence, including material facts and the governing law, rules, and precedent.

(37 C.F.R. § 42.22.)

The statement of the precise relief requested must specify:

- The statutory grounds of the challenge, including:
 - 35 U.S.C. §§ 102 or 103 in an IPR petition; and
 - 35 U.S.C. §§ 101, 102, 103, or 112 in a PGR or CBM petition.
- How the PTAB should construe each disputed claim. On October 11, 2018, the USPTO published a final rule, effecting new petitions filed on or after November 13, 2018, changing the claim construction standard from the "broadest reasonable construction" standard to the *Phillips*-type approach (83 Fed. Reg. 51340). This standard applies to IPR, PGR, and CBM proceedings before the PTAB.
- Where each claim element is found in the prior art.
- Specific citations to exhibit numbers for the supporting evidence.

(37 C.F.R. §§ 42.104, 42.204, and 42.304.)

The petitioner may also include a statement of material fact with its petition, but one is not required. If the petitioner includes a statement of material fact, the statement should identify each fact in separately numbered paragraphs including specific citations to the supporting portions of the record (37 C.F.R. § 42.22(c)).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

The USPTO has identified the following “top 5” items a PTAB paralegal looks for to determine whether a petition for an IPR, CBM, or PGR should be accorded a filing date as complete:

- Verification that the appropriate fee was successfully paid.
- Identification of the challenged patent and the specific claims being challenged.
- Identification of the real parties in interest.
- Copies of the patents and printed publications relied on in support of the petition.
- Verification that the patent owner was served with the petition (for example, a certificate of service).

The petitioner bears the burden of establishing that alleged prior art was a publicly available printed publication under Section 102. The PTAB has held at the institution stage that the petitioner:

- Did not sufficiently show that a reference was publicly available based on a district court joint statement of uncontested facts identifying the reference as a printed publication, where the joint statement did not involve the petitioner and expressly indicated that it was only for purposes of the district court litigation (*Argentum Pharm. LLC v. Research Corp. Techs., Inc.*, 2016 WL 11676938, *4 (PTAB May 23, 2016) (informative as to section II.B)).
- Sufficiently showed that a reference was publicly available based on testimony that the reference was deposited in a university library, indexed and available for retrieval by the public, and that reprints of the reference bear a copyright and publication date (*Seabery N. Am. Inc. v. Lincoln Global, Inc.*, 2016 WL 6678793, *3 (PTAB Oct. 6, 2016) (informative as to section II.A.i)).
- Sufficiently showed that a drug package insert was publicly available based on a screenshot of an archived FDA webpage from the Internet Archive and testimony from a medical doctor describing the use and accessibility of information on the FDA’s webpage (*Sandoz Inc. v. AbbVie Biotechnology Ltd.*, 2018 WL 2735468, *4 (PTAB June 5, 2018) (informative as to section III.C.1)).
- Did not sufficiently show that a conference paper was publicly accessible because the paper’s copyright date and date stamp did not show that the paper was actually disseminated before the relevant conference date, or otherwise available to interested persons of ordinary skill in the art (*In-Depth Geophysical, Inc. v. ConocoPhillips Co.*, 2019 WL 4239627, *2 (PTAB Sep. 6, 2019) (informative as to section I.E)).

The PTAB has encouraged petitioners to choose their best arguments for the petition and commonly rejects redundant or inferior arguments in favor of the strongest argument in the strongest petition filed against any given patent claim (see *Macauto U.S.A. v. BOS GmbH & KG*, 2013 WL 5947694 (PTAB Jan. 24, 2013) and *Google Inc. v. Unwired Planet, LLC*, 2014 WL 1396978 (PTAB Apr. 8, 2014)). The PTAB also may deny a petition in favor of stronger or better arguments made in a separate petition as to the same claims of the same patent (see, for example, *Medtronic, Inc. v. NuVasive, Inc.*, 2014 WL 4594734 (PTAB Sept. 11, 2014)).

A petition may also include supporting declarations and other evidence, such as copies of the prior art relied on in the petition. However, the PTAB may ignore any arguments not conspicuously presented in the petition.

Petition Word Count Limits

Petitions are limited to:

- 14,000 words for IPRs.
- 18,700 words for PGRs.

(37 C.F.R. § 42.24(a)(1).)

These word count limits for petitions do not include words needed for a table of contents, a table of authorities, mandatory notices under 37 C.F.R. § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing (37 C.F.R. § 42.24(a)(1)).

Petitions must include a certification stating the number of words in the paper (37 C.F.R. § 42.24(d)).

The PTAB generally accepts a party’s certificate of compliance with the word count limits except in obvious cases of abuse, such as where a party:

- Includes excessive words in figures, drawings, or images.
- Deletes spacing between words.
- Uses excessive acronyms or abbreviations.

(PTAB Trial Practice Guide August 2018 Update.)

While these word count limits may seem generous, when many claims, long claims, or multiple grounds of challenge are involved, petitioners commonly file multiple petitions challenging the same patent, with each petition addressing different claims or different challenge grounds.

The PTAB does not review petitions to determine if any claim charts contain arguments.

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

Fee

The fee for each petition can be substantial:

Type of Fee	IPR	PGR
Request Fee	\$19,000 (basic fee) plus \$375 (for each claim over 20, including unchallenged claims from which a challenged claim depends)	\$20,000 (basic fee) plus \$475 (for each claim over 20, including unchallenged claims from which a challenged claim depends)
Post-institution Fee	\$22,500 (basic fee) plus \$750 (for each claim over 20, including unchallenged claims from which a challenged claim depends)	\$27,500 (basic fee) plus \$1050 (for each claim over 20, including unchallenged claims from which a challenged claim depends)
Total	\$41,500 plus excess claim fees	\$47,500 plus excess claim fees

(37 C.F.R. § 42.15(a) and (b).)

The petitioner must pay all fees up front at the time of filing. If the PTAB does not institute a trial or only institutes in part, the petitioner is entitled to a full or partial refund of the post-institution fee.

Rule 11-Type Certification to PTAB

All papers filed with the PTAB in a proceeding on or after May 2, 2016 are subject to the following:

- Any paper filed in a proceeding must comply with the signature requirements set forth in 37 C.F.R. § 11.18(a) (37 C.F.R. § 42.11(b)).
- By presenting a paper to the PTAB, an attorney, registered practitioner, or unrepresented party attests to compliance with the certification requirements under 37 C.F.R. § 11.18(b)(2) (37 C.F.R. § 42.11(c)).
- If the PTAB finds a violation of the above rule, it may impose, after notice and a reasonable opportunity to respond, an appropriate sanction on any attorney,

registered practitioner, or party that violated the rule or is responsible for the violation (37 C.F.R. § 42.11(d)(1)).

- After the PTAB's authorization, a motion for sanctions may be filed based on a violation of the above rule. At least 21 days prior to seeking authorization to file a motion for sanctions, the moving party must serve the other party with the proposed motion. A motion for sanctions must not be filed if the alleged violation is cured within 21 days after service of such motion (37 C.F.R. § 42.11(d)(2)).

Parallel Petitions Challenging the Same Patent

The PTAB anticipates that a single petition is sufficient to challenge a patent, but recognizes that in rare circumstances more than one petition may be necessary, such as where the patent owner has asserted many claims in litigation or the parties dispute the priority date and must therefore present arguments under multiple prior art references. When filing more than one petition against a patent, the petitioner must, in the petition or a separate, five-page filing:

- Rank the petitions based on merit.
- Explain:
 - the material differences between the petitions (preferably in table form); and
 - why the Board should institute two petitions if it determines the petitioner has satisfied the institution threshold for one of them under Section 314(a).

(See [PTAB Trial Practice Guide 2019 Update](#) at 26-27.)

Notices In Response To Petition

In the weeks after the petition is filed, the PTAB will issue a notice indicating if it has accorded the petition a filing date, or if instead there are any defects in the petition. The following are official representative examples of notices the PTAB may issue:

- Notice of Filing Date Accorded (see *Liberty Mutual Ins. Co. v. Progressive Casualty Ins. Co.*, CBM2012-00002, Paper 4, (PTAB Sept. 21, 2012) (for a CBM) and *CBS Interactive Inc. v. Helferich Patent Licensing, LLC*, IPR2013-00033, Paper 14, (PTAB Oct. 26, 2012) (for an IPR)).
- Notice of Defective Petition (see *Macauto U.S.A. v. Baumeister & Ostler GmbH & Co.*, IPR2012-00004, Paper 6, (PTAB Sept. 27, 2012)).
- Notice of Incomplete Petition (see *Ariosa Diagnostics v. Isis Innovation Ltd.*, IPR2012-00022, Paper 5, (PTAB Sept. 27, 2012)).

These representative notices reflect early practice of the PTAB. Although they have not been updated on the PTAB's website of Representative Notices, the PTAB has continued to refine its practice since, including its rules regarding claim charts in a petition.

Motion to Correct Clerical Mistakes in the Petition

A petitioner may file a motion to correct a clerical or typographical mistake in the petition, which does not change the petition's filing date (37 C.F.R. § 42.104(c)). When deciding whether to permit correction, the PTAB considers factors including:

- The nature of the error, and whether the petitioner provides adequate explanation for how the error occurred and was discovered.
- The amount of time between learning of the error and bringing the error to the Board's attention.
- Prejudice to the patent owner, if any, by allowing the proposed corrections.
- Whether the proposed corrections have any impact on the proceeding.

(*Sweegen, Inc. v. Purecircle Sdn Bhd*, PGR2020-00070, Paper 9 at 5 (PTAB September 22, 2020) (citation omitted) (denying petitioner's request to add purportedly inadvertently omitted data to a laboratory report included in expert declarations supporting the petition because the correction would introduce "substantive new evidence").

T-6 Months to T-3 Months: Initial Disclosures

Mandatory Initial Disclosures: Agreement Reached

Once the petition is filed, the parties may begin negotiating the scope of mandatory initial disclosures.

If the parties agree to the scope of initial disclosures, they must submit that agreement by the earlier of:

- The time the patent owner files its preliminary response.
- The preliminary response due date (T-3 months).

(37 C.F.R. § 42.51(a)(1)(i).)

If the PTAB institutes a trial within three months of the patent owner's preliminary response, the parties may automatically take discovery of the information identified in the initial disclosures (37 C.F.R. § 42.51(a)(1)(ii)).

If the parties agree to the scope of mandatory initial disclosures, they may choose:

- **Option 1.** This option is modeled after the Federal Rule of Civil Procedure (FRCP) 26(a)(1)(A) and requires a basic exchange of information, such as:
 - the names, addresses, and telephone numbers of individuals likely to have discoverable information; and
 - copies of documents that a party may use to support its position.
- **Option 2.** This more extensive option includes:
 - the disclosures from Option 1;
 - additional contact information of individuals with knowledge of non-published prior art if the petition seeks to cancel claims based on a non-published disclosure; and
 - additional information regarding secondary considerations of non-obviousness if the petition seeks to cancel claims based on obviousness.

(See Trial Practice Guide, 77 Fed. Reg. at 48762 and *Carestream Health, Inc. v. Smartplates, LLC*, IPR2013-00600, Paper 8 (PTAB Dec. 26, 2013) (agreement under Option 1).)

Mandatory Initial Disclosures: No Agreement Reached

It may be more likely that the parties will disagree on the scope of mandatory initial disclosures, in which case they must file a motion to obtain any additional discovery they seek (see 37 C.F.R. § 42.51(a)(2); see Patent Owner Additional Discovery and Petitioner Additional Discovery).

T-3 Months: The Patent Owner's Preliminary Response (Optional)



Preliminary Response Timing

The patent owner may elect to file a preliminary response to an IPR, PGR, or CBM petition within three months of the PTAB's notice according a filing date to the petition (37 C.F.R. §§ 42.107(b) and 42.207(b)).

The preliminary response may either:

- Identify the reasons why the PTAB should not institute a trial (see Preliminary Response Content).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- State that the patent owner declines to respond to the petition (see Trial Practice Guide, 77 Fed. Reg. at 48757).

The PTAB must determine whether to institute a proceeding within three months of the patent owner's preliminary response or the preliminary response due date, whichever is earlier. The patent owner may therefore attempt to expedite the proceedings by waiving its preliminary response (37 C.F.R. §§ 42.107(b) and 42.207(b)). Waiving a preliminary response does not result in an adverse inference against the patent owner (see Trial Practice Guide, 77 Fed. Reg. at 48764).

The PTAB also allows the patent owner at its option to include an expert declaration with its preliminary response (37 C.F.R. §§ 42.107(a) and 42.207(a)). Typically, no depositions of experts will be conducted before institution. If a patent owner submits a declaration with its preliminary response, the petitioner may seek leave to submit a reply to address the declaration but any such request must make a showing of good cause. To the extent a factual dispute is raised by competing declarations, the PTAB will, for purposes of the decision on institution, view all factual disputes in favor of the petitioner. (37 C.F.R. §§ 42.108(c) and 42.208(c).)

Preliminary Response Content

A patent owner's preliminary response:

- Is limited to stating the reasons why the PTAB should not institute a trial.
- May present supporting evidence, including new testimonial testimony (for example, expert declaration).
- May not include any claim amendment.
- May disclaim challenged patent claims, which precludes review of those claims (see *General Elec. Co. v. United Techs. Corp.*, 2017 WL 2891110 (PTAB July 6, 2017)(precedential) (denying institution where patentee disclaimed the challenged claims under 37 C.F.R. 42.107(e)).

(37 C.F.R. §§ 42.107 and 42.207.)

Patent owner preliminary responses commonly include arguments such as:

- The petitioner is statutorily barred from pursuing a review.
- The asserted references are not in fact prior art.
- The prior art:
 - lacks a material limitation present in all of the independent claims; or
 - teaches or suggests away from an obviousness combination that the petitioner is advocating.

- The petitioner's proposed construction of the challenged claims is unreasonable.
- A brief explanation of how the challenged claims are directed to a patent-eligible subject matter, if a PGR or CBM petition challenges patentability under 35 U.S.C. § 101.
- Reasons why the PTAB should deny institution under 35 U.S.C. § 314 and/or § 325(b).

(See Trial Practice Guide, 77 Fed. Reg. at 48764 and [PTAB Trial Practice Guide 2019 Update](#) at 19.)

Where the petitioner has filed more than one petition against the patent, the patent owner may, in its preliminary response or in a separate five-page filing, explain:

- Why the board in its discretion should not institute more than one petition.
- Why the differences between the petitions are not material (and proffer any necessary stipulations regarding, for example, undisputed limitations or qualifying prior art).

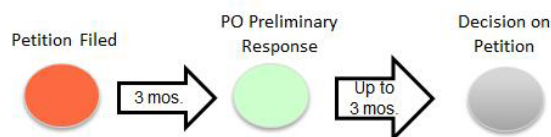
(See [PTAB Trial Practice Guide 2019 Update](#) at 28 and [Parallel Petitions Challenging the Same Patent](#).)

The USPTO maintains updated statistics of patent owner preliminary responses and other filing rates on its [website](#).

Preliminary Response Word Count Limit

The word count limit for patent owner preliminary responses is the same as the word count limit for the petition (37 C.F.R. § 42.24(b)(1); see [Petition Word Count Limits](#)).

T-0: Decision on Institution



Institution Timing

The PTAB must determine whether to institute a trial within three months of the earlier of:

- The patent owner's preliminary response filing.
- The preliminary response due date.

(See Trial Practice Guide, 77 Fed. Reg. at 48757.)

The PTAB's institution decision will take into account any testimonial evidence provided by the patent owner along with its preliminary response. If a genuine issue of material fact is created by such testimonial evidence, the issue will be resolved in favor of petitioner solely for institution purposes so that petitioner will have an opportunity to cross-examine the declarant during the trial (37 C.F.R. §§ 42.108 and 42.208).

Institution Thresholds

In its decision on institution, the PTAB identifies any patentability challenges that will be part of the trial. Before the US Supreme Court's decision in *SAS Institute Inc. v. Iancu*, 2018 WL 1914661 (U.S. Sup. Ct. Apr. 24, 2018), the PTAB would only institute trial on those challenged claims for which the petition has satisfied the threshold standard for instituting trial and issue a final written decision only on the instituted claims. In *SAS Institute Inc.*, however, the Supreme Court held that when the USPTO institutes an IPR it must issue a final written decision addressing the patentability of all of the claims the petitioner challenged in the petition.

Even where a petitioner shows a reasonable likelihood of prevailing on some claims or grounds, the PTAB may still use its discretion not to institute where the petition presents many likely unsuccessful grounds. In *BioDelivery Sciences International, Inc. v. Aquestive Therapeutics, Inc.*, the Federal Circuit held that 35 U.S.C. § 314(d) barred review of the PTAB's decision to terminate previously-instituted IPRs that had been remanded to the PTAB following *SAS*, where the PTAB had instituted based only on one ground in each of the three petitions (2019 WL 4062525 (Fed. Cir. Aug. 29, 2019)).

In two decisions designated informative, the PTAB also denied institution under 35 U.S.C. § 315(a) where the petitioner demonstrated a reasonable likelihood of prevailing only as to:

- Two claims out of 20 challenged claims (*Chevron Oronite Co. LLC v. Infineum USA L.P.*, 2018 WL 5862245 (PTAB Nov. 7, 2018)).
- Two claims out of 23 challenged claims and only as to one of four asserted grounds of patentability (*Deeper, UAB v. Vexilar, Inc.*, 2019 WL 328753 (PTAB Jan. 24, 2019)).

The institution threshold differs across proceedings:

- For **IPR**, the petition and any preliminary response must show that there is a reasonable likelihood that the petitioner would prevail on at least one of the challenged claims (35 U.S.C. § 314(a)).

- For **PGR**, the petition and any preliminary response must show that it is more likely than not (greater than 50%) that at least one of the challenged claims is unpatentable. The petition also may satisfy the "more likely than not" standard if it raises a novel or unsettled legal question that is important to other patents or patent applications (35 U.S.C. § 324(a)).
- For **CBM**, as a subset of PGR, the petition and any preliminary response must show that it is more likely than not that at least one of the challenged claims is unpatentable (see AIA § 18 (PL 112-29, § 18, 125 Stat 284 (2011)). The challenged patent must also meet the definition of a covered business method patent, which is one that:
 - claims a method or corresponding apparatus for performing data processing or other operations used in a financial product or service (AIA § 18(d)(1); 37 C.F.R. § 42.301(a)); and
 - does not claim a technological invention (AIA § 18(d)(1); 37 C.F.R. § 42.301(b)).

In *Unwired Planet, LLC v. Google Inc.*, the Federal Circuit held that "the Board's reliance on whether the patent claims activities 'incidental to' or 'complementary to' a financial activity as the legal standard to determine whether a patent is a CBM patent was not in accordance with the law." (841 F.3d 1376, 1382 (Fed. Cir. 2016), *reh'g en banc denied*, 682 Fed. Appx. 928 (Fed. Cir. Apr. 4, 2017), *cert. denied*, *Google LLC v. Unwired Planet, LLC* (U.S. Apr. 30, 2018)). The court noted that the statute's definition of covered business method is paramount, and "the Board's application of the 'incidental to' and 'complementary to' language from the PTO policy statement instead of the statutory definition renders superfluous the limits Congress placed on the definition of a CBM patent." (*Unwired*, 841 F.3d at 1382).

The PTAB also considers whether the trial can be completed within the 18-month time period allowed by statute (see Timing).

Precedential, Representative, and Informative Institution Decisions

The USPTO has also identified several representative institution decisions in which the PTAB:

- Conducted independent claim construction even though the patent owner had not challenged petitioner's proposed constructions (see *Microsoft Corp. v. ProxyConn, Inc.*, 2012 WL 10703131 (PTAB Dec. 21, 2012)).
- Broadly defined a "covered business method" patent (see *SAP Am., Inc. v. Versata Dev. Grp., Inc.*, 2013 WL 5947661 (PTAB Jan. 9, 2013)).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- Did not adopt patent owner’s claim construction positions taken in a related infringement litigation (see *Garmin Int’l, Inc. v. Cuozzo Speed Techs. LLC*, 2013 WL 5947691 (PTAB Jan. 9, 2013)).
- Refused to consider unpatentability arguments that were not clearly tied to the challenged claims (see *Microstrategy, Inc. v. Zillow, Inc.*, 2013 WL 6327763 (PTAB Apr. 22, 2013) (on rehearing of institution decision)).
- Applied estoppel under 35 U.S.C. § 315(e) to art that “could have been raised” in a prior proceeding, but not against claims that were not instituted (*Dell, Inc. v. Elecs. and Telecomms. Research. Inst.*, 2015 WL 1731182 (PTAB Mar. 26, 2015)).
- Applied estoppel under 35 U.S.C. § 325(e) on a claim-by-claim basis only against claims included in the Final Written Decision, even if otherwise included in the petition (*Westlake Services LLC v. Credit Acceptance, Inc.*, 2015 WL 9699417 (PTAB May 14, 2015)).
- Denied institution under 35 U.S.C. § 314(a) where the petition did not identify the asserted challenges with particularity under 35 U.S.C. § 312(a)(3), resulting in voluminous and excessive grounds (*Adaptics Ltd. v. Perfect Co.*, 2019 WL 1084284 (PTAB Mar. 6, 2019)(informative)(Petitioner identified up to ten references and seventeen possible obviousness combination, including a “catch-all” ground)).
- Denied institution under 35 U.S.C. § 314(a) where the petitioner failed to show that elements of the cited references could have been predictably combined (*Johns Manville Corp. v. Knaf Insulation, Inc.*, 2018 WL 5098902 (PTAB Oct. 16, 2018)(informative)).
- Denied institution under 35 U.S.C. § 325(d) because the petition presented the same or substantially the same prior art previously presented to the USPTO and that the petitioner failed to show that the Examiner materially erred as to the patentability of challenged claims. The PTAB established a two-part framework to determine whether to exercise its discretion to deny review. First, it looks at whether the same or substantially the same art or arguments were previously presented by the office. If so, it then looks at whether the petitioner demonstrated that the office erred “in a manner material to the patentability of challenged claims” when it issued the patent (*Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, 2020 WL 740292 (PTAB Feb. 13, 2020) (precedential)).
- Denied institution under 35 U.S.C. § 325(d) because the Examiner rejected the challenged claims twice during prosecution over the same obviousness grounds raised in the petition, and the petitioner failed to show examiner error (*PUMA North America, Inc. v. NIKE, Inc.*, 2019 WL 5681212 (PTAB Oct. 31, 2019) (informative)).
- Granted institution in view of 35 U.S.C. § 325(d) because the art cited in the petition was not substantially the same as the art considered during prosecution, and the Examiner erred in not considering the art during prosecution (*Oticon Medical AB v. Cochlear Limited*, 2019 WL 5237817 (PTAB Oct. 16, 2019) (precedential as to sections II.B and II.C)). The panel distinguished *NHK Spring Co. v. IntriPlex Technologies, Inc.*, 2018 WL 4373643 (PTAB Sept. 12, 2018) (precedential), because the district court had not set a trial date in the related litigation, and the IPR would not be directly duplicative of the district court’s validity determination.
- Instituted post-grant review proceeding for a design patent after finding the petitioner showed it was more likely than not that the claimed portions of the design were primarily functional, not ornamental (*Sattler Tech. Corp. v. Humancentric Ventures, LLC*, 2019 WL 3385172 (PTAB July 26, 2019) (informative)).

The USPTO maintains a list of PTAB Representative Orders, Decisions, and Notices on its [website](#). For additional representative PTAB decisions, see [Practice Note, USPTO America Invents Act Trial Tracker \(PTAB\)](#).

General Plastic Factors

The PTAB has also noted that it considers several non-exclusive factors (the “General Plastic factors”) in exercising its discretion under 35 U.S.C. Section 314(a) or Section 324(a) when instituting IPR, especially for follow-on petitions challenging the same patent previously challenged in an IPR, PGR, or CBM, including:

- Whether the same petitioner previously filed a petition directed to the same claims of the same patent.
- Whether, when the petitioner filed the first petition, it knew, or should have known, of the prior art asserted in the second petition.
- Whether, when the petitioner filed the second petition, it already received the patent owner’s preliminary response to the first petition or received the PTAB’s decision on whether to institute review on the first petition.
- The time period between when the petitioner learned of the prior art asserted in the second petition and the filing of the second petition.
- Whether the petitioner provides an adequate explanation for the delay between the filing of multiple petitions directed to the same claims of the same patent.

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- The PTAB's resources.
- The requirement for the PTAB to issue a final determination not later than one year after the date of institution.

(See *General Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha*, 2017 WL 3917706 (PTAB Sept. 6, 2017) and [PTAB Trial Practice Guide August 2018 Update](#).)

On May 7, 2019, the PTAB designated as precedential its April 2, 2019 decision in *Valve Corp. v. Elec. Scripting Prods., Inc.* (2019 WL 1490575 (PTAB Apr. 2, 2019)) (“*Valve I*”) (denying institution in view of *General Plastic* factors)). In *Valve I*, the Board denied institution of three petitions that followed on a petition against overlapping claims of the same patent filed by another party, for which the Board denied institution. The Board:

- Held that application of the *General Plastic* factors is not limited to instances when multiple petitions are filed by the same petitioner.
- Explained that when different petitioners challenge the same patent, the Board considers any relationship between those petitioners when weighing the *General Plastic* factors. Here, the petitioner was a co-defendant with and licensed the accused technology to the initial petitioner.

On August 2, 2019, the PTAB designated as precedential its related decision in *Valve Corp. v. Electronic Scripting Prods., Inc.* (2019 WL 1965688 (PTAB May 1, 2019)) (“*Valve II*”). In *Valve II*, the Board elaborated on *General Plastic* factor one (“whether the same petitioner previously filed a petition directed to the same claims of the same patent”), noting that the factor applies to a petitioner that joins an IPR (as a co-defendant in district court litigation) even where it has not previously filed a petition.

For more on the PTAB's approach to applying the *General Plastic* factors, see [PTAB Trial Practice Guide 2019 Update](#) at 23-26.

Becton, Dickinson Factors

The PTAB has also noted the following non-exclusive factors (the “*Becton, Dickinson* factors”) when determining under 35 U.S.C. Section 325(d) whether to institute IPR, PGR, or CBM when the same or substantially the same prior art or arguments were previously presented to the USPTO:

- The similarities and material differences between the asserted art and the prior art previously evaluated.
- The cumulative nature of the asserted art and the prior art previously evaluated.

- The extent to which the asserted art was previously evaluated.
- The extent of the overlap between the previous arguments and the manner in which the petitioner relies on or the patent owner distinguishes the prior art.
- Whether the petitioner sufficiently explained how the USPTO erred in evaluating the prior art.
- The extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

(See *Becton, Dickinson and Co. v. B. Braun Melsungen AG*, 2017 WL 6405100 (PTAB Dec. 15, 2017) and [PTAB Trial Practice Guide August 2018 Update](#).) On August 2, 2019, the PTAB designated precedential the portion of the decision discussing these factors. “The factors set forth in *Becton, Dickinson* should be read broadly, however, to apply to any situation in which a petition relies on the same or substantially the same art or arguments previously presented to the Office during a proceeding pertaining to the challenged patent” (*Advanced Bionics*, 2020 WL 740292 at *4 (discussing weight, breadth and order in which such factors should be weighed)).

In *Advanced Bionics*, the PTAB also established a two-part framework to determine whether to exercise its discretion to deny review. First, it looks at whether the same or substantially the same art or arguments were previously presented by the office. If so, it then looks at whether the petitioner demonstrated that the office erred “in a manner material to the patentability of challenged claims” when it issued the patent (*Advanced Bionics*, 2020 WL 740292 at *3).

On May 7, 2019, the PTAB designated as precedential its September 12, 2018 decision in *NHK Spring Co., Ltd. v. Intri-Plex Techs., Inc.* (2018 WL 4373643 (PTAB Sep. 12, 2018)) (denying institution in view of *Becton, Dickinson* factors)). In *NHK*, the Board denied institution:

- As redundant under 35 U.S.C. § 325(d) in view of the *Becton, Dickinson* factors based on the USPTO's prior consideration of the petition's primary reference during the challenged patent's prosecution.
- In its discretion under 35 U.S.C. § 314(a) as an inefficient use of the Board's resources based on the advanced state of the related district court litigation.

Parallel District Court Litigation

In a decision designated precedential on May 5, 2020, the PTAB discussed the Section 314(a) discretionary denial factors in view of *NHK* and noted that when a patent

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

owner argues for discretionary denial under *NHK* in view of parallel district court litigation, the Board generally balances these factors:

- Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted.
- Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision. The Board is more likely to deny institution where the district court trial date is before the final written decision deadline, and less likely to deny institution where the trial date is contemporaneous with or later than the final written decision date, in view of the other factors.
- Investment in the parallel proceeding by the court and the parties.
- Overlap between issues raised in the petition and in the parallel proceeding.
- Whether the petitioner and the defendant in the parallel proceeding are the same party.
- Other circumstances that impact the Board's exercise of discretion, including the merits.

(*Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential).)

Applying these factors, the PTAB subsequently denied institution because:

- The district court trial was scheduled to begin two months before the final written decision's due date.
- The district court had invested in the validity issues.
- There was a substantial overlap in the patentability challenges.
- The petition was not strong on the merits.

(*Apple Inc. v. Fintiv, Inc.*, 2020 WL 2486683 (PTAB May 13, 2020) (informative).)

In contrast, the Board has instituted review in view of the *Fintiv* factors where:

- It was uncertain whether the trial would take place before the final written decision.
- The district court had not made a significant investment in the validity issues.
- The petitioner stipulated not to raise in the district court the same patentability grounds raised in the IPR.
- The petition was strong on the merits.

(*Sand Revolution II, LLC v. Continental Intermodal Group – Trucking LLC*, 2020 WL 3273334 (PTAB June 16, 2020) (informative).)

Applying the *Fintiv* factors in the **PGR context**, the Board has denied institution under Section 324(a) where:

- There was no district court record evidence that a stay would be granted.
- The district court trial would occur seven to ten months before the Board's final written decision (even though the district court had not invested significantly in the case).
- The same statutory grounds, arguments, and prior art were at issue across proceedings.
- The petitioner and district court defendant were the same party.
- Other circumstances supported denying institution under Section 324(a), including that:
 - fairness and efficiency in view of *Fintiv* and *NHK* supported denial in the PGR context as well, even though PGR proceedings are for early challenges of issued patents; and
 - petitioner's ineligibility and obviousness challenges appeared to be strong on the merits.

(*Supercell Oy v. GREE, Inc.*, 2020 WL 5991726 (PTAB Oct. 9, 2020).)

Seeking Rehearing of the Decision on Institution

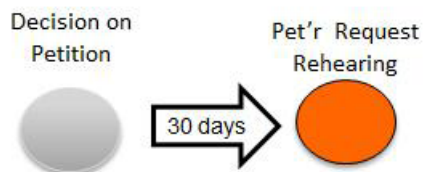
The PTAB's institution decision is final and nonappealable (35 U.S.C. §§ 314(d) and 324(e)). A party dissatisfied with a decision may request a rehearing of an institution decision by a PTAB panel, but may only file a single rehearing request as of right (see 37 C.F.R. § 42.71(d)). The PTAB is generally reluctant to grant rehearing requests, however, and a party requesting rehearing of an institution decision may face an uphill battle.

Separate timelines and procedures exist for seeking rehearing of a PTAB institution decision depending on whether the PTAB has:

- Declined to institute a trial on any challenged claim (see Requesting Rehearing of a Decision Not to Institute a Trial).
- Instituted a trial on the challenged claims (see Requesting Rehearing of a Decision to Institute Trial).

Requesting Rehearing of a Decision Not to Institute a Trial

T+30 Days: Petitioner's Rehearing Request



If the PTAB does not institute a trial, the petitioner may file a rehearing request, without the PTAB's prior authorization, within 30 days of the PTAB's entry of its decision (37 C.F.R. § 42.71(d)(2)). This differs from the 14 day period for seeking rehearing of a decision to institute a trial because a decision not to institute a trial is a final decision.

The petitioner bears the burden of proof in the rehearing request and a panel reviews the decision not to institute for an abuse of discretion (37 C.F.R. § 42.71(c) and Trial Practice Guide, 77 Fed. Reg. at 48768).

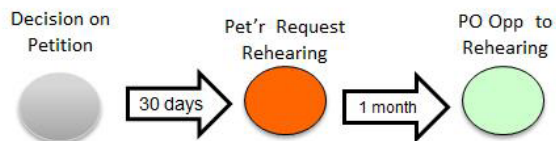
The rehearing request must specifically identify:

- All matters the PTAB misapprehended or overlooked.
- Where each matter was previously addressed in a motion, opposition, or reply.

(See 37 C.F.R. § 42.71(d) and *MicroStrategy, Inc. v. Zillow, Inc.*, 2013 WL 6327763 (PTAB Apr. 22, 2013).)

A petitioner may not present new evidence or arguments in a rehearing request without good cause (see *Larose Indus., LLC v. Choon's Design, LLC*, 2014 WL 2741646 (PTAB June 16, 2014)).

T+2 Months: Patent Owner's Opposition to Rehearing Request



A patent owner's opposition to a rehearing request is due one month after service of the rehearing request (37 C.F.R. § 42.25). The patent owner must receive the PTAB's authorization to file an opposition (see Trial Practice Guide at 48768 and *Illumina Inc. v. The Tr. of Columbia Univ. in the City of New York*, 2013 WL 8149386 (PTAB May 10, 2013) and *Illumina Inc. v. The Tr. of Columbia Univ.*, 2013 WL 5653110 (PTAB May 10, 2013)).

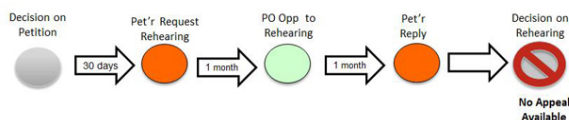
Columbia Univ. in the City of New York, 2013 WL 8696617 (PTAB Apr. 17, 2013)). The PTAB may decline to consider any unauthorized patent owner response to a rehearing request (see *Sony Corp., v. Tisum Research Dev. Co. of the Hebrew Univ. of Jerusalem*, 2013 WL 6514069 (PTAB Nov. 21, 2013)).

T+3 Months: Petitioner's Reply



If a patent owner submits an authorized opposition to a petitioner's rehearing request, the petitioner must obtain the PTAB's authorization to submit a reply brief in further support of its rehearing request. Any reply is due one month after the opposition (see 37 C.F.R. § 42.25 and *Sony Corp. v. Tisum Research Dev. Co. of the Hebrew Univ. of Jerusalem*, 2013 WL 6514069 (PTAB Nov. 21, 2013)).

Decision on Request for Rehearing after Denying Trial



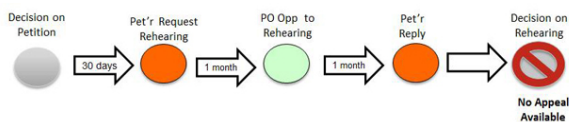
The PTAB determines whether to grant rehearing any time after the parties have either exhausted or been denied their requested rehearing filings.

Early PTAB decisions show that the PTAB has been reluctant to grant requests for rehearing of its institution decisions. In denying rehearing requests, the PTAB has emphasized that a rehearing petition must explain in detail what the PTAB misapprehended or overlooked regarding specific portions of the disclosed prior art.

One petitioner has successfully requested rehearing in three related IPRs, however, where it identified specific differences between two prior art publications and where the PTAB had instituted an IPR based on one of the publications, but denied IPR as redundant as to the other. On request for rehearing, the PTAB agreed that the prior art publications were not redundant and modified the institution decision to include a patentability challenge based on both publications (see *Illumina Inc. v. The Tr. of Columbia Univ. in the City of New York*, 2013 WL 8149386 (PTAB May 10, 2013) and *Illumina Inc. v. The Tr. of Columbia Univ.*, 2013 WL 5653110 (PTAB May 10, 2013)).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

No Appeal is Available



While a party may request a rehearing of an institution decision, neither the decision nor a rehearing decision affirming non-institution is appealable to the Federal courts (see 35 U.S.C. §§ 314(d), 324(e); and *Dominion Dealer Solutions, LLC v. Lee*, 2014 WL 1572061 (E.D. Va. Apr. 18, 2014), *aff'd* 749 F.3d 1379 (Fed. Cir. 2014)).

Requesting Rehearing of a Decision to Institute Trial

T+14 Days: Patent Owner Request for Rehearing on Decision to Institute Trial



If the PTAB institutes a trial, the patent owner may request a rehearing of the institution decision and the petitioner may request a rehearing as to claims or unpatentability grounds for which the PTAB denied institution.

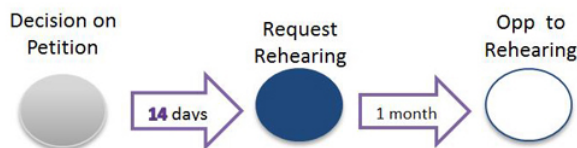
Because, unlike a decision not to institute a trial, a decision to institute an IPR is a non-final decision, a party must file any rehearing request within 14 days of the PTAB's entry of the decision (37 C.F.R. § 42.71(d)(1)).

As with a request for rehearing of a decision denying institution, the rehearing request must specifically identify all matters the PTAB misapprehended or overlooked and where the matter was previously addressed in the record (37 C.F.R. § 42.71(d) and Trial Practice Guide, 77 Fed. Reg. at 48768).

Absent a showing of good cause, the PTAB will not admit new evidence in a rehearing request that the parties did not raise in the pre-institution filings. For example, the PTAB has refused to consider rehearing exhibits not included in the patent owner's preliminary response, holding that a rehearing request is not an opportunity

to supplement the parties' initial filings or raise new arguments (see *BAE Sys. Info. and Elec. Sys. Integration, Inc. v. Cheetah Omni, LLC*, 2013 WL 5653116 (PTAB July 23, 2013)).

T+1.5 Months: Opposition to Rehearing Brief



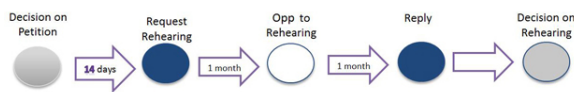
A party must receive the PTAB's authorization to file an opposition to a rehearing request (Trial Practice Guide, 77 Fed. Reg. at 48768). Any authorized opposition is due one month after service of the rehearing request (37 C.F.R. § 42.25).

T+2.5 Months: Reply to Opposition Brief



If a party files an authorized opposition to a rehearing request, the party seeking rehearing must receive the PTAB's authorization to file a reply within one month of service of the opposition (see 37 C.F.R. § 42.25).

Decision on Rehearing

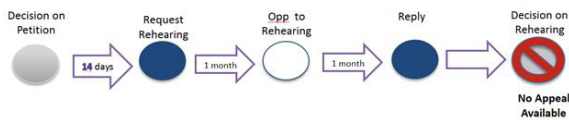


The PTAB determines whether to grant rehearing any time after the parties have either exhausted or been denied their requested rehearing filings. If no opposition is filed, the PTAB will likely decide the rehearing request one month after the rehearing request is filed (see Trial Practice Guide, 77 Fed. Reg. at 48768).

As with requests for rehearing of decisions not to institute trial, the PTAB has been reluctant to grant requests for rehearing of a decision to institute trial. However, in at least one case the PTAB has granted a patent owner's rehearing request where the patent owner specifically identified arguments in its preliminary response that the PTAB had overlooked in instituting trial (see *Veeam Software Corp. v. Symantec Corp.*, 2013 WL 8696284 (PTAB Sept. 30, 2013)).

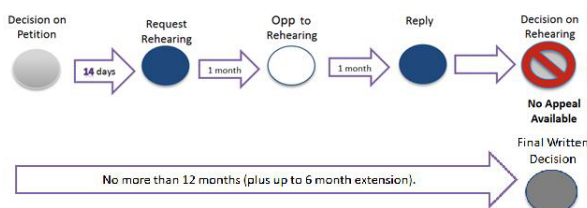
Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

No Appeal is Available



The PTAB's institution decision, including its decision on rehearing, is final and not appealable to the federal courts (see 35 U.S.C. §§ 314(d) and 324(e)).

Proceeding on Instituted Claims Continues in Parallel



Because the PTAB must enter a final written decision within one year of instituting trial, unless that time is extended by up to six months for good cause, a request for rehearing of a decision to institute trial will not toll the deadlines for other actions in the proceedings (see 37 C.F.R. § 42.71(d)). The trial proceedings will therefore continue in parallel with any rehearing proceedings.

Post-Institution Proceedings Leading to the Hearing

Once the PTAB has issued an order to institute a trial on the challenged claims, the trial proceeds with the following key milestones:

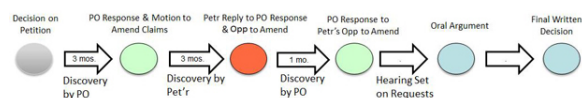
- Entry of a Scheduling Order and an initial conference call with the PTAB (see T-0 Months: Entry of Scheduling Order and Initial Conference Call).
- Discovery by the patent owner (see T-0 to T+3 Months: Discovery by Patent Owner).
- The patent owner's response to the petition and motion to amend claims (see T+3 Months: Patent Owner Response and Motion to Amend Claims).
- Discovery by the petitioner (see T+3 Months to T+6 Months: Discovery by Petitioner).
- The petitioner's reply in response to the patent owner's opposition and the petitioner's opposition to the patent owner's motion to amend (see T+6 Months: Petitioner Reply to Patent Owner Response and Opposition to Motion to Amend).

- A second discovery period by the patent owner (see T+6 Months to T+7 Months: Second Patent Owner Discovery Period).
- The patent owner's reply to the petitioner's opposition to the motion to amend (see T+7 Months: Patent Owner Reply to Petitioner's Opposition to Motion to Amend).
- The petitioner's sur-reply on a motion to amend (optional with leave).
- Pre-hearing proceedings (see Pre-Hearing Proceedings).
- Oral argument (see Oral Argument).
- The PTAB's final written decision (see Final Written Decision).

T-0 Months: Entry of Scheduling Order and Initial Conference Call

If the PTAB institutes trial, it will enter a scheduling order along with its institution decision (see Trial Practice Guide, 77 Fed. Reg. at 48757). Within one month of instituting trial, the PTAB may on request hold a conference call with the parties to discuss the scheduling order and any motions the parties anticipate filing during the trial (see Trial Guide, 77 Fed. Reg. at 48765). The PTAB generally requires a list of the parties' proposed motions, if any, at least two business days before the conference call to provide the parties adequate notice to prepare for the conference call. The PTAB may require prior authorization if a party seeks to file any motion not included in the pre-conference list of proposed motions (see Trial Guide, 77 Fed. Reg. at 48765).

The scheduling order guides the proceedings to their conclusion within the statutory one-year time limit, unless an extension of up to six months is granted for good cause by the Chief Administrative Patent Judge or if the schedule is adjusted by the PTAB in the case of joinder (37 C.F.R. §§ 42.100(c), 42.200(c), and 42.300(c)).



The August 2018 update to the trial practice guide provides an exemplary scheduling order that includes the following important default deadlines:

- **DUE DATE 1:** Patent owner response to the petition and authorized motion to amend (three month default time).
- **DUE DATE 2:** Petitioner reply to the patent owner's response and opposition to patent owner's motion to amend (three month default time).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- **DUE DATE 3:** Patent owner sur-reply to reply and reply to the petitioner's opposition (one month default time).
- **DUE DATE 4:** Petitioner sur-reply to reply to opposition to motion to amend and parties' motion to exclude evidence (one month default time).
- **DUE DATE 5:** Opposition to motion to exclude (one week default time).
- **DUE DATE 6:** Reply to opposition to motion to exclude and request for prehearing conference (one week default time).
- **DUE DATE 7:** Oral argument (two week default time).

(PTAB Trial Practice Guide August 2018 Update.)

The parties may:

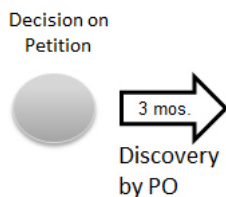
- Stipulate different dates for DUE DATES 1-5, but no later than DUE DATE 6.
- Not stipulate to an extension of DUE DATES 6-7 or to the requests for oral hearing.

(see PTAB Trial Practice Guide August 2018 Update.)

The USPTO has identified several cases with representative scheduling orders, including:

- *Microsoft Corp. v. Proxyconn, Inc.*, IPR2012-00026, Paper 18 (PTAB Dec. 21, 2012).
- *SAP Am., Inc. v. Versata Dev. Grp., Inc.*, 2013 WL 5947665 (PTAB Jan. 9, 2013).
- *Garmin Int'l, Inc. v. Cuozzo Speed Techs. LLC*, 2013 WL 5947692 (PTAB Jan. 9, 2013).

T-0 to T+3 Months: Discovery by Patent Owner



Once the PTAB institutes trial, discovery proceeds in a sequenced fashion between the patent owner and the petitioner. During the first three months after the PTAB institutes trial, the patent owner may conduct discovery including deposing (cross-examining) the petitioner's declarants (see Trial Practice Guide, 77 Fed. Reg. at 48757). Unlike district court litigation, discovery in a PTAB trial is focused on what the parties actually need and

narrows in scope as the trial continues (see Trial Practice Guide, 77 Fed. Reg. at 48761).

Discovery includes:

- The information the parties exchange through agreed-upon initial disclosures and mandatory notices (see T-6 Months to T-3 Months: Initial Disclosures).
- Routine discovery (see Routine Discovery).
- Additional discovery (see Patent Owner Additional Discovery).

(37 C.F.R. § 42.51.)

Routine Discovery

Routine discovery includes:

- Production of any exhibit cited in a paper or testimony.
- Cross-examination of affidavit testimony prepared for the proceeding.
- Relevant information that is inconsistent with a position advanced during the proceeding.

(37 C.F.R. § 42.51(b).)

The parties may obtain routine discovery without PTAB authorization and the scheduling order typically specifies the times for conducting routine discovery (see Trial Practice Guide at 48761).

Patent Owner Additional Discovery

If the patent owner seeks more than routine discovery, it typically must file a motion for additional discovery (see 37 C.F.R. § 42.51(b)(2)). The parties also may agree to conduct additional discovery, but this rarely occurs.

The PTAB's standard for granting additional discovery depends on the proceeding type. In an IPR, the moving party must show that additional discovery should be allowed in the "interests of justice." In a PGR or CBM proceeding, a more liberal "good cause" standard applies. The PTAB normally grants additional discovery of information that is in the exclusive possession of a party and relevant to an issue that the party raised (see Trial Practice Guide, 77 Fed. Reg. at 48761).

The PTAB has generally considered the following five factors, known as the "Garmin factors," to determine whether to grant a motion for additional discovery in an IPR proceeding under the "interests of justice" standard:

- Is there more than a possibility and mere allegation that something useful might be found?

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- Does the request merely seek early identification of the opponent's litigation position?
- Can the party requesting discovery generate equivalent information through other means?
- Are the instructions easily understandable?
- Are the requests overly burdensome to answer?

(See *Garmin Int'l, Inc. v. Cuozzo Speed Techs. LLC*, 2013 WL 8696519 (PTAB Feb. 14, 2013) and [PTAB Trial Practice Guide 2019 Update](#) at 7-11 (expanding on *Garmin* Factors and collecting cases).)

Generally, the PTAB has been stringent in applying the *Garmin* factors and has denied most requests for additional discovery. The PTAB has, however, granted a patent owner's request for additional discovery of laboratory notebooks in the petitioner's possession where the petitioner's expert suggested that the details of procedures disclosed in the notebooks demonstrated unpatentability (see *Corning Inc. v. DSM IP Assets B.V.*, 2013 WL 8699246 (PTAB June 21, 2013)). The PTAB has also granted a patent owner's motion for additional discovery concerning real parties in interest that the petitioner did not identify in its petition (see *Atlanta Gas Light Co. v. Bennett Regulator Guards, Inc.*, 2014 WL 1622746 (PTAB April 23, 2014)). Requests for additional discovery that are merely "fishing expeditions" are not good enough. Instead, a party seeking additional discovery must show that the additional discovery is in the interests of justice and the request must be more than a possibility and mere allegation that something useful may be found (37 C.F.R. § 42.51(b)(2) (i); *Garmin Int'l, Inc. v. Cuozzo Speed Techs. LLC*, 2013 WL 11311697 (PTAB Mar. 5, 2013) (precedential), see also *Arctic Cat, Inc. v. Polaris Indus., Inc.*, 2019 WL 7050133 (Fed. Cir. Dec. 23, 2019) (non-precedential) (denying additional discovery of litigation testimony obtainable through other means)).

Objections to Evidence and Answers to Objections

Once the PTAB has instituted a trial, a party must raise any objection to the opposing party's deposition or other submitted evidence within five business days of service of the evidence or risk waiver (37 C.F.R. § 42.64(b)(1)). Any objection to evidence must particularly and clearly identify the grounds for the objection to allow the opposing party to correct the evidence by filing supplemental evidence.

Following an objection to evidence, the party that submitted the evidence may respond by filing supplemental evidence within ten business days of service of the objection (37 C.F.R. § 42.64(b)(2)).

If a party objects to evidence submitted before institution of a trial, the objection must be filed within ten business days of the institution of trial (37 C.F.R. § 42.64(b)(1)). The objection is preserved by filing a motion to exclude the evidence once the time for taking discovery in the trial has ended. The scheduling order sets the deadline for filing the motion to exclude. ([PTAB Trial Practice Guide August 2018 Update](#).)

A motion to exclude should:

- Identify where in the record:
 - the objection was originally made; and
 - an opponent relied on the evidence the party seeks to exclude.
- Address objections to exhibits in numerical order.
- Explain the basis and grounds for each objection.

A party may also seek authorization to file a motion to strike if a party believes that the opposing party's brief:

- Raises new issues.
- Is accompanied by belatedly presented evidence.
- Exceeds the proper scope of reply or sur-reply.

The party requesting authorization to file a motion to strike should do so within one week of the allegedly improper submission.

Alternatively, a party may seek authorization for further merits briefing.

([PTAB Trial Practice Guide August 2018 Update](#).)

Admissibility of evidence is generally governed by the Federal Rules of Evidence (37 C.F.R. § 42.62).

Depositions (Cross-Examination)/Uncompelled Testimony

Routine discovery permits the parties to depose (cross-examine) the opposing party's declarants that submit affidavit testimony prepared for the proceeding. A party seeking a deposition must file a notice at least ten business days before the deposition (37 C.F.R. § 42.53(d)(4)). The content, logistics, and form of the testimony are governed by 37 C.F.R. § 42.53.

Unless the parties agree otherwise, cross-examination should take place after any supplemental evidence is due and should conclude more than one week before the filing date for any paper in which the parties expect to cite the cross-examination testimony (37 C.F.R. § 42.53(d)(2)).

Testimony, such as a deposition transcript, must be filed as an exhibit, but either party may file the testimony

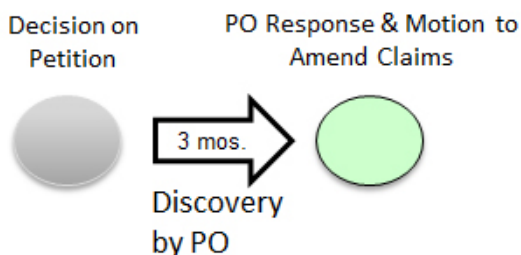
(37 C.F.R. § 42.53(f)(7)). Any uncompelled direct testimony must be submitted in the form of an affidavit (37 C.F.R. § 42.53(a)).

Appendix D to the Trial Practice Guide provides testimony guidelines, which are based in part on guidelines in Federal Rules of Civil Procedure (77 Fed. Reg. at 48772-48773). The guidelines provide that:

- Examination and cross-examination should proceed as they would at trial under the Federal Rules of Evidence (FRE), except FRE 103 evidentiary rulings do not apply.
- Objections must be:
 - noted on the record, with testimony taken subject to them; and
 - concise and not argumentative or suggestive.
- Counsel may instruct the witness not to answer only to preserve a privilege, to enforce a Board order, or to present a motion to terminate or limit the testimony.
- Examination is limited to seven hours for direct, four hours for cross, and two hours for redirect (the same limits apply to cross, redirect, and re-cross)(37 C.F.R. § 42.53(c)).
- During cross-examination, counsel offering the witness cannot consult with the witness regarding the substance of his testimony (except to confer regarding a potential privilege) or suggest how to answer questions. However, the prohibition against conferring with the witness ends once cross-examination is over and restarts when re-cross begins, if necessary. Counsel is therefore permitted to confer with the witness before redirect examination begins (*Focal Therapeutics, Inc. v. Senorx, Inc.*, 2014 WL 3572460 (PTAB July 21, 2014)(precedential)).
- The Board may impose sanctions on any party impeding or interfering with the examination.
- A witness or party may move to terminate or limit the testimony if the examination is in bad faith or unreasonably oppressive.

(See also [PTAB Trial Practice Guide 2019 Update](#) at 11-13.)

T+3 Months: Patent Owner Response and Motion to Amend Claims



Within three months of the institution decision, the patent owner may file a response and motion to amend the instituted patent claims (35 U.S.C. §§ 316(a)(8) and 326(a)(8); 37 C.F.R. §§ 42.120 and 42.220). Unlike the patent owner's preliminary response (see T-3 Months: The Patent Owner's Preliminary Response (Optional)), in its post-institution response the patent owner may substantively refute the patentability challenges raised in the petition and institution decision.

On March 15, 2019, the USPTO introduced a pilot program concerning motions to amend in PTAB proceedings and related trial procedure (84 Fed. Reg. 9497 (Mar. 15, 2019)). The pilot program gives a patent owner who files a motion to amend the option to choose how the motion to amend will proceed before the Board, including whether to:

- Request preliminary guidance from the Board on the motion to amend.
- File a revised motion to amend.

The USPTO will reassess the pilot program about one year after its March 15, 2019 effective date. For more information, see [Legal Update, USPTO Establishes Pilot Program for Motions to Amend Procedures in AIA Trials](#) and [Box, USPTO Motion to Amend Pilot Program](#).

Patent Owner Response Word Count Limit

The word count limit for patent owner responses is the same as the word count limit for the petition (37 C.F.R. § 42.24(b)(2); see [Petition Word Count Limits](#)).

Patent Owner Response Content

The patent owner's response should include arguments for all claims that are believed to be patentable as well as any affidavits or additional factual evidence on which the patent owner intends to rely, with an explanation of the evidence's relevance (Trial Practice Guide, 77 Fed. Reg. at 48766). If a patent owner chooses not to file a response, it may request a conference call with the PTAB to discuss whether the patent owner will file a request for adverse judgment under 37 C.F.R. § 42.73(b).

A patent owner may request adverse judgment for strategic reasons. For example, in *ZTE Corp. v. ContentGuard Holdings Inc.*, the patent owner filed a request for adverse judgment and cancellation of all instituted claims where the petitioner moved to join two IPR petitions against claims the patent owner had asserted against it in a related litigation. The second IPR petition was time barred by 35 U.S.C. § 315(b) and, because the PTAB granted the patent owner's adverse judgment on the first petition, it then denied the petitioner's joinder request because there was no

pre-existing proceeding to which the second, time-barred petition could be joined. This precluded review of the challenged claims in the second petition. (See 2013 WL 6514088 (PTAB Sept. 25, 2013)).

As with the petition, the patent owner's response is limited to 14,000 words in an IPR proceeding and 18,700 words in a PGR or CBM proceeding (37 C.F.R. §42.24(b)).

Motion to Amend Claims

A patent owner may file a motion to amend instituted claims, which is typically due three months after a trial is instituted along with the patent owner's response to the petition (37 C.F.R. §§ 42.121(a) and 42.221(a)). The patent owner does not need the PTAB's permission to file an initial motion to amend, but must confer with the PTAB before filing the motion to give the parties guidance on how the motion to amend may affect the schedule. The PTAB may modify the motion to amend's due date if the patent owner gives the PTAB and opposing party adequate notice.

A motion to amend:

- May not enlarge claim scope or add new matter.
- Must clearly identify the support for the amended claims in the original patent disclosure.

(See 35 U.S.C. §§ 316(d)(3) and 326(d)(3); and *Munchkin, Inc. v. Luv N' Care, LTD.*, 110 U.S.P.Q.2d 1580, 2014 WL 1619033 (PTAB Apr. 21, 2014).)

In determining whether to grant a motion to amend, the PTAB also considers:

- Whether a petitioner has submitted supplemental information after the time period set for filing a motion to amend.
- The time remaining for the trial.
- Whether the additional evidence was known to the patent owner before the motion to amend was due.

(See Trial Practice Guide, 77 Fed. Reg. at 48766.)

In some cases, the patent owner may seek to file an additional motion to amend as the trial progresses. To do so, the patent owner must request the PTAB's authorization and show good cause for the additional amendment (37 C.F.R. §§ 42.121(c) and 42.221(c)). The PTAB has authorized a supplemental motion to amend where the parties submitted a joint request for a supplemental amendment to advance settlement (see *Nichia Corp. v. Emcore Corp.*, 2013 WL 8352845 (PTAB Jun. 3, 2013)).

A patent owner also may request to substitute new claims for the claims that are the subject of the trial. In *Aqua Products v. Matal*, a divided *en banc* panel of the Federal Circuit vacated the PTAB's decision denying the patent owner's motion to amend and remanded the case for the PTAB to consider patentability of the amended claims without placing the burden of persuasion on the patent owner (2017 WL 4399000 (Fed. Cir. Oct. 4, 2017, O'Malley, K.)). In the court's leading opinion, Judge O'Malley directed the PTAB on remand to:

- Assess patentability on a motion to amend without placing the burden of persuasion on the patent owner.
- Consider the entire record when assessing the patentability of amended claims under 35 U.S.C. Section 318(a) and justify any conclusions of unpatentability on that record.

Before the *Aqua Products* decision, the PTAB had placed the burden of proving the patentability of proposed amended claims on the patent owner. For example, in *Idle Free Systems, Inc. v. Bergstrom, Inc.*, the PTAB rejected the patent owner's motion to substitute claims and set out guidelines that a patent owner must meet to substitute claims in an IPR proceeding, holding that:

- There is a rebuttable presumption that only one substitute claim would be needed to replace each challenged claim.
- The substitute claim may only narrow the claim it replaces, and the patent owner should specifically identify the feature or features added to each substitute claim.
- The burden is on the patent owner to show a patentable distinction over the prior art of record and other prior art known to the patent owner by:
 - showing that the claims are distinguishable over the prior art by identifying features, technical facts, and reasoning supporting the features; and
 - providing a proposed claim construction for the substitute claims that supports patentability over the prior art of record and other prior art known to the patent owner.

(2013 WL 8705538 (PTAB June 11, 2013), *but see Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017).)

The Federal Circuit's *Aqua Products* decision left unclear whether a patent owner as a moving party still has the burden of **production** for a motion to amend (see *Aqua Prods.*, 2017 WL 4399000, at *41 (Renya, J., concurring, joined by a majority of Judges, stating that "the Patent Office must by default abide by the existing language of

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

the *inter partes* review statute and regulations, § 316(d) and 37 C.F.R. § 42.121, which only allocate a burden of production to the patent owner.”), but see *Aqua Prods.*, 2017 WL 4399000, at *27 (O’Malley, J., stating that this portion of Judge Renya’s concurrence is “dictum”).

As a result of the Federal Circuit’s *Aqua Products* decision, on November 21, 2017 the USPTO revised its guidelines on motions to amend (see [USPTO Guidance](#)). Under *Aqua Products* and the new guidelines, the Board will not place the burden of persuasion on a patent owner with respect to the patentability of substitute claims presented in a motion to amend. However, the patent owner’s motion to amend must still meet the statutory requirements of 35 U.S.C. § 316(d), and 37 C.F.R. §§ 42.121 or 42.221, as applicable. In view of the shift of burden of persuasion from the patent owner to the petitioner, the PTAB will entertain a request from petitioners to file a sur-reply brief with respect to any motion to amend.

On March 7, 2019, the PTAB designated as precedential its February 25, 2019, order in *Lectrosionics, Inc. v. Zaxcom, Inc.*, which provides guidance on the motion to amend process in view of *Aqua Products*, *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017), and the PTAB’s 2017 guidance on motions to amend (2019 WL 1118864 (PTAB Feb. 25, 2019) and see [Legal Update, Precedential PTAB Decision Provides Guidance on IPR Motions to Amend](#)). The USPTO concurrently de-designated its earlier decision regarding motions to amend in *Western Digital Corp. v. SPEX Techs., Inc.*, 2018 WL 1989599 (PTAB April 25, 2018).

The *Lectrosionics* order provides that:

- The PTAB will ordinarily consider a request to substitute claims as a contingent motion to amend, only after a preponderance of the evidence shows that the original claims are unpatentable. It will not consider a request to cancel claims as a contingent motion to amend.
- The petitioner, not the patent owner, ordinarily has the burden of persuasion to show that any proposed substitute claims are unpatentable by a preponderance of the evidence.
- While there is a presumption of one substitute claim per challenged claim, the patent owner may present more than one substitute claim for each cancelled claim in a motion to amend on a showing, on a claim-by-claim basis, of:
 - the need for the additional claims; and
 - why the number of proposed substitute claims is reasonable.(37 C.F.R. § 42.121(a)(3).)

- The amendment must respond to a ground of unpatentability involved in the trial under 37 C.F.R. § 42.121(a)(2)(i), but may also include modifications to address 35 U.S.C. §§ 101 or 112 issues, if necessary.
- The proposed substitute claims must not:
 - enlarge claim scope; or
 - introduce new subject matter.(37 C.F.R. § 42.121(a)(2)(ii).)
- The patent owner must provide a claim listing with the motion to amend showing in the proposed substitute claim the changes from the original claim. The claim listing may be filed as an appendix and does not count toward the motion’s page limit (37 C.F.R. § 42.121(b)). The claim listing may not include any substantive briefing.
- The default page limits under the rules apply (37 C.F.R. § 42.24).
- The duty of candor applies to the filing of the motion to amend (37 C.F.R. § 42.11). Under 37 C.F.R. § 42.11(a), all parties have a duty of candor during the course of a proceeding, which includes a patent owner’s duty to disclose to the Board information of which the patent owner is aware that is material to the patentability of substitute claims, if such information is not already of record in the case.

In its Final Written Decision in *Lectrosionics*, the PTAB held that the petitioner met its burden of showing the original challenged claims unpatentable as obvious, but did not meet its burden of showing that the proposed substitute claims were unpatentable (*Lectrosionics, Inc. v. Zaxcom, Inc.*, 2020 WL 407145 (PTAB Jan. 24, 2020) (precedential)). The Board reasoned that the patent owner provided an insufficient nexus to support secondary factors of non-obvious with respect to the original claims, but did provide a sufficient nexus as to the substitute claims.

The Board may *sua sponte* raise unpatentability grounds against proposed substitute claims based on art of record, provided it gives the parties notice and opportunity to respond (*Nike, Inc. v. Adidas AG*, 955 F.3d 45 (Fed. Cir. 2020) (*Nike II*)). In *Nike II*, the Federal Circuit vacated the Board’s decision denying a proposed substitute claim as obvious based on prior art raised in the petition but not addressed in the parties’ motion to amend briefing. The court held that the Administrative Procedure Act (APA) required the Board to provide the parties notice and opportunity to respond to the unpatentability ground as it concerned the proposed substitute claim.

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

Consistent with *Nike II*, the Board's Precedential Opinion Panel has held that, while the Board may *sua sponte* identify a patentability issue for a proposed substitute claim based on prior art of record, it is not obligated to do so and "should only do so under rare circumstances" where the adversarial process fails, such as where the petitioner fails to participate (*Hunting Titan, Inc. v. DynaEnergetics Europe GmbH*, 2020 WL 3669653, at *2 (PTAB July 6, 2020) (precedential)). The POP did not identify the "rare circumstances" that justify the Board's *sua sponte* raising of prior art. When it does identify new grounds, however, the Board must provide notice and comment to the parties of those new grounds so they have an opportunity to respond by, for example, requesting:

- Supplemental briefing from the parties regarding its proposed ground for unpatentability.
- That the parties be prepared to discuss the prior art in connection with the substitute claim at an oral hearing.

(*Hunting Titan*, 2020 WL 3669653 at *7 (citing *Nike II*, 955 F.3d at 54).)

On July 22, 2020, the Federal Circuit affirmed the PTAB's precedential decision in *Amazon.com, Inc. v. Uniloc Lux. S.A.* ("Rehearing Denial") 2019 WL 343802 (PTAB, Jan. 18, 2019)), holding that the PTAB may consider the eligibility of proposed substitute claims under Section 101 on a motion to amend (*Uniloc 2017, LLC v. Hulu, LLC*, 2020 WL 4197750 (Fed. Cir. Jul. 22, 2020)).

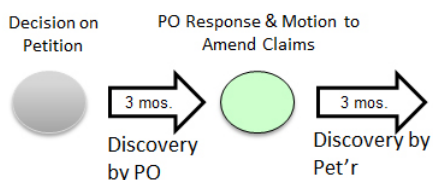
For more on motion to amend practice, see the [PTAB Trial Practice Guide 2019 Update](#).

Patent Owner Motion to Amend Page Limit

Motions to amend are limited to 25 pages (37 C.F.R. § 42.24(a)(1)(vi)).

This page limit does not include words needed for a table of contents, a table of authorities, a certificate of service or word count, or appendix of exhibits or claim listing (see 37 C.F.R. § 42.24 (a)(1)).

T+3 Months to T+6 Months: Discovery by Petitioner



After the patent owner has filed any response to the petition or motion to amend the claims, the petitioner is typically given three months to conduct routine discovery, including deposing the patent owner's declarants (see Trial Practice Guide, 77 Fed. Reg. at 48757).

Like the patent owner, the petitioner also may attempt to agree to additional discovery with the patent owner or, if necessary, file a motion for additional discovery (see Trial Practice Guide, 77 Fed. Reg. at 48761).

Petitioner Additional Discovery

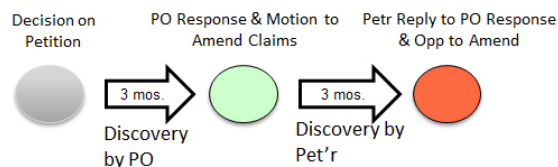
In requesting additional discovery, the petitioner faces difficulties similar to those faced by the patent owner (see Patent Owner Additional Discovery). The PTAB has been stringent in applying the five *Garmin* factors and reluctant to grant petitioners' requests for additional discovery.

The PTAB has, however, granted a motion for additional discovery of emails between two experts concerning prior art where the experts' testimony showed more than a mere possibility that something useful may be uncovered by examining the emails (see *Apple Inc. v. Achates Reference Publ'g, Inc.*, 2014 WL 840502 (PTAB Jan. 31, 2014)).

Objections to Evidence and Depositions and Cross-Examination

The same guidelines that apply to patent owners for objections to evidence and depositions and cross-examination apply to petitioners (see Objections to Evidence and Answers to Objections and Depositions (Cross-Examination)/Uncompelled Testimony).

T+6 Months: Petitioner Reply to Patent Owner Response and Opposition to Motion to Amend



The scheduling order may provide up to three months for the petitioner to reply to any patent owner response and oppose any patent owner motion to amend (see Trial Practice Guide, 77 Fed. Reg. at 48757 and 37 C.F.R. §§ 42.120 and 42.220).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

Reply to Patent Owner's Response Content

A petitioner's reply to a patent owner's response must be directed only to those arguments raised in the response (see 37 C.F.R. § 42.23 and Trial Practice Guide, 77 Fed. Reg. at 48767). The PTAB does not consider new issues raised for the first time in the petitioner's reply. For example, a reply cannot:

- Discuss "previously unidentified portions of a prior art reference to make a meaningfully distinct contention" (*Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015)).
- Cite new non-patent references to argue obviousness "for reasons other than those described in the originally relied-upon prior art" (*Intelligent Bio-Systems v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (emphasis original)).

However, the petitioner may introduce new evidence in its reply if "the evidence is a legitimate reply to evidence introduced by the patent owner." The petitioner cannot be expected to discuss all potential permutations of an exemplar algorithm cited in its petition. (*Apple Inc. v. Andrea Elecs. Corp.*, 2020 WL 593661, at *7 (Fed. Cir. Feb. 7, 2020) (citation omitted) (PTAB abused its discretion in rejecting Apple's reply arguments regarding another example of a previously-cited prior art algorithm).)

Petitioner Reply Word Count Limit

Replies to patent owner responses are limited to 5,600 words (37 C.F.R. § 42.24(c)(1)). Sur-replies, if authorized and unless the PTAB orders otherwise, are also limited to 5,600 words (PTAB Trial Practice Guide August 2018 Update).

Opposition to Motion to Amend

A petitioner may file an opposition to a motion to amend without the PTAB's authorization. The opposition may respond to new patentability issues arising from the patent owner's proposed substitute claims (35 U.S.C. §§ 316(a) and 326(a); and Trial Practice Guide, 77 Fed. Reg. at 48767).

In opposing a patent owner's motion to amend, petitioners commonly argue that the motion to amend:

- Fails to respond to a ground of unpatentability involved in the trial.
- Broadens the scope of the claims.
- Introduces new subject matter not supported by the original disclosure.

(See 37 C.F.R. §§ 42.121(a)(2) and 42.221(a)(2).)

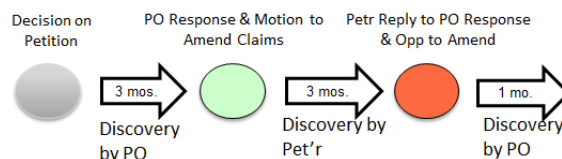
Under the Federal Circuit's *Aqua Products* decision, petitioners bear the burden of proving the unpatentability of amended claims. Accordingly, a petitioner opposing a motion to amend should:

- Consider asking the Board for waiver of the 25-page limit for its opposition brief.
- As the bearer of the burden of proof, consider seeking the Board's authorization to file a sur-reply in opposition to a motion to amend so that the petitioner can have the last word on the unpatentability of amended claims.

Petitioner Opposition to Motion to Amend Page Limit

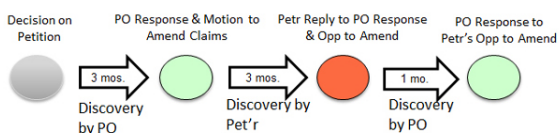
The page limits for oppositions are the same as those for corresponding motions (37 C.F.R. § 42.24(b)(3)).

T+6 Months to T+7 Months: Second Patent Owner Discovery Period



After the petitioner has filed any reply to the patent owner's response and any opposition to the patent owner's motion to amend, the patent owner typically has one month to conduct any further discovery relating to the petitioner's opposition, including deposing the petitioner's declarants (see Trial Practice Guide, 77 Fed. Reg. at 48757-48758 and *Respironics, Inc., v. Zoll Med. Corp.*, IPR2013-00322, Paper 26, at 3 (PTAB May 7, 2014)).

T+7 Months: Patent Owner Reply to Petitioner's Opposition to Motion to Amend



The patent owner typically has one month to file any reply to the petitioner's opposition to a motion to amend. The patent owner's reply may only respond to those arguments raised in the petitioner's opposition. (37 C.F.R. §§ 42.23(b) and 42.25(a)(2).)

Practitioners filing a reply in support of a motion to amend should specifically address each of the

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

petitioner's arguments in its opposition. The PTAB has denied a patent owner's motion to amend where its motion to amend and reply:

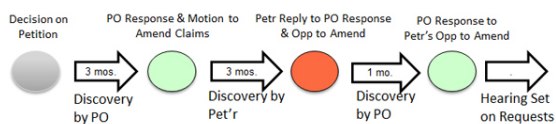
- Failed to discuss:
 - the level of ordinary skill in the art; or
 - prior art not of record known to the patent owner.
- Limited the bases for its motion to amend to references identified in the petition.
- Provided only conclusory remarks on the new references and combinations of references raised in the petitioner's opposition to the motion to amend.

(See *Larose Indus., LLC v. Capriola Corp.*, 2014 WL 2965701 (PTAB June 26, 2014).)

Patent Owner Reply to Opposition to Motion to Amend Page Limit

Replies to oppositions to motions to amend are limited to 12 pages (37 C.F.R. § 42.24(c)(3)). Sur-replies, if authorized and unless the PTAB orders otherwise, are limited to 12 pages (PTAB Trial Practice Guide August 2018 Update).

Pre-Hearing Proceedings



Motions to Exclude

Following any authorized patent owner reply in support of a motion to amend, either party may challenge submitted evidence to which it has objected by filing a motion to exclude the evidence (37 C.F.R. § 42.64 and Objections to Evidence and Answers to Objections).

The scheduling order typically sets the deadline for filing motions to exclude at one month after the patent owner's reply in support of its motion to amend. Any opposition to a motion to exclude is typically due one week later and any reply to the opposition is due one week after that (see PTAB Trial Practice Guide August 2018 Update).

A motion to exclude evidence must:

- Identify where in the record the objection originally was made.
- Identify where in the record the evidence sought to be excluded was relied on by an opponent.

- Address objections to exhibits in numerical order.
- Explain each objection.

(See PTAB Trial Practice Guide August 2018 Update.)

The PTAB has denied in part a patent owner's motion to exclude that did not specifically identify the evidence it sought to exclude or where in the record the petitioner relied on the evidence (see *Corning Inc. v. DSM IP Assets B.V.*, 2014 WL 1783280 (PTAB May 1, 2014)).

Sur-Replies

Sur-replies to:

- Motions are not generally permitted, but may be authorized on a case-by-case basis.
- Principle briefs are normally authorized by the scheduling order.

The sur-reply:

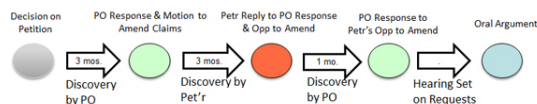
- May not be accompanied by new evidence other than deposition transcripts of any reply witness' cross-examination.
- Should only:
 - respond to arguments made in reply briefs;
 - comment on reply declaration testimony; or
 - point to cross-examination testimony.

A sur-reply may address the institution decision if necessary to respond to the petitioner's reply.

Sur-reply practice essentially replaces the previous practice of filing observations on cross-examination testimony.

(PTAB Trial Practice Guide August 2018 Update.)

Oral Argument



Once the parties have filed all motions and briefs, a party may request oral argument on an issue raised in a brief (37 C.F.R. § 42.70 and Trial Practice Guide, 77 Fed. Reg. at 48758). The scheduling order usually sets the time for requesting an oral argument, but the request may be modified on a case-by-case basis. For examples of representative trial hearing orders, see:

- Synopsys, Inc. v. Mentor Graphics Corp.*, 2013 WL 8705579 (PTAB Oct. 31, 2013).

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- *Bloomberg Inc. v. Markets-Alert Pty Ltd.*, 2013 WL 8609637 (PTAB Dec. 5, 2013).
- *Shaw Indus. Group, Inc. v. Automated Creel Sys., Inc.*, IPR2013-00132, Paper 36, (PTAB Apr. 10, 2014).

The PTAB generally hears the petitioner first, followed by the patent owner and then any petitioner rebuttal. The PTAB may modify this order according to the needs of the case. The parties may only rely on previously submitted evidence and may not introduce new evidence at the oral argument (see Trial Practice Guide, 77 Fed. Reg. at 48768).

A representative hearing order for CBM cases was presented in *SAP America v. Versata Development Group*. There, the PTAB stated that when the hearing regards unpatentability under 35 U.S.C. § 101 and associated issues, the procedure should be that:

- Each party is given 60 minutes total to present its case.
- Because the petitioner bears the ultimate burden of proving the claims at issue unpatentable, the petitioner presents its arguments first followed by the patent owner.
- The parties may reserve time for rebuttal arguments.

(2013 WL 5947672 (PTAB Apr. 8, 2013).)

The PTAB ordinarily provides one hour of argument for each party for a single proceeding, but a party may request more or less time.

Either party may request a pre-hearing conference call at least three days before the oral argument to preview the issues to be discussed at the oral argument and seek the PTAB's guidance on any particular issue the PTAB would like the parties to address ([PTAB Trial Practice Guide August 2018 Update](#)).

The USPTO publicly broadcasts the oral argument due to the strong public policy interest in making all information presented in a review public because the patentability of claims in an issued patent affect the public's rights. Where the parties use confidential information during a hearing, however, the PTAB has provided the following guidance:

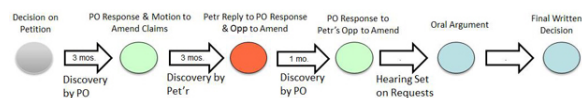
- After the parties' presentations during the open portion of the hearing, the Board will close the courtroom to persons not authorized to access confidential information.
- The court reporter will mark as confidential the remaining portion of the transcript.
- The parties will each get up to 15 minutes of argument relating to confidential information in the closed session.

- The parties will proceed with their presentations during the closed session in the same order as set forth for the oral hearing generally.
- Either party may, at the beginning of the hearing, indicate it wishes to allocate more of its time to the open portion of the hearing. Neither party, however, shall be allotted more than 15 minutes during the closed session, or more than 60 minutes total. A party may not reserve time not used during the open portion of the hearing may for use during the closed portion.
- The parties should not include confidential information in any demonstrative exhibit.
- During the portion of the hearing that is closed to the public, either party may direct the panel to specific confidential information being discussed by exhibit, page, and line number in the record.

(*Curt G. Joa, Inc. v. Fameccanica.data S.P.A.*, 2017 WL 2664386 (PTAB June 20, 2017) (informative).)

The parties must serve any demonstrative exhibit they intend to use at the hearing at least seven business days before the hearing and file them with the USPTO before the hearing (37 C.F.R. § 42.70(b)).

Final Written Decision



Timing

The PTAB must enter a final written decision no later than one year after instituting trial. The Chief Administrative Patent Judge may extend the one-year period in a case for good cause (35 U.S.C. §§ 316(a)(11) and 326(a)(11)). Unlike the PTAB's decision on whether to institute trial, a party may appeal the final written decision to the Federal Circuit (see Rehearing and Appeal to the Federal Circuit).

The USPTO maintains final written decision statistics on its [website](#).

Cancellation of Claims

In its final written decision, the PTAB may cancel all or some of the reviewed claims based on the permissible patentability challenges for each type of proceeding. In an IPR, the PTAB may cancel claims as anticipated under 35 U.S.C. § 102 or obvious in view of prior art under 35 U.S.C. § 103 (see, for example, *Illumina Inc. v. Columbia Univ.*, 2014 WL 1252940 (PTAB Mar. 6, 2014) (cancelling

claims as obvious and denying the patent owner's motion to amend) and *Intellectual Ventures Mgmt. LLC v. Xilinx*, 110 U.S.P.Q.2d 1346, 2014 WL 574597 (PTAB Feb. 10, 2014) (same)).

In PGR and CBM reviews, the PTAB may cancel claims as anticipated or obvious, failing to claim patent eligible subject matter under 35 U.S.C. § 101, or failing to satisfy the enablement or written description requirements of 35 U.S.C. § 112.

While the PTAB has cancelled all challenged claims in most of its early IPR and CBM decisions, some challenged claims have survived a trial (see, for example *ABB Inc. v. Roy-G-Biv Corp.*, 2014 WL 1478218 (PTAB Apr. 11, 2014) (surviving obviousness challenge because petitioner's expert did not directly address missing elements from the prior art references) and *Avaya Inc. v. Network-1 Sec. Solutions, Inc.*, 2014 WL 2175370 (PTAB May 22, 2014) (rejecting petitioner's inherent anticipation arguments)).

Settlements

The parties may agree to settle any issue in a proceeding (37 C.F.R. § 42.74). To settle an issue, the parties must file a true copy of any agreement (and any related collateral agreements) between the parties with the PTAB before the termination of the trial (35 U.S.C. § 317(b); 37 C.F.R. § 42.74(b)). Collateral agreements do not need to be between the patent owner and the petitioner and do not need to be made in connection with, or in contemplation of, terminating an IPR to fall within the scope of 35 U.S.C. § 317(b) (*DTN, LLC v. Farms Tech., LLC*, 2019 WL 2489184 (PTAB June 14, 2019) (precedential) (denying joint request to expunge two collateral agreements from settlement agreement)).

The PTAB generally terminates proceedings regarding both the petitioner and the patent owner if the parties settle early in the proceeding or if the case is not fully briefed at the time of settlement (see, for example, *Int'l Bus. Mach. Corp. v. Fin. Sys. Tech. Pty. Ltd.*, 2013 WL 3323647 (PTAB Feb. 12, 2013) (Representative Settlement Related Order); *Honeywell Int'l, Inc. v. HVAC Modulation Techs. LLC*, 2013 WL 5408061 (PTAB Aug. 27, 2013)). However, the PTAB has made clear in a representative order that since "the Board is not a party to the settlement [it] may independently determine any question of jurisdiction, patentability, or Office practice" (*Macauto U.S.A. v. Bos GmbH & KG*, 2013 WL 5947695 (PTAB Feb. 4, 2013) (quoting 37 C.F.R. § 42.74(a))). The Board may decline to decide a pending motion to amend

claims following settlement because the patent owner may pursue the claims in a reissue or reexamination proceeding (*Kokusai Electric Corp. v. ASM IP Holding B.V.*, 2019 WL 3941259 (PTAB Aug. 20, 2019) (informative)).

When the parties settle a proceeding, the PTAB may permit them to file the settlement agreement under seal as business confidential (*Int'l Bus. Mach. Corp. v. Fin. Sys. Tech. Pty. Ltd.*, 2013 WL 5947701 (PTAB Feb. 8, 2013) (Representative Settlement Related Order)).

Post-Final Written Decision Proceedings

Rehearing and Appeal to the Federal Circuit

A party to an IPR, PGR, or CBM proceeding who is dissatisfied with the PTAB's final written decision may:

- File a request for rehearing within 30 days after the final written decision (see 37 C.F.R. § 42.71(d)(2)).
- Appeal the decision only to the Federal Circuit (see 35 U.S.C. § 141(c)).

The party requesting rehearing:

- Has the burden of showing the decision should be modified (37 C.F.R. § 42.71(d)).
- Must identify specifically all matters the Board misapprehended or overlooked, and where in the record each matter was addressed.
- May file new evidence with its rehearing request only for good cause, which the party may request:
 - on a conference call with the Board before filing the rehearing request; or
 - in the rehearing request itself.
 - (*Huawei Device Co., Ltd. v. Optis Cellular Technology, LLC*, 2019 WL 137151 (PTAB Jan. 8, 2019) (precedential)(denying rehearing).)

The appealing party must file the appeal within 63 days of the final written decision (35 U.S.C. § 141 and 37 C.F.R. § 90.3(a)). The appellant also must:

- File a copy of the notice of appeal with the PTAB (37 C.F.R. §§ 41.10 and 42.6(b)).
- Comply with the Federal Rules of Appellate Procedure and Federal Circuit's rules. For more information on Federal Circuit appeal procedure, see [Federal Circuit Civil Appeals Toolkit](#).

For a discussion on appealing PTAB rulings, see [Practice Note, Appealing Patent Trial and Appeal Board Final Written Decisions](#).

Issuance of Certificate

The USPTO issues and publishes a certificate when the time for any appeal of a final written decision has expired or any appeal has terminated (see 37 C.F.R. § 42.80). The certificate:

- Cancels any claims the PTAB has determined are unpatentable.
- Confirms any patentable claims the PTAB has reviewed.
- Incorporates into the challenged patent any patentable, amended claims.

(37 C.F.R. § 42.80.)

Estoppel

The AIA's estoppel provisions apply on the issuance of the PTAB's final written decision. Following a final written decision in an IPR or PGR proceeding, the petitioner or any real party in interest or privy of the petitioner is

estopped from challenging the patentability or validity of any previously challenged claim on any ground that the petitioner raised or reasonably could have raised in the proceeding (35 U.S.C. §§ 315(e) and 325(e)). A petitioner who joins a IPR proceeding is not estopped from raising district court validity challenges that are not at issue in the IPR because, under the Federal Circuit's *Facebook v. Windy City* decision, which precludes issue joinder, the joining petitioner cannot raise new validity challenges along with its petition (*Network-1 Technologies, Inc. v. Hewlett-Packard Co.*, 2020 WL 5666893, at *8-9 (Fed. Cir. Sep. 25, 2020)).

Following a CBM final written decision, the petitioner or any real party in interest or privy of the petitioner is estopped:

- In a district court litigation or ITC proceeding from challenging the patent claims on those grounds **actually raised** in the proceedings (AIA § 18(a)(1)D) (PL 112-29, § 18, 125 Stat 284 (2011)).
- In a subsequent USPTO proceeding, from challenging the claims on any ground that the petitioner raised or reasonably could have raised in the CBM proceeding (35 U.S.C. § 325(e)(1)).

USPTO Motion to Amend Pilot Program

The pilot program, effective March 15, 2019, provides a patent owner with two previously unavailable motion to amend options. A patent owner may use the pilot program in any AIA trial where the PTAB institutes the trial on or after the effective date (March 15, 2019).

Under the program, the patent owner may choose to:

- Receive non-binding preliminary guidance from the PTAB on its motion to amend. The PTAB will provide the preliminary guidance will be provided no later than four weeks after the due date for the petitioner's opposition to the motion to amend and include an initial discussion of whether:
 - the motion to amend meets statutory and regulatory requirements; and
 - the petitioner establishes a reasonable likelihood that the substitute claims are unpatentable.
- File a revised motion to amend after receiving:
 - the petitioner's opposition to the original motion to amend; and/or
 - the PTAB's preliminary guidance, if requested.

Option One: Patent Owner Files Reply Without Revised Motion to Amend

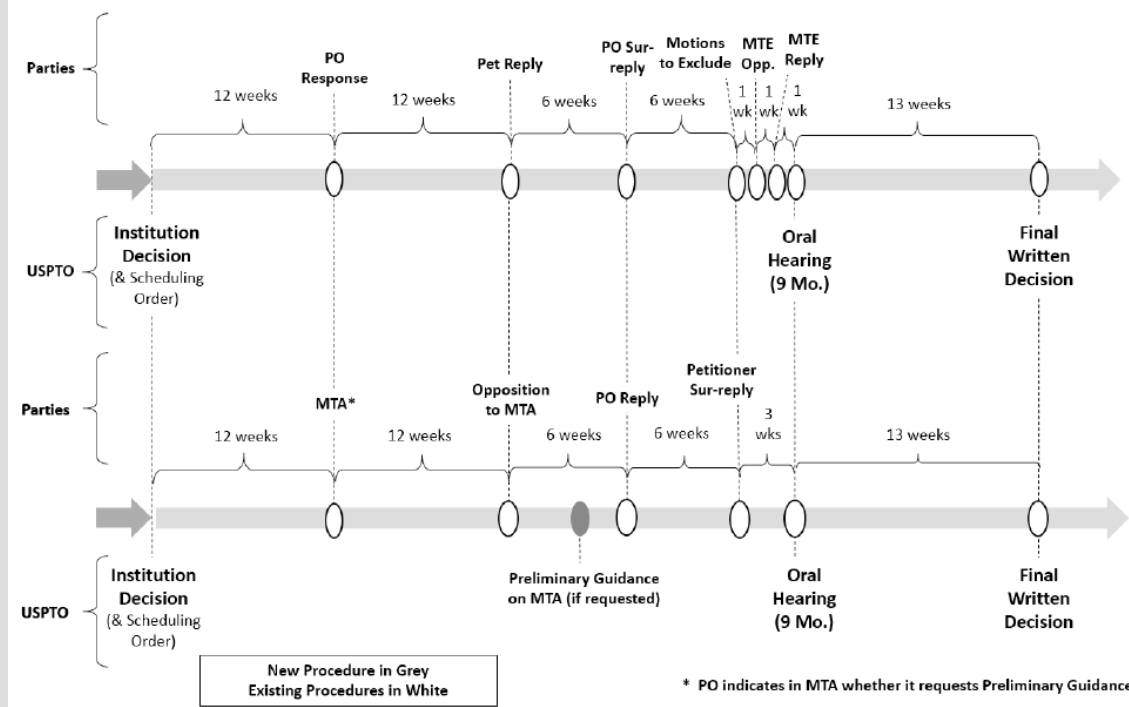
If the patent owner elects not to file a revised motion to amend, the following timeline generally applies after trial institution (T), subject to modification by the scheduling order:

- **T+12 Weeks:** Patent owner files motion to amend, including any request for preliminary guidance, along with its response to the petition.

Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- **T+24 Weeks:** Petitioner files opposition to motion to amend, along with its reply in support of the petition.
- **T+28 Weeks:** PTAB preliminary guidance on motion to amend, if requested, within four weeks of the petitioner's opposition to the motion to amend.
- **T+30 Weeks:** Patent owner files reply to petitioner's opposition and any preliminary guidance.
- **T+36 Weeks:** Petitioner files sur-reply in in opposition to the motion to amend.

APPENDIX 1A (PO REPLY TIMELINE)



Option Two: Patent Owner Files Revised Motion to Amend

If the patent owner files a revised motion to amend, the PTAB will issue a revised scheduling order and the following timeline will generally apply after trial institution (T):

- **T+12 Weeks:** Patent owner files motion to amend, including any request for preliminary guidance, along with its response to the petition.
- **T+24 Weeks:** Petitioner files opposition to motion to amend, along with its reply in support of the petition.
- **T+28 Weeks:** PTAB preliminary guidance on motion to amend within four weeks of the petitioner's opposition to the motion to amend.

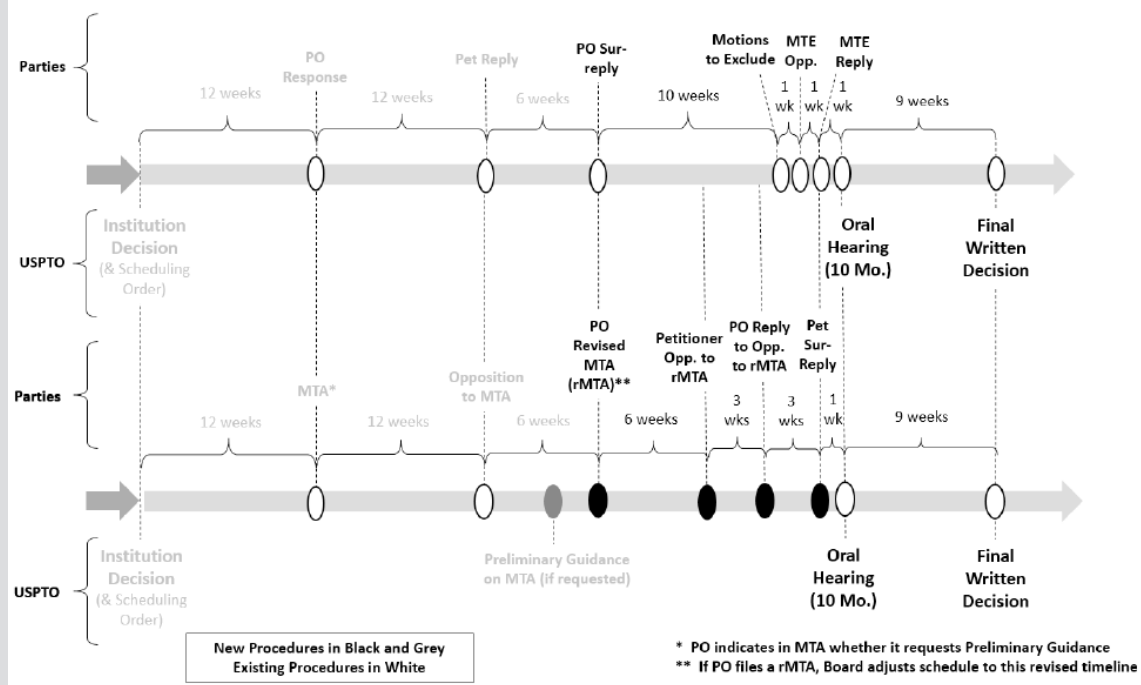
Understanding PTAB Trials: Key Milestones in IPR, PGR, and CBM Proceedings

- **T+30 Weeks:** Patent owner files revised motion to amend six weeks after the due date for the petitioner's opposition to the original motion to amend.
- **T+36 Weeks:** Petitioner may file an opposition to the revised motion to amend, and preliminary guidance, if requested, within six weeks after the revised motion to amend.
- **T+39 Weeks:** Patent owner may file a reply to the opposition within three weeks after the opposition, which will generally be four weeks before the oral hearing.
- **T+42 Weeks:** Petitioner may file a sur-reply within three weeks after the reply, which will generally be one week before the oral hearing.
- **T+43 Weeks:** PTAB conducts Oral Hearing (typically 10 months after the institution decision).
- **T+52 Weeks:** PTAB issues Final Written Decision.

The revised motion to amend may include:

- Substitute claims, arguments, or evidence previously submitted in the original motion to amend, but these may not be incorporated by reference.
- New arguments, evidence, and amendments responsive to issues raised in the preliminary guidance and/or the petitioner's opposition to the motion to amend.

APPENDIX 1B (REVISED MTA TIMELINE)



Option Three: Patent Owner Files No Paper in Response to Petitioner's Opposition to Motion to Amend

If the patent owner does not file a reply to a petitioner's opposition to the original motion to amend or a revised motion to amend and the PTAB has:

- Not issued preliminary guidance, no further briefing is authorized.
- Issued preliminary guidance:
 - the petitioner may file a reply to the guidance, typically three weeks after the patent owner's deadline to have filed a reply to the petitioner's opposition; and
 - the patent owner may file a sur-reply.

Option Four: Patent Owner Elects Not to Request Preliminary Guidance or File a Revised Motion to Amend

If the patent owner does not choose either option under the pilot program, it may file a motion to amend in accordance with current practice, except that the time between due dates for certain later-filed papers are slightly extended. For example, where the patent owner files a motion to amend:

- A patent owner may file a reply to an opposition to the original motion to amend within six weeks of the opposition; and
- A petitioner may file a corresponding sur-reply within six weeks.

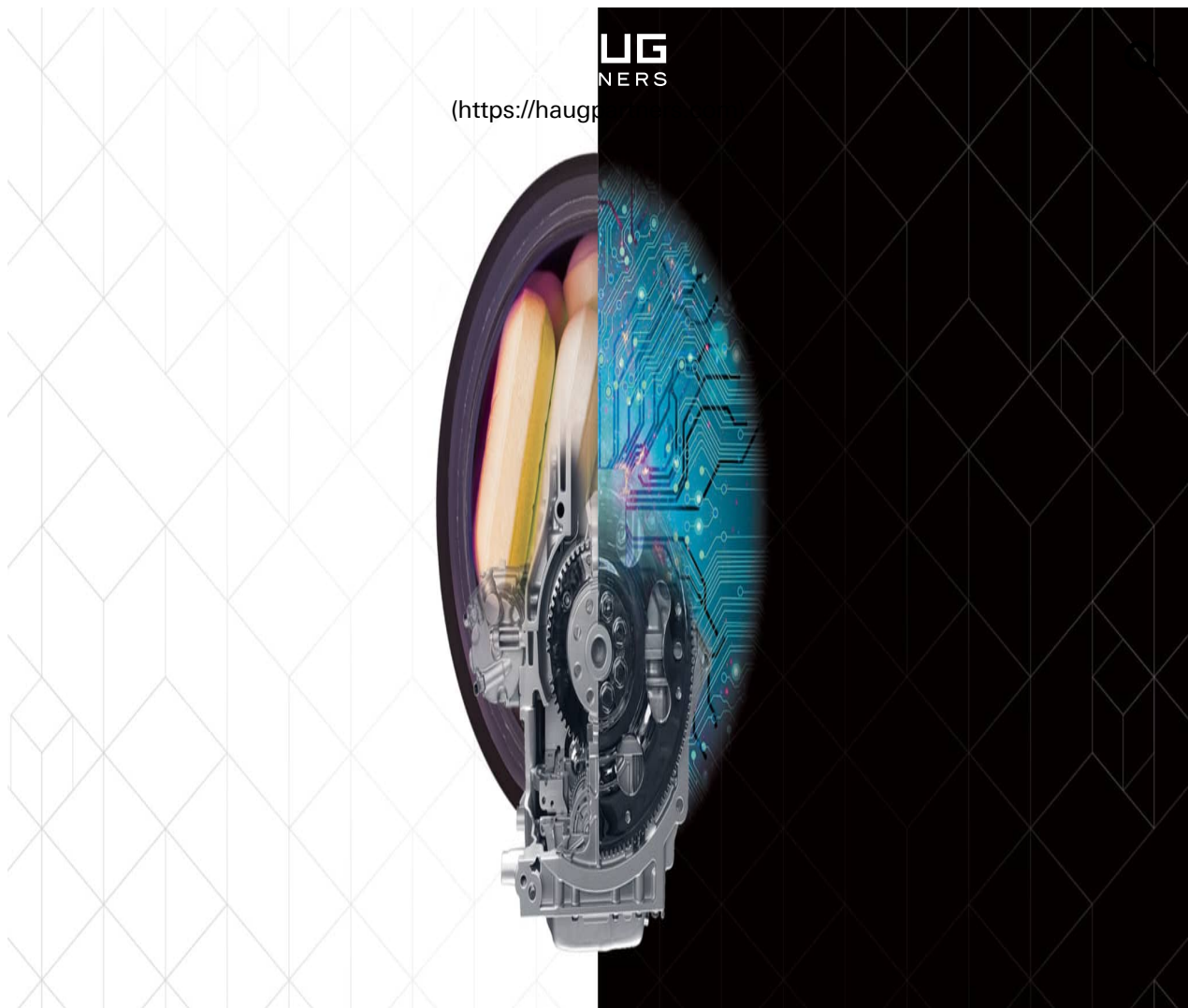
Regardless of whether the patent owner files a motion to amend, it may file a sur-reply to the petitioner's reply to the patent owner's response to the petition within six weeks of the reply.

The author would like to thank Christopher Lisiewski, Jung Hahm, Richard Zemsky, Sandra Hudak, and Victor Wang for their assistance preparing this Note. Jung Hahm was an author on an earlier version of this Note.

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PTAB

Facebook v. Windy City - Federal Circuit Justifies Judicial Review of PTAB Joinder Decisions at the Institution Stage

September 14, 2020

WHAT DO WE KNOW?

1. On September 4, 2020, the Federal Circuit modified and reissued its March 18, 2020 *Facebook v. Windy City*

(<https://haugpartners.getbynder.com/m/7dd5e64f1c7f773/original/Facebook-v-Windy-City-Opinion.pdf>) opinion to address the Supreme Court's intervening April 20, 2020 *Thryv v. Click-to-Call* opinion (140 S. Ct. 1367 (2020)). *Thryv v. Click-to-Call* held that 35 U.S.C. § 314(d) precludes Federal Circuit review of PTAB decisions concerning "the application of" an institution-related statute," specifically the

one-year time bar prohibiting late-filed IPR petitions set forth in 35 U.S.C. § 315(b). *Id.* at 1373. The threshold issue in *Facebook v. Windy City* was whether the Federal Circuit had jurisdiction to review PTAB's decision interpreting 35 U.S.C. § 315(c) to allow Facebook to join its own earlier instituted IPR proceeding in order to challenge additional claims of the same patent. <https://haugpartners.com>



2. § 315(b) expressly states that the one-year time bar does not apply when an IPR petitioner requests joinder to an earlier instituted IPR under § 315(c). The PTAB ruled, therefore, that § 315(c) permitted Facebook to “join as a party” to its own earlier instituted IPR, even after the one-year time bar had passed.

3. In the modified *Facebook v. Windy City* opinion, the Federal Circuit distinguished *Thryv* and held that it does have jurisdiction to review PTAB joinder decisions under 35 U.S.C. § 315(c) because “the joinder decision is a separate and subsequent decision to the institution decision.” The Federal Circuit rejected the USPTO’s argument that, when the PTAB uses the joinder provision of § 315(c) to institute an otherwise time barred IPR review petition, “the Board’s application of 315(c) is ‘integral to, indeed a condition of, institution’” (quoting from *Thryv*).

4. The panel decision reasoned that the “clear and unambiguous text of § 315(c)” requires two sequential PTAB decisions. First, the PTAB must decide whether the later-filed petition “warrants” institution, a decision the Federal Circuit acknowledged it may not review under § 314(d). Second, the PTAB must then decide whether to permit the joinder applicant to join the earlier instituted IPR proceeding, which makes joinder a separate post-institution decision that is reviewable and avoids the appellate review bar of § 314(d).

OBSERVATIONS AND PRACTICE TIPS:


1. The Federal Circuit’s *Facebook v. Windy City* opinion engages in a careful statutory analysis. The court, however, does not explain why a PTAB determination that an IPR petition “warrants the institution of an inter partes review” under the joinder provision of § 315(c), should be considered a non-reviewable institution decision “separate” from a reviewable joinder decision. This is particularly apparent when the IPR petition otherwise would be time barred but for the concurrently filed joinder request.

2. Under § 315(c), a petitioner whose petition is otherwise time barred must file an IPR petition “one month after the institution date of any inter partes review for which joinder is requested . . . ^(https://haugpartners.com) accompanied by a request for joinder.” 37 C.F.R. § 42.122(b) (emphasis added); see *Facebook v. Windy City*, IPR2017-00709, Paper 34 (PTAB Aug. 1, 2017). If PTAB determines the later-filed IPR petition “warrants” institution and, in its discretion, that joinder would be appropriate, PTAB issues a single decision ordering institution, joinder to the previously instituted IPR, and termination of the later-filed IPR in view of the joinder. *Id.* There is no meaningful separation in the decision making process between institution and joinder at the PTAB.

3. The Federal Circuit’s analysis also does not directly address the impact of the time bar on a joinder decision, as argued by the USPTO. Where the later-filed IPR would otherwise be time barred under § 315(b), PTAB’s application of § 315(c) would appear to be “integral” to the institution decision under the rationale of *Thryv*. And if the statutory language is “clear and unambiguous,” as stated by the court, why would the last sentence of § 315(b) permit institution of a time-barred IPR by a different petitioner, but block the successful petitioner who wants to challenge additional patent claims raised in the district court infringement proceeding? After all, the successful petitioner will be collaterally estopped in district court if it ultimately loses any of those patent challenges, as happened to Facebook.

4. The Federal Circuit’s Facebook opinion repeatedly asserts that the statutory language is “clear and unambiguous” to avoid giving *Chevron* deference to the PTAB’s contrary interpretation in *Proppant Express v. Oren Techns.*, IPR2018-00914, Paper 38 (PTAB March 13, 2019) (Precedential). The *Proppant* decision raises another possible ambiguity by stating that the joinder provision applies to “any person,” namely “every person who properly files a petition that warrants institution.” *Id.* at 6. If the statute precludes so-called same party joinder, as determined by the Federal Circuit in *Facebook v. Windy City*, why doesn’t the statute limit joinder requests to “any person other than petitioner”?

5. The Federal Circuit’s modified *Facebook v. Windy City* opinion signals the court’s willingness to engage in provision-by-provision judicial review of applicable PTAB institution decisions unless expressly prohibited by Supreme Court precedent.

6. Look for the USPTO to request Supreme Court certiorari based on the *Thryv* decision. 

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Stand by Your Appeal (from the PTAB)

Any party to an AIA trial “shall have the right to be a party to the appeal.”¹ Even though the statute gives a party an appellate right, that party, the party initiating the appeal, must still establish it has Article III standing to maintain the appeal.

In *Consumer Watchdog v. Wis. Alumni Research Found.*,² Consumer Watchdog filed a request for *inter partes* reexamination against a patent owned by Wis. Alumni Research Found. (“WARF”). Consumer Watchdog claimed the patent allowed WARF to preempt all uses of human embryonic stem cells. Consumer Watchdog was unsuccessful in the reexamination and filed an appeal to the Federal Circuit. The court, however, concluded that Consumer Watchdog had not established an injury in fact sufficient to confer Article III standing and dismissed the appeal.³

Consumer Watchdog is a not-for-profit public charity dedicated to providing a voice for taxpayers and consumers in various special-interest groups. It did not allege in its appeal that it had any involvement in research or commercial activities involving human embryonic stem cells that could serve as the basis for an infringement claim or that it had any intention to engage in such activities. Consumer Watchdog also did not allege it was a licensee (actual or prospective) of the patent it challenged.⁴

The court observed that U.S. district courts may only adjudicate Article III “cases” and “controversies.” A party seeking U.S. district court involvement must show it suffered an “injury in fact” that is both concrete and particular and actual or imminent. The injury must be shown to be fairly traceable to the challenged action and it must be shown that favorable judicial decision will likely redress the injury. At bottom, the party attempting to invoke U.S. district court review must have a “personal stake in the outcome.” The Article III standing requirements “apply with equal force to appeals from administrative agencies,” such as the USPTO. Although Article III standing may not be needed to appear before an administrative agency, as is the case with reexaminations, “the constitutional requirement that [a party] have standing kicks in” once it seeks U.S. district court review.⁵

Consumer Watchdog relied on the PTAB’s denial of its reexamination to establish it had proper Article III standing to maintain its appeal. The court concluded this was not enough. The PTAB’s disagreement with Consumer Watchdog “did not invade any legal right conferred by the *inter partes* reexamination statute.” The statute “did not guarantee a particular outcome” favorable to Consumer Watchdog; it merely permitted it to challenge the patent and participate in the reexamination proceeding.⁶

¹ 35 U.S.C. § 319.

² 753 F.3d 1258 (Fed. Cir. 2014).

³ *Id.* at 1260.

⁴ *Id.* at 1260-61.

⁵ *Id.*

⁶ *Id.* at 1261-62.

Consumer Watchdog also argued that it was entitled to maintain its appeal because the reexamination statute permitted it to do so. The court disagreed, stating that the *inter partes* reexamination statute permitting an appeal “does not eliminate the requirements of Article III.” A statute may relax certain basic standing requirements but a procedural right granted by statute does not eliminate the requirement that Consumer Watchdog have a particularized, concrete stake in the outcome of the reexamination.⁷

The court also rejected Consumer Watchdog’s argument that the estoppel provisions relating to *inter partes* reexaminations established an injury in fact sufficient for Article III standing. Consumer Watchdog did not argue it was engaged in any activity that would give rise to a potential infringement suit or that it would file another request to cancel claims of the patent with the USPTO. The court found that Consumer Watchdog thus had nothing more than “a general grievance” with the patent and the estoppel provisions did not confer standing.⁸

The Federal Circuit predictably extended *Consumer Watchdog* to AIA trials in *Phigenix, Inc. v. ImmunoGen, Inc.*⁹

In view of *Consumer Watchdog* and *Phigenix*, Article III standing to maintain a direct appeal from the PTAB in an AIA trial requires a showing of an injury in fact that is both concrete and particularized. Injuries that are “conjecture or hypothetical” will not provide standing.¹⁰

Article III requires the appellant to “show that it is engaged or will likely engage ‘in an[] activity that would give rise to a possible infringement suit,’ or has contractual rights that are affected by a determination of patent validity.” The fact that the appellant “has no product on the market at the present time does not preclude Article III standing.” Where the appellant relies on potential infringement liability as a basis for an injury in fact, but is not currently engaging in an infringing activity, “it must establish that it has concrete plans for future activity that creates a substantial risk of future infringement or likely cause the patentee to assert a claim of infringement.” It is not enough for the appellant and appellee to be “competitors generally,” where appellant does not have any concrete product in development that would expose it to an infringement risk. Now, to be sure, “IPR petitioners need not concede infringement to establish standing to appeal.” But actual products or products in development must create a concrete and substantial risk of infringement or likelihood that they would lead to claims of infringement.¹¹

Where standing is in doubt, the appellant must satisfy the “summary judgment burden of production” by submitting sufficient evidence:

in some cases, **an appellant’s standing to seek review of administrative action is self-evident**; no evidence outside the administrative record is necessary for the court to be sure of it. Self-

⁷ *Id.* at 1262.

⁸ *Id.* at 1262-63.

⁹ 845 F.3d 1168 (Fed. Cir. 2017).

¹⁰ *JTEKT Corp. v. GKN Auto. Ltd.*, 898 F.3d 1217, 1220 (Fed. Cir. 2018).

¹¹ *Id.* at 1220-21.

evident standing typically arises when an appellant is an object of the action (or forgone action) at issue. **When the [appellant]’s standing is not self-evident, however, the [appellant] must supplement the record to the extent necessary to explain and substantiate its entitlement to judicial review.** In so doing, an appellant may submit arguments and any affidavits or other evidence to demonstrate its standing. Taken together, an appellant must either identify record evidence sufficient to support its standing to seek review or, if there is none because standing was not an issue before the agency, submit additional evidence to the court of appeals, such as by affidavit or other evidence.

The appellant “must identify the relevant evidence demonstrating its standing ‘at the first appropriate’ time, whether in response to a motion to dismiss or in the opening brief” because standing involves threshold questions over a court’s authority to hear the case.¹²

The Federal Circuit has issued numerous decisions clarifying factual circumstances that are sufficient, and insufficient, to confer Article III standing in AIA trial appeals.

I. Decisions that **Found** Article III Standing

The Federal Circuit has found that an actual or concrete future launch of a product that might trigger an infringement lawsuit is generally sufficient to give rise to Article III appellate standing. The threat of a lawsuit or dismissal of an earlier lawsuit without prejudice may also constitute a sufficiently concrete and particularized injury in fact, even where the appellant had divested itself of the potentially infringing products, so long as the appellant retains exposure for infringing acts that occurred prior to the divestment.

These and other fact patterns that were sufficient to establish Article III standing were shown in the following Federal Circuit decisions:

- *PPG Indus., Inc. v. Valspar Sourcing, Inc.* (Feb. 9, 2017):¹³ PPG established standing to maintain its appeal where it demonstrated that it had already launched a commercial product and received at least one inquiry from a customer suggesting that Valspar was planning to sue PPG for infringement.
- *Altaire Pharms., Inc. v. Paragon Biotech, Inc.* (May 2, 2018):¹⁴ Altaire demonstrated that it had the requisite standing when it presented evidence of its intent to resume marketing its product and, on that basis, believed that Paragon would inevitably sue it for patent infringement when Altaire filed an Abbreviated New Drug Application with the FDA.

¹² *Id.* at 1172-73.

¹³ 679 Fed. Appx. 1002 (Fed. Cir. 2017).

¹⁴ 889 F.3d 1274 (Fed. Cir. 2018).

- *E.I. DuPont de Nemours & Co. v. Synvina C.V.* (Sept. 17, 2018):¹⁵ DuPont had standing to maintain its appeal because it had demonstrated that it had built a plant capable of infringing the challenged patent, Synvina alleged before the PTAB that DuPont's processes were embraced by the claims, and Synvina, DuPont's avowed competitor, rejected DuPont's request for a covenant not to sue.
- *Google LLC v. Conversant Wireless Licensing S.A.R.L.* (Nov. 20, 2018):¹⁶ Google and LG had standing to maintain the appeal because LG was previously sued for allegedly infringing the challenged patent as a result of selling one of its products, Google's Map application was directly implicated in Conversant's infringement contentions, and Conversant refused to grant a covenant not to sue.
- *Amerigen Pharms. Ltd. v. UCB Pharma GmbH* (Jan 11, 2019):¹⁷ Amerigen demonstrated that it had standing by presenting evidence that the launch of its generic product was blocked by the challenged patent, cancellation of the patent would "advance [the] drug's launch," and removing the patent from listing in the FDA's Orange Book would allow Amerigen to begin marketing its product.
- *Mylan Pharms. Inc. v. Research Corp. Techs., Inc.* (Feb. 1, 2019):¹⁸ Time-barred parties joined by the PTAB to an instituted IPR, under 35 U.S.C. § 315(c), as co-Petitioners had standing to participate in the appeal because, once joined, they were parties to an IPR and fell "within the zone of interests of § 319."
- *Sony Corp. v. Iancu* (May 22, 2019):¹⁹ Sony had standing to appeal the PTAB finding claims of its patent unpatentable as obvious even though the patent had expired, Petitioner had elected not to defend its victory, and Sony and Petitioner had settled the co-pending related U.S. district court case.
- *Samsung Elec. Co., Ltd. v. Infobridge Pte. Ltd.* (July 12, 2019):²⁰ Samsung had standing where the challenged patent was licensed as part of a patent "pool" that included patents owned by Samsung. Royalties received from licensing the pool were divided among its members such that members would receive higher royalties if one of the patents, e.g., the challenged patent, was found unpatentable. The court found that Samsung's injury in the form of deprived royalties, at least in these specific circumstances and under the particular terms of the pool license agreement, "can be traced directly to the validity of Infobridge's patent and would be redressed by a favorable decision for Samsung."

¹⁵ 904 F.3d 996 (Fed. Cir. 2018).

¹⁶ 753 Fed. Appx. 890 (Fed. Cir. 2018).

¹⁷ 913 F.3d 1076 (Fed. Cir. 2019).

¹⁸ 914 F.3d 1366 (Fed. Cir. 2019).

¹⁹ 924 F.3d 1235 (Fed. Cir. 2019).

²⁰ 929 F.3d 1363 (Fed. Cir. 2019).

- *Grit Energy Solutions, LLC v. Oren Techs., LLC* (Apr. 30, 2020):²¹ Grit had standing to maintain its appeal even though Oren had dismissed its infringement action asserting the challenged patent without prejudice, Grit had transferred ownership of all products previously accused of infringement, and Grit failed to identify any concrete plans for future activity that would create a substantial risk of future infringement lawsuits. According to the court, the dismissal of the earlier lawsuit without prejudice left Oren free to pursue its previous claims of infringement in the future. And, although Grit transferred ownership of the accused products, that did not absolve Grit of liability for actions it took before the transfer.
- *Adidas AG v. Nike, Inc.* (June 25, 2020):²² Adidas had standing to maintain its appeal despite there being no accusation of infringement in the U.S. The fact that the parties are direct competitors, Nike accused Adidas of infringing a German patent covering relevant technology, and Nike refused to grant Adidas a covenant not to sue supported a finding of an injury in fact.
- *FitBit, Inc. v. Valencell, Inc.* (July 8, 2020):²³ Joined challenger that, in its own Petition, challenged less than the claims challenged by Petitioner in the joined proceeding, had standing to appeal “the entirety” of the PTAB’s Final Written Decision as a joined party.

II. Decisions that **Did Not Find** Article III Standing

On the other hand, the Federal Circuit has found unsupported allegations regarding upcoming products, market competition, and the potential for litigation to be insufficient to give rise to Article III appellate standing. Such allegations are at most conjecture or hypothetical and cannot establish, under a “summary judgment” standard, a concrete and particular and actual or imminent injury in fact. Factual evidence, e.g., declarations, is not guaranteed to save the day. Declarations must be sufficiently detailed to allow the court to evaluate the merits of the claims of injury or infringement risk before allowing the appeal to proceed.

These and other fact patterns that did not amount to Article III standing were shown in the following Federal Circuit decisions:

- *Phigenix, Inc. v. ImmunoGen, Inc.* (Jan. 9, 2017):²⁴ Phigenix did not establish that it had standing to maintain its appeal where its briefs relied on unsupported allegations that Phigenix had suffered actual economic injury because the challenged patent increased competition between it and ImmunoGen. In other words, the court dismissed Phigenix’s allegations that if the patent were invalidated, at least a portion of ImmunoGen’s licensing revenue would inure to Phigenix.

²¹ 957 F.3d 1309 (Fed. Cir. 2020).

²² 963 F.3d 1355 (Fed. Cir. 2020).

²³ 964 F.3d 1112 (Fed. Cir. 2020).

²⁴ 845 F.3d 1168 (Fed. Cir. 2017).

- *RPX Corp. v. Chanbond LLC* (Jan. 17, 2018):²⁵ RPX failed to demonstrate that it had standing because RPX was not engaged in any potentially infringing activities regarding the challenged patent. RPX’s evidence did not demonstrate that the PTAB’s final written decision “increased or aids the competition in the market of the non-defendant IPR petitioners” or that RPX suffered any quantifiable reputational or economic harm as a result of the decision.
- *JTEKT Corp. v. GKN Auto. Ltd.* (Aug. 3, 2018):²⁶ JTEKT lacked standing because it did not establish that it had a product in the market or that its planned product would create a substantial risk of infringement. JTEKT’s Chief Engineer admitted that JTEKT was still validating its design, and that its product concept would continue to evolve and might change until it was finalized, such that nothing could yet be analyzed for potential infringement.
- *Momenta Pharms., Inc. v. Bristol-Myers Squibb Co.* (Feb. 7, 2019):²⁷ Momenta lacked standing because the evidence of record established that Momenta’s prior proposed biosimilar product, that would potentially expose it to a claim of infringement, had failed clinical trials and had been withdrawn. The fact that Momenta did not abandon its intent to produce the product was overshadowed by Momenta terminating its participation in the program to develop it.
- *AVX Corp. v. Presidio Components, Inc.* (May 13, 2019):²⁸ AVX lacked standing, despite evidence tending to show that it was Presidio’s competitor, because AVX failed to present specific evidence of a “present or nonspeculative interest in engaging in conduct even arguably covered by the patent claims at issue.” The court rejected AVX’s argument that standing exists because Presidio had sued AVX before and would do so again to assert the challenged patent if it had a reasonable basis: AVX’s suspicion “does not mean that there is any reasonable basis right now” for doing so.
- *Gen. Elec. Co. v. United Techs. Corp.* (July 10, 2019):²⁹ GE lacked standing because it had no definite plans to produce a product that might infringe the challenged patent. The court dismissed GE’s submitted evidence, a declaration from GE’s Chief IP Counsel and GC of Engineering for GE Aviation, finding that it did not establish that GE “lost bids to customers” or suffered any “lost business or lost opportunities” because it did not offer a product that could potentially infringe the challenged patent.
- *Fisher & Paykel Healthcare Ltd. v. ResMed Ltd.* (Nov. 27, 2019):³⁰ Fisher & Paykel lacked standing despite claiming that it “continues to develop products” that ResMed “may at some future date allege infringe” the patent. Fisher & Paykel failed to

²⁵ 780 Fed. Appx. 866 (Fed. Cir. 2018).

²⁶ 898 F.3d 1217 (Fed. Cir. 2018).

²⁷ 915 F.3d 764 (Fed. Cir. 2019).

²⁸ 923 F.3d 1357 (Fed. Cir. 2019).

²⁹ 928 F.3d 1349 (Fed. Cir. 2019).

³⁰ 789 Fed. Appx. 877 (Fed. Cir. 2019).

“provide[] any, let alone sufficient, detail regarding features of its future products to enable [the court] to determine that its activities create a substantial risk of future infringement.”

- *Argentum Pharms. LLC v. Novartis Pharms. Corp.* (Apr. 23, 2020):³¹ Argentum lacked standing even though it submitted declarations that established it formed a partnership with a third party that intended to file an ANDA and release a generic product covered by the challenged patent. The court, however, held that Argentum failed to show that it was substantially involved in developing the generic product or that it bore any risk from any future infringement suit against its partner.
- *Pfizer Inc. v. Chugai Pharma. Co., Ltd.* (Apr. 27, 2020):³² Pfizer failed to present evidence to establish that it had standing throughout the entire appeal. Pfizer provided evidence that it had concrete plans to market a biosimilar as early as July 2019. The notice of appeal, however, was filed on January 30, 2019, and Pfizer “failed to supply any evidence that it was suffering from an injury in fact when this appeal began.”

Importantly, **standing to initiate** the appeal is not to be conflated with **standing to participate** in an appeal. In *Pers. Audio, LLC v. Elec. Frontier Found.*,³³ Petitioner Electronic Frontier Foundation (“EFF”) challenged and ultimately demonstrated a collection of Personal Audio’s claims to be unpatentable. Personal Audio appealed the PTAB’s Final Written Decision. The Federal Circuit requested the parties brief whether EFF, the prevailing party at the PTAB, had standing to participate in the appeal in view of the court’s holding in *Consumer Watchdog*. The court observed “that standing to appeal is measured for the party ‘seeking entry to the federal courts for the first time in the lawsuit.’” In this case, Personal Audio, the party invoking judicial review, had Article III standing as a result of the PTAB cancelling its patent claims. And, with Article III standing being satisfied by Personal Audio, EFF was “not constitutionally excluded from appearing in court to defend the PTAB decision in its favor.”³⁴

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Practitioners must remember that Article III standing, not required to institute or maintain PTAB proceedings, is still required for appellate review of a PTAB decision to proceed. Under the current state of the law, Article III standing requires a showing that the appellant engages or will likely engage in some activity that would give rise to an infringement lawsuit or have some other contractual right affected by the PTAB’s determination. Competitor status, by itself, is likely not enough to confer Article III standing. Appellant must have an actual product, or concrete future plans for a product that can trigger an infringement lawsuit.

Importantly, an appellant, under *Mylan*, is not deprived of standing merely by being time-

³¹ 956 F.3d 1374 (Fed. Cir. 2020).

³² 2020 WL 1983197 (Fed. Cir. Apr. 27, 2020).

³³ 867 F.3d 1246 (Fed. Cir. 2017).

³⁴ *Id.* at 1247, 1249-50.

barred (but joined) on the underlying AIA petition. Article III standing to maintain the appeal exists if the appellant otherwise demonstrates an injury in fact.

Practitioners should also keep in mind that a successful Petitioner defending a PTAB decision on appeal need not have Article III standing because Article III standing is satisfied by the appealing Patent Owner.