

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Stanley Black & Decker, Inc.
Petitioner

v.

Viking Arm AS
Patent Owner

IPR2025-00665
U.S. Patent No. 11,554,473

DECLARATION OF RICHARD W. KLOPP, Ph.D., P.E., F.A.S.M.E.

TABLE OF CONTENTS

I.	ENGAGEMENT.....	1
II.	QUALIFICATIONS	2
III.	INFORMATION CONSIDERED	5
IV.	LEGAL PRINCIPLES.....	6
V.	THE RELEVANT TIMEFRAME FOR ANALYSIS	10
VI.	PERSON OF ORDINARY SKILL IN THE ART (“POSITA”).....	10
VII.	SUBJECT MATTER OF THE ’473 PATENT	12
	A. Caulking Gun Jacking Mechanism	12
	B. Incremental Lowering Mechanism 12	13
	C. Complete Release Lever 10.....	16
	D. Challenged Claims	16
VIII.	SUMMARY OF PRIOR ART.....	18
	A. Gruber (EX1003/EX1004)	18
	B. Brasemann (EX1005).....	22
IX.	CLAIM CONSTRUCTION	26
	A. Construction Of “Pivot Structure” (Challenged Claim 1)	28
	B. Construction Of “Beside” (Challenged Claim 2).....	32
X.	RESERVATION OF OPINIONS AS TO NON-IPR-ELIGIBLE INVALIDITY GROUNDS.....	38
XI.	INVALIDITY GROUND	39
	A. Invalidity Ground: Gruber In View of Brasemann	39
	1. Gruber And Brasemann Are Analogous Art	39

2.	It Would Have Been Obvious To Have Incorporated Braselmann's Incremental Lowering Mechanism Into Gruber	42
3.	Obviously Modified Gruber Jack	47
B.	Claim 1	49
1.	Limitation 1(a): "1. A lowering mechanism for a hand held jacking tool comprising a jacking frame, a jacking shaft, and a caulking gun jacking mechanism comprising at least one jacking plate biased towards an open state"	49
2.	Limitation 1(b): "and at least one holding plate, above the at least one jacking plate"	51
3.	Limitation 1(c): "being biased towards a gripping state"	52
4.	Limitation 1(d): "wherein the lowering mechanism comprises: a lowering plate on top of the at least one holding plate"	52
5.	Limitation 1(e): lowering plate "being parallel to the at least one holding plate when not activated"	55
6.	Limitation 1(f): "a spring biasing the lowering plate towards the at least one holding plate"	58
7.	Limitation 1(g): "a thumb operable pushing lever"	64
8.	Limitation 1(h): "a release lever which is an extension of the at least one holding plate"	68
9.	Limitation 1(i): "a hinge attachment connecting the thumb operable pushing lever to the lowering plate at a rear end towards an operating handle"	68
10.	Limitation 1(j): "a pivot structure connected to the thumb operable pushing lever or the at least one holding plate a distance backward from the hinge attachment"	70
11.	Limitation 1(k): "wherein the lowering plate is lifted up and grips the jacking shaft when the thumb operable pushing lever is pushed downwards and pivots around the pivot structure and in turn, pushes the at least one holding plate downwards loosening te at least one holding plate from the jacking shaft and moving the jacking frame down along the jacking shaft a distance until the at least one holding plate reaches an angle that stops the at least one holding plate against the jacking shaft while the lowering plate still grips the jacking shaft"	76

C.	Claim 2	77
1.	Obviousness If “Beside” Means “Nearby”	77
2.	Obviousness If “Beside” Means “Laterally Adjacent”	80
D.	Claim 3	82
E.	Secondary Considerations	85
XII.	CONCLUDING STATEMENTS	86

I, Richard W. Klopp, declare as follows:

I. ENGAGEMENT

1. I have been retained by Petitioner (Stanley Black & Decker, Inc.) as an expert witness in an *inter partes* review (“IPR”) before the U.S. Patent Trial and Appeal Board (“PTAB”).

2. I have been asked to provide my opinions on whether a person of ordinary skill in the art (“POSITA”) would have found that claims 1-3 (the “Challenged Claims”) of U.S. Patent No. 11,554,473 (“the ’473 Patent”) (EX1001) were obvious over German Patent Specification Publication No. DE10127718A1 (EX1003/EX1004) (“Gruber”) in view of U.S. Patent No. 2,820,608 (EX1005) (“Braselmann”).

3. My employer, Exponent, is being compensated by Patent Owner at the rate of \$720 per hour, which is Exponent’s standard hourly consulting rate for my time spent on this matter. This compensation is not contingent on my performance, my opinions, the outcome of this matter, or any other issues involved in or related to this matter. Neither Exponent nor I have a conflict of interest with respect to the Petitioner or Patent Owner.

4. I am over 18 years of age, I have personal knowledge of the facts stated in this declaration, and I could testify competently to them if asked to do so.

II. QUALIFICATIONS

5. A copy of my curriculum vitae is attached to this declaration as Appendix A. This curriculum vitae lists publications I have authored over the past ten years. A list of all other cases in which I have testified as an expert during the last four years at trial or by deposition is attached as Appendix B.

6. Exponent is the world's largest engineering and scientific consulting firm dedicated to solving technology problems of all kinds. Exponent provides both proactive services aimed at preventing problems, as well as reactive services for investigating and understanding problems that have occurred. With more than 900 employees, including more than 500 with Ph.Ds., having expertise in dozens of engineering and scientific disciplines, located in more than 30 offices around the world, Exponent is able to assemble project teams with the appropriate expertise for any given problem. Exponent has investigated nearly every high-profile failure or disaster of the past several decades, including the World Trade Center collapse in New York City, the Miller Park crane collapse in Milwaukee, Wisconsin, Boston's Big Dig, and Seattle's SR99 Tunnel.

7. I am a Principal Engineer based in Exponent's Menlo Park, California, office. I am a trained mechanical engineer holding professional engineer licenses in the states of California, Texas, Washington, Michigan, and Nevada. I received my undergraduate Bachelor of Science degree in mechanical

engineering from Lehigh University; two Master of Science degrees, in engineering and applied mathematics, from Brown University; and a Ph.D. in engineering, also from Brown University. I currently mentor the local high school robotics team, teaching them aspects of mechanical engineering design, metal fabrication, and machine shop practice. I am also a Fellow of the American Society of Mechanical Engineers and have been practicing in the field of mechanical engineering for more than 40 years. I have specific expertise and regularly provide consulting services in mechanical engineering and mechanics, including product design, machine design, solid mechanics, failure analysis, fracture mechanics, and experimental mechanics.

8. I have been immersed my whole life in the area of mechanical engineering design, and I am also a skilled machinist and precision tool enthusiast. My failure analysis work has involved portable automotive jacks. This has included verifying the advertised capacities of a vendors' full jack product line by loading jacks to failure. I have also analyzed a jack design to identify functional features in the context of a design patent. In addition, I was retained in a class action matter regarding automotive jack stands. This work involved testing the stability of jack stands in actual use, loading jack stands to failure in the laboratory, and making demonstrative cutaways to reveal the load support mechanisms. I have extensive personal experience with woodworking extending back decades,

including clamping, fastening, and joining of furniture I built from scratch while I was in graduate school, and house framing with my father in my pre-teen years. My experience involves using bar clamps, which I own, and a handful of them are equipped with “caulking gun” style locking mechanisms as cited in the ’473 Patent. Furthermore, I use Irwin brand “Quick-Grip” bar clamps having “caulking gun” style jacking mechanisms in the high school robotics shop where I am a mentor to the students. In addition, I own and use a caulking gun with its namesake mechanism. I am very familiar with the mechanical engineering principles employed by such mechanisms. This prior experience is all relevant to the jacking tool technology at issue.

9. Much of my current work relates directly to commercial disputes. The remainder is split between reactive failure analyses and proactive (non-litigation) engineering work supporting, specifically, product design, product improvement, and the prevention of failures. I have provided written analysis and oral testimony in a wide variety of intellectual property matters, including patent infringement and invalidity analyses, trade secret misappropriation, design patent and trade dress functionality, and technology licensing disputes. Venues have included state and U.S. District courts, the U.S. International Trade Commission, the U.S. Patent Trial and Appeal Board, Canadian courts, and seats of international arbitration.

III. INFORMATION CONSIDERED

10. My opinions are based on my years of education, research, personal experience, professional experience, and my investigation and study of the '473 Patent, its prosecution history, the documents identified in this declaration, and the following exhibits, in light of the general knowledge in the relevant art:

Exhibit	Description
1001	U.S. Patent No. 11,554,473 ('473 Patent)
1003	German Patent Specification Pub. No. DE 101 27 718 A1 ("Gruber")
1004	English Translation of Gruber (Including Translator's Declaration)
1005	U.S. Patent No. 2,820,608 ("Brasemann")
1006	'473 Patent Prosecution History, 11/14/22 Notice of Allowability
1007	August 1964 Volkswagen 1200 Instruction Manual
1008	December 27, 2024, Viking Arm AS Response To Opposition Against European Patent No. 3953541B1
1009	Wayback Machine Webpages

IV. LEGAL PRINCIPLES

11. I understand that a patent claim is invalid if it is anticipated (35 U.S.C. § 102) by a prior art reference or if it is obvious over the prior art (35 U.S.C. § 103).

12. Available Prior Art: I am informed and understand that prior art available for use in an IPR includes: (1) patents and printed publications that issued/published anywhere in the world before the effective filing date of the challenged claim/patent, and (2) patents and published applications that were based on a patent application filed before the effective filing date of the challenged claim/patent. I am informed and understand that there are certain exceptions, but that those exceptions are inapplicable to this IPR because the relied upon prior art published or issued over a year before the earliest claimed filing date of the '473 Patent.

13. Anticipation: I am informed and understand that a patent claim is invalid under 35 U.S.C. §102 as “anticipated” if the claimed invention is not new. I am also informed and understand that for the claim to be invalid because it is not new, all of the requirements of the claim must have been described in a single piece of prior art. I understand that, for inherent anticipation, it is required that the missing descriptive material is necessarily present in the prior art.

14. Obviousness: I further understand that a patent claim is invalid if the claim, as a whole, would have been obvious (35 U.S.C. §103) to a POSITA at the time the invention was made. I understand that “obvious” (in this context) means that even if all the requirements of a claim cannot be found in a single prior art reference, a POSITA who knew about the relevant prior art would have come up with the claimed invention. I understand that an obviousness analysis takes into account: (1) the level of skill possessed by a POSITA at the time the claimed invention was made; (2) the scope and content of the prior art; (3) what difference, if any, existed between the claim and the prior art; and (4) secondary considerations of non-obviousness, to the extent such considerations exist.

15. To assess the differences between prior art and the claimed subject matter, I understand that the claimed invention should be considered as a whole.

16. I have been advised that a patent claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. In evaluating whether such a claim would have been obvious, I understand that I may consider whether there is a motivation that would have prompted a person of ordinary skill in the art to combine the elements or concepts from the prior art in the same way as in the claimed invention.

17. I understand the rationales which may support a conclusion that a claim is obvious include:

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

18. I understand that, for an obviousness argument based on a combination of prior art references, a POSITA must be shown to have a motivation to combine or modify a reference with a reasonable expectation of success. The showing of a motivation to combine helps avoid hindsight bias.

19. I understand that it is improper to combine prior art where the references teach away from their combination. I also understand that a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily foreclose obviousness or a motivation to combine.

20. I understand that I must be careful not to determine obviousness using the benefit of hindsight; many true inventions might seem obvious after the fact. I understand that when conducting an obviousness analysis, I should put myself in the position of a POSITA at the time the claimed invention was made. Using this perspective, I should not consider what is known today or what is learned from the teaching of the challenged patent.

21. I understand that secondary considerations of non-obviousness include, but are not limited to:

- commercial success of a product due to the merits of the claimed invention;
- a long-felt need for the solution provided by the claimed invention;

- unsuccessful attempts by others to find the solution provided by the claimed invention;
- copying of the claimed invention by others;
- unexpected and superior results from the claimed invention
- acceptance by others of the claimed invention as shown by praise from others in the field or from the licensing of the claimed invention;
- other evidence tending to show non-obviousness; and
- independent invention of the claimed invention by others before or at about the same time as the named inventor thought of it.

22. I am also informed and understand that secondary considerations of non-obviousness must have a pertinent connection (“nexus”) to the patent claims at issue, and the patentee bears the burden of showing that such a nexus exists.

V. THE RELEVANT TIMEFRAME FOR ANALYSIS

23. In performing this analysis, I have assumed that the priority date is the date of the earliest application in the chain leading to the '473 Patent: April 12, 2019. EX1001, Face. I take no position at this time whether that is the correct priority date for any of the challenged claims.

VI. PERSON OF ORDINARY SKILL IN THE ART (“POSITA”)

24. I understand that a POSITA is a hypothetical person who is presumed to be aware of pertinent art including knowledge in the art, thinks along

conventional wisdom in the art, and is a person of ordinary creativity. I understand that this hypothetical POSITA is considered to have the normal skills and knowledge of a person in the technical field.

25. I understand that, in determining the level of ordinary skill of a POSITA, the following factors may be considered: (a) the levels of education and experience of persons working in the field; (b) the types of problems encountered in the field; and (c) the sophistication of the technology.

26. For the purposes of this declaration and given the mechanical nature of the '473 Patent, a POSITA would have had a Bachelor of Science degree in Mechanical Engineering or a related field, and at least two (2) years of professional or practical experience with mechanical devices, or a comparable combination of education and experience, such as ten years of practical experience in industry. However, the opinions in this declaration would not change if a POSITA had somewhat more or less sophistication.

27. Based on my advanced degrees in engineering combined with my decades of hands-on experience with the pertinent mechanical principles, I was a person of more than ordinary skill in the art as of April 12, 2019. I have a good understanding of the capabilities of a POSITA in the time frame leading up to the priority date of the '473 Patent. I am knowledgeable as to what a POSITA would

have understood from the prior art references described below and from the state of the art at the time of the invention.

28. I have conducted my analysis from the perspective of this POSITA, as of April 12, 2019.

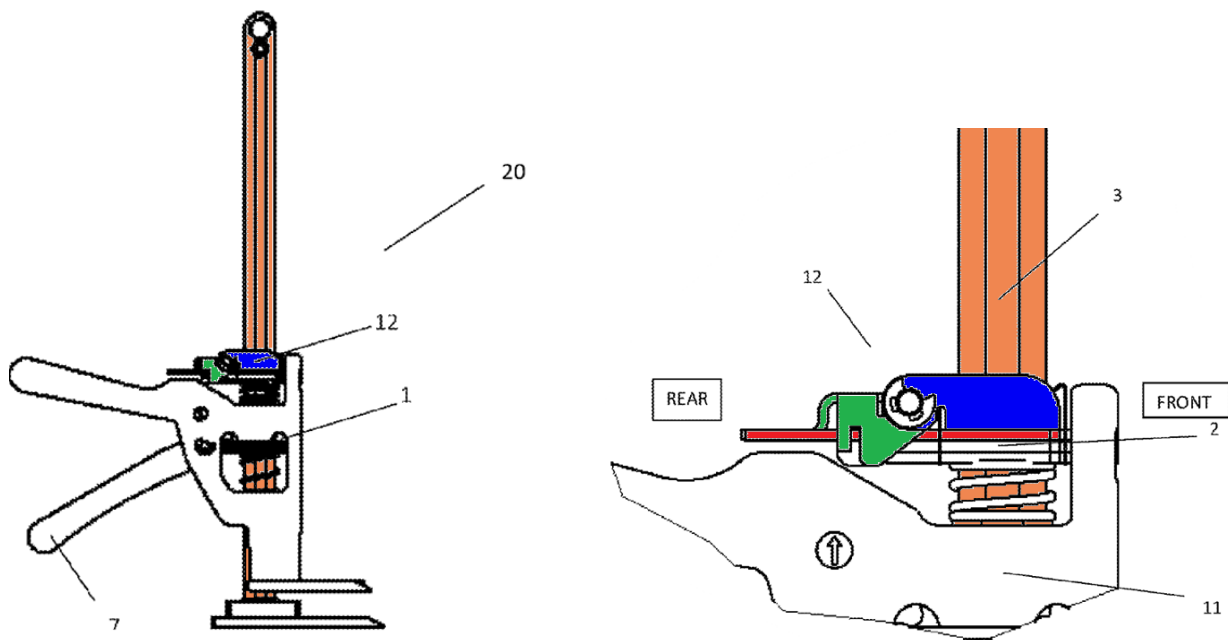
VII. SUBJECT MATTER OF THE '473 PATENT

29. The '473 Patent is titled "Lowering Mechanism For Hand Held Jacking Tool." EX1001. The '473 Patent discloses a jacking tool 20 with a jacking/lifting mechanism, an incremental lowering mechanism 12, and a complete release lever 10.

A. Caulking Gun Jacking Mechanism

30. As shown below, the '473 Patent's own jacking tool 20 included a jacking frame 11, a **jacking shaft 3¹**, and a caulking gun jacking mechanism comprising a jacking plate 1 biased towards an open state and a holding plate 2 biased towards a locked/gripping state. *See* '473 Patent, 2:25-31, claim 1, and FIGS. 1-2.

¹ All color and emphasis throughout this declaration are added.



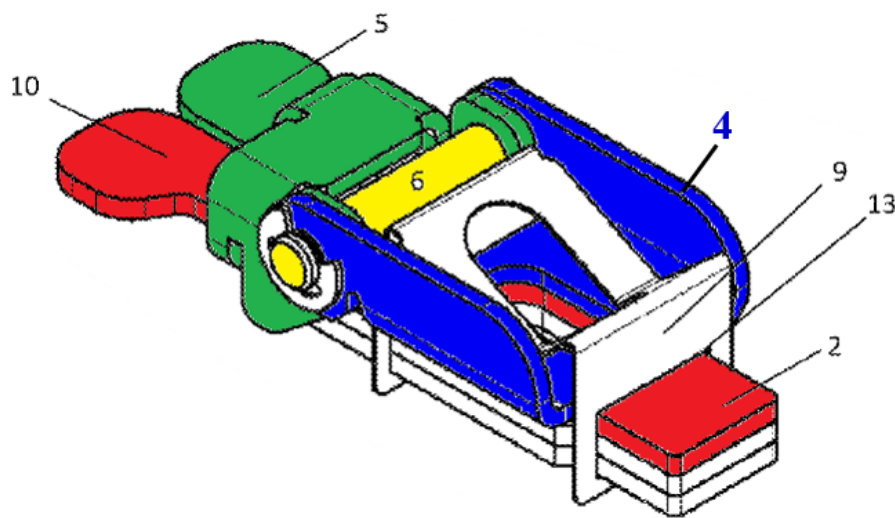
'473 Patent, FIGS. 1, 2

B. Incremental Lowering Mechanism 12

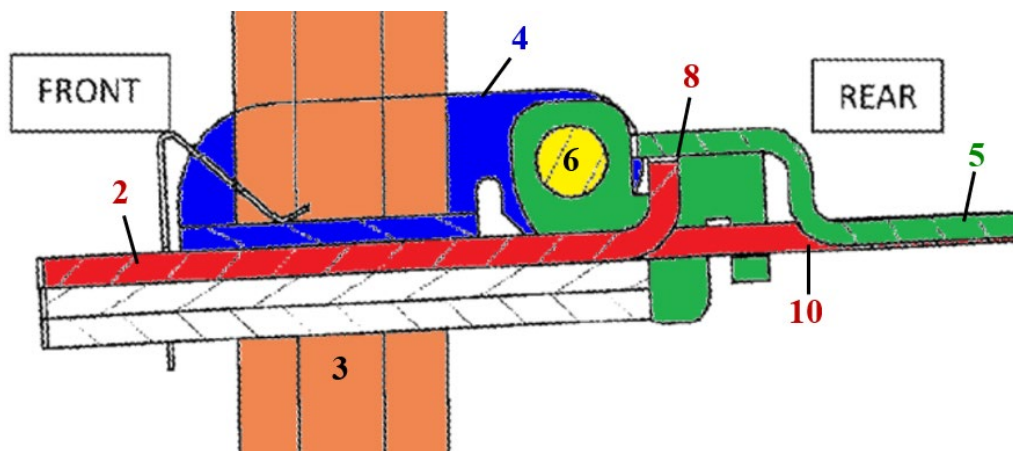
31. The '473 Patent's Background cautions that when the holding plate of a conventional caulking gun jacking mechanism is released, the jack's frame and load can "'fall' uncontrollably along the jacking shaft." *Id.*, 1:32-33. The '473 Patent allegedly solved this problem via a lowering mechanism 12 that "control[s] the downward movement of the frame along the jacking shaft in a caulking gun jacking mechanism in an adjustable stepwise manner." *Id.*, 1:33-35.

32. As shown below, the '473 Patent's lowering mechanism 12 comprises: a **lowering plate 4** on top of the **holding plate 2** and parallel to the **holding plate 2** when not activated, a spring 9 biasing the **lowering plate 4** towards the **holding plate 2**, a thumb operable **pushing lever 5**, a **release lever 10**

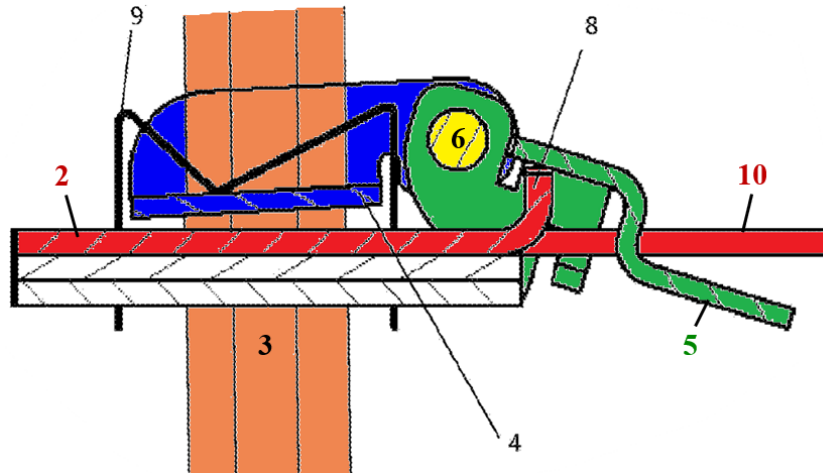
which is an extension of **holding plate 2**, a **hinge attachment 6** connecting the thumb operable **pushing lever 5** to the **lowering plate 4** at a rear end towards an operating handle 7, and a **pivot structure 8** connected to the **holding plate 2** a distance backward from the **hinge attachment 6**. See '473 Patent, claim 1 and 2:51-4:7.



'473 Patent, FIG. 4



'473 Patent, FIG. 7a: Nonactivated State of Lowering Mechanism



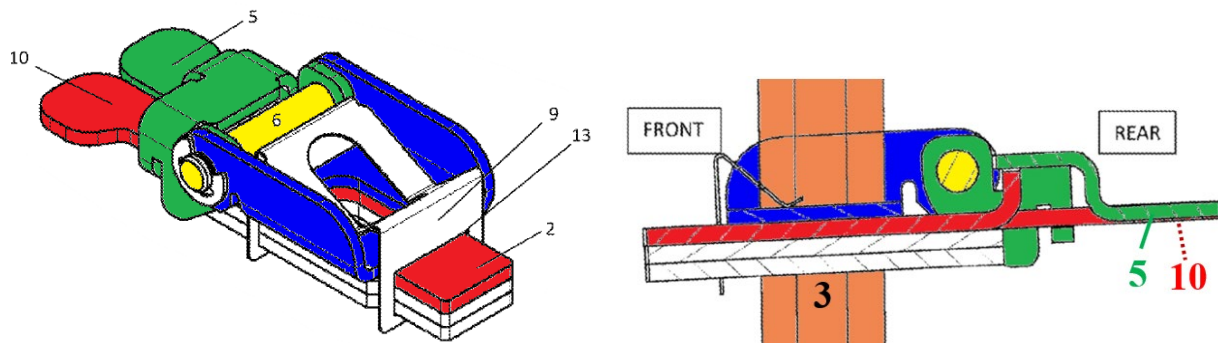
'473 Patent, FIG. 7b: Activated State of Lowering Mechanism

33. Starting from the nonactivated position in FIG. 7a, the lowering mechanism 12 is activated by pressing the **pushing lever 5** downward, which causes the **lever 5** to pivot around the **pivot structure 8**, which lifts the **lowering plate 4** up and causes the **lowering plate 4** to grip the **jacking shaft 3**. '473 Patent, 2:57-63 and claim 1. As shown in FIG. 7b, pushing the **pushing lever 5** further pushes the **holding plate 2** downwards, which loosens the **holding plate 2** from the **jacking shaft 3** and moves the jacking frame 11 (see FIG. 2) down along the **jacking shaft 3** a distance until the **holding plate 2** reaches an angle that stops the **holding plate 2** against the **jacking shaft 3** while the **lowering plate 4** still grips the **jacking shaft 3**. See '473 Patent, claim 1 and 2:63-3:20. When the operator releases the **pushing lever 5**, the spring 9 forces the **lowering plate 4** down towards the **holding plate 2** and the lowering mechanism 12 returns to the nonactivated position shown in FIG. 7a. See '473 Patent, 3:18-20. Repeatedly

pushing the **pushing lever 5** lowers the frame 11 in a controlled, incremental fashion.

C. Complete Release Lever 10

34. The jacking tool 20 includes a **release lever 10**, which is an extension of the **holding plate 2**. '473 Patent, 4:4-5. Pressing the **release lever 10** disengages the **holding plate 2** from the **jacking shaft 3**, which allows the frame 11 (see FIG. 2) to fall down the **jacking shaft 3** in an unrestricted/complete/continuous manner.



'473 Patent, FIGS. 4, 7a (annotated)

35. As shown above, “the **rear end** of the **pushing lever [5]** and **release lever 10** ... is positioned beside each other for easy operation by the thumb of an operator as seen in FIG. 3, 4.” '473 Patent, 4:4-7.

D. Challenged Claims

36. Challenged claims 1-3 are quoted below with added reference numbers from the specification for context (I understand that such reference numbers from the specification do not limit the scope of the claims):

1. A lowering mechanism [12] for a hand held jacking tool [20] comprising a jacking frame [11], a **jacking shaft [3]**, and a caulking gun jacking mechanism comprising at least one jacking plate [1] biased towards an open state and at least one **holding plate [2]**, above the at least one jacking plate [1], being biased towards a gripping state, wherein the lowering mechanism [12] comprises:

a **lowering plate [4]** on top of the at least one **holding plate [2]** being parallel to the at least one **holding plate [2]** when not activated,

a spring [9] biasing the **lowering plate [4]** towards the at least one **holding plate [2]**,

a thumb operable **pushing lever [5]**,

a **release lever [10]** which is an extension of the at least one **holding plate [2]**,

a **hinge attachment [6]** connecting the thumb operable **pushing lever [5]** to the **lowering plate [4]** at a rear end towards an operating handle [7],

a **pivot structure [8]** connected to the thumb operable **pushing lever [5]** or the at least one **holding plate [2]** a distance backward from the **hinge attachment [6]**,

wherein the **lowering plate [4]** is lifted up and grips the **jacking shaft [3]** when the thumb operable **pushing lever [5]** is pushed downwards and pivots around the **pivot structure [8]** and in turn, pushes the at least one **holding plate [2]** downwards loosening the at least one **holding plate [2]** from the **jacking shaft [3]** and moving the jacking frame [11] down along the **jacking shaft [3]** a distance until the at least one **holding plate [2]** reaches an angle that

stops the at least one **holding plate [2]** against the **jacking shaft [3]** while the **lowering plate [4]** still grips the **jacking shaft [3]**.

2. The lowering mechanism [12] according to claim 1, wherein the rear end of the thumb operable **pushing lever [5]** and the **release lever [10]** are positioned beside each other.

3. The lowering mechanism [12] according to claim 1, wherein the **pivot structure [8]** is moveable in a rear-front direction and/or in an up-down direction to regulate the distance of the downward movement of the jacking frame [11].

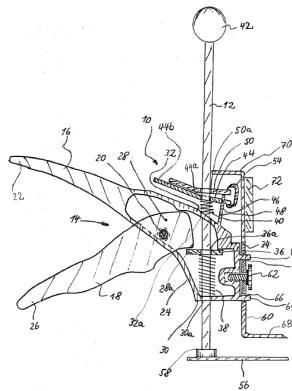
VIII. SUMMARY OF PRIOR ART

37. The state of the art of gradual/intermittent lowering mechanisms for jacking tools is reflected in the prior art as illustrated in my analysis and discussions below. The '473 Patent's jacking mechanism, lowering mechanism, and release lever were all well known in the prior art from Gruber and/or Braselmann.

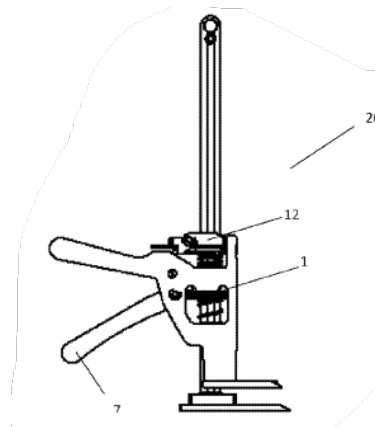
A. Gruber (EX1003/EX1004)

38. Gruber published on December 12, 2002. *See* EX1003/1004. I am informed that Gruber is therefore prior art under pre-AIA 35 U.S.C. §§ 102(a).

39. Gruber taught a handheld lifting jack that is very similar to the '473 Patent's jack. Both jacks have a caulking gun jacking mechanism, a continuous/complete release lever, and an incremental lowering mechanism.



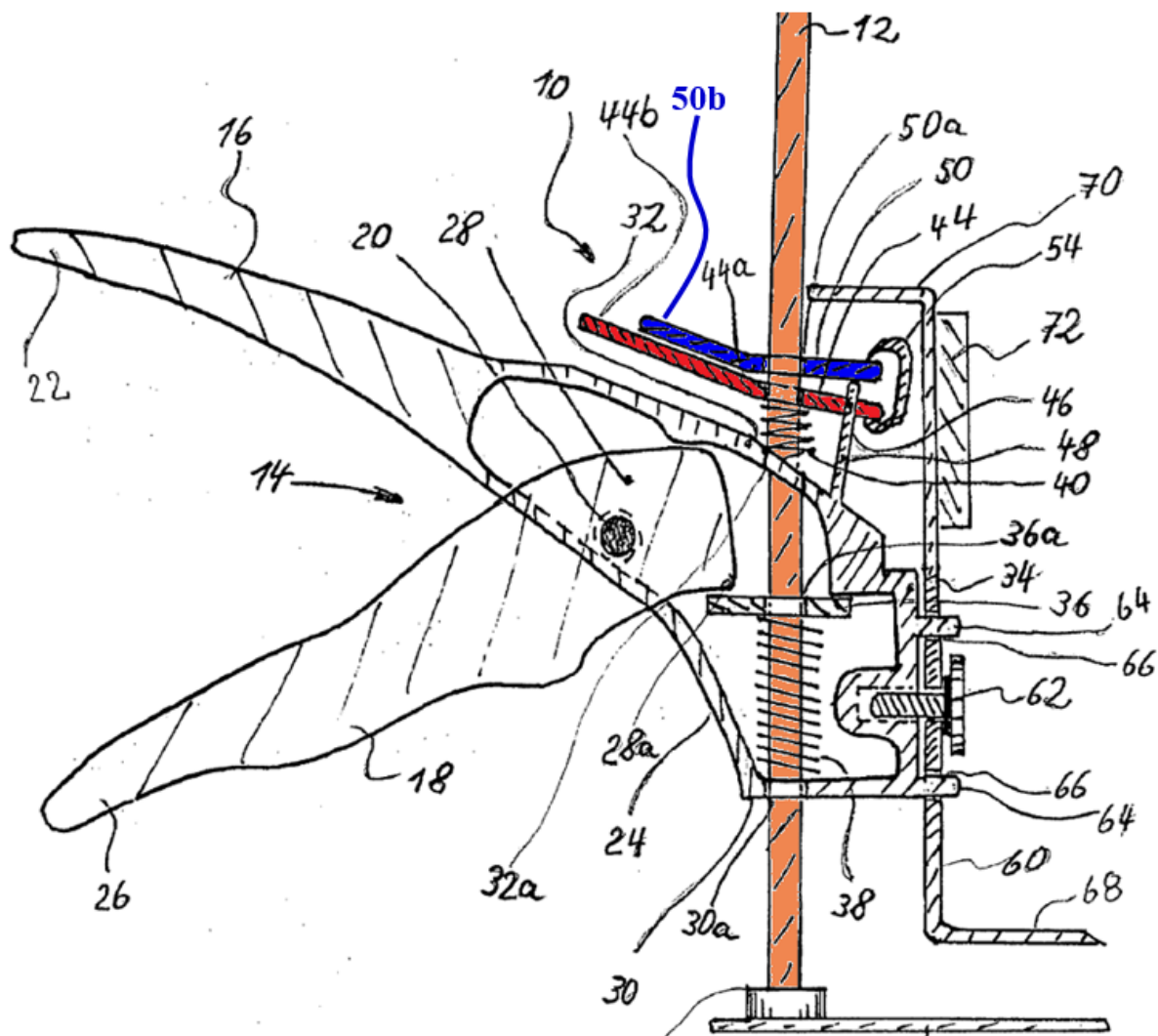
Gruber, FIG. 1



'473 Patent, FIG. 1

40. As shown below, just like in the '473 Patent, Gruber's "lifting device 10" includes: a jacking frame 22/24/30/32/34/48², a **jacking shaft** ("**rod 12**"), a caulking gun jacking mechanism comprising a jacking plate ("lifting disc 36") biased towards an open state, a **holding plate 44** ("**lowering plate 44**"), above the jacking plate 36, being biased towards a gripping state by a "spring 40," and an operating handle 18/26. Gruber, ¶¶ [0012]-[0018]. Gruber's caulking gun jacking mechanism works in the same way as disclosed and claimed in the '473 Patent. Gruber, ¶¶ [0029]-[0031].

² The components 22/24/30/32/34/48 are all interconnected and move together such that they define a frame of Gruber's tool.



Gruber, FIG. 1 (annotated; excerpt)

41. Like the '473 Patent, Gruber's lowering mechanism "makes it possible to lower the load both continuously [by pushing **release lever 44b** ('**lowering operating area 44b**')] and gradually[/incrementally]" by pushing **lever 50b** ("**lowering operating area 50b**"). Gruber, ¶ [0021].

42. Like the '473 Patent and as shown above, Gruber provides for complete/"continuous" lowering of the frame and load by using a thumb to push a

release lever 44b which is an extension of Gruber's **holding plate 44**. *See* Gruber, ¶¶ [0018], [0020]-[0021].

43. Like the '473 Patent and as shown above, Gruber also includes an incremental/gradual lowering mechanism, which includes a "**lowering plate 50**" on top of the **holding plate 44**, and a thumb operable **pushing lever 50b**. Gruber, ¶ [0019]-[0020], [0032]-[0033]. Pressing the **pushing lever 50b** provides "controlled," "intermittent," "gradual[]" lowering. Gruber, ¶ [0021]; Gruber, ¶ [0033] ("The intermittent downward movement allows the load to be lowered to the desired height in a controlled manner."). In particular, as explained in Gruber:

[0032] When lowering the load, the second lowering **operating portion 50b** of the second **lowering plate 50** is pressed, thereby pressing the first lowering operating portion 44b of the first **lowering plate 44**. First, the first **lowering plate 44** is pivoted so that jamming with the rod 12 no longer occurs and the tongs 14 can be lowered. Since the second **lowering plate 50** is tilted at the same time, the downward movement is inhibited again after a short distance.

[0033] The second compression spring 40 and the return spring 54 return the first **lowering plate 44** and the second **lowering plate 50** to their initial position after each pressing of the lowering operating portion 50b or 44b. The intermittent downward movement allows the load to be lowered to the desired height in a controlled manner.

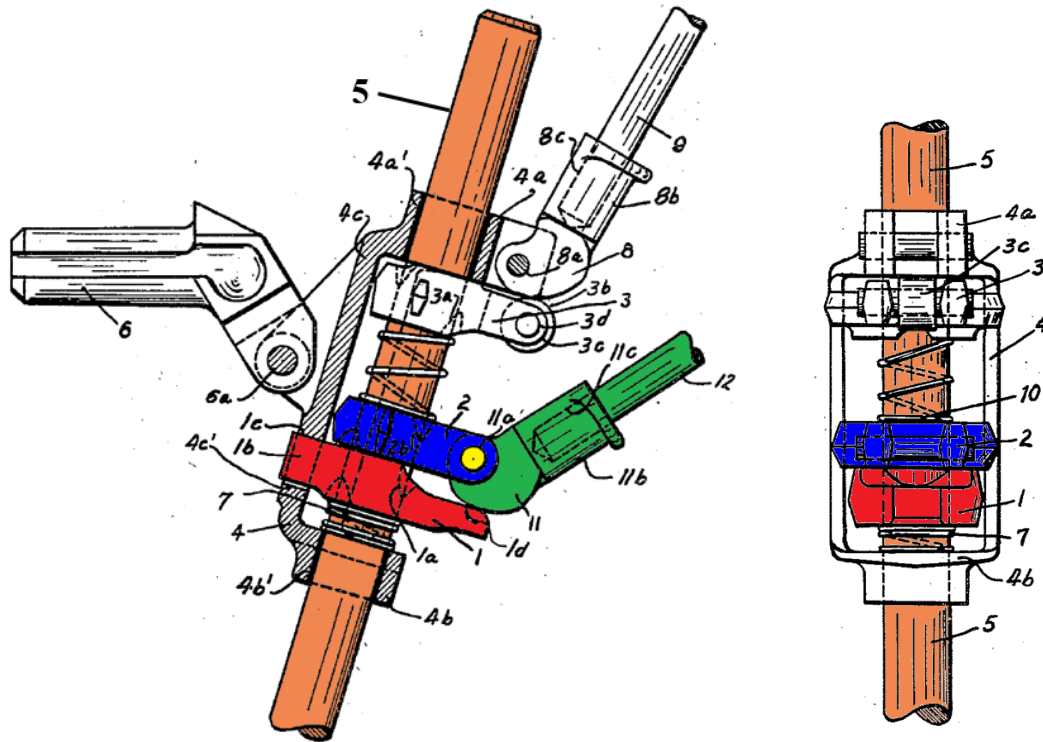
Gruber, ¶¶ [0032]-[0033].

B. Braselmann (EX1005)

44. Braselmann issued on January 21, 1958. *See* EX1005. I am informed that Braselmann is therefore prior art under pre-AIA 35 U.S.C. §§ 102(a).

45. Braselmann taught another handheld lifting jack that is very similar to the '473 Patent's jack. Both jacks have a caulking gun jacking mechanism and very similar incremental lowering mechanisms.

46. Braselmann taught a lifting jack that utilizes the same type of caulking gun jacking mechanism as in the '473 Patent and Gruber. *See* Braselmann, FIG. 1. As shown below, just like the jacks in the '473 Patent and Gruber, Braselmann's jack includes: a jacking frame 4, a **jacking shaft 5**, and a jacking mechanism comprising a jacking plate 3 biased towards an open state by a spring 10, a **holding plate 1** biased towards a gripping state by a spring 7, and a jacking lever 8/9. *See* Braselmann, 3:5-62, 5:32-36.

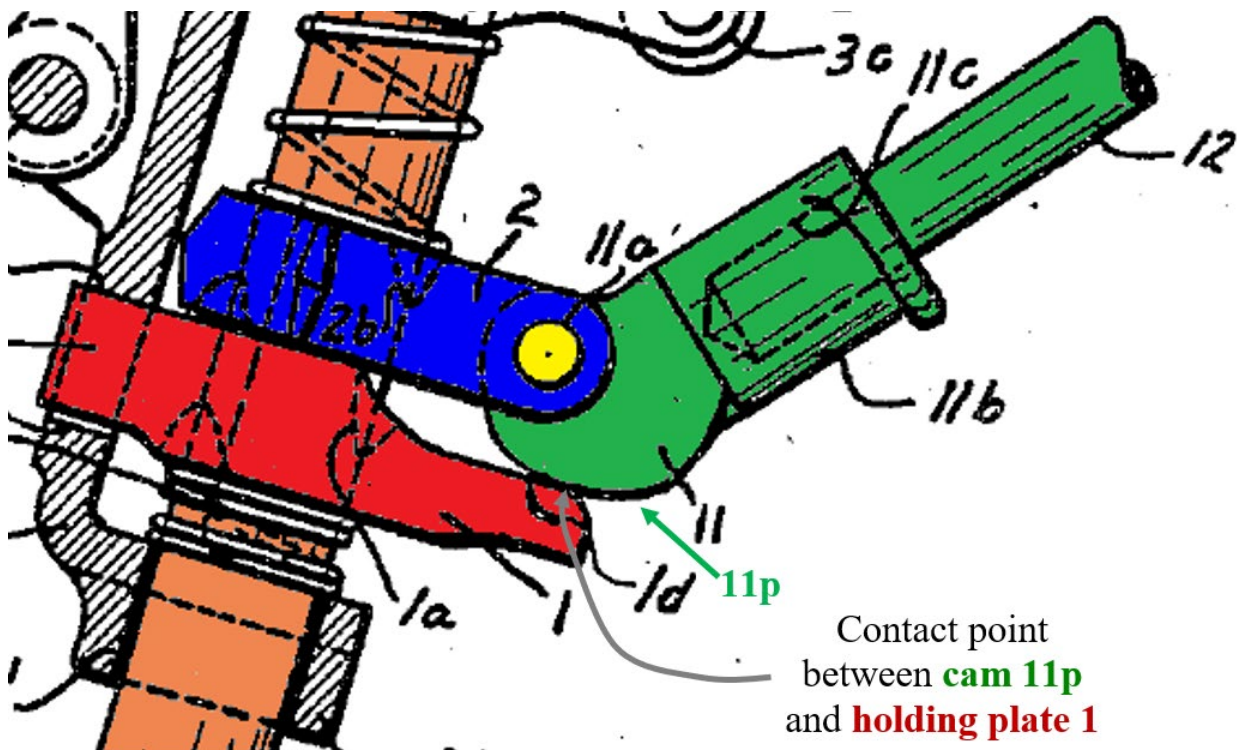


Brasemann, FIGS. 1-2 (annotated; excerpt)

Brasemann's caulking gun jacking mechanism provides a one-way jacking system in which pumping the jacking handle/lever 8/9 jacks the frame 4 up more and more, while the spring-biased **holding plate 1** prevents the frame 4 from falling back down between jacking strokes.

47. Brasemann has a "step-wise" lowering mechanism that provides safe lowering of the jack and "prevents rapid and uncontrolled descent" of the frame 4 and load. Brasemann, 1:16-42. As shown below, Brasemann's lowering mechanism includes: a **lowering plate** ("**clamping member 2**") on top of a **holding plate** ("**clamping member 1**") and parallel to the **holding plate 1** when not activated, a "spring 10" biasing the **lowering plate 2** towards the **holding plate**

1, a **pushing lever 11/12** (“lever or cam 11” either alone or in combination with “lever 12”), and a **hinge attachment 11a** connecting the **pushing lever 11/12** to the **lowering plate 2** at a rear end towards an operating handle 8/9. See Braselmann, 3:63-5:36. Braselmann’s **pushing lever 11/12** includes a **cam portion 11p** that contacts the **holding plate 1** backward (to the right and down as shown in Braselmann’s skewed FIG. 1) from the **hinge attachment 11a**.



Braselmann, FIG. 1 (excerpt; annotated)

48. Braselmann’s controlled/incremental/adjustable lowering mechanism functions similarly to the ’473 Patent’s lowering mechanism 12, except that Braselmann utilizes a **cam 11p** that is connected to the **pushing lever 11/12**

'473 Patent, FIG. 7a (annotated)

Stanley Black & Decker, Inc. - EX1002, Page029
IPR2025-00665 (Stanley Black & Decker v. Viking Arm AS)

which enables the operator to adjust and precisely control the amount of lowering provided by Braselmann's lowering mechanism. *See* Braselmann, 4:3-46.

50. A POSITA would have understood that Braselmann's jack can also be completely released by pushing downwardly on the **portion 1d** of the **holding plate 1**, either directly or by pushing the **lever 11/12** downwardly against the **portion 1d** (instead of in a levering/pivoting movement resulting in gradual lowering). Braselmann's operator can therefore choose to: (a) utilize Braselmann's incremental lowering mechanism by pivoting the **lever 11/12**, or (b) utilize Braselmann's complete release feature by pressing down on the **portion 1d** of the **holding plate 1**.

IX. CLAIM CONSTRUCTION

51. I understand that "claim construction" is the interpretation of the meaning of patent claims. I understand that claims in this IPR proceeding will be construed according to a district court-type claim construction approach. I further understand that claim construction is a matter of law for the Board to decide. I will adopt the Board's claim constructions if and when they provide them.

52. I understand that, under the district court approach, words of a claim are generally given their ordinary and customary meaning, which is the meaning that the term or phrase would have to a POSITA at the time of the invention. I

understand that both intrinsic and extrinsic evidence can be used to assist in understanding the meaning of a claim.

- a. Intrinsic Evidence: I understand that intrinsic evidence includes the claim language, language in other claims of the patent, the specification, and the prosecution history. I further understand that, unless required by the claim language or specification, claims should generally not be limited to the embodiments in the specification, including preferred embodiments. However, claims should be construed to be consistent with the specification.
- b. Extrinsic Evidence: I understand that extrinsic evidence, which consists of all evidence external to the patent and prosecution history including expert and inventor testimony, dictionaries, and technical publications, including those known and authoritative in a particular technical field, may also be relevant to claim construction.

53. I further understand that a patent applicant may act as his or her own lexicographer and set forth a special definition of a claim term in the specification.

54. I have been asked to review the claims and ascertain the meaning of the claims from the perspective of a POSITA. Any opinions on claim construction

expressed in this declaration are from the perspective of a POSITA as of April 12, 2019.

A. Construction Of “Pivot Structure” (Challenged Claim 1)

55. Claim 1 requires “a pivot structure,” which the pushing lever “pivots around.” I have been informed that Patent Owner alleges in a related European proceeding that a cam like Braselmann’s **cam 11** satisfies this limitation. I disagree.

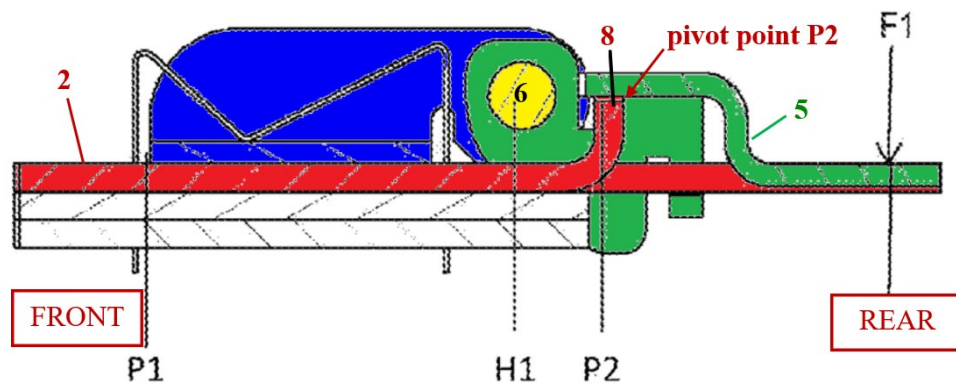
56. The claims and specification of ’473 Patent show that “pivot structure” means “a structure having a fixed pivot point around which the pushing lever pivots.” This is true for several reasons.

57. First, the language of claim 1 specifically requires that the “pushing lever ... pivots around the pivot structure.” ’473 Patent, 4:35-37; *see also* ’473 Patent, 2:60-61 (“[T]he **pushing lever [5]** is pivoting around a **pivot structure 8[.]**”). The pivot structure must have a fixed pivot point for this “pivot[ing] around” to occur.

58. Second, the language of claim 1 also requires that the **pivot structure** “connect[s] to the thumb operable **pushing lever** or the at least one **holding plate a distance** backward from the **hinge attachment**.” The specification refers to this distance as “the distance H1-P2” (’473 Patent, 3:31) shown below in FIG. 5. For

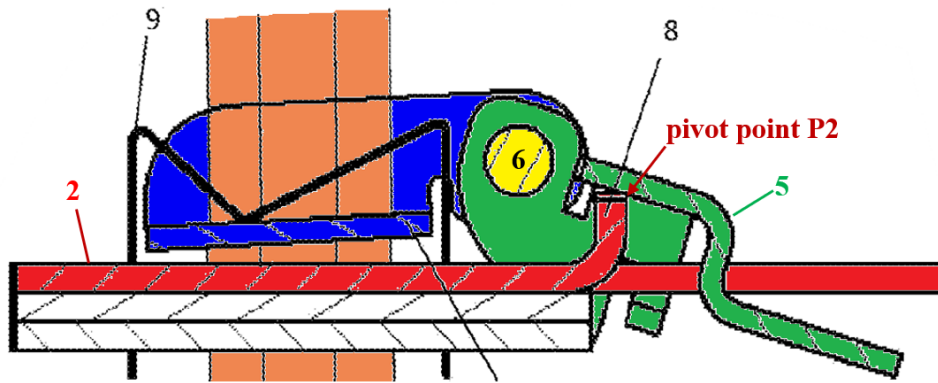
there to be “a” distance, per claim 1, **pivot point P2** must have a fixed position backward from the **hinge attachment 6**.

59. Third, the specification confirms this construction by illustrating that the “**pivot point, P2**³, associated with the **pivot structure 8**” (’473 Patent, 3:24-25) is what the **pushing lever 5** pivots around, as shown in FIGS. 5 and 7.



’473 Patent, FIG. 5 (annotated)

³ A POSITA would have understood that the locations of pivots H1 and P2 are crudely shown in FIG. 5. H1 is actually at the center of the **hinge 6**’s circle. *Id.* P2 is actually at the upper right corner of the **pivot structure 8**, as confirmed by FIGS. 5, 7b, and 7c.



'473 Patent, FIG. 7b (annotated)

60. Fourth, the specification makes clear that the positions and “positional distribution” of the **pivot point P2** and other points “must” be known and calculated to ensure correct operation of the lowering mechanism. '473 Patent, 3:22-42. And, in the context of the illustrated **pivot structure 8** with its fixed **pivot point P2**, the '473 Patent admits that the critical “positional distribution of P1, P2, H1 and F1 are hard to calculate and have to be tested and tried.” '473 Patent, 3:27-29. If the position of the **pivot structure 8** and its **pivot point P2** contemplated by the '473 patent was construed broadly to allow variability, such calculations would be even more complex and outside the teachings of the '473 Patent.

61. A POSITA would have understood that the “pivot structure” claimed, disclosed, and contemplated by the '473 Patent covered only a fixed pivot point, just as shown in FIGS. 5, 7b, and 7c, to facilitate such calculations. '473 Patent, 3:27-29. It is only by virtue of **pivot point P2** being in a fixed position, during

operation of the **pushing lever 5**, that **point P2** can provide a fixed, known ratio, such as (H1-P2):(P1-H1). *See* '473 Patent, 3:22-42.

62. Fifth, the '473 Patent recognizes that the illustrated embodiment's **pivot structure 8** connects to the **holding plate 2**, not the **pushing lever 5**. '473 patent, 2:59-60 and FIGS. 5 and 7b. Only the **pivot structure 8** connected to the **holding plate 2** has a **pivot point P2**, which the **pushing lever 5** "pivots about" ('473 Patent, claim 1). When actuated/pushed, the **pushing lever 5** slides along and pivots about the **pivot point P2**. '473 Patent, FIGS. 5, 7b, 7c. The illustrated **pushing lever 5** does not "pivot about" any portion of the **pushing lever 5** itself (other than at inapplicable **hinge attachment 6**), so the specification correctly never states that a pivot point/pivot structure connects to the **pushing lever 5** in the illustrated embodiment. If the sliding contact surface of the **pushing lever 5** could somehow be a "pivot structure," then the specification would have stated that a pivot structure connects to the **pushing lever 5**. It does not. A POSITA would have therefore understood from the patent's disclosure of the **pivot structure 8** being connected to the **holding plate 2**, not the **pushing lever 5**, that only a structure with a fixed **pivot point** (e.g., **P2**) around which the **pushing lever** pivots is a "pivot structure."

63. A POSITA therefore would have understood that to be consistent with the claims and specification, “pivot structure” should be construed to mean “a structure having a fixed pivot point around which the pushing lever pivots.”

B. Construction Of “Beside” (Challenged Claim 2)

64. Claim 2 requires that “the rear end of the thumb operable pushing lever and the release lever are positioned beside each other.” I have been asked to analyze how a POSITA would have understood the term “beside” in this claim.

65. I have been informed that in a related European proceeding, Patent Owner interprets “beside” to mean “nearby” (i.e., in any direction such as up/down or sideways). I disagree.

66. The claims, specification, figures, and prosecution history of the ’473 Patent show that “beside” refers to a lateral direction, rather than just proximity (nearby).

67. The claims themselves define a precise directional reference frame having orthogonal up/down, front/rear, and side directions:

- a. “at least one holding plate, above the at least one jacking plate”
(claim 1);
- b. “a lowering plate on top of the at least one holding plate”
(claim 1);

- c. “a hinge attachment connecting the thumb operable pushing lever to the lowering plate at **a rear end** towards an operating handle” (claim 1);
- d. “a pivot structure connected to the thumb operable pushing lever or the at least one holding plate a distance **backward** from the hinge attachment” (claim 1);
- e. “the lowering plate is lifted **up**” (claim 1);
- f. “the thumb operable pushing lever is pushed **downwards**” (claim 1);
- g. “pushes the at least one holding plate **downwards**” (claim 1);
- h. “moving the jacking frame **down along the jacking shaft**” (claim 1);
- i. “the **rear end** of the thumb operable pushing lever and the release lever are positioned **beside** each other” (claim 2); and
- j. “the pivot structure is moveable in a **rear-front direction** and/or in an **up-down direction** to regulate the distance of the **downward** movement of the jacking frame” (claim 3).

’473 Patent, claims 1-3. A POSITA would have understood from this claim language that the claims define the following 3D reference frame:

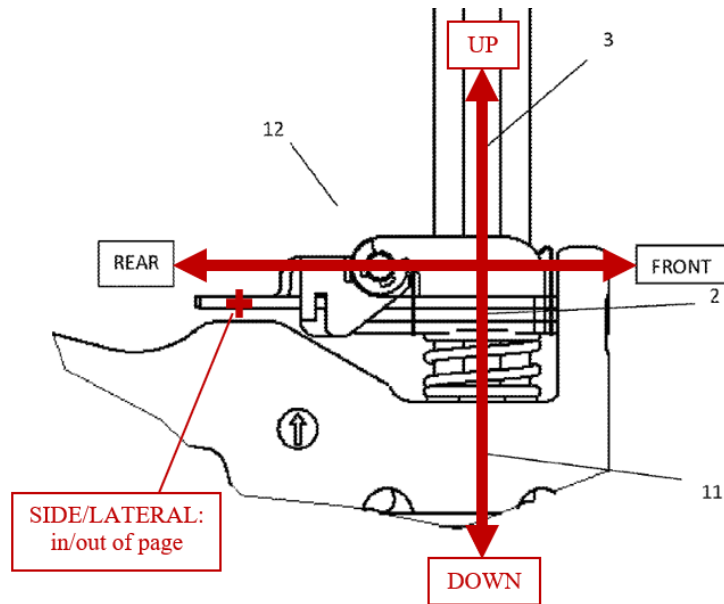
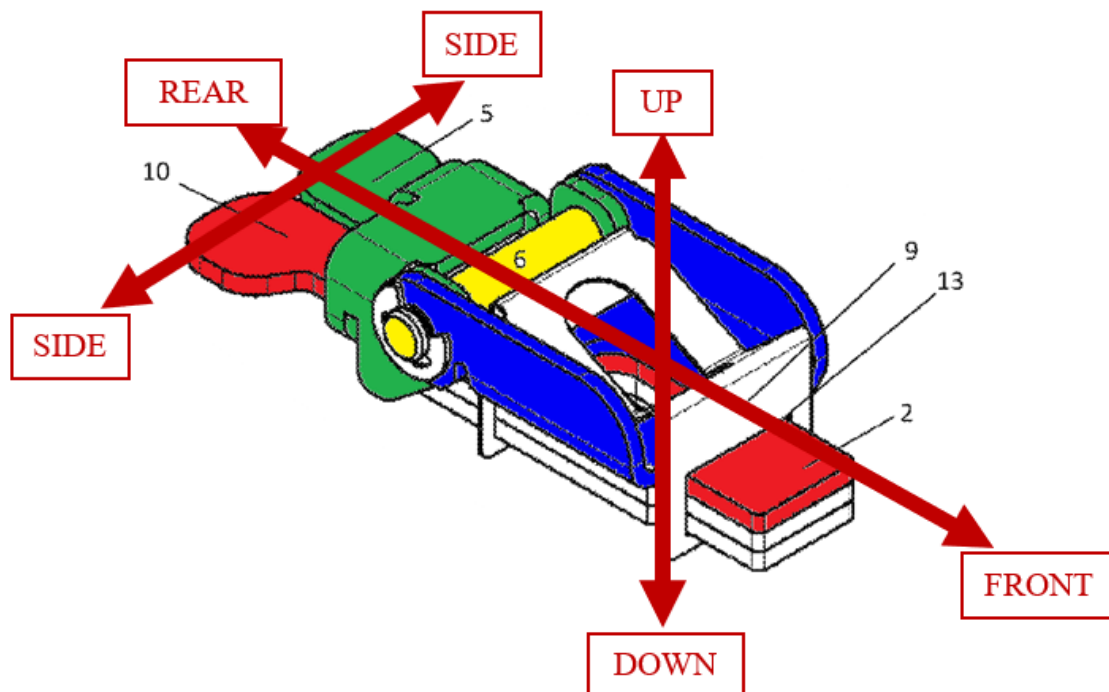


Fig. 2

'473 Patent, FIG. 2 (red annotations added)

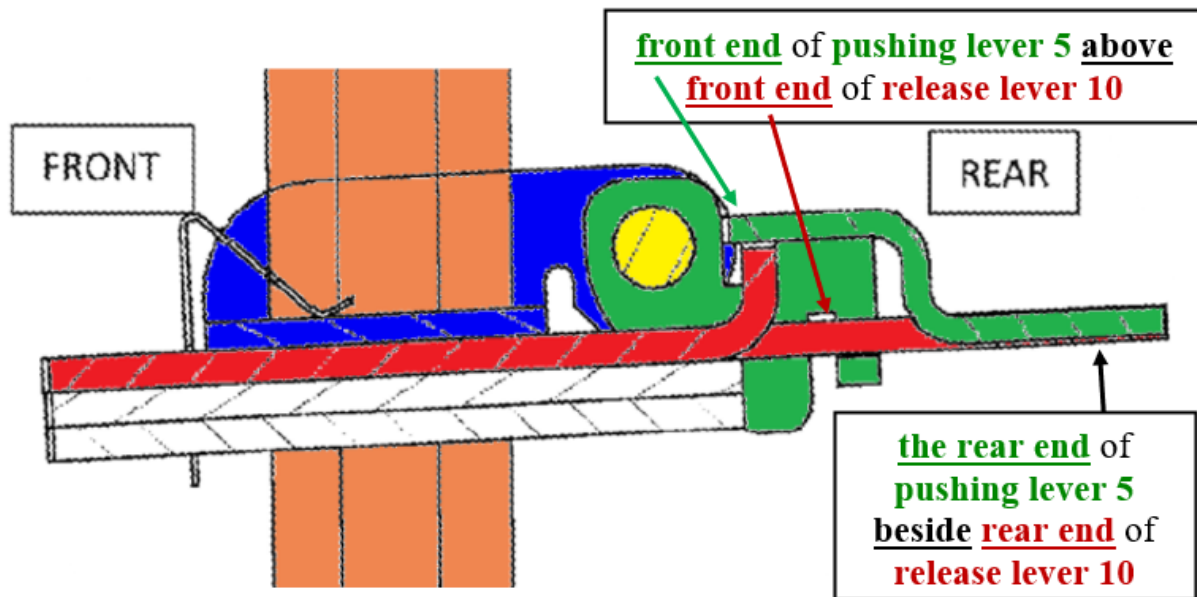


'473 Patent, FIG. 4 (annotated)

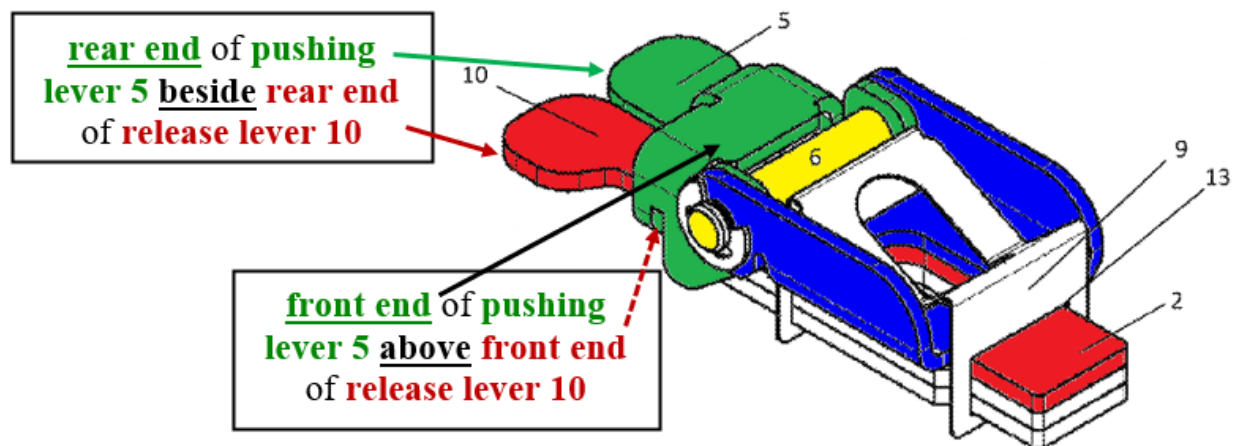
'473 Patent, FIG 7a (labeling "FRONT"/"REAR"). Given the specificity with which the claims recite these orthogonal directions, a POSITA would have understood that "beside" refers to the lateral direction, not an up/down or front/rear direction of the jacking shaft.

68. If Patent Owner intended to merely recite proximity ("nearby"), without directionality, Patent Owner would have used a word of proximity like "nearby," rather than the directional word "beside."

69. Claim 2's precise language further supports Petitioner's construction by requiring that "the rear end of the thumb operable **pushing lever [5]** and the **release lever [10]** are positioned beside each other." In the patent's illustrated embodiment, only the claimed "rear end of the thumb operable **pushing lever**" **5** is actually "beside" (i.e., laterally adjacent) the "rear end of ... the **release lever 10**." A front end of the thumb operable **pushing lever 5** is above (not laterally adjacent) the **front end** of the **release lever 10**.



'473 Patent, FIG. 7a (annotated)



'473 Patent, FIG. 4 (annotated)

70. If “beside” meant “nearby” (encompassing above or beside), there would have been no reason to specify that only the “the rear end of the thumb

operable pushing lever” is what is beside “**the rear end**⁴ of ... the release lever” (or the release lever as a whole for that matter). Claim 2’s needed clarification that only the rear ends of these levers were “beside” each other, when read in the context of the specification, would have informed a POSITA that “beside” referred to the lateral direction.

71. The specification provides further support by explaining and illustrating that “the rear end of the **pushing lever [5]** and a **release lever 10** ... is [sic] positioned beside each other **for easy operation by the thumb of an operator as seen in FIG. 3, 4.**” ’473 Patent, 4:4-7. A POSITA would have understood from this disclosure that laterally adjacent (i.e., beside) arrangement of the rear end of the **pushing lever 5** and the **release lever 10** is what provides “easy operation by the thumb of an operator.” ’473 Patent, 4:4-7. It would be more difficult for an operator’s thumb to reach the levers if they were arranged one on

⁴ I interpret this limitation, “the rear end of the thumb operable pushing lever and the release lever are positioned beside each other,” to mean that the rear end of the thumb operable pushing lever is positioned beside the rear end of the release lever. However, my pertinent opinions would not change if this limitation instead was construed to mean that the rear end of the thumb operable pushing lever is positioned beside the release lever.

top of the other. As a result, a POSITA reading claim 2 in the context of the specification would have understood “beside” to mean “laterally adjacent.”

72. The specification further confirms that Patent Owner intended to distinguish between different directions in a 3D reference frame by “describ[ing] the invention with directions up-down as seen in FIG. 1 and rear as pointing towards the user.” ’473 Patent, 2:20-21.

73. During an EPO opposition involving the ’473 Patent’s European counterpart, even Patent Owner admitted that because Gruber’s levers 44b, 50b have an over/under relationship (*see* Gruber, ¶ [0020] and FIG. 1), they are not “positioned beside each other according to claim 2.” EX1008, p. 27.

74. In view of this evidence, a POSITA would have understood “beside” in claim 2 to mean “laterally adjacent,” and not merely “nearby.”

X. RESERVATION OF OPINIONS AS TO NON-IPR-ELIGIBLE INVALIDITY GROUNDS

75. I understand that a claim is invalid as indefinite under 35 U.S.C. § 112 if a POSITA would not have understood its scope with reasonable certainty in view of the patent’s claims, specification, and prosecution history. I understand that a statute prevents Petitioner from pursuing invalidity based on indefiniteness (among other invalidity grounds) in this IPR. I have endeavored to apply the prior art to the Challenged Claims as best I can, despite their indefiniteness. I reserve the right to

opine on the invalidity of the Challenged Claims based on non-IPR-eligible invalidity grounds in an appropriate venue.

XI. INVALIDITY GROUND

76. As shown below, it is my opinion that each of claims 1-3 of the '473 Patent would have been obvious over Gruber in view of Braselmann.

A. Invalidity Ground: Gruber In View of Braselmann

1. Gruber And Braselmann Are Analogous Art

77. I understand that, for a reference to be considered relevant analogous prior art for obviousness purposes, it must be either (1) from the same field of endeavor as the invention, regardless of the problem addressed, or (2) if not within the field of the inventor's endeavor, still reasonably pertinent to the particular problem with which the inventor is involved. Gruber and Braselmann are analogous art under either condition.

a. Gruber And Braselmann Are in The Same Field of Endeavor

78. As explained above, Gruber, Braselmann, and the '473 Patent are all in the same field of endeavor: incremental/gradual/stepwise lowering mechanisms for jacking tools. '473 Patent, 1:14-18.

79. The field of endeavor was not limited to "hand held" tools, but even if it was, Gruber and Braselmann are still in this same field because they are "hand held" in that they can be held in the operator's hands.

- a. Gruber's jack 10 is a hand held jack because it can be held in an operator's hand. Gruber, FIG. 1. Gruber's jacking tool 10 can also be transported, positioned, and operated by a single hand.

Id.

- b. Braselmann's jack is a hand held jack because it can be held by the operator's hand(s). Braselmann, FIG. 1. Braselmann's jack can also be transported, positioned, and operated by hand.

Braselmann, 4:67 (hand operated "lever 12"). A POSITA would have understood that Braselmann's jack was the type of handheld jack commonly used by hand in the art, for example to change an automobile tire. August 1964 VW Instruction Manual (EX1007), pp. 28-29 (showing hand transportation, positioning, and operation of a jack like Braselmann's).

80. The field of endeavor was not limited to "caulking gun jacking mechanisms," but even if it was, Gruber and Braselmann both use caulking gun jacking mechanisms to lift their frames relative to their jacking shafts. Caulking gun jacking mechanisms are one-way jacking systems that typically involve the use of:

- a. a tiltable, spring-biased jacking plate,

- b. a jacking lever or handle, whose actuation causes the jacking plate to engage/grip the jacking shaft such that further actuation of the jacking lever or handle raises the jacking frame relative to the jacking shaft and jacking plate; and
- c. a spring-biased holding plate that naturally prevents the frame from falling relative to the jacking shaft.

Repetitive pumping of the jacking lever causes the frame to lift progressively higher on the jacking shaft. *See* '473 Patent, 1:21-30; Gruber and Braselmann both include caulking gun jacking mechanisms, as explained above. *See* Gruber, FIG. 1; Braselmann, FIG. 1.

81. A caulking gun jacking mechanism is not limited to a mechanism that can be operated by a single hand, but even if it was, Gruber and Braselmann can both be operated by a single hand so they would each still have a caulking gun jacking mechanism. *See* Gruber, FIG. 1; Braselmann, FIG. 1. Gruber's particular caulking gun jacking mechanism involves a jacking lever 18/26 that can be actuated by squeezing it against the jacking frame part 16/22 using a single hand, but caulking gun jacking mechanisms are not limited to such squeeze-type jacking levers. Gruber, FIG. 1.

**b. Gruber and Braselmann are Reasonably Pertinent to
The Particular Problem Faced by The '473 Patent's
Inventor, Gruber, And Braselmann**

82. Braselmann and Gruber are alternatively analogous art because their lowering mechanisms are reasonably pertinent to the particular problem faced by the '473 Patent's inventor and by Gruber and Braselmann, i.e., providing a lowering mechanism to control the lowering of a lifting jack in a stepwise and/or safe manner. *See* '473 Patent, 1:31-35.

83. A POSITA therefore would have obviously looked to Braselmann as analogous art for ways to improve Gruber's jack.

**2. It Would Have Been Obvious To Have Incorporated
Braselmann's Incremental Lowering Mechanism Into
Gruber**

84. A POSITA would have obviously incorporated Braselmann's incremental lowering mechanism (i.e., the concept embodied in Braselmann's **lowering plate 2**, **pushing lever 11/12**, **hinge attachment 11a**, and spring 10) into Gruber's jack, for example in place of Gruber's **lowering plate 50** and spring 54, for at least the following reasons.

a. Safety

85. It would have been obvious to make this modification to make Gruber's lowering mechanism safer. To use Gruber's "intermittent," "gradual[]" lowering mechanism, the operator pushes Gruber's **pushing lever 50b**, which pushes down and disengages the **holding plate 44**, which causes the frame to fall a

“short distance” until the **lowering plate 50** engages the **jacking shaft 12**. Gruber, ¶¶ [0032]-[0033]. Although Gruber’s “intermittent” lowering mechanism provides safer, more “controlled” lowering (Gruber, ¶¶ [0020]-[0021], [0032]-[0033]), a POSITA would nonetheless recognize that a risk remains that pushing Gruber’s **pushing lever 50b** might cause Gruber’s **holding plate 44** to disengage from the **jacking shaft 12** without the **lowering plate 50** quickly engaging the **jacking shaft 12**, which could disadvantageously result in an unintended, larger, and less controlled free fall. *See* Gruber, FIG. 1; Braselmann, 1:20-32.

86. Braselmann recognized that incremental/“step-wise” lowering mechanisms like Gruber’s could result in the “[un]safe[],” “undesirable,” “rapid and unchecked descent of the load.” Braselmann, 1:20-31. Braselmann overcame such “disadvantages” via an improved adjustable lowering mechanism that “prevents rapid and uncontrolled descent of the load” during intended incremental lowering. Braselmann, 1:33-42. As shown above, Braselmann’s improved/safer lowering mechanism comprises: (a) a **lowering plate 2** that is disposed above the **holding plate 1**, (b) a spring 10 biasing the **lowering plate 2** toward the **holding plate 1**, (c) a **pushing lever 11/12** pivotally connected to the **lowering plate 2** at a **hinge attachment 11a**, and (d) contact between the **holding plate 1** and a **cam portion 11p** of the **pushing lever 11/12**. Braselmann, 3:63-4:60. Braselmann’s lowering mechanism ensures that when the **pushing lever 11/12** is pivoted

clockwise as shown in FIG. 1 of Braselmann, the **lowering plate 2** engages the **jacking shaft 5** before the **holding plate 1** disengages from the **jacking shaft 5**.

See Braselmann, 4:10-16 (“This arrangement of the parts is such that the **clamping member [i.e., lowering plate] 2** is first moved into its clamping position” and then “the **clamping member [i.e., holding plate] 1** is thereupon moved out of its clamping position...”).

87. Conversely, Braselmann’s lowering mechanism ensures that the **holding plate 1** reengages with the **jacking shaft 5** when the **lowering plate 2** disengages from the **jacking shaft 5**. See Braselmann, 4:24-46. A POSITA would have understood that Braselmann’s lowering mechanism prevents the type of uncontrolled freefall that is possible with Gruber’s incremental lowering mechanism by preventing a scenario in which both the **holding plate 1** and **lowering plate 2** are simultaneously disengaged from the **jacking shaft 5** during use of the incremental lowering mechanism.

88. Incorporation of Braselmann’s incremental lowering mechanism into Gruber’s jack would obviously improve safety by helping to ensure that under all circumstances, the incremental lowering mechanism “prevents rapid and uncontrolled descent of the load supported by the lifting device” (Braselmann, 1:41-42), while also still advantageously retaining Gruber’s separate “continuous” lowering mechanism (**release lever 44b**) so that the operator can still choose

between “continuous[] and gradual[/incremental]” lowering, as desired and taught by Gruber. Gruber, ¶¶[0020]-[0021].

b. Improved Adjustability

89. It would have been obvious to incorporate Braselmann’s adjustable incremental lowering mechanism into Gruber’s jack to enable the operator to adjust the amount of lowering. Gruber’s intermittent lowering mechanism does not afford precise, adjustable control over the “short distance” free fall resulting from each push of the **pushing lever 50b**.

90. In contrast, a POSITA would have understood that Braselmann’s lowering mechanism advantageously enables the operator to adjust the amount of lowering by adjusting how much the operator actuates Braselmann’s **pushing lever 11/12**, as explained above. Braselmann, 4:3-46. Actuating Braselmann’s **pushing lever 11/12** a small amount results in a small amount of lowering, and further actuation yields proportionally more lowering, as explained above. It would have been obvious to incorporate Braselmann’s adjustable incremental lowering mechanism into Gruber’s jack to achieve Braselmann’s more precisely controlled, adjustable lowering.

c. Mere Obvious Application of Braselmann’s Known Technique to A Tool Ready for The Improvement

91. Such a “mere application of a known technique (Braselmann’s safer, more precisely-controlled, adjustable, lowering mechanism) to a piece of prior art

ready for the improvement (Gruber's incremental lowering mechanism) would have been obvious because it involves no more than the predictable use of prior art elements according to their established functions.

d. Simple Substitution of One Known Element for Another with No More Than the Predictable Use of The Elements According to Their Established Functions

92. Such a modification was similarly obvious because it involved the simple substitution of one known element (Brasemann's incremental, adjustable, lowering mechanism) for another (Gruber's incremental lowering mechanism) and therefore involves no more than the predictable use of prior art elements according to their established functions.

93. As incorporated into Gruber's tool, Brasemann's safer, adjustable lowering mechanism would work in the way described in Brasemann to achieve Brasemann's stated objectives.

e. Further Motivation in Brasemann to Make the Modification

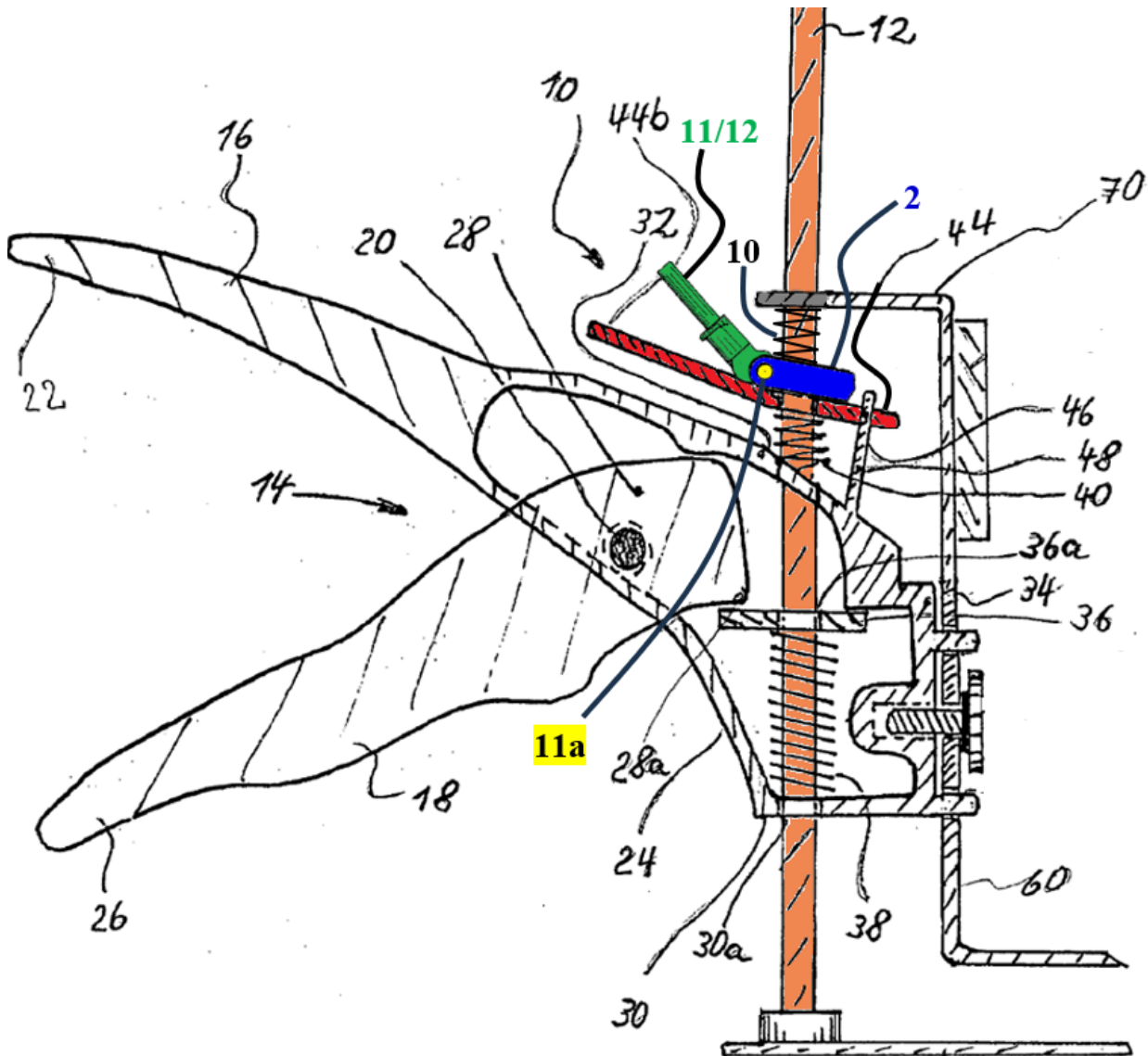
94. The obvious applicability of Brasemann's incremental lowering mechanism to other lifting devices such as Gruber's is explicitly confirmed by Brasemann's teaching that "each of the elements described above [e.g., Braselman's lowering mechanism] ... may also find a useful application in other

types of lifting devices differing from the types described above.” Braselmann, 5:44-46.

95. For any and/or all of the above reasons, it would have been obvious to a POSITA to have incorporated Braselmann’s incremental lowering mechanism into Gruber’s jack.

3. Obviously Modified Gruber Jack

96. When Gruber’s jack is obviously modified to incorporate Braselmann’s incremental lowering mechanism, Braselmann’s incremental lowering mechanism (i.e., **lowering plate 2**, **pushing lever 11/12**, **hinge attachment 11a**, and spring 10) would obviously replace Gruber’s incremental lowering mechanism (**lowering plate 50** and spring 54) and interact with Gruber’s **holding plate 44** in the way Braselmann’s lowering mechanism interacted with Braselmann’s own **holding plate 1**, for example as shown below, which will obviously and advantageously provide safer, adjustable, intermittent lowering.



Exemplary, Non-Limiting Illustration of Obviously Modified Gruber Jack

97. As shown above, the **jacking shaft 12** passes through holes in the plates **2**, **44**, **36** and frame, despite these holes not always being visible in the drawings in this declaration because these drawings are amalgamated from a mixture of cross-sectional and side views from Gruber and Braselmann.

98. The above illustration is provided to show how Braselmann's lowering mechanism could be obviously and physically be incorporated into Gruber's jack. I am informed that it is not necessary that the prior art references be physically combinable to render a claim obvious. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, but rather whether a POSITA would have been motivated to combine the teachings of the prior art references to achieve the claimed invention. Here, it would still have been obvious to have combined the teachings of Braselmann and Gruber to satisfy every limitation in the challenged claims even if they were not physically combinable.

99. The obviously modified Gruber jack satisfies every limitation in the challenged claims, as shown below.

B. Claim 1

1. **Limitation 1(a): "1. A lowering mechanism for a hand held jacking tool comprising a jacking frame, a jacking shaft, and a caulking gun jacking mechanism comprising at least one jacking plate biased towards an open state"**

100. The obviously modified Gruber jack includes a lowering mechanism (**lowering plate 2**, **pushing lever 11/12**, **hinge attachment 11a**, a spring (e.g., Braselmann's spring 10, Gruber's spring 54), **holding plate 44**, and **release lever 44b**)), as explained and shown in greater detail below with respect to the specific

limitations 1(d)-1(k), which make up the lowering mechanism. The lowering mechanism facilitates lowering of Gruber's jacking frame, as explained above.

101. The lowering mechanism is for Gruber's hand held jacking tool ("lifting device 10"), which comprises Gruber's jacking frame 22/24/30/32/34/48, **jacking shaft** ("**rod 12**"), and caulking gun jacking mechanism (Gruber's jacking plate 36 biased by spring 38, **holding plate 44** biased by spring 40, and jacking handle/lever 18/26), for example as shown above in paragraph 96. Gruber's caulking gun jacking mechanism provides a one-way jacking system in which pumping the jacking handle/lever 18/26 jacks the frame up more and more, while the spring-biased **holding plate 44** prevents the frame from falling back down between jacking strokes.

102. If "caulking gun jacking mechanism" is overly narrowly construed to require actuation via squeezing and/or operation via a single hand, Gruber's jack 10 has a caulking gun jacking mechanism because Gruber's handle parts 16/22, 18/26 can be held by a single hand and squeezed with a single hand to jack the frame up. Gruber, FIG. 1; Gruber, ¶¶ [0013], [0029]-[0031].

103. Gruber's caulking gun jacking mechanism comprises a jacking plate ("lifting disc 36") biased by a "spring 38." Gruber, ¶¶ [0012]-[0014], [0015], [0019], [0029] and FIG. 1. A POSITA would have understood, as is standard to facilitate the functionality of such jacking mechanisms, that Gruber's jacking plate

36 was or would obviously have been biased by the spring 38 toward the open (i.e., nonengaged) state generally perpendicular to the **jacking shaft 12**, as shown in Gruber's FIG. 1, until actuation of the handle 26 tilts the plate 36 so it engages the **jacking shaft 12**. *See* Gruber, ¶ [0014] ("lifting disc 36, which is preloaded in the direction of the second wall part 32 by means of a first compression spring 38"), ¶ [0015]; Braselmann, 3:58-62 ("The clamping member [i.e., jacking plate] 3 may have a tendency normally to occupy its unclamping position, but may be constantly urged thereinto by the coil spring 10...").

104. As a result, the Gruber jack, as obviously modified in view of Braselmann, provides a "lowering mechanism for a hand held jacking tool comprising a jacking frame, a jacking shaft, and a caulking gun jacking mechanism comprising at least one jacking plate biased towards an open state," as recited in this limitation.

2. Limitation 1(b): "and at least one holding plate, above the at least one jacking plate"

105. In the obviously modified Gruber jack, Gruber's holding plate ("**lowering plate 44**") is above Gruber's jacking plate 36. Gruber, ¶ [0017] & FIG. 1. Gruber's "**lowering plate 44**" is a **holding plate 44** because it holds up Gruber's jacking frame when not released. *See* Gruber, ¶ [0030] ("[T]he inclined position of the first **lowering plate 44** prevents the tongs 14 from being lowered[.]").

106. As a result, the Gruber jack, as obviously modified in view of Braselmann, includes “at least one holding plate, above the at least one jacking plate,” as recited in this limitation.

3. Limitation 1(c): “being biased towards a gripping state”

107. In the obviously modified Gruber jack, Gruber’s **holding plate 44** is biased towards a gripping state by a spring 40. *See* Gruber, ¶[0017] (“The second compression spring 40 presses against a first **lowering plate 44**....”); Gruber, ¶[0018] (“[B]y an inclined position of the first **lowering plate 44**, set up by a corresponding articulation of the first **lowering plate 44** on the first pivot bearing 46 and by an angular position of the first **lowering plate 44**, a tilting of the first **lowering plate 44** in relation to the rod 12 is present in the starting position.”); Gruber, ¶[0030] (“[T]he inclined position of the first **lowering plate 44** prevents the tongs 14 from being lowered in the downward direction[.]”).

108. As a result, in the obviously modified Gruber jack, the holding plate is “being biased towards a gripping state,” as recited in this limitation.

4. Limitation 1(d): “wherein the lowering mechanism comprises: a lowering plate on top of the at least one holding plate”

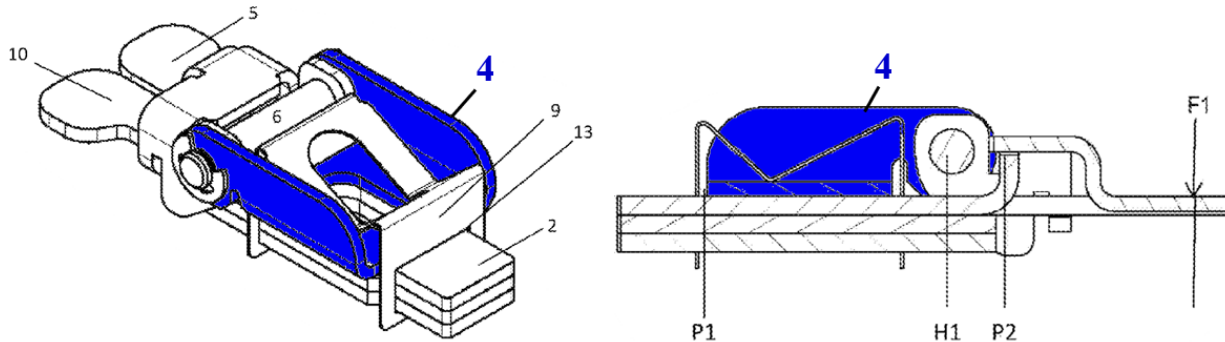
109. The obviously modified Gruber jack incorporates Braselmann’s adjustable/incremental lowering mechanism, which comprises: a **lowering plate** (Braselmann’s “**clamping member 2**” (Braselmann, 3:31)) on top of Gruber’s

holding plate 44. In particular, Braselmann's **lowering plate 2** would have obviously been positioned relative to Gruber's **holding plate 44** in the same way as Braselmann's **lowering plate 2** was positioned relative to Braselmann's **holding plate 1**, i.e., on top, to function in the manner taught by Braselmann to facilitate controlled, adjustable lowering. Braselmann, FIG. 1; Braselmann, 4:3-4:64; Gruber, FIG. 1 (showing Gruber's **lowering plate 50** on top of Gruber's **holding plate 44**).

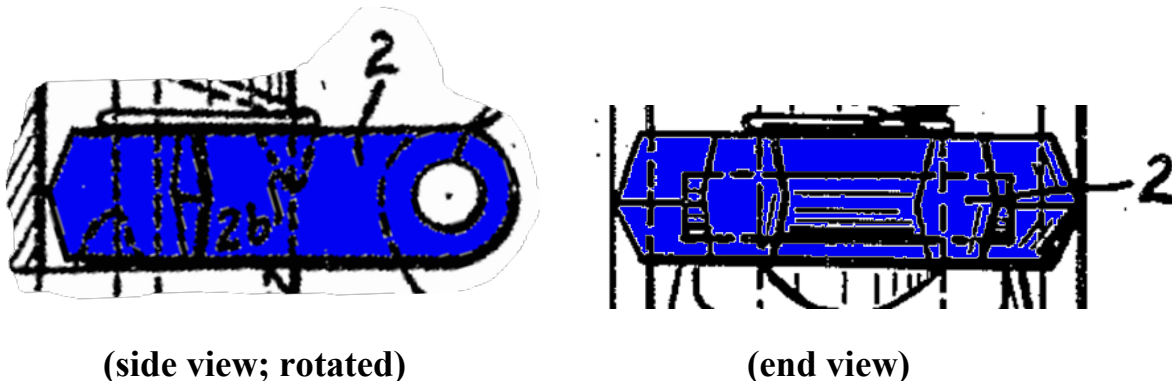
110. In the context of the '473 Patent, a POSITA would have understood that Braselmann's "**clamping member 2**" (Braselmann, 3:31) was a "plate," as recited in claim 1 of the '473 Patent, because Braselmann's **clamping member 2** has the structure and functionality of a caulking gun jacking mechanism's plate (e.g., a structure with a hole through which the jacking shaft extends such that the structure is pivotable between a gripping state (tilted relative to the jacking shaft to bind against the jacking shaft) and an open state (generally perpendicular to the jacking shaft so that the structure can slide up/down the jacking shaft)). '473 Patent, 1:15-31.

111. The '473 Patent's specification does not define or limit the term "plate" with respect to any particular dimensions, thickness ratios, or aspect proportions, nor require any specific edge geometry (e.g., square or rounded). As shown below, the '473 Patent illustrated "**lowering plate 4**" (2:52) as a deep U-

shape, making it non-flat, quite thick relative to its width and length, and far less plate-like than Braselmann's **lowering plate 2**, which is substantially thinner than it is wide or long.



'473 Patent, FIGS. 4-5 (annotated)



Braselmann, FIGS. 1-2 (annotated; excerpt)

If the '473 Patent's disclosed **lowering plate 4** is a "plate," Braselmann's **clamping member 2** is a plate also.

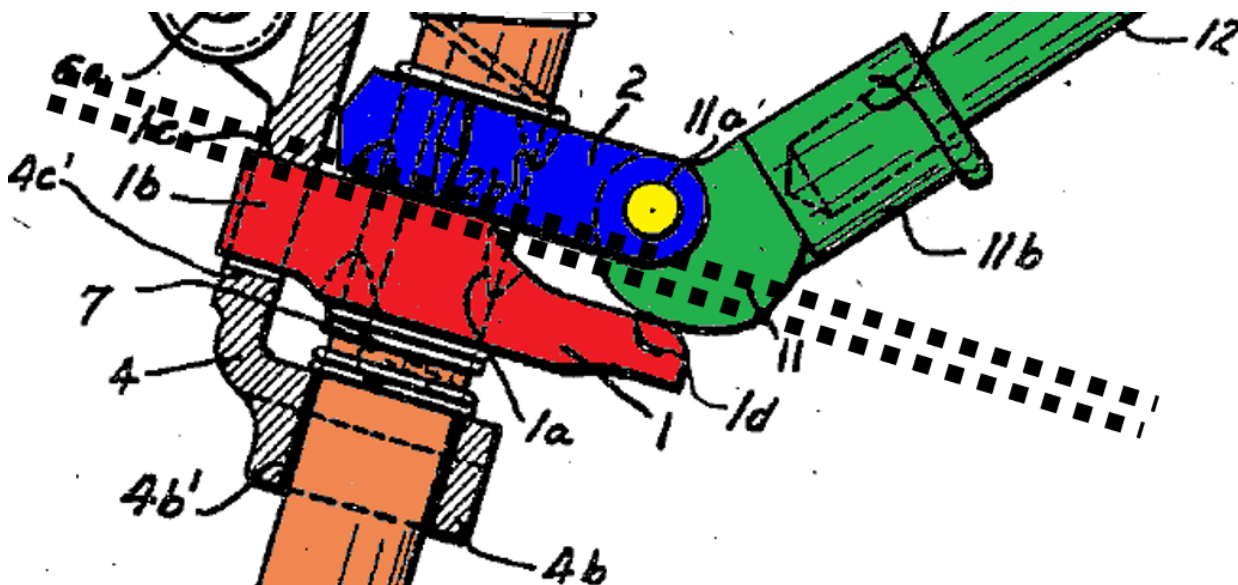
112. Moreover, even if Braselmann's "**clamping member 2**" was not a plate, it would have been obvious to have incorporated Braselmann's **clamping member 2** into Gruber's jack in the form of a "plate" because Gruber taught that it

was known to implement such lowering members (e.g., Gruber’s “**lowering plate 50**”) in plate form, e.g., to provide efficient, easy-to-manufacture, compact clamping/lowering members. Gruber, FIG. 1 and ¶ [0019] (“lowering[/holding] plate 44” and “lowering plate 50”).

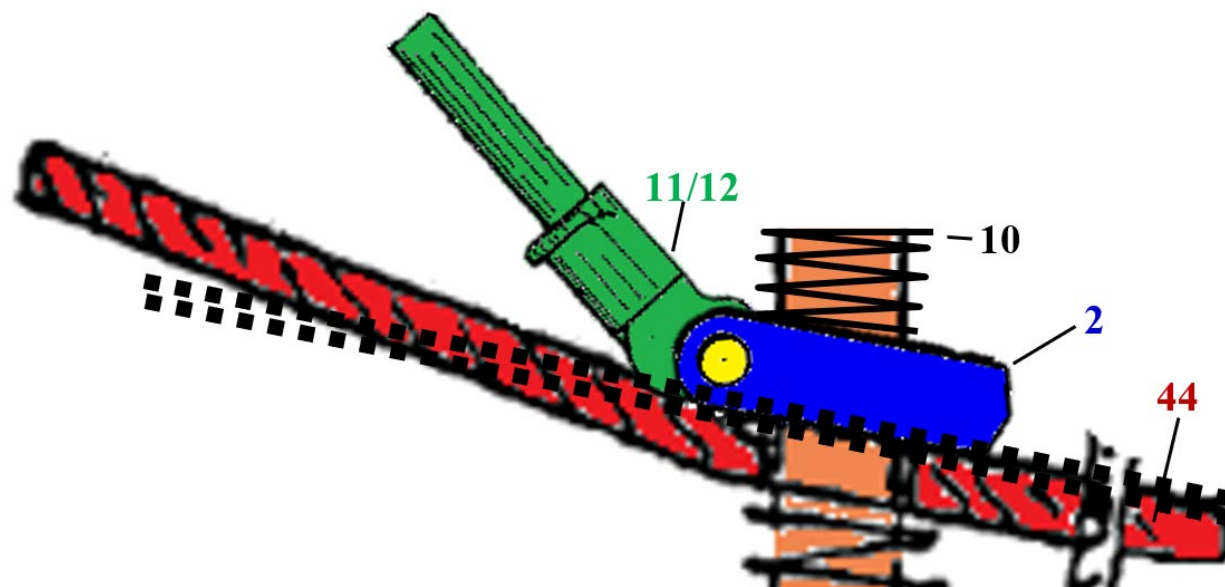
113. As a result, in the obviously modified Gruber jack, “the lowering mechanism comprises: a lowering plate on top of the at least one holding plate,” as recited in this limitation.

5. Limitation 1(e): lowering plate “being parallel to the at least one holding plate when not activated”

114. As explained below regarding limitation 1(f), the obviously modified Gruber jack’s **lowering plate 2** is spring-biased toward and against Gruber’s **holding plate 44**. This spring bias causes Braselmann’s **lowering plate 2** and **holding plate 1** to be parallel when the **lowering plate 2** is not activated, so the same would remain true in the obviously modified Gruber jack, as shown below. Braselmann, FIG. 1 and 4:50-55.



Brasemann, FIG. 1 (excerpt; annotated)



Obviously Modified Gruber Jack

115. Such parallelism is the obvious and intended result of biasing
Brasemann's **lowering plate 2** toward and against Brasemann's **holding plate 1**,

as would obviously occur to maintain the functionality of Braselmann's spring-biased **lowering plate 2**. *See* Braselmann, FIG. 1.

116. Furthermore, this parallelism ensures that the **lowering plate 2** does not inadvertently lock while jacking up the load. Parallelism guarantees that the **lowering plate 2** is in a known orientation. That would not be the case if the **lowering plate 2** were somehow floating above the **holding plate 1**. Alternatively, counterclockwise rotation of the **lowering plate 2** in the obviously modified Gruber jack (as shown above) in the released condition could be limited by the fit of the **jacking shaft** in the **lowering plate 2's** hole, but that would increase friction and raise the risk of the **lowering plate 2** accidentally rotating the **holding plate 1** into the released direction, resulting in the unintended dropping of the jack. Parallel contact helps prevent the **holding plate 1** from accidentally being rotated by the **lowering plate 2**. In view of these benefits of such parallelism, a POSITA would obviously have maintained/applied this parallelism in the obviously modified Gruber jack.

117. As a result, in the obviously modified Gruber jack, the **lowering plate 2** is "parallel to the at least one **holding plate [44]** when not activated," as recited in this limitation.

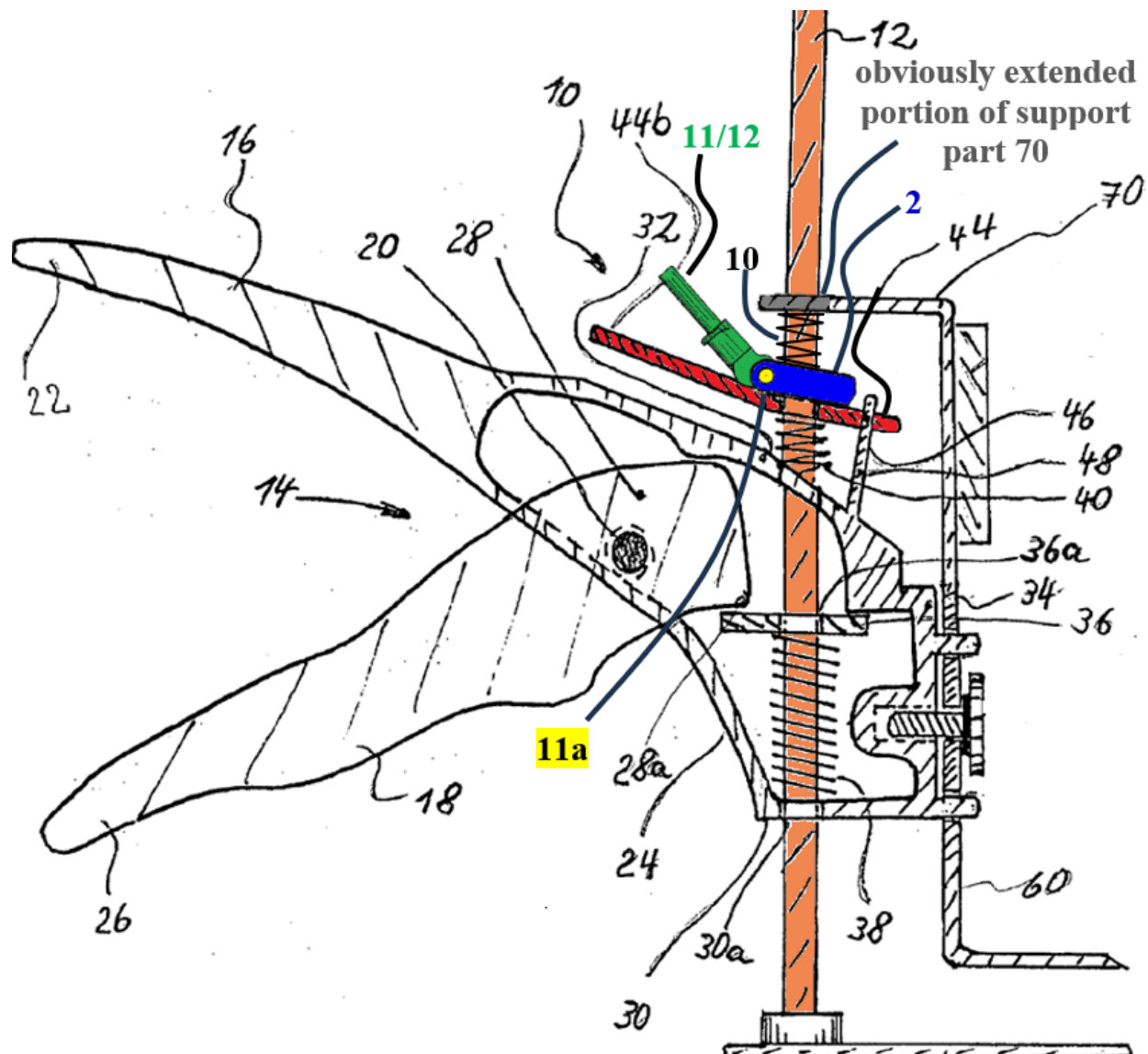
6. **Limitation 1(f): “a spring biasing the lowering plate towards the at least one holding plate”**

118. Braselmann’s spring 10 biases Braselmann’s **lowering plate 2** towards Braselmann’s **holding plate 1** so that Braselmann’s lowering mechanism functions correctly (e.g., ensuring the intended functionality of Braselmann’s adjustable lowering mechanism, returning the **lowering plate 2** to its natural/neutral position abutting the **holding plate 1** when the **pushing lever 11/12** is not activated, causing the **lowering plate 2** to engage the **jacking shaft 5** when the rear end of the **lowering plate 2** is lifted upwardly by the pressing of the **pushing lever 11/12**). *See* Braselmann, FIG. 1 and 4:50-55 (“The **clamping member[/lowering plate] 2** ... will move downwardly under the influence of ... the spring 10 into abutting relationship with the **clamping member[/holding plate] 1** so that the parts will .. assume the position illustrated in Fig. 1.”). In the obviously modified Gruber jack, Braselmann’s **lowering plate 2** would obviously have been biased by a spring towards Gruber’s **holding plate 44** for the same reason(s): ensuring the intended functionality for the lowering mechanism, returning Braselmann’s **lowering plate 2** to its natural/neutral position abutting Gruber’s **holding plate 44** when the **pushing lever 11/12** is not activated, ensuring that the **lowering plate 2** engages the **jacking shaft 12** when the **pushing lever 11/12** is pushed, etc.. *See* Braselmann, FIG. 1.

119. In the obviously modified Gruber jack, it would have been obvious to implement the biasing spring in any of a number of ways.

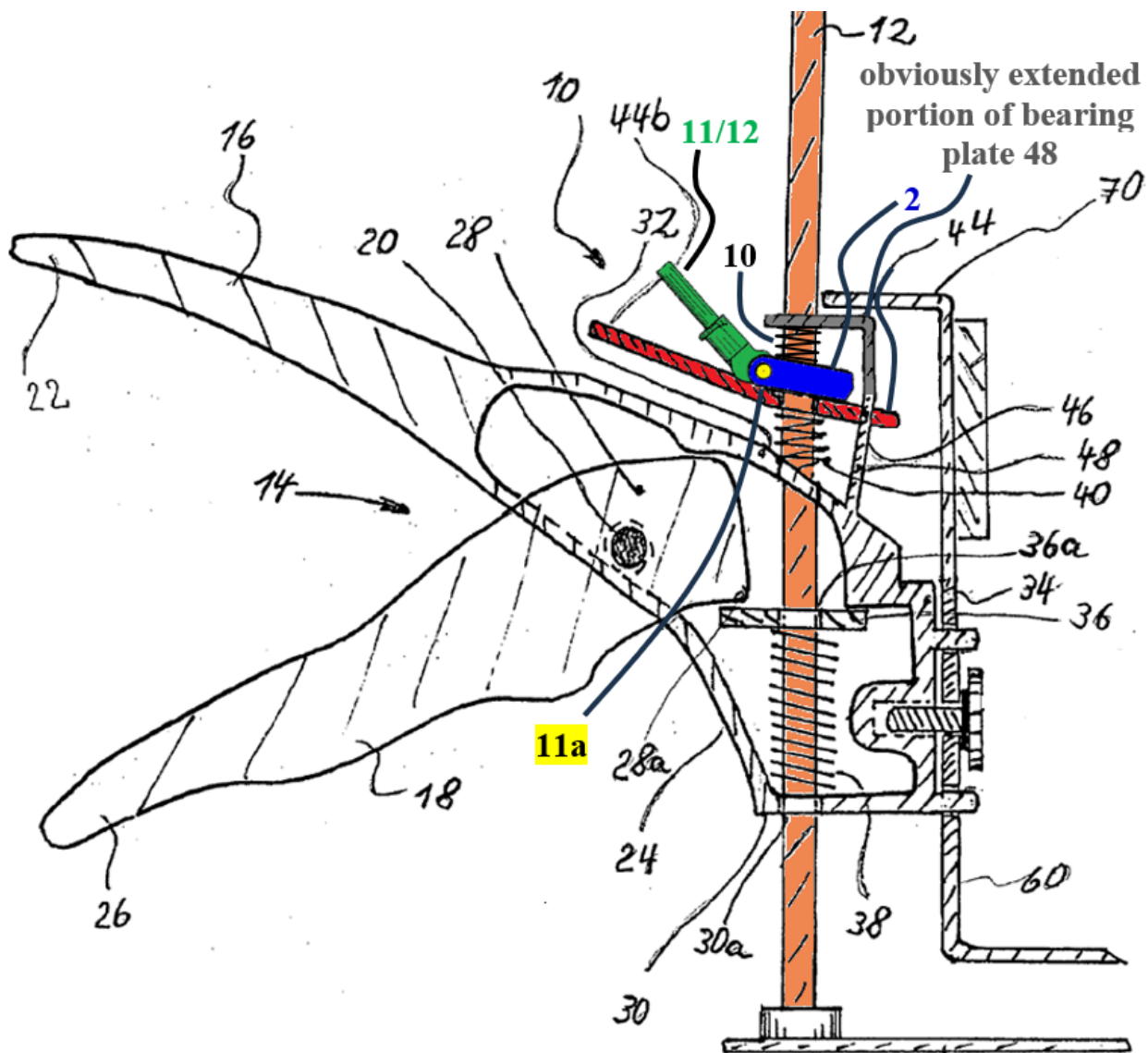
120. For example, Braselmann taught that the **lowering plate 2** is biased by a compression spring 10 that extends, on a force transfer basis, between the **lowering plate 2** and the frame 4. *See* Braselmann, FIG. 1, 3:42-45, 4:50-55. In view of Braselmann's teaching, it would have been obvious to have positioned the compression spring 10 between the **lowering plate 2** and a portion of Gruber's frame to achieve the intended spring bias.

121. It would have been obvious to have arranged a portion of Gruber's frame or an extension thereof above the lowering plate 2 so that the spring 10 is compressed therebetween and the spring's force appropriately transfers from the frame to the **lowering plate 2**, as taught by Braselmann and shown in Braselmann's FIG. 1. For example, as shown in gray below, it would have been obvious to have extended Gruber's support part 70 above the **lowering plate 2** to support Braselmann's spring 10.



Obviously Modified Gruber Jack

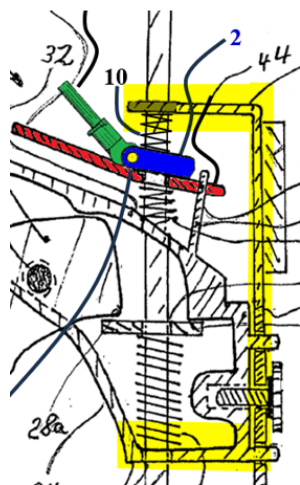
122. Alternatively, as shown in gray below, it would have been obvious to have extended Gruber's bearing plate 48, which is part of Gruber's jacking frame, above the **lowering plate 2** to support Braselmann's spring 10.



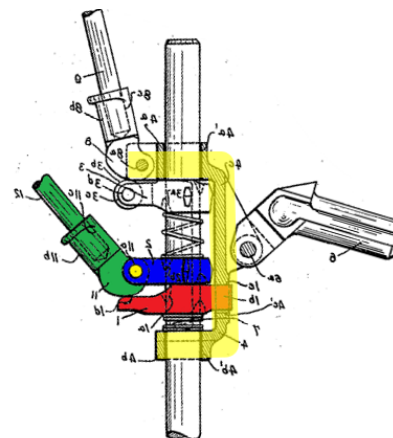
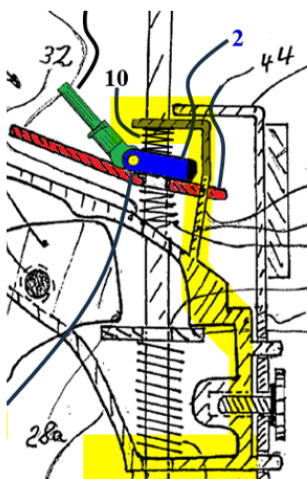
Obviously Modified Gruber Jack

123. As highlighted in yellow below, the backward “C” shape of the resulting portions of Gruber’s frame would have been obvious in view of the comparable C shape of Braselmann’s frame 4 for this same purpose (i.e., providing a support for an end of a compression spring 10 that biases the **lowering plate 2**

toward the **holding plate 1**), as well as other purposes (e.g., guiding the **jacking shaft**).

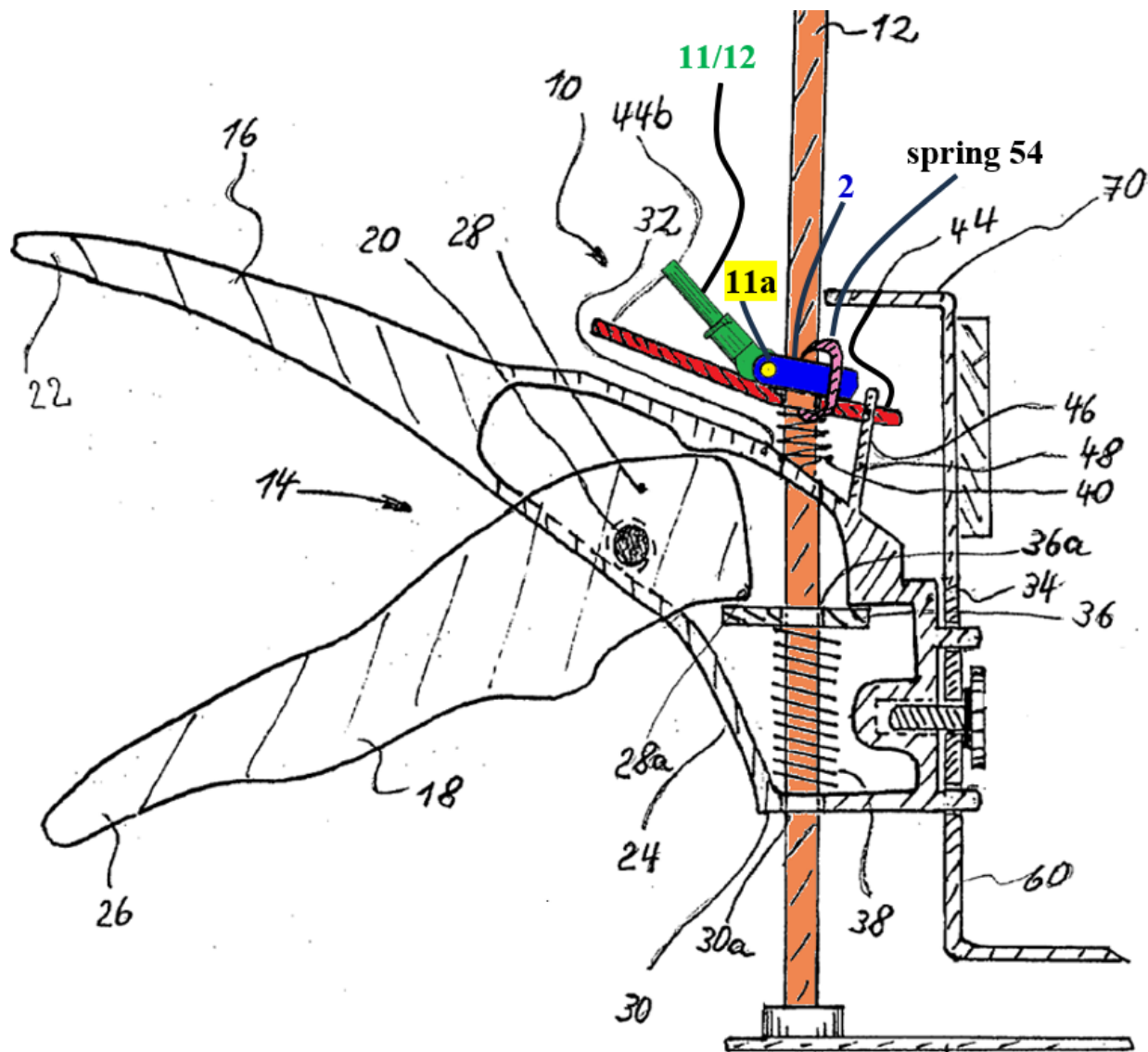


Obviously Modified Gruber Jack Variants



Braselmann, FIG. 1
(excerpt; mirrored; rotated)

124. Alternatively, as shown below, it would have been obvious to have extended one or more tensile springs like Gruber's spring 54 between the plates **2**, **44** to bias Braselmann's **lowering plate 2** toward Gruber's **holding plate 44**. See Gruber, FIG. 1 and ¶ [0023] ("**lowering plate 50** ... connected to ... **lowering plate 44** ... via a return spring 54."). In this obvious variant, the tensile force axis of the spring(s) 54 would obviously have been aligned with Gruber's **shaft 12** (as was the case with Braselmann's spring 10) to bias the holding plate 2 toward its neutral position abutting the **holding plate 1**, as taught by Braselmann. See Braselmann, FIG. 1 and 4:50-55.



Obviously Modified Gruber Jack

125. In any of these obvious variants, the obviously modified Gruber jack's lowering mechanism included a spring (e.g., Braselmann's compression spring 10, tensile spring(s) like Gruber's spring 54) biasing Braselmann's **lowering plate 2** towards Gruber's **holding plate 44**.

126. Thus, in the obviously modified Gruber jack, the lowering mechanism comprises “a spring biasing the lowering plate towards the at least one holding plate,” as recited in this limitation.

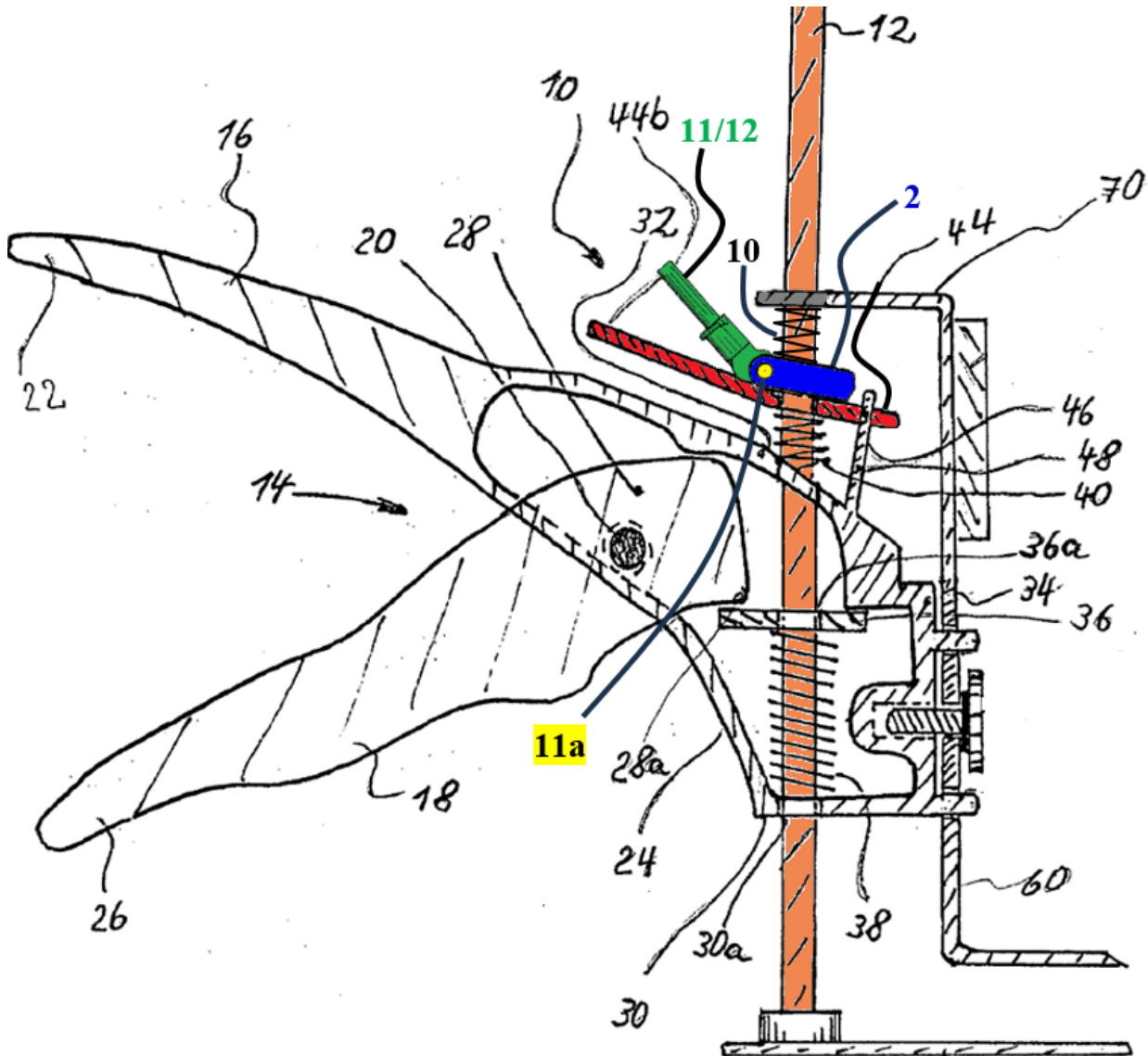
7. Limitation 1(g): “a thumb operable pushing lever”

127. The obviously modified Gruber jack incorporates Braselmann’s **pushing lever 11/12**, which was obviously “thumb operable,” to the extent that term is understandable and not indefinite. For the purposes of this opinion, I interpret “thumb operable” the best I can despite its indefiniteness.

128. The **pushing lever 11/12** in Braselmann and the **pushing lever 11/12** in the obviously modified Gruber jack are “thumb operable” because they are capable of being operated by the operator’s thumb.

129. Moreover, in the obviously modified Gruber jack, it would have been obvious to have sized and shaped Braselmann’s **pushing lever 11/12** to be “thumb operable” to make the **pushing lever 11/12** more convenient to operate. Braselmann’s **pushing lever 11/12** has a length appropriate for the load and lifting/lowering stroke/speed to which Braselmann’s jack is directed. *See* Braselmann, FIG. 1. Likewise, Gruber’s release lever 44b and pushing lever 50b have leverage arm lengths that are appropriate for the load and intended stroke length/speed to which Gruber’s jack 10 is directed. *See* Gruber, FIG. 1. A POSITA would have understood that Gruber’s **release lever 44b** and incremental

lowering/pushing lever 50b were sized and located to be operated by the operator's thumb. *See* Gruber, FIG. 1; Gruber, ¶ [0018] (“**lowering plate 44** is extended and forms a first lowering actuation region 44b”); Gruber, ¶ [0019] (“second **lowering plate 50** is extended and forms a second lowering operating area 50b”). When Braselmann's **lowering plate 2** and **pushing lever 11/12** are obviously incorporated into Gruber (e.g., in place of Gruber's lowering plate 50 and pushing lever 50b), it would have been obvious to size and position Braselmann's **pushing lever 11/12** similarly to Gruber's pushing lever 50b, in view of Gruber's teachings and the loads to which Gruber's jack is directed, with the resulting **pushing lever 11/12** being thumb operable to be more convenient for the operator.



Exemplary, Non-Limiting Illustration of Obviously Modified Gruber Jack

130. As shown above, it would have been obvious to have the **release lever 44b** extend rearwardly farther than the **pushing lever 11/12** to provide convenient thumb access to both the continuous-lowering **release lever 44b** and incremental-lowering **pushing lever 11/12** (with the **pushing lever 11/12** sized and positioned similarly to Gruber's incremental release lever 50b), as shown in

Gruber's FIG. 1 and described in ¶[0021] of Gruber. Such an arrangement would result in convenient thumb operation of both levers 11/12, 44b, as shown in FIG. 1 of Gruber with respect to the analogous levers 50b, 44b. Alternatively, it also would have been obvious to have the incremental-lowering **pushing lever 11/12** extend rearwardly to the same extent as the continuous **release lever 44b** because Gruber taught that such an alternative arrangement would result in the incremental **pushing lever 11/12** extending over top of the continuous **release lever 44b** to discourage "accidental[] activat[ion]" of Gruber's continuous **release lever 44b**, as taught in ¶[0020] of Gruber. Either way, the resulting **pushing lever 11/12** and **release lever 44b** are conveniently reached by the operator's thumb for thumb operation of the desired lever **11/12, 44b**.

131. Braselmann taught that "[i]f desired," the lever 12 lever may be removably attached to the lever 11, e.g., to facilitate using the lever 12 as a lifting lever in connection with Braselmann's jacking cam 8. *See* Braselmann, 4:65-68, 5:32-36. When Braselmann's lowering mechanism is obviously incorporated into Gruber's jack, the **pushing lever** would obviously have been small enough to be conveniently actuated by the operator's thumb, so the lever 12 would have obviously been (1) omitted altogether by dimensioning the lever 11 to have an appropriate length for convenient thumb actuation, or (2) rigidly mounted to the lever 11 with the same effect.

132. In conclusion, in the obviously modified Gruber jack, the lowering mechanism comprises “a thumb operable **pushing lever [11/12]**,” as recited in this limitation.

8. Limitation 1(h): “a release lever which is an extension of the at least one holding plate”

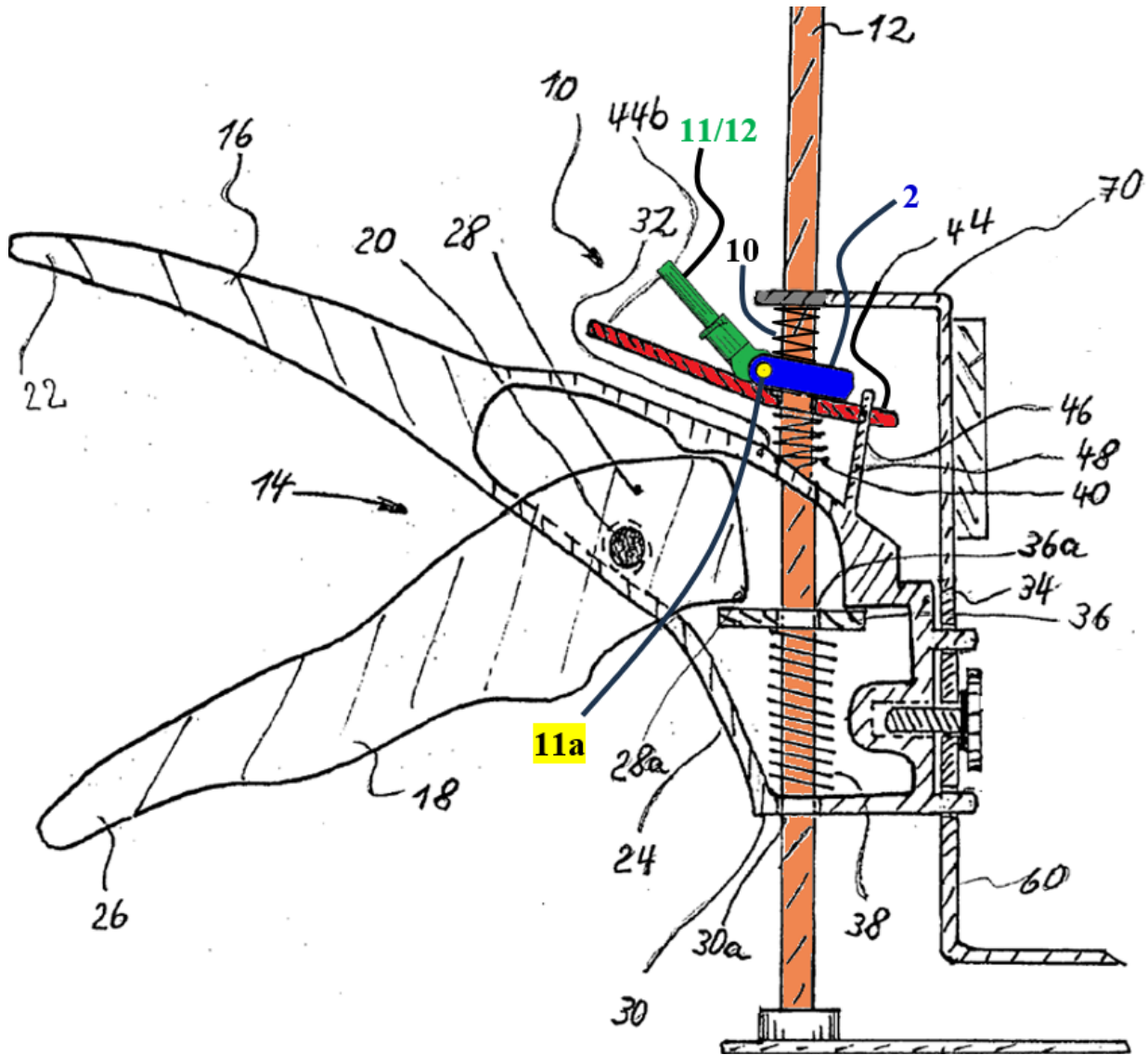
133. The obviously modified Gruber jack’s lowering mechanism includes Gruber’s release lever (“**lowering operating area 44b**”) which is an extension of Gruber’s **holding plate (“lowering plate 44”)**. *See* Gruber, FIG. 1; Gruber, ¶ [0018] (“[T]he first **lowering plate 44** is extended and forms a first lowering **operating area 44b**”).

134. Thus, in the obviously modified Gruber jack, the lowering mechanism comprises “a **release lever [44b]** which is an extension of the at least one **holding plate [44]**,” as recited in this limitation.

9. Limitation 1(i): “a hinge attachment connecting the thumb operable pushing lever to the lowering plate at a rear end towards an operating handle”

135. The obviously modified Gruber jack’s lowering mechanism includes Braselmann’s **hinge attachment 11a** connecting Braselmann’s thumb operable **pushing lever 11/12** to Braselmann’s **lowering plate 2** at a rear end towards Gruber’s operating handle (“handle part 26”) (to the left as shown below) because this arrangement facilitates the functionality and benefits of Braselmann’s lowering mechanism (e.g., causing the **lowering plate 2** to lift, tilt, and engage the **shaft 12**

when the pivotally connected **lever 11/12** is pressed). See Gruber, ¶ [0013] and FIG. 1; Braselmann, FIG. 1 and 4:3-6 (“**cam [i.e., pushing lever] 11** which is pivotally mounted on the **clamping member [i.e., lowering plate] 2** at **11a**”).



Exemplary, Non-Limiting Illustration of Obviously Modified Gruber Jack

136. Thus, in the obviously modified Gruber jack, the lowering mechanism comprises “a **hinge attachment [11a]** connecting the thumb operable **pushing lever [11/12]** to the **lowering plate [2]** at a rear end towards an operating handle,” as recited in this limitation.

10. Limitation 1(j): “a pivot structure connected to the thumb operable pushing lever or the at least one holding plate a distance backward from the hinge attachment”

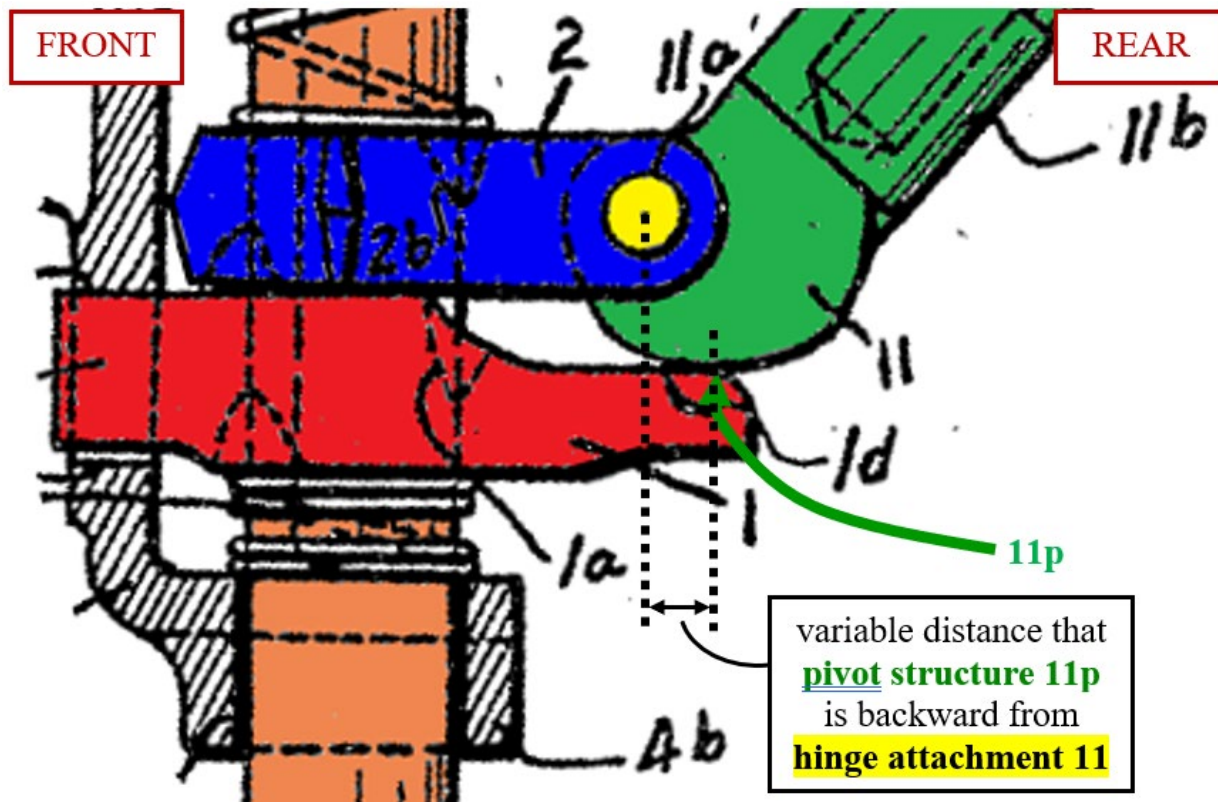
137. I have been informed that in the previously mentioned European litigation, the parties dispute whether the claim term “pivot structure” encompasses a cam 11 like in Braselmann or must have a fixed pivot point, as explained above in the claim construction section addressing this limitation. As explained below, the obviously modified Gruber tool’s lowering mechanism satisfies this limitation under either construction.

f. Obviousness If “Pivot Structure” Encompasses A Sliding Cam Like in Braselmann

138. If the claimed “pivot structure,” which the pushing lever “pivots about,” encompasses a sliding cam like Braselmann’s, as proposed by Patent Owner, then in the obviously modified Gruber jack, the **cam portion 11p** of Braselmann’s **lever 11** that slidingly contacts Gruber’s **holding plate 44** is a **pivot structure 11p** that satisfies this limitation.

139. As shown below, Braselmann’s **pivot structure 11p** is positioned backward (to the right as shown in Braselmann’s FIG. 1) from Braselmann’s **hinge**

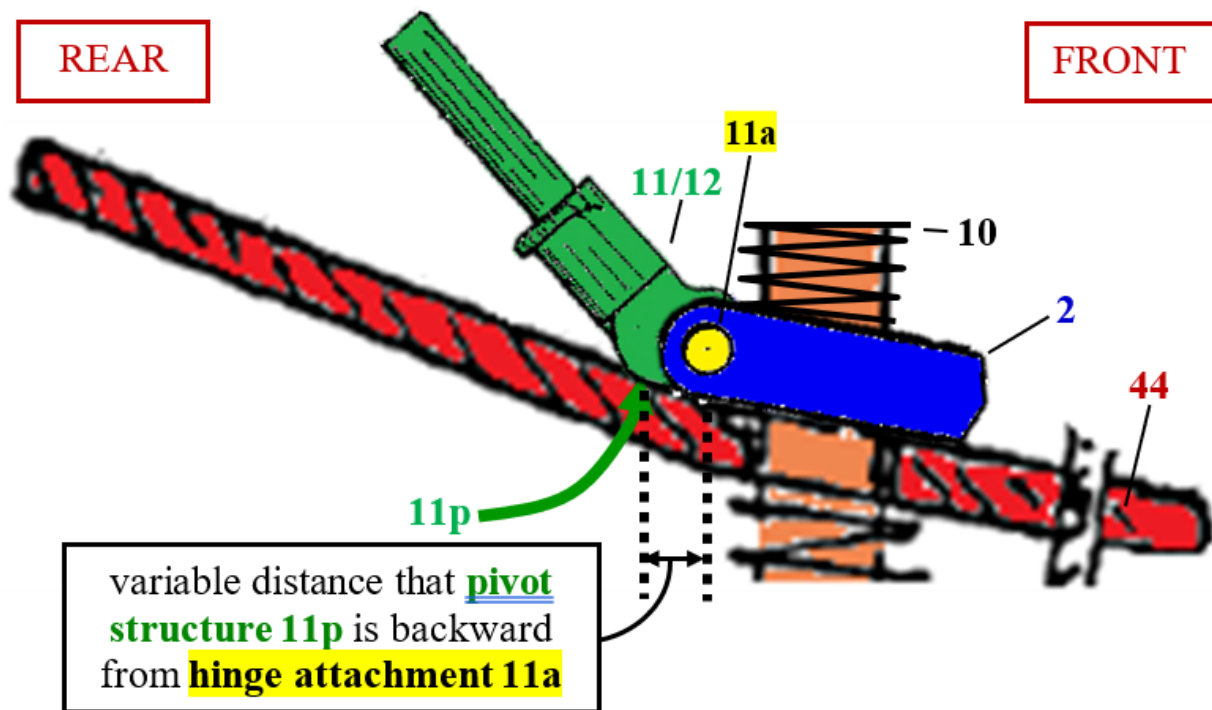
attachment 11a so that the lowering mechanism functions correctly (i.e., so the pushing the **pushing lever 11/12** downward causes the **pivot structure 11p** to push downward on the **lowering plate 1**). Braselmann's lowering mechanism would not work if the **pivot structure 11p** was forward of **hinge attachment 11a** because the pressing the **lever 11/12** would lift the **pivot structure 11p** up away from the **holding plate 1**, and thus fail to push the **holding plate 1** downward, as required to lower the jack.



Braselmann, FIG. 1 (excerpt; rotated so shaft 5 is vertical; annotated)

140. As shown below, just as in Braselmann, the obviously modified Gruber jack's **pivot structure 11p** (cam portion of **lever 11** slidingly contacting

the **holding plate 1**) would likewise have obviously been positioned backward (to the left as shown in Gruber FIG. 1) from the **hinge attachment 11a** so that the lowering mechanism functions correctly, as taught by Braselmann.



Obviously Modified Gruber Jack (excerpt)

141. As a result, the obviously modified Gruber jack's lowering mechanism includes a **pivot structure (cam portion 11p)** connected to the thumb operable **pushing lever 11/12** a distance backward from the **hinge attachment 11a**, as recited in this limitation under Patent Owner's construction.

g. Obviousness If “Pivot Structure” Means “A Structure Having A Fixed Pivot Point Around Which The Pushing Lever Pivots”

142. If “pivot structure” means “a structure having a fixed pivot point around which the pushing lever pivots,” as proposed above, it would have been obvious to further modify Gruber’s jack in a way that satisfies this limitation.

143. Braselmann uses the **cam 11** to steadily convert the large angular stroke of Braselmann’s **lever 11/12** into downward movement of Braselmann’s **holding plate 1** and frame 4 throughout the lever’s pivotal stroke. *See* Braselmann, FIG. 1 and 4:4-46. If the **lever 11/12** utilized a fixed pivot point instead of the **cam 11**, the extent of downward movement of the **holding plate 1** and frame 4 per degree of **lever 11/12** actuation would significantly vary over the lever’s angular stroke as the contact point between the **cam 11** and the **holding plate 1** moves horizontally forward (toward the **jacking shaft 5**). The **cam 11** is beneficial to Braselmann’s jack given Braselmann’s **lever 11/12**’s large angular stroke.

144. In the modified Gruber jack, however, the angular stroke of the thumb operable **pushing lever 11/12** would obviously be much smaller (e.g., as was the case for Gruber’s own pushing lever 50b), consistent with the appropriate lever arm lengths, loads, and thumb stroke appropriate for Gruber’s jack. Gruber, FIG. 1. It would therefore have been obvious to have replaced Braselmann’s **cam 11** surface with a **pivot structure 11p** having a fixed pivot point in contact with

Gruber's **holding plate 44** because there will be no need for a cam in connection with the smaller lever stroke. The **fixed pivot point 11p** of the lever 11 would obviously have been positioned backward (to the left as shown in Gruber's FIG. 1) from the **hinge attachment 11a**, so that the lowering mechanism functions correctly (e.g., so that pushing the **lever 11** pushes the **pivot point 11p** and contacting **holding plate 22** downwardly), as explained above, with respect to the relative positioning of the **cam 11p**.

145. In the context of the obviously modified Gruber tool, it would have alternatively been obvious to have formed the **pivot structure** with a **fixed pivot point** on the **holding plate 44** instead of the **lever 11/12** because an upwardly extending **pivot structure** and **fixed pivot point** on the **holding plate 44** would have been understood as being an obvious alternative to a downwardly extending **pivot structure 11p** and **fixed pivot point** on the **pushing lever 11/12**. There were only two possible places to locate a pivot structure that acts between the **lever 11/12** and **holding plate 44**: either on the **lever 11/12**, or on the **holding plate 44**. It would have been obvious to choose either location.

146. As a result, under Petitioner's construction of "pivot structure," the obviously modified Gruber jack's lowering mechanism includes a pivot structure (i.e., a portion of the **pushing lever 11/12** defining a **pivot structure 11p** having a fixed pivot point, or an upwardly extending portion of the **holding plate 44** having

a **fixed pivot point**) connected to the thumb operable **pushing lever 11/12** or the **holding plate 44** (e.g., via integral formation) a distance backward (to the left as shown in Gruber's FIG. 1) from the **hinge attachment 11a**, as recited in this limitation.

147. In sum, regardless of how "pivot structure" is construed, the obviously modified Gruber jack's lowering mechanism includes a pivot structure (e.g., **cam 11p**, a fixed pivot point of a pivot structure replacing cam 11p, or a fixed pivot point **pivot structure** formed on the **holding plate 44**) connected (e.g., via integral formation as was the case in Braselmann) to the thumb operable **pushing lever 11/12** or the at least one **holding plate** a distance backward from the **hinge attachment 11a**. Thus, in the obviously modified Gruber jack, the lowering mechanism comprises "a pivot structure connected to the thumb operable pushing lever or the at least one holding plate a distance backward from the hinge attachment," as recited in this limitation.

11. **Limitation 1(k): “wherein the lowering plate is lifted up and grips the jacking shaft when the thumb operable pushing lever is pushed downwards and pivots around the pivot structure and in turn, pushes the at least one holding plate downwards loosening the at least one holding plate from the jacking shaft and moving the jacking frame down along the jacking shaft a distance until the at least one holding plate reaches an angle that stops the at least one holding plate against the jacking shaft while the lowering plate still grips the jacking shaft”**

148. In the obviously modified Gruber jack, the incremental lowering mechanism works in the way disclosed in Braselmann. Braselmann, FIG. 1 and 4:3-64. As a result, in the obviously modified Gruber jack, Braselmann’s **lowering plate 2** is lifted up and grips Gruber’s **jacking shaft 12** when Braselmann’s thumb operable **pushing lever 11/12** is pushed downwards and pivots around the pivot structure and in turn, pushes Gruber’s **holding plate 44** downwards loosening Gruber’s **holding plate 44** from the **jacking shaft 12** and moving the jacking frame 22/24/30/32/34/48 down along the **jacking shaft 12** a distance until Gruber’s **holding plate 44** reaches an angle that stops Gruber’s **holding plate 44** against the **jacking shaft 12** while Braselmann’s **lowering plate 2** still grips the **jacking shaft 12**. Braselmann, FIG. 1 and 4:3-64.

149. Thus, in the obviously modified Gruber jack, “the **lowering plate [2]** is lifted up and grips the **jacking shaft [12]** when the thumb operable **pushing lever [11/12]** is pushed downwards and pivots around the pivot structure and in turn, pushes the at least one **holding plate [44]** downwards loosening the at least

one **holding plate [44]** from the **jacking shaft [12]** and moving the jacking frame [22/24/30/32/34/48] down along the **jacking shaft [12]** a distance until the at least one **holding plate [44]** reaches an angle that stops the at least one **holding plate [44]** against the **jacking shaft [12]** while the **lowering plate [2]** still grips the **jacking shaft [12]**,” as recited in this limitation.

150. Gruber’s jack, as obviously modified in view of Braselmann, therefore satisfies every limitation in claim 1.

C. Claim 2

151. Challenged claim 2 recites:

2. The lowering mechanism according to claim 1, wherein the rear end of the thumb operable pushing lever and the release lever are positioned beside each other.

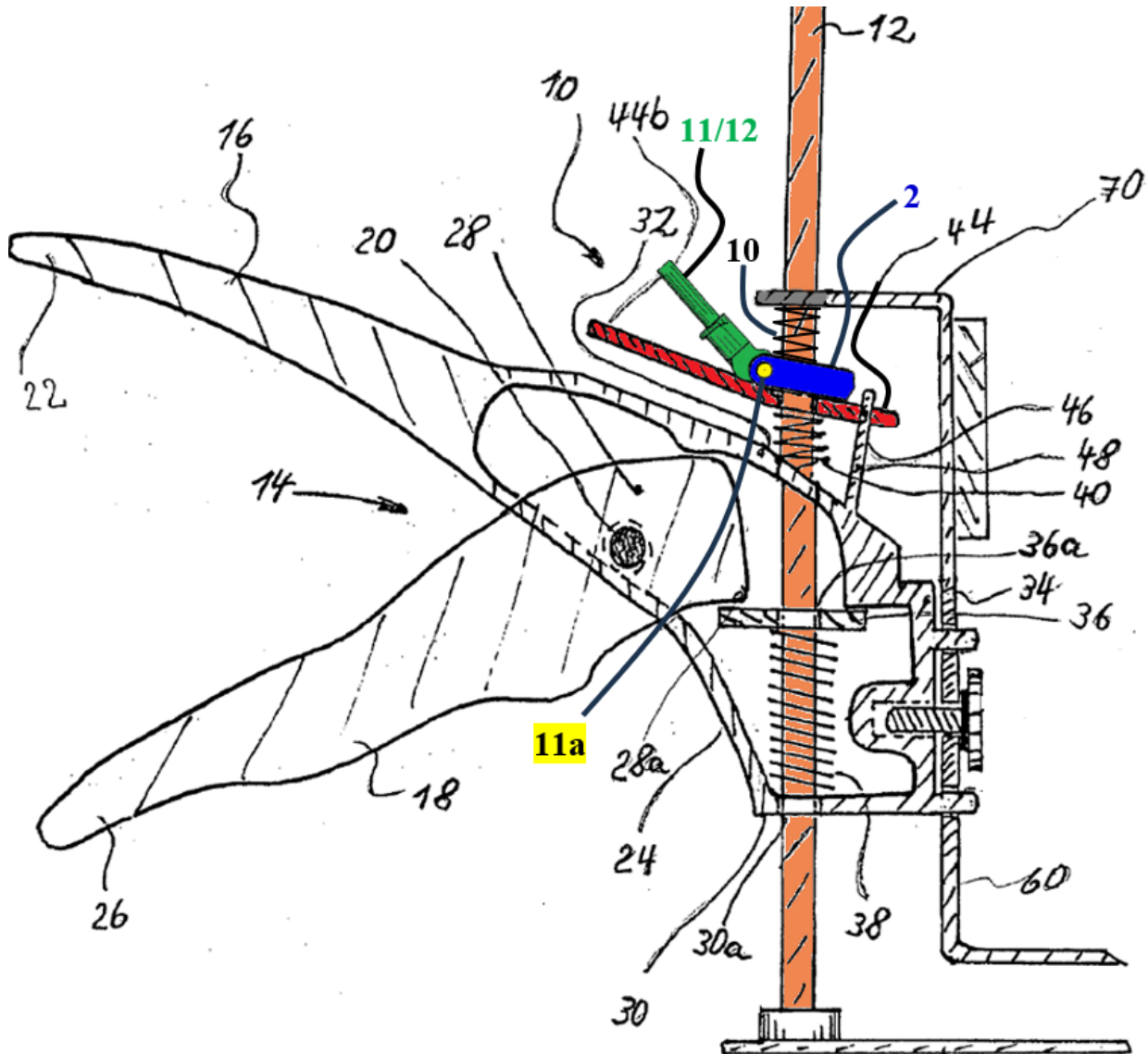
152. The obviously modified Gruber jack satisfies claim 1, as explained above. As explained below, the claim 2 would have been obvious regardless of whether “beside” means “nearby” (as proposed by Patent Owner) or “laterally adjacent” (as I propose).

1. Obviousness If “Beside” Means “Nearby”

153. As explained and shown above regarding limitation 1(g), in the obviously modified Gruber jack, the **pushing lever 11/12** and **release lever 44b** are shaped and positioned for convenient operation by the operator’s thumb, e.g.,

as taught by Gruber. Gruber, FIG. 1 (showing thumb operable release lever 44b immediately below the thumb operable intermittent lowering/pushing lever 50b). To facilitate convenient operation by the operator's thumb, it would have been obvious to position the thumb-operable portions (i.e., the rear ends) of the levers 11/12, 44 nearby each other so the operator's thumb can easily reach both.

154. For example, it would have been obvious in the obviously modified Gruber jack for the thumb operable release lever 44b and **pushing lever 11/12** to be positioned in the same convenient relative locations as the release lever 44b and intermittent lowering/pushing lever 50b were in Gruber's original tool, i.e., so that the thumb operable **pushing lever 11/12** is immediately above the thumb operable **release lever 44b**, as shown below. See Gruber FIG. 1.



Exemplary, Non-Limiting Illustration of Obviously Modified Gruber Jack

155. As a result, the rear end of the thumb operable **pushing lever 11/12** is immediately above the rear end of the **release lever 44b**, such that they nearby each other.

156. The obviously modified Gruber jack would therefore satisfy all limitations in claim 2 if “beside” means “nearby.”

2. Obviousness If “Beside” Means “Laterally Adjacent”

157. It also would have been obvious to have further modified the Gruber jack so that the rear ends of the thumb operable **pushing lever 11/12** and the **release lever 44b** are laterally adjacent each other for safety and/or ergonomic reasons.

158. For example, it would have been obvious to have provided such lateral adjacency by shaping and/or bending the **pushing lever 11/12** and the **release lever 44b** so that their forward over/under relationship transitions into a side-by-side relationship toward and at their rear ends.

159. Safety: A POSITA would have thought that if the **pushing lever 11/12** was above the **release lever 44b** and the operator intended to push on the **pushing lever 11/12** to provide controlled gradual lowering, the operator’s thumb could slip off of the back of the **pushing lever 11/12** and mistakenly push on and release the **release lever 44b**, resulting in an unintended and potentially hazardous complete release of the frame from the **jacking shaft 12**. A POSITA would have thought that such an undesirable result could be avoided by positioning the thumb operable/rear portions of the levers **11/12**, **44b** laterally adjacent each other. Lateral adjacency helps to ensure that if the operator’s thumb slips off the back of the **pushing lever 11/12** while pushing downwardly on it, the downward trajectory of

their thumb will not unintentionally actuate the **laterally adjacent release lever 44b**.

160. Ergonomics: A POSITA would have thought that an over/under relationship might require the operator to strain their thumb to reach the **pushing lever 11/12** if the **release lever 44b** was positioned to be comfortably reached by the operator's thumb, and vice versa. In contrast, a POSITA would have thought that positioning the thumb operable portions of the levers **11/12, 44b** laterally adjacent each other would make it easier for the operator's thumb to reach both levers. In other words, a POSITA would have thought that while grasping Gruber's tool's handle parts 16/22, 18/26, it would have been easier for the operator to move their thumb from side to side (i.e., into and out of the page as shown in Gruber's FIG. 1) to actuate the desired lever **11/12, 44b** than to move their thumb up and forward or down and back to press the desired lever **11/12, 44b**.

161. As a result, it would have been obvious to have modified Gruber's jack such that the rear end of Braselmann's thumb operable **pushing lever 11/12** and the rear end of Gruber's **release lever 44b** are laterally adjacent each other, thereby satisfying claim 2 under Petitioner's construction of "beside" as meaning "laterally adjacent" (or Patent Owner's construction of "beside" as meaning "nearby").

162. In sum, the obviously modified Gruber jack provides “[t]he lowering mechanism according to claim 1, wherein the rear end of the thumb operable **pushing lever [11/12]** and the **release lever [44b]** are positioned beside each other,” as recited in claim 2, under either construction.

163. Gruber’s jack, as obviously modified in view of Braselmann, therefore satisfies every limitation in claim 2.

D. Claim 3

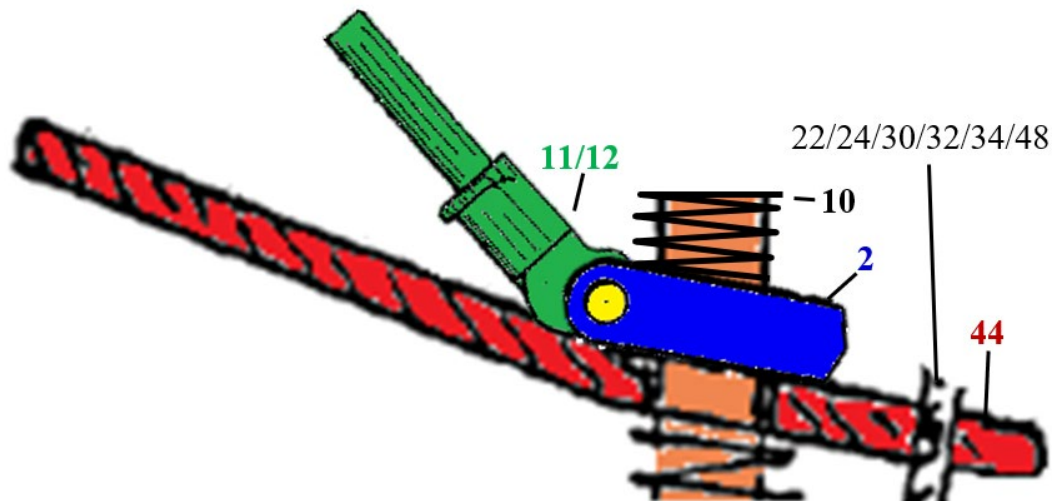
164. Challenged claim 3 recites:

3. The lowering mechanism according to claim 1, wherein the pivot structure is moveable in a rear-front direction and/or in an up-down direction⁵ to regulate the distance of the downward movement of the jacking frame.

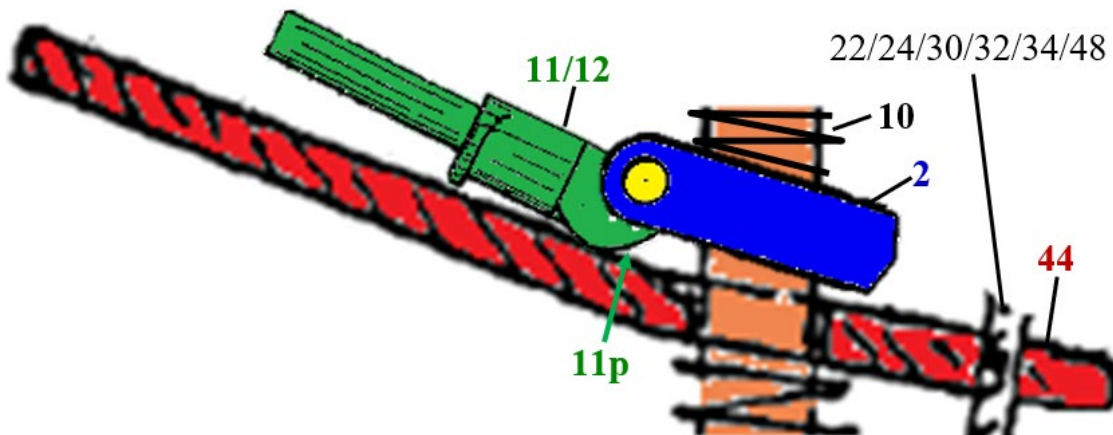
165. As shown below, in the obviously modified Gruber jack, regardless of whether the **pivot structure** is a cam or a structure with a fixed pivot point on the

⁵ This limitation is indefinite because movement in the rear-front and up-down direction is not defined relative to a specific structure. For example, the pivot structure can move up-down relative to the **jacking shaft** without moving up-down relative to the holding plate and/or lowering plate, and vice versa. I interpret claim 3 as best I can despite this indefiniteness.

lever 11/12, the pivot structure is moveable in a rear-front direction (e.g., relative to the **jacking shaft 12**, frame, and **holding plate 2**) as the angles of the **lever 11/12** and **lowering plate 2** change relative to each other and the **jacking shaft 12** when the **lever 11/12** is pressed/actuated, which results in the regulation of the distance of the downward movement of the jacking frame due to the changing angles. Regardless of whether the pivot structure is a **cam 11p** or a structure with a fixed pivot point on the **lever 11/12** or **holding plate 44**, the pivot structure also moves downwardly (e.g., relative to the **jacking shaft 12** and/or **lowering plate 2**) when the **pushing lever 11/12** is activated/pivoted downwardly after the **lowering plate 2** engages the **jacking shaft 12**. The extent of downward movement of the pivot structure directly regulates the extent of downward movement of the **lever-11/12**-contacting portion of the **holding plate 44** because they are in contact with each other, which in turn regulates the distance of the downward movement of the jacking frame connected to the **holding plate 44**.



Non-Actuated State



Actuated State

166. As shown above, for example, the extent of rightward and downward movement of the **pivot structure 11p** during actuation causes and regulates the distance of downward movement of the contacting **holding plate 44** and connected jacking frame 22/24/30/32/34/48. As explained above, this makes the lowering mechanism adjustable, since the operator can adjust the extent of downward

movement of the frame 22/24/30/32/34/48 by adjusting the extent to which the operator pivots/actuates the **pushing lever 11/12** with its connected **pivot structure 11p**.

167. In sum, the obviously modified Gruber jack provides “[t]he lowering mechanism according to claim 1, wherein the pivot structure is moveable in a rear-front direction and/or in an up-down direction to regulate the distance of the downward movement of the jacking frame,” as recited in claim 3. Gruber’s jack, as obviously modified in view of Braselmann, therefore satisfies every limitation in claim 3.

E. Secondary Considerations

168. I am not aware of any secondary considerations that would weigh in favor of finding the challenged claims nonobvious.

169. For example, the challenged claims did not solve any long felt but unresolved need. Quite to the contrary, as explained above, Gruber and/or Braselmann already solved the problems to which the challenged claims were directed, e.g., a safer, and/or adjustable incremental lowering mechanism for a lifting jack. For the same reasons, I am not aware of any failure of others to solve the problem identified by the inventor; any unexpected results resulting from the chosen solution, which was known in the art; or any industry recognition or praise regarding this particular claimed invention.

170. I am also not aware of any other secondary considerations that weigh against the obviousness of the challenged claims, for example, commercial success or copying.

171. Even if evidence of secondary considerations existed and had a nexus to the challenged claims, in my opinion, they would be insufficient to overcome the clear obviousness of the challenged claims, as explained above.

XII. CONCLUDING STATEMENTS

172. In summary, I find that a POSITA would have found it obvious to modify Gruber in view of Braselmann to arrive at a device that practices each and every limitation of claims 1-3 of the '473 Patent.

173. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and

the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

A handwritten signature in blue ink, appearing to read 'R. Klopp', is positioned above a horizontal line.

Dated: February 27, 2025

By: _____
Richard W. Klopp, Ph.D., P.E.

Appendices:

A: Curriculum Vitae

B: List of Prior Four Years Testimony Experience

APPENDIX A



Exponent[®]

Engineering & Scientific Consulting

Rich Klopp, Ph.D., P.E., F.A.S.M.E.

Principal Engineer | Mechanical Engineering

Menlo Park

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Professional Profile

Dr. Klopp specializes in mechanical engineering and the mechanics of materials. He has particular expertise in laboratory-based testing, mechanical design, failure analysis and prevention, and manufacturing.

Dr. Klopp's mechanical engineering background includes extensive experience in machining; machinery; mechanisms; analysis of fasteners, gears, and bearings; power generation; mechanical power transmission; optical systems; metrology; hydraulic systems; and fluid handling components. His mechanics of materials background includes extensive experience in fracture mechanics, high strain rate deformation and failure, impact and shock wave loading, mechanical testing and optical measurement methods.

Dr. Klopp has applied his expertise to machine tools, industrial machinery, laser systems, electric and gas utilities, automobiles, trucks, construction equipment, potable, fire protection, and wastewater system components, plumbing, computer equipment, electronic packaging, consumer products, hand and power tools, medical equipment and medical devices, toys, recreational products, railroad tank cars, chemical storage tanks, underground tunnels, armor/antiarmor, and missile defense. Dr. Klopp has studied the mechanical behavior of metals, ceramics, rock, plastics, advanced composites, liquids, and wood.

Dr. Klopp has provided consulting services on matters of industrial problem solving, product recalls, product defect litigation, intellectual property disputes, commercial disputes, national defense, and insurance issues. His consulting relating to intellectual property has included patent infringement and non-infringement analyses, patent invalidity analyses, patent claim construction support, trade secret matters, and technology licensure.

Dr. Klopp is a skilled machinist qualified to set up and operate machine tools such as lathes, milling machines and other shop equipment. His personal machine shop is equipped with a computer numerical control (CNC) vertical machining center, two manual milling machines, two toolroom lathes, grinders, and a wide variety of supporting tooling and equipment. Dr. Klopp routinely uses computer-aided design (CAD) and computer-aided manufacturing (CAM) software. Dr. Klopp is a mentor for the local high school FIRST Robotics team. In addition to mentoring on mechanical design, Dr. Klopp's role includes maintaining, tooling, upgrading, and repairing the school's machine tools and teaching students and other mentors how to use them.

Prior to joining Exponent, Dr. Klopp was a Research Engineer at SRI International and worked as a Research Associate at Brown University. He is a Fellow of the American Society of Mechanical Engineers.

Academic Credentials & Professional Honors

Ph.D., Engineering, Brown University, 1986
Sc.M., Applied Mathematics, Brown University, 1986
Sc.M., Engineering, Brown University, 1984
B.S., Mechanical Engineering, Lehigh University, 1981
Fellow, American Society of Mechanical Engineers, 2019
SRI International Postdoctoral Fellowship
University Fellowship, Brown University
Ingersoll Rand Award
Alfred Stenning Award
Pi Tau Sigma
Tau Beta Pi

Licenses and Certifications

Professional Engineer Mechanical, California, #31530
Professional Engineer, Michigan, #6201069727
Professional Engineer Mechanical, Nevada, #24867
Professional Engineer Mechanical, Texas, #113452
Professional Engineer Mechanical, Washington, #52816

Prior Experience

Research Engineer, SRI International Poulter Laboratory, 1987-1999
Postdoctoral Fellow, SRI International Poulter Laboratory, 1986-1987

Professional Affiliations

Community Service

Mentor to the FIRST Robotics teams at Woodside High School, Woodside, CA.

Affiliations

American Society of Mechanical Engineers (ASME - Fellow)
ASME B5 Technical Committee 52 - Machine Tool Performance
ASME B5 Technical Committee 64 – Linear Positioning

ASM International — American Society for Metals

American Water Works Association

Society of Manufacturing Engineers

Peer reviewer for ASM International Journal of Materials Engineering and Performance

Peer reviewer for Proceedings of the iMechE Part E: Journal of Process Mechanical Engineering

Peer reviewer for ASME 2010 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference(CIE)

Peer reviewer for ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE)

Peer reviewer for ASME 2015 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE)

Peer reviewer for ASME 2015 International Mechanical Engineering Congress and Exhibition (IMECE)

Peer reviewer for American Gear Manufacturers Association (AGMA) 2024 Fall Technical Meeting

Publications

Spak KS, Klopp RW. Traces of bentonite prevent bonding of electrofusion pipeline joints. Pipeline & Gas Journal, pp. 50-52, December 2017.

Klopp RW. Failure analysis of redundant escalator chain pin retention mechanisms. Proceedings of the ASME 2011 International Mechanical Engineering Congress & Exposition (IMECE2011), Denver, CO, ASME, November 11-17, 2011.

Klopp RW, Dugnani R, Edmonds JS. The role of brush spring kinking in a generator flash-over incident. Proceedings, 43rd North American Power Symposium (NAPS2011), Boston, MA, IEEE, August 4-6, 2011.

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Klopp RW, Crocker JE. Dynamic fracture behavior of SCS 6/Ti-15-3 metal-matrix composite. *International Journal of Fracture* 1993; 61(R77-R83).

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Klopp RW, Kirkpatrick SW, Shockey DA. Damage assessment of tank cars involved in accidents: Phase II—modeling and validation. Final Report DOT/FRA/ORD-02/04, Federal Railroad Administration, Office of Research and Development, 2002.

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de Resseguier T, Klopp RW, Seaman L, Kanazawa C, Curran DR. Characterization and modeling penetration of ceramic armor. Final Report to Army Research Office on Contract DAAL03-92-K-0004, February 1995.

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Giovanola JH, Klopp RW, Simons JW, Marchand AH. Investigation of the fracture behavior of scaled HY-130 weldments. SRI International report, SRI International, Menlo Park, CA, 1990.

Book Chapters

Kirkpatrick SW, Klopp RW. Risk assessment for damaged pressure tank cars. In: *Computer Technology*

and Applications, PVP-Vol. 458. ASME, New York, NY, 2003.

Giovanola JH, Klopp RW, Crocker JE, Alexander DJ, Corwin WR, Nanstad RK. Using small cracked round bars to measure the fracture toughness of a pressure vessel steel weldment: A feasibility study. In: Small Specimen Test Techniques, ASTM STP 1329. Corwin WR, Rosinski ST, van Walle E (eds), ASTM, Philadelphia, PA, 1998.

Giovanola JH, Homma H, Lichtenberger M, Crocker JE, Klopp RW. Fracture toughness measurements using small cracked round bars. In: Constraint Effects in Fracture: Theory and Applications, ASTM STP 1244. Kirk M, Bakker A (eds), ASTM, Philadelphia, PA, 1994.

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Presentations and Published Abstracts

Kerans M, Klopp RW. Bentonite contamination in plastic pipe installed by HDD. 2018 Western Regional Gas Conference, Henderson, NV. August 28-29, 2018.

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Invited Lectures

Klopp, RW. Techniques of failure analysis. In: Failure Analysis: The Science of What Went Wrong, ASME Professional Development Seminar/Webinar, Santa Clara, CA, March 23, 2013.

Guest lecturer, Engineering 448 - Electrical Power Systems, San Francisco State University, December 7, 2013.

Klopp, RW. Techniques of failure analysis. In: Failure Analysis: The Science of What Went Wrong, ASME Professional Development Seminar/Webinar, Santa Clara, CA, April 5, 2014.

Project Experience

Intellectual Property

Analyzed semiconductor wafer chemical mechanical polishing patents. Developed opinions relating to enablement and written description.

Characterized thermal strains in ball-grid-array semiconductor packages using Moiré interferometry for an International Trade Commission matter. Prepared interferograms that demonstrated infringement.

Characterized the adhesion between coatings and medicines for an IP dispute involving gel-coated pills.

Analyzed laser surgery fiber optic connector patents for infringement and invalidity. Testified in deposition.

Analyzed claim construction in gemstone laser micro-inscribing equipment patents and then analyzed the patents for infringement and invalidity. Testified in deposition, at a Markman hearing, and at trial.

Demonstrated that a patent on granular pesticide morphology claimed a natural phenomenon.

Analyzed design patent claims to folding pocketknives for functional features. Court adopted sections of expert report in summary judgment ruling of noninfringement.

Performed analysis supporting a successful Daubert motion to exclude reports and testimony relating to testing of handheld power tools for patent infringement. Demonstrated that plaintiff's testing was improper and conclusions based on them lacked sufficient basis.

Analyzed claims for a web-cam support asserted by a Patent Assertion Entity for anticipation and obviousness in light of prior art.

Analyzed linkage motion in fruit-pitting machinery in light of prior art linkages extending back to the time of James Watt and his steam engine.

Analyzed allegations that dimensions and manufacturing methods for sleeve bolts used in aerospace applications were trade secrets. Showed that dimensions easily could be reverse engineered from samples and public standards. Showed that manufacturing methods were commonly known in industry, easily reverse-engineered, and optional methods were known.

Deconstructed a WiFi-connected countertop smart oven and compared the physical parts with CAD files to determine the use of others' proprietary designs deep within the oven.

Demonstrated the detailed, microscopic structure of a high-speed data connector assembly during a trial, using live, unscripted 3D CAD fly-throughs and cross-sectioning.

Analyzed coal pulverizer designs to determine the extent of similarities between competitors' designs and the likelihood that similarities were due to happenstance versus copying.

Machine Tools

Demonstrated the impact strength of CNC lathe guard windows by launching simulated workpieces at them using Exponent's automotive crash rail.

Surveyed a large lathe and identified numerous design and manufacturing defects.

Examined and tested a high-speed milling machine to diagnose and resolve an intermittent control fault.

Analyzed shop-wide machine tool lubrication system failures in light of the design and construction of such systems and oil contamination.

Analyzed the root cause of vacuum workholding failure and high-speed ejection of a workpiece from a CNC milling machine enclosure.

Assessed a manufacturer's and operator's care and use of a large engine lathe in view of industry standards of care and use. Assessed the design of the lathe's safety features in view of features on peer machines.

Cranes, Elevators, Escalators, and Mining Equipment

Performed a critical safety assessment of the controls for the cableways used to construct the Mike O'Callaghan – Pat Tillman Memorial Bridge (Hoover Dam Bypass), recommended modifications, and performed extensive testing.

Identified a critical design issue with the tower luffing bearings on the Hoover Dam Bypass cableways, and proposed a solution that avoided dismantling the cranes for repairs.

Determined the root cause of escalator chain failures involving lateral movement of connector pins that ostensibly were press-fit and secured with clips.

Assisted in machinery damage assessment after a fire at a facility for processing iron ore into pig iron via direct reduction.

Analyzed the root causes of failures of machinery plant-wide at an iron ore concentrator facility based on computer plant historian records and physical evidence, in light of claims of overall plant under-performance.

Analyzed damage to and repair of the world's largest tunnel boring machine being used to mine a tunnel to replace the Alaskan Way Viaduct in Seattle.

Food Machinery

Analyzed bearing failure in an ice cream freezer that resulted in a recall to address plastic material in the product.

Analyzed the rebuilding and subsequent failure of positive-displacement butter pumps that resulted in a recall to address plastic material in the product.

Analyzed contributions of mechanical component defects to fires in cracker baking and drink powder packaging lines.

Analyzed failures of wine fermenter heat exchangers leading to product contamination with coolant, and failures of wine fermenter tank hardware resulting in product spills.

Medical Devices and Equipment

Developed special machines to test the durability of neonatal warmer support arms and portable ventricular assist device pneumatic hoses.

Developed a time-lapsed cinematography technique to characterize micron-level motion of an insulin pump plunger at low dosage rates.

Analyzed the effect on dosage accuracy of insulin pump systems subjected to altitude changes.

Analyzed the collapse failure of an endoscope support arm during brain surgery, and collapse failure of a medical bed during eye surgery.

Water Supply, Wastewater, Natural Gas Piping and Plumbing

Determined that hydraulic jump due to improperly configured waste piping in a 42-story hotel/condominium building was the root cause of sewer backups.

Performed successful field testing of a large sewer line bladder plug in a remote location, coordinating with contractors sight-unseen.

Investigated numerous instances of cracking failure of enameled steel bathtubs used in hotels.

Tested the effect of out-of-tolerance polyethylene gas pipe on the integrity of a wide range of coupling methods.

Determined that water hammer associated with rapid closing of a fire hydrant was the root cause of underground pipe joint failures.

Led a multi-year, multi-million-dollar study on the design, manufacture, and maintenance of fire hydrants and the effect of different food-grade greases on corrosion of the valve operating mechanism.

Investigated multi-million-dollar hospital flood. Determined root cause was failure of ductile iron pipe bell and spigot joints due to lack of axial restraint. Identified actions by the designers, plumbers, and inspectors that, in combination, created conditions leading to the failure.

Investigated the root cause of erosion-corrosion failures of copper piping in a condominium complex with a hybrid domestic/hydronic hot water circulating system. Developed a flow model to demonstrate that the system could function correctly when properly balanced.

Successfully performed laboratory testing to replicate the slow crack growth field failure of a high-density polyethylene (HDPE) water main fitting at a fusion weld.

Investigated the root cause of electrofusion saddle fitting field failures and replicated failures in the laboratory.

Performed testing of gas distribution valves according to consensus standards, in order to qualify the valves for a public utility application.

Automotive Technology and Engines

Analyzed the depreciation of peer brands and models of cars in light of recall publicity.

Developed an analytical model for the behavior of truck power steering systems under impact conditions.

Determined the root cause of cylinder liner cracking in Fairbanks-Morse opposed-piston Diesel and gas engines.

Determined the root cause of the catastrophic failure of a Caterpillar marine engine.

Determined that repeated crankshaft fatigue failures in automobile engines used in an industrial application were due to vibrations peculiar to four-cylinder engines.

Determined the root cause of the catastrophic failure of a state-of-the-art piston engine powered by anaerobic digester gas at a wastewater treatment facility.

Consumer Products

Tested window shade cord strangulation safety release devices as part of a Consumer Product Safety Commission (CPSC) inquiry.

Authored proposed Window Covering Manufacturers Association test standards for roll-up window coverings (shades). Standards are being revised to incorporate tests for cord release devices intended to reduce risk of child strangulation.

Analyzed existing and improved designs for pocketknife safety latch mechanisms as part of a CPSC inquiry.

Analyzed the design and manufacturing of tract home air conditioner coils in light of allegations of premature failure due to corrosion.

Tested automotive service jacks and jack stands according to industry consensus standards and representative misuse. Subjected jack stands to gross overload until failure, showing that a hypothesized failure event was inconsistent with facts.

Electricity Generation and Energy Transport

Determined the cause of malfunction of a generator brush spring mechanism that led to a flashover event and outage.

Analyzed the catastrophic over-speed failure of a steam turbine generator due to the combination of trip valve oxidation and governor valve wear.

Identified the root cause of gas turbine compressor blade damage in sister turbines based on physical evidence inspection, finite element analysis, and review of operating records.

Analyzed weld cracking due to vibration-induced fatigue that led to a flashover event in a steam turbine generator. Subsequently assessed the efficacy of tuning masses added to the generator housing to reduce vibration amplitudes.

Performed ISO 281 bearing capacity and life analysis for wind turbine main rotor bearings, considering bearing clearances and preloads.

Determined the failure of a steam turbine babbitt bearing was due to insufficient cooling and turning gear rotation following emergency shutdown.

Consulted on the analysis and repair of a steam turbine generator that was significantly damaged by an over-speed event and subsequent thermal shock.

Analyzed the root cause of lubrication system failure and ensuing damage in an 8,000-horsepower gas transmission turbo-compressor. Evaluated near-miss of a catastrophic gas explosion due to overheated rotating components in the presence of leaked gas. Provided recommendations for a simple hardware upgrade that would have mitigated the lubrication failure risk.

APPENDIX B

Deposition/Trial Testimony

Deposition and trial testimony of Richard W. Klopp, Ph.D., P.E., over the past four years.

Depositions

Walmart Inc., Petitioner, v. Caravan Canopy International, Inc., Patent Owner. United States Patent and Trademark Office, Patent Trial and Appeal Board, IPR2020-01026, July 30, 2021.

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