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Filed on behalf of: Delta Power Equipment Corporation; Lowe's Home Centers, LLC; and Home Depot U.S.A., Inc.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DELTA POWER EQUIPMENT
CORPORATION; LOWE'S HOME CENTERS,
LLC; HOME DEPOT U.S.A., INC.
Petitioners,

v.

P & F BROTHER INDUSTRIAL CORPORATION,
Patent Owner.

IPR2024-00347
U.S. Patent No. 7,475,622 to Chang et al.
Issue Date: January 13, 2009
Title: Supporting Device for Mounting a Protective Cover to Shield a Cutting
Blade of a Cutting Machine

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 7,475,622**

TABLE OF CONTENTS

I.	MANDATORY NOTICES	1
A.	REAL PARTIES-IN-INTEREST UNDER 37 C.F.R. § 42.8(B)(1)	1
B.	RELATED MATTERS UNDER 37 C.F.R. § 42.8(B)(2)	1
C.	LEAD AND BACK-UP COUNSEL UNDER 37 C.F.R. § 42.8(B)(3).....	1
D.	SERVICE INFORMATION UNDER 37 C.F.R. § 42.8(B)(4).....	2
II.	INTRODUCTION	2
III.	GROUND FOR STANDING UNDER 37 C.F.R. § 42.104(A)	3
IV.	IDENTIFICATION OF CHALLENGE AND STATEMENT OF THE PRECISE RELIEF REQUESTED (37 C.F.R. § 42.22(A) AND 37 C.F.R. § 42.104(B))	3
V.	THRESHOLD REQUIREMENTS FOR INTER PARTES REVIEW	4
VI.	STATEMENT OF REASONS FOR THE RELIEF REQUESTED	4
A.	LEVEL OF ORDINARY SKILL IN THE ART.....	4
B.	OVERVIEW OF THE '622 PATENT	4
C.	CLAIM CONSTRUCTION (37 C.F.R. § 42.104(B)(3)).....	5
D.	THE PRIOR ART CITED IS NOT REDUNDANT	5
E.	THE CHALLENGED CLAIMS.....	6
F.	SCOPE AND CONTENT OF THE PRIOR ART	6
1.	Applicant Admitted Prior Art	7
2.	Gass	9
3.	Burke	10
4.	Garcia	12
5.	Liu, Huang, and Ceroll.....	12
VII.	THE CLAIMS OF THE '622 PATENT ARE UNPATENTABLE	12
A.	GROUND 1: THE CHALLENGED CLAIMS ARE UNPATENTABLE AS OBVIOUS UNDER 35 U.S.C. §103 OVER GASS IN VIEW OF AAPA	13
1.	Claim 1	13
2.	Claim 2.....	38
3.	Claim 5.....	41
4.	Claim 9.	43
5.	Motivation to Combine	44
B.	GROUND 2: THE CHALLENGED CLAIMS ARE UNPATENTABLE AS OBVIOUS UNDER 35 U. S. C. §103 OVER BURKE IN VIEW OF GASS.....	47
1.	Claim 1.....	47
2.	Claim 2.....	60
3.	Claim 5.....	62

4.	Claim 9.....	62
5.	Motivation to Combine.....	64
C.	GROUND 3: THE CHALLENGED CLAIMS ARE UNPATENTABLE AS OBVIOUS UNDER 35 U.S.C. §103 OVER AAPA IN VIEW OF GASS	66
1.	Claim 1.....	66
2.	Claim 2.....	78
3.	Claim 5.....	79
4.	Claim 9.....	79
5.	Motivation to Combine.....	80
D.	GROUND 4: THE CHALLENGED CLAIMS ARE UNPATENTABLE AS OBVIOUS UNDER 35 U.S.C. §103 OVER GASS IN VIEW OF BURKE	81
1.	Claim 1.....	81
2.	Claim 2.....	84
3.	Claim 5.....	84
4.	Claim 9.....	84
5.	Motivation to Combine.....	84
E.	GROUND 5: THE CHALLENGED CLAIMS ARE OBVIOUS UNDER 35 U.S.C. §103(A) OVER GASS IN VIEW OF GARCIA	86
1.	Claim 1.....	86
2.	Claim 2.....	89
3.	Claim 5.....	89
4.	Claim 9.....	90
5.	Motivation to Combine.....	90
F.	NO SECONDARY CONSIDERATIONS SUPPORT NONOBVIOUSNESS	91
VIII.	DISCRETIONARY DENIAL WOULD BE NEITHER APPROPRIATE NOR EQUITABLE	92
A.	THE BECTON, DICKINSON FACTORS DO NOT SUPPORT DISCRETIONARY DENIAL	92
B.	THE FINTIV FACTORS DO NOT SUPPORT DISCRETIONARY DENIAL	92
1.	Likelihood of a Stay.....	92
2.	Proximity of the Court’s Trial Date to a Final Written Decision	92
3.	Investment in Parallel Proceeding	93
4.	Overlap Between Parties and Issues Raised in the Petition and Litigation	93
5.	Other Factors That Could Impact Exercise of Discretion	93
IX.	CONCLUSION.....	93

TABLE OF AUTHORITIES

Page(s)

Cases

<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 11 (P.T.A.B. March 20, 2020)	92
<i>Becton, Dickinson & Company v. B. Braun Melsungen AG</i> , IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017)	92
<i>Constant v. Advanced Micro-Devices, Inc.</i> , 848 F.2d 1560 (Fed. Cir. 1988)	8
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	46, 85, 91
<i>In re Larson</i> , 340 F.2d 965, 144 U.S.P.Q. 347 (CCPA 1965).....	<i>passim</i>
<i>McCoy v. Heal Sys., LLC</i> , 850 F. App’x 785 (Fed. Cir. 2021)	8
<i>P & F Brother Industrial Corporation v. The Home Depot, Inc. and Home Depot U.S.A., Inc.</i> , No. 2:23-cv-00312-JRG (E.D. Tex.)	1
<i>P & F Brother Industrial Corporation v. Lowe’s Companies, Inc. and Lowe’s Home Centers LLC</i> , No. 2:23-cv-00313-JRG (E.D. Tex.)	1
<i>Pfizer, Inc. v. Apotex, Inc.</i> , 480 F.3d 1348 (Fed. Cir. 2007)	91
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005)(<i>en banc</i>).....	5
<i>Scientific Design Co., Inc. v. Shell Oil Co.</i> , IPR2021-01537, Paper 7 (P.T.A.B. Mar. 18, 2022)	5

Statutes

35 U.S.C. § 102	4
35 U.S.C. § 103	<i>passim</i>

35 U.S.C. § 103(a)	86
35 U.S.C. §§ 311-319	2
35 U.S.C. § 314(a)	4
35 U.S.C. § 325(d)	5

LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 7,475,622
1002	Prosecution history of U.S. Patent No. 7,475,622
1003	U.S. Patent No. 7,827,890 to Gass et al.
1004	Declaration of Bruce Main
1005	Curriculum Vitae of Bruce Main
1006	U.S. Patent No. 713,196 to Bennett
1007	Approved American National Standard for Woodworking Machinery - Safety Requirements, ANSI O1.1 (2004)
1008	S. Chowdhury et al., Survey of Injuries Involving Stationary Saws - Table and Bench Saws 2007-2008, U.S. Consumer Product Safety Commission (March 2011)
1009	U.S. Patent Application Publication No. 2005/0160895 to Garcia et al.
1010	U.S. Patent No. 7,437,981 to Burke et al.
1011	U.S. Patent No. 6,840,144 to Huang
1012	U.S. Patent Application Publication No. 2008/0168875 to Liu et al.
1013	Instruction Manual for Grizzly Industrial, Inc. Heavy-Duty Left-Tilting 12" Table Saw (Model G5959Z) (Feb. 2004)
1014	Maintenance Instruction and Parts List for Powermatic Tilting Arbor Saw (Model 72-A) (Nov. 1999)
1015	U.S. Patent No. 5,875,698 to Ceroll et al.

I. MANDATORY NOTICES

A. Real Parties-In-Interest Under 37 C.F.R. § 42.8(b)(1)

The Petitioners and real parties-in-interest are Delta Power Equipment Corporation, which is a wholly owned subsidiary of Chang Type Industrial Co., Limited; Lowe's Home Centers, LLC, which is wholly owned by Lowe's Companies, Inc.; and Home Depot U.S.A., Inc., a wholly owned subsidiary of HD Operations Holding Company, Inc., which is wholly owned by The Home Depot, Inc.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The following litigations related to the '622 patent are pending: *P & F Brother Industrial Corporation v. Lowe's Companies, Inc. and Lowe's Home Centers LLC*, No. 2:23-cv-00313-JRG (E.D. Tex.) and *P & F Brother Industrial Corporation v. The Home Depot, Inc. and Home Depot U.S.A., Inc.*, No. 2:23-cv-00312-JRG (E.D. Tex.).

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D. Service Information Under 37 C.F.R. § 42.8(b)(4)

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II. INTRODUCTION

Petitioners petition for *Inter Partes* Review (“IPR”) of claims 1-2, 5, and 9 (“Challenged Claims”) of U.S. Patent No. 7,475,622 to Chang (“the ’622 patent,” EX1001), issued on January 13, 2009, and assigned to P & F Brother Industrial Corporation of Taichung, Taiwan (“Patent Owner”), under 35 U.S.C. §§311-319 and 37 C.F.R. Part 42, and seek determination that the Challenged Claims be canceled

as unpatentable.

This Petition is filed in accordance with 37 C.F.R. § 42.106(a). Filed herewith is a power of attorney and exhibit list pursuant to 37 C.F.R. §§ 42.10(b) and 42.63(e). Pursuant to 37 C.F.R. § 42.103, the fee set forth in 37 C.F.R. § 42.15(a) accompanies this Petition.

III. GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.104(a)

Petitioners certify that, under 37 C.F.R. § 42.104(a), the '622 patent is available for IPR, and Petitioners are not barred or estopped from requesting IPR of the '622 patent on the grounds identified.

IV. IDENTIFICATION OF CHALLENGE AND STATEMENT OF THE PRECISE RELIEF REQUESTED (37 C.F.R. § 42.22(a) AND 37 C.F.R. § 42.104(b))

Petitioners respectfully request *inter partes* review and cancellation of the Challenged Claims on the following grounds:

Ground	References	Basis
1	U.S. Patent No. 7,827,890 Gass et al. ("Gass") in view of what Applicant expressly admitted to be prior art within the '622 patent ("AAPA")	§103
2	U.S. Patent No. 7,437,981 to Burke et al. ("Burke") in view of Gass	§103
3	AAPA in view of Gass	§103
4	Gass in view of Burke	§103
5	Gass in view of U.S. Patent Publication No. 2005/0160895 ("Garcia")	§103

V. THRESHOLD REQUIREMENTS FOR *INTER PARTES* REVIEW

A petition for IPR must demonstrate “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. §314(a.) This Petition clears that threshold.

VI. STATEMENT OF REASONS FOR THE RELIEF REQUESTED

A. Level of Ordinary Skill in the Art

A person of ordinary skill in the art (a “POSA”) in the relevant field, as of the date of alleged invention of the ’622 patent, would have earned at least an undergraduate degree in mechanical engineering or had equivalent work experience of one to two years designing power tools. (EX1004, ¶164.)

B. Overview of the ’622 Patent

The ’622 patent issued on January 13, 2009 from U.S. Application No. 11/977,779 (“the ’779 application”), which was filed on October 26, 2007 (EX1001). No priority claims were made. Thus, the earliest possible priority date for the Challenged Claims is October 26, 2007. Pre-AIA 35 U.S.C. §§ 102 and 103 apply to the Challenged Claims. The ’622 patent discloses a “supporting device” (a clamp) for a “protective cover” (a saw blade guard) that tightens to secure a “supporting frame” (a riving knife). The ’622 patent has one independent claim and eight dependent claims.

The ’779 application was a first-action allowance. None of the claims were rejected or required amendment. The Examiner cited only the “biasing member” of

claim 1 as his reason for allowance. (EX1002, 23.)

C. Claim Construction (37 C.F.R. § 42.104(b)(3))

No terms require construction. Each term should be given its plain and ordinary meaning in accordance with *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)(*en banc*).

D. The Prior Art Cited is Not Redundant

The grounds relied upon in this Petition are not duplicative or redundant to the art considered during prosecution nor are the references or arguments made herein the same or substantially the same as those previously presented to the Office. None of Bennett, Huang, Gass, Garcia, or Liu were cited on the face of the '622 patent or by the Examiner.

While the publication giving rise to Burke was cited by the Examiner, the reference was merely cited on an October 6, 2008 Notice of References cited. (EX1002, 25.) The reference was not used in any rejection nor was it addressed by the Examiner in any other way. *See Scientific Design Co., Inc. v. Shell Oil Co.*, IPR2021-01537, Paper 7 (P.T.A.B. Mar. 18, 2022) (declining to deny institution under 35 U.S.C. § 325(d) where a reference cited on an IDS [which was not the case as to Burke] was not substantively addressed by the Examiner). Furthermore, the grounds herein incorporating Burke are in combination with references not

previously of record concerning the '622 patent. Thus, all grounds cited herein are new.

E. The Challenged Claims

The Challenged Claims relate to a table saw clamp for a support frame that carries a protective blade cover. (EX1004, ¶¶166-167.) The elevation of the support frame is adjustable via a slot in the support frame that allows the frame to be retracted and raised. (*Id.*)

Independent claim 1 generally has the following components: a supporting device that mounts a protective blade cover to shield a rotating cutting machine, wherein the supporting device includes: a mount unit, a tightening bolt, a supporting frame, a movable tightening member, a cam actuating member, a handgrip, and a biasing member. (*See* EX1004, ¶¶170-174, 177.) Dependent claim 2 defines the mount unit as having fixed and movable components; claim 5 adds a screw nut; and claim 9 adds a retaining unit.

F. Scope and Content of the Prior Art

Table saws are useful for making cuts in woodworking. (EX1004, ¶¶62-63.) However, table saws use an exposed rotating blade, creating hazards to the operator and those in proximity to the tool. (*Id.*)

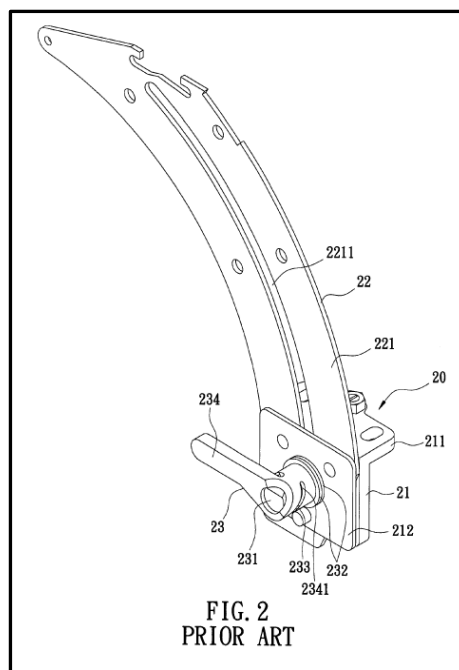
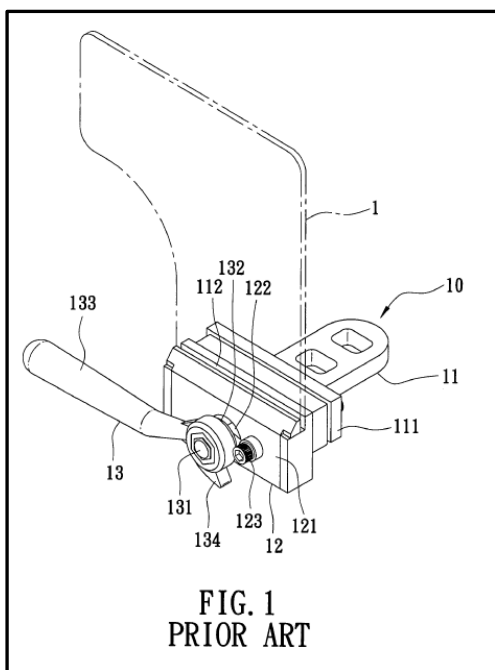
Table saws can be made safer by the addition of certain components. (*Id.*, ¶¶64-66.) A blade guard (a component to cover the blade) is one such safety device

that has been known in the art for at least a century. (EX1006, 1:8-9.) A riving knife or splitter can also be added to further protect the user and have been known in the art for decades. (EX1004, ¶¶65, 67-71, 134-141; *see* EX1006.) Riving knives help prevent kickback, which occurs when the rotating blade launches a workpiece toward the user. (*Id.*) Riving knives can also carry the blade guard. (*Id.*)

It has been a known problem that users resist using riving knives and blade guard assemblies because of difficulty in installation, removal, and use. (*See* EX1003, 19:56-65; EX1004, ¶¶66, 74-75.) A POSA would have been well-aware of the specific challenges associated with these safety devices and would have been motivated to find a solution to increase the use and user-friendliness of such devices. (*Id.*) The following prior art references illustrate what was known in the art.

1. Applicant Admitted Prior Art

The '622 patent expressly admits the scope and content of the prior art ("AAPA"). The '622 patent presents enabling disclosure of at least two prior art "supporting devices" (Figures 1-2) and describes each embodiment under the heading "Description of the Related Art." (EX1001, 1:13-2:2; EX1004, ¶¶77-79.) Figures 1 and 2, captioned "Prior Art," are below.



The '622 patent admits that the above prior art already includes a mounting unit 11/21 having a fixed mount 111/211, a tightening mount 12/212 having a handgrip 133 and a cam actuator including cam surfaces, and a supporting frame 1/22 that is “adapted to hold a protective cover” and clamped and positioned by “operat[ion of the] handgrip 133” along an “arcuate slot 2211.” (EX1001, 1:14-62, Figs. 1-2; EX1004, ¶¶78-79.)

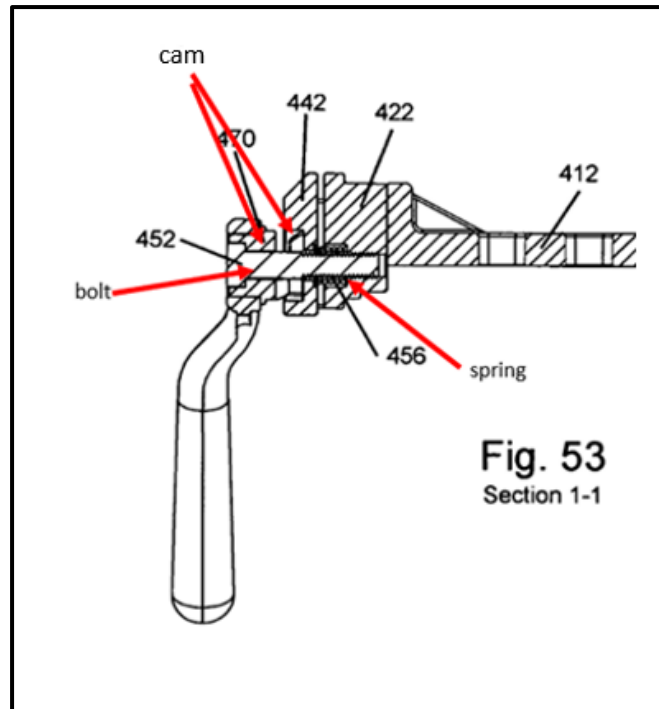
The Federal Circuit has held that “[a] statement in a patent that something is in the prior art is binding on the applicant and patentee for determinations of anticipation and obviousness.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1570 (Fed. Cir. 1988); *see also McCoy v. Heal Sys., LLC*, 850 F. App’x 785, 789 (Fed. Cir. 2021). Given the '622 patent’s binding admission that the prior art includes the components identified therein, such components cannot be the basis for

patentability of the Challenged Claims.¹

2. Gass

Gass is directed to “[t]able saws having a mounting system configured to hold a riving knife or splitter adjacent a blade.” (EX1003, Abstract; EX1004, ¶¶97-98.) Gass discloses, among other features, a “riving knife” or “splitter” (support frame) with a “blade guard” (protective cover) and held by a clamp (EX1003, 18:41-47, 24:47-52, 27:37-45); and a spring sleeved on a bolt (*id.*, 20:55-62; 21:59-65, Fig. 53). Some of these components are labelled below (*see* EX1004, ¶¶99, 111-114; *see also id.*, ¶¶100-110).

¹ Grounds 1 and 3 rely on AAPA in combination with other prior art references. Petitioners submit that it has only used AAPA herein as permitted by the Office’s updated guidance. (*See* June 9, 2022 updated guidance to PTAB, 3-4.)



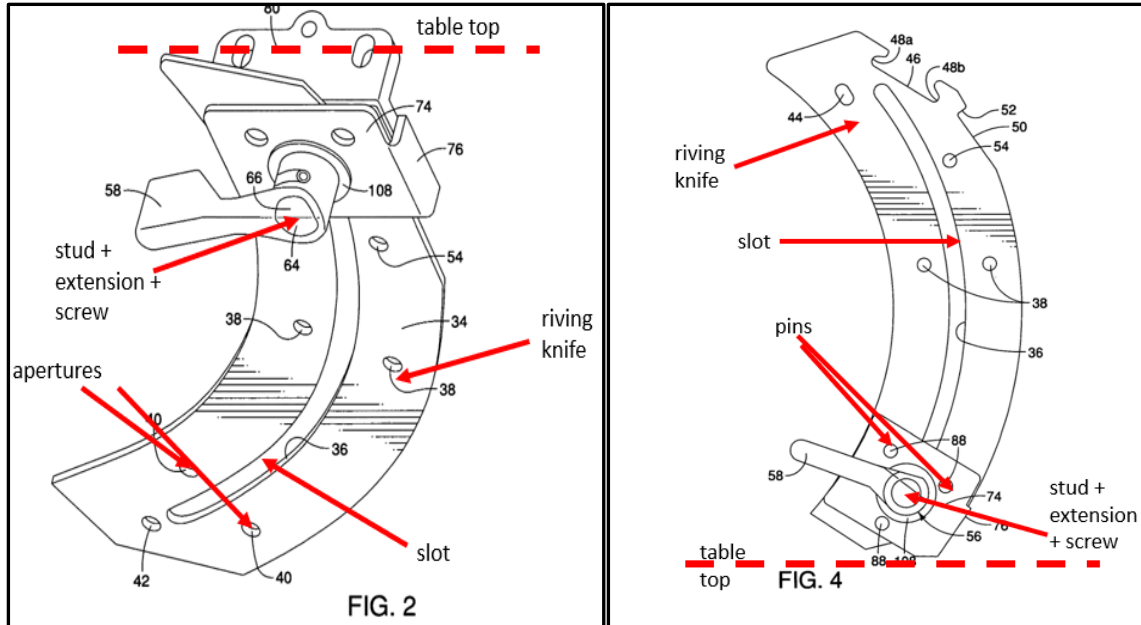
Annotated Fig. 53 of Gass

Gass details a camming mechanism (two discs having sloped faces in contact with one another) and teaches that “the geometry of the cam surfaces prevents vibration or other factors from causing the mounting system to unclamp or open.” (EX1003, 20:63-21:8, 22:49-23:30; EX1004, ¶¶115-122.) Gass teaches a spring sleeved on a bolt that exerts a force onto the clamping plate and the cams. (EX1003, 20:55-62; EX1004, ¶¶113.)

3. Burke

Burke is directed to a “blade guard ... mounted to [a] riving knife” for a table saw and teaches a “quick release assembly” to clamp the riving knife in place that allows for adjustment of the elevation of the riving knife relative to the blade. (EX1010, Abstract, 4:22-54; EX1004, ¶¶123-124.) Burke discloses a “retracted

position,” where a “stud” and “screw” (bolt) are proximate to the upper end of the riving knife, and an “extended position” where a “stud” and “screw” (bolt) are remote from the upper end of the riving knife. (EX1010, Figs. 2 (retracted) & 4 (extended); EX1004, ¶¶125, 131-133.) The slot of the riving knife slidably engages with the stud and screw, and the riving knife can be secured in place by locking the clamp and aligning the apertures in the riving knife with the pins of the bracket of the clamp. (EX1010, 4:22-54, 5:37-67, Figs. 1 & 2; EX1004, ¶¶125, 131-133.)



Annotated Fig. 2 of Burke

Annotated Fig. 4 of Burke

Burke highlights that a simple slot in the riving knife eliminates and reduces many of the difficulties users have with a riving knife (i.e., need to remove, ease of adjustment between positions, and convenience of use). (See EX1010, 4:10-21; EX1004, ¶¶126-129.)

4. Garcia

Garcia discloses “[a] dual bevel table saw” similar to those disclosed herein, having a slot-guided adjustment assembly similar to Burke and AAPA. (EX1004, ¶¶80-87) Garcia also teaches an eccentric shaft camming mechanism and use of a compression spring with force that can “securely affix the position of the riving knife 1422 relative to the saw blade 106.” (EX1009, ¶¶0104-0107; EX1004, ¶¶88-94.)

5. Liu, Huang, and Ceroll

Liu, Huang, and Ceroll all disclose cutting tool devices having springs that exert a force in a direction that tightly secures a riving knife in place. (EX1012, ¶0043; EX1011, 3:47-67; EX1015, 5:22-33 (disclosing a spring securing a “cutting tool” in place); EX1004, ¶¶142-151.)

VII. THE CLAIMS OF THE '622 PATENT ARE UNPATENTABLE

Riving knives and riving knife clamps for use in cutting machines have been known in the art, and skilled artisans have long understood the importance of using such devices to improve user safety. (EX1004, ¶¶65-66, 152-162.) A POSA would have been motivated to combine features of existing riving knives and clamps to make them easier to use to provide for increased safety. (*Id.* at ¶¶179-181.) Well-understood principles of the mechanical arts would have motivated the skilled artisan to combine the teachings of these references, and such references provide ample reason to believe the combinations would be successful.

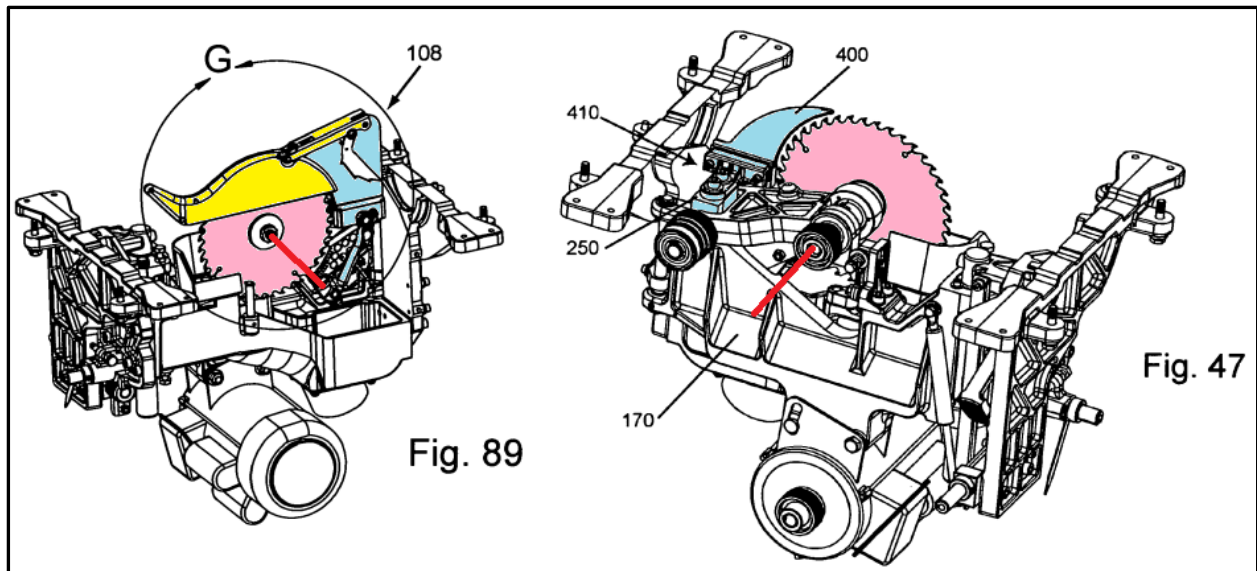
A. Ground 1: The Challenged Claims are unpatentable as obvious under 35 U.S.C. §103 over Gass in view of AAPA

1. Claim 1

Gass discloses all of the limitations of claim 1 except the guiding slot within its supporting frame. AAPA discloses this limitation.

a. Limitation 1.0: A supporting device for mounting a protective cover to shield a cutting blade of a cutting machine which is driven to rotate about a rotating axis, said supporting device comprising:

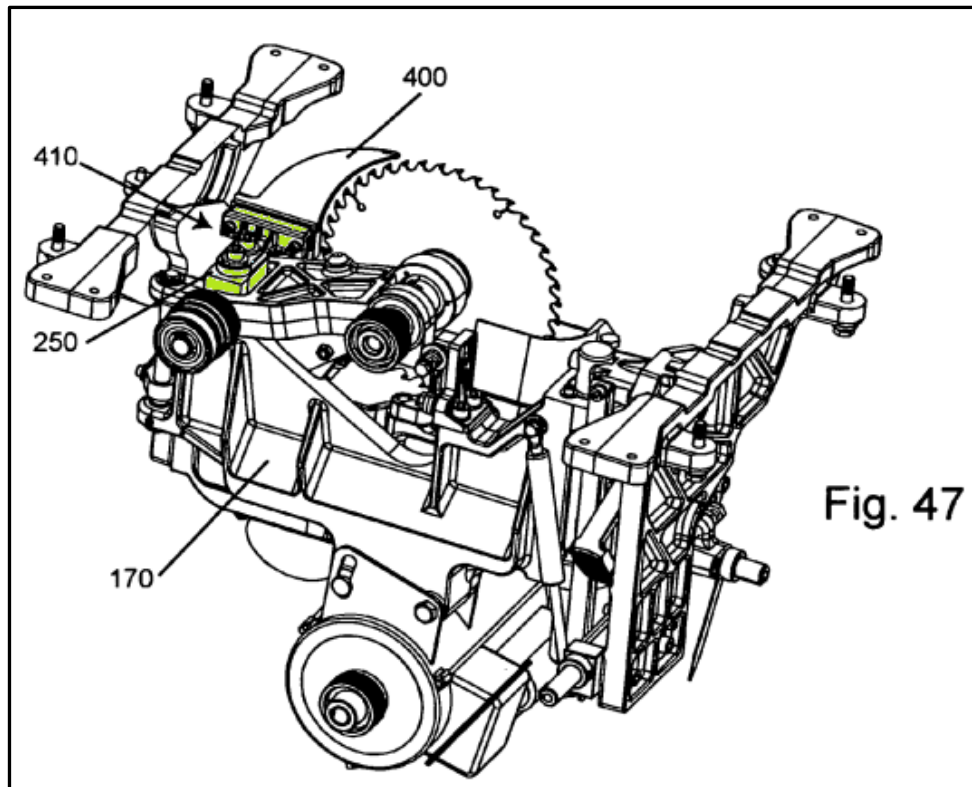
Gass teaches a supporting device 410 (blue below) for mounting a protective cover 108 (yellow below) to shield a cutting blade 105 (pink below) of a cutting machine 100. (EX1003, Figs. 3 & 47, 24:47-51 (“Blade guard assembly 108 is another item that may be mounted and indexed in the mounting system 410.... Blade guard 108 includes a blade shroud 520 shaped to fit over the blade and shield a person from accidentally contacting the blade.”); EX1004, ¶¶182-184.) The cutting blade 105 (pink) of cutting machine 100 is driven to rotate about a rotating axis (red line, below). (EX1003, Figs. 89 & 47, 14:46-47 (“[T]he blade of the saw is mounted on the arbor so that it spins when the arbor rotates.”); EX1004, ¶¶182-184).



Annotated Figs. 89 & 47 of Gass

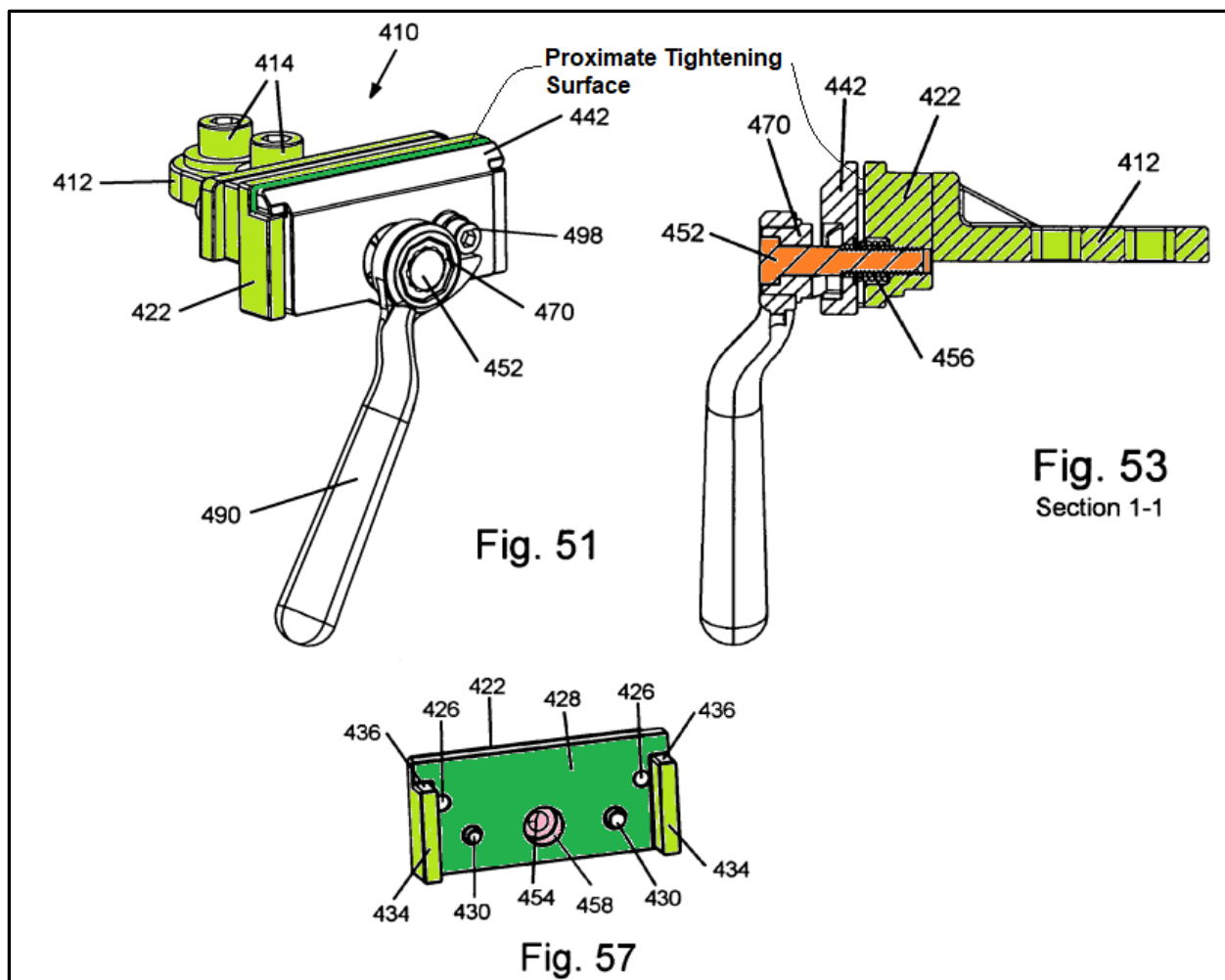
- b. **Limitation 1.1: a mount unit which is adapted to be secured to the cutting machine, said mount unit including a major abutment wall which has a proximate tightening surface that has an axial hole extending therethrough along a tightening axis parallel to the rotating axis of the cutting blade;**

Gass teaches a mount unit 412, 422, 428 (green below) secured to a cutting machine (via 414). (EX1003, Fig. 47, 20:3-18 (“Mounting system 410 includes a mounting plate 412 that is bolted onto raised portion 250 of elevation plate 170 by bolts 414.”); EX1004, ¶185.)



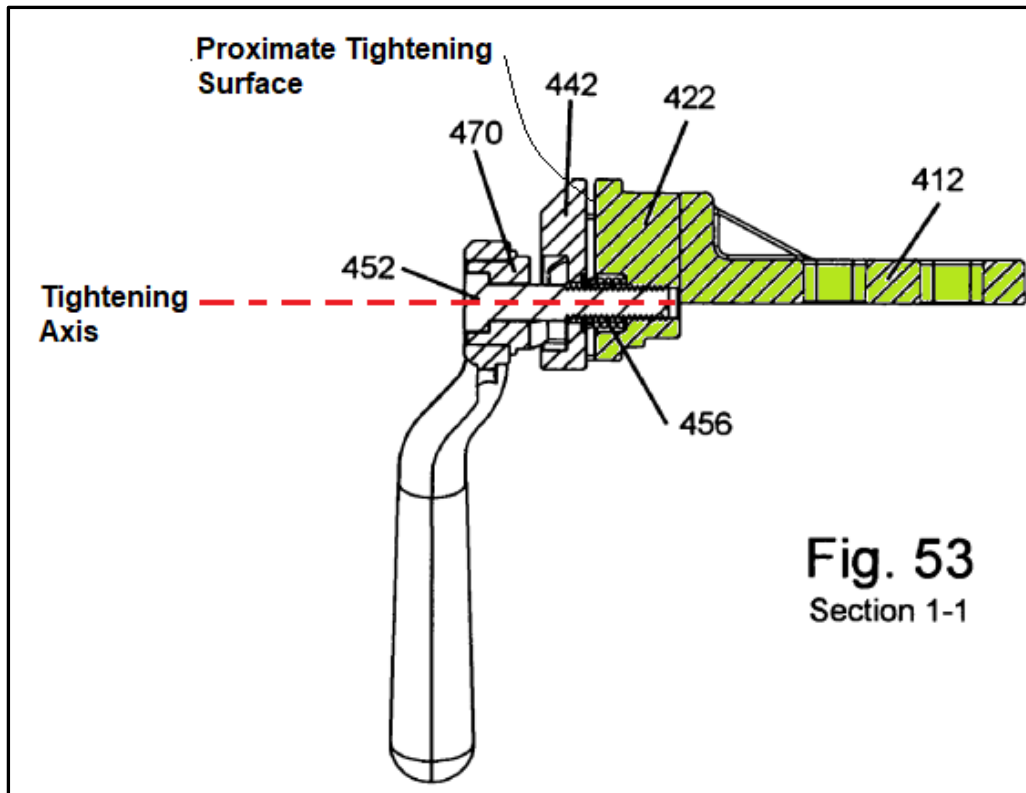
Annotated Fig. 47 of Gass

Gass' mount unit 412, 422, 428 (green) includes a major abutment wall 428 with a proximate tightening surface 428 (dark green below) and an axial hole 454, 458 (pink below) extending therethrough. (EX1003, Figs. 50-58, 20:52-55 ("Bolt 452 passes through hole 450 and is threaded into a hole 454 in positioning plate 422 to loosely connect the clamping plate to the positioning plate."); EX1004, ¶186.)

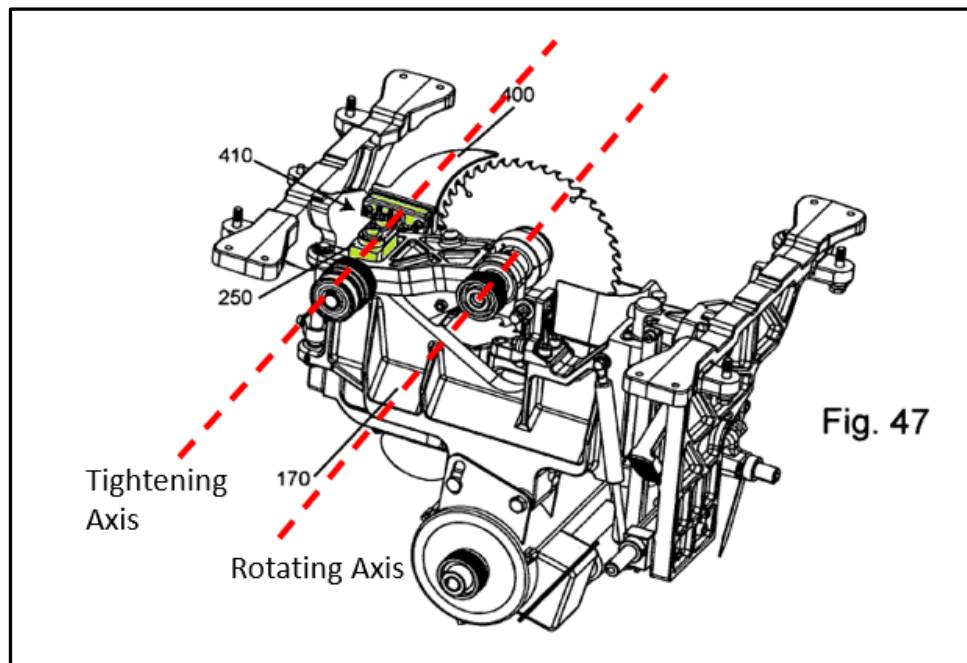


Annotated Figs. 51, 53 & 57 of Gass

The axial hole 454, 458 extends along a tightening axis parallel to the rotating axis of the cutting blade. (EX1004, ¶¶187-188.)



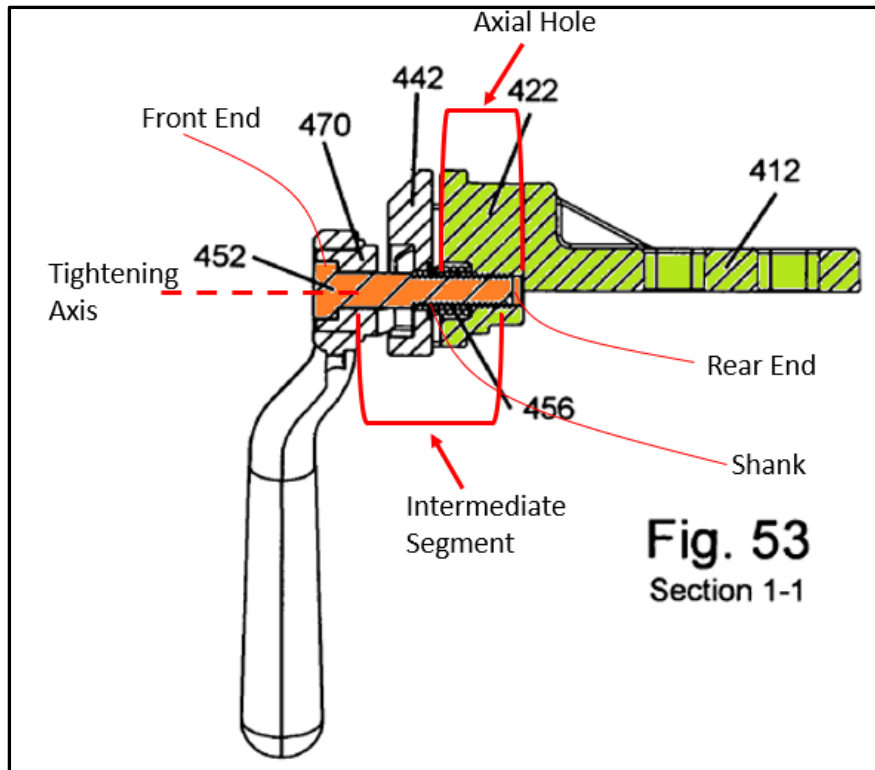
Annotated Fig. 53 of Gass



Annotated Fig. 47 of Gass

- c. **Limitation 1.2: a tightening bolt having a shank which is configured to pass through said axial hole, and which has front and rear ends opposite to each other in the tightening axis, and an intermediate segment interposed between said front and rear ends;**

Gass teaches a tightening bolt 452 (orange below) having a shank (also orange below). The shank of the bolt 452 (orange) passes through the axial hole 454, 458 (pink above) in the major abutment wall 428 (green below). (*Id.*, Fig. 53, 20:52-55 (“Bolt 452 passes through hole 450 and is threaded into a hole 454 in positioning plate 422 to loosely connect the clamping plate to the positioning plate.”).) The bolt 452 has front and rear ends (annotated below) opposite each other in the tightening axis, as well as an intermediate segment (annotated below) interposed between the front and rear ends. (*Id.*, 20:19-38, 20:51-62, 21:30-36, Figs. 50-57; EX1004, ¶¶189-190.)

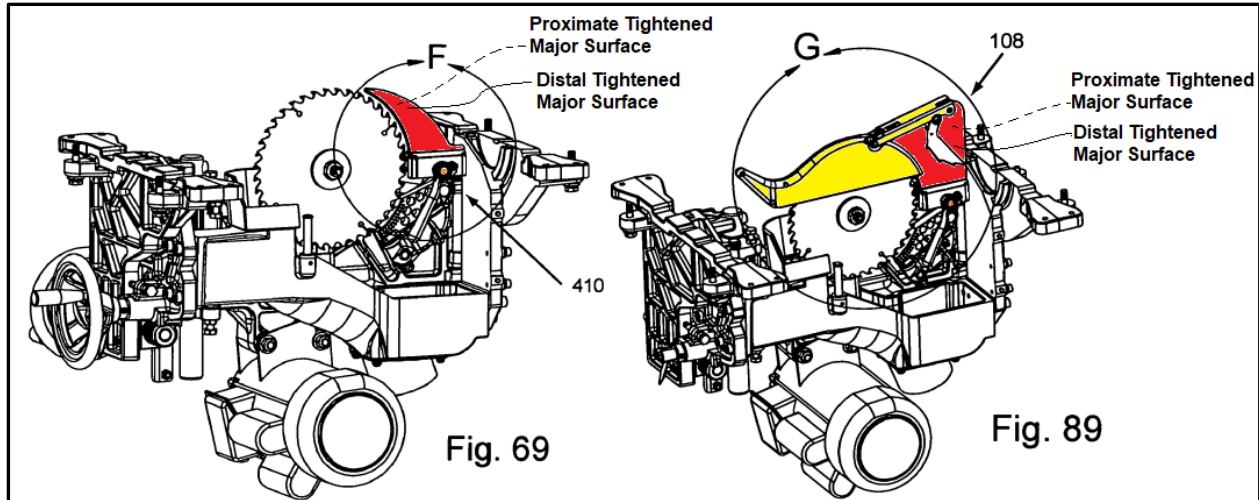


Annotated Fig. 53 of Gass

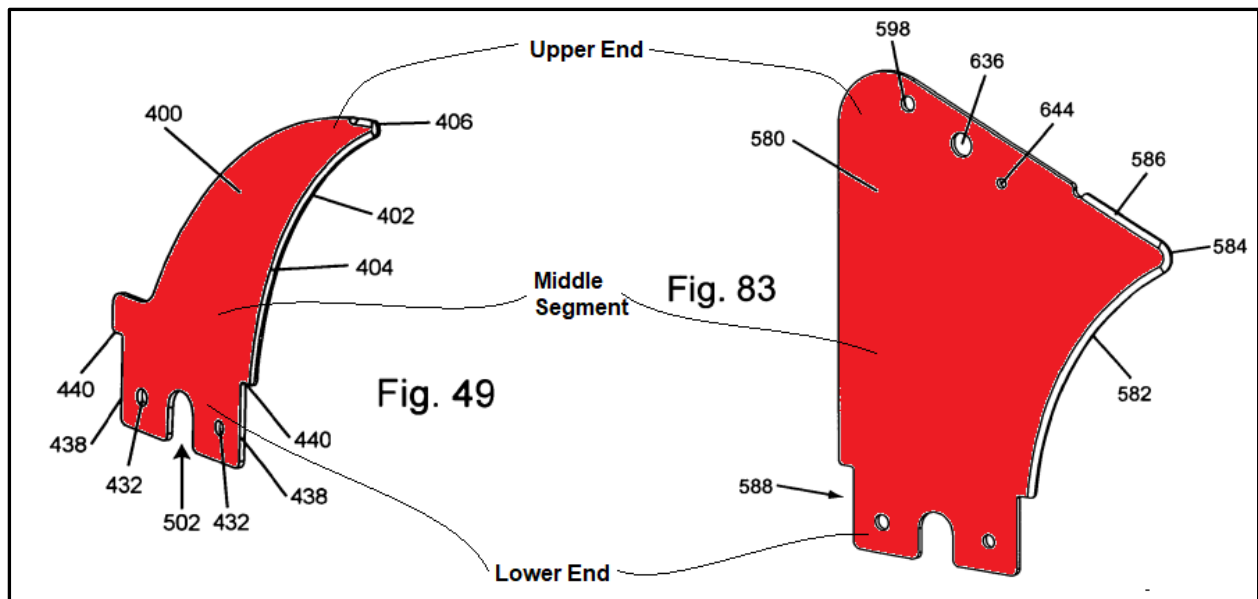
- d. **Limitation 1.3:** a supporting frame which has upper and lower ends opposite to each other, and a middle segment interposed between said upper and lower ends, said upper end being adapted to hold the protective cover, said middle segment having proximate and distal tightened major surfaces opposite to each other along the tightening axis,

Gass's supporting frame 400/580 (red below) has an upper end (annotated below), a lower end (annotated below) opposite the upper end, and a middle segment (annotated below) interposed between the upper and lower ends. (EX1003, 18:34-35 ("FIG. 44 shows a table saw with a riving knife 400 positioned adjacent the back edge of the blade."), 27:38-43 ("Splitter 580 is a flat, metal plate similar to the riving knife discussed above. ... the splitter is positioned in the saw behind and within the

kerf of the blade, like the riving knife.”), Figs. 44-49, 69, 74-77, 83-89, 93-94.); EX1004, ¶191.) The upper end of Gass’s supporting frame 580 is adapted to hold a protective cover (yellow below). (EX1003, Fig. 89; 27:43-45 (“The splitter, however, extends above the height of the fully elevated blade so that a blade shroud may be mounted thereto.”).) The middle segment has proximate and distal tightened major surfaces opposite each other along the tightening axis (tightening axis extends through orange bolt 452). (EX1003., Figs. 69 & 89; EX1004, ¶191.)



Annotated Figs. 69 & 89 of Gass



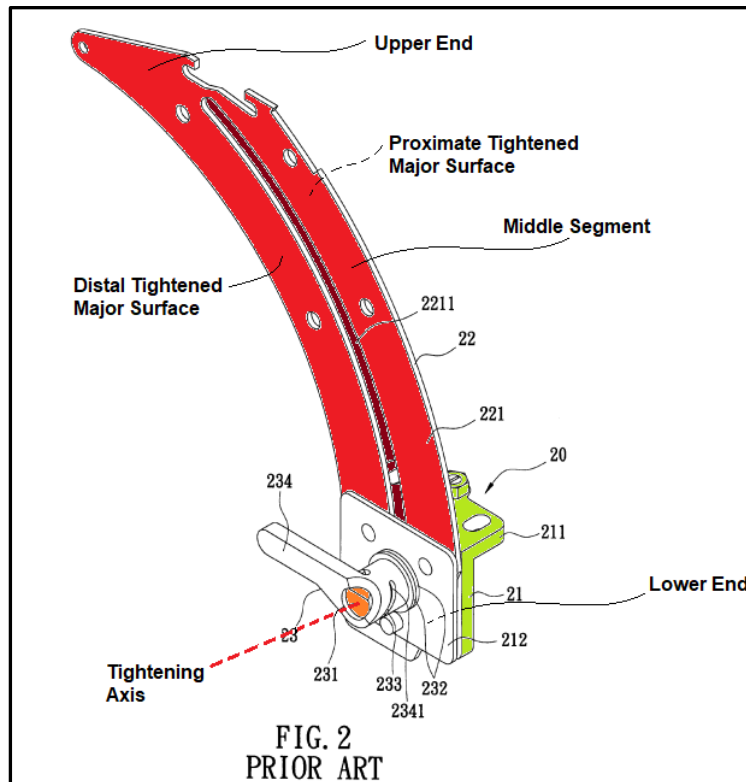
Annotated Figs. 49 & 83 of Gass

A POSA would have understood the interchangeability of a riving knife 400, splitter 580, or an alternative support frame in view of the teachings of Gass. (EX1003, 24:41-46 (“Mounting system 410 is constructed so that items other than a riving knife may be attached to or mounted in the saw. Any item that includes a base configured to fit . . . may be mounted and indexed in the saw as described.”); EX1004, ¶¶192-194.)

- e. **Limitation 1.4:** and a guiding slot which extends through said proximate and distal tightened major surfaces and which permits passage of said shank therethrough, said guiding slot permitting said middle segment to be movable between a position of use where said shank is remote from said upper end, and a retreat position where said shank is closer to said upper end;

AAPA, as also discussed in Section VII(C)(1)(d)-(f) herein, discloses this limitation. AAPA discloses a guiding slot 2211 (dark red below) extending through

the proximate and distal major tightened surfaces (annotated below) of supporting frame 22 which permits passage of the shank (orange) therethrough. (EX1001, 1:53-62 (disclosing a “supporting frame unit 22” has an “arcuate slot 2211” with the shank of “a tightening bolt 231 [that] extends through the arcuate slot 2211 and into the fixed mount 211”), Fig. 2; EX1004, ¶195.)

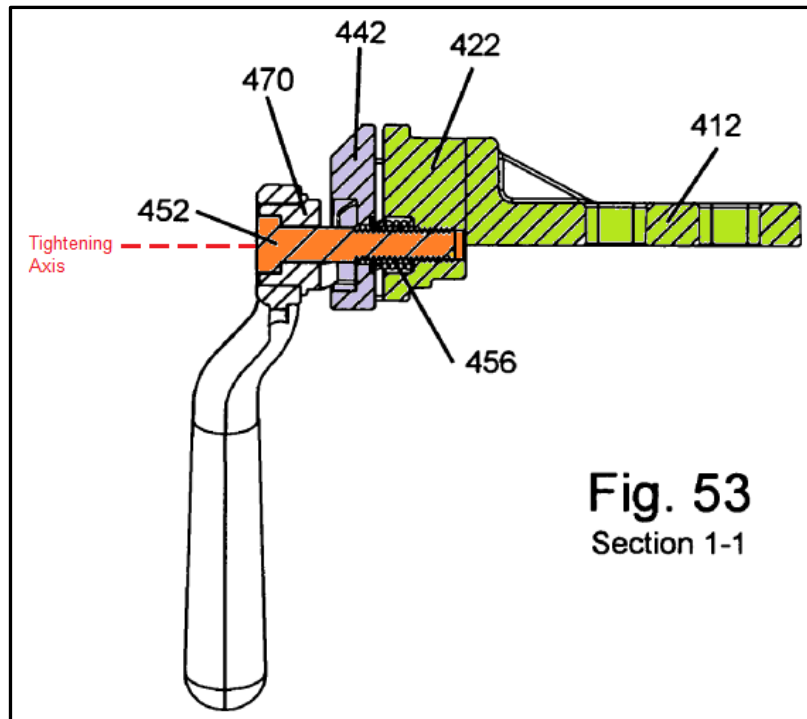


Annotated Fig. 2 of AAPA

A POSA would have known that the guiding slot 2211 (dark red) permits the middle segment (annotated above) to be movable between a position of use (AAPA, Fig. 2) where the shank 231 (orange) is remote from the upper end (annotated above), and a retreat position (not shown), where the shank 231 (orange) is closer to the upper end (annotated above). (EX1004, ¶¶196-198.)

f. Limitation 1.5: a movable tightening member which is sleeved on said shank, and which has a thrust major wall to which the tightening axis is normal,

Gass discloses a movable tightening member 442 (purple below) that is sleeved on the shank 452 (orange below), having a thrust major wall (also purple below) to which the tightening axis (red dashed lines below) is normal. (EX1003, Fig. 53, 20:39-50 (The movable tightening member of Gass is “clamping plate 442,” which “works with positioning plate 422 to clamp and hold the riving knife in position.”), 20:51-55 (“Clamping plate 442 also includes a hole 450 through which a bolt 452 passes. Bolt 452 is labeled in FIG. 53. Bolt 452 passes through hole 450 and is threaded into a hole 454 in positioning plate 422 to loosely connect the clamping plate to the positioning plate.”), 22:33-38 (disclosing that clamping plate is movable: “[m]oving handle 490 down causes cam bushing 470 to turn. When the cam bushing turns, cam surfaces . . . slide up cam surfaces . . . on the clamping plate and push the clamping plate toward the positioning plate”); EX1004, ¶¶199-200). The tightening axis oriented normal to the thrust major wall. (*Id.*)

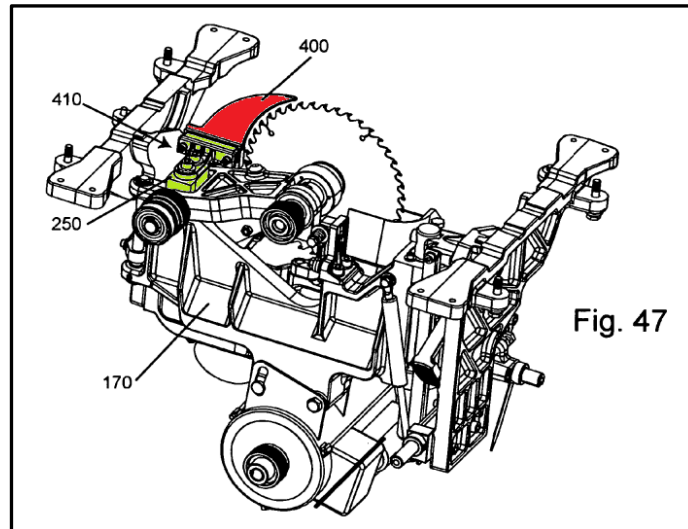


Annotated Fig. 53 of Gass

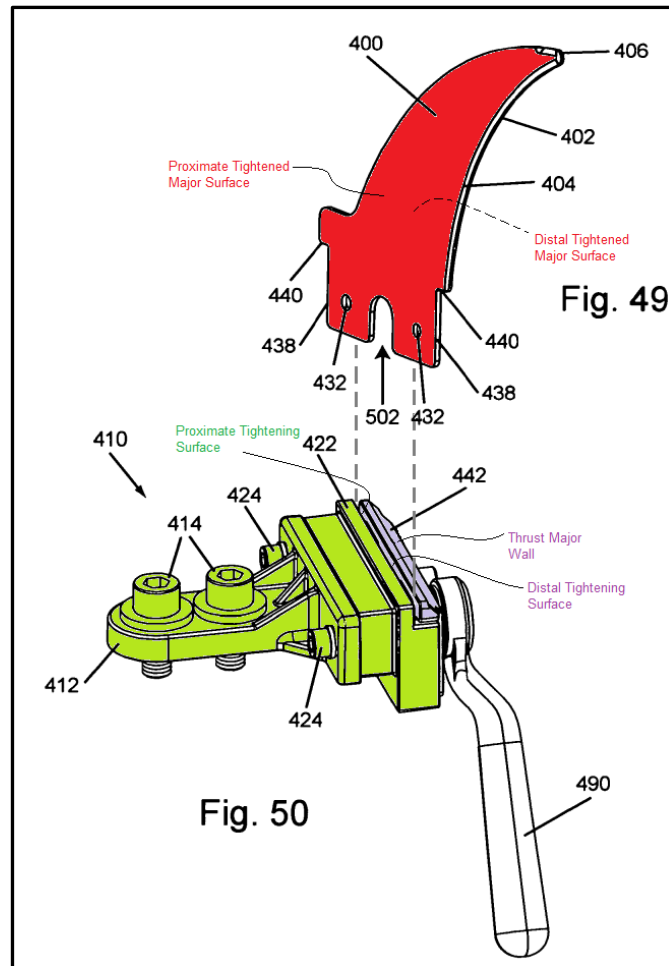
- g. Limitation 1.6: said thrust major wall having a distal tightening surface which confronts and which is to be brought to press said distal tightened major surface so as to force said proximate tightened major surface to abut against said proximate tightening surface, and**

Gass Figures 47 and 49-50 show the thrust major wall (purple below) of movable tightening member 442 has a distal tightening surface (annotated below) that confronts and which is to be brought to press distal tightened major surface (annotated below) of supporting frame 400 (red). (EX1003, Fig. 47, 20:39-50 (clamping plate 442 “supports the side of the riving knife opposite the side supported by the positioning plate.”)). During operation, the proximate tightened major surface (annotated below) of the supporting frame 400 (red) is forced to abut the proximate tightening surface (annotated below) of the mount unit 412, 422, 428 (green). (*Id.*,

Fig. 47, 20:39-41 (“Mounting system 410 also includes a clamping plate 442 that works with positioning plate 422 to clamp and hold the riving knife in position. Clamping plate 442 includes a flat surface 444 that supports the side of the riving knife opposite the side supported by the positioning plate.”); EX1004, ¶¶202-203.)



Annotated Fig. 47 of Gass



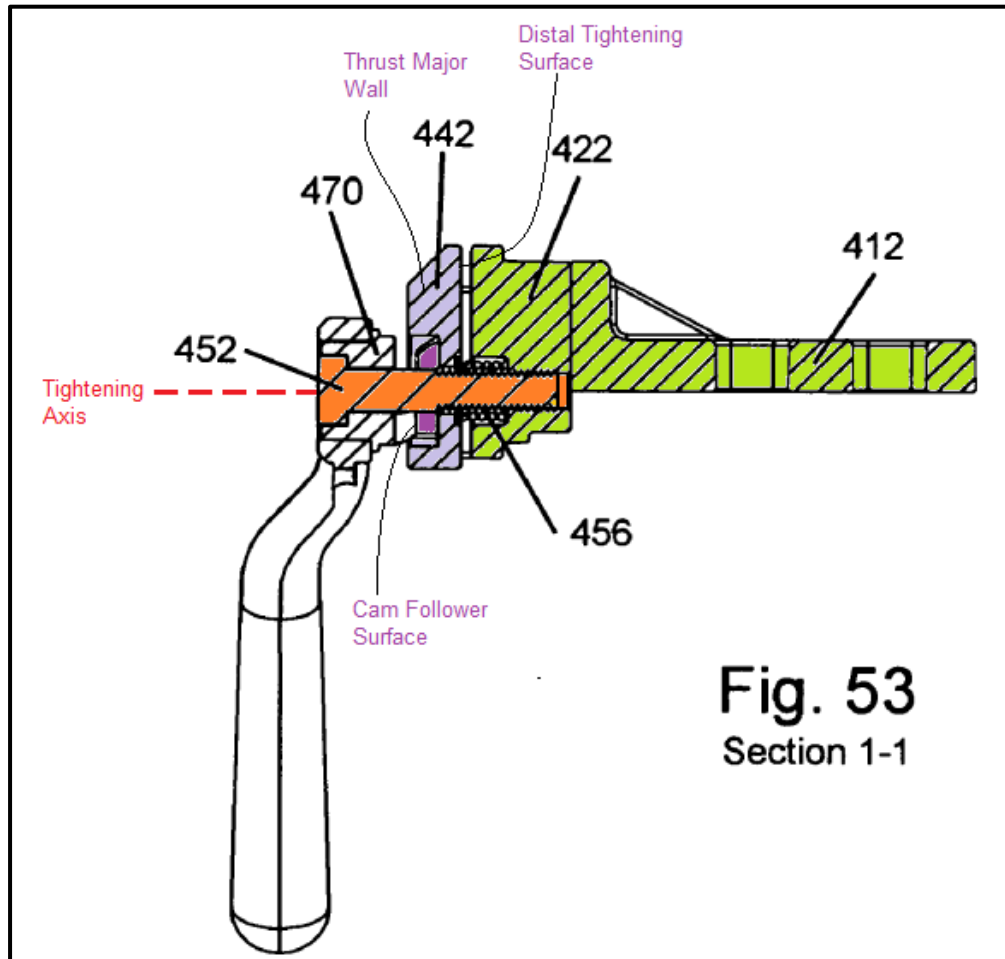
Annotated Figs. 49-50 of Gass

A POSA would have understood this limitation to describe clamping the supporting frame (riving knife). (*See id.*, 22:32-48; EX1004, ¶201.)

- h. **Limitation 1.7:** a cam follower surface which is opposite to said distal tightening surface along the tightening axis, and which has first and second pressed areas that are angularly displaced from each other about the tightening axis, and that are respectively proximate to and distal from said distal tightening surface along the tightening axis;

Gass's thrust major wall (purple) includes a cam follower surface 462-465

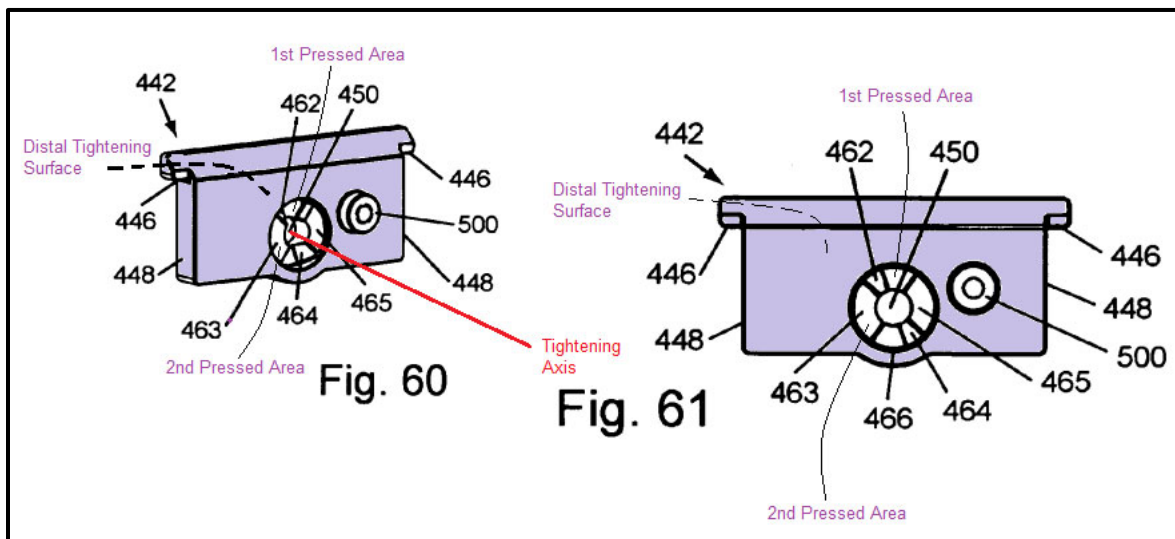
(annotated and dark purple below) opposite the distal tightening surface (annotated below) along the tightening axis (red dashed line). (EX1003, Fig. 53; EX1004, ¶206.)



Annotated Fig. 53 of Gass

Gass's cam surface 462-465 has a first pressed area 466 (annotated below) and a second pressed area 463 (annotated below) that are angularly displaced from each other about the tightening axis. (EX1004, ¶207.) The first pressed area (annotated) of Gass is proximate to (closer to) the distal tightening surface (annotated below) along the tightening axis (dashed red line) compared to the second

pressed area 463 of Gass, which is distal to (farther from) the distal tightening surface (annotated below) along the tightening axis. (EX1003, Fig. 60-61, 20:63-21:2 (“Clamping plate 442 also includes a first set of cam surfaces 462 and 463 and a second set of cam surfaces 464 and 465. The cam surfaces are positioned in a recess 466 that is concentric with hole 450 and the cam surfaces are arcuately spaced around the hole. Cam surfaces 462 and 464 slope up from the bottom of recess 466 to where they join with cam surfaces 463 and 465, respectively.”); EX1004, ¶¶207-208.)

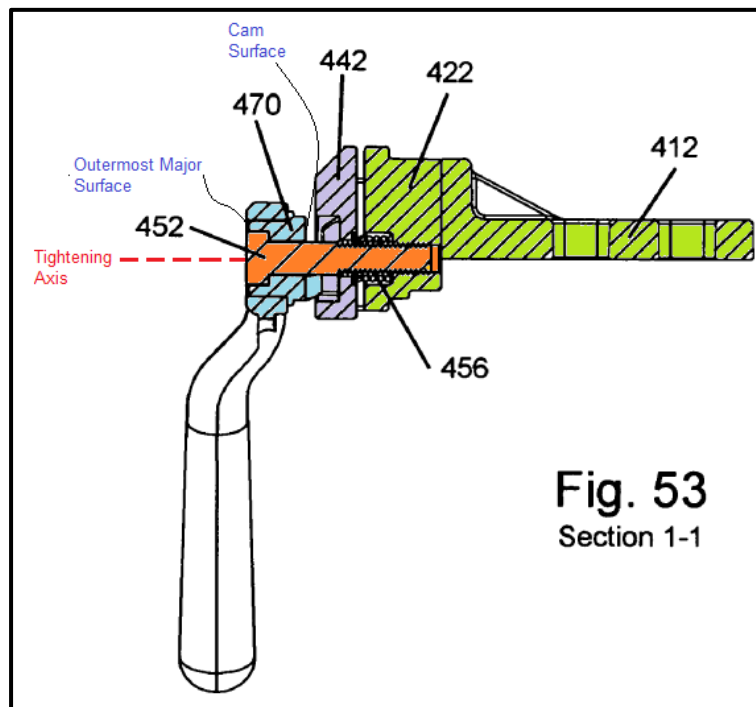


Annotated Figs. 60-61 of Gass

The “cam follower” of the limitation is a rotationally static member of a common cam that translates rotary motion into linear motion along the rotational axis. (EX1004, ¶¶204-205.)

- i. **Limitation 1.8: a cam actuating member including an actuating body which is sleeved on said shank, and which has a cam surface and an outmost major surface opposite to each other in the tightening axis, said cam surface having first and second pressing spots which are angularly displaced from each other about the tightening axis such that,**

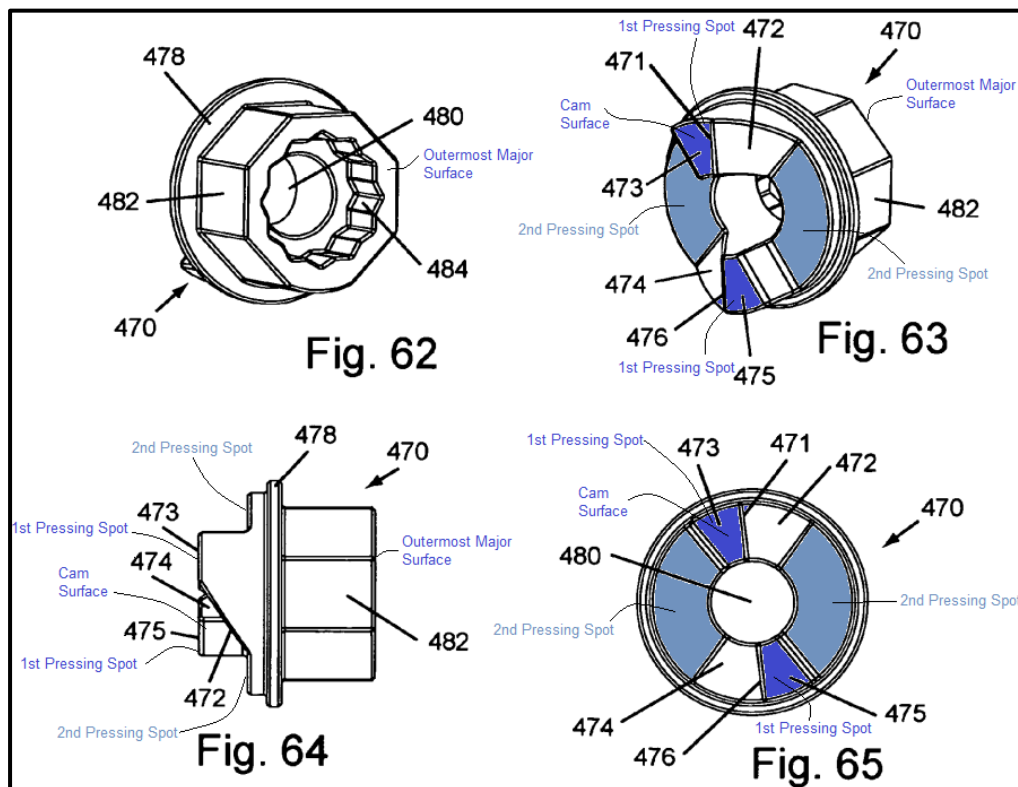
Gass discloses a cam actuating member (blue). The cam actuating member 470 includes an actuating body that is sleeved (via 480) on the shank 452 (orange, Fig. 53 below). (EX1003, Figs. 53, 62-65, 21:26-27 (“Bolt 452 passes through hole 480 in the cam bushing and through hole 450 in the clamping plate.”); EX1004, ¶¶209-210.)



Annotated Fig. 53 of Gass

The cam actuating member 470 has cam surfaces 471-476 (annotated above

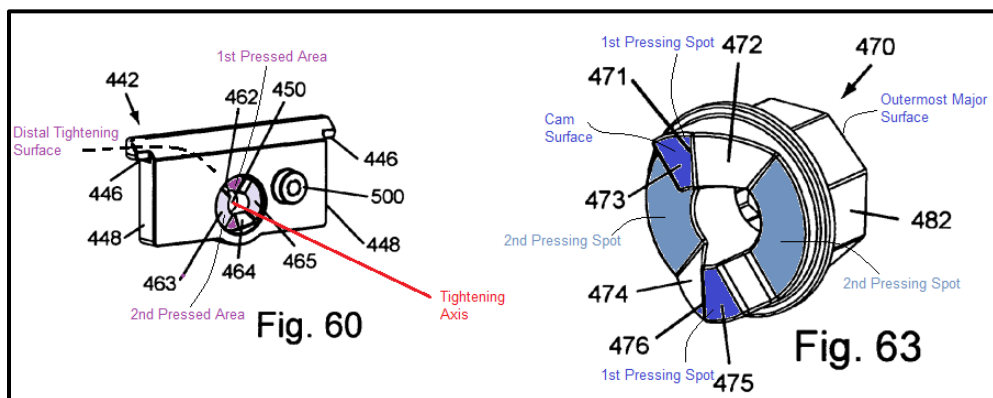
and below) and an outmost major surface (annotated above and below) opposite to the cam surfaces 471-476 in the tightening axis (all annotated below in blue). (EX1004, ¶211.) Cam surfaces 471-476 include a first pressing spot 473 (annotated in royal blue below) and a second pressing spot (annotated in grayish blue) which are angularly displaced from each other about the tightening axis. (EX1003, Figs. 62-65, 21:11-19 (“Cam bushing 470 includes cam surfaces 472 and 473 joined by a first edge 471, and a second set of cam surfaces 474 and 475 joined by a second edge 476. Those cam surfaces are arcuately spaced around a hole 480 ... each of cam surfaces 472 and 474 is a portion of a helix or coil with a pitch of 44 mm. Each of cam surfaces 473 and 475 is a flat surface.”); EX1004, ¶¶211-213.)



Annotated Figs. 62-65 of Gass

- j. **Limitation 1.9: said first and second pressing spots are brought into contact with said first and second pressed areas respectively when said cam surface is brought to mate with said cam follower surface in a loosened position,**

Gass discloses the first pressing spot 473 (annotated, royal blue below) of the actuating member 470 is brought into contact with the first pressed area (annotated, dark purple below) of the movable tightening member 442; and the second pressing spot (annotated and gray blue below) of the actuating member 470 is brought into contact with the second pressed area 463, 465 (annotated, light purple below) of the movable tightening member 442 when the cam surface 471-476 is brought to mate with the cam follower surface 462-465 in a loosened position. (EX1003, 21:59-22:13 (“[w]hen handle 490 is moved up to open the clamp, the handle turns cam bushing 470 so that the cam bushing fits into recess 466 on the clamping plate without engaging the cam surfaces.”); EX1004, ¶¶215-217.)



Annotated Figs. 60 & 63 of Gass

- k. Limitation 1.10: and such that, when said actuating body is turned about the tightening axis to a tightening position, said first pressing spot is displaced to contact said second pressed area with an axial frictional force so as to move said distal tightening surface to press said distal tightened major surface, thereby forcing said proximate tightened major surface to abut against said proximate tightening surface, and**

Gass discloses that, when the actuating body 470 is turned about the tightening axis to a tightening position, the first pressing spots 473, 475 (royal blue above) are displaced to contact the second pressed areas 463, 465 (light purple above) so as to move the distal tightening surface of the movable tightening member (purple above) to press the distal tightened major surface of the supporting frame 400 (red above), which thereby forces the proximate tightened major surface of the supporting frame 400 (red above) to abut against the proximate tightening surface (dark green above) of the mount unit 412, 422, 428 (green above). (EX1003, 21:59-22:54 (“When handle 490 is moved up to open the clamp, the handle turns cam bushing 470 so that the cam bushing fits into recess 466 on the clamping plate without engaging the cam surfaces.... Handle 490 may then be moved down to clamp the riving knife between the positioning and clamping plates. Moving handle 490 down causes cam bushing 470 to turn. When the cam bushing turns, cam surfaces 472 and 474 and/or leading edges 471 and 476 slide up cam surfaces 462 and 464, respectively, on the clamping plate and push the clamping plate toward the positioning plate.... When edges 471 and 476 move to the top of cam surfaces 462 and 464, cam

surfaces 473 and 475 on the cam bushing will engage cam surfaces 463 and 465 on the clamping plate. Continued downward rotation of the handle will then cause cam surfaces 473 and 475 to slide over cam surfaces 463 and 465.”); EX1004, ¶222) .)

A POSA, reading limitations 1.7-1.10, may find them to be indefinite, but may understand it to be describing how cams function. In particular, a POSA would have understood that camming actions require contact between at least two surfaces. A POSA would have understood that, because a cam has a circular configuration, displacement of one spot/area to contact another is an intrinsic aspect of the camming action. (EX1004, ¶¶218-219.) A POSA would have understood the terms “said first pressing spot is displaced to contact second pressed spot” to be merely describing this contact. (*Id.*)

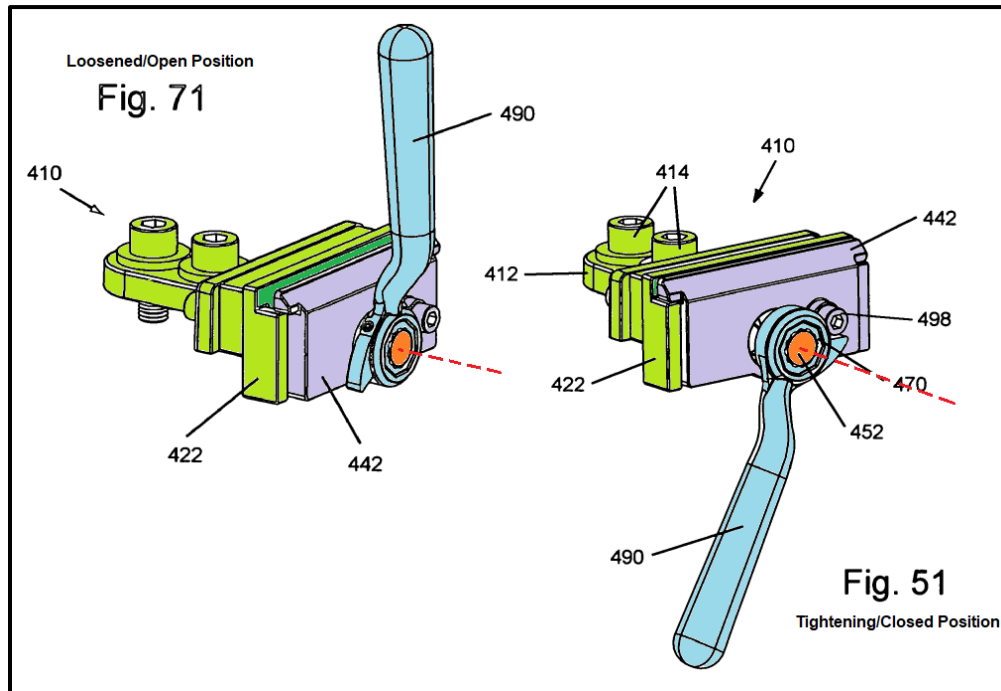
“Axial frictional force” does not act to create or impart motion. (*Id.*, ¶¶220-221.) A POSA would have known that the limitation requires an “axial clamping force” to accomplish the recited action. (*Id.*)

Ultimately, Gass informs the POSA that its cams, including its first and second pressing spots and first and second pressed areas (Gass’s “cam surfaces”), are to be designed such that their “geometry ... prevents vibration or other factors from causing the mounting system to unclamp or open.” (EX1003, 22:54-59; *see also id.*, 22:59-62 (“One possible configuration is to make cam surfaces 463, 465 ... relatively flat and smooth with only very little or no slope.”); EX1004, ¶¶221-225)

Although the '622 patent states that its purported invention limits “vibration of the cutting machine 100 during a cutting operation,” (EX1001, 5:59-62; EX1004, ¶¶221-225.), Gass had already solved this problem and is within the knowledge of a POSA. Thus the claimed cam configuration was not novel.

I. Limitation 1.11: a handgrip disposed to extend from said actuating body radially so as to turn said actuating body about the tightening axis between the loosened and tightening positions; and

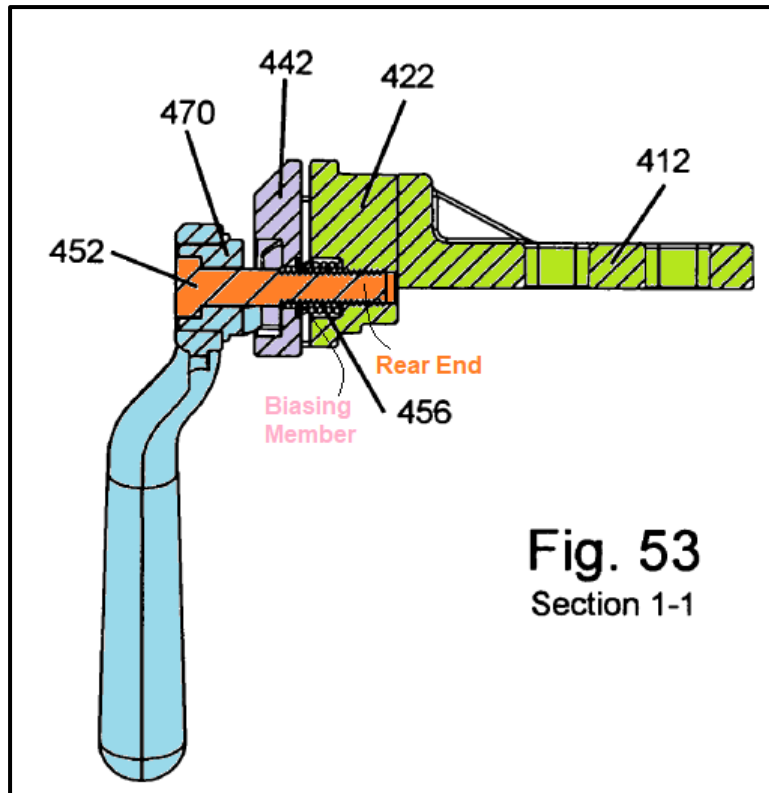
Gass discloses a handgrip 490 (blue below) disposed to extend from the actuating body 470 (also blue below) radially so as to turn the actuating body 470 about the tightening axis (red dashed line) between the loosened (Figure 71) and tightening (Figure 51) positions. (EX1003, 21:30-58 (“handle 490 ... has an elongate body ... configured to fit over octagon-shaped drive head 482 on cam bushing 470.... The open position is shown in FIGS. 71 and 72. In that position, handle 490 is raised and plates 422 and 442 are spaced apart. ... The closed position is shown in FIGS. 50, 51 and 69. In that position handle 490 is lowered and plates 422 and 442 are closer together to clamp the riving knife and hold it in position.”); EX1004, ¶¶226-228.)



Annotated Figs. 71 & 51 of Gass

- m. Limitation 1.12: a biasing member disposed on said shank adjacent to said rear end of said shank such that,**

Gass discloses a biasing member 456 (annotated below) disposed on the shank 452 (orange below) adjacent to the rear end (annotated below) of the shank 452. (EX1003, Fig. 53, 20:51-62 (a “spring 456 ... placed over bolt 452.”); EX1004, ¶¶229-231.)

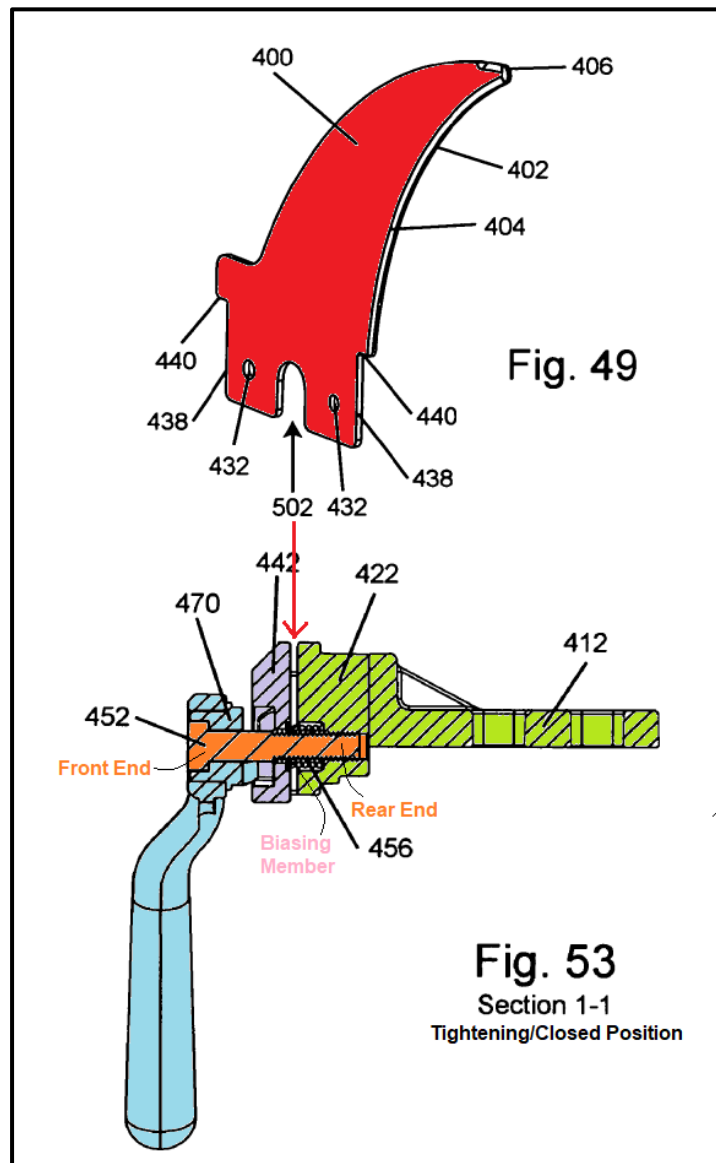


Annotated Fig. 53 of Gass

- n. **Limitation 1.13:** as a result of displacement of said actuating body to the tightening position, said biasing member acquires an increment of a biasing force which biases said front end of said shank towards said supporting frame so as to counteract the axial frictional force to thereby keep said actuating body in the tightening position.

Gass discloses that, as a result of displacement of the actuating body 470 (blue below) to the tightening (closed) position, the biasing member 456 acquires an increment of a biasing force which biases the front end (annotated in orange below) of the shank 452 (orange) towards the supporting frame 400 (red) to keep the actuating body in the tightening (closed) position. (EX1003, Figs. 49 & 53, 20:60-61 (“Spring 456 biases clamping plate 442 away from positioning plate 422 to help

open the clamp....”), 22:18-23 (“[T]he spring may be sized and selected so that it applies 5 to 15 pounds of force against the clamping plate in the open position, and more force when compressed. In this manner, the spring biases the clamping plate out so that the mounting system opens when handle 490 is raised.”); EX1004, ¶¶235-236.) Compressing a spring results in increased spring force.



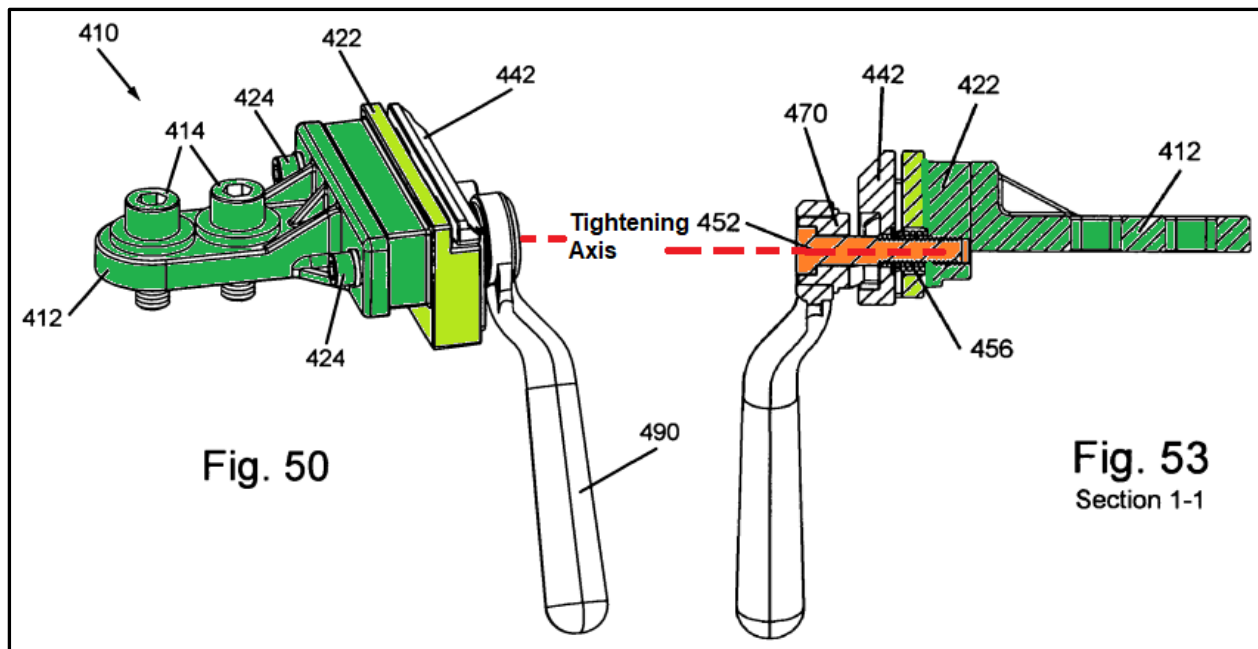
Annotated Figs. 49 & 53 of Gass

A POSA would have understood “axial frictional force” in the same manner

as described above. (EX1004, ¶¶232-234.) A POSA would have understood that “biasing force ... to counteract the axial frictional force” refers to the normal force that generates friction between the cam and the cam follower to keep them in a clamped position. (*Id.*) A POSA would have understood that such friction would result in a more stable, less movable clamp. (*Id.*)

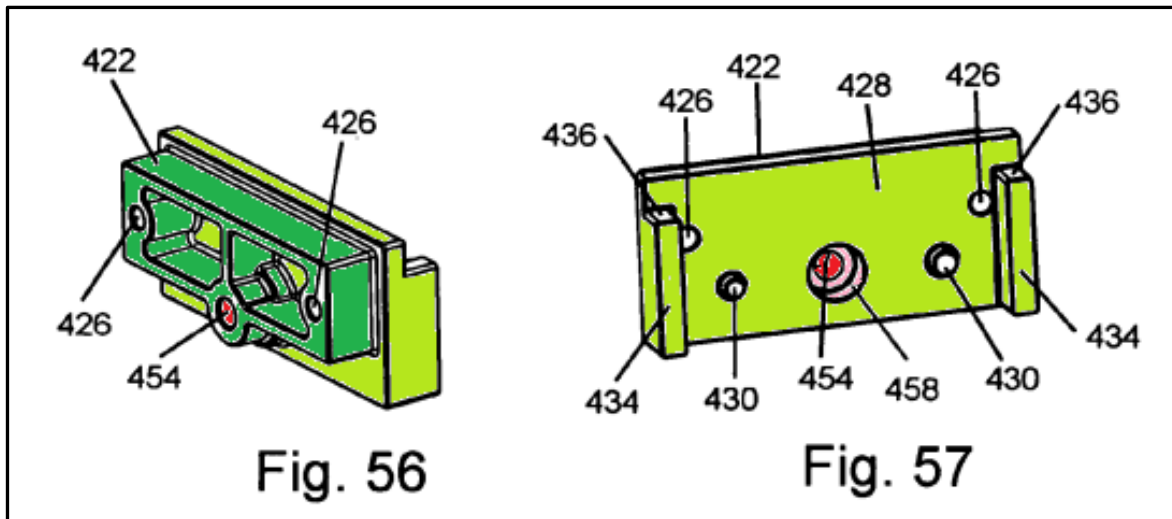
2. **Claim 2. The supporting device according to claim 1, wherein said mount unit includes a fixed mount adapted to be secured to the cutting machine, and having a throughbore which extends along the tightening axis for passage of said shank, and a movable mount having said major abutment wall, which is disposed forwardly of said fixed mount along the tightening axis to permit said throughbore to be coaxial with said axial hole.**

Gass discloses that its mount unit 412, 422, 428 includes a fixed mount (412, partial 422) (dark green below) that is adapted to be secured to the cutting machine (via 414) and has a throughbore 454 that extends along the tightening axis (red dashed line) for passage of the shank 452 (orange). (EX1003, Fig. 47 & 50, 20:3-5 (“Mounting system 410 includes a mounting plate 412 that is bolted onto raised portion 250 of elevation plate 170 ...”), 20:52-55 (“Bolt 452 passes through hole 450 and is threaded into a hole 454 in positioning plate 422 to loosely connect the clamping plate to the positioning plate.”); EX1004, ¶¶237-239.)



Annotated Figs. 50 & 53 of Gass

Gass' mount unit 412, 422, 428 also includes a moveable mount (partial 422, 428) (light green above and below) that includes the major abutment wall 428 that is disposed forwardly of the fixed mount (412, partial 422) along the tightening axis (red dashed line) to permit the throughbore 454 (red below) to be coaxial with the axial hole 458 (pink below) (also referenced herein as 454, 458). (*Id.*, ¶240.)



Annotated Figs. 56 & 57 of Gass

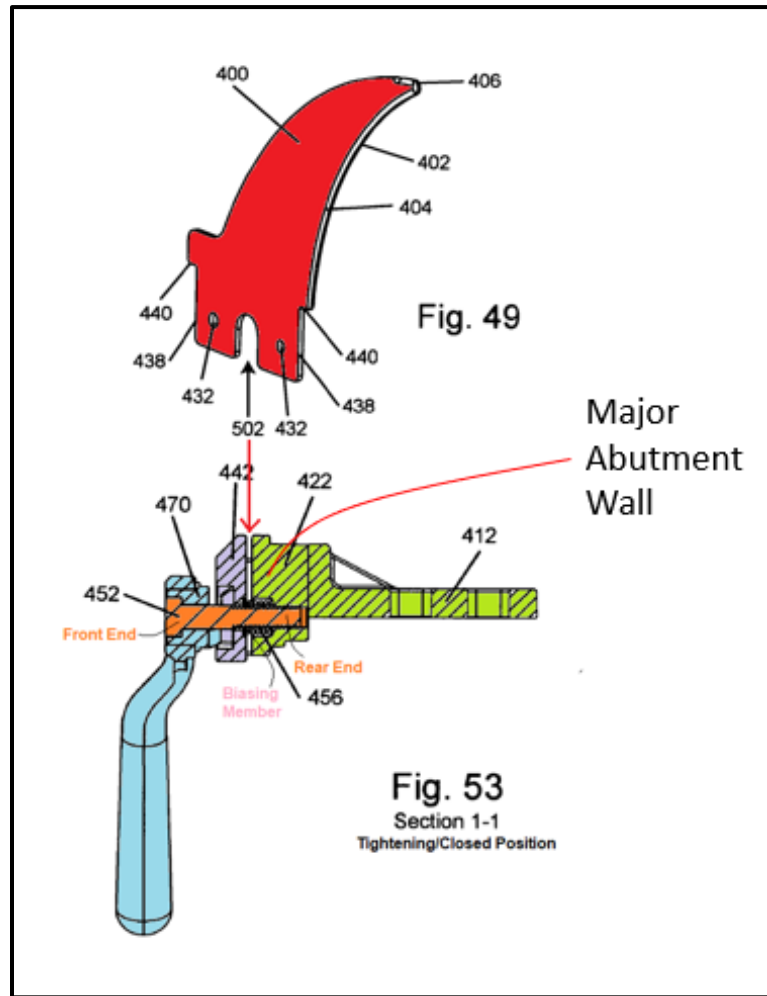
A POSA would have found it obvious to extend the throughbore along the tightening axis further into the fixed mount (into 412) for passage of a shank. (*Id.*, ¶241.) A POSA would have understood that this addition is a mere design choice and thus would have decided to extend the throughbore further into fixed mount portion 412 because it better stabilizes and secures the riving knife and the clamp assembly when the shank passes through/screws into an immobile fixed mount attached to the saw frame. (*Id.*)

Additionally, a POSA would have found it obvious to make the fixed mount (80, rear surface 90) a separate structural component from the movable mount (front surface of 90) so that, for example, the movable mount could allow for additional tolerances and flexibility when adjusting the supporting frame/knife 34 of Burke. A POSA would have understood that this modification is common sense, ordinary routine practice, and an obvious engineering choice. (EX1004, ¶¶242-244; MPEP

2144.04(V)(C) (making components “integral” and/or “separable” is typically considered obvious); *see also In re Larson*, 340 F.2d 965, 968, 144 U.S.P.Q. 347, 349 (CCPA 1965) (The court holding that “the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.”).

3. Claim 5. The supporting device according to claim 2, wherein said tightening bolt has a screw nut which is threadedly engaged with said rear end of said shank, said biasing member being a coil spring which is disposed to surround said shank and between said major abutment wall and said screw nut so as to acquire the increment of the biasing force.

Gass’s Figure 53 shows the tightening bolt 452 (orange) has a screw nut 454 that is threadedly engaged with the rear end of the shank 452 (orange). (EX1003, Fig. 53; EX1004, ¶¶245-246.) Hole 454 of Gass functions as a screw nut as it threadedly engages the rear end of the shank 452 (orange). (EX1003, 20:52-55 (“Bolt 452 ... is threaded into a hole 454 in [the] positioning plate.”); EX1004, ¶¶245-246.). Further, the biasing member 456 of Gass is a coil spring 456 that is disposed to surround the shank 452 (orange) between the major abutment wall 428 (green) and functioning screw nut 454 (at threads of 422 in Figure 53 below) so as to acquire the increment of the biasing force. (EX1003, Fig. 53, 20:58-60 (“Spring 456 may be a compression spring, a wave compression spring or some other spring.”); EX1004, ¶¶245-246.)



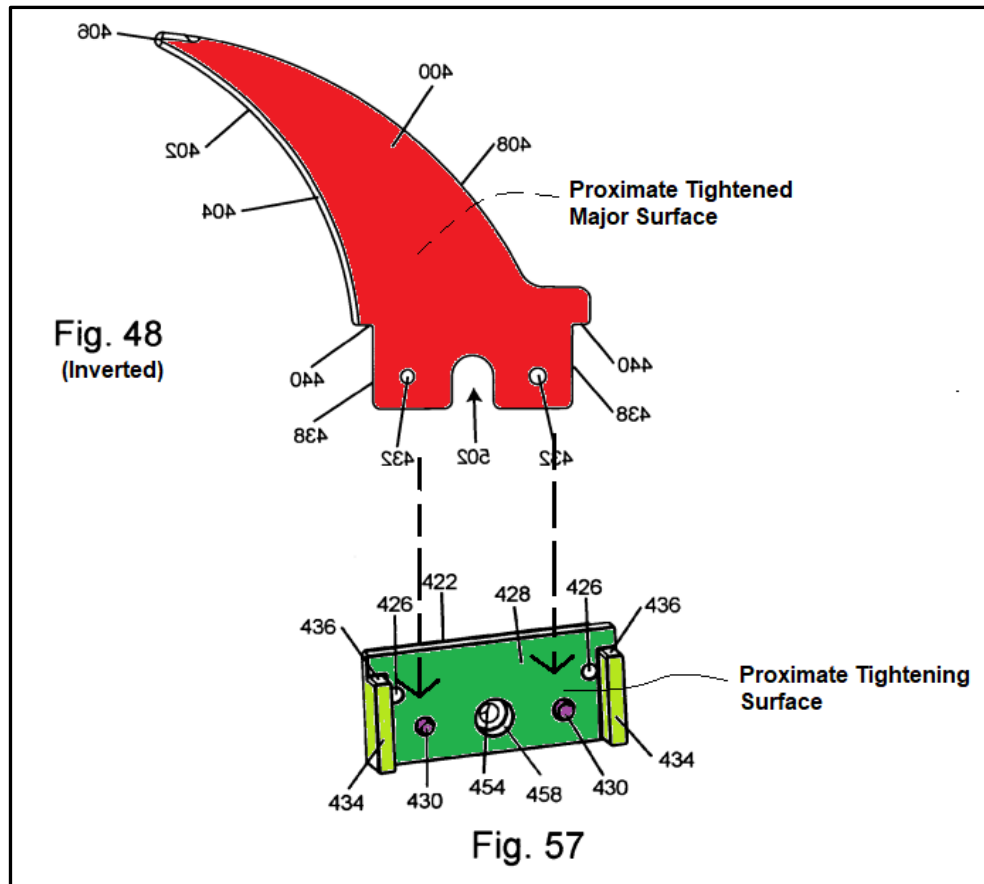
A traditional nut could alternatively be added to the clamping assembly threadedly engaged with the rear end of the shank in order to secure the bolt in place. Gass provides explicit motivation to add a nut, as it discloses that lock nuts hold bolts in place. (EX1003, 12:40-42; EX1004, ¶247. Adding a nut to the end of a shank 452 extending through the fixed mount would be a mere design choice: it would allow the operator to adjust the amount of clamping force applied and would transmit the force from the coil spring to the shank. (*Id.*)

A POSA would also have understood that Gass's compression spring 456 is a

coil spring. (EX1004, ¶248.) Moreover, as a mere design choice, the position of fixed mount 412 in relation to 422 could be altered so that a traditional “nut” could be added to the rear end of bolt 452. It would then be another mere design choice to run the spring 456 the entire length of the shank 452 between the major abutment wall 428 and the traditional “nut.” (*Id.*)

4. **Claim 9. The supporting device according to claim 1, further comprising a retaining unit which is disposed between said proximate tightening surface and said proximate tightened major surface and which is configured to retain said supporting frame in a corresponding one of the position of use and the retreat position.**

Gass discloses a retaining unit 430 (purple below) that is disposed between the proximate tightening surface (dark green and annotated below) of the mount unit 412,422,428 (green) and the proximate tightened major surface (annotated below) of the supporting frame 400 (red below). (EX1003, Figs. 48 & 57; EX1004, ¶250.) The retaining unit 430 is configured to retain the supporting frame 400 in a corresponding one of the position of use and the retreat position. (EX1003, Figs. 48, 57, 58, 20:27-38 (“The base of riving knife 400 includes two holes 432 and pins 430 are configured to extend through those holes to locate the riving knife in the mounting system.... Thus, the riving knife is positioned in the mounting system by fitting on pins 430....”); EX1004, ¶250.)



Annotated Figs. 48 & 57 of Gass

While the retaining unit 430 does not retain the supporting frame 400 of Gass when in the removed/retreat position, a POSA would have understood that the retaining units 430 would be used to retain the supporting frame 400 when the slotted supporting frame 22 disclosed by AAPA is used. Indeed, the AAPA supporting frame 22 includes openings at its upper end for such retention in the retreat position. (EX1004, ¶¶251-252.) See Section VII(C)(4) herein.

5. Motivation to Combine

A POSA would have been motivated to combine Gass and AAPA. (EX1004, ¶253.) Both are directed to the same subject matter and are in the same field of

invention: Gass is directed to “[t]able saws having a mounting system configured to hold a riving knife or splitter adjacent a blade,” (EX1003, Abstract); similarly, AAPA is directed to “a conventional table cutting machine, such as a circular saw machine.” (EX1001, 1:14-15.) Moreover, the structures disclosed by Gass and AAPA share many commonalities. Gass discloses, among other components, a riving knife or splitter with a blade guard, (EX1003, 18:41-47, 24:47-52, 27:37-45), and AAPA discloses a “protective cover” and a “supporting frame” (i.e., a riving knife). (EX1001, 1:39-41, Figs. 1-2; EX1004, ¶253.)

A POSA would have known that they any variation of a riving knife or splitter could have been used as the “supporting frame,” given that Gass contemplates interchangeably using a riving knife 400, splitter 580, or “[a]ny item that includes a base configured to fit over positioning plate 422 and sized to be clamped between the positioning plate and clamping plate 442 may be mounted and indexed in the saw as described.” (EX1003, 24:41-46; EX1004, ¶¶254-256.)

The guiding slot of AAPA would allow the user to retract the riving knife below the table and extend the riving knife above the table. (EX1004, ¶257.) A POSA would have found it obvious to utilize this adjustment mechanism in other riving knife/clamp assemblies, including that disclosed by Gass, and would then have found it obvious to add a retention unit such that the knife could be secured in place in the desired position, further increasing usability and safety. (*Id.*) Gass is

concerned with the safety of table saws and the inconveniences associated with using riving knives. (EX1003, 19:56-65 (“It is desirable for a user to be able to install and remove the riving knife quickly and easily when performing different operations with the saw so that the riving knife is not an inconvenience.... If it were complicated, difficult or time consuming to remove and reinstall the riving knife . . . , then it would be less likely a person would use the riving knife.”); EX1004, ¶¶257-258.) A POSA would have known that, to further reduce the complexity, difficulty, and inconvenience of using a riving knife, it would be desirable to design the knife so that it could be retracted below the work surface of the table saw when performing certain cuts and extended when making other cuts.

It would have been obvious to use the slot configuration of AAPA to construct a riving knife that could be raised and lowered, thereby mitigating installation inconvenience. (EX1004, ¶259.) The arcuate slot disclosed in AAPA is simple, inexpensive, and easy for saw operators to use, making it an obvious solution to a known problem in the art. (*Id.*) Moreover, a POSA would have a reasonable expectation of success in trying the adjustment method disclosed by AAPA. (*Id.*) Thus, the claimed invention is no “more than the predictable use of prior art elements according to their established functions.” (*KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); EX1004, ¶259.)

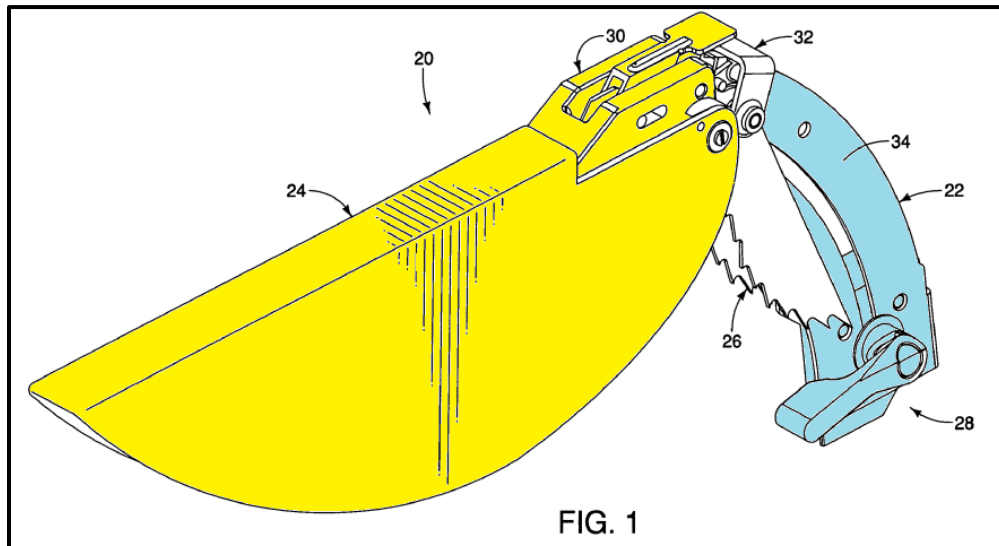
B. Ground 2: The Challenged Claims are unpatentable as obvious under 35 U. S. C. §103 over Burke in view of Gass

1. Claim 1.

Burke discloses all of the limitations of claim 1 except the cam follower surface having first and second pressed area; and the biasing member disposed on the shank. Gass discloses these limitations.

a. Limitation 1.0

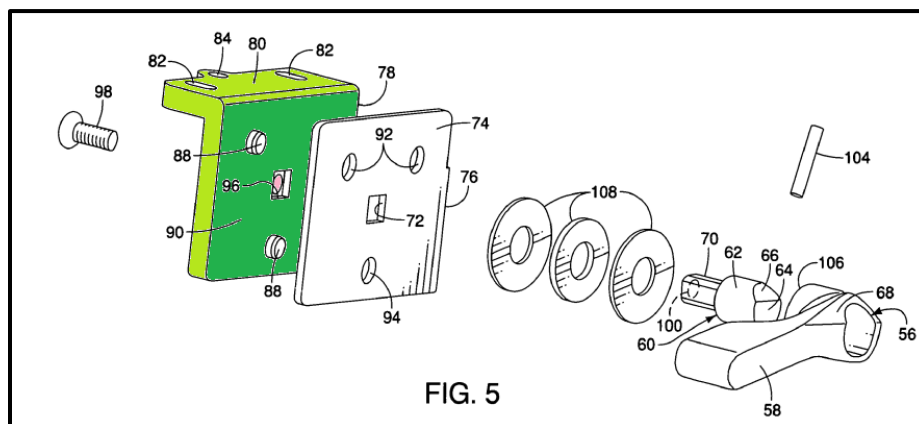
Burke teaches a supporting device 22 (blue below) for mounting a protective cover 24 (yellow below). (*See* EX1010, Fig. 1, 4:55-58 (“[W]hen the riving knife mechanism is in its fully extended position, the blade guard mechanism 24 ... can be easily mounted to the riving knife mechanism 22.”) The supporting device 22 and protective cover 24 are for shielding a cutting blade of a cutting machine which is driven to rotate about a rotating axis. (*See id.*, Fig. 1, 1:44-46 (“the present invention is directed to a modular saw guard system for a power table saw of the type which has ... a rotatable circular saw blade.”); EX1004, ¶¶260-261.)



Annotated Fig. 1 of Burke

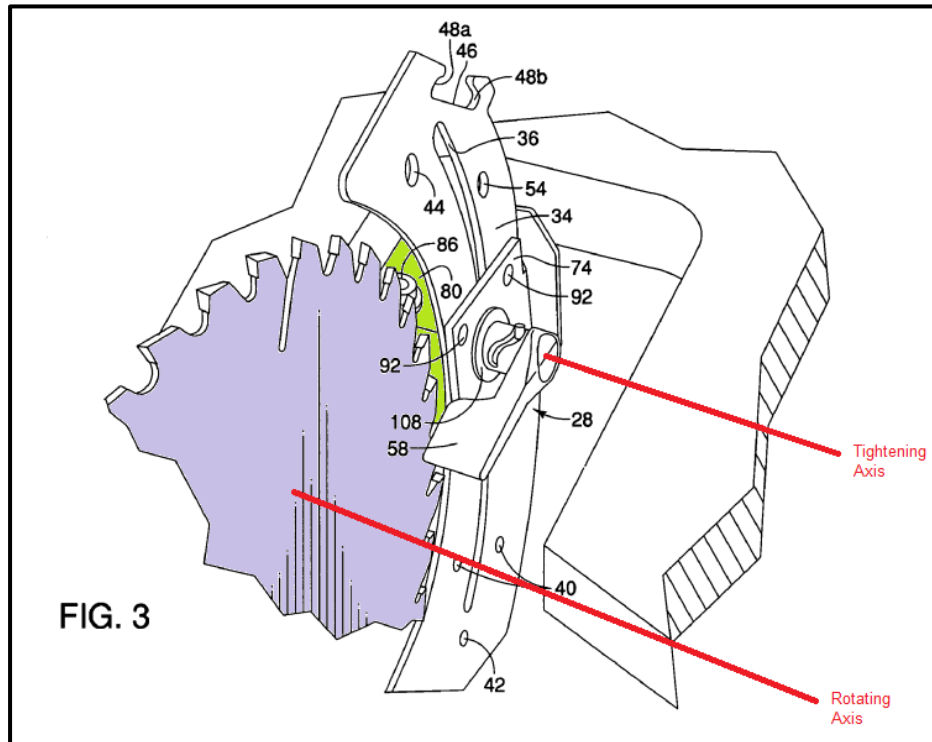
b. Limitation 1.1

The supporting device 22 includes a mount unit 78 (green below) adapted to be secured to a cutting machine. (EX1010, Figs. 2-8, 5:43-46 (“The bracket 78 has an upper transverse extension 80 with apertures 82 and 84 for mounting the bracket to ... the table saw.”).) The mount unit 78 includes a major abutment wall having a proximate tightening surface 90 (dark green below) that has an axial hole (pink below) extending therethrough. (See *id.*, Figs. 2-5; EX1004, ¶262.)



Annotated Fig. 5 of Burke

When the mount unit 78 is secured to a cutting machine (at 80 via 86, 82), the axial hole extends through the mount unit along a tightening axis (red below) parallel to the rotating axis (also red below) of the cutting blade (purple). (EX1004, ¶¶263-264.)

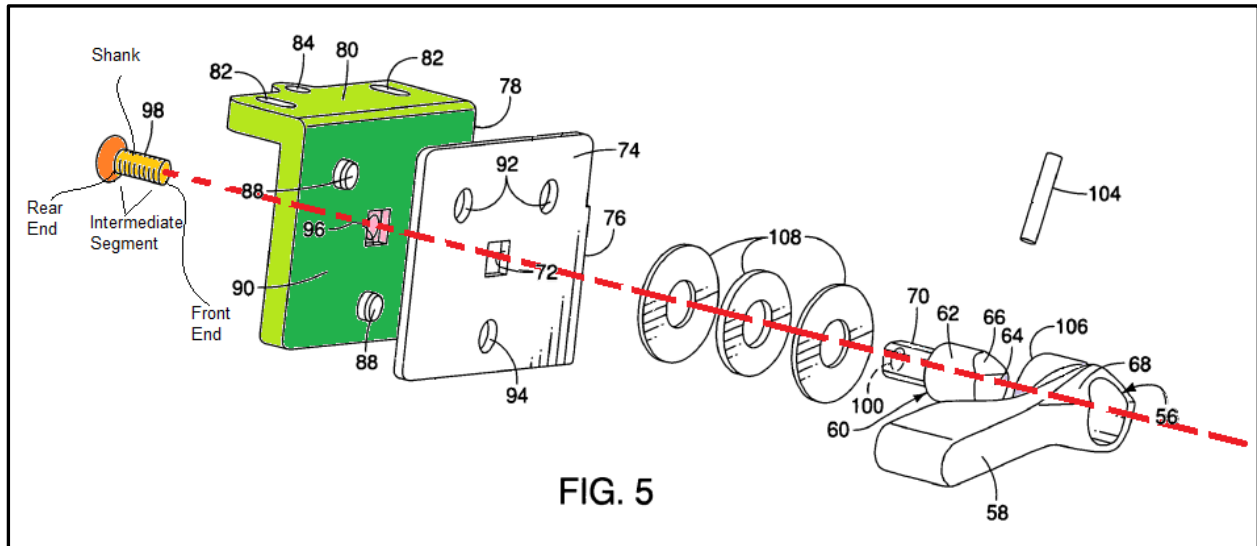


Annotated Fig. 3 of Burke

c. Limitation 1.2

As best illustrated in Figure 5 of Burke as annotated below, Burke discloses a tightening bolt 98 (orange below) having a shank (light orange below) that is configured to pass through the axial hole 96 (pink). (EX1010, 5:65-67 (“The front face 90 of the bracket 78 also has a generally square aperture 96 through which a screw 98 passes.”); EX1004, ¶265.) The shank (light orange) of Burke has front and

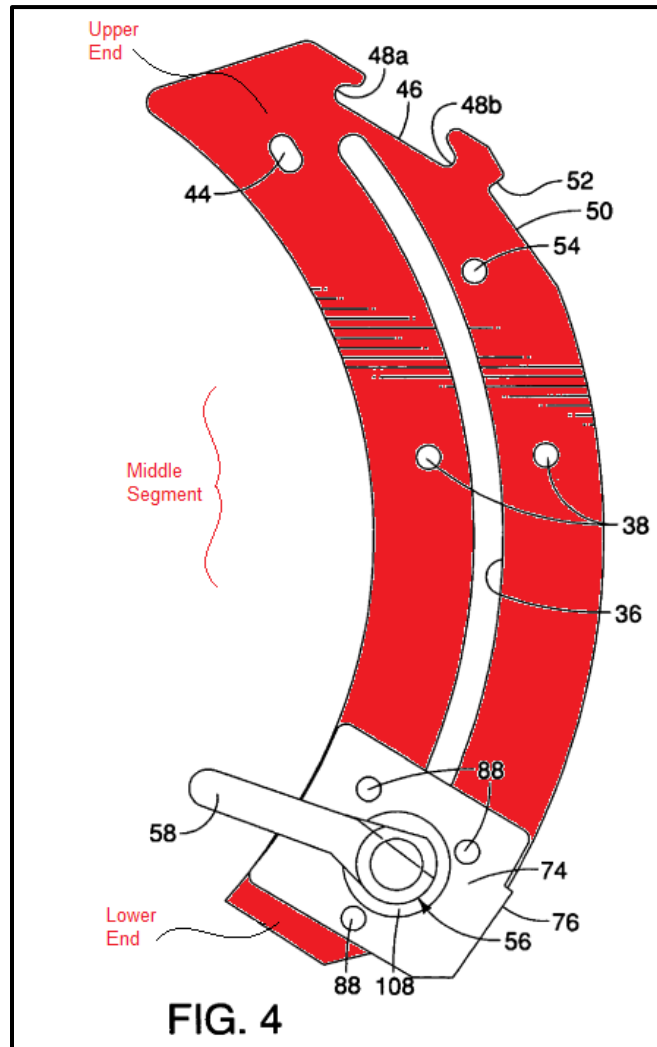
rear ends (annotated below) opposite each other in the tightening axis (red dotted line below). (EX1010, Fig. 5; EX1004, ¶¶265-266.) The shank also includes an intermediate segment (annotated below) interposed between the front and rear ends of the shank (light orange). (*Id.*)



Annotated Fig. 5 of Burke

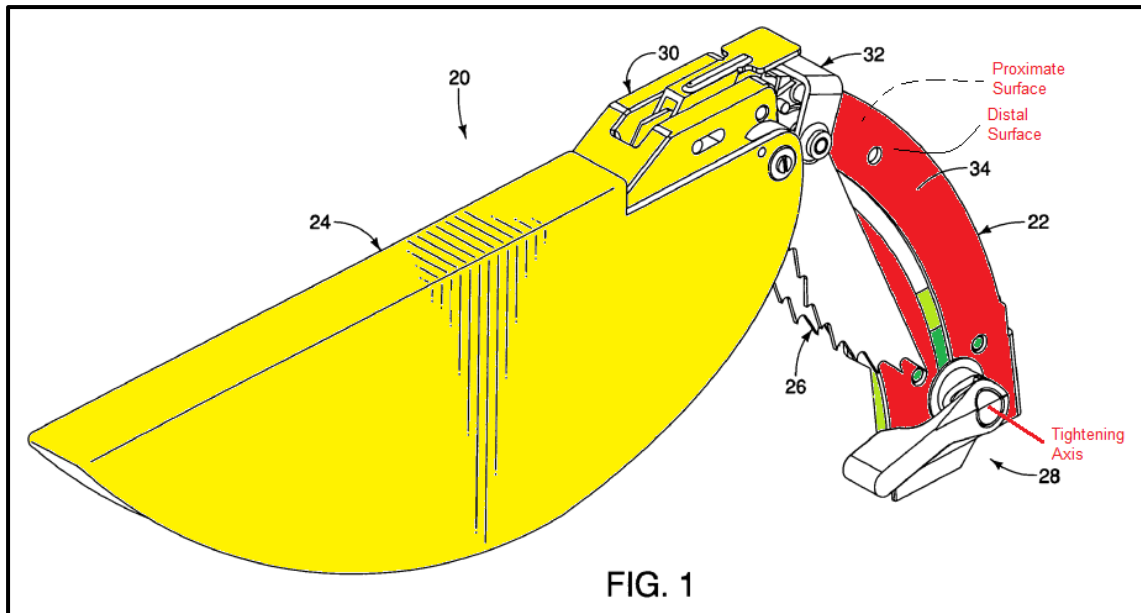
d. Limitation 1.3

Burke teaches a supporting frame 34 (red below). (EX1010, 3:59-61, Figs. 1-4.) The supporting frame 34 (red) of Burke includes upper and lower ends opposite to each other as annotated in Figure 4 below, and also includes a middle segment (all annotated below) interposed between the upper and lower ends. (*Id.*, Fig. 4.; EX1004, ¶267.)



Annotated Fig. 4 of Burke

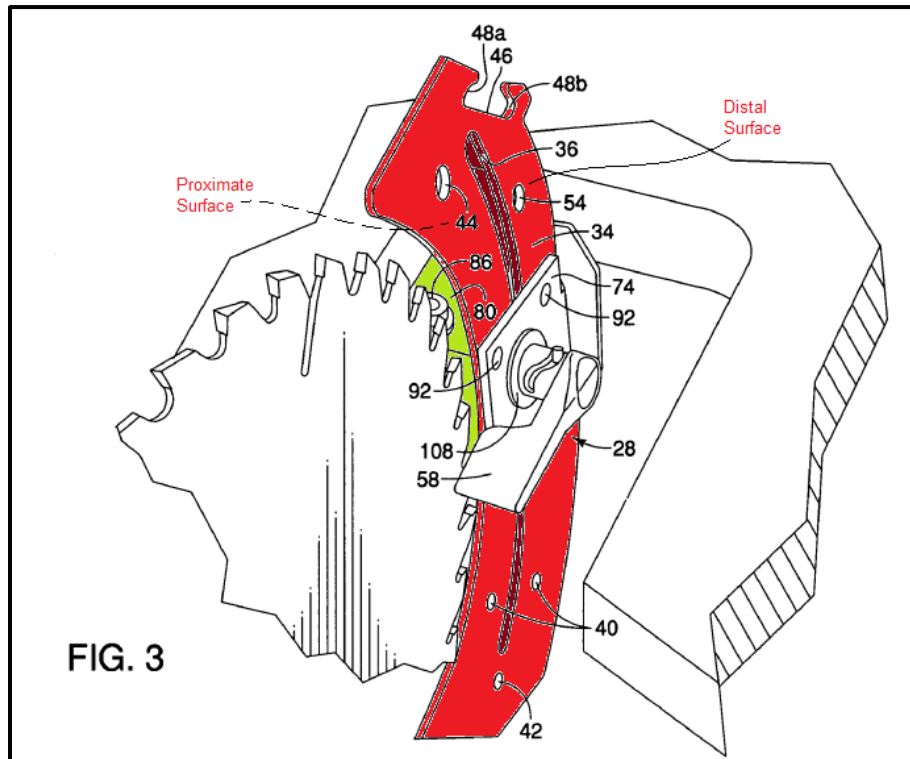
The upper end of supporting frame 34 (red) of Burke is adapted to hold a protective cover (yellow). (*See id.*, Fig. 1, 5:7-13 (“... an aperture 44 is located on the left side of the slot 36 and an elongated recess 46 is formed in the outer surface on the opposite side of the slot 36 ... to mount the blade guard mechanism 24 to the knife 34.”).) The middle segment of supporting frame 34 (red) has proximate and distal tightened major surfaces (annotated below) opposite each other along the tightening axis (annotated below). (EX1004, ¶¶268-269.)



Annotated Fig. 1 of Burke

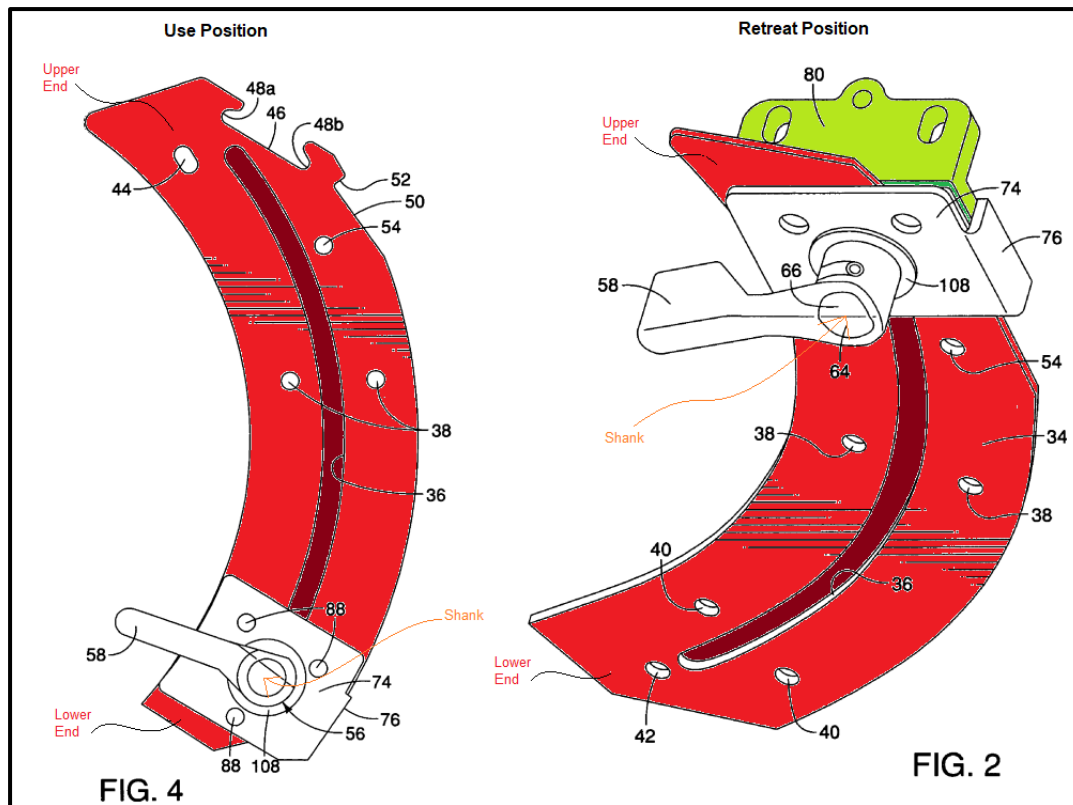
e. Limitation 1.4

The middle segment of the supporting frame 34 (red) of Burke includes a guiding slot 36 (dark red) that extends through the proximate and distal tightened major surfaces (annotated below) and permits passage of the shank 98 (orange, Figure 5) therethrough. (EX1010, Figs. 2-4, 4:66-5:2 (“[T]he knife 34 ... has ... a center slot 36 that extends substantially the full length of the knife 34.”), 6:1-2 (“The screw 98 is configured to fit through ... the slot 36 of the knife 34....”); EX1004, ¶270.)



Annotated Fig. 3 of Burke

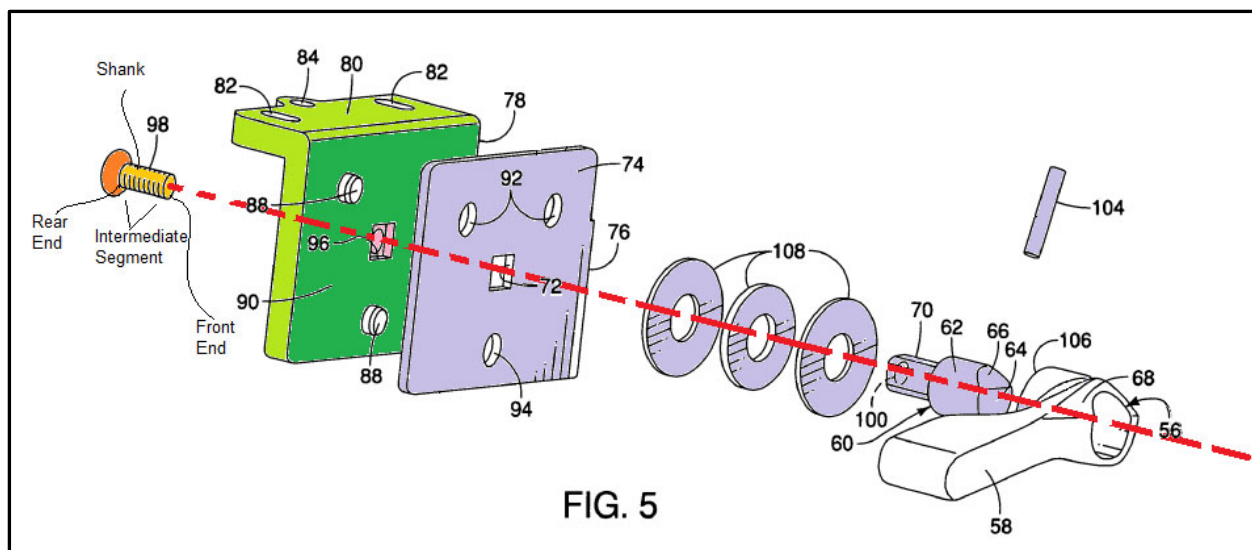
The guiding slot 36 (dark red) permits the middle segment of the supporting frame 34 (red) to move between a position of use where the shank (extending through the mount unit (green)) is remote from the upper end (Figure 4 configuration) and a retreat position where the shank is closer to the upper end (Figure 2 configuration). (EX1010, 2:5-7 (“FIG. 2 is a perspective view ... particularly illustrating a riving knife mechanism as shown in a retracted position...”); EX1004, ¶¶271-272.)



Annotated Figs. 4 and 2 of Burke

f. Limitation 1.5

Burke includes a movable tightening member (purple below) that is sleeved (via 70) on the shank (orange). (EX1010, Fig. 5, 6:1-3 (“The screw 98 is configured to fit through ... the aperture 72 and into a threaded aperture 100 in the extension 70 of the stud 60.”); EX1004, ¶273.) The movable tightening member (purple) of Burke includes a thrust major wall 74 to which the tightening axis (red dashed line below) is normal. (EX1004, ¶¶273-274.)



Annotated Fig. 5 of Burke

g. Limitation 1.6

The thrust major wall 74 of the movable tightening member (purple) of Burke has a distal tightening surface (annotated in purple below) that confronts and which is to be brought to press the distal tightened major surface (annotated in red below) of the supporting frame 34 (red). (EX1010, Fig. 2; EX1004, ¶¶275-267.) Further, the proximate tightened major surface (also red) of the supporting frame 34 (red) abuts against the proximate tightening surface (dark green) of the mount unit 78 (green). (EX1010, Fig. 2, 6:16-19 (“the quick release mechanism 28 is configured to clamp the plate member 74 and knife 34 against the front face 90 of the bracket 78 when the quick release assembly is in its locked position.”).)

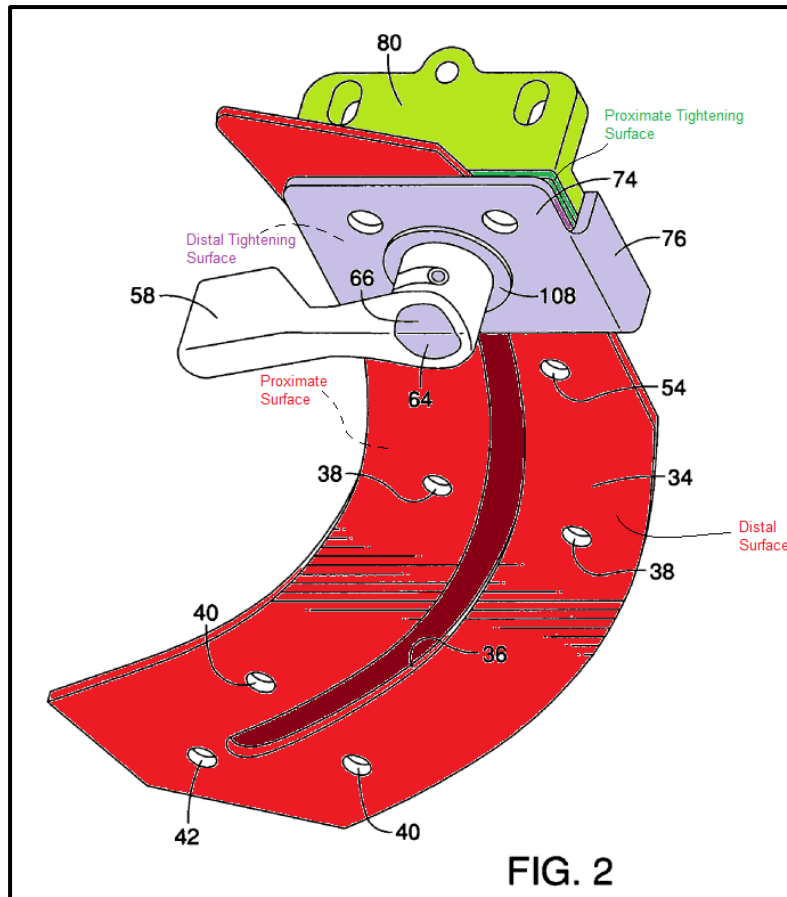


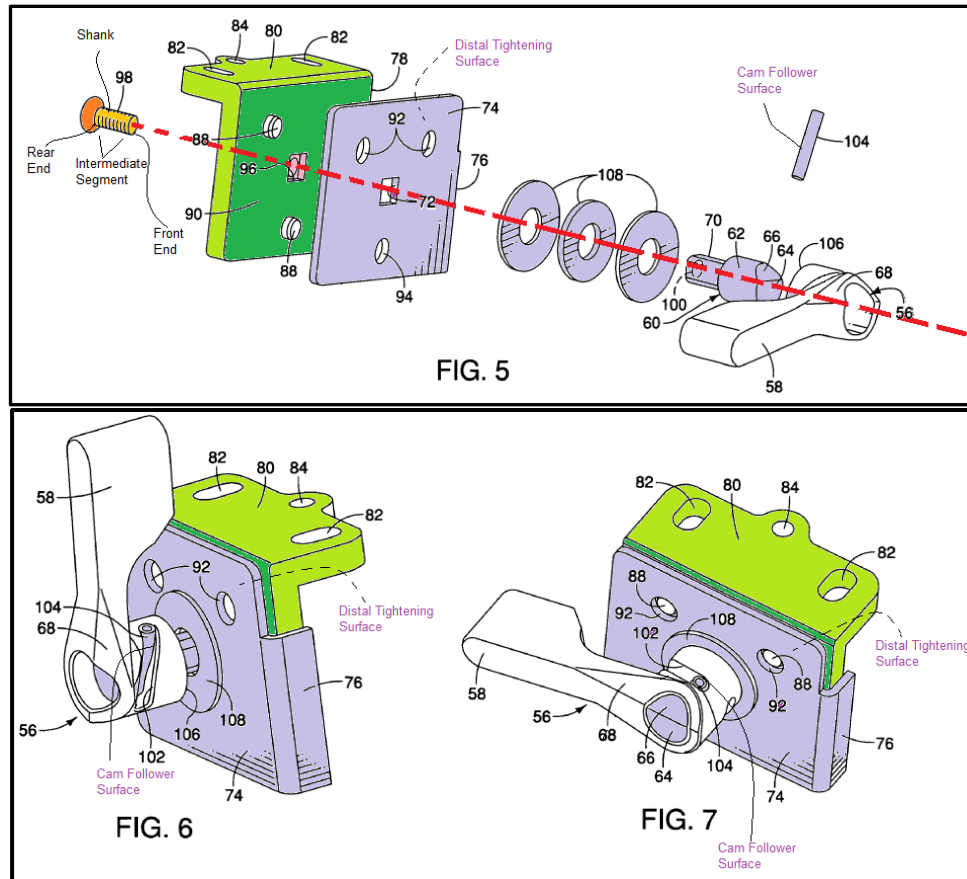
FIG. 2

Annotated Fig. 2 of Burke

h. Limitation 1.7

The thrust major wall 74 of the movable tightening member (purple) of Burke has a cam follower surface (bottom surface of pin 104, annotated and purple below) which is opposite to the distal tightening surface (annotated in purple below) along the tightening axis (red dashed line). (*See id.*, Figs. 5-7, 6:16-21 (“[T]he quick release mechanism 28 is configured to clamp the plate 74 and knife 34 against the front face 90 of the bracket 78 when the quick release assembly is in its locked position. This is accomplished by the lever 56 having a cam surface 102 that extends approximately $\frac{1}{4}$ of a rotation between its locked and release position.”); EX1004,

¶278.)



Annotated Figs. 5-7 of Burke

The cam surface of Burke is a pin. (EX1004, ¶¶277.)

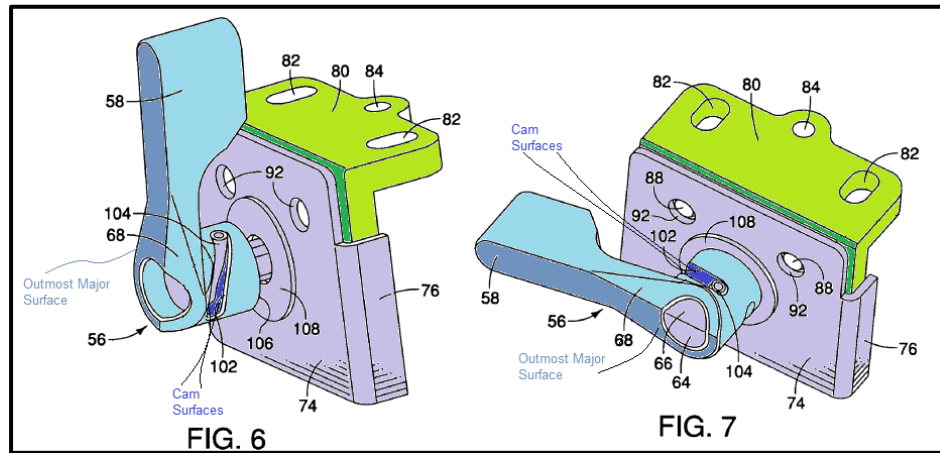
Gass discloses limitation 1.7. (*See supra*, Section VII(A)(1)(h); EX1004, ¶¶279-280.)

i. Limitation 1.8

Burke teaches a cam actuating member 56 (blue below) that includes an actuating body 106 that is sleeved on the shank 98. (*See* EX1010, Figs. 6-7, 6:26-30.) Further, the cam actuating member 56 of Burke has a cam surface 102 (royal blue below and mirrored cam surface above pin 104) and an outmost major surface

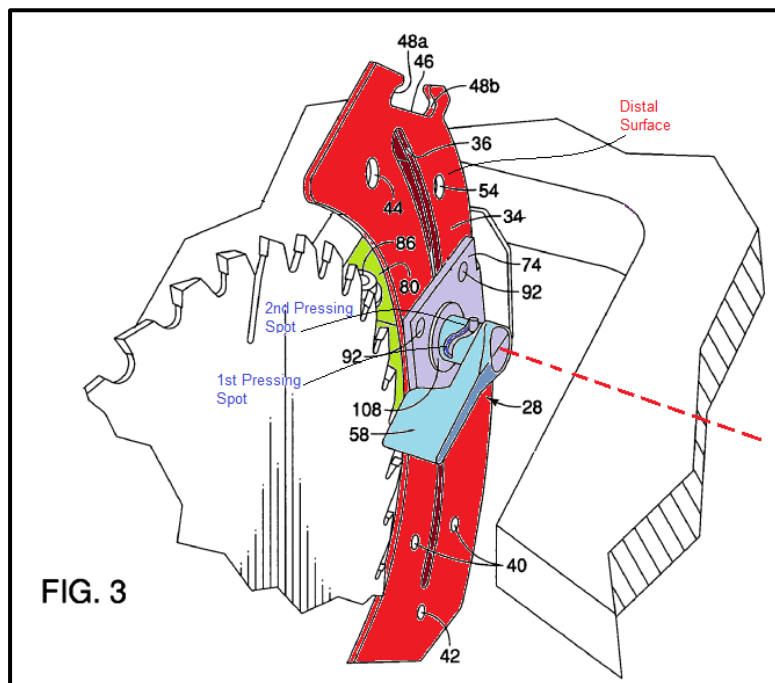
(annotated and dark blue below) opposite to the cam surface in the tightening axis.

(*Id.*, Figs. 6-7; EX1004, ¶281.)



Annotated Figs. 6-7 of Burke

Burke's cam surface (royal blue below) has first and second pressing spots (light blue) that are angularly displaced from each other about the tightening axis. (EX1010, Fig. 3; EX1004, ¶282.)



Annotated Fig. 3 of Burke

Gass discloses limitation 1.8. (*See supra*, Section VII(A)(1)(i); EX1004, ¶¶283-284.)

j. Limitation 1.9

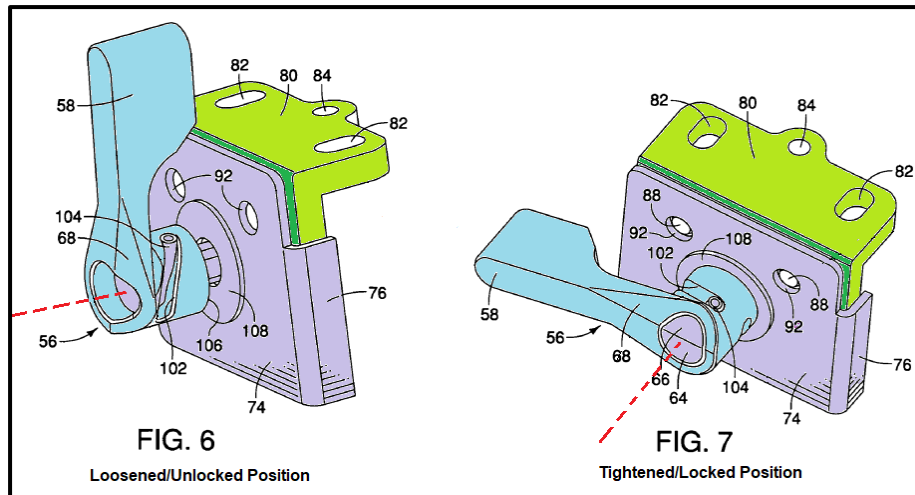
Gass discloses limitation 1.9. (*See supra*, Section VII(A)(1)(j); EX1004, ¶¶285-286.)

k. Limitation 1.10

Gass discloses limitation 1.10. (*See supra*, Section VII(A)(1)(k); EX1004, ¶¶287-288.)

l. Limitation 1.11

Burke discloses a handgrip 58 (blue below) disposed to extend from the actuating body 56 (also blue below) radially so as to turn the actuating body 56 about the tightening axis (red dashed line) between the loosened and tightening positions (*compare* Figure 6 (loosened positioned) *with* Figure 7 (tightened position)). (EX1010, Figs. 6-7, 2:18-22 (FIG. 6 shows “the quick release assembly” in “the unlocked position;” FIG. 7 shows such assembly “in the locked position.”); EX1004, ¶289.)



Annotated Figs. 6-7 of Burke

Gass also discloses limitation 1.11. (*See supra*, Section VII(A)(1)(l); EX1004, ¶¶290-291.)

m. Limitation 1.12

Gass discloses limitation 1.12. (*See supra*, Section VII(A)(1)(m); EX1004, ¶¶292-293.)

n. Limitation 1.13

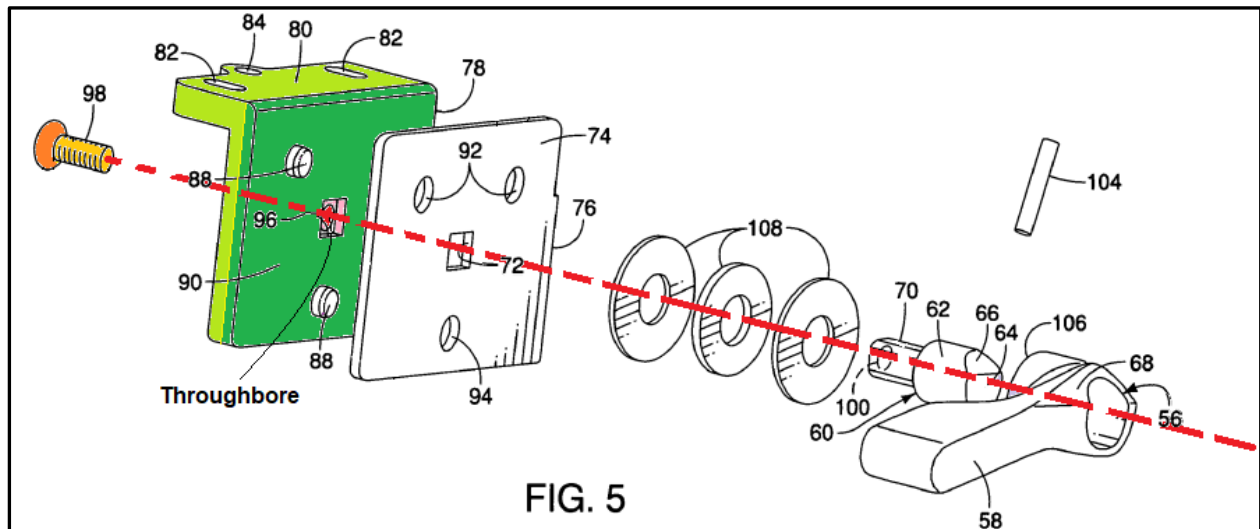
Gass discloses limitation 1.13. (*See supra*, Section VII(A)(1)(n); EX1004, ¶¶294-295.)

2. Claim 2

Both Burke and Gass teach the additional limitations of claim 2. (*Id.*, ¶¶296-300.)

Burke discloses that its mount unit 78 includes a fixed mount (80, rear surface of 90) (light green below) that is adapted to be secured to the cutting machine (via 82,84) and has a throughbore (annotated and red below) that extends along the

tightening axis (red dashed line) for passage of the shank 98 (orange). (EX1010, Fig. 5, 5:43-48 (“The bracket 78 has an upper transverse extension 80 with apertures 82 and 84 for mounting the bracket to either the frame or the portion of the blade drive structure of the table saw.”); EX1004, ¶297.)



Annotated Figs. 50 & 53 of Gass

The mount unit 78 also includes a moveable mount (front surface of 90) (dark green above) that includes the major abutment wall that is disposed forwardly of the fixed mount (80, rear surface of 90) along the tightening axis (red dashed line) to permit the throughbore (red) to be coaxial with the axial hole 96 (pink above). (EX1004, ¶298.)

A POSA would have found it obvious to make the fixed mount (80, rear surface 90) a separate structural component from the movable mount (front surface of 90) so that the movable mount could allow for additional tolerances and flexibility when adjusting the supporting frame/knife 34 of Burke. This modification is

common sense, routine practice, and an obvious engineering choice. (*See* MPEP 2144.04(V)(C) (making components “integral” and/or “separable” is typically considered obvious); *see In re Larson*, 340 F.2d at 968 (The court holding that “the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.”); EX1004; ¶299.)

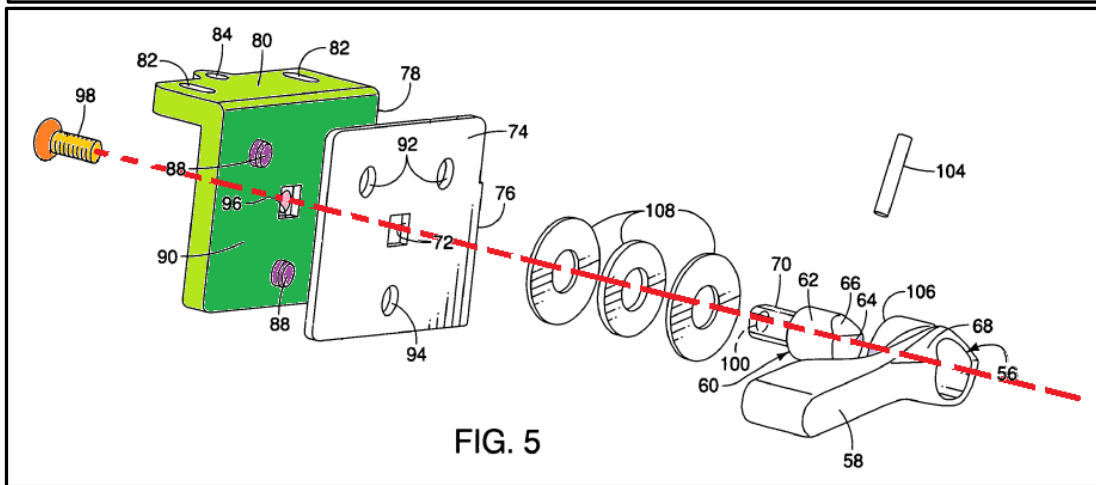
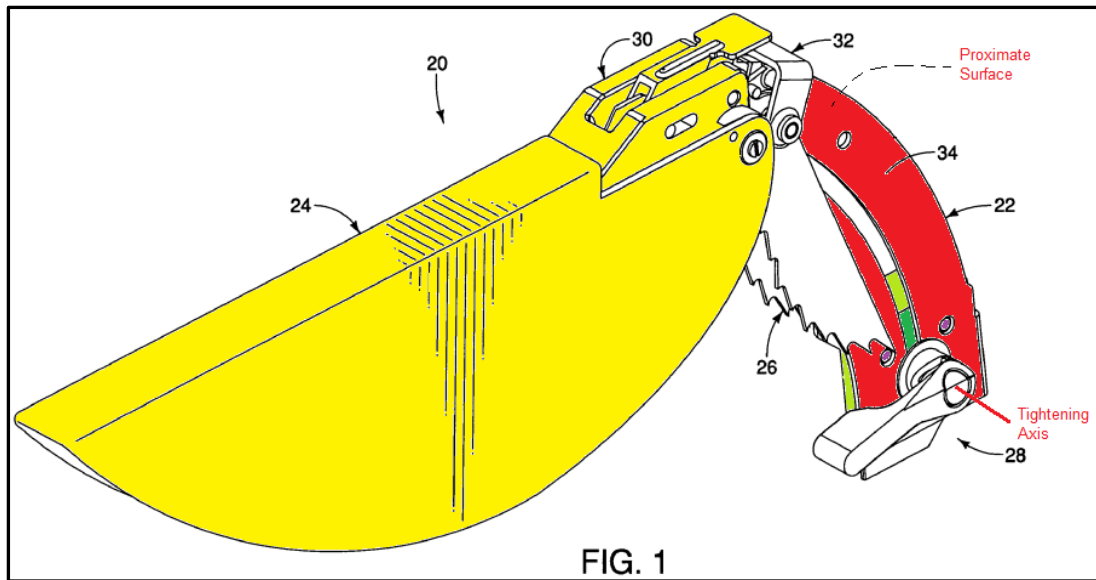
Gass discloses this limitation. (*See supra*, Section VII(A)(2); EX1004, ¶¶300-301.)

3. Claim 5

Gass discloses this limitation. (*See supra*, Section VII(A)(3); EX1004, ¶¶302-303.) As stated, a POSA would have understood that a traditional nut could be added. (*Id.*)

4. Claim 9

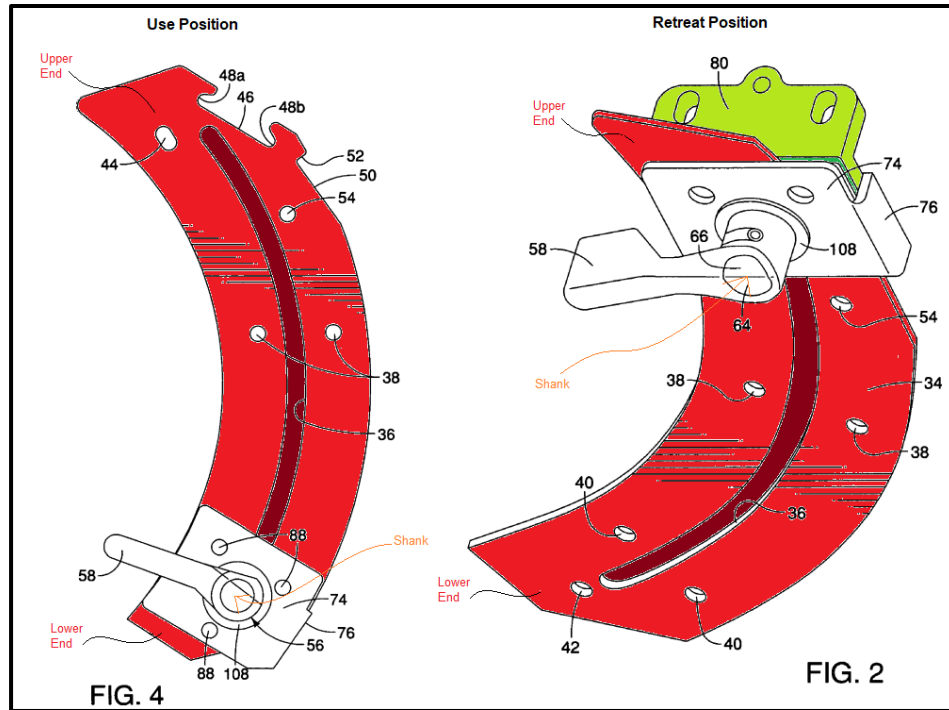
Burke discloses a retaining unit 88 (purple below) that is disposed between the proximate tightening surface (dark green) of the mount unit 78 (green) and the proximate tightened major surface (annotated below) of the supporting frame 34 (red below). (EX1010, Figs. 1 & 5, 5:49-53 (“The bracket 78 also has a number of relatively short pins 88 which extend from a front face 90 thereof. The front face contacts the knife 34 and the pins 88 are located on the front face 90 so that they can engage the apertures 38, 40, and 42 of the knife 34.”); EX1004, ¶304.)



Annotated Figs. 1 & 5 of Burke

The retaining unit 88 of Burke retains the supporting frame 34 in a corresponding one of the position of use and the retreat position. (EX1010, 5:59-65 (“It should be apparent from FIGS. 2 and 5, that the knife 34 can be positioned in one of three positions, i.e., the lower position where the pattern of pins 88 penetrate the apertures 40 and 42, the mid position where the pins 88 penetrate the apertures 38 and the lower pin rides in the slot 36 and in the upper position where one of pins 88 penetrates the aperture 44 and another seats in the recess 46.”); EX1004,

¶¶305-306.)



Annotated Figs. 4 & 2 of Burke

5. Motivation to Combine

A POSA would have been motivated to combine Gass and Burke. (EX1004, ¶307.)

Burke and Gass are directed to the same subject matter in the same field of invention. (*See* Section VII(A)(5); EX1003, Abstract; EX1010, Abstract; EX1004, ¶308.) Both Burke and Gass disclose clamps for support frames carrying blade guards. (EX1003, 18:41-47, 24:47-52, 27:37-45; EX1010, 5:7-13, 6:16-21; EX1004, ¶308.)

Both Gass and Burke are concerned with same problem: that riving knives are not used frequently enough because of the challenges they create for the user, such

as being a hindrance to a user when making certain specialty cuts. (EX1003, 1:41-58, 19:32-20:2; EX1010, 3:6-58, 4:4-21; EX1004, ¶309.) Gass discloses a device for quick and easy removal/placement of a riving knife/splitter, and Burke discloses a device that eliminates the need to completely remove the riving knife at all. (EX1003, 19:37-65; EX1010, Abstract, 4:41-51; EX1004, ¶309.)

A POSA would have looked to Gass's disclosure regarding cams to provide an explanation as to the manner in which Burke's cam piece and cam follower pieces work to translate motion into linear clamping motion. (EX1004, ¶310.) Moreover, a POSA would have been motivated to add a spring to Burke's supporting device because springs were commonly used with cams to maintain contact between the cam member and the cam follower member. (*Id.*) Further, a POSA would have understood Gass to identify the loosening of the riving knife clamp during operation as a problem known in the art. (*Id.*) A POSA, knowing that compression springs apply biasing force and absorb/release energy, would have found it obvious to use a spring in a clamp assembly to improve the operation of the clamp, replicating Gass's solution to the problem. (*Id.*) It would have been obvious to add Gass's pressed cam surfaces and biasing member with the device of Burke to provide more secure and easier release/tightening of the Burke supporting device. (*Id.*)

Understanding Gass's teachings regarding safety, it would have been obvious to make the fixed mount a separate component from the movable mount as described

in Section VII(B)(2) and to provide a throughbore to extend through both mounts in order to stabilize the machine and to make it easier to use. (*Id.*) A POSA would have found it obvious to add a nut and use a coil spring as described in Section VII(A)(3). (*Id.*)

Given the above-described similarities in the structure of Gass and Burke and the similarity in the problem to be solved, a POSA would have a reasonable expectation of success in combining the references. (EX1004, ¶311.)

C. Ground 3: The Challenged Claims are unpatentable as obvious under 35 U.S.C. §103 over AAPA in view of Gass

1. Claim 1

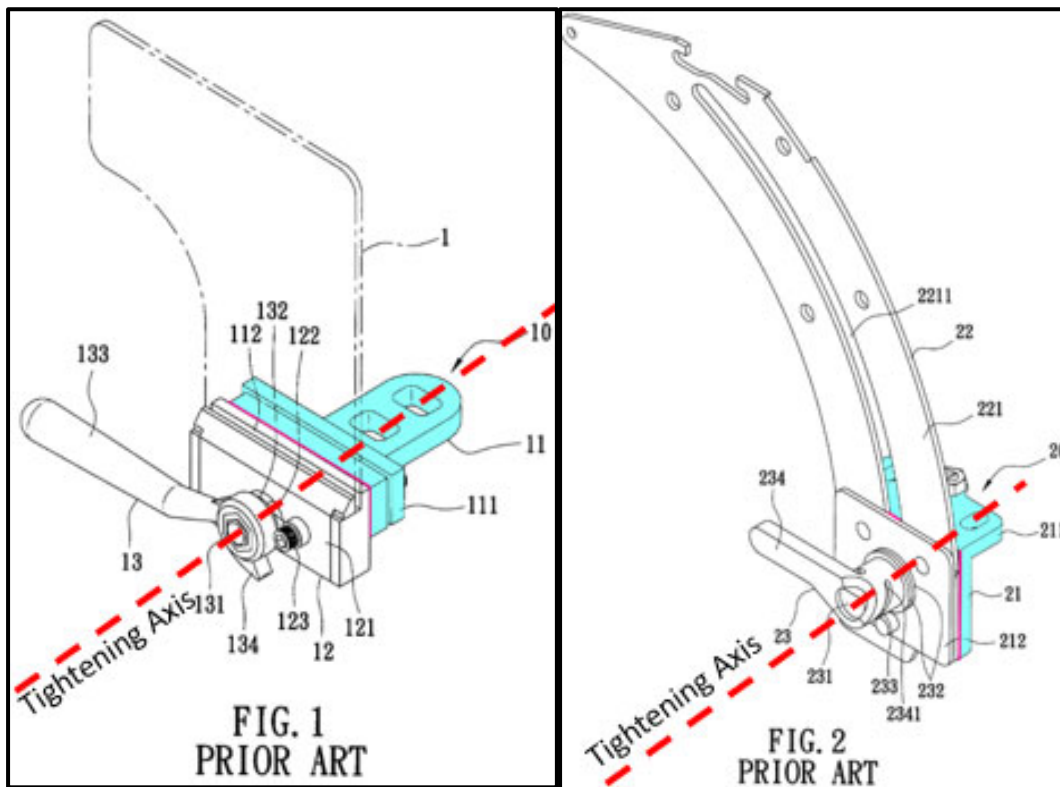
AAPA discloses all of the limitations of claim 1 except the cam follower surface having first and second pressed areas; and the biasing member disposed on the shank. Gass discloses these limitations.

a. Limitation 1.0

AAPA teaches a supporting device 1/22 for mounting a protective cover to shield a cutting blade of a cutting machine which is driven to rotate about a rotating axis. (EX1001, Figs 1 & 2, 1:14-26 (“In a conventional table cutting machine. . . a supporting device is disposed adjacent to a circular saw blade for mounting a protective cover to shield the circular saw blade.”), 1:39-40 (“An upper portion of the supporting frame 1 is adapted to hold a protective cover.”) A POSA would have understood that a circular saw machine rotates about an axis. (EX1004, ¶¶312-313.)

b. Limitation 1.1

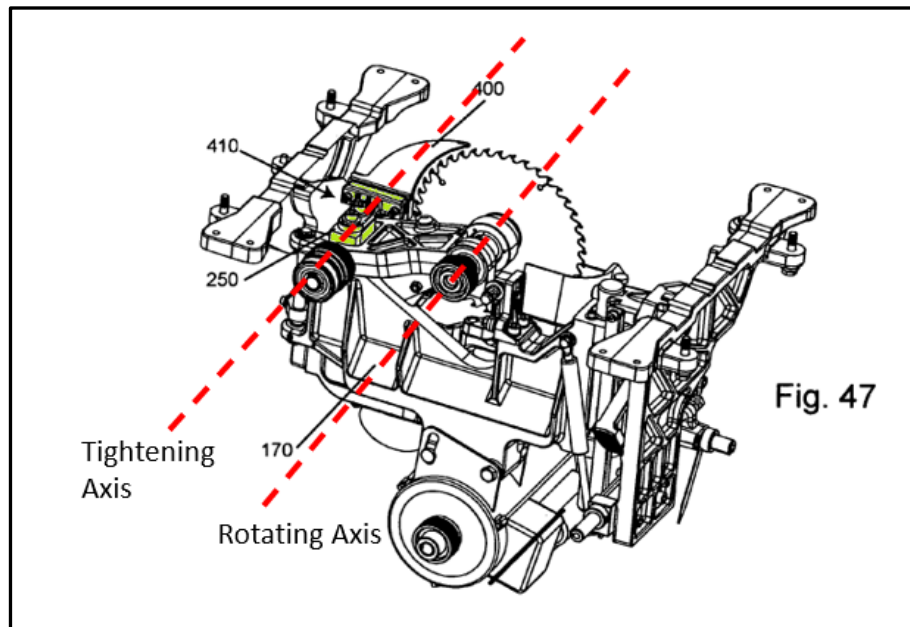
AAPA teaches a mount unit 11/211 that is adapted to be secured to the cutting machine. (EX1001, 1:20-25 (“fixed mount 111 secured on a tabletop ... of a cutting machine”), 1:50-53.) The mount unit 11/211 (teal) includes a major abutment wall (also teal) that has a proximate tightening surface (outlined in magenta below; the wall of the mount unit 11/211 pushing up against 1/22). (EX1004, ¶314.)



Annotated Figs. 1 & 2 of AAPA

A POSA would have understood that the proximate tightening surface (magenta above) has an axial hole extending therethrough along a tightening axis (red dashed line above). (EX1001, 1:32-37; 1:56-62 (“The control unit 23 has a tightening bolt 231 which extends through the arcuate slot 2211 and into the fixed

mount 211.”); EX1004, ¶315.) The axial hole extends along a tightening axis (defined by the tightening bolts) that is parallel to the rotating axis of the cutting blade when mounted to a table saw. (EX1004, ¶¶316-317.)

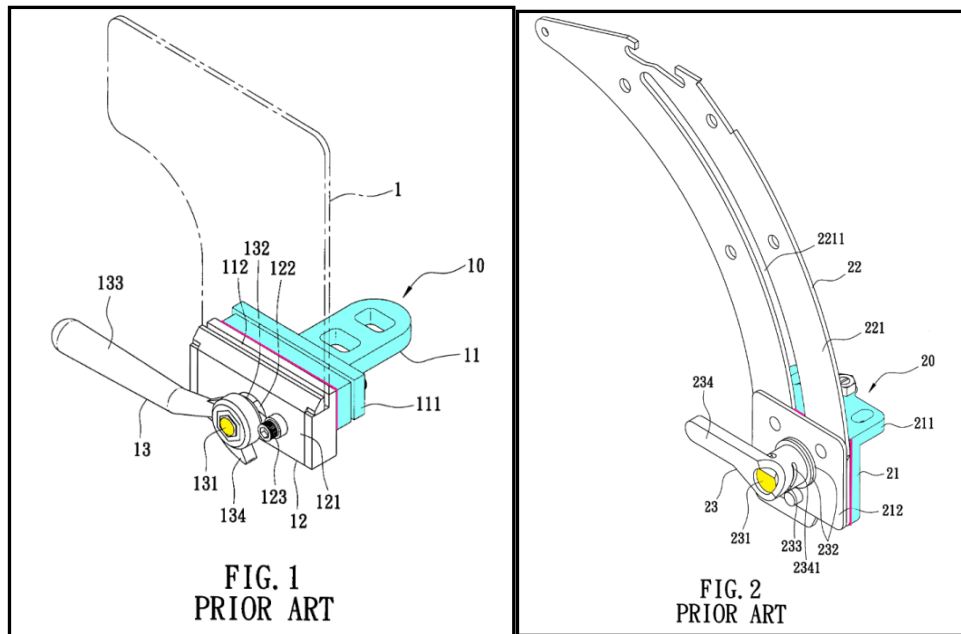


Annotated Fig. 47 of Gass

c. Limitation 1.2

AAPA teaches a tightening bolt 131/231 (yellow below) having a shank that is configured to pass through the axial hole of the proximate tightening surface (magenta below). (EX1001, 1:32-37, 1:56-62 (citation above); EX1004, ¶318.)

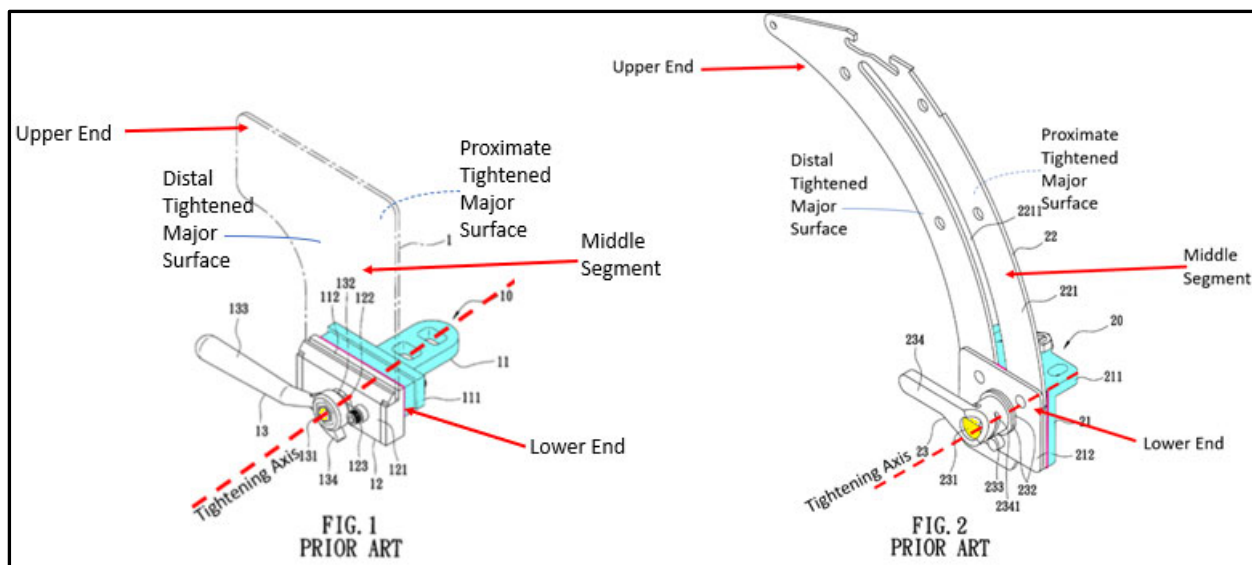
Because the term “bolt” is a well-known conventional item in the art, a POSA would have understood that “bolt” 131/231 would have front and rear ends opposite to each other in the tightening axis (red dashed line above) with an intermediate segment interposed between the front and rear ends. The bolts define the tightening axis. (EX1004, ¶¶319-320.)



Annotated Figs. 1 & 2 of AAPA

d. Limitation 1.3

AAPA teaches a supporting frame 1/221 that has upper and lower ends (annotated below) opposite each other and a middle segment (annotated below) interposed between the upper and lower ends. (EX1001, Figs. 1-2.) As stated, AAPA teaches supporting frame 1 being adapted to hold a protective cover. (*Id.*, 1:39-44 (disclosing a “protective cover” held by “[a]n upper portion of the supporting frame.”).) The middle segment has proximate and distal tightened major surfaces (below) opposite each other along the tightening axis (red dashed line). (*Id.*, 1:53-56, Figs 1 & 2; EX1004, ¶¶321-322.)



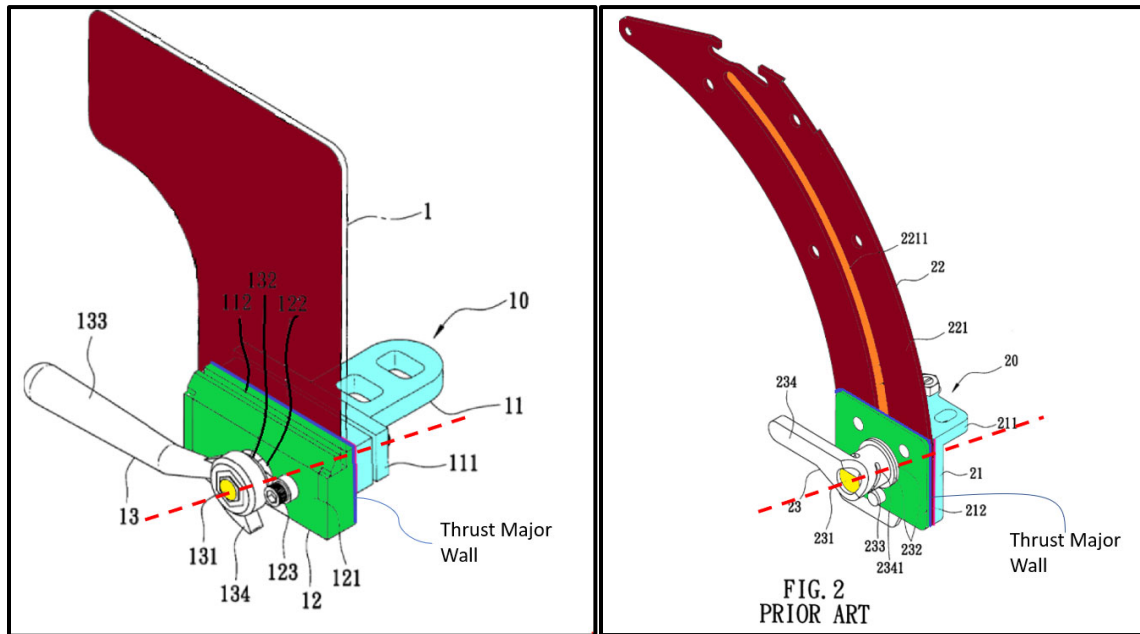
Annotated Figs. 1 & 2 of AAPA

e. Limitation 1.4

AAPA discloses limitation 1.4. (*See supra*, Section VII(A)(1)(e); EX1004, ¶¶323-324.)

f. Limitation 1.5

AAPA teaches a movable tightening member 12/212 that is sleeved on the shank (yellow). (EX1001, 1:56-57 (“[T]ightening bolt 231 [] extends through the arcuate slot 2211” and therefore must also extend through an opening in tightening member/plate 212).) The movable tightening member 12/212 has a thrust major wall (green) that is normal to the tightening axis (red dashed line). (EX1004, ¶¶325-326.)

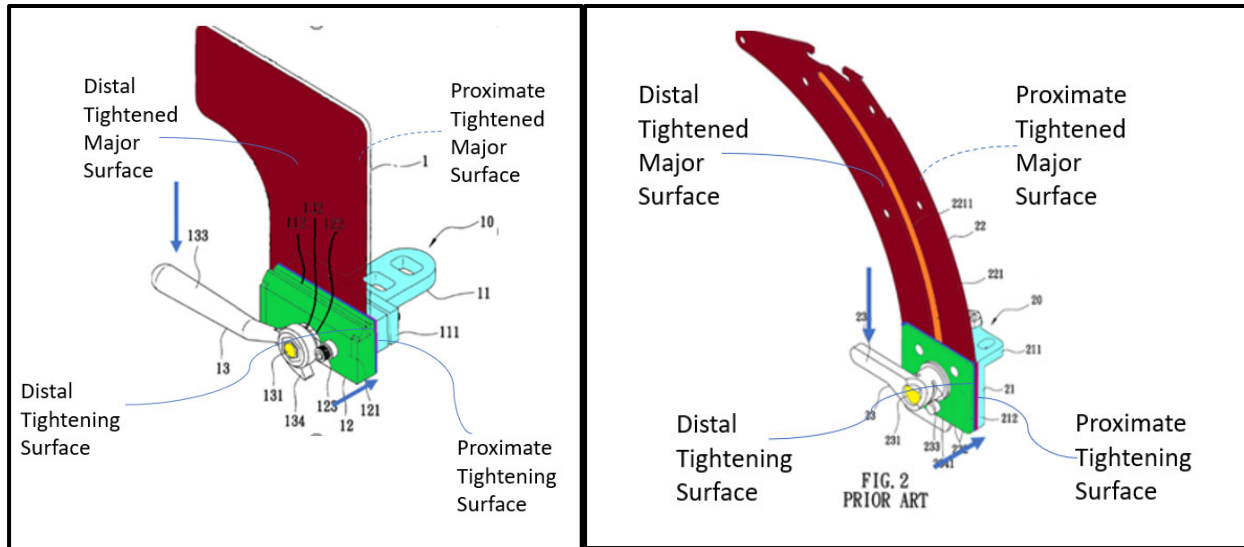


Annotated Figs. 1 & 2 of AAPA

g. Limitation 1.6

AAPA teaches the thrust major wall (green below) having a distal tightening surface (annotated below—outlined in dark blue and is the surface-facing support frame 1/221). AAPA’s distal tightening surface (dark blue outline) and is brought to press the distal tightened major surface (annotated below) of the support frame 1/221 (dark red) to force the proximate tightened major surface (annotated below) of the support frame 1/221 (dark red) to abut the proximate tightening surface (magenta, annotated below) of the mount unit. (EX1001, Figs. 1 & 2, 1:41-67 (“When the user operates the handgrip 133 to rotate the cam piece 132, the cam follower piece 122 is pressed toward the fixed mount 111 so as to tighten the supporting frame 1” and “when the user rotates the cam actuator 234, the cam actuator 234 can press the tightening plate 212 via the washers 232 towards the fixed

mount 211 so as to tighten the supporting frame 221.”); EX1004, ¶¶327-329.)

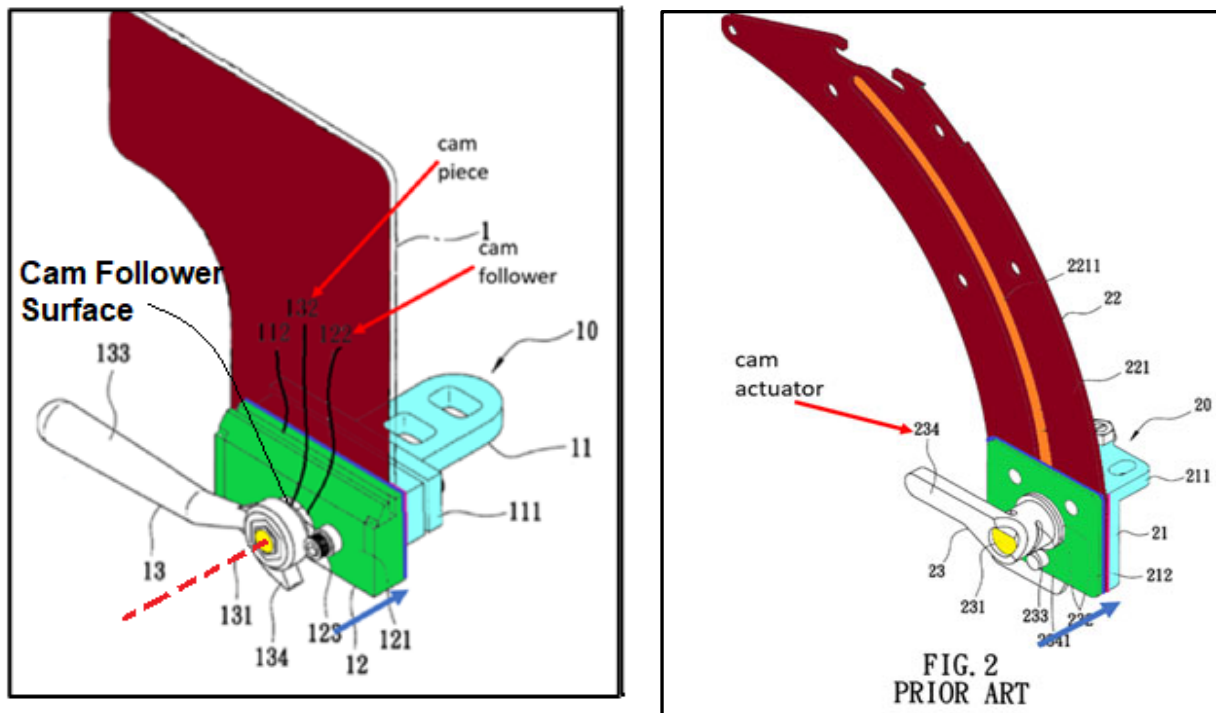


Annotated Figs. 1 & 2 of AAPA

A POSA would have understood this limitation as described in Section VII(A)(1)(g). (EX1004, ¶328.)

h. Limitation 1.7

AAPA discloses a cam follower surface (annotated below) that is opposite to the distal tightening surface (dark blue outline, annotated below) along the tightening axis (dashed red line). (EX1001, 1:32-44 (“a cam piece 132 which meshes with the cam follower piece 122” such that “[w]hen the user operates the handgrip 133 to rotate the cam piece 132, the cam follower piece 122 is pressed toward the fixed mount 111 so as to tighten the supporting frame 1.”); EX1004, ¶331.



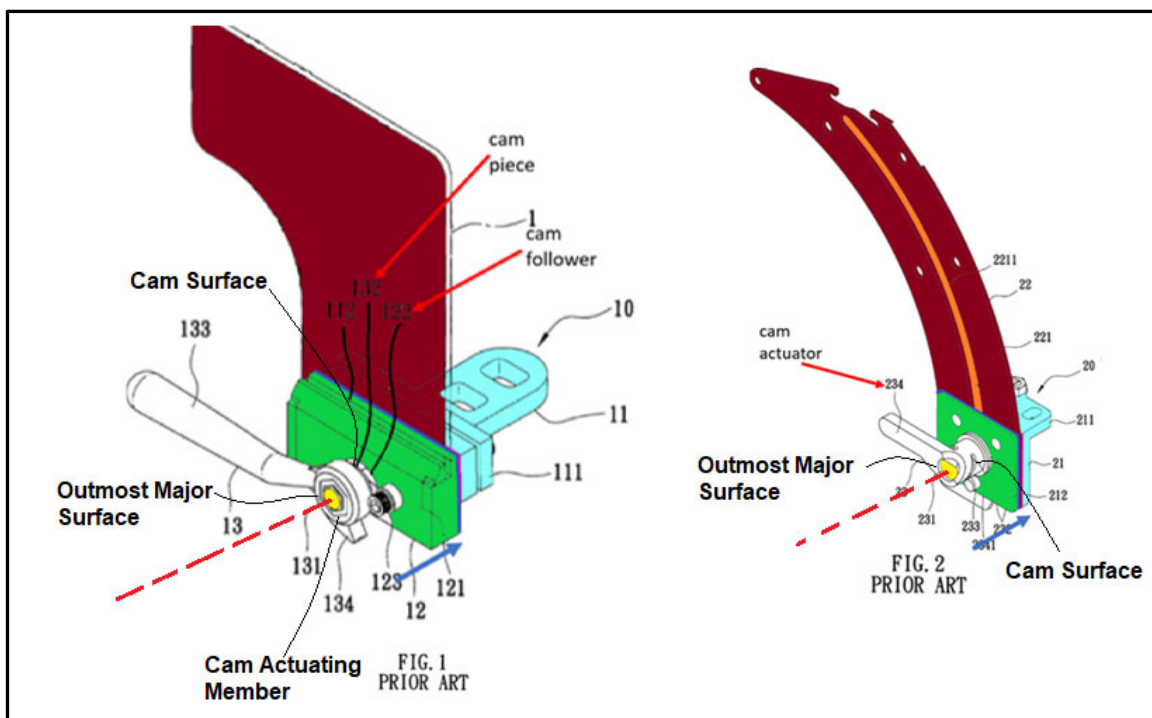
Annotated Figs. 1 & 2 of AAPA

A POSA would have understood AAPA to inherently teach the cam follower surface 122 (annotated above) to have first and second pressed areas that are angularly displaced from each other about the tightening axis (red dashed line) and that are respectively proximate to and distal from the distal tightening surface along the tightening axis (red dashed line). (EX1001, Fig. 1, 1:32-34 (The control unit 13 has ... a cam piece 132 which meshes with the cam follower piece 122 ...).) A POSA would have understood the “cam follower piece 122” to have a cam surface as recited by the limitation 1.7. (EX1004, ¶¶330-332.)

Gass discloses limitation 1.7. (*See supra*, Section VII(A)(1)(h); *Id.*, ¶333.)

i. Limitation 1.8

AAPA teaches a cam actuating member 132/234 including an actuating body that is sleeved on the shank (yellow). (EX1001, Fig. 1-2, 1:56-62 (“The control unit 23 has a ... a cam actuator 234 which is sleeved on the tightening bolt 231 at one end thereof.”), 1:32-34 (“The control unit 13 has a tightening bolt 131, a cam piece 132 which meshes with the cam follower piece 122.”).) The cam actuating member 132/234 has a cam surface (below) and an outmost major surface (below) opposite to each other in the tightening axis. (EX1004, ¶¶335-336.)



Annotated Figs. 1 & 2 of AAPA

The embodiment of Figure 1 of AAPA inherently teaches the cam surface (above) have first and second pressing spots angularly displaced from each other about the tightening axis. (EX1001, Fig. 1, 1:32-34 (“The control unit 13 has ... a

cam piece 132 which meshes with the cam follower piece 122 ...”).) A POSA would have understood the “cam piece 132” to have a cam surface as recited. (EX1004, ¶¶337-338.)

Gass discloses limitation 1.8. (*See supra*, Section VII(A)(1)(i); EX1004, ¶339.)

j. Limitation 1.9

The embodiment of Figure 1 of AAPA inherently teaches that the first and second pressing spots are brought into contact with the first and second pressed areas respectively when the cam surface is brought to mate with the cam follower surface in a loosened position. (EX1001,1:32-34 (“The control unit 13 has ... a cam piece 132 which meshes with the cam follower piece 122.”); EX1004, ¶¶340-341, 343.)

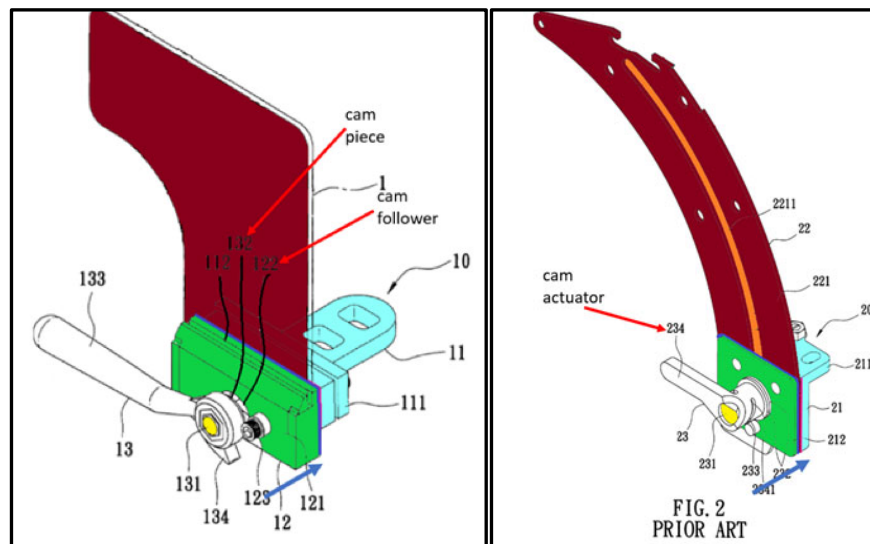
Gass discloses limitation 1.9. (*See supra*, Section VII(A)(1)(j); EX1004, ¶342.)

k. Limitation 1.10

The embodiment of Figure 1 of AAPA inherently teaches that when the actuating body of the cam actuating member 132/234 is turned about the tightening axis (red dashed line) to a tightening position, the first pressing spot is displaced to contact the second pressed area with an axial force to move the distal tightening surface (dark blue) to press the distal tightened major surface (annotated) of the support frame 1 (dark red), thereby forcing the proximate tightened major surface

(annotated above) of the support frame 1 (dark red above) to abut against the proximate tightening surface (magenta above) of mount unit 11 (teal above). (EX1001, 1:41-44; (“When the user operates the handgrip 133 to rotate the cam piece 132, the cam follower piece 122 is pressed toward the fixed mount 111 so as to tighten the supporting frame 1.”), 1:64-67); EX1004, ¶¶344-345.)

A POSA would have understood that turning the actuating body of the cam piece 132 engages the cam surfaces to move the distal tightening surface (dark blue) to press distal tightened major surface (dark red) to force the proximate tightened major surface (surface of support frame 1 opposite the dark red surface) to abut against the proximate tightening surface (magenta), i.e., to clamp the support frame/riving knife in place. (EX1004, ¶¶346, 347.)



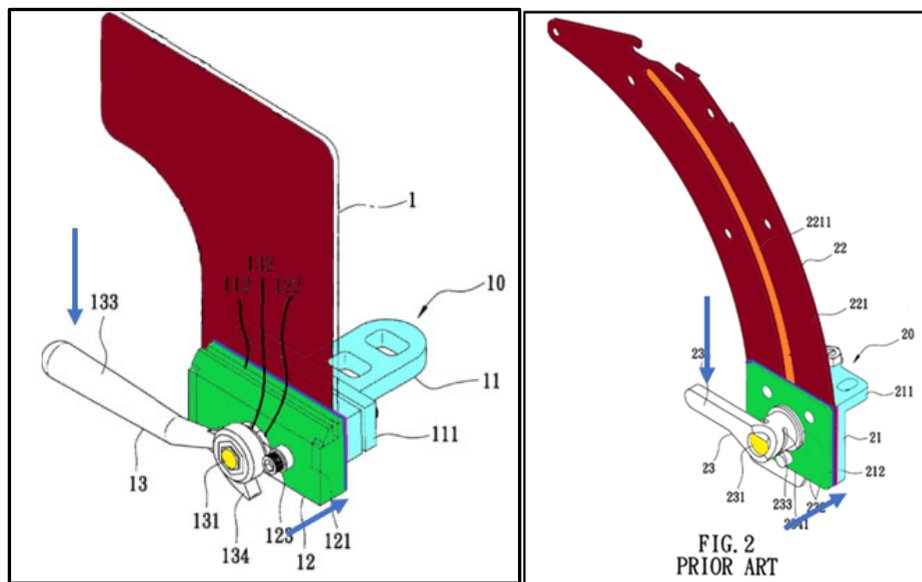
Annotated Figs. 1 & 2 of AAPA

Gass discloses limitation 1.10. (See *supra*, Section VII(A)(1)(k); EX1004,

¶348.)

l. Limitation 1.11

AAPA discloses a handgrip 133, extending from the actuating body 132/23 radially so as to turn the actuating body 132/23 about the tightening axis (defined by the yellow bolt below) between the loosened and tightening positions. (EX1001, Figs. 1-2; 1:32-44 (“When the user operates the handgrip 133 to rotate the cam piece 132, ... to tighten the supporting frame 1.”); EX1004, ¶¶349, 351.)



Annotated Figs. 1 & 2 of AAPA

Gass discloses limitation 1.11. (See *supra*, Section VII(A)(1)(l); EX1004, ¶350.)

m. Limitation 1.12

Gass discloses limitation 1.12. (See *supra*, Section VII(A)(1)(m); EX1004, ¶¶352-353.)

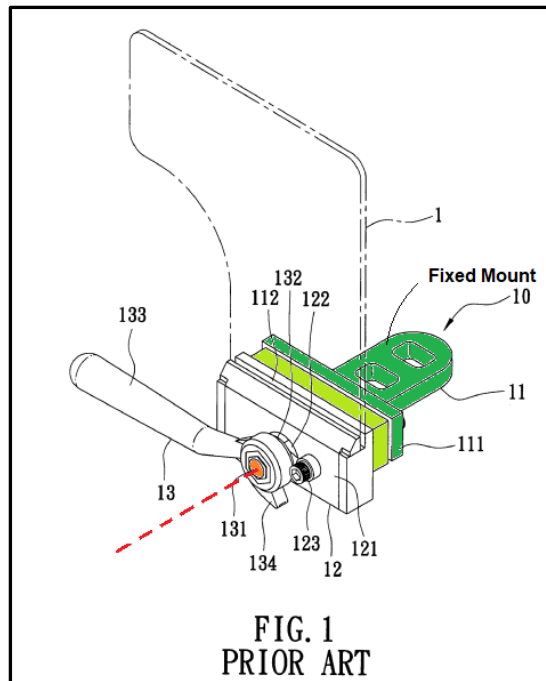
n. Limitation 1.13

Gass discloses limitation 1.13. (*See supra*, Section VII(A)(1)(n); EX1004, ¶¶354-355.)

2. Claim 2

AAPA's mount unit (green) in Figure 1 includes a fixed mount (dark green) adapted to be secured to a cutting machine (via openings in the fixed mount). (EX1001, Fig. 1, 1:24-25 ("The fixed mount unit 11 has a fixed mount 111 secured on a tabletop (not shown) of a cutting machine").) The fixed mount (dark green) includes a throughbore that extends along the tightening axis for passage of the shank 131 (orange). (*Id.*, Fig. 1, 1:32-35; EX1004, ¶¶356-357.) AAPA teaches a movable mount (light green) that includes the major abutment wall disposed forwardly of the fixed mount (dark green) along the tightening axis (red dashed line) to permit the throughbore to be coaxial with the axial hole. (EX1001, Fig. 1; EX1004, ¶¶356-357.)

For the same reasons identified in Section VII(A)(2), a POSA would have understood that the component carrying the major abutment wall, which is disposed forwardly of the fixed mount, could be separate from the fixed mount (dark green). Such a configuration would be considered common sense, ordinary routine practice, and an obvious engineering choice. (*See* MPEP 2144.04(V)(C); *see In re Larson*, 340 F.2d at 968 ; EX1004, ¶¶359, 361.)



Annotated Fig. 1 of AAPA

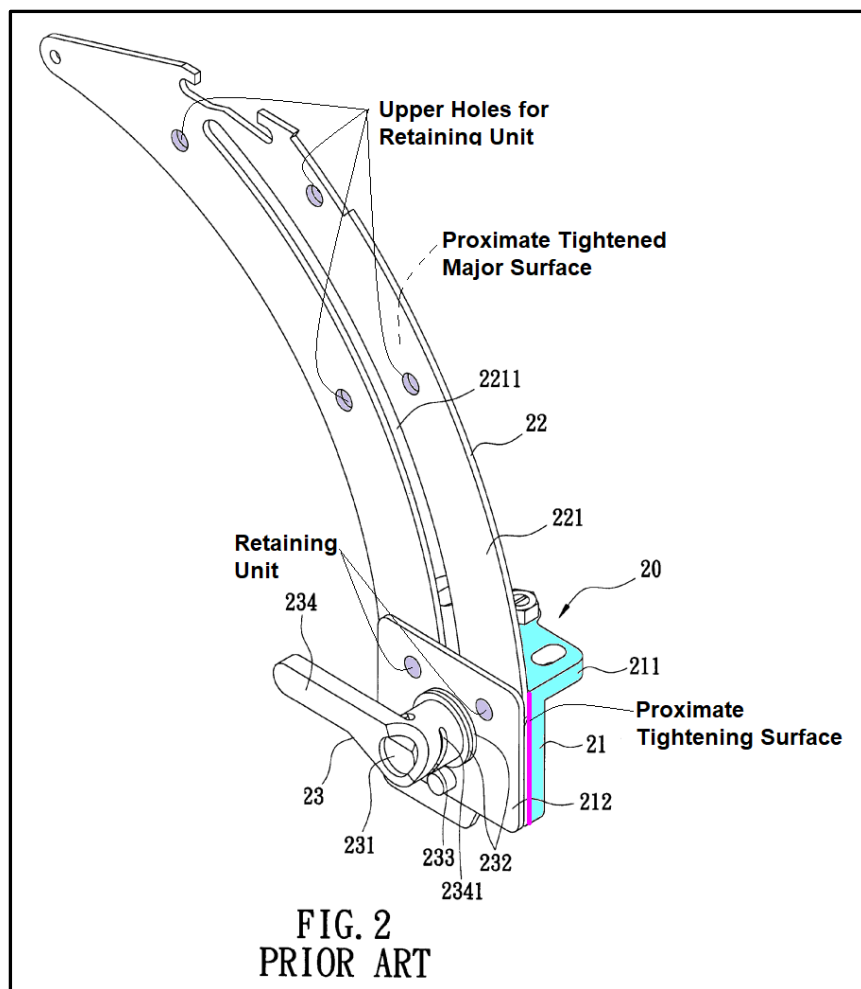
Gass discloses claim 2. (*See supra*, Section VII(A)(2); EX1004, ¶360.)

3. Claim 5

Gass discloses claim 5. (*See supra*, Section VII(A)(3); EX1004, ¶¶362-363.)

4. Claim 9

Figure 2 of AAPA discloses a retaining unit (annotated) disposed between the proximate tightening surface (magenta) and the proximate tightened major surface (annotated) of the supporting frame 221 and which is configured to retain the supporting frame 221 in a corresponding one of the position of use (Figure 2) and the retreat position (when the retaining unit is secured in the upper holes of support frame 221). (*Id.*, ¶¶364-365.)



Annotated Figure 2 of AAPA

5. Motivation to Combine

A POSA would have been motivated to modify the supporting device of AAPA as taught by Gass. (EX1004, ¶366.) Both are directed to the same subject matter, are in the same field of invention, and teach structures with many commonalities in that they both disclose, among other components, riving knives and blade guards. (See Section VII(A)(5); EX1004, ¶367.)

A POSA would have looked to Gass's disclosure regarding cams to provide an explanation as to the manner in which AAPA's cam piece and cam follower

pieces work to translate radial motion into linear clamping motion. (EX1004, ¶368.) Moreover, a POSA would have been motivated to add a spring to AAPA because a POSA would have been familiar with the utility of springs in power tools. (*Id.*) In particular, a POSA would have understood that springs are commonly used with cams to maintain contact between the cam member and the cam follower member. (*Id.*) Further, a POSA would have understood Gass to identify loosening of the riving knife clamp during operation as a problem known in the art. (*Id.*, ¶¶368-369.) A POSA, knowing that compression springs apply biasing force and absorb/release energy, would have found it obvious to use a spring in a clamp assembly to improve the operation of the clamp, replicating part of Gass's solution to the problem. (*Id.*) A POSA would have found it obvious to separate the fixed mount from the movable and to add a nut and use a coil spring as described in Sections VII(A)(2)-(3). (*Id.*)

Given the above-described similarities in the structure of the Gass and AAPA, a POSA would have a reasonable expectation of success in combining the above features with the AAPA supporting device. (*Id.*, ¶370.)

D. Ground 4: The Challenged Claims are unpatentable as obvious under 35 U.S.C. §103 over Gass in view of Burke

1. Claim 1

Gass discloses all of the limitations of claim 1 except the guiding slot within its supporting frame. Burke discloses this limitation.

a. Limitation 1.0

Gass discloses limitation 1.0. (*See supra*, Section VII(A)(1)(a); EX1004, ¶¶371-372.)

b. Limitation 1.1

Gass discloses limitation 1.1. (*See supra*, Section VII(A)(1)(b); EX1004, ¶¶373-374.)

c. Limitation 1.2

Gass discloses limitation 1.2. (*See supra*, Section VII(A)(1)(c); EX1004, ¶¶375-376.)

d. Limitation 1.3

Gass discloses limitation 1.3. (*See supra*, Section VII(A)(1)(d).) Burke also discloses limitation 1.3. (*See supra*, Section VII(B)(1)(d) EX1004, ¶¶377-378.)

e. Limitation 1.4

Burke discloses limitation 1.4. (*See supra*, Section VII(B)(1)(e); EX1004, ¶¶379-380.)

f. Limitation 1.5

Gass discloses limitation 1.5. (*See supra*, Section VII(A)(1)(f); EX1004, ¶¶381-382.)

g. Limitation 1.6

Gass discloses limitation 1.6. (*See supra*, Section VII(A)(1)(g); EX1004, ¶¶383-384.)

h. Limitation 1.7

Gass discloses limitation 1.7. (*See supra*, Section VII(A)(1)(h); EX1004, ¶¶385-386.)

i. Limitation 1.8

Gass discloses limitation 1.8. (*See supra*, Section VII(A)(1)(i); EX1004, ¶¶387-388.)

j. Limitation 1.9

Gass discloses limitation 1.9. (*See supra*, Section VII(A)(1)(j); EX1004, ¶¶389-390.)

k. Limitation 1.10

Gass discloses limitation 1.10. (*See supra*, Section VII(A)(1)(k); EX1004, ¶¶391-392.)

l. Limitation 1.11

Gass discloses limitation 1.11. (*See supra*, Section VII(A)(1)(l); EX1004, ¶¶393-394.)

m. Limitation 1.12

Gass discloses limitation 1.12. (*See supra*, Section VII(A)(1)(m); EX1004, ¶¶395-396.)

n. Limitation 1.13

Gass discloses limitation 1.13. (*See supra*, Section VII(A)(1)(n); EX1004, ¶¶397-398.)

2. Claim 2

Gass discloses claim 2. (*See supra*, Section VII(A)(2); EX1004, ¶¶399-400.)

3. Claim 5

Gass discloses claim 5. (*See supra*, Section VII(A)(3), EX1004, ¶¶401-402.)

4. Claim 9

Gass discloses claim 9. (*See supra*, Section VII(A)(4).) Burke also discloses this claim. (*See supra*, Section VII(B)(4); EX1004, ¶¶403-404.)

5. Motivation to Combine

A POSA would have been motivated to modify a supporting device of Gass to include the support frame having a guiding slot as taught by Burke. (*Id.*, ¶405.)

Burke is directed to the same subject matter, in the same field of invention, and discloses a similarly structured device as Gass. (*See* Section VII(B)(5); EX1004, ¶406.)

The guiding slot of Burke would allow the user to retract the riving knife below the table and extend the riving knife above the table. (EX1004, ¶407.) As

stated above, it would be obvious to utilize this adjustment mechanism in other riving knife/clamp assemblies, including that disclosed by Gass. (*Id.*) A POSA would have understood Gass to be concerned with the safety of table saws and the inconveniences associated with using riving knives. (EX1003, 19:37-65.) A POSA would have understood that, in order to further reduce the complexity, difficulty, and inconvenience of using a riving knife, it would be desirable to design the knife so that it could be retracted below the work surface of the table saw when performing certain cuts and extended when making other cuts. (EX1004, ¶407.)

The guiding slot disclosed by Burke is simple, inexpensive, and easy for saw operators to use, making it an obvious solution to a known problem in the art. (*Id.*, ¶408.) Moreover, a POSA would have a reasonable expectation of success in trying the adjustment method disclosed by Burke. (*Id.*) It would have been obvious to add a retention unit so the knife could be secured in the desired position, further increasing usability and safety. (*Id.*) It would also have been obvious to use Gass's biasing spring as it would improve the reliability and usability of the clamping system. (*Id.*, ¶409.) Burke provides explicit motivation to add a spring as it discloses a compression spring. (*Id.*) The claimed invention is no "more than the predictable use of prior art elements according to their established functions." (*KSR Int'l Co.*, 550 U.S. at 417.)

E. Ground 5: The Challenged Claims are Obvious Under 35 U.S.C. §103(a) Over Gass in view of Garcia

1. Claim 1.

Gass discloses all of the limitations of claim 1 except the guiding slot within its supporting frame. Garcia discloses this limitation.

a. Limitation 1.0

Gass discloses limitation 1.0. (*See supra*, Section VII(A)(1)(a); EX1004, ¶¶410, 411.)

b. Limitation 1.1

Gass discloses limitation 1.1. (*See supra*, Section VII(A)(1)(b); EX1004, ¶¶412, 413.)

c. Limitation 1.2

Gass discloses limitation 1.2. (*See supra*, Section VII(A)(1)(c); EX1004, ¶¶414, 415.)

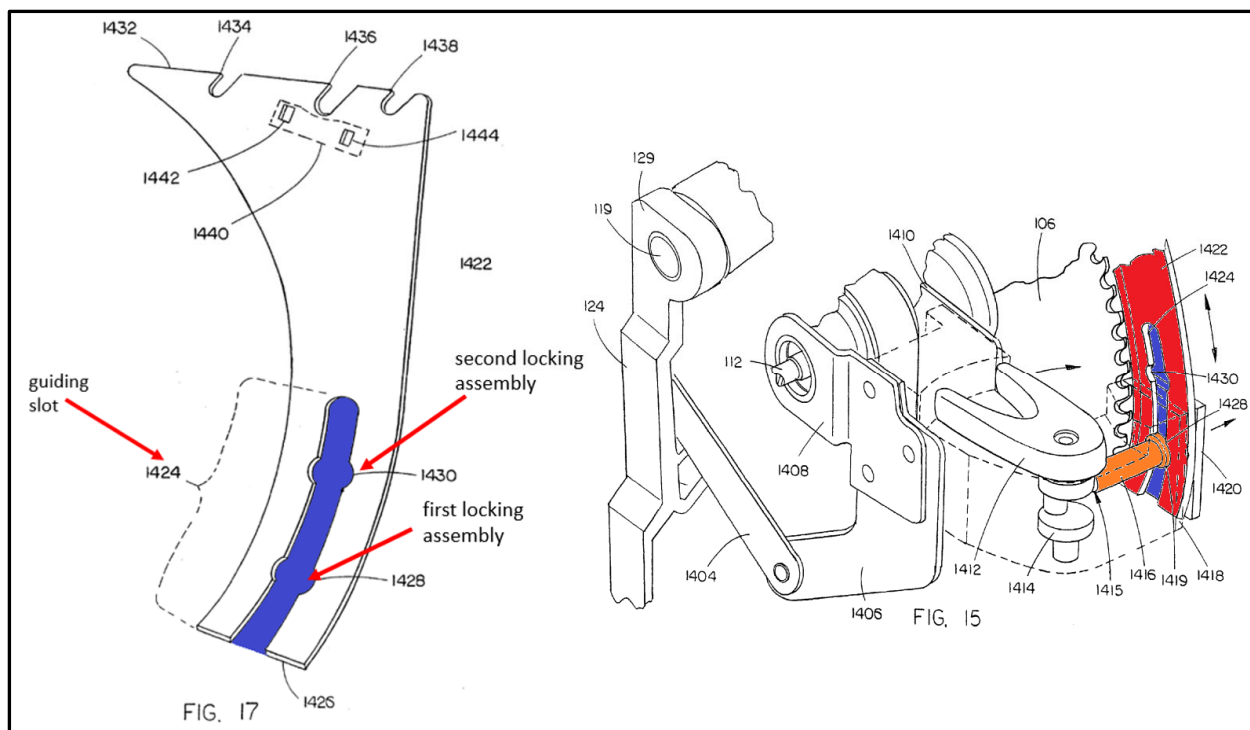
d. Limitation 1.3

Gass discloses 1.3. (*See supra*, Section VII(A)(1)(d); EX1004, ¶¶416, 417.)

e. Limitation 1.4

Garcia is directed to a supporting device 1400 for use with a cutting machine very similar to Gass. (*See* EX1009, Figs. 17 & 20, ¶¶0115, ¶¶0054; EX1004, ¶¶418-419.) Garcia discloses a supporting frame 1422 having a guiding slot 1424 (blue below) that extends through the proximate and distal tightened major surfaces and

permits passage of a shank 1415 (orange below) therethrough. (EX1009, Figs. 15-17, ¶0105 (“The locking pin 1415...[is] configured to engage the riving knife 1422. ...[T]he engagement assembly 1424 is a slot defining a recess within the riving knife 1422.”); EX1004, ¶420.) The guiding slot permits the middle segment of the supporting frame to move between a position of use where the shank 1415 is remote from the upper end of the supporting frame 1422, and a retreat position where the shank 1416 is closer to the upper end. (*Id.* (“The slot of engagement assembly 1424 further defines a first locking assembly 1428 and a second locking assembly 1430. In the current embodiment, the first and second locking assemblies are circular apertures which allow the circular engagement member 1419 of the locking pin 1415 to engage in preset locations and securely establish the position of the riving knife 1422.”); EX1004, ¶¶420-421.)



Annotated Figures 17 & 15 of Garcia

f. Limitation 1.5

Gass discloses limitation 1.5. (*See supra*, Section VII(A)(1)(f); EX1004, ¶¶422-423.)

g. Limitation 1.6

Gass discloses limitation 1.6. (*See supra*, Section VII(A)(1)(g); EX1004, ¶¶424-425.)

h. Limitation 1.7

Gass discloses limitation 1.7. (*See supra*, Section VII(A)(1)(h); EX1004, ¶¶426-427.)

i. Limitation 1.8

Gass discloses limitation 1.8. (*See supra*, Section VII(A)(1)(i); EX1004,

¶¶428-429.)

j. Limitation 1.9

Gass discloses limitation 1.9. (*See supra*, Section VII(A)(1)(j); EX1004, ¶¶430-431.)

k. Limitation 1.10

Gass discloses limitation 1.10. (*See supra*, Section VII(A)(1)(k); EX1004, ¶¶432-433.)

l. Limitation 1.11

Gass discloses limitation 1.11. (*See supra*, Section VII(A)(1)(l); EX1004, ¶¶434-435.)

m. Limitation 1.12

Gass discloses limitation 1.12. (*See supra*, Section VII(A)(1)(m); EX1004, ¶¶436-437.)

n. Limitation 1.13

Gass discloses limitation 1.13. (*See supra*, Section VII(A)(1)(n); EX1004, ¶¶438-439.)

2. Claim 2

Gass discloses claim 2. (*See supra*, Section VII(A)(2); EX1004, ¶¶440-441.)

3. Claim 5

Gass discloses claim 5. (*See supra*, Section VII(A)(3) EX1004, ¶¶442-443.)

4. Claim 9

Gass discloses claim 9. (*See supra*, Section VII(A)(4).)

Figure 15 of Garcia discloses a retaining unit 1419 disposed between the proximate tightening surface and the proximate tightened major surface of the supporting frame 1422 and which is configured to retain the supporting frame 1422 in a corresponding one of the position of use (when pin 1415 is secured in first locking assembly 1428) and the retreat position (when pin 1415 is secured in second locking assembly 1430). (EX1009, Fig. 15-17, ¶¶0104-0105; EX1004, ¶¶444-446.)

5. Motivation to Combine

A POSA would have been motivated to modify the supporting device of Gass to include the support frame having a guiding slot as taught by Garcia. Garcia is directed to the same subject matter, is in the same field of invention, and discloses similar devices as Gass. (*See* EX1003, Abstract; EX1009, ¶0002; EX1004, ¶447.) Both disclose riving knives and blade guards. (EX1003, 18:41-47, 24:47-52, 27:37-45; EX1009, ¶0115.)

The guiding slot of Garcia would allow the user to retract the riving knife below the table and extend the riving knife above the table. (EX1004, ¶448.) As stated above, it would have been obvious to utilize this adjustment mechanism in other riving knife/clamp assemblies, including that disclosed by Gass. (*Id.*) A POSA would have understood Gass to be concerned with the safety of table saws

and the inconveniences associated with using riving knives. (EX1003, 19:37-65; EX1004, ¶448.) A POSA would have known that, to further reduce the complexity, difficulty, and inconvenience of using a riving knife, it would be desirable to design the knife so that it could be retracted below the work surface of the table saw when performing certain cuts and extended when making other cuts. (EX1004, ¶448.)

The guiding slot disclosed by Garcia is simple, inexpensive, and easy for saw operators to use, making it an obvious solution to a known problem in the art. (*Id.*, ¶¶449-450.) Moreover, a POSA would have reasonable expectations of success in trying the adjustment method disclosed by Garcia and would then find it obvious to add a retention unit such that the knife could be secured in place in the desired position, further increasing usability and safety. (*Id.*) It would have been obvious to use Gass's cams instead of Garcia's eccentric shaft as Gass's cams provide a more compact, less expensive, and more durable way to achieve this. (*Id.*, ¶451.) Thus, the claimed invention is no "more than the predictable use of prior art elements according to their established functions." (*KSR Int'l Co.*, 550 U.S. at 417.)

F. No Secondary Considerations Support Nonobviousness

To counter the evidence of obviousness set forth in Grounds 1-5, Patent Owner might try to rely on secondary indicia of nonobviousness. While any such evidence would be "insufficient" to overcome "such a strong case of obviousness" here, *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1372 (Fed. Cir. 2007), Petitioners

reserve the right to respond to any arguments made by Patent Owner.

VIII. DISCRETIONARY DENIAL WOULD BE NEITHER APPROPRIATE NOR EQUITABLE

A. The *Becton, Dickinson* Factors Do Not Support Discretionary Denial

The *Becton, Dickinson* factors favor institution. *Becton, Dickinson & Company v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017) (precedential). No other party has previously filed a petition challenging the '622 patent. None of Gass, Garcia, or AAPA were before the Office during prosecution. While Burke was cited on a Notice of References Cited, it was not used in any rejection nor was it addressed by the Examiner in any way.

B. The *Fintiv* Factors Do Not Support Discretionary Denial

The *Fintiv* factors point to deciding the petition on the merits. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. March 20, 2020).

1. Likelihood of a Stay

Petitioners include the defendants in the above-referenced District Court litigation and the manufacturer of the accused products. All Petitioners have been participating in the cases. The cases are early in their lifetime—the complaints were filed about five months ago—so a district court is likely to grant a stay given that this proceeding is an efficient, quick way to narrow the issues.

2. Proximity of the Court's Trial Date to a Final Written

Decision

The current scheduling orders set trial beginning April 21, 2025, by which time this proceeding will be close to resolution, if not already resolved.

3. Investment in Parallel Proceeding

The litigations are in early stages and have not required significant investment by either the Court or the parties. Discovery has been open for a few months.

4. Overlap Between Parties and Issues Raised in the Petition and Litigation

All Petitioners will have to participate in the litigations. The Petition uses the same prior art that is used in the invalidity contentions. Institution will allow the Board to address this art, and the issues for litigation will be narrowed due to estoppel. Having the Board address invalidity, and the District Court address any remaining issues, is the most efficient course.

5. Other Factors That Could Impact Exercise of Discretion

Petitioners' invalidity arguments are strong, thus factoring against discretionary denial.

IX. CONCLUSION

For the reasons set forth above, the Challenged Claims are unpatentable. (EX1004, ¶452.) Petitioners request that an *inter partes* review of these claims be instituted.

Respectfully submitted,

Dated: February 6, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e)(4)(i) et seq. and 42.105(b), the undersigned certifies that PETITIONERS' PETITION FOR *INTER PARTES* REVIEW, including all exhibits and supporting evidence, was served in its entirety on the Patent Owner at the correspondence address of record at the USPTO for the subject patent, the address listed in PACER of Patent Owner's counsel of record in the district court litigations referenced herein, and the address listed for the entity having power of attorney for the subject patent:

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CERTIFICATE OF COMPLIANCE PURSUANT TO 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24. This paper (including figure labels and annotations) contains 13,895 words as calculated by the “Word Count” feature of Microsoft Word, the word processing program used to create it, and manual counting of the annotations in the figures.

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(ii) and the type style requirements of § 42.6(a)(iii)&(iv).

Respectfully submitted,

Dated: February 6, 2024

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APPENDIX A: LISTING OF CLAIMS

Text of claims from the '622 patent

Claim Number	Claim Language
1.0	A supporting device for mounting a protective cover to shield a cutting blade of a cutting machine which is driven to rotate about a rotating axis, said supporting device comprising:
1.1	a mount unit which is adapted to be secured to the cutting machine, said mount unit including a major abutment wall which has a proximate tightening surface that has an axial hole extending therethrough along a tightening axis parallel to the rotating axis of the cutting blade;
1.2	a tightening bolt having a shank which is configured to pass through said axial hole, and which has front and rear ends opposite to each other in the tightening axis, and an intermediate segment interposed between said front and rear ends;
1.3	a supporting frame which has upper and lower ends opposite to each other, and a middle segment interposed between said upper and lower ends, said upper end being adapted to hold the protective cover, said middle segment having proximate and distal tightened major surfaces opposite to each other along the tightening axis,
1.4	and a guiding slot which extends through said proximate and distal tightened major surfaces and which permits passage of said shank therethrough, said guiding slot permitting said middle segment to be movable between a position of use where said shank is remote from said upper end, and a retreat position where said shank is closer to said upper end;
1.5	a movable tightening member which is sleeved on said shank, and which has a thrust major wall to which the tightening axis is normal,
1.6	said thrust major wall having a distal tightening surface which confronts and which is to be brought to press said distal tightened major surface so as to force said proximate tightened major surface to abut against said proximate tightening surface, and

1.7	a cam follower surface which is opposite to said distal tightening surface along the tightening axis, and which has first and second pressed areas that are angularly displaced from each other about the tightening axis, and that are respectively proximate to and distal from said distal tightening surface along the tightening axis;
1.8	a cam actuating member including an actuating body which is sleeved on said shank, and which has a cam surface and an outmost major surface opposite to each other in the tightening axis, said cam surface having first and second pressing spots which are angularly displaced from each other about the tightening axis such that,
1.9	said first and second pressing spots are brought into contact with said first and second pressed areas respectively when said cam surface is brought to mate with said cam follower surface in a loosened position,
1.10	and such that, when said actuating body is turned about the tightening axis to a tightening position, said first pressing spot is displaced to contact said second pressed area with an axial frictional force so as to move said distal tightening surface to press said distal tightened major surface, thereby forcing said proximate tightened major surface to abut against said proximate tightening surface, and
1.11	a handgrip disposed to extend from said actuating body radially so as to turn said actuating body about the tightening axis between the loosened and tightening positions; and
1.12	a biasing member disposed on said shank adjacent to said rear end of said shank such that,
1.13	as a result of displacement of said actuating body to the tightening position, said biasing member acquires an increment of a biasing force which biases said front end of said shank towards said supporting frame so as to counteract the axial frictional force to thereby keep said actuating body in the tightening position.
2	The supporting device according to claim 1, wherein said mount unit includes a fixed mount adapted to be secured to the cutting machine, and having a throughbore which extends along the tightening axis for passage of said shank, and a movable mount having said major abutment wall, which is disposed forwardly of said fixed mount along the tightening axis to permit said throughbore to be coaxial with said axial hole.

5	The supporting device according to claim 2, wherein said tightening bolt has a screw nut which is threadedly engaged with said rear end of said shank, said biasing member being a coil spring which is disposed to surround said shank and between said major abutment wall and said screw nut so as to acquire the increment of the biasing force.
9	The supporting device according to claim 1, further comprising a retaining unit which is disposed between said proximate tightening surface and said proximate tightened major surface and which is configured to retain said supporting frame in a corresponding one of the position of use and the retreat position.