

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOPP & SCREED S.A.,
Petitioner,

v.

SOMERO ENTERPRISES, INC.,
Patent Owner.

Case IPR2024-00051
U.S. Patent No. 8,038,366

DECLARATION OF THOMAS S. BREIDENBACH

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I, Thomas S. Breidenbach, declare as follows:

I. INTRODUCTION

1. I have been retained by Morgan Lewis & Bockius LLP on behalf of Topp & Screed S.A. (“Topp & Screed” or “Petitioner”), as an independent expert in this proceeding before the Patent Trial and Appeal Board (“PTAB” or “Board”). I understand that Topp & Screed is requesting that the Board institute an *inter partes* review (“IPR”) proceeding of U.S. Patent No. 8,038,366 (“’366 Patent”) (Ex-1001), currently assigned to Somero Enterprises, Inc. (“Somero,” “Patent Owner,” or “PO”).

2. I am not and have never been an employee of Topp & Screed. I am being compensated at my usual and customary rate of \$350 per hour. No part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding.

3. I have been asked to study and provide my independent analysis of the technology claimed in, and the patentability or unpatentability of, claims 1-15 of the ’366 Patent. I have also been asked to consider the state of the art and prior art available as of the ’366 Patent’s earliest potential priority date, which I have been informed is July 26, 2004. Based on my experience, knowledge of the art at the

relevant time, and analysis of the prior art discussed herein, it is my opinion that claims 1-15 of the '366 Patent are unpatentable for the reasons provided below.

II. QUALIFICATIONS

4. My experience and education are detailed in my curriculum vitae, which is attached as Appendix A to this Declaration. I summarize some of the relevant information regarding my CV as follows.

5. I received a Bachelor of Science degree in Mechanical Engineering from the University of North Dakota in 1989.

6. From March 1995 to November 2000, I was a Sr. Mechanical Design Engineer at Caterpillar Paving Products, Inc., Brooklyn Park, MN. During the development of an experimental Caterpillar paving screed, I led the mainframe and adjustment system development efforts, including the design, analysis, prototype build, and testing of these features. I also invented a Linkage Mechanism for an Extendable Asphalt Paver Screed, implemented on this Caterpillar paving screed, and U.S. Patent No. 5,924,819 was issued to this invention.

7. I have additional experience with high-performance linkage and actuations systems from my work at Boeing Commercial Airplanes, Seattle, WA and Tetra Pak Gable Top Systems, Inc., Minneapolis, MN. At Boeing, I gained such experience supporting the 737 landing gear systems and in developing calibration hardware for force measuring instruments at the Boeing Aerodynamic Laboratory

(i.e., Wind Tunnel). At Tetra Pak, I led the development of a Carton Transfer Unit, and U.S. Patent Nos. 7,059,466; 7,077,259; & 7,080,726 were issued to these inventions.

8. I was also involved in the development of Caterpillar's AP-655C Paving Machine, which included a screed system. I was involved in system development efforts, including the design, analysis, prototype build, and testing of the AP-655C.

9. I was also involved in the development of a kickback protection device for use on Caterpillar's cold planer machines (e.g., PM465 & PM565). This device was further integrated with a control system for automatically controlling elevation of the cold planer's cutting plane. U.S. Patent 5,879,056 was issued to this invention.

10. I have further worked as a mechanic on mobile equipment at my father's repair shop and farm.

11. I am currently a (mechanical) Professional Engineer (P.E.) registered in the States of Washington and Minnesota.

12. Based on my experience and education, I believe that I am qualified to opine as to the knowledge and level of skill of one of ordinary skill in the art at the time of the alleged invention of the '366 Patent, as well as the state of the art at that time.

III. METHODOLOGY AND MATERIALS CONSIDERED

13. I have relied upon my education, knowledge, and experience with construction and screeding systems, as well as other materials discussed in this declaration in forming my opinions.

14. For this work, I have been asked to review the '366 Patent including the specification and claims, the '366 Patent's prosecution history (file history). In developing my opinions related to the '366 Patent, I have considered the materials cited herein, including those items itemized in the Exhibit Table below.

Ex-1001	U.S. Patent No. 8,038,366 (“’366 Patent”)
Ex-1002	Prosecution History of the '366 Patent
Ex-1003	U.S. Patent Publication No. 2003/0068200 (“Quenzi”)
Ex-1004	European Patent Application EP0743408B1 (“Jochems”)
Ex-1005	U.S. Patent No. 6,022,171 (“Munoz”)
Ex-1006	Declaration of Thomas S. Breidenbach, including his curriculum vitae as Appendix A
Ex-1007	U.S. Patent No. 5,129,803 (“Nomura”)
Ex-1008	U.S. Patent No. 4,655,633 (“Somero”)
Ex-1009	U.S. Patent No. 7,195,423
Ex-1010	U.S. Patent No. 7,407,339
Ex-1011	U.S. Patent No. 7,854,565
Ex-1012	U.S. Patent No. 4,930,935

Ex-1013	U.S. Patent No. 6,129,481
Ex-1014	U.S. Patent No. 6,152,647
Ex-1015	U.S. Patent No. 6,183,160
Ex-1016	U.S. Patent No. 6,588,976
Ex-1017	U.S. Patent No. 6,623,208
Ex-1018	AMERICAN CONCRETE INSTITUTE, GUIDE FOR CONSOLIDATION OF CONCRETE (ACI Committee 309, ACI309R-96 1997)
Ex-1019	ELSEVIER SCIENCE LTD., ADVANCES IN BUILDING TECHNOLOGY 679 (M. Anson et al. eds. Volume 1 2002)
Ex-1020	<i>Screed</i> , <u>Merriam-Webster's Collegiate Dictionary</u> (11th Ed. 2003)

IV. LEGAL STANDARDS

15. I am not an attorney. In forming my opinions and considering the subject matter of the '366 Patent and its claim in light of the prior art, I am relying on certain legal principles that counsel in this case explained to me. My understanding of these concepts is summarized below.

16. As explained to me, a determination of patent validity involves the following: First, the claim language must be construed to determine its scope and meaning. In that regard, I understand that statements made about certain claim terms during the prosecution history of a patent in the same family as the '366 Patent can have an effect on the interpretation of the same terms used in the Asserted Patent. Second, the construed claim language must be compared with the prior art to

determine whether the claim is valid. I understand that earlier publications and patents may act to render a patent unpatentable for one of two reasons: (1) anticipation, and (2) obviousness.

A. Claim Construction

17. I am informed that the United States Patent and Trademark Office interprets the claims of an unexpired patent using the same claim construction standard that would be used to construe the claim in a United States federal court, including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention.

18. I am informed that this inquiry focuses on the words of the claims themselves, and that the words of the claims are generally given their ordinary and customary meaning as understood by a POSITA in light of the specification and the prosecution history pertaining to the patent. I have been informed that a POSITA is presumed to have read the patent’s specification and prosecution history to better understand the context of the invention. I understand, however, that claim terms are generally not limited by the embodiments described in the specification.

19. I am informed that in addition to the claims, specification, and prosecution history, other evidence may be considered to ascertain the meaning of claim terms, including textbooks, encyclopedias, articles, and dictionaries. I have

been informed that this other evidence is often less significant and less reliable than the claims, specification, and prosecution history.

20. I am also informed that where multiple patents derive from the same parent application, such that they share the same written descriptions and use many common terms, such common terms should be interpreted consistently across all those patents. However, I understand that matter disclosed for the first time in a later-filed application should not be used to construe claim terms appearing in an earlier application, even if the claim terms are common.

B. POSITA Standard

21. I am informed that a POSITA is a hypothetical person skilled in the art, not a judge, a layperson, a person skilled in the remote arts, nor a genius in the art at hand. Relevant factors in determining the level of ordinary skill in the art include the educational level of the inventor and those who work in the field. Other considerations include various prior art approaches employed in the art, types of problems encountered in the art, the rapidity with which innovations are made, and the sophistication of the technology involved. Not all considerations may be present in every case, and the education level of inventors is not itself conclusive. This person of ordinary skill is also a person of ordinary creativity, not an automaton.

C. Anticipation

22. I am informed that a patent claim is invalid if the claimed invention is anticipated. For a claimed invention to be invalid because of anticipation, all of the elements of the claims must be found in a single prior art reference.

23. I am informed that to establish anticipation, a prior art reference must disclose every element of the patent claim at issue, either explicitly or inherently, arranged or combined in the same manner as the patent claim. In addition, the anticipating reference must enable a POSITA to make and use the invention without undue experimentation.

24. I am informed that a reference that does not expressly disclose a claim limitation may nevertheless “inherently” disclose the limitation if the matter not expressly disclosed is necessarily present in the system or method described in the reference. I also understand that the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

D. Obviousness

25. I am informed that a patent claim may be invalid because it was obvious in view of the prior art. In particular, I am informed that although the prior art may not expressly or inherently disclose every element of a patent claim arranged or combined in the same manner as claimed, the differences between the prior art and

the patent claim may nevertheless be found to have been obvious to a POSITA at the time of the alleged invention. I am informed that obviousness may be based on a single prior art reference or a combination of multiple prior art references. I am also informed that when multiple pieces of prior art are being combined in an obviousness inquiry, the determination requires considering whether a POSITA would have been motivated to combine the teachings of the prior art, and whether the POSITA would have had a reasonable expectation of success in doing so.

26. I am informed that the ultimate conclusion of whether a claim is obvious is based on the consideration of several factors (which I have been informed are commonly known as the “Graham factors”), including: (1) the level of ordinary skill in the art that someone would have had 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 claimed invention and the prior art; and (4) any secondary indications of obviousness or non-obviousness.

27. In determining obviousness, I am informed that evidence of objective indications of non-obviousness (also known as “secondary considerations”) is also considered and that this is to be done before any ultimate determination of obviousness is made. I have been advised that the following factors may be considered as secondary considerations: (1) a long-felt and unmet need in the art for the invention; (2) failure of others to achieve the results of the invention; (3)

commercial success of the invention; (4) copying of the invention by others in the field; (5) whether the invention was contrary to accepted wisdom of the prior art; (6) expression of disbelief or skepticism by those skilled in the art upon learning of the invention; (7) unexpected results; (8) praise of the invention by those in the field; and/or (9) commercial take-up or acquiescence (licensing).

28. I also am informed that, in order for secondary considerations to be relevant to the issue of obviousness, a patentee must establish a clear connection or link (“nexus”) between such secondary considerations and the claimed invention. Stated one way, this means that the secondary consideration is sufficiently derived from merits of the claimed invention, rather than other factors. I am informed that if the patentee comes forward with a showing of one or more secondary considerations and the required nexus, then the burden of coming forward with evidence in rebuttal shifts to the party challenging the patent. Additionally, a party asserting invalidity may come forward with evidence of the absence of such secondary considerations or nexus. Further, it is my understanding that even though evidence of secondary considerations must be weighed against the obviousness evidence, this does not always overcome a strong showing of obviousness.

V. SUMMARY OF THE GROUNDS

29. I understand that Petitioner challenges the validity of claims 1-15 of the '366 Patent. In particular, I understand that Petitioner asserts the following grounds for challenging the claims of the '366 Patent:

Ground	Summary
1	Claims 1-9 are anticipated by Quenzi (Ex-1003)
2	Claims 1-9 are obvious over Quenzi (Ex-1003)
3	Claims 1-15 are obvious over Jochems (Ex-1004) in view of Quenzi (Ex-1003)

VI. BACKGROUND OF THE '366 PATENT

A. Priority

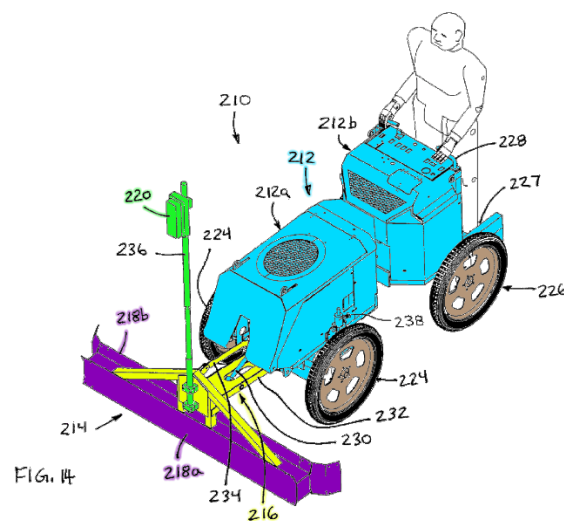
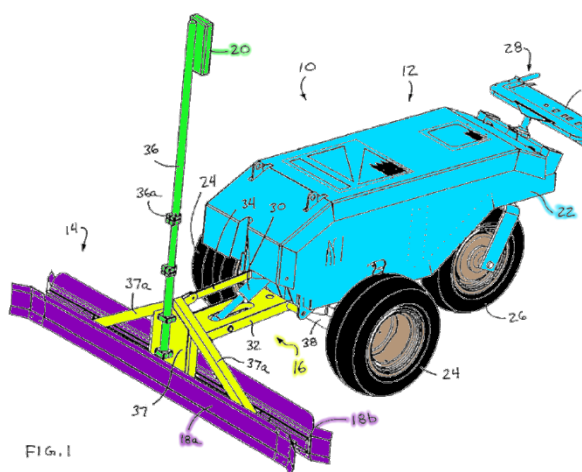
30. The '366 Patent issued on October 18, 2011, from an application filed on November 22, 2010. Ex-1002, 0141. I understand that the '366 Patent is a continuation of three earlier non-provisional utility applications that resulted in the earlier patents: **(1)** U.S. Patent No. 7,195,423 (Ex-1010); **(2)** U.S. Patent No. 7,407,339 (Ex-1011); and **(3)** U.S. Patent No. 7,854,565 (Ex-1012). I understand that the '366 Patent also claims the benefit of three earlier provisional applications: **(1)** Application No. 60/521,950, filed on July 26, 2004; **(2)** Application No.

60/619,672, filed on October 18, 2004; and (3) Application No. 60/666,672, filed on March 30, 2005.

31. Given the priority claims, the earliest possible priority date that could be claimed by Patent Owner is July 26, 2004. Each of the prior art discussed herein was published more than one year before July 26, 2004. As such, I understand that it is unnecessary to consider whether any claim of the '366 Patent is only entitled to one of the later priority dates.

B. Overview of the '366 Patent

32. The '366 Patent discloses and claims a screeding device for striking off uncured concrete surfaces. Ex-1001, 1:21-23. It discloses various embodiments of screeding devices, including walk-behind machines (e.g., Figure 1) and those that can be ridden by an operator (e.g., Figure 14).

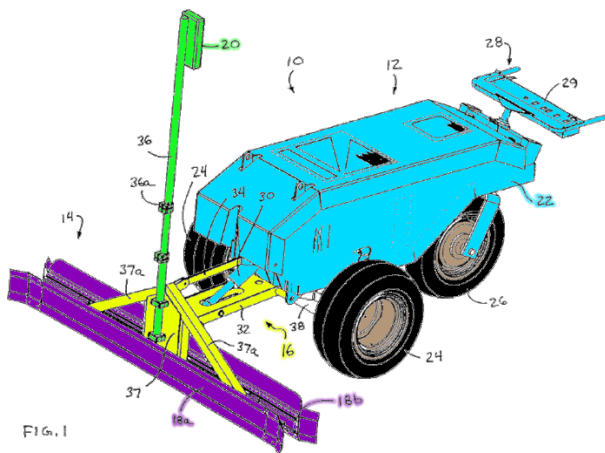


Ex-1001, Fig. 1

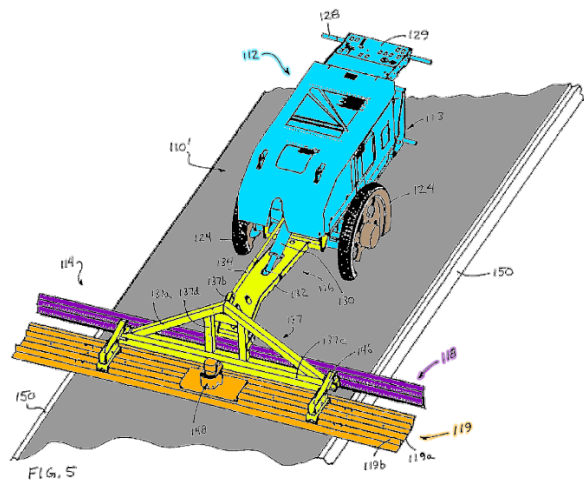
Ex-1001, Fig. 14

33. Each embodiment generally comprises a wheeled base unit 12, 212 having a frame 22, 222 (blue) and a plow assembly 14, 214, having plow blades 18, 218 (purple) adjustably mounted to the frame via mechanical linkage 16, 216 (yellow). Ex-1001, 2:6-12. The plow assembly is vertically adjustable with respect to the frame to strike off the concrete at a desired level or grade. *Id.*, 1:55-63; 3:48-52; 6:15-17. The plow assembly is adjustable responsive to a laser reference system using laser receiver 20, 220 (green) and may include a vibrating member to compact and smooth the concrete at the desired grade as established by the plow. Ex-1001, 1:63-67; 6:22-25; 20:37-40. The purpose for mounting the plow/vibrating member to the frame in an adjustable way is so the plow assembly can be adjusted vertically to establish the desired level or grade. Ex-1001, 1:60-62; 2:1-6; 2:12-15; 2:37-39; 3:17-20; 3:48-52.

34. The challenged claims are directed to a particular wheeled screeding device. Figures 1 and 5 illustrate exemplary embodiments, shown below:



Ex-1001, Fig. 1



Ex-1001, Fig. 5

35. The device comprises a wheeled base unit 12 and an adjustably mounted plow head or assembly 14, 114. Ex-1001, 6:15-18. The wheeled base unit 12 includes a frame 22 supported by wheels 24, 26. Ex-1001, 6:28-30. The plow assembly 14 includes a strike-off member or plow (Fig. 1 shows forward-facing plow 18a and rearward-facing plow 18b). Ex-1001, 6:18-20. The plow assembly 14 is adjustably mounted to the base unit 12 (Ex-1001, 6:15-18) through a lift mechanism 16 and hydraulic actuator 30 to form a vertically movable mechanical linkage together with lift arm 32 and upper tie rod 34. Ex-1001, 6:62-67. The grade of the plow assembly 14 may be adjusted relative to the base 12 in response to a signal from a laser receiver 20. Ex-1001, 6:22-24. In some embodiments, the plow assembly 14 may be replaced with a screeding device 114, which includes a plow or

strike-off member 118 and a vibrating member 119, shown in Figure 4. Ex-1001, 9:45-52. The vibrating member 119 is dragged or pulled behind the plow 118 while a wheeled unit 112 is moved forwardly over and through the uncured concrete. Ex-1001, 12:32-34. (The sense of “forward” and “rearward” may vary between embodiments.)

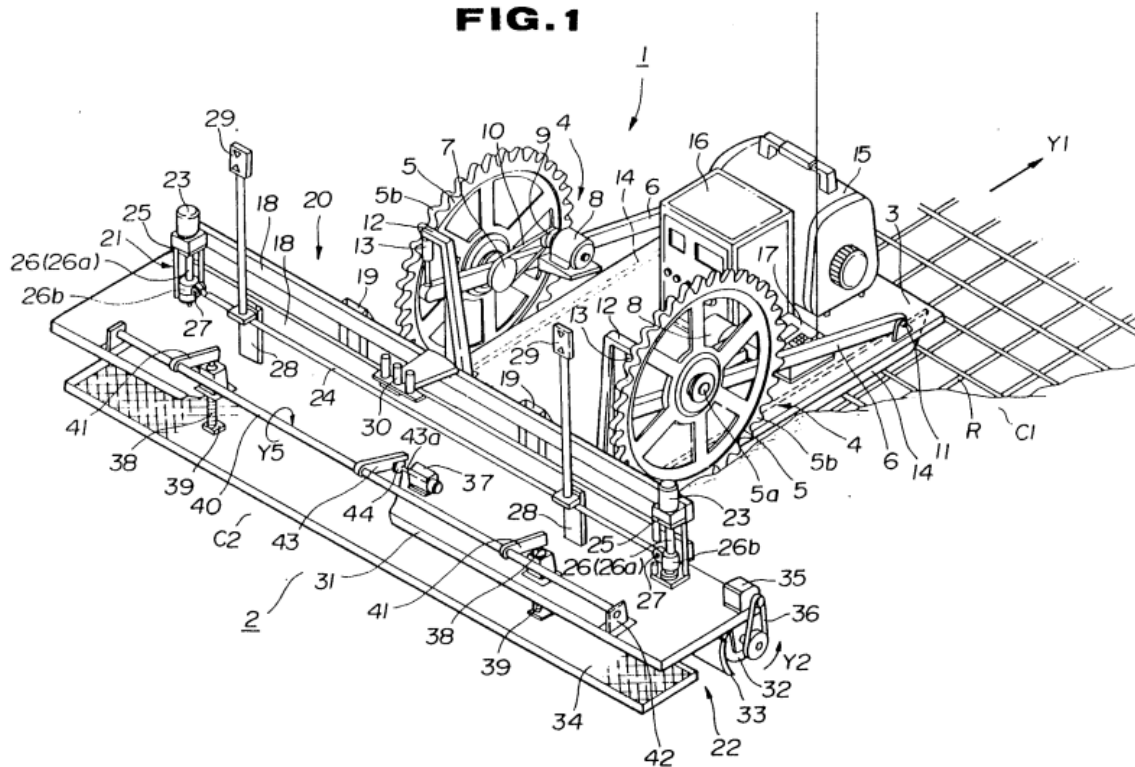
C. Prosecution History

36. Application claims 1-20 ultimately issued without amendment. Claims 1-9 were initially rejected under 35 U.S.C § 102(b) as being anticipated by U.S. Patent No. 5,129,803 to Nomura et al. (“Nomura”) (Ex-1007), and claims 10-15 were rejected as obvious over Nomura in view of Munoz (Ex-1005).¹ Ex-1002 at 094-095 (First Office Action).

37. As shown in Figure 1 below, Nomura discloses a wheeled concrete screeding device (concrete leveling machine 1) having a screeding head (leveling unit 2) including a grade setting device (leveling section 22) having a plow (leveling auger 32 and leveling blade 33) and a vibrating beam (tamper 34) secured to a

¹ The remaining claims 16-20 were rejected over Nomura in view of a separate piece of prior art U.S. Patent No. 5,607,205 to Burdick. *See* Ex-1002 at 95. However, I understand that claims 16-20 are not at issue in this IPR.

support frame 20, arranged at the rear of platform 3. Ex-1007, 3:45-49; 4:38-44; 5:59-62.



In rejecting claims 1-9, the Examiner noted from Nomura:

“Further wherein said vibratable member (34) is adjustably attached at a rearward end of said grade setting assembly, as at (28), such that said vibratable screed (34) at least partially floats behind said plow (33) on the struck-off concrete surface, as said wheeled unit is in [sic] moving through said concrete (C1). See Cols. 3-4; Figs. 7-14.”

Ex-1002 at 094 (First Office Action).

38. In an effort to overcome Nomura, the Applicant argued that Normura’s vibratable member (tamper 34) is not “at least partially *floating* behind the grade

establishing element *on the struck-off surface*” and is not “*at least partially supported at the struck-off surface* of the uncured concrete as the wheeled unit is moved in the screeding direction.” Ex-1002 at 116-118 (Applicant’s Response to First Office Action) (emphasis in original). Claim 1 was allowed based on these arguments. However, the ’366 Patent incorporates by reference and relies upon the prior art Quenzi (discussed below) as providing written description support for how the screed head “generally floats on or is supported by the concrete surface.” Ex-1001, 20:45-54. As such, the Applicant appears to have misled the Examiner regarding the patentability of its basis for distinguishing the prior art. Regardless, in my opinion, the Examiner clearly erred by failing to consider the anticipatory disclosures of Quenzi against claims 1-9.

39. In rejecting claim 10, the Examiner also found that U.S. Patent No. 6,022,171 issued to Munoz (Ex-1005) teaches a similar, laser-guided screeding machine having a 4-wheel primary mover and asserted that it would have been obvious to a POSITA to provide the screeding machine of Nomura with the 4-wheel prime mover as taught by Munoz. *See* Ex-1002 at 095 (First Office Action). In response, the Applicant made no argument regarding any failure of the combination to teach the limitations directed to wheels, or a plow, or an auger, or a screeding structure, or vertical adjustability, but rather argued only that Munoz does not teach “an *articulatable* wheeled unit (such as claimed in claims 11-15), which includes a

front frame portion that is *articulatable* relative to a rear frame portion *about a generally vertical pivot axis.*” Ex-1002 at 119 (Applicant’s Response to First Office Action) (emphasis in original). A Notice of Allowance issued shortly thereafter. Ex-1002 at 127. However, I note that claim 10 does not require an articulatable wheeled unit. Further, as described below, other prior art (such as Jochems) clearly disclosed an articulatable wheeled unit, as claimed. In my opinion, the Examiner clearly erred by not looking to this other prior art in response to Applicant’s argument, and failing to recognize that Quenzi could readily be combined with Jochems to teach all of the requirements of claims 10-16.

40. In short, the Examiner only ever applied Nomura as a base reference to claims 1-15 and failed to consider more relevant prior art references that were of record, such as Quenzi and Jochems. Such prior art references do not suffer from the same purported deficiency that Nomura had (i.e., that the tamper level was set downward by spring force and upward via actuator rotation force), so the challenged claims should not have issued over them had the Examiner adequately considered Quenzi and Jochems. In my opinion, these oversights by the Examiner were material errors.

D. POSITA Definition

41. As discussed, the ’366 Patent describes and claims machinery for concrete screeding and finishing. This type of machinery is similar in many ways

to other types of construction equipment, which often use motorized wheeled equipment for improving the efficiency of some physical action (e.g., digging, scraping, leveling, moving, lifting, pushing, and the like). These types of equipment routinely utilize wheeled support frames, mechanical couplings, adjustable linkages, sensors, and the like to achieve the goal.

42. Based on my consideration of the '366 Patent and the relevant factors in determining the level of ordinary skill in the art (discussed above), I believe a POSITA would have had an undergraduate education in mechanical, civil, construction, or industrial engineering, or a related field and at least two years of experience in research, design, development, testing, or use of mechanical or industrial equipment. These are not hard and fast requirements as, for example, additional education may substitute for experience, or additional experience may substitute for education.

VII. CLAIM KEY

43. Claims 1-15 of the '366 Patent are set forth below with a numbering scheme in order to facilitate discussion thereof through this declaration.

No.	Claim Limitations
1[preamble]	A wheeled concrete screeding device for screeding uncured concrete, said wheeled concrete screeding device comprising:
1.1	a wheeled unit having at least two wheels for movably supporting a frame portion of said wheeled unit,
1.2	said frame portion having a forward end and a rearward end,

No.	Claim Limitations
1.3	wherein said wheeled unit is movable through uncured concrete in a screeding direction;
1.4	a screed head supported at said rearward end of said frame portion and following behind said wheeled unit when said wheeled unit is moved in said screeding direction,
1.5	said screed head comprising a grade establishing element and a vibratable member;
1.6	wherein said grade establishing element is generally vertically adjustable responsive to a signal from a laser receiver disposed at said screed head to establish a struck-off surface of the uncured concrete at a desired grade when said wheeled unit is moved in said screeding direction; and
1.7	wherein said vibratable member is adjustably attached at a rearward end of said grade establishing element
1.8	and wherein said vibratable member at least partially floats behind said grade establishing element on the struck-off surface of the uncured concrete and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction.
2	The wheeled concrete screeding device of claim 1, wherein said grade establishing element comprises a plow member.
3	The wheeled concrete screeding device of claim 2, wherein said grade establishing element comprises an auger disposed behind said plow member, and wherein said auger is generally vertically adjustable with said plow member.
4	The wheeled concrete screeding device of claim 3, wherein said rearward end of said grade establishing element comprises a rearward end of said auger and wherein said vibratable member is adjustably attached at said rearward end of said auger.
5	The wheeled concrete screeding device of claim 1, wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element.
6	The wheeled concrete screeding device of claim 5, wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element via a pair of links that are pivotally attached at said rearward end of said grade establishing element.

No.	Claim Limitations
7	The wheeled concrete screeding device of claim 5, wherein said vibrating member is pivotally attached at at least one bracket at said rearward end of said grade establishing element.
8	The wheeled concrete screeding device of claim 7, wherein said vibrating member is pivotally attached at said at least one bracket via at least one mounting pin.
9	The wheeled concrete screeding device of claim 7, wherein said vibrating member is securable relative to said at least one bracket to retain said vibrating member at a desired attack angle as said vibrating member is moved in said screeding direction behind said grade establishing element.
10	The wheeled concrete screeding device of claim 1, wherein said wheeled unit comprises a pair of front wheels supporting a front frame portion and a pair of rear wheels supporting a rear frame portion, wherein said screed head is supported at a rearward end of said rear frame portion.
11	The wheeled concrete screeding device of claim 10, wherein said wheeled unit comprises an articulatable wheeled unit and wherein said front frame portion is articulatable relative to said rear frame portion about a generally vertical pivot axis when said wheeled unit is supported at a generally horizontal support surface.
12	The wheeled concrete screeding device of claim 11, wherein said front frame portion includes a platform at its forward end, and wherein said platform supports an operator of said wheeled concrete screeding device during operation of said wheeled concrete screeding device.
13[preamble]	A wheeled concrete screeding device for screeding uncured concrete, said wheeled concrete screeding device comprising:
13.1	an articulatable wheeled unit having a front frame portion movably supported by front wheels and a rear frame portion movably supported by rear wheels, wherein said front frame portion is articulatable relative to said rear frame portion about a generally vertical pivot axis when said wheeled unit is supported at a generally horizontal support surface, wherein said articulatable wheeled unit is movable through uncured concrete in a screeding direction;

No.	Claim Limitations
13.2	a screed head supported at a rearward end of said rear frame portion so that said screed head follows behind said articulatable wheeled unit when said articulatable wheeled unit is moved in said screeding direction,
13.3	said screed head comprising a grade establishing element and a vibratable member, wherein said grade establishing element comprises a plow member;
13.4	wherein said grade establishing element is generally vertically adjustable relative to said rear frame portion responsive to a signal from a laser receiver disposed at said screed head to establish a struck-off surface of the uncured concrete at a desired grade when said articulatable wheeled unit is moved in said screeding direction;
13.5	wherein said vibratable member is pivotally attached at a rearward end of said grade establishing element, and wherein said vibratable member at least partially floats behind said grade establishing element on the struck-off surface of the uncured concrete and is at least partially supported at the struck-off surface of the uncured concrete as said articulatable wheeled unit is moved in said screeding direction.
14	The wheeled concrete screeding device of claim 13, wherein said grade establishing element comprises an auger disposed behind said plow member, and wherein said auger is generally vertically adjustable with said plow member, and wherein said rearward end of said grade establishing element comprises a rearward end of said auger and wherein said vibratable member is pivotally attached at said rearward end of said auger.
15	The wheeled concrete screeding device of claim 13, wherein said front frame portion includes a platform at its forward end, and wherein said platform supports an operator of said wheeled concrete screeding device during operation of said wheeled concrete screeding device.

VIII. CLAIM CONSTRUCTION

44. I do not believe that any claim term requires explicit construction to resolve the issues addressed in this declaration. Accordingly, I apply the plain and ordinary meaning to each claim term, as that plain and ordinary meaning would have been understood by a POSITA.

45. I have been informed that the '366 Patent was previously asserted against a third party in *Somero Enterprises, Inc. v. Ligchine International Corporation*, Case Nos. 1:20-cv-002356, 4:21-cv-00028 (S.D. Ind. filed September 10, 2020), which was dismissed prior to claim construction. I also understand that the '366 Patent was involved with the following proceedings before the Board: *Ligchine International Corporation v. Somero Enterprises, Inc.*, IPR2021-00490. I have been informed that both proceedings were terminated based on settlement.

46. However, I understand that in that prior IPR proceeding, Ligchine identified three terms as potentially deserving construction: (i) “grade establishing element,” (ii) “vibratable member,” and (iii) “at least partially floats”/“at least partially supported.” IPR2021-00490, Paper 1 at 16-19.

47. Specifically, Ligchine proposed “grade establishing element” should be interpreted under 35 U.S.C. §112, ¶ 6, where the function is to “establish a struck-off surface of the uncured concrete at a desired grade” and the corresponding structure is “a plow and/or an auger disposed behind the plow.” IPR2021-00490,

Paper 1 at 15-17. I have reviewed Ligchine's argument, and generally agree with Ligchine's description of how the term "grade establishing element" is used in the '366 Patent. However, I have been informed that the use of the word "element" in a claim term alone does not necessarily trigger §112, ¶ 6, and thus, it is necessary to consider whether the claims provide sufficient structure for the term despite the term's use of the word "element."

48. Here, Claim 1 recites that the "grade establishing element" is a part of the screed head supported at the rearward end of the screeding device. Ex-1001, Cl. 1. Claim 1 further recites that the "grade establishing element is generally vertically adjustable responsive to a signal from a laser receiver disposed at said screed head to establish a struck-off surface of the uncured concrete at a desired grade when said wheeled unit is moved in said screeding direction." *Id.* Claim 13 recites similar limitations, but also expressly recites that the "grade establishing element comprises a plow member." *Id.*, Cl. 13. Likewise, dependent claims 2, 3, and 14 recite that the grade establishing element comprise a plow member (claim 2) or an auger disposed behind a plow member (claims 3 and 14). *Id.*, Cls. 2, 3, 14. In light of these limitations, as well as my consideration of the term in the context of the invention as whole, it is my opinion that the claims recite sufficient description of what the claimed "grade establishing element" is so as not to trigger §112, ¶ 6. Nonetheless, whether the term is interpreted under §112, ¶ 6, as Ligchine proposed,

is immaterial because, as discussed below, the prior art discussed herein utilizes both a plow and auger.

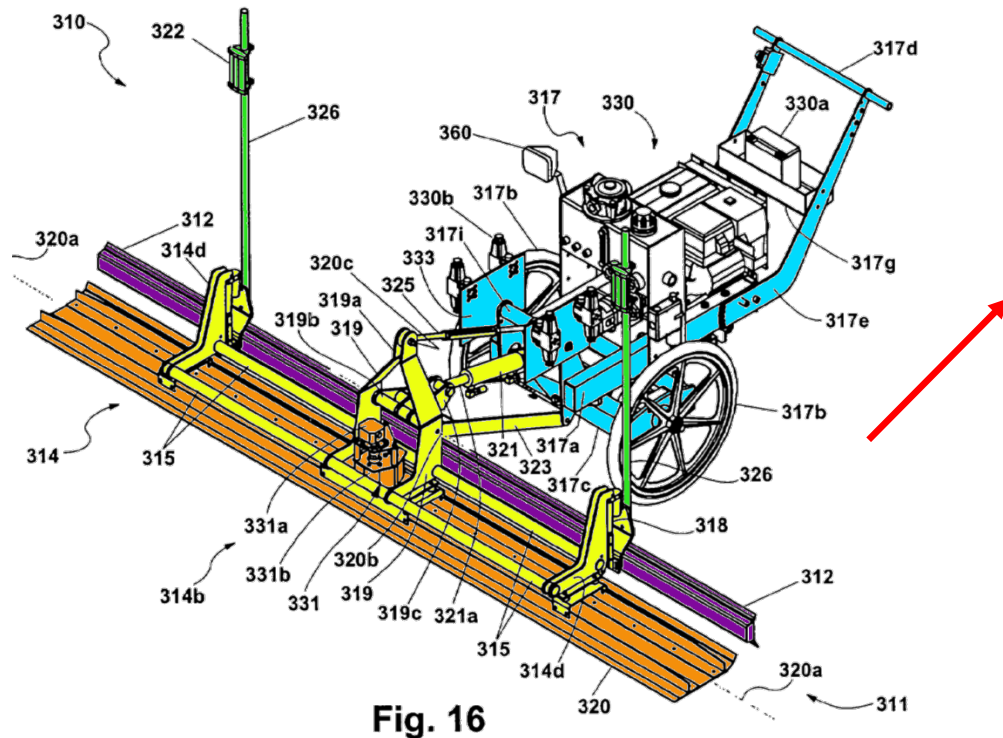
49. Similarly, Ligchine proposed to construe “vibratable member” as “having a flat surface for engaging uncured concrete that is vibrated by a vibratory device,” and to construe “at least partially floats”/“at least partially supported” as “taken together to mean a vibratable or vibrating member that contacts the uncured surface with at least a portion of its weight.” IPR2021-00490, Paper 1 at 17-18. I do not believe it is necessary to construe these terms either given that Ligchine’s proposals have no material effect on my analysis herein. In particular, the prior art and combinations discussed herein use a vibratable beam having a flat surface for engaging uncured concrete that is vibrated by a vibratory device, which Quenzi expressly describes using the same language as the claims, i.e., that it is “partially supported by, or essentially ‘floating’ upon, the uncured concrete surface.” Ex-1003, ¶ 112.

IX. PRIOR ART

A. Quenzi (Ex-1003)

50. Quenzi, entitled “Light Weight Apparatus For Screeding And Vibrating Uncured Concrete Surfaces,” published on April 10, 2003, more than one year prior to the earliest alleged priority date (July 26, 2004) of the ’366 Patent. Quenzi is, therefore, prior art under, at least, 35 U.S.C. §102(b). Quenzi is commonly owned

by the Patent Owner and the later issued version of Quenzi (U.S. Patent No. 6,976,805) was cited in the '366 Patent file history. However, as explained above, the examination was inexplicably silent on its teachings despite its anticipatory nature. Figure 16 (with highlighting added) below is representative.

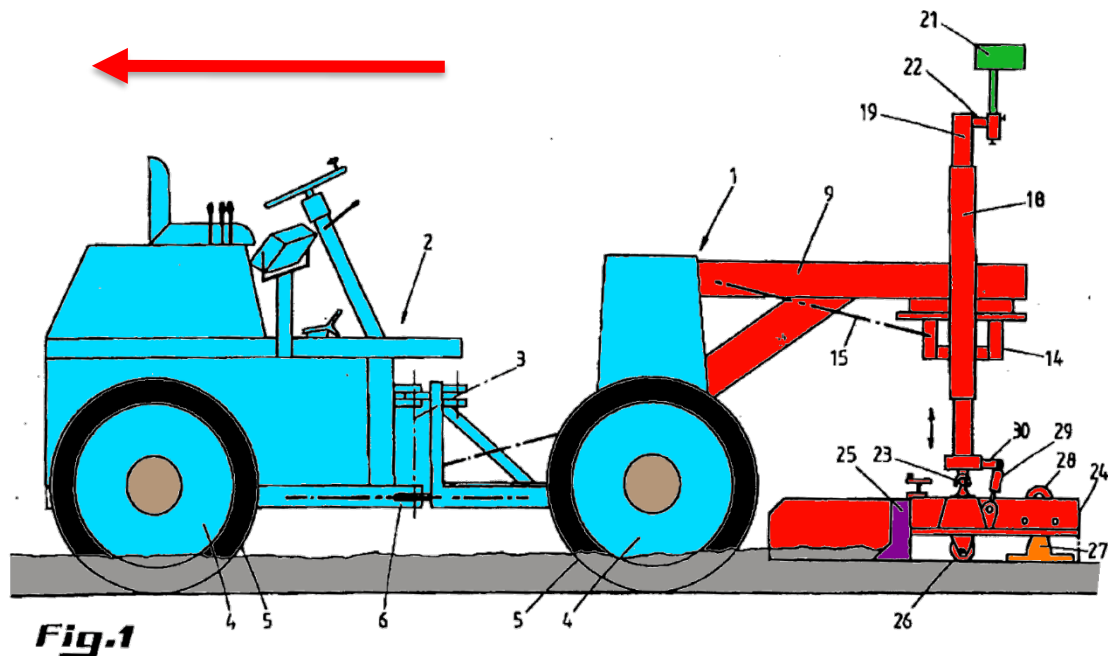


51. With reference to the above-colored figure, Quenzi's device may be moved generally in the direction of the red arrow via human effort pulling on the wheeled support unit (blue), and/or motorized and driven by wheels. Ex-1003, ¶ 8. It has a screed head consisting of a working member (orange), such as a vibrating member or beam 320, and "a grade setting member" (purple), such as a plow 312, located ahead of and parallel to the vibrating member (orange). *Id.*, ¶ 98. The grade

setting member (purple) may include a strike-off plow, an auger, a spinning tube, or a flexible belt or chain. Ex-1003, ¶ 8. The grade setting member is adjustable to automatically adjust the elevation of the device to establish a desired surface elevation of struck-off concrete. Ex-1003, 2:64-3:6. The vibrating member “generally floats upon” or is at least partially supported directly on the uncured concrete surface to smooth and finish the surface behind the grade setting device. Ex-1003, ¶ 9.

B. Jochems (Ex-1004)

52. Jochems, entitled “Machine for striking off poured concrete” published on October 7, 1998, more than one year prior to the earliest alleged priority date (July 26, 2004) of the ’366 Patent. Jochems is, therefore, prior art under, at least, 35 U.S.C. §102(b).



53. With reference to the above-colored figure, Jochems' machine for striking off concrete may be moved generally in the direction of the red arrow via operator control of the wheeled support unit (blue) and driven by wheels. Ex-1004, 1:53-56. Jochems machine "consists...of a first frame part 1 and a second frame part 2 which are hingedly connected to each other at the vertical hinge axis 3." Ex-1004, 2:30-34. Specifically, Jochems teaches "[t]he diameter of the wheels 4 and the thickness of the tires 5 which equip these wheels are calculated in such a manner that the machine can be moved without problems through the poured concrete." Ex-1004, 2:41-45; *see id.*, 1:3-8, 2:35-41. Specifically, Jochems' machine is designed "to move the machine through the poured concrete" and "stri[k]e off the concrete afterwards." Ex-1004, 4:26-30.

54. Jochems machine also has a screed head (red), which “consist of a scraper (25) [purple], a rotating roller (26) and a vibrating beam (27) [orange].” Ex-1004, Cl.4. Jochems also teaches “said scraper (25), roller (26) and vibrating beam (27) are mounted on a support beam (24), the height of which is adjustable by means of sensors (21) [green] with respect to a laser beacon.” Ex-1004, Cl.5.

X. THE ELEMENTS IN CLAIMS 1-15 OF THE '366 PATENT ARE ANTICIPATED AND RENDERED OBVIOUS BY THE PRIOR ART

C. Ground 1: Claims 1-9 Are Anticipated by Quenzi (Ex-1003)

55. In my opinion, independent claim 1 and dependent claims 2-9 are anticipated under 35 U.S.C. §102 by Quenzi.

56. Quenzi discloses several embodiments of a wheeled concrete screeding devices. *See* Ex-1003, Figs. 12-27. In my analysis below, I address three separate embodiments that each anticipates claim 1-9. These embodiments are those illustrated in: (i) Figures 12-15 (and generally discussed at Ex-1003, ¶¶ 88-97); (ii) Figures 16-20 (generally discussed at Ex-1003, ¶¶ 98-120); and (iii) Fig. 23 (generally discussed at Ex-1003, ¶¶ 121-126).

57. However, as discussed further in connection with Ground 2 below, these embodiments are not mutually exclusive. Rather, the embodiments are very similar to each other and Quenzi repeatedly relies on earlier disclosures in lieu of repeating itself when introducing the next or new embodiment. Quenzi also

expressly describes combining various features from these embodiments. As such, a POSITA reading Quenzi would be readily appreciate that the various descriptions of the embodiments may be combined or modified, as discussed below.

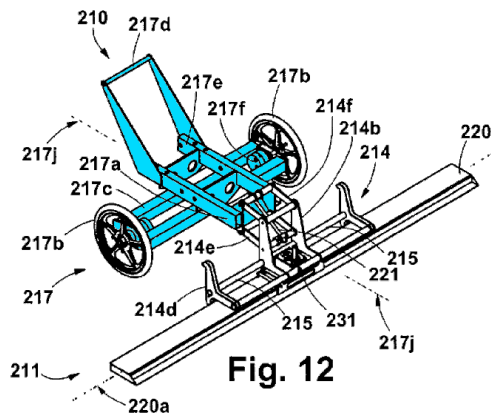
1. Element 1 [preamble]: A wheeled concrete screeding device for screeding uncured concrete, said wheeled concrete screeding device comprising:

58. I have been informed that the preamble is ordinarily not limiting where the body of independent claim 1 is structurally complete and does not refer back to the preamble. Nevertheless, I address the preamble out of an abundance of caution in case Patent Owner were to assert, or the Board were to find, that the preamble is limiting.

59. The preamble recites “[a] wheeled concrete screeding device for screeding uncured concrete.” In my opinion, this is disclosed by Quenzi.

60. Below are exemplary figures of the each of the embodiments discussed above (i.e., the embodiments of Figures 12-15, 16-20, and 23). As shown below, each of these embodiments are wheeled concrete screeding devices for screeding uncured concrete having “wheeled supports” (colored blue):

Figs. 12-15



Figs. 16-20

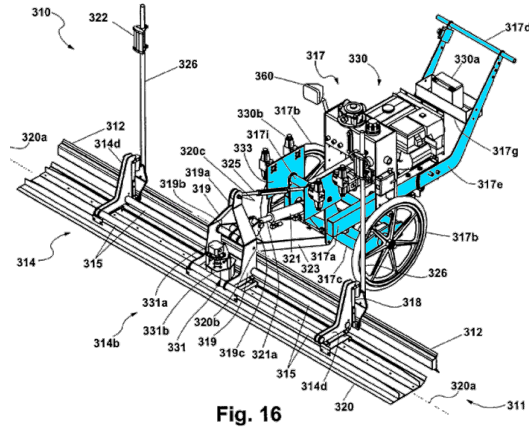
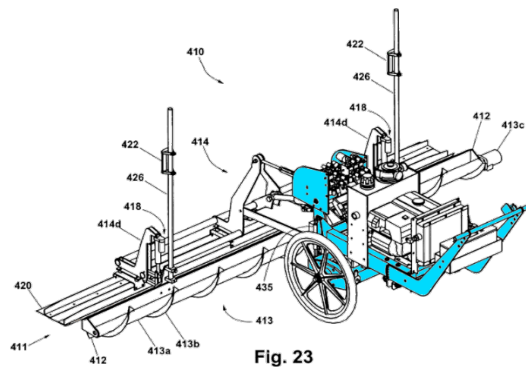


Fig. 23



See Ex-1003, Figs. 12-20, 23.

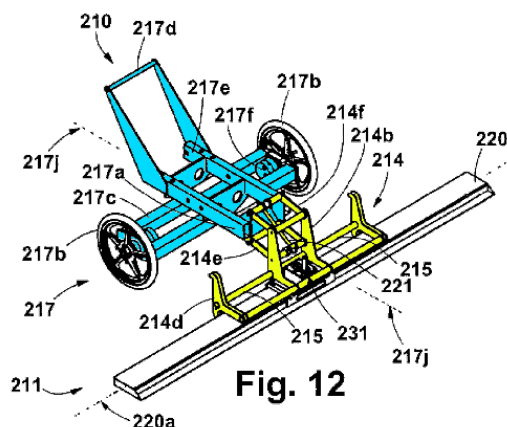
61. Further, Quenzi expressly describes each of the above embodiments as wheeled concrete screeding devices for screeding uncured concrete. *Id.*, ¶ 88 (Figs. 12-15: describing “a wheeled screeding device 210”); *id.*, ¶ 98 (Figs. 16-20: describing “a powered wheeled screeding device 310”); ¶ 121 (Fig. 23: describing “a powered wheeled screeding device 410”).

62. Therefore, in my opinion, Quenzi discloses “[a] wheeled concrete screeding device for screeding uncured concrete” (e.g., the devices shown in Figs. 12-20 and 23) above.

2. Element [1.1]: a wheeled unit having at least two wheels for movably supporting a frame portion of said wheeled unit,

63. Each of the embodiments disclosed in connection with Figures 12-15, 16-20, and 23 of Quenzi are “a wheeled unit having at least two wheels for movably supporting a frame portion of said wheel unit.” As shown below, each embodiment has a frame portion (colored blue) supported by the wheeled unit’s two wheels:

Figs. 12-15



Figs. 16-20

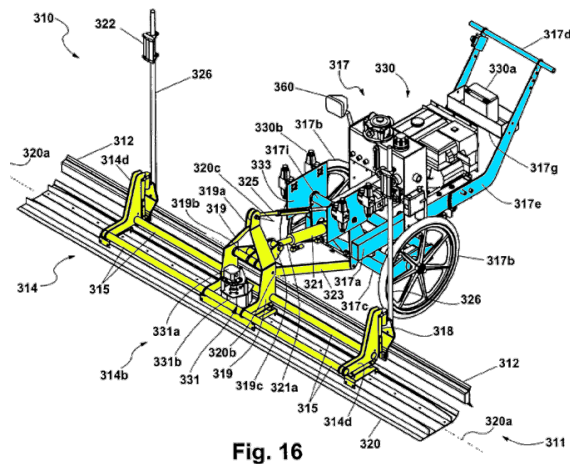
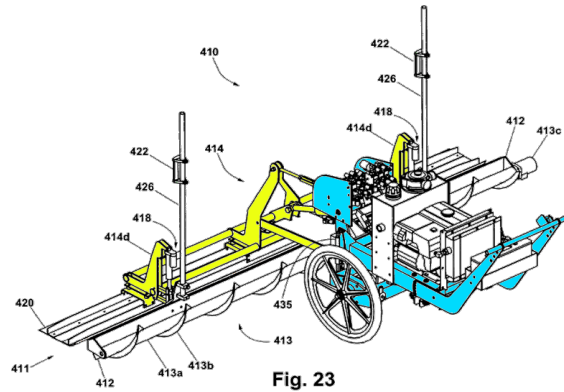


Fig. 23



See Ex-1003, Figs. 12-20, 23.

64. Further, for each of the three embodiments, Quenzi expressly describes that the “pair of wheels” 217b, 317b movably supports the frame portion, i.e., the wheeled supports 217, 317 (colored blue), as well as the attached frameworks 214, 314 (yellow). See Ex-1003, ¶¶ 88-89 (Figs. 12-15), ¶¶ 98-99 (Figs. 16-20), ¶ 121 (Fig. 23). I note for the embodiment of Figure 23, Quenzi does not repeat the discussion of the “pair of wheels” but rather describes “a powered wheeled screeding device 410” and states that its “[s]creeding device 410, vibrating beam 420 and plow 412 are otherwise substantially similar to screeding device 310, vibrating beam 320 and plow 312, discussed above, such that a detailed discussion will not be repeated herein.” *Id.*, ¶ 121. Nonetheless, the use of the same pair of wheels is clear from the illustration above.

65. Therefore, in my opinion, Quenzi discloses “a wheeled unit [e.g., Quenzi’s devices shown above] having at least two wheels [e.g., wheels 217b, 317b]

for movably supporting a frame portion [e.g., wheeled supports 217, 317] of said wheeled unit.”

3. Element [1.2]: said frame portion having a forward end and a rearward end,

66. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “said frame portion having a forward end and a rearward end.” As shown labeled below, each embodiment has a frame portion (colored blue) with a forward and rearward end:

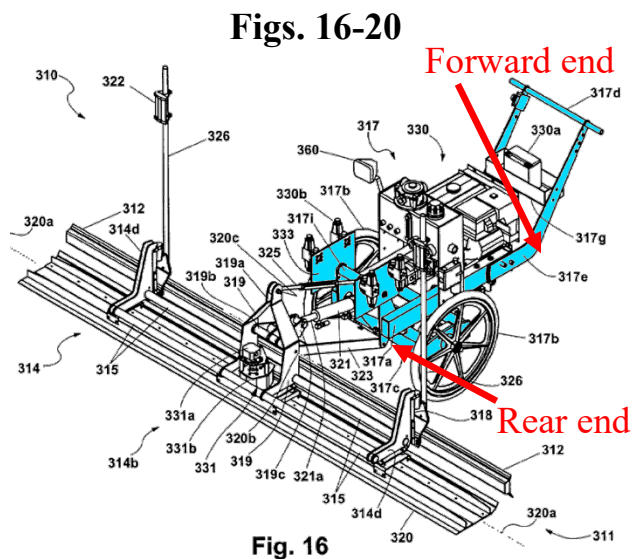
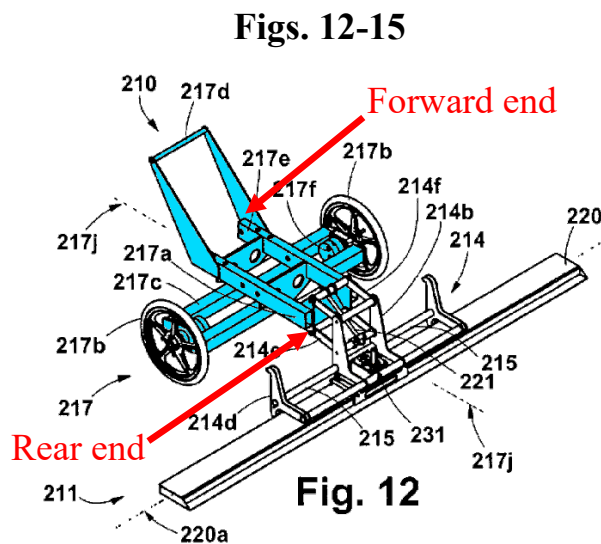
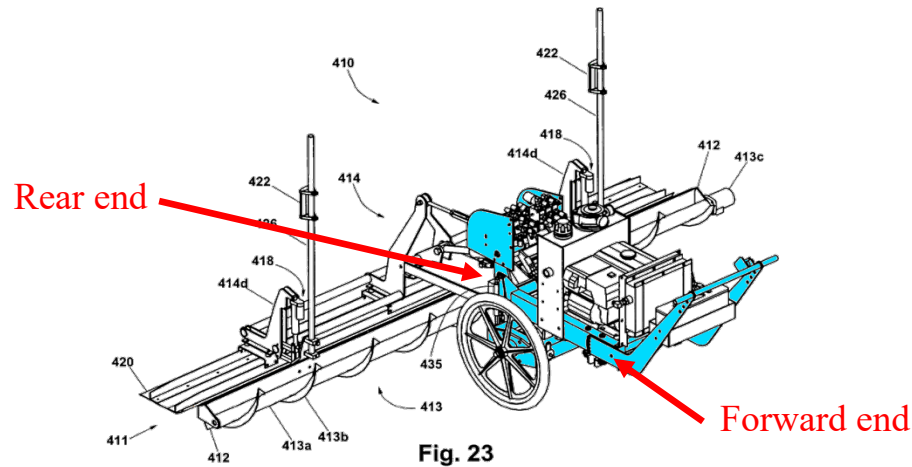


Fig. 23



See Ex-1003, Figs. 12-20, 23.

67. Further, for the embodiments shown in Figs. 12-15 and 16-20, Quenzi expressly labels the “rear end” 217a, 317a and “forward end” 217e, 317e of wheeled support 217, 317. Ex-1003, ¶¶ 88-89, 99, 106. As discussed before, Quenzi does not repeat its discussion of these elements of the wheeled unit for Fig. 23 but makes clear the configuration is “substantially similar to screeding device 310 ... such that a detailed discussion will not be repeated herein.” Ex-1003, ¶ 123. As such, the rear and forward end is the same for Figure 23.

68. Therefore, in my opinion, Quenzi discloses “said frame portion [e.g., wheeled support 217, 317 (blue)] having a forward end [e.g., forward end 217e, 317e] and a rearward end [e.g., rear end 217a, 317a].”

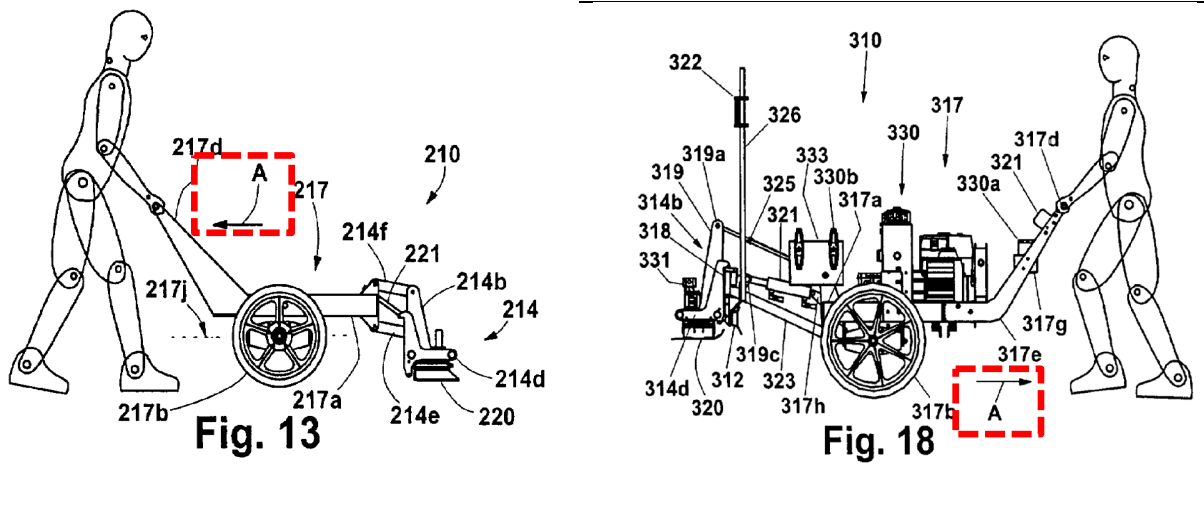
4. Element [1.3]: wherein said wheeled unit is movable through uncured concrete in a screeding direction;

69. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “wherein said wheeled unit is movable through

uncured concrete in a screeding direction.” As shown labeled below, each embodiment has a frame portion (colored blue) with a forward and reward end.

70. In particular, consistent with the aforementioned “rearward end” and “forward end” labels discussed in connection with Element [1.2], Quenzi repeatedly describes that the wheeled unit is movable through uncured concrete in the “forward direction” (i.e., the screeding direction, as claimed). *See* Ex-1003, ¶¶ 81, 89, 95, 110, 148.

71. Further, Quenzi illustrates the screeding direction by an “arrow A” in various figures, including Figures 13 and 18:



Ex-1003, Figs. 13, 18 (red box added); *see also id.*, ¶¶ 95, 110 (describing screeding direction indicated by arrow A).

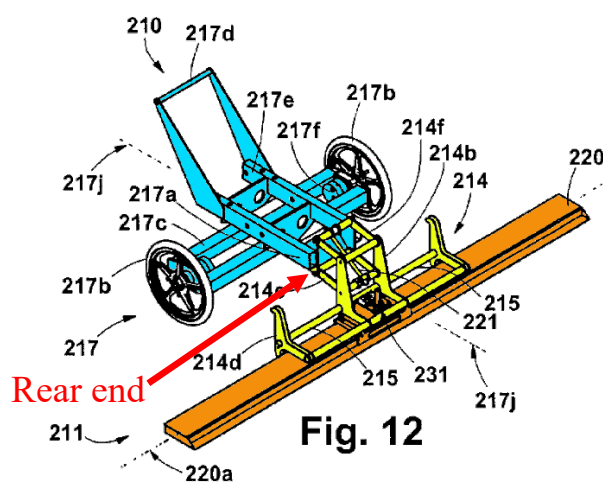
72. Therefore, in my opinion, Quenzi discloses “wherein said wheeled unit is movable through uncured concrete [e.g., through the poured concrete] in a

screeding direction [e.g., in the “forward direction” indicated by the arrow in the red box above].”

- 5. Element [1.4]: a screed head supported at said rearward end of said frame portion and following behind said wheeled unit when said wheeled unit is moved in said screeding direction,**

73. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “a screed head supported at said rearward end of said frame portion and following behind said wheeled unit when said wheeled unit is moved in said screeding direction.” As shown labeled below, each embodiment is a wheeled unit that includes a screed head with a vibrating member (orange) and plow (purple) supported by a framework (yellow) at the rearward end of the frame portion (blue). *See infra* Element [1.5] for additional analysis. With this configuration, the screed head (orange) will follow “behind” the wheel unit when moved in the screeding direction that I discussed in connection with Element 1.3.

Figs. 12-15



Figs. 16-20

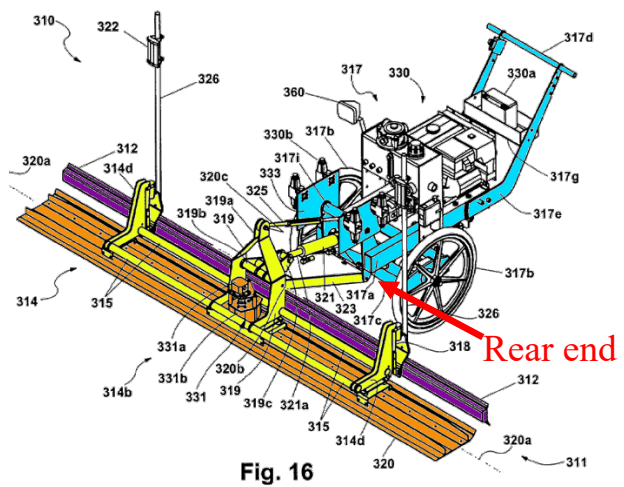
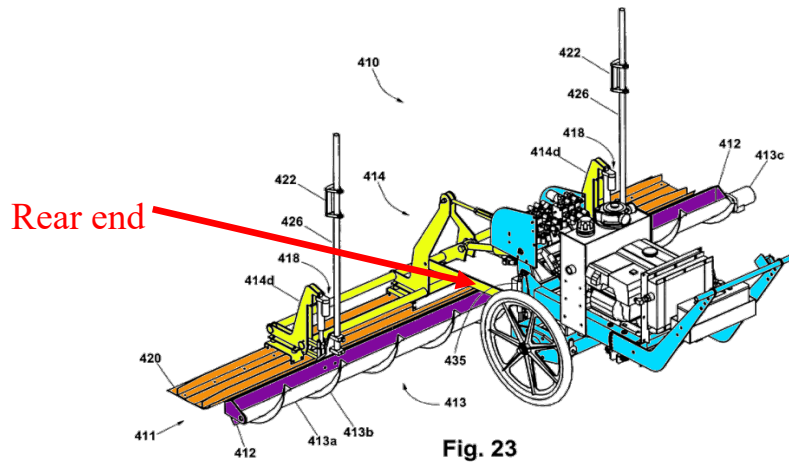


Fig. 23



See Ex-1003, Figs. 12-20, 23.

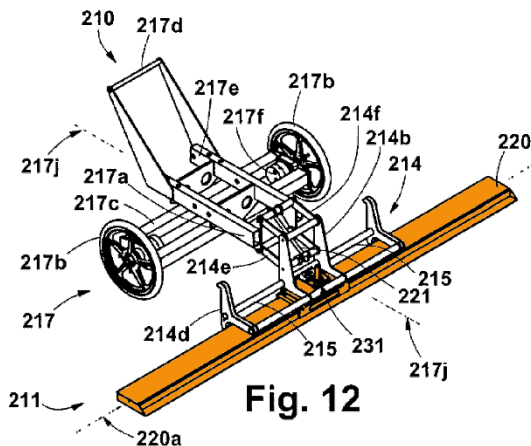
74. Further, Quenzi describes the “screeding heads” 211, 311, 411 (orange) are attached to their respective frameworks (yellow), and that those frameworks are mounted to the “rear end” 217a, 317a of the “wheeled support” 217, 317 (blue). *See* Ex-1003, ¶ 88 (Figs 12-15); *id.*, ¶¶ 98, 106 (Figs. 16-20); *id.*, ¶ 121 (Fig. 23). As such, the screed head (orange) is supported at the rear end of the frame portion (blue) and follows behind the wheeled unit when moved in the screeding direction (discussed in connection with Elements 1.2, 1.3).

75. Therefore, in my opinion, Quenzi discloses “a screed head [e.g., “screeding heads” 211, 311, 411] supported at said rearward end of said frame portion [e.g., rear end 217a, 317a] and following behind said wheeled unit when said wheeled unit is moved in said screeding direction [e.g., in the “forward direction” indicated by the arrow in the red box discussed above].”

6. Element [1.5]: said screed head comprising a grade establishing element and a vibratable member;

76. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “said screed head comprising a grade establishing element and a vibratable member.” As shown labeled below, the embodiments of Figs. 16-20 and 23 include screed heads, 311, 41, which in turn include a grade establishing element, such as a plow (purple), and a vibratable member (orange). See Ex-1003, Figs. 12-20, 23.

Figs. 12-15



Figs. 16-20

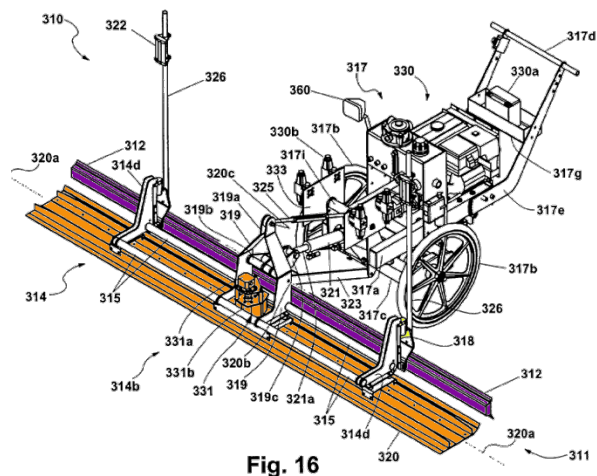
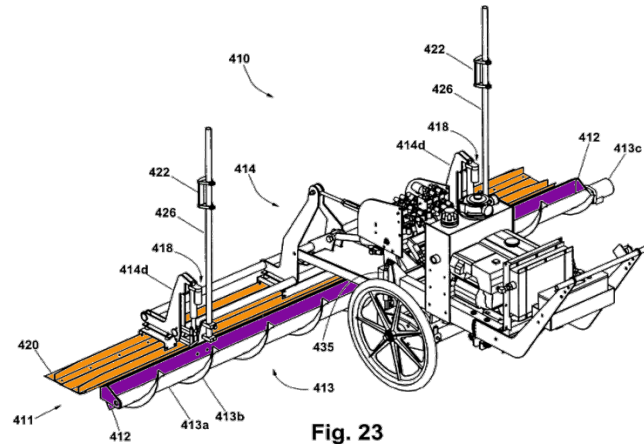


Fig. 23



77. With respect to the embodiment shown in Figs. 12-15, Quenzi does not depict the grade setting member (e.g. plow) in the figure itself. Nonetheless, Quenzi describes that the “screeding head 211 [] includes a vibrator beam or member 220” and “may also include a plow or other grade setting device or member.” Ex-1003, ¶ 88, 91. Thus, the embodiment of Figs. 12-15 discloses the screed head comprising a grade establishing element and a vibratable member as well.

78. Quenzi also continues similar written disclosures confirming that the screed heads of Figs. 16-20 and 23 include vibrating beams 320, 420 and plows 312, 412 as well. *Id.*, ¶ 98 (Figs. 16-20, ¶ 121 (Fig. 23). As Quenzi explains in its background, “[t]he vibrating member and grade setting device together generally comprise a screeding head.” Ex-1003, ¶ 17.

79. Therefore, in my opinion, Quenzi discloses “said screed head [e.g., “screeding heads” 211, 311, 411] comprising a grade establishing element [e.g.,

plows 312, 412 (purple)] and a vibratable member [e.g., vibrating beams 320, 420 (orange)].”

7. **Element [1.6]: wherein said grade establishing element is generally vertically adjustable responsive to a signal from a laser receiver disposed at said screed head to establish a struck-off surface of the uncured concrete at a desired grade when said wheeled unit is moved in said screeding direction; and**

80. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “wherein said grade establishing element is generally vertically adjustable responsive to a signal from a laser receiver disposed at said screed head to establish a struck-off surface of the uncured concrete at a desired grade when said wheeled unit is moved in said screeding direction.” Quenzi describes “[t]he screeding device includes a plow or other grade setting element or device which is **vertically adjustable** relative to a concrete surface working member or vibrating member of the screeding device to adjust the grade setting device to the desired grade height as the screeding device is moved over and supported on the uncured concrete surface.” Ex-1003, ¶ 30. Quenzi further describes that “[t]he screeding device includes an automatic control system which is **responsive to a laser plane or laser-guided reference for vertically adjusting the grade setting device** to the desired grade height.” *Id.*

81. As shown labeled below, each of embodiments of Figs. 16-20 and 23 have a laser receiver 322, 422 (green) disposed at the screed head (orange, purple) that is vertically adjustable using by the framework (yellow).

Figs. 16-20

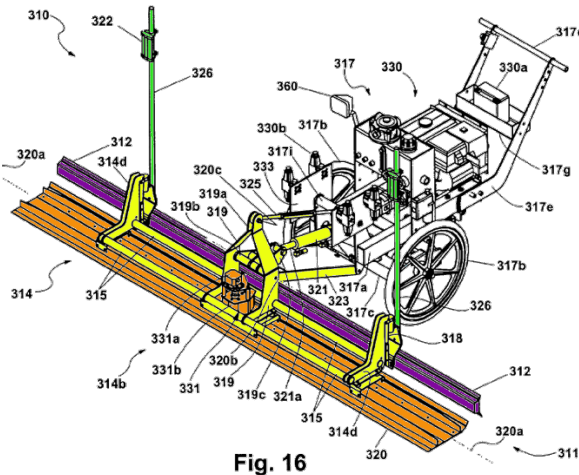
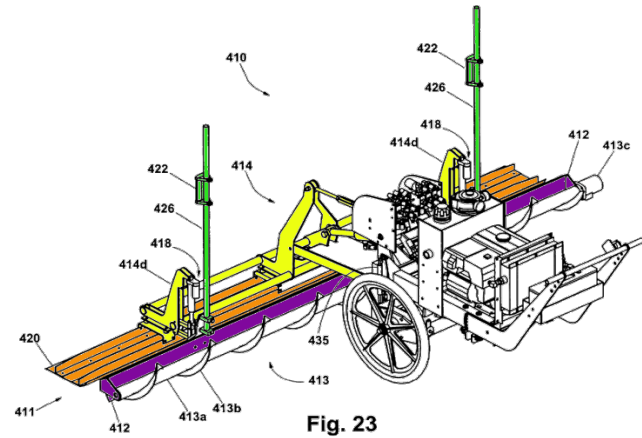


Fig. 23



See id., Figs. 16-20, 23; *see also id.*, ¶ 103 (discussing Figs. 16-20), ¶ 126 (discussing Fig. 23).

82. With respect to the embodiment shown in Figs. 12-15, Quenzi does not depict the laser receivers (green) in the figure itself. Nonetheless, Quenzi expressly describes that this embodiment may likewise incorporate “laser receivers 22 (as shown in FIG. 1 and FIG. 10).” Ex-1003, ¶ 96.

83. For each of these embodiments, Quenzi further describes that the laser is used to adjust the position of the grade establishing element (i.e., the plow (purple), which, as discussed before, Quenzi confirms may also be included in Figs. 12-15) in order to establish a struck-off surface of the uncured concrete at a desired

grade when said wheeled unit is moved in said screeding direction. Ex-1003, ¶¶ 79-81 (Figs. 12-15), ¶ 103 (Figs. 16-20), ¶ 126 (Fig. 23).

84. Therefore, in my opinion, Quenzi discloses “wherein said grade establishing element is generally vertically adjustable [e.g., “plow [purple] or other grade setting element or device which is vertically adjustable....”] responsive to a signal from a laser receiver disposed at said screed head [e.g., laser receiver 322, 422 (green)] to establish a struck-off surface of the uncured concrete at a desired grade [e.g., “automatic control system which is **responsive to a laser plane or laser-guided reference for vertically adjusting the grade setting device** to the desired grade height.”] when said wheeled unit is moved in said screeding direction [e.g., in the “forward direction” discussed above].”

8. Element [1.7]: wherein said vibratable member is adjustably attached at a rearward end of said grade establishing element

85. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “wherein said vibratable member is adjustably attached at a rearward end of said grade establishing element.”

86. At the outset, I note that Element 1.7 requires “said vibratable member is *adjustably attached at a rearward end* of said grade establishing element.” In my opinion, a POSITA would understand the plain language of this phrase to be expressing two requirements: (1) the vibratable member is adjustable (i.e.,

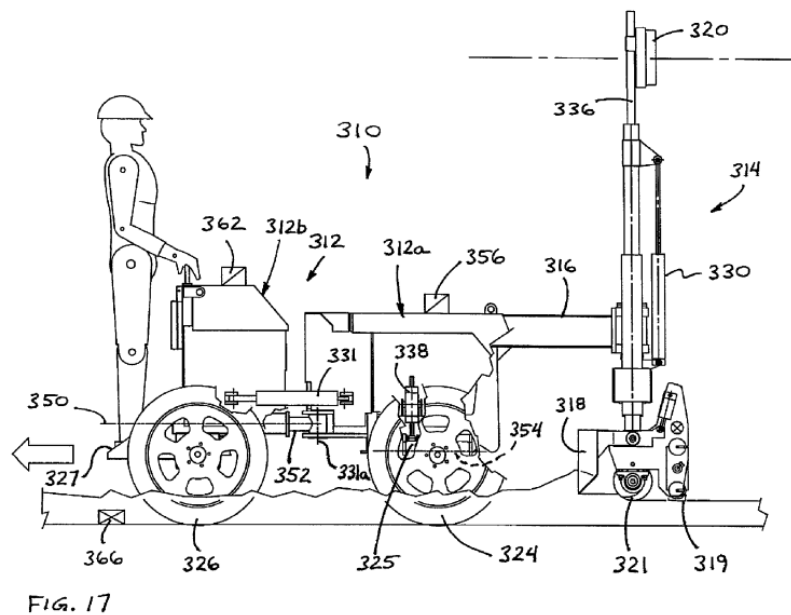
adjustably attached) and (2) the vibratable member is attached at a location rearward of the grade establishing member (i.e., at said rearward end). In particular, a POSITA would understand the plain language of the claim and its use of the word “at” (as opposed to “to”) to be referring to the location of the vibratable member relative to the grade establishing element. My understanding of the claim language is supported by the ’833 Patent’s consistent use of “at” in the claims and specification to indicate the location of a particular component.

87. For instance, claim 4 of the ’366 Patent recites a similar limitation with respect to the embodiment where the “grade establishing element” includes an auger:

4. The wheeled concrete screeding device of claim 3, wherein said rearward end of said grade establishing element comprises a rearward end of said auger and wherein *said vibratable member is adjustably attached at said rearward end of said auger.*

Ex-1001, Cl. 4.

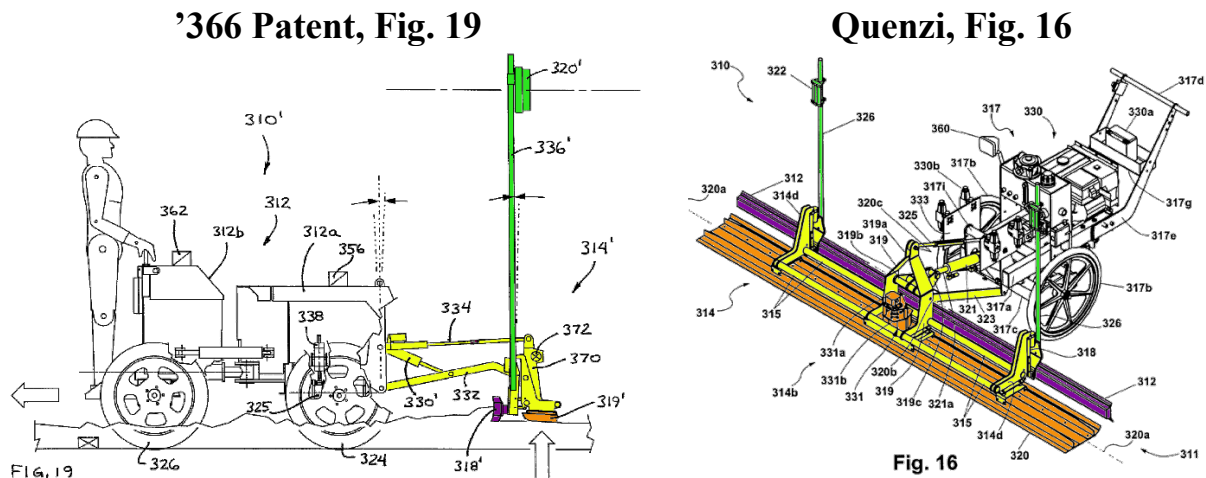
88. The requirements of claim 4 are demonstrated by the only embodiment of a device illustrated with an auger in Figure 17, shown below:



89. In Figure 17, the vibrating member 319 is depicted behind the auger 321—i.e., at said rearward end of said auger—but is not attached to the auger itself. The '366 Patent further explains “[t]he height or elevation of the plow blade 318, auger 321 and vibrating member 319 is adjusted via at least one elevation actuator or hydraulic cylinder 330.” Ex-1001, 17:45-47. In other words, the vibrating member is adjustably attached. The '366 Patent specification, however, does not teach or otherwise disclose the vibrating member 319 is adjustable *with respect to* the auger 321 itself. Rather, the claims and specification make clear the vibrating member is (1) adjustable and (2) located at said rearward end of said auger.

90. Similarly, in connection with Figure 19, the '366 Patent describes another embodiment where the “screed head may also include an auger, such as described above.” Ex-1003, 20:34-60. Here, again, the '366 Patent discloses an

embodiment in Figure 19 where the vibratable member is (1) adjustable and (2) located at said rearward end of said auger, as opposed to be adjustable *relative to* or *with respect to* the auger itself. In fact, as written description support for Figure 19, the '366 Patent incorporates by reference and relies upon Quenzi's disclosure. *Id.*, 20:45-54. As shown below, Figure 19 of the '366 Patent also illustrates adjustably attaching the vibratable member at a location reward of the grade establishing element using nearly identical structure as described and illustrated in Quenzi:



91. In addition to Element 1.7 and claim 4, several other claims recite requirements relating to how the vibratable member or other components are “attached at” a location. *See* Ex-1001, cls. 1, 4, 5, 6, 7, 8, 13, 14. Specifically, the independent claims and various dependent claims recite that the vibratable member is adjustably or pivotably attached: (i) “at the rearward end of the grade establishing element”; (ii) “at said rearward end of said auger”; and (iii) “at at least one bracket.”

The fact that the independent claims recite the attachment is “at” one component

(i.e., the grade establishing element) and the dependent claims recite the attachment is “at” a different component (e.g., a bracket) further confirms that the claims are referring to the general location and not a direct connection.

92. This understanding of the ’366 Patent claims’ use of “at” to identify a location is further confirmed by the following specification examples which equate use of “at” when specifying a location:

Vibrating member 119 of screeding attachment is attached to the frame 137 of plow 118 and **behind or at the rear of the plow 118**, such as via a pair of mounting members or attachment members or links 146.

Ex-1001, 10:24-27

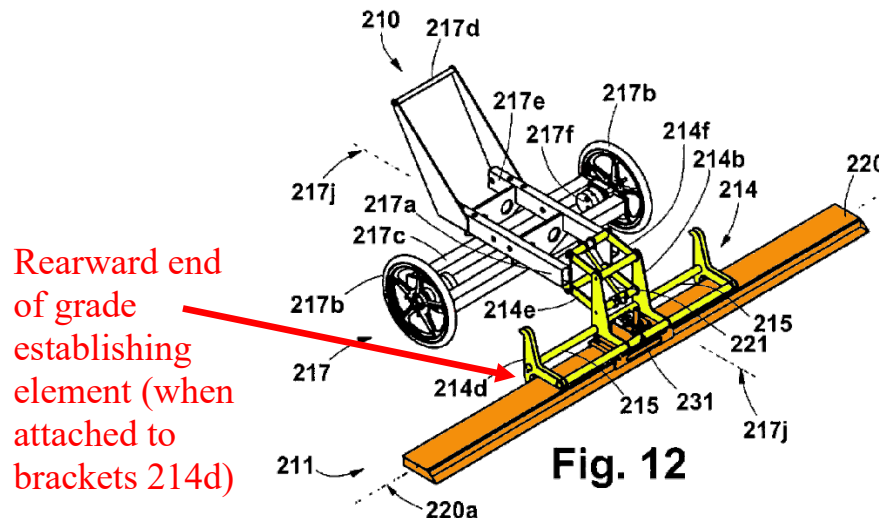
Referring now to FIG. 17, an articulated powered rake or plow or screeding or concrete working or processing machine or device or apparatus 310 includes an articulatable wheeled base 312, which is supported by four rubber-tired wheels, two front wheels 324 **at the front frame portion 312 a** and two rear wheels 326 **at the rear frame portion 312 b**.

Ex-1001, 17:14-19.

93. Turning to Quenzi’s disclosure of Element 1.7, for Figs. 12-15, as discussed above, Quenzi does not depict the grade establishing element (e.g., plow) in the figure itself, but describes that it may be “mounted to the side frame members 214d and vertically adjustable relative to the vibrating beam 220.” Ex-1003, ¶ 91. As shown below, mounting a plow to the side frame members 214d results in the

vibratable beam 220 (orange) being “attached at a rearward end of said grade establishing element,” as claimed:

Figs. 12-15

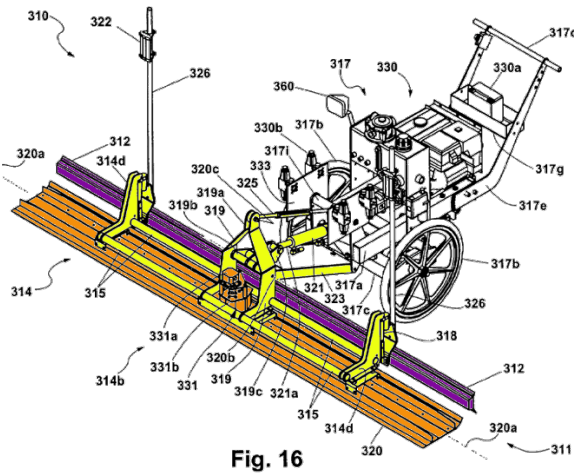


Ex-1003, Figs. 12-15.

94. As to adjustability, Quenzi further describes that “[t]he operating range height of the vibrating beam 220 may be manually adjusted relative to the level of the wheels 217b via an adjustment device 221.” Ex-1003, ¶ 92. As example “adjustment devices,” Quenzi describes that the device could include “an actuator, a threaded rod, turnbuckle, or any other extension and retraction device or the like.” Ex-1003, ¶ 92.

95. With respect to Figs. 16-20 and 23, Quenzi similarly illustrates the vibratable member beams (orange) as being adjustably attached at a rearward end of said grade establishing element (purple) via the framework (yellow).

Figs. 16-20



Ex-1003, Figs. 12-20, 23.

97. In addition to Quenzi's linkage structures I discuss above, Quenzi further discloses "[a] pair of actuators 518 and **linkages 516 may function to generally vertically adjust the position of grade setting device 512 relative to frame members 514d of framework 514 and, thus, relative to vibrating beam 520...**" Ex-1003, ¶131. Quenzi teaches these linkages operate "similar to the actuators 12 and linkages 16 of screeding device 10, discussed above." Ex-1003,

¶131. Quenzi's Figures 5 and 7, below, show the function of these linkages in greater detail:

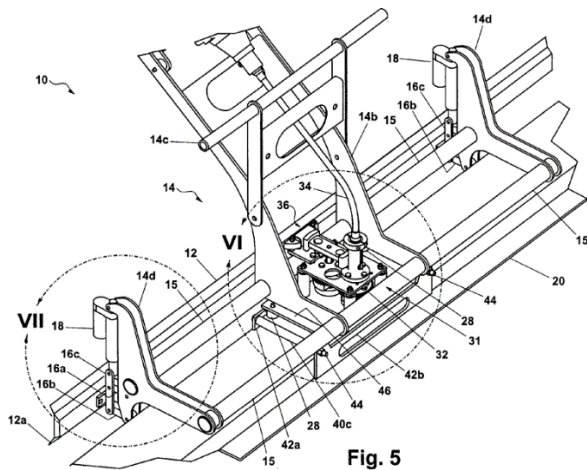


Fig. 5

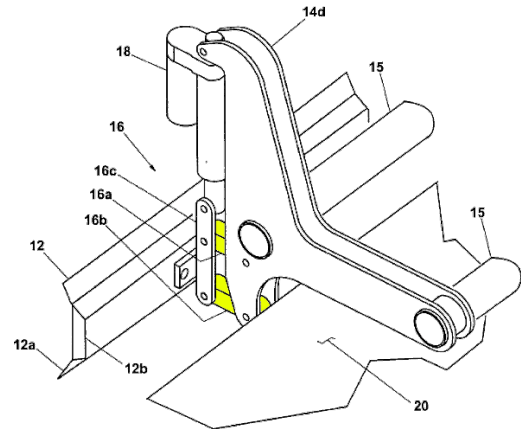


Fig. 7

98. Quenzi explains, “actuators 18 control the vertical elevation of the plow 12 in relationship to the framework 14 and vibrator beam 20 **via pivoting of the linkages 16 relative to plow 12 and framework 14.**” Ex-1003, ¶72. Quenzi teaches these linkages between the vibrating beam and plow allow adjustment of the plow to occur independently. Ex-1003, ¶72 (“Because the actuators are generally fixedly mounted to the frame members 14d and, thus, to the vibrator beam 20, **actuation of the actuators functions to lower or raise the plow relative to the vibrator beam.**”) Quenzi provides additional detail concerning the connection points of these linkages between the plow and vibratable member beams and the movement they allow between the two structures:

As best seen in FIGS. 7 and 8, each set of linkages 16 includes a pair of generally **parallel links 16 a, 16 b,**

which are pivotally mounted to side frame member 14 d at one end and to a generally vertical link 16 c at the other end. **Vertical link 16 c is secured to a rear portion of the plow 12.** Actuators 18 are connected to generally vertical link 16 c and **function to raise and lower** vertical link 16 c and **plow 12 in a generally vertical, linear, reciprocal direction** by pulling or pushing link 16 c toward or away from the actuator, while **links 16 a, 16 b function to maintain the plow in its generally vertical orientation during such reciprocal movement via pivotal movement of links 16 a, 16 b relative to frame member 14 d** and center link 16 c.

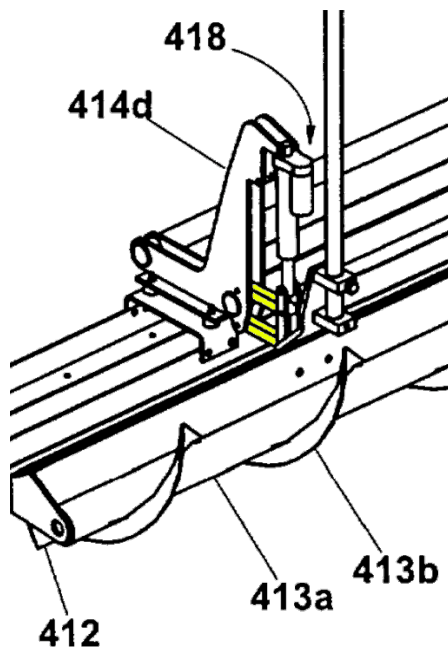
Ex-1003, ¶73.

99. Each of Quenzi's embodiments that I discuss also include these linkages. Regarding the embodiment of Figures 12-15, as discussed above, Quenzi does not depict the grade establishing element (e.g., plow) in the figure itself, but describes that it may be "mounted to the side frame members 214d and vertically adjustable relative to the vibrating beam 220, . . . such as in a **similar manner as discussed above with respect to screeding devices 10 and 110.**" Ex-1003, ¶ 91. Quenzi's linkages are the only disclosed structure for attaching Quenzi's plow to side frame members 214d while "being vertically adjustable relative to the vibrating beam 220." *Id.*

100. With respect to the embodiment of Figures 16-20, Quenzi discloses "Similar to screeding head 11 of screeding device 10, discussed above, screeding head 311 of screeding device 310 includes grade setting member or **strike-off plow 312, which is adjustably mounted to each of the side frame members 314 d via**

a pair of parallel, plow adjusting linkages (not shown in FIGS. 16-20) and an elevation cylinder or actuator 318, in a manner similar to that discussed above in screeding device 10.” Ex-1003, ¶103. Specifically, Quenzi teaches “[t]he **parallel linkages function to maintain horizontal attachment and generally parallel alignment of plow 312 relative to framework 314** as the plow is raised or lowered by actuators 318.” Ex-1003, ¶103.

101. With respect to the embodiment of Figure 23, I note that these linkages are not labeled by a number but are explicitly shown in the figure:

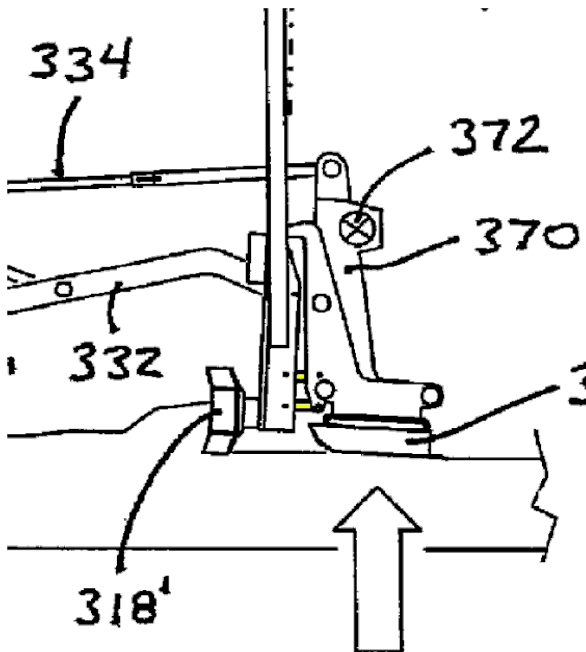


Ex-1003, Figure 23 (excerpted)

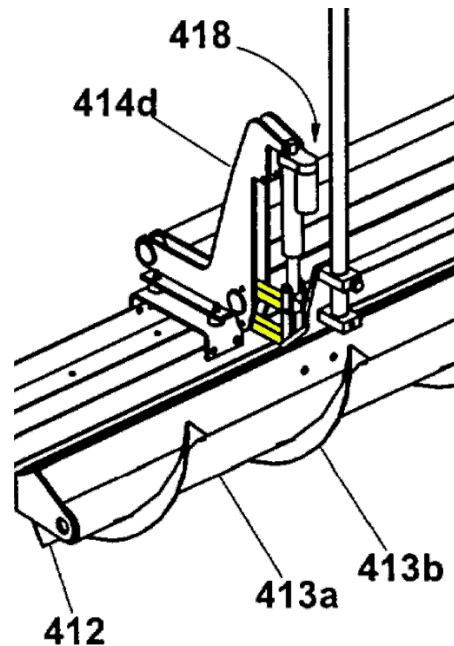
102. In addition, in an alternative version of Figure 23’s embodiment, Quenzi teaches “[g]rade setting device 712 is **adjustably mounted** to the

framework **via linkages 716** and is preferably adjusted via actuation of actuators 718...” Ex-1003, ¶136.

103. In fact, the '366 Patent **expressly relies on and incorporates by reference Quenzi's prior art disclosure as written description support** for how the screed head “generally floats on or is supported by the concrete surface” (*Id.*, 20:44-60), including how Quenzi's linkage “actuators...may be adjusted or controlled to adjust the degree of cutting into the concrete so as to establish the desired grade for the floating vibrating member as the machine is moved along the concrete.” Ex-1001, 20:45-59. A comparison of the '366 Patent's framework and Quenzi's is shown below:



Ex-1001, Fig. 19 (excerpted)



Ex-1003, Figure 23 (excerpted)

104. In my opinion, this incorporation by reference of Quenzi's screed head and framework confirms that Quenzi discloses this feature in the same manner as disclosed by the '336 Patent.

105. Therefore, in my opinion, Quenzi discloses "wherein said vibratable member [e.g., vibrating beams 320, 420 (orange)] is adjustably attached [e.g., adjustable in both height and pitch angle] at a rearward end of said grade establishing element [e.g., plows 312, 412 (purple)]."

9. **Element [1.8]: and wherein said vibratable member at least partially floats behind said grade establishing element on the struck-off surface of the uncured concrete and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction.**

106. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose "wherein said vibratable member at least partially floats behind said grade establishing element on the struck-off surface of the uncured concrete and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction."

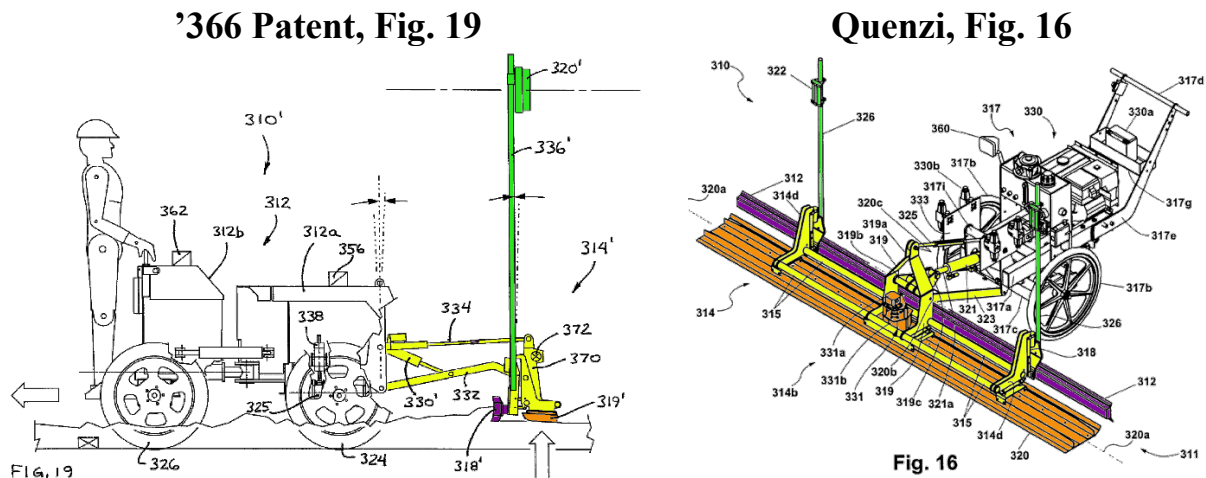
107. For example, Quenzi describes that "[t]he **vibrating member generally floats upon or is supported** directly on the uncured concrete surface created by the grade setting device ahead of it." Ex-1003, ¶ 9. Quenzi further describes "[t]he present invention thus provides a self-correcting process along with

the ability of the apparatus to be **at least partially supported upon the desired correct elevation surface it creates, as the device itself advances.**” *Id.*, ¶ 11; *see also id.*, ¶ 68 (“the vibrator beam 20 **floats on** or is **at least partially supported** on the uncured surface”). I note that the first two quotes come from Summary of the Invention. Nonetheless, as described above, each of the embodiments in Figs. 12-15, 16-20, and 23 use the same or similarly functioning adjustable framework for supporting the vibratable member behind the grade setting device at the desired height on the struck-off surface of the concrete. As such, in my opinion, a POSITA’s reading of Quenzi would readily understand that these disclosures apply equally to each of the embodiments in Figs. 12-15, 16-20, and 23.

108. Quenzi’s descriptions of Figs. 12-15, 16-20, and 23 confirms this. For example, for Figs. 12-15, Quenzi expressly describes “[v]ibrating beam 220, and/or any other grade setting device, may at least be **partially supported** by a wheeled support 217 of the screeding device 210.” *Id.*, ¶ 96. And for the embodiment of Figs. 16-20, Quenzi describes “that vibrating beam 320 is at least **partially supported by, or essentially ‘floating’ upon, the uncured concrete surface**, and applies a sufficient and desired amount of down-pressure to work the surface.” *Id.*, ¶ 112; *see also id.*, ¶¶ 115-116 (describing options to manually or automatically shift the frame positioning to adjust the “degree of float”). Lastly, for Fig. 23, Quenzi describes that the “[s]creeding device 410, vibrating beam 420 and plow 412 are

otherwise substantially similar to screeding device 310, vibrating beam 320 and plow 312, discussed above, such that a detailed discussion will not be repeated herein.” *Id.*, ¶ 121. Accordingly, each embodiment discloses this limitation.

109. In addition, similar as discussed for Element 1.7 and as shown again below, Quenzi’s framework structure (yellow) for attaching the vibratable member (orange) and grade setting device (purple) is nearly identical to that illustrated in the ’366 Patent:



110. The ’366 Patent confirms that this structure “generally floats on or is supported by the concrete surface.” *See* Ex-1001, 20:45-54. In fact, the ’366 Patent **expressly relies on and incorporates by reference Quenzi’s prior art disclosure as written description support** for how the screed head “generally floats on or is supported by the concrete surface.” *Id.*, 20:44-60. This confirms that Quenzi discloses this feature in the same manner as disclosed by the ’336 Patent.

111. Therefore, in my opinion, Quenzi discloses “wherein said vibratable member [e.g., vibrating beams 320, 420 (orange)] at least partially floats behind said grade establishing element [e.g., plows 312, 412 (purple)] on the struck-off surface of the uncured concrete [e.g., “partially supported by, or essentially ‘floating’ upon, the uncured concrete surface”] and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction [e.g., to “appl[y] a sufficient and desired amount of down-pressure to work the surface.”].”

112. As demonstrated above, Quenzi teaches every limitation of claim 1. Thus, it is my opinion that Quenzi anticipates, claim 1.

10. Dependent Claim 2: “The wheeled concrete screeding device of claim 1, wherein said grade establishing element comprises a plow member.”

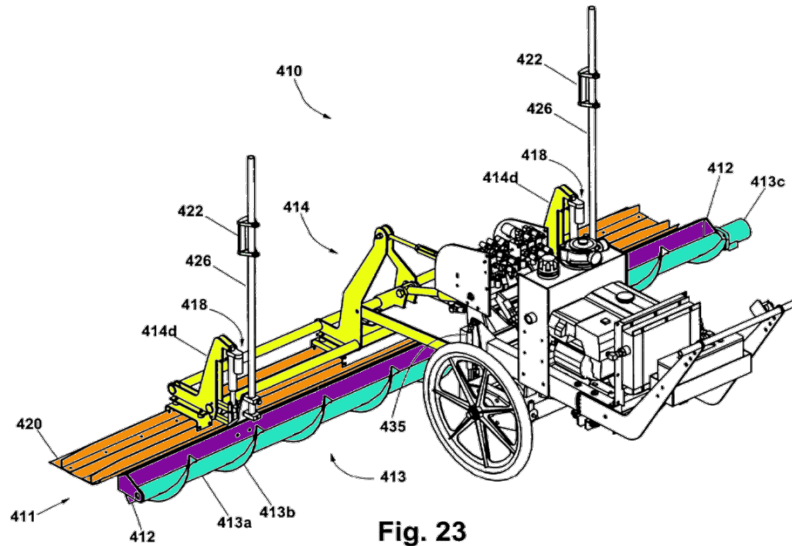
113. As described for Element 1.5 above, for each embodiment shown in Figs. 12-15, 16-20 and 23, Quenzi describes that the grade establishing element may be a plow. *See* Ex-1003, ¶¶ 88, 91 (Figs. 12-15: “a screeding head 211 . . . may also include a plow or other grade setting device or member”); ¶ 98 (Figs. 16-20: “a screeding head 311, which includes a grade setting member or strike-off plow 312”); ¶ 121 (Fig. 23: “a screeding head 411, which includes a grade setting device, such as a plow 412”).

114. Therefore, in my opinion, Quenzi discloses “said grade establishing element comprises a plow member [e.g., plows 312, 412 (purple)].”

11. Dependent Claim 3: “The wheeled concrete screeding device of claim 2, wherein said grade establishing element comprises an auger disposed behind said plow member, and wherein said auger is generally vertically adjustable with said plow member.”

115. At least the embodiment of Fig. 23 of Quenzi discloses “wherein said grade establishing element comprises an auger disposed behind said plow member, and wherein said auger is generally vertically adjustable with said plow member.”

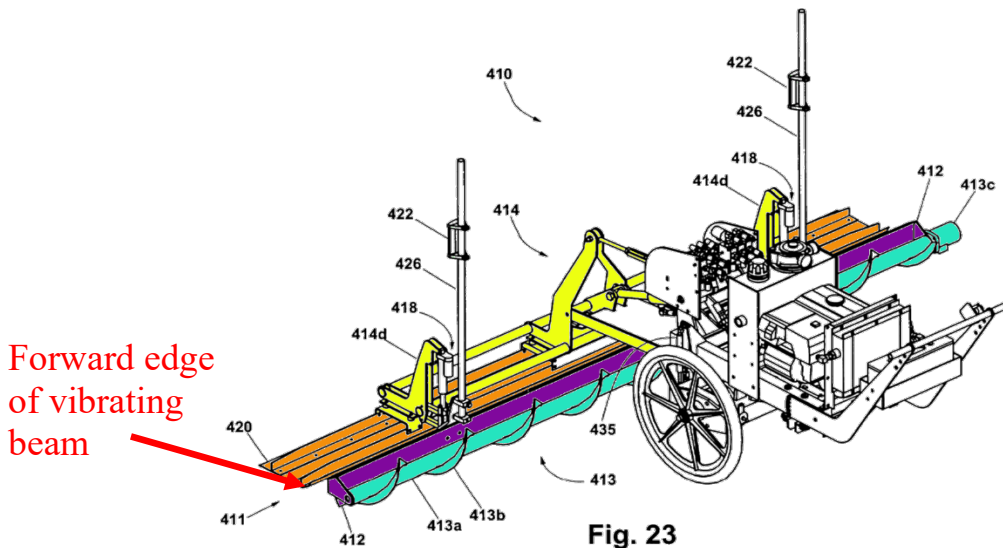
116. In particular, in the Summary of Invention, Quenzi discloses that the grade establishing element may include a vertically adjustable auger disposed behind the plow member and “in front of the vibrating beam.” *See* Ex-1003, ¶ 15. This disclosure is not limited to any particular embodiment, and therefore, applies to each of the embodiments in Figs. 12-15, 16-20, and 23. Nonetheless, to the extent there is any doubt, in connection with the embodiment of Fig. 23 (shown below), Quenzi illustrates and expressly describes that an auger (teal) may be mounted to the rear side of the plow (purple).



See *id.*, Fig. 23; see also *id.*, ¶¶ 121-122 (describing same).

117. While the auger (teal) is shown above as being *forward* of the plow (purple), Quenzi goes on to describe that the auger may “alternatively” be located *behind* the plow as claimed. Specifically, without providing a separate figure, Quenzi states: “It is envisioned that the screeding device of the present invention may alternately include an auger or the like positioned along a forward edge of the vibrating beam,” where “[s]uch an embodiment may or may not include a strike-off plow or indicating member. The auger may replace the function of this component entirely or, optionally, **the auger may supplement engagement and strike-off of the concrete.**” *Id.*, ¶ 125. Thus, Quenzi expressly contemplates that this is an “alternative” modification to the embodiment shown above.

118. Moreover, as demonstrated with reference to exemplary Fig. 23, positioning the auger (teal) along the “forward edge” of vibrating beam (orange) results in the auger (teal) being positioned behind said plow member, as claimed:



119. Further, although Fig. 23 alone is enough to anticipate claim 3, a POSITA would understand that Quenzi's proposed modification is not limited to Fig. 23. Rather, Quenzi discusses the modification of placing the auger behind the plow in a standalone paragraph that generally refers to "the screeding device of the present invention." *Id.* Indeed, this paragraph even refers back to "the other grade setting devices 12, 112, 212, 312 and/or 412, discussed above." *Id.* As such, the disclosed modification applies equally to other embodiments discussed above.

120. Quenzi also confirms “[t]he auger or other such device may be **vertically adjustable** in response to the elevation actuators or cylinders to adjust the concrete surface to the desired grade, such as in a manner similar to the other grade

setting devices 12, 112, 212, 312, and/or 412, discussed above.” *Id.*, ¶ 125. The elevation actuators or cylinders also adjust the position of the plow. *Id.*, ¶ 103

121. Therefore, in my opinion, Quenzi discloses “said grade establishing element comprises an auger disposed behind said plow member [e.g., “an auger or the like positioned along a forward edge of the vibrating beam” and behind plows 312, 412 (purple)], and wherein said auger is generally vertically adjustable with said plow member [e.g., “vertically adjustable in response to the elevation actuators or cylinders”].”

12. Dependent Claim 4: “The wheeled concrete screeding device of claim 3, wherein said rearward end of said grade establishing element comprises a rearward end of said auger and wherein said vibratable member is adjustably attached at said rearward end of said auger.”

122. As described in connection with Claim 3, Quenzi describes embodiments having an auger mounted to the plow and located at the forward edge of the vibrating beam. Ex-1003, ¶¶ 121-125. In each of these embodiments (including at least Fig. 23), the auger and plow comprise a “grade establishing element,” such that the auger is located *behind* or “rearward” of the plow. *See id.*, ¶ 125 (“the auger may supplement engagement and strike-off of the concrete”). In this arrangement, the “rearward end of the grade establishing element” would be the “rearward end of said auger.” Similarly, in this arrangement, the vibratable member, which is adjustably attached at the rearward end of the grade establishing element as

described in connection with Element 1.7, would also therefore be attached at the rearward end of the auger.

123. Therefore, in my opinion, Quenzi discloses “wherein said rearward end of said grade establishing element [e.g., the auger and plows 312, 412 (purple)] comprises a rearward end of said auger and wherein said vibratable member [e.g., vibrating beams 320, 420 (orange above)] is adjustably attached at said rearward end of said auger.”

13. Dependent Claim 5: “The wheeled concrete screeding device of claim 1, wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element.”

Dependent Claim 6: “The wheeled concrete screeding device of claim 5, wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element via a pair of links that are pivotally attached at said rearward end of said grade establishing element.”

124. For claims 5 and 6, I note that claim 6 repeats the same limitation from claim 5 of “wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element.” Thus, I address both claims 5 and 6 together inasmuch as addressing claim 6 necessarily involves discussing this limitation of claim 5.

125. At the outset, I note that both claims require “said vibratable member is pivotally attached *at said rearward end* of said grade establishing element.” For the same reasons as discussed with the “adjustably at said reward end” language of

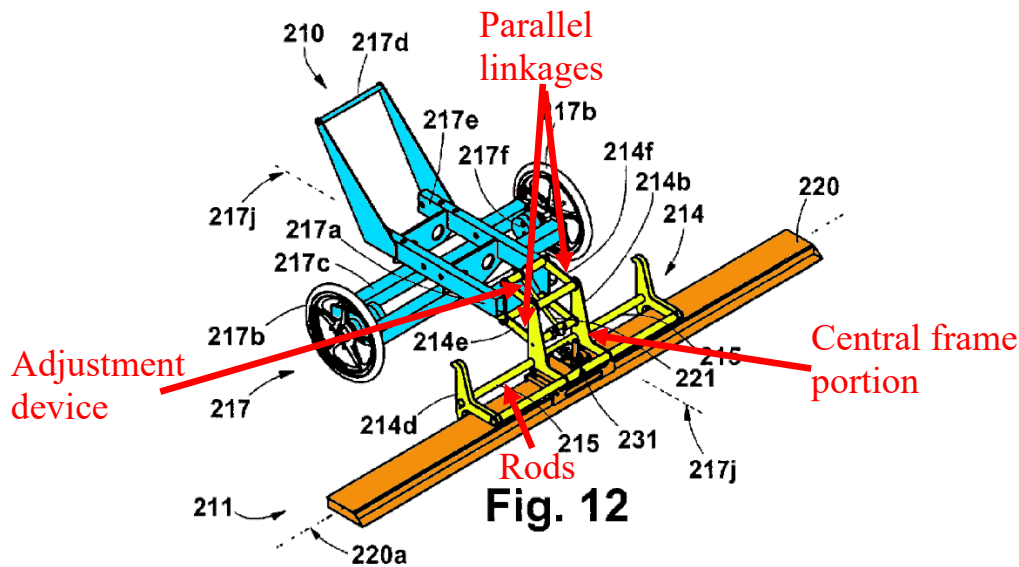
Element 1.7 above, in my opinion, a POSITA would understand the plain language of this phrase to be expressing two requirements the vibratable member is: (1) pivotable (i.e., pivotally attached) and (2) attached at a location rearward of the grade establishing member (i.e., at said rearward end). Similarly, for language “via a pair of links that are pivotally attached *at said rearward end* of said grade establishing element,” a POSITA would understand the plain language to be expressing that the links are: (1) pivotable (i.e., pivotally attached) and (2) attached at a location rearward of the grade establishing member (i.e., at said rearward end).

126. Turning to Quenzi, each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element via a pair of links that are pivotally attached at said rearward end of said grade establishing element.” As described in connection with Element 1.7, Quenzi’s vibratable member (orange) for each embodiment disclosed in connection with Figures 12-15, 16-20, and 23 is **adjustably attached** at the rearward end of the grade establishing element. Quenzi also confirms that the vibratable member (orange) of each of these embodiment is “**pivotably attached**” at this location as well “via a pair of links that are pivotally attached at said rearward end of said grade establishing element.”

127. For example, for Figs. 12-15, Quenzi describes that the vibratable beam is attached to the framework 214 via “two pairs of spaced side **frame members 214d**

which are connected together by a pair of **generally parallel rods 215**, similar to frame 14 discussed above.” Ex-1003, ¶ 88. The rods 214 are in turn connected to the central frame portion 214b, “each side of which is further connected to **a pair of generally parallel linkages 214e, 214f** (in the illustrated embodiment, linkage 214f is generally parallel to and above linkage 214 e at each side of the wheeled support 217).” *Id.* “The spaced, **parallel linkages 214e, 214f** . . . are **pivotal** to adjust the framework 214, and thus the vibrating beam 220, relative to wheeled support 217, as discussed below.” Ex-1003, ¶ 88.

128. As can be easily seen in Fig. 12 shown below, the parallel linkages 214e, 214f are attached to framework 214 via central frame portion 214b, which is in turn connected to spaced side frame members 214 via the rods 215, and each is located at the forward edge of the vibrating beam (orange) so as to permit adjustment via adjustment device 221:



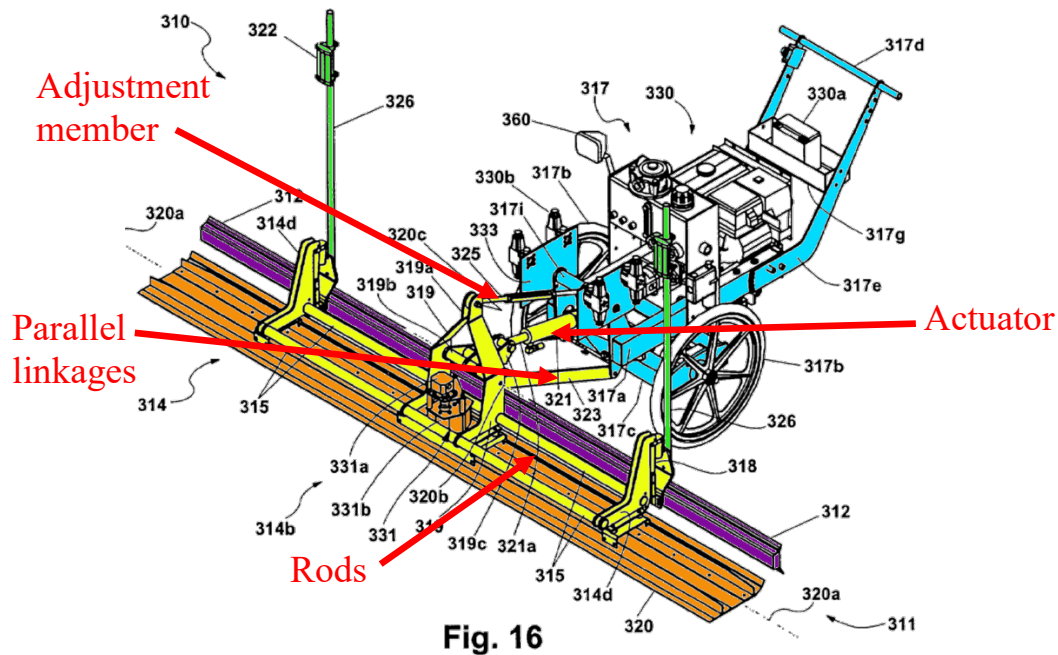
See also *id.*, ¶¶ 88, 92 (describing same).

129. As discussed in connection with Element 1.5, although not shown in Figure 12 above, Quenzi describes that an optional plow may be “adjustably mounted to the side frame members 214d.” *Id.*, ¶ 91. When a plow is included attached to the side frame members 214, then the vibrable member is pivotally attached (as discussed above) at the rearward end of said grade establishing element via a pair of links (e.g., parallel linkages 214e, 214f, the crossbars between them, rods 215, etc.) that are likewise pivotally attached at the rearward end of said grade establishing element.

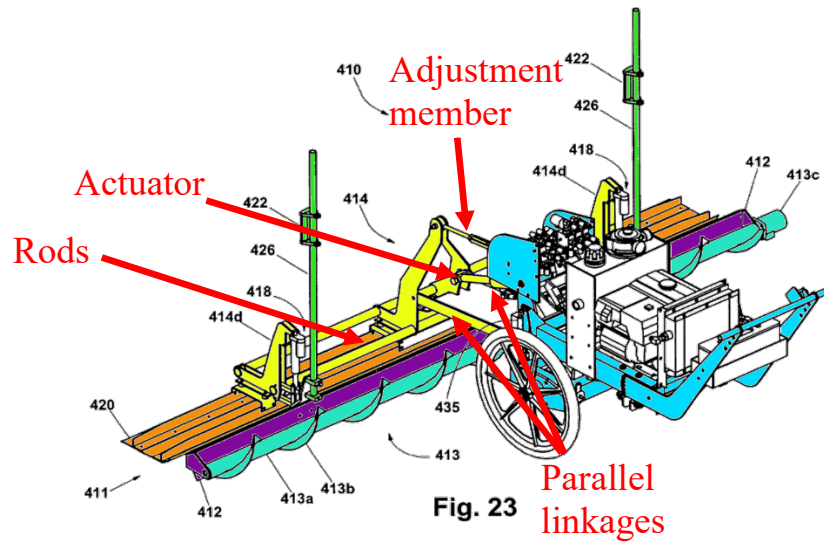
130. For Figs. 16-20, Quenzi similarly describes that the vibratable beam is attached to the framework 314 via “two pairs of spaced side **frame members 314d** which are connected together by a pair of generally **parallel rods 315**, similar to

frames 14 and 214 discussed above.” Ex-1003, ¶106. As before, the rods 315 are in turn connected to the central frame portion 314b, such that the “central frame portion 314b is **pivotally and adjustably** mounted to rear end 317a of wheeled support 317 via the pair of **parallel linkages 323**, the adjustable member 325 and actuator 321.” Ex-1003, ¶ 107. Quenzi further describes that “adjustment of the length of adjustable member 325 causes **pivotal movement of brackets 319 and vibrating beam 320** and plow 312 about cross member 319b and pivot axis 320b.” *Id.*, ¶109.

131. As illustrated in Figure 16 below, the parallel linkages 323, upwardly extending brackets or flanges 319, side frame members 314d, rods 315, etc., are pivotally attached at said rearward end of said grade establishing element (i.e., purple plow) and adjustable in height and angle using the adjustable member 325 and actuator 321:

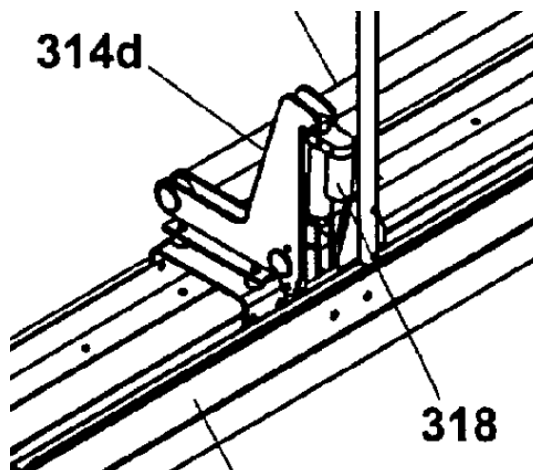


132. For Fig. 23, Quenzi likewise describes that “screeding device 410 includes a screeding head 411 . . . and a vibrating beam 420 attached to a framework 414, similar to screeding device 310 discussed above” and that “such that a detailed discussion will not be repeated herein.” *Id.*, ¶ 121. The pivotable linkages, upwardly extending brackets, side frame members, rods, brackets, and actuators are clearly shown in Fig. 23 as being pivotally attached at said rearward end of said grade establishing element (purple plow) using the same or nearly identical structure as described in connection with Fig. 16 above:

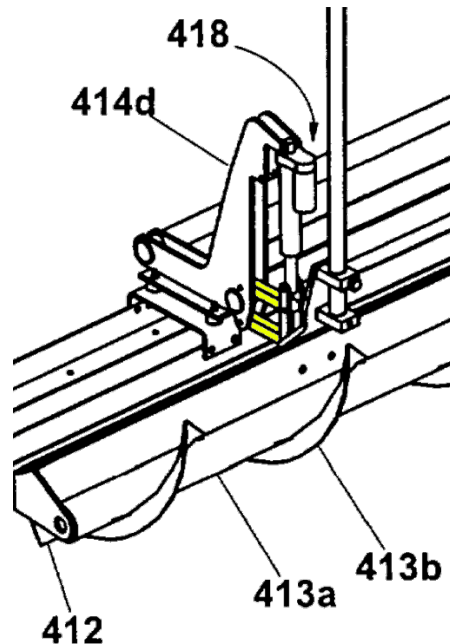


133. In addition, as I discuss above in Element 1.7, Quenzi discloses linkages that are pivotally attached to the vibrating member at the rearward end of the plow. Specifically, Quenzi teaches, “actuators 18 control the vertical elevation of **the plow 12 in relationship to the framework 14 and vibrator beam 20 via pivoting of the linkages 16 relative to plow 12 and framework 14.**” Ex-1003, ¶72. Quenzi describes these linkages as being “**pivotally mounted**” and “**secured to a rear portion of the plow 12.**” Ex-1003, ¶73.

134. For the reasons I provide above in Element 1.7, each of Quenzi’s embodiments that I discuss throughout this ground also include these linkages. For example, these linkages would be present in the Figures 12-15 embodiment when modified to include a plow, and they can be seen shown in Figures 17 and 23:



Ex-1003, Figure 17 (excerpted)



Ex-1003, Figure 23 (excerpted)

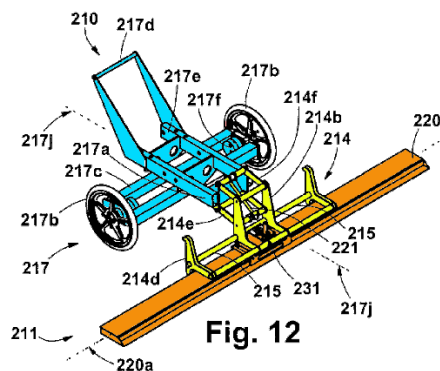
135. Therefore, in my opinion, Quenzi discloses “wherein said vibratable member [e.g., vibrating beams 320, 420 (orange)] is pivotally attached at said rearward end of said grade establishing element [e.g., the auger and plow 312, 412 (purple)] via a pair of links that are pivotally attached at said rearward end of said grade establishing element [e.g., parallel linkages 214e, 214f, adjustable member 325, actuator 321, rods 215, 315, and other linkages attached to the brackets at reward end of auger and plow].”

14. Dependent Claim 7: “The wheeled concrete screeding device of claim 5, wherein said vibrating member is pivotally attached at at least one bracket at said rearward end of said grade establishing element.”

136. As discussed in connection with claims 5 and 6, Quenzi describes that the vibratable member is pivotally attached at the rearward end of the grade establishing element via a pair of links. Each of the embodiments disclosed in

connection with Figures 12-15, 16-20, and 23 of Quenzi further disclose “wherein said vibrating member is pivotally attached at at least one bracket at said rearward end of said grade establishing element.” Again, as before, a POSITA would understand the claim to be describing the location of attachment.

137. As shown labeled below, the embodiments of Figs. 12-15, 16-20, and 23 include the vibrating member such that it is also pivotably attached at at least one bracket located at the rearward end of the grade establishing element:



Ex-1003, Fig.12

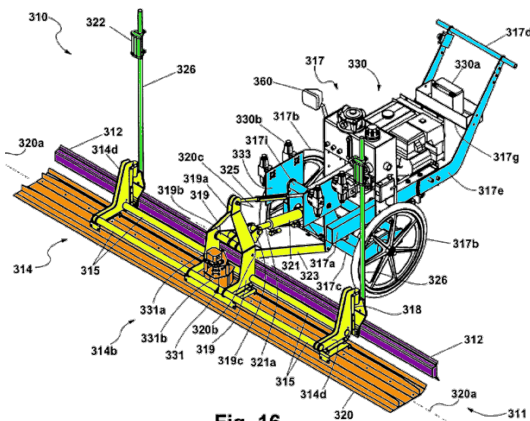
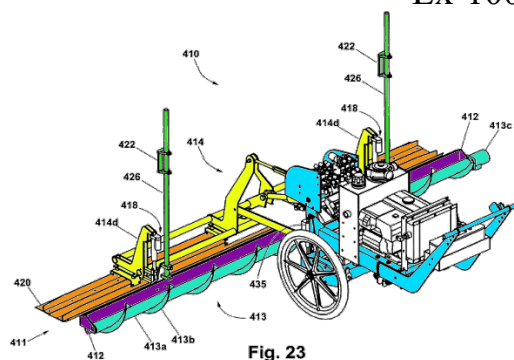


Fig. 16

Ex-1003, Fig.16

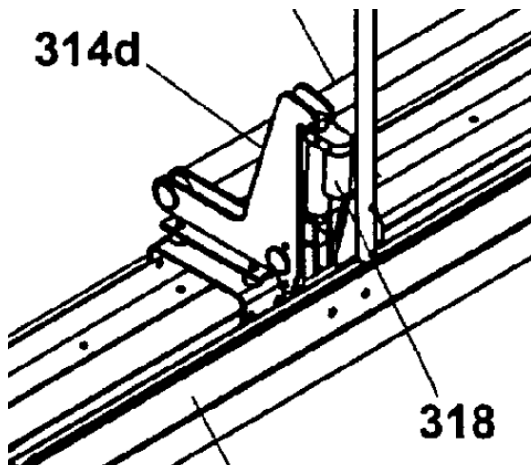


138. For example, Quenzi describes “upwardly extending brackets” as part of the “central frame portion” for each of the embodiments. *See id.*, ¶ 88 (describing “central frame portion 214b” for Figs. 12-15); *id.*, ¶¶ 98, 106 (describing “upwardly

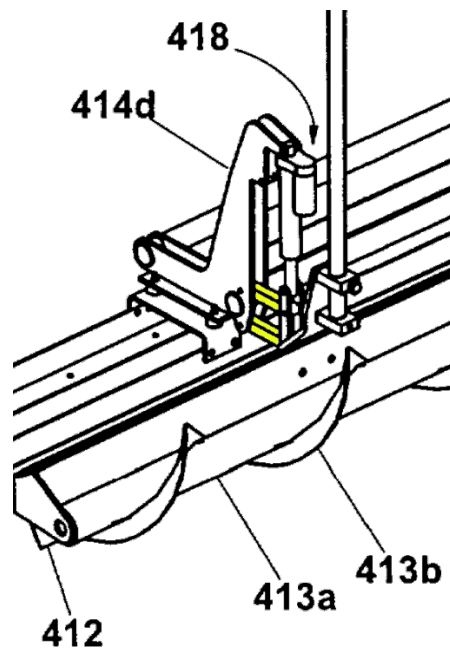
extending brackets or flanges 319” for Figs. 16-20); *id.*, ¶ 121 (describing Fig. 23 uses “similar” framework as screeding device 310). In addition, as can be seen in the images above, the side frame members 214d, 314d and rods 214, 315 are secured to the vibratable beam using brackets attached to the beam’s surface. *See id.*, ¶ 88 (describing “framework 214 includes two pairs of spaced side frame members 214d which are connected together by a pair of generally parallel rods 215, similar to frame 14 discussed above.”); *id.*, ¶ 102 (“[T]he vibrating beam 320 may be attached to the vibrating device 331 via cylindrical mounting members 340c, while the lower mounting plate 340b of vibrating device 331 is mounted to the framework 314 through one or more vibration isolator or elastic rubber sandwich mounts 31e (FIG. 17), which serves to help dampen the transmission of beam vibration to the support frame 314a.”). Quenzi describes further details about these brackets in connection with the earlier Figures 1-8. *See, e.g., id.*, ¶ 77 (“The lower mounting plate 40b, and thus the vibrator beam 20, is also mounted to lower brackets or plates 46, one on each of the central frame portions 14b, via one or more rubber sandwich mounts 28 (such as four in the illustrated embodiment), which also help serve to dampen the transmission of beam vibration to the support frame 14 and operator handle 14 a of screeding device 10.”). These components are also “brackets at said rearward end of said grade establishing element” that pivotably attach the vibratable beam to the wheeled unit.

139. In addition, as I discuss above in Element 1.7, Quenzi discloses linkages that are pivotally attached to the vibrating member at the rearward end of the plow. Specifically, Quenzi teaches, “actuators 18 control the vertical elevation of the **plow 12 in relationship to the framework 14 and vibrator beam 20 via pivoting of the linkages 16 relative to plow 12 and framework 14.**” Ex-1003, ¶72. Quenzi describes these linkages as being “**pivotally mounted**” and “**secured to a rear portion of the plow 12.**” Ex-1003, ¶73.

140. Again, for the reasons I provide above in Element 1.7, each of Quenzi’s embodiments that I discuss throughout this ground also include these linkages. For example, these linkages would be present in the Figures 12-15 embodiment when modified to include a plow, and they can be seen shown in Figures 17 and 23:



Ex-1003, Figure 17 (excerpted)



Ex-1003, Figure 23 (excerpted)

141. Therefore, in my opinion, Quenzi discloses “wherein said vibrating member [e.g., vibrating beams 320, 420 (orange)] is pivotally attached at at least one bracket at said rearward end of said grade establishing element [e.g., pivotally attached by parallel linkages 214e, 214f. 323, 325, rods 215, 315, and other linkages attached to the brackets (yellow) and vibratable beam (orange) at reward end of auger (teal) and plow (purple)].”

15. Dependent Claim 8: “The wheeled concrete screeding device of claim 7, wherein said vibrating member is pivotally attached at said at least one bracket via at least one mounting pin.”

142. Each of the embodiments disclosed in connection Figures 12-15, 16-20, and 23 of Quenzi disclose “wherein said vibrating member is pivotally attached at said at least one bracket via at least one mounting pin.” In each of the illustrations of the embodiments disclosed in Figs. 12-15, 16-20, and 23, Quenzi clearly depicts that the brackets identified for claim 7 are secured by a pin running through the cross member(s) between the brackets, as well as a pins attaching the adjustable member 325 and actuator 321 of Figures 16 and 23. *Id.*, Figs. 12-15, 16-20, and 23. For example, the pins are clearly visible in the figures for each embodiment shown below:

Fig. 12

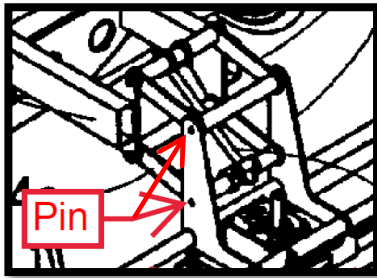


Fig. 16

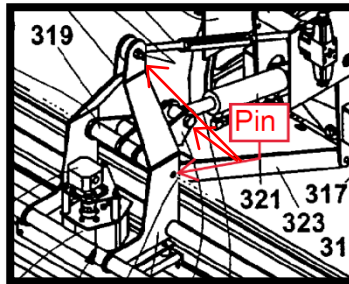
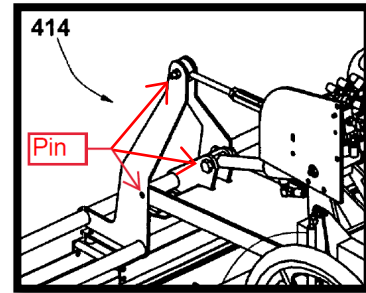
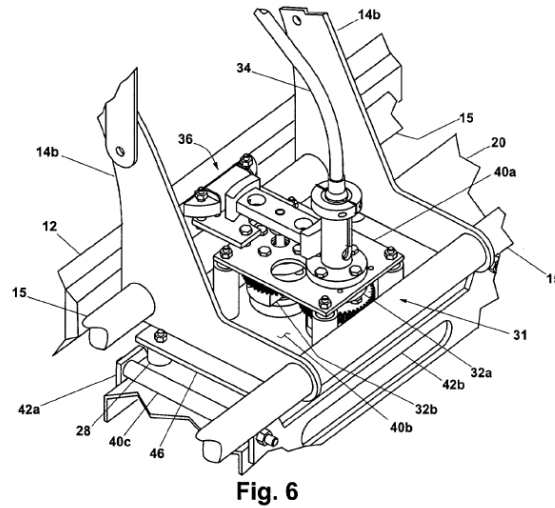


Fig. 23



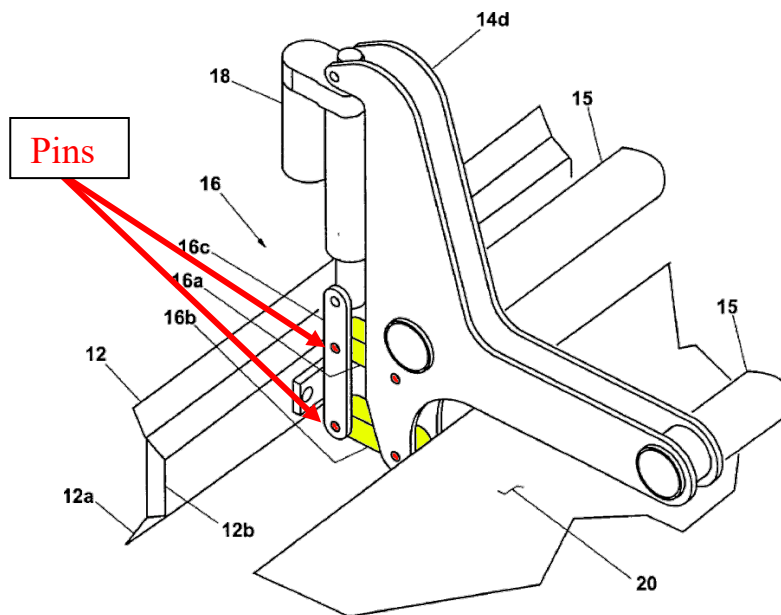
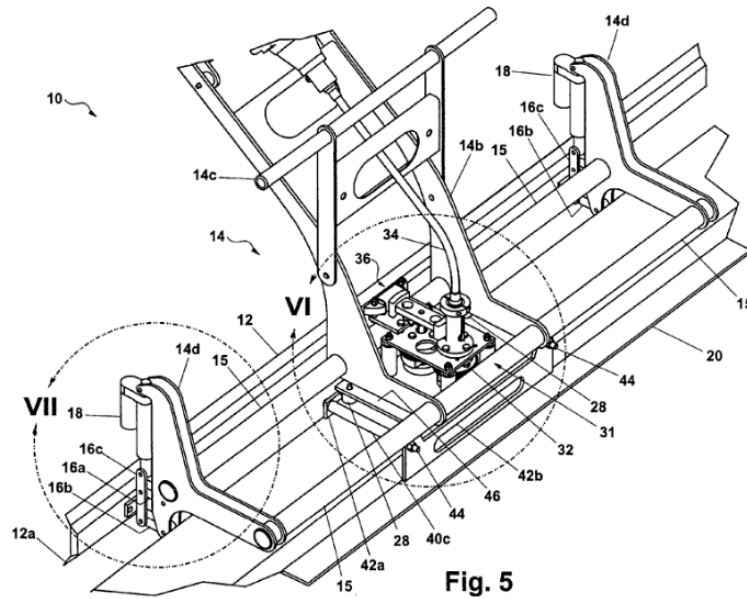
143. In addition, the brackets discussed in claim 7 that assist in securing the side frame members 214d, 314d and rods 214, 315 to the vibratable beam are also attached via at least one mounting pin. The embodiments of Figures 12-15, 16-20, and 23 refer back to Quenzi's earlier discussion of Figures 1-8 for details regarding the mounting of the vibratable beam to side frame members 214d, 314d and rods 214, 315. *See, e.g., id.*, ¶ 88 (describing “framework 214 includes two pairs of spaced side frame members 214d which are connected together by a pair of generally parallel rods 215, similar to frame 14 discussed above.”); *id.*, ¶ 100 (describing “a vibration device 331, which is operable to cause vibration of the vibrating beam 320, in a similar manner as described above with respect to vibration device 31”). As is more easily seen in the earlier figures showing close-ups of how the vibratable beam is mounted, the brackets attached to the beam's surface are attached using mounting pins:



Ex-1003, Fig. 6

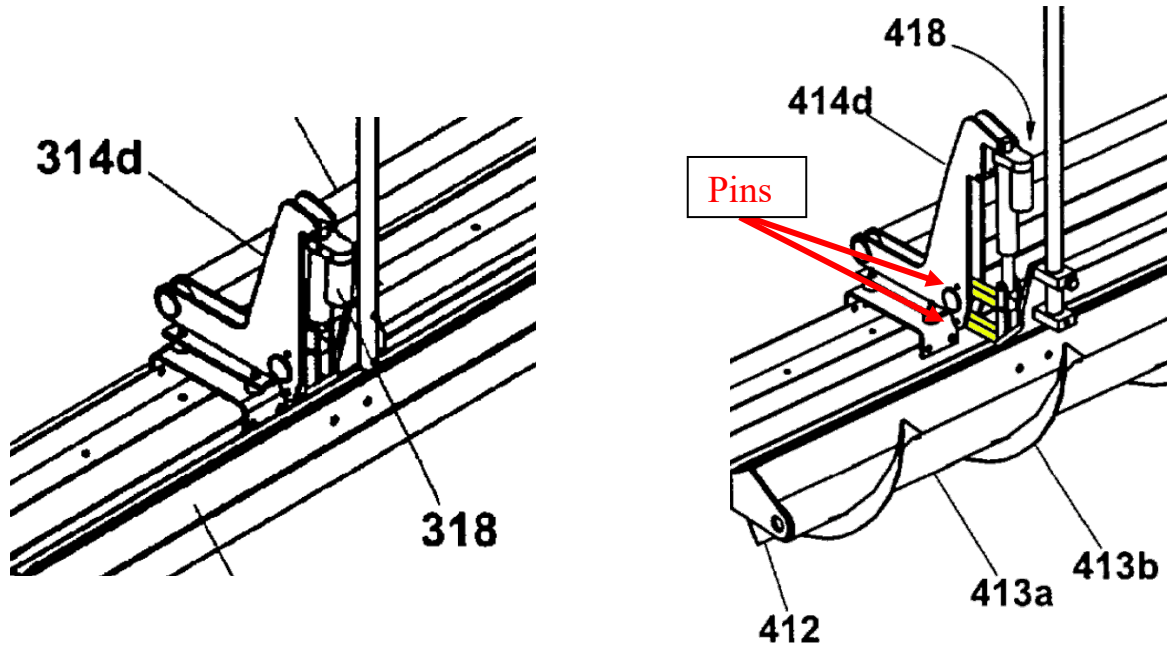
144. In addition, as I discuss above in Element 1.7, Quenzi discloses linkages that are pivotally attached to the vibrating member at the rearward end of the plow. Specifically, Quenzi teaches, “actuators 18 control the vertical elevation of the plow 12 in relationship to the framework 14 and vibrator beam 20 via pivoting of the linkages 16 relative to plow 12 and framework 14.” Ex-1003, ¶72. Quenzi describes these linkages as being “pivotally mounted” and “secured to a rear portion of the plow 12.” Ex-1003, ¶73.

145. Quenzi's Figures 5 and 7, below, show the function of these linkages in greater detail, including the mounting pins (red) that attach the linkages:



146. For the reasons I provide above in Element 1.7, each of Quenzi's embodiments that I discuss throughout this ground also include these linkages. For

example, these linkages would be present in the Figures 12-15 embodiment when modified to include a plow, and they can be seen shown in Figures 17 and 23:



Ex-1003, Figure 17 (excerpted)

Ex-1003, Figure 23 (excerpted)

147. Therefore, in my opinion, Quenzi discloses “said vibrating member is pivotally attached at said at least one bracket via at least one mounting pin.”

16. Dependent Claim 9: “The wheeled concrete screeding device of claim 7, wherein said vibrating member is securable relative to said at least one bracket to retain said vibrating member at a desired attack angle as said vibrating member is moved in said screeding direction behind said grade establishing element.”

148. Each of the embodiments disclosed in connection with Figures 12-15, 16-20, and 23 of Quenzi disclose “wherein said vibrating member is securable relative to said at least one bracket to retain said vibrating member at a desired attack

angle as said vibrating member is moved in said screeding direction behind said grade establishing element.”

149. For Figs. 12-15, as discussed, Quenzi describes that the vibratable member is attached relative to the central frame portion 214b by parallel rods 215 extending between frame members 214d and mounting brackets attached to the beam’s surface. Ex-1003, ¶¶ 77, 88. And as described with Element 1.7, the vibratable member (orange) and framework 214 is adjustable using adjustment device 221. When such adjustment occurs, Quenzi describes that parallel linkages 214e, 214f are caused to “pivot[] to adjust the framework 214, and thus the vibrating beam 220 . . .” *Id.* Quenzi also describes that “either or both of the linkages 214e, 214f may be replaced with **adjustment devices** that are operable to adjust the relative angle or pitch of the framework 214, central frame portion 214b, and vibrating beam 220 relative to both the wheeled support 217 and the generally horizontal work surface,” and “are thus operable to adjust the **‘angle of attack’ of the vibrating beam 220** relative to the wheeled support 217.” *Id.*, ¶ 94. Accordingly, for Figures 12-15, the vibrating member 220 (orange) is securable relative to the brackets that I discussed in connection with claim 7 above (yellow) to retain vibrating member 220 (orange) at a desired attack angle as it is moved in the screeding direction behind the grade establishing element or plow.

150. For Figs. 16-20, Quenzi similarly describes that the vibratable member is attached relative to upwardly extending brackets 319 by parallel rods 315 extending between frame members 314d and mounting brackets attached to the beam's surface, "such that pivotal movement of cross member 319b causes pivotal movement or rotation of the brackets 319 and of vibrating beam 320" *Id.*, ¶ 98. Quenzi further describes that "[a]djustable member 325 . . . is adjustable to adjust a **pitch or 'angle of attack' of framework 314 and vibrating beam 320** relative to wheeled support 317," and that "adjustable member 325 functions to **maintain vibrating beam 320 at the desired orientation or 'angle of attack'** relative to wheeled support 317 through the operating range of travel." *Id.*, ¶ 106. In this way, "the **pitch angle and general height of the vibrating beam 320** relative to the wheeled support 317 may be selected and adjusted via adjustment of the turnbuckle or adjustable member 325 and extension and/or retraction of the adjustable member 321." *Id.*, ¶ 109.

151. Further, Quenzi describes that the screeding head 311 in this embodiment may be mounted so that it "may be pivoted . . . about an axis 320b generally parallel to the longitudinal axis 320a of the vibrating beam (FIGS. 16 and 17)." *Id.*, ¶ 105. Thus, for Figures 16-20, the vibrating beam 320 (orange) is securable relative to the brackets that I discussed in connection with claim 7 above

(yellow) to retain vibrating beam 320 (orange) at a desired attack angle as it is moved in the screeding direction behind the grade establishing element or plow (purple).

152. For Fig. 23, Quenzi describes that “vibrating beam 420” is “attached to a framework 414, similar to screeding device 310 discussed above” and “such that a detailed discussion will not be repeated herein.” *Id.*, ¶ 121. Thus, the embodiment of Fig. 23 includes a vibratable beam 420 (orange) secured relative to the brackets that I discussed in connection with claim 7 above (yellow) that are pivotable to retain the vibrating beam 420 (orange) at a desired attack angle behind the grade establishing element or plow (purple) in the same manner as described for Figs. 16-20.

153. In addition, as I discuss above in Element 1.7, Quenzi discloses linkages that are pivotally attached to the vibrating member at the rearward end of the plow. Specifically, Quenzi teaches, “actuators 18 control the vertical elevation of the plow 12 in relationship to the framework 14 and vibrator beam 20 via pivoting of the linkages 16 relative to plow 12 and framework 14.” Ex-1003, ¶72. Quenzi describes these linkages as being “pivotally mounted” and “secured to a rear portion of the plow 12.” Ex-1003, ¶73.

154. Quenzi’s Figures 5 and 7, below, show the function of these linkages in greater detail, including the mounting pins that attach the linkages:

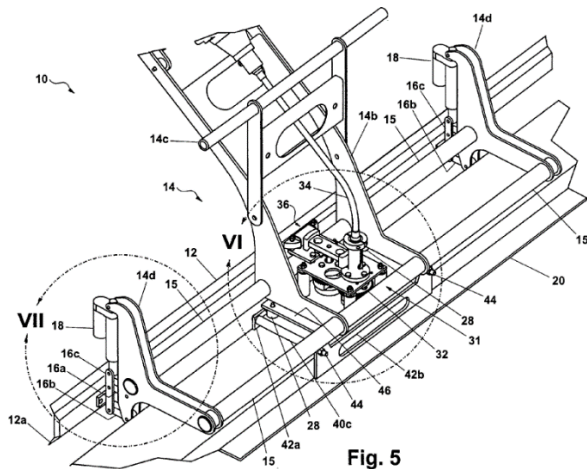


Fig. 5

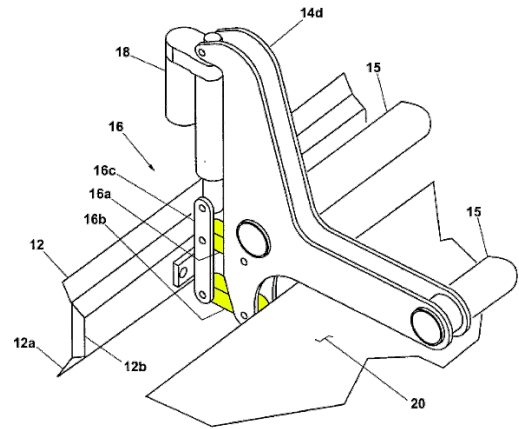


Fig. 7

155. Quenzi teaches these linkages between the vibrating beam and plow allow adjustment of the plow to occur *independently* of the vibrator beam. Ex-1003, ¶72 (“Because the actuators are generally fixedly mounted to the frame members 14d and, thus, to the vibrator beam 20, **actuation of the actuators functions to lower or raise the plow relative to the vibrator beam.**”) Quenzi explains that the linkages allow the plow to move relative to the vibrator beam, even after its angle of attack is locked-in:

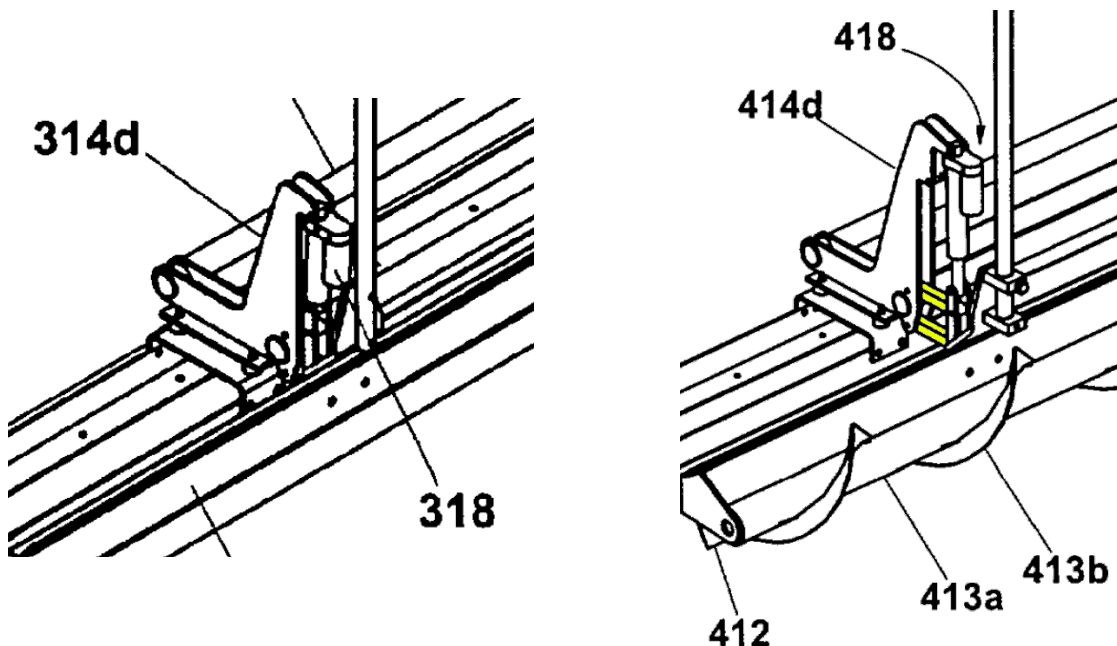
As best seen in FIGS. 7 and 8, each set of linkages 16 includes a pair of generally **parallel links 16 a, 16 b, which are pivotally mounted to side frame member 14d at one end** and to a generally vertical link 16 c at the other end. **Vertical link 16 c is secured to a rear portion of the plow 12.** Actuators 18 are connected to generally vertical link 16 c and **function to raise and lower vertical link 16 c and plow 12 in a generally vertical, linear, reciprocal direction** by pulling or pushing link 16 c toward or away from the actuator, while **links 16 a, 16 b function to maintain the plow in its generally vertical orientation during such reciprocal movement via pivotal**

**movement of links 16 a, 16 b relative to frame member
14 d and center link 16 c.**

Ex-1003, ¶73.

156. In other words, a POSITA would appreciate that once the angle of attack for the vibrator beam is set and secured using adjustable member 325, the height of the plow can still be adjusted utilizing these linkages.

157. For the reasons I provide above in Element 1.7, each of Quenzi's embodiments that I discuss throughout this ground also include these linkages. For example, these linkages would be present in the Figures 12-15 embodiment when modified to include a plow, and they can be seen shown in Figures 17 and 23:



Ex-1003, Figure 17 (excerpted)

Ex-1003, Figure 23 (excerpted)

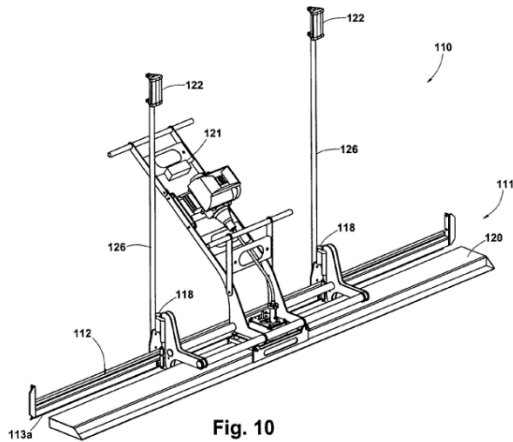
158. Therefore, in my opinion, Quenzi discloses “wherein said vibrating member is securable relative to said at least one bracket to retain said vibrating member at a desired attack angle [e.g., the wheeled devices have adjustment

mechanisms “operable to adjust the ‘**angle of attack**’ of the **vibrating beam 220** [orange] relative to the wheeled support 217 [blue]”] as said vibrating member is moved in said screeding direction behind said grade establishing element [e.g., in the “forward direction” as discussed in Element 1.3].”

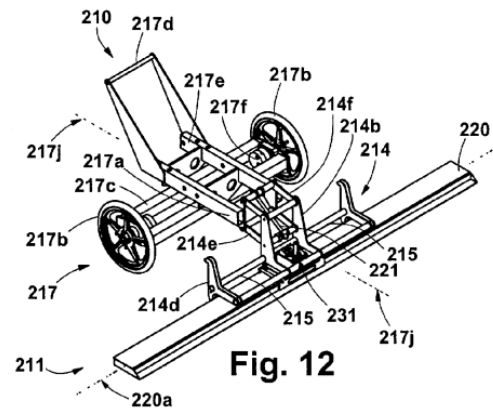
B. Ground 2: Claims 1-9 Are Rendered Obvious by Quenzi (Ex-1003)

159. In my opinion, independent claim 1 and dependent claims 2-9 are rendered obvious under 35 U.S.C. §103 by Quenzi.

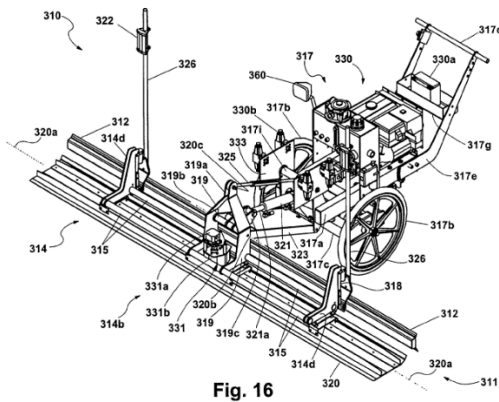
160. As I discussed in the introduction to Ground 1, Ground 1 is based on three embodiments from Quenzi that each anticipate on their own. Nonetheless, these embodiments are not mutually exclusive and a POSITA reading Quenzi’s disclosure would both recognize and be motivated to combine the respective embodiments. For example, as seen in the figures, the various embodiments of Quenzi are all directed to similar screeding devices that contain, among other things, vibratable members and/or plows that are attached to frameworks using similar bracketing and linkage mechanisms. *See* Ex-1003, Figs. 1-27.



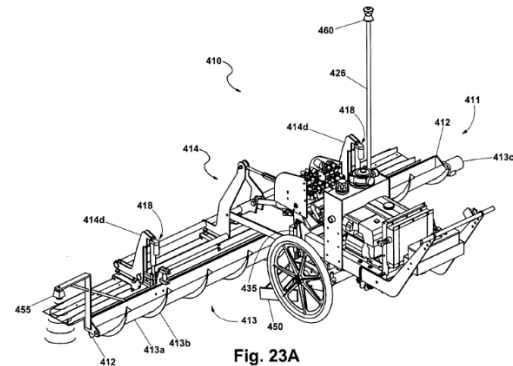
Ex-1003, Fig. 10



Ex-1003, Fig. 12

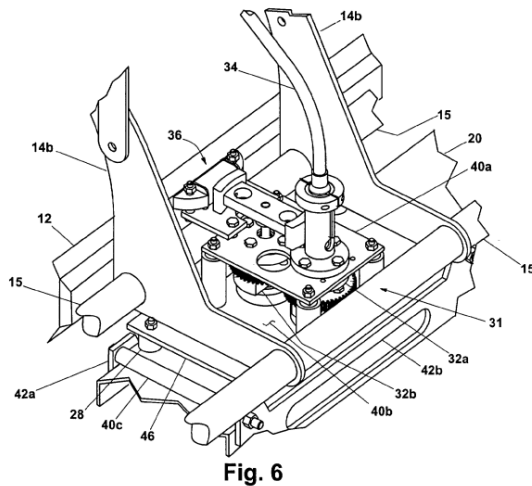


Ex-1003, Fig. 16

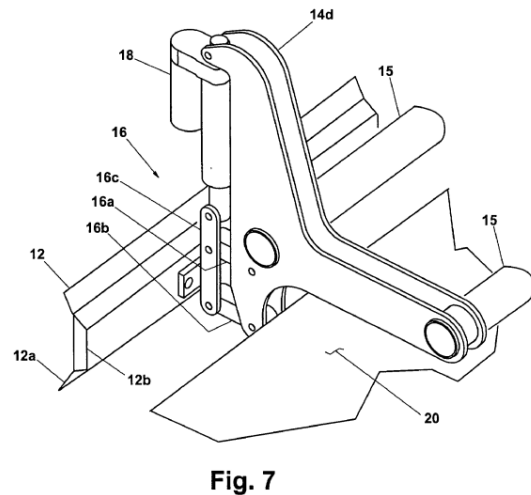


Ex-1003, Fig. 23A

161. Some of these features are illustrated and described in depth with Quenzi's earlier figures, such as the brackets and the actuators coupled there to shown in Figures 6 and 7. *Id.*, Figs. 6-7.



Ex-1003, Fig. 6



Ex-1003, Fig. 7

162. Not surprisingly, given this set up, Quenzi repeatedly refers to various features “discussed below” or “discussed above” throughout its disclosure when describing the disclosed embodiments. *See, e.g., id.*, ¶¶ 69, 70, 79, 86, 88-91, 102-103, 118, 121. For example, when describing the embodiment of Figures 12-15, Quenzi refers to arranging the structure “in a similar manner as discussed above with respect to screeding devices 10 and 110.” *Id.*, ¶ 91. Quenzi does the same for embodiments of Figures 16-20 and 23. *See id.*, ¶¶ 102, 121.

163. Considering these disclosures and similar disclosures throughout Quenzi, in my opinion, it would have been obvious to a POSITA to combine the features of Quenzi’s embodiments given at least: (i) the similarity between the structure and function of each disclosed embodiment, including how the plow, vibratable beam, and/or auger are all attached to the wheeled support using an

adjustable framework; and (ii) Quenzi's repeated references to prior embodiments when discussing features of the devices or potential modifications thereto. Thus, to the extent that Patent Owner argues that any specific features discussed above are not expressly disclosed to be present on the same embodiment (which I would dispute for the reasons discussed in Ground 1), it would nonetheless have been obvious to combine the elements of each embodiment on the same device.

164. As non-limiting examples, as discussed for Element 1.8 above, Quenzi repeatedly describes the vibratable member as member at least partially floats behind the grade establishing element on, and is at least partially supported at, the struck-off surface. *See id.*, ¶¶ 9 (“The **vibrating member generally floats upon or is supported** directly on the uncured concrete surface created by the grade setting device ahead of it.”); *id.*, ¶ 11 (“The present invention thus provides a self-correcting process along with the ability of the apparatus to be **at least partially supported upon the desired correct elevation surface it creates, as the device itself advances.**”), *id.*, ¶ 68 (“[T]he vibrator beam 20 **floats on or is at least partially supported** on the uncured surface”). In connection with Element 1.8, I described my opinion that even though certain of these disclosures come from Quenzi's Summary of the Invention, the nonetheless apply equally to each of the embodiments in Ground 1 inasmuch as they each use the same or similarly functioning adjustable

framework for supporting the vibratable member behind the grade setting device at the desired height and angle on the struck-off surface of the concrete.

165. To the extent Patent Owner disputes this assertion, it is also my opinion that, based on the aforementioned disclosures in Quenzi, it would have been obvious (and desirable) to a POSITA to place the vibratable member behind the grade setting device in a manner that ensures it at least partially floats behind said grade establishing element on the struck-off surface of the uncured concrete and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction. For example, a POSITA would have readily understood, based on Quenzi's disclosures mentioned above, that the vibratable members discussed in Ground 1 are designed to at least partially float behind said grade establishing element on the struck-off surface of the uncured concrete and be at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction. Further, Quenzi reflects that it would have been obvious and desirable to ensure this because “[t]he **floating action** of the vibrator beam 20 over the uncured concrete [] continues to consolidate, smooth, level and finish the uncured concrete surface.” Ex-1003, ¶ 81. Accordingly, in my opinion, a POSITA would have been motivated based on Quenzi's disclosure to form the vibratable member such that it “at least partially floats behind said grade establishing element on the struck-off surface of the uncured

concrete and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction,” as claimed.

166. For claims 3 and 4, as discussed above, Quenzi expressly teaches modifying the embodiment of Fig. 23 to include an auger behind the plow member and with the vibrating member attached rearward of the auger. Specifically, Quenzi teaches “[i]t is envisioned that the screeding device of the present invention **may alternately include an auger or the like positioned along a forward edge of the vibrating beam**,” where “[s]uch an embodiment **may or may not include a strike-off plow or indicating member**. The auger may replace the function of this component entirely or, optionally, **the auger may supplement engagement and strike-off of the concrete.**” Ex-1003, ¶125.

167. A POSITA would appreciate that it would be advantageous to incorporate an auger behind the plow to “supplement engagement and strike-off of the concrete” as taught by Quenzi. Ex-1003, ¶125. Specifically, Quenzi teaches the auger can act as a secondary strike-off device or grade establishing element:

The auger or other such device may be vertically adjustable in response to the elevation actuators or cylinders to adjust the concrete surface to the desired grade, such as **in a manner similar to the other grade setting devices 12, 112, 212, 312 and/or 412**, discussed above. In such an embodiment, it is further envisioned that the auger may be constructed to close tolerance dimensions and constructed of materials of increased structural rigidity, such as alloy steel or carbon fiber or the

like, such that **the auger may be increasingly suited for cutting or establishing the grade height of the uncured concrete** as the screeding device is moved along and through the uncured concrete.

Ex-1003, ¶125.

168. A POSITA would further appreciate that placing an auger behind the plow would have the benefit of removing excess concrete not captured by the plow and filling any low spots in the concrete not otherwise filled by the plow. *See* Ex-1003, ¶122 (“Alternately, the auger 413 may be positioned relative to the plow 412 such that a lower edge of flanging 413 is equal in elevation to the lower edge of the plow 412, such that **the auger 413 removes any excess concrete or respectively carries and adds concrete to fill any low spots and therefore sets the uncured concrete surface to the desired grade.**”) In my opinion, a POSITA would have been motivated to follow the teachings of Quenzi and utilize an auger behind the plow member and with the vibrating member attached rearward of the auger.

169. At the very least, and given that Quenzi only discloses two options (an auger in front of or behind the plow), use of an auger behind a plow would have been obvious to try as there were a finite number of identified, predictable solutions (two options in Quenzi, in front of or behind the plow), and there was a reasonable expectation of success in using either of these (Quenzi specifically shows a POSITA how to design a screed head that can be configured to use an auger and plow in either configuration).

170. It would also have been obvious to a POSITA to modify the other embodiments of Ground 1 in a similar manner, especially given Quenzi's repeated descriptions of making the same types of modifications to its various embodiments.

171. For claims 7 and 9, as discussed above, Quenzi discloses linkages that are pivotally attached to the vibrating member at the rearward end of the plow. *See* Ex-1003, ¶¶ 72, 73; Figures 5, 7. Further, as I discussed, each of the embodiments discussed throughout Ground 1 include these linkages given that Quenzi refers back to the earlier paragraphs when describing the embodiments of Figures 12-15, 16-20, and 23, and even illustrates the linkages in Figures 16-20 and 23. *See, e.g., id.*, ¶¶ 91, 95, 103. To the extent Patent Owner disputes this assertion or argues additional modifications would be required to incorporate these features, it would have been obvious to a POSITA to modify the embodiments of Ground 1 to incorporate the pivoting linkages discussed in connection with Figures 5 and 7 in a similar manner. Given the similarity of Quenzi's various embodiments, a POSITA would have readily recognized this modification could be made and been motivated to make it in order to, for example, provide the ability to "lower or raise the plow relative to the vibrator beam." *Id.*, ¶ 72. The similarity of the embodiments and the manner in which the linkages attach in each also confirms a POSITA would have had a reasonable expectation of success in making this modification (if necessary).

172. For claim 8, to the extent that Patent Owner argues Quenzi does not expressly disclose a mounting pin pivotally attaching the vibrating member to the at least one brackets discussed above, it would have been obvious to a POSITA to use a mounting pin. For example, using a mounting pin arranged as shown and suggested in the figures cited in Ground 1 would permit the frame, and thus vibrating member, to pivot during adjustment of the framework (e.g., 214, 314, 414, etc.).

173. Moreover, it is my opinion that the disclosures identified in Ground 1 confirm that Quenzi discloses the same structure, arranged in the same manner as claimed. To the extent Patent Owner argues that there are minor differences in structure that would purportedly defeat an anticipation claim, in my opinion such minor differences would also have been obvious to a POSITA based on Quenzi's robust disclosures discussed above for each element.

C. Ground 3: Claims 1-15 Are Rendered Obvious by Jochems (Ex-1004) in View of Quenzi (Ex-1003)

174. In my opinion, independent claims 1 and 13 and dependent claims 2-12 and 14-15 are rendered obvious under 35 U.S.C. §103 by Jochems in view of Quenzi.

1. Motivation to Combine Jochems-Quenzi

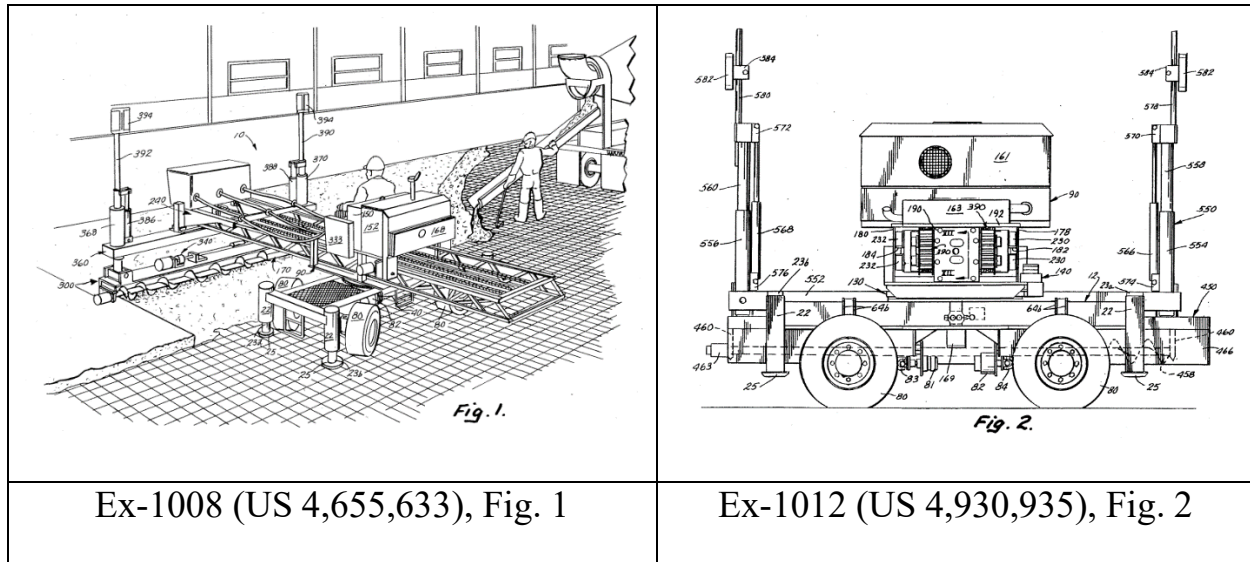
175. In my opinion, a POSITA would have been motivated to modify Jochems multi-frame screeding machine in view of Quenzi to utilize a screed head with a floating-type vibrator/vibrating beam (as taught in detail in Quenzi) for the following reasons. Specifically, in my opinion, a POSITA would have been

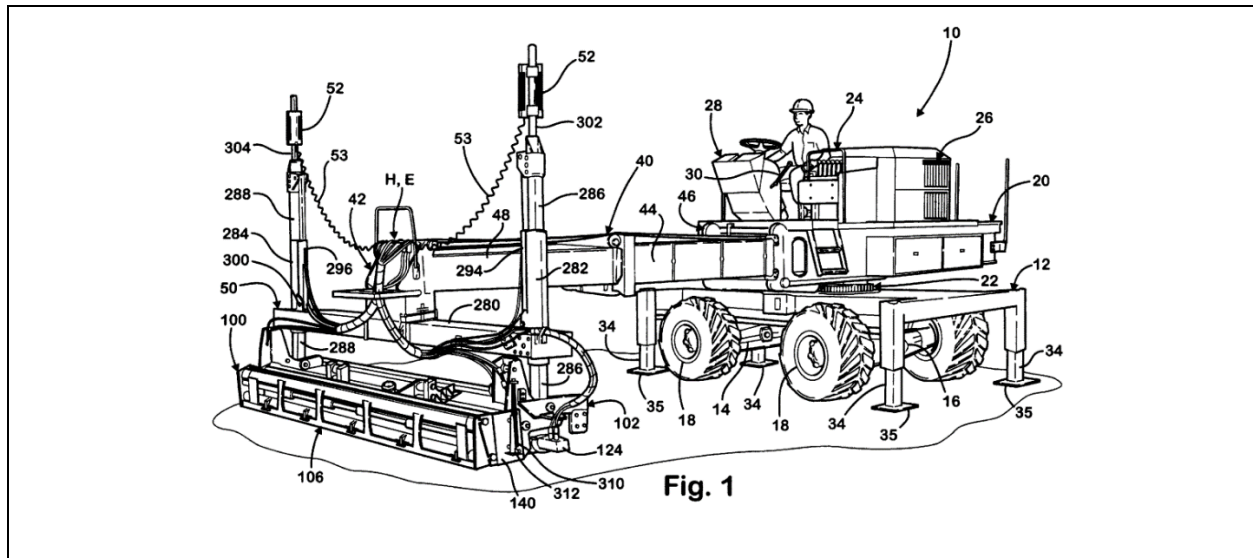
motivated to replace Jochems' screed head with Quenzi's screed head to achieve the numerous benefits of Quenzi's floating-type vibrator/vibrating beam as further described below.

176. *First*, in my opinion, a POSITA would have appreciated that Jochems and Quenzi are analogous art to the claimed invention of the '366 Patent because they are within the **same field of endeavor** and **address the same problem**. The '366 Patent defines its "FIELD OF THE INVENTION" as "raking or striking-off devices for striking-off uncured concrete at floors and surfaces." Ex-1001, 1:22-24. In addition, the '366 Patent claims are directed to "[a] wheeled concrete screeding device for screeding uncured concrete..." Ex-1001, Cls. 1, 13. Like the '366 Patent, Jochems and Quenzi are similarly directed to striking off poured concrete and wheeled screeding devices for screeding uncured concrete floors and surfaces. Ex-1003, ¶ 2 ("The present invention relates generally to screeding devices for uncured concrete floors and surfaces..."); Ex-1004, 1:3-4 ("The present invention relates to a machine for striking off poured concrete..."). Furthermore, the wheels of Jochems, Quenzi, and the '366 patent operate in uncured concrete. Ex-1004, 2:39-54; Ex-1003, ¶ 95; Ex-1001, 10:59-66, Fig 6.

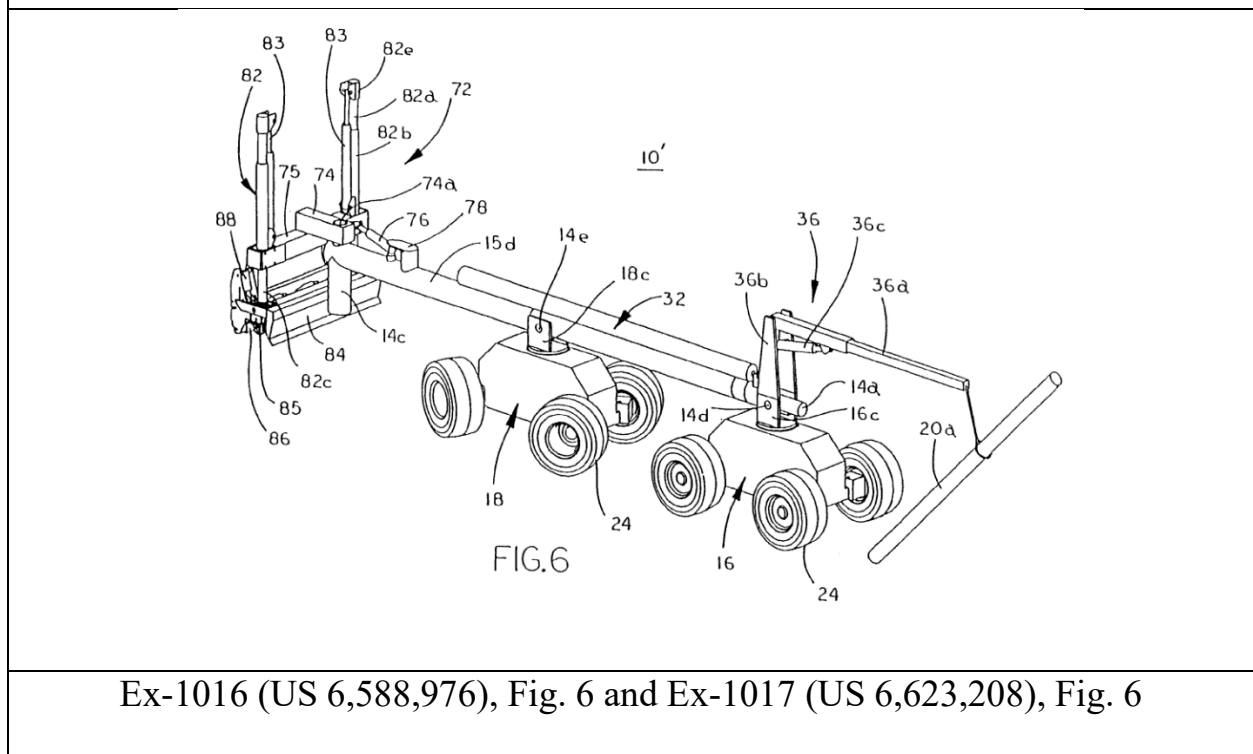
177. Moreover, Jochems and Quenzi are reasonably pertinent to the problem identified in the '366 Patent. The '366 Patent describes known screeding machines "such as a Laser Screed machines manufactured by Somero Enterprises of

Houghton, Mich., USA (and/or such as the types described in U.S. Pat. Nos. 4,655,633; 4,930,935; 6,129,481; 6,152,647; 6,183,160; 6,588,976; and/or 6,623,208, which are hereby incorporated herein by reference), reduce the manual labor of screeding concrete substantially over large areas.” Ex-1001, 1:37-44. These screeding machines are quite large and their applications are limited to open and easily accessible spaces. I have reproduced representative images of those screeding machines, below:





Ex-1013 (US 6,129,481), Fig. 1; Ex-1014 (US 6,152,647),
Fig. 1; and Ex-1015 (US 6,183,160), Fig. 1



Ex-1016 (US 6,588,976), Fig. 6 and Ex-1017 (US 6,623,208), Fig. 6

178. The known screeding machines referenced by the '366 Patent are sometimes referred to as boom screeds because they include a cantilevered and telescoping boom that supports the screed head while screeding. *See* Ex-1013 (US

6,129,481), 15:29-32 (“Screeding is begun by actuating the appropriate hand controlled fluid valve to retract the boom assembly 40 slowly while controlling the speed of retraction with a flow control on the valve.”) These screeding machines are large and must be stationary during screeding operations. *See* Ex-1013 (US 6,129,481), 6:61-67 (“Four extendable, telescoping stabilizer legs 34, one at each corner of support frame 12, each including a ground engaging foot or plate 35 extend downwardly for extension and retraction by separate hydraulic cylinders to engage the ground or other support surface when the screeding apparatus is positioned adjacent an area of material such as uncured concrete to be screeded.”)

179. In my opinion, a POSITA would appreciate that these known boom screeds were quite large and not able to operate in areas with low ceilings, tight corners, or obstacles such as pillars or low hanging pipes. According to the '366 Patent, when one of these traditional or large “screeding machine cannot be used, the concrete still must be spread out or struck-off...by manual effort which is very labor intensive and costly.” Ex-1001, 1:44-48. The '366 Patent teaches that the problem to be solved is providing “an improved striking-off or raking apparatus and/or method that requires less manual labor,” including in places where such large screeding machines cannot operate. Ex-1001, 1:49-51. A POSITA at the time of the alleged invention would have understood the benefits in reduction in construction time that come from using such economical techniques. *See* Ex-1018,

004 (“Hand tamping may be used to consolidate stiff mixtures...This is an effective consolidation method, but laborious and costly.”)

180. Jochems and Quenzi address this problem by disclosing screeding machines that are highly maneuverable around obstacles and can be used in smaller areas. Like the '366 Patent, Jochems also teaches there are numerous drawbacks to large boom screeds:

If it concerns larger surfaces, it is already possible to strike off the concrete surface by means of machines which are provided with vibration beams and instruments pertaining thereto. To enable to strike off an as large as possible surface, these machines are provided with **a telescopic arm** to which the striking off means are applied. This was realised for always enabling to strike off a distance as large as possible. **These machines are always set up out off the poured concrete and operate from a stationary position.**

Ex-1004, 1:11-20.

181. Specifically, Jochems teaches “operating these machines is seriously hampered by the presence of obstacles such as for example pillars, high lying sewer systems, too low ceilings, too small passages, and the like.” Ex-1004, 1:21-26. Therefore, Jochems expressly teaches “[a]n object of the invention is therefore to provide a machine which enables to achieve striking off concrete floor surfaces under all circumstances on a very flexible manner...” and that “...the machine can be deployed under all possible angles and under the most thinkable circumstances

for striking off concrete.” Ex-1004, 1:53-56, 2:57-3:1. In my opinion, this is the same problem addressed by the ’366 Patent.

182. Similarly, Quenzi teaches that “[t]he present invention provides an apparatus for screeding and vibrating uncured concrete...in areas which may be inaccessible to larger machines and equipment, such as due to the space limitations of small buildings, or the weight restrictions maintained during the construction of elevated decks and surfaces.” Ex-1003, ¶8. Therefore, in my opinion, Jochems and Quenzi are not only in the same field of endeavor as the ’366 patent, but also address the very problem that the ’366 patent purports to solve.

183. *Second*, in my opinion, a POSITA would have been motivated to combine Jochems and Quenzi. While Jochems discloses the use of a scrapper 25 (i.e., a grade establishing element) for striking-off the poured concrete (as illustrated at Fig. 1) and a vibration beam 27 (i.e., a vibratable member, vibrating beam, etc.) and other elements related to the screed head of claim 1, Quenzi explains the benefits of using a floating-type vibrating beam (i.e., vibration beam, vibratable member) and corresponding screed head. Specifically, Quenzi explains the many benefits of a floating-type vibrator/vibrating beam incorporated into a corresponding screed head. Ex-1003, ¶70 (“The length and width of vibrator beam 20 may be selected to provide a large enough footprint of the lower surface of the beam **such that vibrator beam 20, along with the screeding device 10, floats on or is at least partially supported**

on the uncured concrete surface”), ¶81 (“The **floating action** of the vibrator beam 20 over the uncured concrete then **continues to consolidate, smooth, level and finish** the uncured concrete surface.”), ¶112 (“vibrating beam 320 is **at least partially supported by, or essentially “floating”** upon, the uncured concrete surface, and **applies a sufficient and desired amount of down-pressure to work the surface.**”), ¶115 (“the means described above serves to **adjust the force or “degree of float”** of the vibrating beam 320 upon the uncured concrete surface as the uncured concrete surface is being worked and smoothed to the desired final elevation.”). In my opinion, a POSITA would have appreciated that Quenzi’s screed head with floating-type vibrator/vibrating beam as applied on Jochem’s articulating screeding machine would provide these same improvements and benefits.

184. In fact, in my opinion, the benefits of floating-type vibrator/vibrating beam screed heads were well known at the time of filing of the ’366 Patent. For example, industry publications at least as early as 2002 describe floating-type screeding machines, such as the MAGIC SCREED® vibrating power floats. *See* Ex-1019, 005. Furthermore, another of Patent Owner’s patents related to concrete screeding and finishing, U.S. Patent No. 6,695,532 B2 teaches the benefits of floating-type heads. U.S. Patent No. 6,695,532 B2 was published in 2004 and is in the same field of endeavor as the ’366 Patent in that it teaches a concrete finishing apparatus with a moveable unit 12 that is an articulated-wheeled vehicle having four

wheels 16. *See id.*, 6:12-13). Further, the wheeled vehicle 12 is steerable via articulation (like Jochems) and the patent describes that “[t]he finishing member may rest or float upon, or may be pushed downwardly onto, the concrete surface.” *See id.*, 6:24-25, 9:59-61. A POSITA would understand that floating on the concrete surface allows one to control the pressure placed upon the uncured concrete and, thus, control the amount of compaction/consolidation.

185. It has been known to POSITAs in the concrete placing industry since at least 1997, that it is desirable to consolidate (compact) freshly placed concrete. The American Concrete Institute provides a brief guide for consolidation of concrete. Ex-1018 (ACI 309R-96). The American Concrete Institute guide explains:

A mass of freshly placed concrete is usually honeycombed with entrapped air. If allowed to harden in this condition, the concrete will be nonuniform, weak, porous, and poorly bonded to the reinforcement. It will also have a poor appearance. The mixture must be consolidated if it is to have the properties normally desired and expected of concrete.

Ex-1018, 002.

186. To avoid these undesirable effects, POSITAs would appreciate that consolidation is required for any concrete finishing application. “Consolidation is the process of removing entrapped air from freshly placed concrete.” Ex-1018, 001. POSITAs would further appreciate that vibration is one well-known method of concrete consolidation. Ex-1018, 005 (“The most widely used consolidation method

is vibration.”). In addition, POSITAs would appreciate that it was common to combine surface vibration with varied pressure application to achieve improved consolidation. Ex-1018, 005 (“Vibration of the form is sometimes combined with static pressure applied to the top surface.”).

187. In my opinion, and consistent with the general knowledge of a POSITA, use of Quenzi’s floating-type vibrator/vibrating beam and corresponding screed head, which can “**consolidate, smooth, level and finish** the uncured concrete surface” and also “**adjust the force or ‘degree of float’**” would have provided these known consolidation benefits to Jochems’ machine. Ex-1003, ¶¶81 and ¶115.

188. Screeds that can create a more smooth or level concrete surface and/or provide a floating-type vibrator/vibrating beam and corresponding screed head were also commercially desirable. The cost effectiveness, both in labor and capital equipment, is an important consideration in placing floor slabs. In my opinion, utilizing Jochems’ machine with Quenzi’s screed head would have led to increased cost effectiveness because of a reduction in construction time (using Jochem’s articulating machine) and increase in quality and performance (using Quenzi’s floating-type vibrator/vibrating beam and corresponding screed head). This would have further motivated a POSITA to follow Quenzi’s teachings regarding the advantages of its floating-type vibrator/vibrating beam and corresponding screed head, in order to design a screeding machine to meet these commercial demands.

189. Jochems provides an articulating screeding machine that is particularly well suited for certain applications. In particular, Jochems discloses machine handling that occurs in a very reliable manner by mounting a hydraulic cylinder 6 between a first frame part 1, and a second frame part 2. Ex-1004, 3:9-12. The configuration of the machine described and illustrated by Jochems is known in the art of mobile equipment as articulating and provides desirable maneuverability and/or stability in applications with restricted access or obstructions. As I discuss above, Jochems further teaches using such an articulated machine configuration in a machine for striking off poured concrete (see title), using vibrating beams to strike off the concrete (Ex-1004, 1:9-11), and moving wheels of the machine through the uncured poured concrete (Ex-1001, 2:43-53). Jochems is silent as to whether any part of the screed (including the vibrating beam) floats.

190. In addition, given that a POSITA would merely need to take Quenzi's floating-type vibrator/vibrating beam and corresponding screed head and mount it to Jochem's articulating screeding machine, in my opinion there was a reasonable expectation of success in making this combination. Articulating screeding machines were well known and Quenzi's screed head utilizes a well-known four-bar linkage to connect its screed head to its wheeled support. Such four-bar linkages are used on a variety of commercial equipment and are readily adaptable by POSITAs. In my opinion, a POSITA would have had a reasonable expectation of success

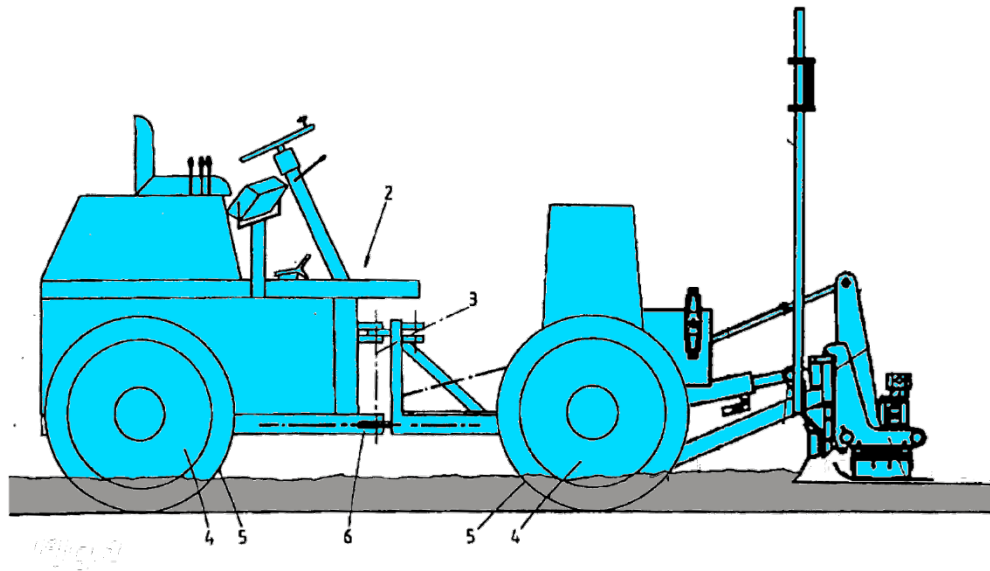
incorporating Quenzi's screed head on Jochems' machine by utilizing well-known four-bar linkage systems with minimal modification.

191. In my opinion, a POSITA would also have had a reasonable expectation of success in making this modification because the screeding components described in Jochems and Quenzi (e.g., wheeled screeds, vibrating screed heads, laser leveling, height adjustable screed heads, etc.) were well-known at the time. *See, e.g.*, Ex-1001, 8:57-66 (“the Somero Copperhead Laser Screed machine and/or Copperhead XD Laser Screed machine, **which are commercially available** from Somero Enterprises of Houghton, Mich., and which are described in in U.S. patent application Ser. No. 10/728,620, filed Dec. 5, 2003, now U.S. Pat. No. 6,953,304; **Ser. No. 10/266,305, filed Oct. 2, 2002, now U.S. Pat. No. 6,976,805**; and Ser. No. 10/902,528, filed Jul. 29, 2004, now U.S. Pat. No. 7,121,762”); Ex-1003, ¶6 (“**Hand screeding devices are known where a vibratory device** is moved over a concrete surface by hand.”), ¶79 (“laser receivers 22 (FIGS. 1-4), which each sense the elevation of a fixed laser plane reference 24 (FIG. 1) that has been established over the job site by a separate rotating, **laser plane generator or projector (not shown), as is commonly known in the industry.**”); Ex-1004, 1:12-14 (“it is already possible to strike off the concrete surface by means of machines which are provided with vibration beams”), 1:27-33 (“a device is described which is equipped with cage wheels for enabling to move through the poured liquid concrete.”), 4:7-8 (“The

sensors 21 act on **a laser beacon, as known...**"). As such, it would also have been straightforward for a POSITA to modify Jochems screed to include Quenzi's screed head and that such a system would work.

192. In view of the motivations discussed above, in my opinion, it would have been obvious to a POSITA before July 2004 to modify Jochem's articulating screeding machine in view of Quenzi, *i.e.*, utilize Quenzi's screed head with a floating-type vibrator/vibrating beam. To improve operation of the modified screed, a POSITA would likely also have made some other minor modifications including adapting Jochem's articulating screeding machine to accept and manipulate Quenzi's screed head with floating-type vibrator/vibrating beam, such as by incorporating a standard three-point hitch system to Jochems. A POSITA would also have ensured Jochems' electrical and hydraulic control mechanisms were adapted to function with the screed head control scheme described by Quenzi. A POSITA would also ensure that Quenzi's screed head was sufficiently balanced and/or supported to permit the floating taught by Quenzi. A POSITA would also have modified the dimensions of Quenzi's screed head (e.g., the span of the screed head) to match up with the dimensions of Jochems machine to ensure an appropriate swath of concrete was screeded with each pass. Such modifications would have been obvious design changes well within the knowledge of a POSITA, and would not require undue experimentation.

193. An illustrative example of Jochems' articulating screeding machine as modified by Quenzi is shown below.



Illustrative Jochems-Quenzi Combination

2. Independent Claim 1

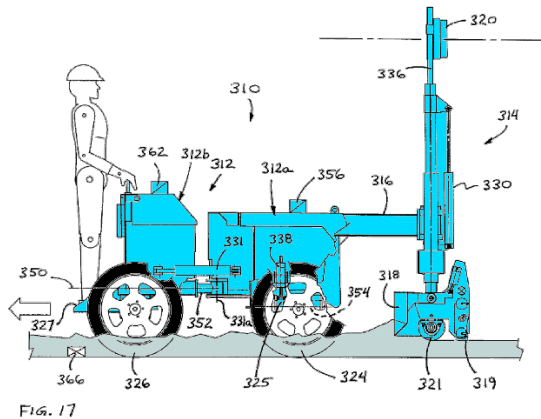
- a. **Element 1 [preamble]: A wheeled concrete screeding device for screeding uncured concrete, said wheeled concrete screeding device comprising:**

194. I have been informed that the preamble is ordinarily not limiting where the body of independent claim 1 is structurally complete and does not refer back to the preamble. Nevertheless, I address the preamble out of an abundance of caution in case Patent Owner were to assert, or the Board were to find, that the preamble is limiting.

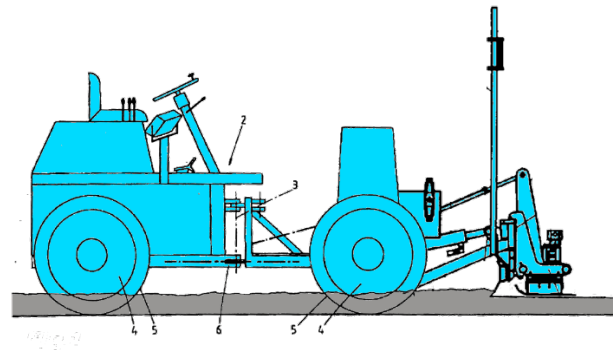
195. The preamble recites “[a] wheeled concrete screeding device for screeding uncured concrete.” In my opinion, this is disclosed by the Jochems-Quenzi combination.

196. To the extent that the Board finds that the preamble is limiting, Jochems-Quenzi discloses “[a] wheeled concrete screeding device for screeding uncured concrete.” Jochems discloses “[t]he present invention relates to a **machine for striking off poured concrete...**” Ex-1004, 1:3-4. Jochems further discloses “[a]n object of the invention is therefore to provide a machine which enables to achieve striking off concrete floor surfaces under all circumstances on a very flexible manner...” Ex-1004, 1:53-56. Jochems also teaches “**the concrete which is entirely levelled by striking off** the concrete...” Ex-1004, 2:49-50. The ’366 Patent uses the term screeding and striking-off interchangeably. Ex-1001, 4:50-53 (“**the present invention provides a strike-off device** and method that provides a desired and accurate **strike-off or raking of an uncured concrete surface...**”); *id.*, 1:22-24 (“The present invention relates generally to **raking or striking-off devices for striking-off uncured concrete** at floors and surfaces.”). In fact, the ’366 Patent describes a “simple wooden ‘2x4’” as a “hand-held screed[.]” Ex-1001, 8:67. A POSITA would therefore appreciate that “striking off concrete” means “screeding uncured concrete.” Ex-1020, 003 (defining a screed as “a leveling device drawn over freshly poured concrete”).

197. Like the challenged patent (left), Jochems-Quenzi (right) depicts a wheeled concrete screeding device (blue) screeding uncured concrete (gray):



Ex-1001, Fig.17



Jochems-Quenzi

198. Therefore, in my opinion, Jochems-Quenzi thus discloses “[a] wheeled concrete screeding device for screeding uncured concrete [e.g., Jochems’ machine for striking off poured concrete].”

- a. **Element [1.1]: a wheeled unit having at least two wheels for movably supporting a frame portion of said wheeled unit,**

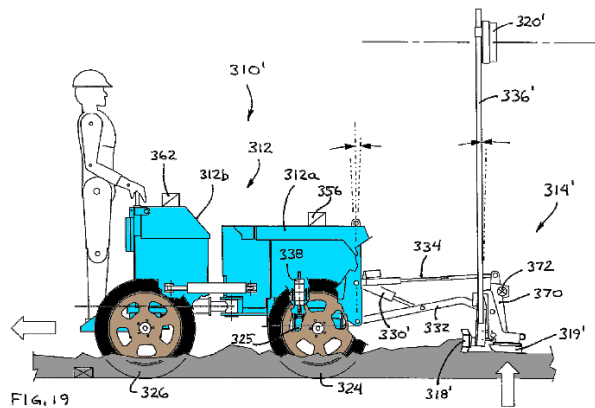
199. Jochems teaches its machine for striking off poured concrete “consists...of a **first frame part 1** and a **second frame part 2** which are hingedly connected to each other at the vertical hinge axis 3.” Ex-1004, 2:30-34. Specifically, Jochems discloses:

A machine for striking off poured concrete composed of **frame parts (1,2)** which carry the elements for striking off the concrete and the control members thereof, which **frame parts are equipped with wheels (4)**, at least

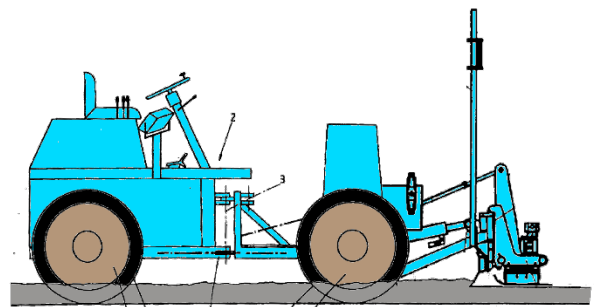
some of which are **drive wheels**, characterised in that **said wheels (4) are equipped with tires (5)** having a tire width of 18 cm at the most.

Ex-1004, Cl.1.

200. Jochems' frame parts (1,2) (blue), wheels (4) (brown), and tires (5) (black), are depicted below.



Ex-1001, Fig.19



Jochems-Quenzi

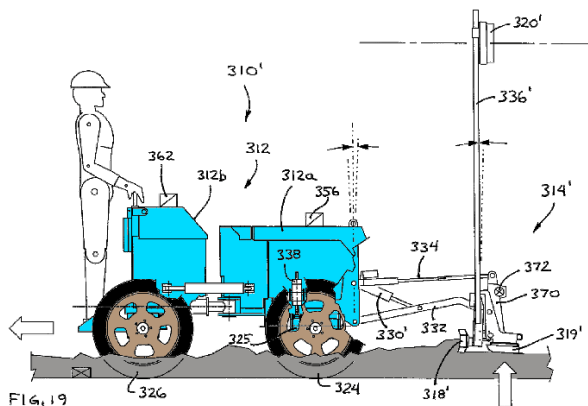
201. Specifically, Jochems teaches “[t]he diameter of the **wheels 4** and the thickness of the **tires 5** which equip these wheels are calculated in such a manner that **the machine can be moved without problems through the poured concrete.**”

Ex-1004, 2:41-45; *see id.*, 1:3-8, 2:35-41.

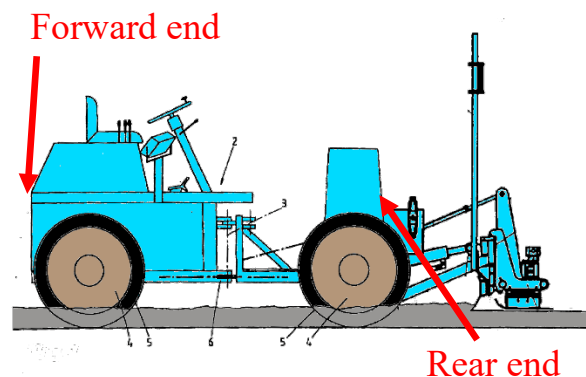
202. Therefore, in my opinion, Jochems-Quenzi discloses “a wheeled unit [e.g., Jochems' machine for striking off poured concrete] having at least two wheels [e.g., wheels (4) (white), and tires (5)] for movably supporting a frame portion [e.g., frame parts (1,2) (blue)] of said wheeled unit.”

b. Element [1.2]: said frame portion having a forward end and a rearward end,

203. Jochems teaches its machine for striking off poured concrete includes frame parts (1,2) (blue). Ex-1004, 2:30-34, Cl.1. For example, Jochems' Figure 1 depicts the frame portion having forward and rearward ends:



Ex-1001, Fig.19



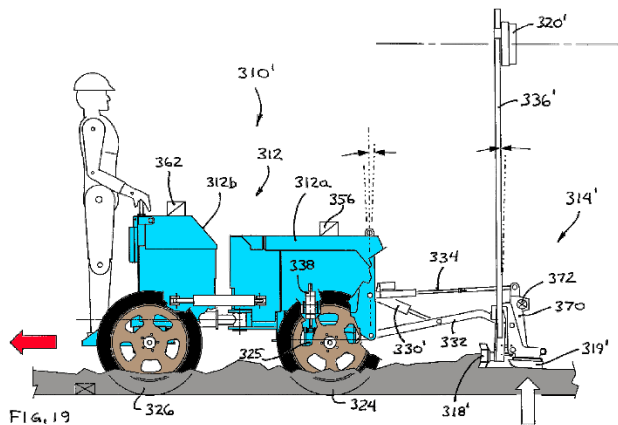
Jochems-Quenzi

204. Thus, in my opinion, Jochems discloses “said frame portion [e.g., frame parts (1,2) (blue)] having a forward end [e.g., left end of frame part 2] and a rearward end [e.g., right end of frame part 1].”

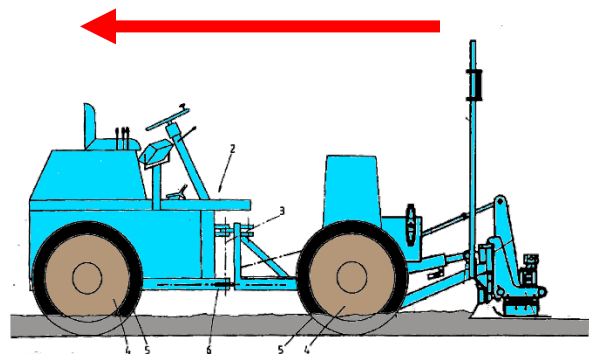
c. Element [1.3]: wherein said wheeled unit is movable through uncured concrete in a screeding direction;

205. Jochems teaches “[i]t is further also possible, thanks to the use of wheels with the appropriate diameter and band width, **to move the machine through the poured concrete without causing any problems upon striking off the concrete afterwards.**” Ex-1004, 4:26-30. Jochems also teaches “[f]rom experiments, it has been found that **in freshly poured concrete, wheels** which meet

to the just described definition **form tracks in the concrete which disappear entirely of their own or in each case upon striking off.**” Ex-1004, 3:2-6; *id.*, 2:41-45. Jochems also teaches “[a] roller 26 is also fixed to the support beam, **the rotation direction of which is opposite to the direction wherein the machine moves.**” Ex-1004, 4:12-14. Therefore, a POSITA would appreciate that Jochems’ machine moves in a screeding direction as shown below.



Ex-1001, Fig.19



Jochems-Quenzi

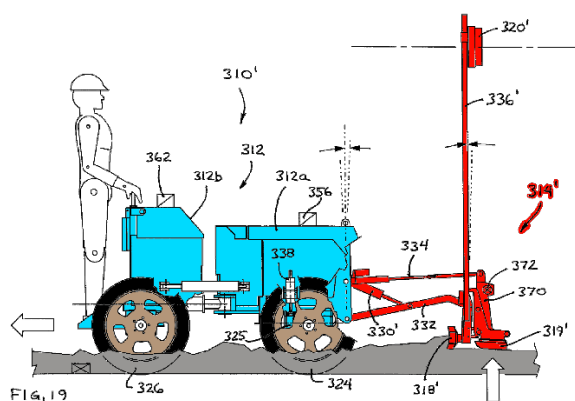
206. Specifically, a POSITA would understand that because Jochems’ machine is designed “to move the machine through the poured concrete” and “strik[e] off the concrete **afterwards**,” Jochems teaches moving in a screeding direction identified in Figure 1, above. Ex-1004, 4:26-30.

207. In my opinion, Jochems-Quenzi thus discloses “wherein said wheeled unit is movable through uncured concrete [e.g., moving the machine through the poured concrete] in a screeding direction [e.g., in a direction (red) preceding striking off the concrete afterwards].”

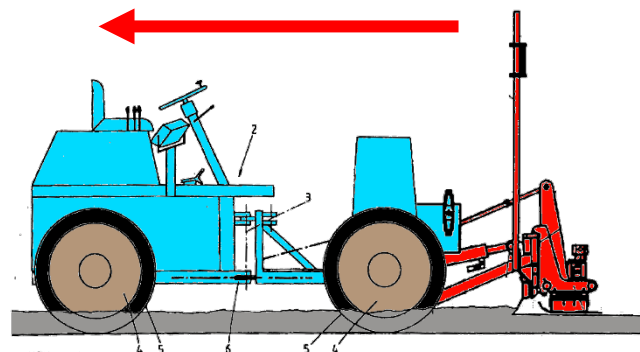
- d. **Element [1.4]: a screed head supported at said rearward end of said frame portion and following behind said wheeled unit when said wheeled unit is moved in said screeding direction,**

208. Jochems discloses “[t]he first frame part 1 carries the required instruments for striking off the poured concrete...” Ex-1004, 2:35-38. Specifically, Jochems teaches “said elements for striking off the poured concrete consist of a scraper (25), a rotating roller (26) and a vibrating beam (27).” Ex-1004, Cl.4. For the reasons provided above in the motivation to combine section, a POSITA would have been motivated to utilize Quenzi’s screed head with floating vibrating member on Jochem’s machine. *Supra* Section I.C.1.

209. The Jochems-Quenzi combination discloses a screed head (red) consisting of a vibrating member and plow supported at the rearward end of the frame portion (blue). *See* Ground 1, Element 1.4, *supra* Section I.A.5 (analyzing Quenzi’s screed head with vibrating member and plow).



Ex-1001, Fig.19



Jochems-Quenzi

210. Further, for the reasons provided in Element 1.3, incorporated here, Jochems teaches its screed head follows behind when its machine is moved in the screeding direction. *Supra* Section I.C.2.c; Ex-1004, 4:12-14 (“A roller 26 is also fixed to the support beam, **the rotation direction of which is opposite to the direction wherein the machine moves.**”). Quenzi also teaches this for the reasons provided in Ground 1, Element 1.3, incorporated here. *Supra* Section I.A.4.

211. Therefore, in my opinion, Jochems-Quenzi discloses “a screed head [e.g., Quenzi’s “screeding heads” 211, 311, 411] supported at said rearward end of said frame portion [e.g., at right side of Jochems’ frame part 1] and following behind said wheeled unit when said wheeled unit is moved in said screeding direction [e.g., in a direction (red) preceding striking off the concrete afterwards].”

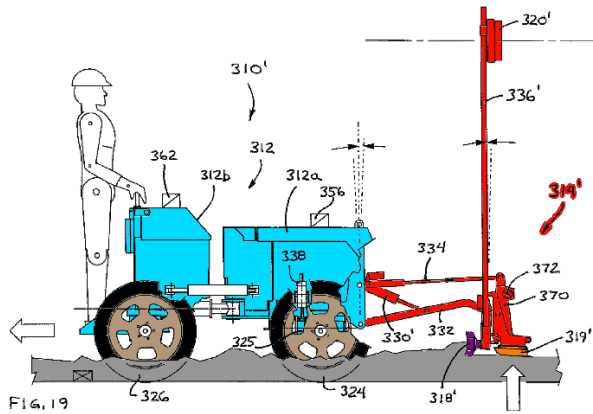
e. Element [1.5]: said screed head comprising a grade establishing element and a vibratable member;

212. For the reasons I provided above in the motivation to combine section, in my opinion a POSITA would have been motivated to utilize Quenzi’s screed head with floating vibrating member on Jochem’s machine. *Supra* Section I.C.1. Further, as I discussed in Ground 1, Element 1.5, incorporated here, Quenzi’s screed heads comprise a grade establishing element, such as a plow, and a vibratable member. Quenzi describes that the “screeding head 211 [] includes a vibrator beam or member 220” and “may also include a plow or other grade setting device or member.” Ex-

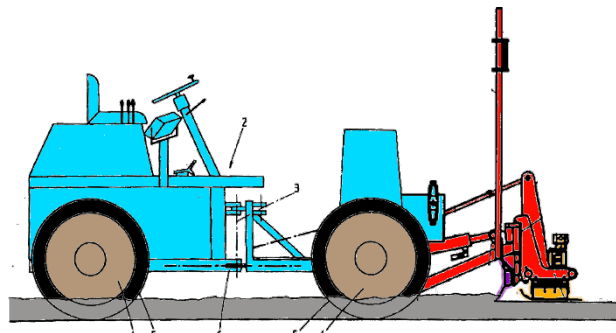
1003, ¶ 88, 91. Quenzi also continues similar written disclosures confirming that the screed heads of Figs. 16-20 and 23 include vibrating beams 320, 420 and plows 312, 412 as well. *Id.*, ¶ 98 (Figs. 16-20, ¶ 121 (Fig. 23). As Quenzi explains in its background, “[t]he vibrating member and grade setting device together generally comprise a screeding head.” Ex-1003, ¶ 17.

213. In addition, Jochems teaches its screed head includes scraper (25), rotating roller (26), and vibrating beam (27). Ex-1004, Cl.4 (“said **elements for striking off the poured concrete consist of a scraper (25), a rotating roller (26) and a vibrating beam (27).**”); *id.*, Cl.5. Jochems also teaches “**the concrete which is entirely levelled by striking off** the concrete...” Ex-1004, 2:49-50; *see* Ex-1004, 4:14-26 (discussing vibration motor 28).

214. As shown below, the Jochems-Quenzi combination screed head (red) is shown with a plow (purple) and vibrating beam (orange). *See* Ex-1003, Figs. 12-20, 23.



Ex-1001, Fig.19



Jochems-Quenzi

215. In my opinion, Jochems-Quenzi thus discloses “said screed head [e.g., Quenzi’s “screeding heads” 211, 311, 411] comprising a grade establishing element [e.g., Quenzi’s plows 312, 412 (purple)] and a vibratable member [e.g., Quenzi’s vibrating beams 320, 420 (orange)].”

- f. **Element [1.6]: wherein said grade establishing element is generally vertically adjustable responsive to a signal from a laser receiver disposed at said screed head to establish a struck-off surface of the uncured concrete at a desired grade when said wheeled unit is moved in said screeding direction; and**

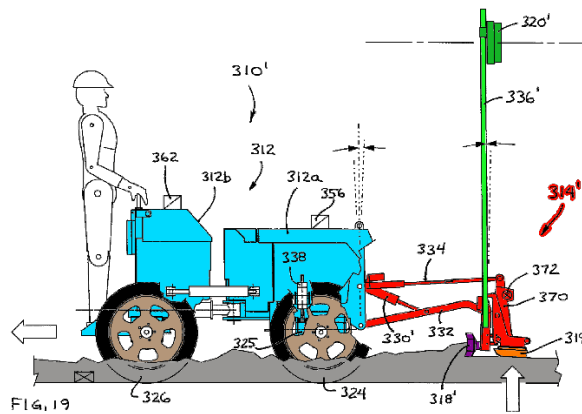
216. For the reasons I provided above in the motivation to combine section, a POSITA would have been motivated to utilize Quenzi’s screed head with floating vibrating member on Jochem’s machine. *Supra* Section I.C.1. Further, as I discussed in Ground 1, Element 1.6, incorporated here, Quenzi’s screed heads teach this limitation. *Supra*, Section I.A.7.

217. Specifically, Quenzi describes “[t]he screeding device includes a plow or other grade setting element or device which is **vertically adjustable** relative to a concrete surface working member or vibrating member of the screeding device to adjust the grade setting device to the desired grade height as the screeding device is moved over and supported on the uncured concrete surface.” Ex-1003, ¶ 30. Quenzi further describes that “[t]he screeding device includes an automatic control system which is **responsive to a laser plane or laser-guided reference for vertically adjusting the grade setting device** to the desired grade height.” *Id.*

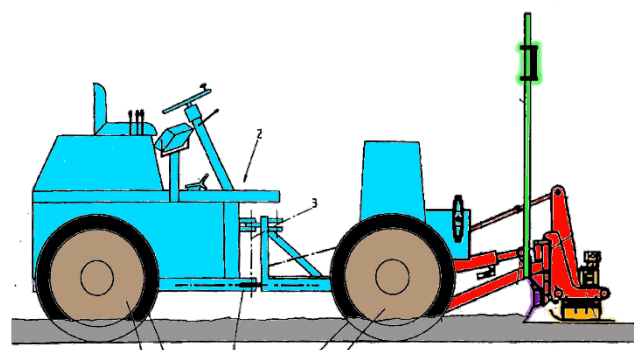
218. For each of its embodiments, Quenzi further describes that the laser is used to adjust the position of the grade establishing element (i.e., the plow (purple), which, as discussed before, Quenzi confirms may also be included in Figs. 12-15) in order to establish a struck-off surface of the uncured concrete at a desired grade when said wheeled unit is moved in said screeding direction. Ex-1003, ¶¶ 79-81 (Figs. 12-15), ¶ 103 (Figs. 16-20), ¶ 126 (Fig. 23).

219. In addition, Jochems explicitly teaches “said **scraper (25)**, roller (26) and vibrating beam (27) **are mounted on a support beam (24), the height of which is adjustable by means of sensors (21) with respect to a laser beacon.**” Ex-1004, Cl.5. Jochems further teaches “[t]he **sensors 21 act on a laser beacon**, as known, which has not been illustrated in the figures.” Ex-1004, 4:7-9.

220. As shown below, Quenzi-Jochems' screed head includes a plow (purple) that is vertically adjustable responsive to a laser receiver (green) disposed at the screed head (red):



Ex-1001, Fig.19



Jochems-Quenzi

221. Jochems further teaches “[t]he present invention relates to a **machine for striking off poured concrete...**” (Ex-1004, 1:3-4) and “**the concrete which is entirely levelled by striking off the concrete...**” Ex-1004, 2:49-50. Further, for the reasons provided in limitation 1.3, incorporated here, Jochems teaches its screed head follows behind when its machine is moved in the screeding direction. *Supra* Section I.C.2.c; Ex-1004, 4:12-14 (“A roller 26 is also fixed to the support beam, **the rotation direction of which is opposite to the direction wherein the machine moves.**”) Quenzi also teaches this for the reasons provided in Ground 1, Element 1.3, incorporated here. *Supra* Section I.A.4.

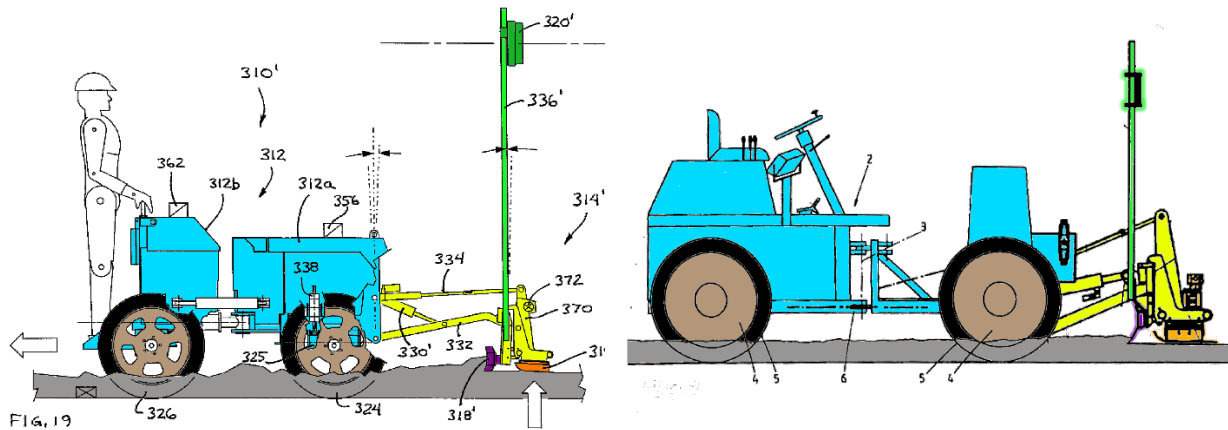
222. Therefore, in my opinion, Jochems-Quenzi discloses “wherein said grade establishing element is generally vertically adjustable [e.g., Quenzi’s “plow

[purple] or other grade setting element or device which is vertically adjustable....”]
responsive to a signal from a laser receiver disposed at said screed head [e.g.,
Quenzi’s laser receiver 322, 422 (green)] to establish a struck-off surface of the
uncured concrete at a desired grade [e.g., Quenzi’s “automatic control system which
is **responsive to a laser plane or laser-guided reference for vertically adjusting
the grade setting device** to the desired grade height.”] when said wheeled unit is
moved in said screeding direction [e.g., in a direction (red) preceding screeding the
concrete afterwards].”

**g. Element [1.7]: wherein said vibratable member is
adjustably attached at a rearward end of said grade
establishing element**

223. For the reasons provided above in the motivation to combine section, a
POSITA would have been motivated to utilize Quenzi’s screed head with floating
vibrating member on Jochem’s machine. *Supra* Section I.C.1. Further, as discussed
in Ground 1, Element 1.7, incorporated here, Quenzi’s screed heads teach this
limitation. *Supra*, Section I.A.8.

224. As shown below, vibratable member (orange) is adjustably attached to
the rearward end of the plow via framework (yellow):



Ex-1001, Fig.19

Jochems-Quenzi

225. Specifically, Quenzi describes that “[t]he operating range height of the vibrating beam 220 may be manually adjusted relative to the level of the wheels 217b via an adjustment device 221,” which may be “an actuator, a threaded rod, turnbuckle, or any other extension and retraction device or the like.” Ex-1003, ¶ 92. Quenzi teaches for each of its embodiments, that the vibratable member is adjustable in both height and pitch angle. *See* Ex-1003, ¶ 109 (Figs. 16-20), ¶¶ 121, 126-127 (Fig. 23).

226. Jochems-Quenzi thus discloses “wherein said vibratable member [e.g., Quenzi’s vibrating beams 320, 420 (orange)] is adjustably attached [e.g., adjustable in both height and pitch angle] at a rearward end of said grade establishing element [e.g., Quenzi’s plows 312, 412 (purple)].”

- h. **Element [1.8]: and wherein said vibratable member at least partially floats behind said grade establishing element on the struck-off surface of the uncured concrete and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction.**

227. For the reasons provided above in the motivation to combine section, a POSITA would have been motivated to utilize Quenzi's screed head with floating vibrating member on Jochem's machine. *Supra* Section I.C.1. Further, as discussed in Ground 1, Element 1.8, incorporated here, Quenzi's screed heads teach this limitation. *Supra*, Section I.A.9.

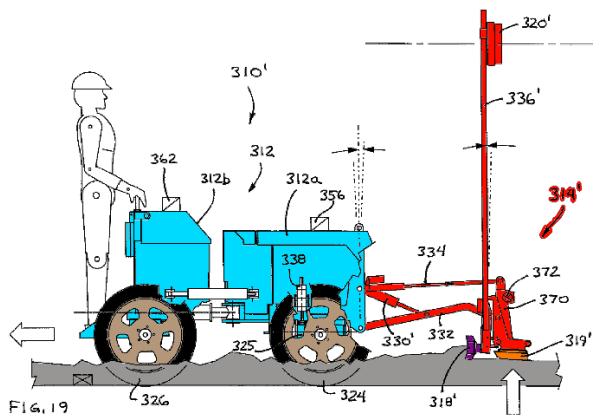
228. Specifically, Quenzi describes that "[t]he **vibrating member generally floats upon or is supported** directly on the uncured concrete surface created by the grade setting device ahead of it." Ex-1003, ¶ 9. Quenzi further describes "[t]he present invention thus provides a self-correcting process along with the ability of the apparatus to be **at least partially supported upon the desired correct elevation surface it creates, as the device itself advances.**" *Id.*, ¶ 11; *see also id.*, ¶ 68 ("the vibrator beam 20 **floats on** or is **at least partially supported** on the uncured surface"). These disclosures apply equally to each of the embodiments in Figs. 12-20 and 23 as described above inasmuch as they each use the same or similarly functioning adjustable framework for supporting the vibratable member behind the grade setting device at the desired height on the struck-off surface of the concrete.

For example, for Figs. 12-15, Quenzi expressly describes “[v]ibrating beam 220, and/or any other grade setting device, may at least be **partially supported** by a wheeled support 217 of the screeding device 210.” *Id.*, ¶ 96. And for the embodiment of Figs. 16-20, Quenzi describes “that vibrating beam 320 is at least **partially supported by, or essentially ‘floating’ upon, the uncured concrete surface**, and applies a sufficient and desired amount of down-pressure to work the surface.” *Id.*, ¶ 112; *see also id.*, ¶¶ 115-116 (describing options to manually or automatically shift the frame positioning to adjust the “degree of float”). Likewise, for Fig. 23, Quenzi describes the “[s]creeding device 410, vibrating beam 420 and plow 412 are otherwise substantially similar to screeding device 310, vibrating beam 320 and plow 312, discussed above, such that a detailed discussion will not be repeated herein.” *Id.*, ¶ 121.

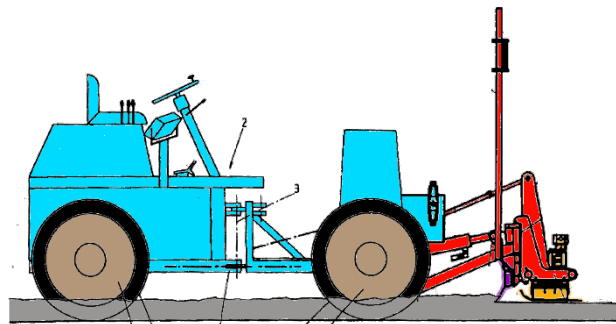
229. Jochems-Quenzi thus discloses “wherein said vibratable member (e.g., Quenzi’s vibrating beams 320, 420 (orange)) at least partially floats behind said grade establishing element (e.g., Quenzi’s plows 312, 412 (purple)) on the struck-off surface of the uncured concrete (e.g., “partially supported by, or essentially ‘floating’ upon, the uncured concrete surface”) and is at least partially supported at the struck-off surface of the uncured concrete as said wheeled unit is moved in said screeding direction (e.g., to “appl[y] a sufficient and desired amount of down-pressure to work the surface.”)”.

3. Dependent Claim 2: “The wheeled concrete screeding device of claim 1, wherein said grade establishing element comprises a plow member.”

230. For the same reasons provided in Element 1.5, incorporated here, the Jochems-Quenzi combination discloses said grade establishing element comprises a plow member. *Supra* Section I.C.2.e.



Ex-1001, Fig.19



Jochems-Quenzi

231. The Jochems-Quenzi combination thus discloses said grade establishing element comprises a plow member (e.g., Quenzi’s plows 312, 412 (purple)).

4. Dependent Claim 3: “The wheeled concrete screeding device of claim 2, wherein said grade establishing element comprises an auger disposed behind said plow member, and wherein said auger is generally vertically adjustable with said plow member.”

232. For the same reasons provided in Ground 1, Claim 3, incorporated here, the Jochems-Quenzi combination discloses this limitation. *Supra* Section I.A.11.

5. **Dependent Claim 4: “The wheeled concrete screeding device of claim 3, wherein said rearward end of said grade establishing element comprises a rearward end of said auger and wherein said vibratable member is adjustably attached at said rearward end of said auger.”**

233. For the same reasons provided in Ground 1, Claim 4, incorporated here, the Jochems-Quenzi combination discloses this limitation. *Supra* Section I.A.12.

6. **Dependent Claim 5: “The wheeled concrete screeding device of claim 1, wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element.”**

Dependent Claim 6: “The wheeled concrete screeding device of claim 5, wherein said vibratable member is pivotally attached at said rearward end of said grade establishing element via a pair of links that are pivotally attached at said rearward end of said grade establishing element.”

234. For the same reasons provided in Ground 1, Claims 5 and 6, incorporated here, the Jochems-Quenzi combination discloses this limitation. *Supra* Section I.A.13.

7. **Dependent Claim 7: “The wheeled concrete screeding device of claim 5, wherein said vibrating member is pivotally attached at at least one bracket at said rearward end of said grade establishing element.”**

235. For the same reasons provided in Ground 1, Claim 7, incorporated here, the Jochems-Quenzi combination discloses this limitation. *Supra* Section I.A.14.

8. **Dependent Claim 8: “The wheeled concrete screeding device of claim 7, wherein said vibrating member is pivotally attached at said at least one bracket via at least one mounting pin.”**

236. For the same reasons provided in Ground 1, Claim 8, incorporated here, the Jochems-Quenzi combination discloses this limitation. *Supra* Section I.A.15.

9. **Dependent Claim 9: “The wheeled concrete screeding device of claim 7, wherein said vibrating member is securable relative to said at least one bracket to retain said vibrating member at a desired attack angle as said vibrating member is moved in said screeding direction behind said grade establishing element.”**

237. For the same reasons provided in Ground 1, Claim 9, incorporated here, the Jochems-Quenzi combination discloses this limitation. *Supra* Section I.A.16.

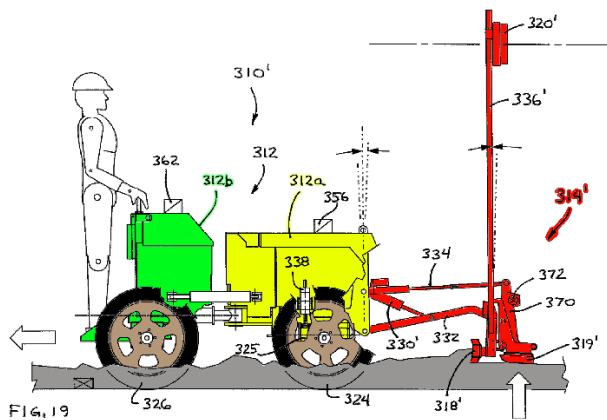
10. **Dependent Claim 10: “The wheeled concrete screeding device of claim 1, wherein said wheeled unit comprises a pair of front wheels supporting a front frame portion and a pair of rear wheels supporting a rear frame portion, wherein said screed head is supported at a rearward end of said rear frame portion.**

238. Jochems teaches its machine for striking off poured concrete “consists...of a **first frame part 1 and a second frame part 2** which are **hingedly connected to each other at the vertical hinge axis 3.**” Ex-1004, 2:30-34. Specifically, Jochems discloses:

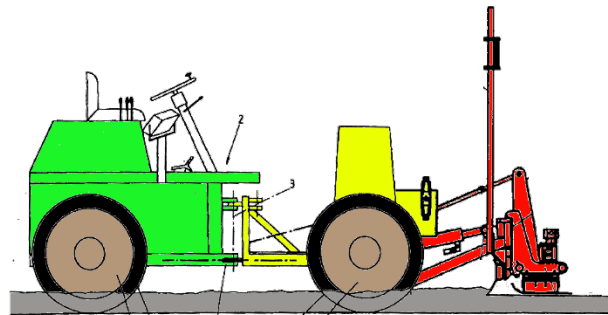
A machine for striking off poured concrete composed of **frame parts (1,2)** which **carry the elements for striking off the concrete** and the control members thereof, which **frame parts are equipped with wheels (4)**, at least some of which are **drive wheels, characterised in that**

said wheels (4) are equipped with tires (5) having a tire width of 18 cm at the most.

239. Ex-1004, Cl.1. Jochems' first frame part (1) (yellow), second frame part (2) (green), wheels (4) (brown), and tires (5) (black), are depicted below. In addition, the Jochem-Quenzi screed head (red) is shown supported at a rearward end of first frame part (1) (yellow):



Ex-1001, Fig.19

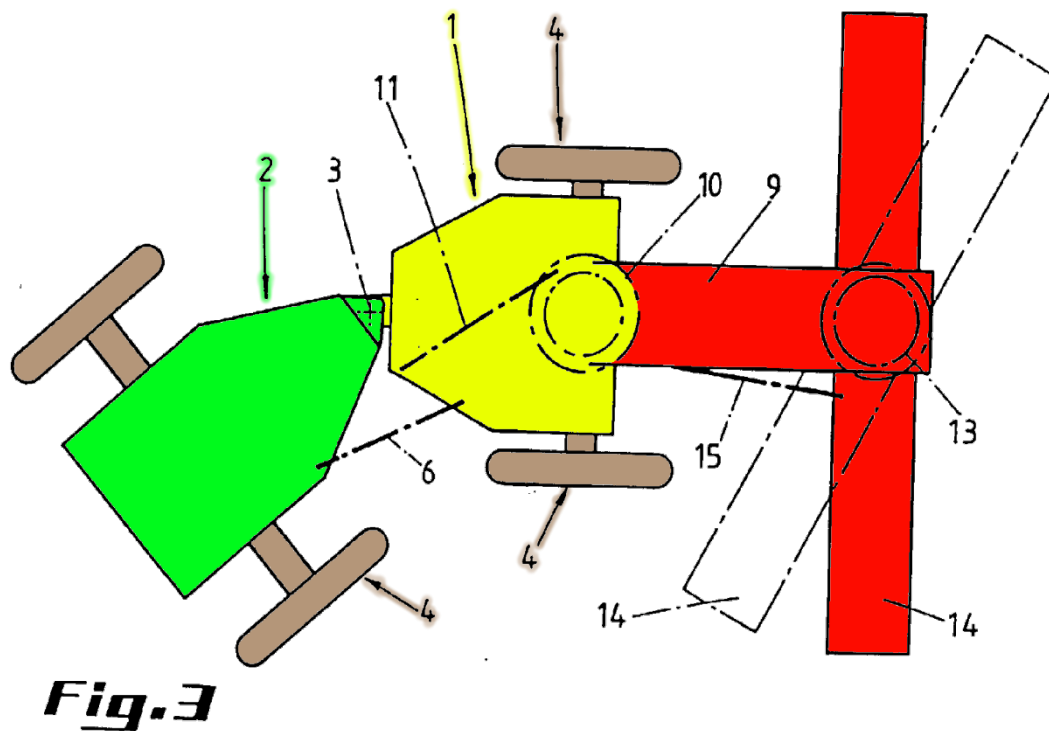


Jochems-Quenzi

240. Specifically, Jochems teaches “[t]he diameter of the **wheels 4** and the thickness of the **tires 5** which equip these wheels are calculated in such a manner that **the machine can be moved without problems through the poured concrete.**”

Ex-1004, 2:41-45; *see id.*, 1:3-8, 2:35-41.

241. In addition, Jochems' wheels are depicted in Figure 3, below, which discloses a pair of wheels (4) supporting each of the first frame part (1) (yellow) and second frame part (2) (green):

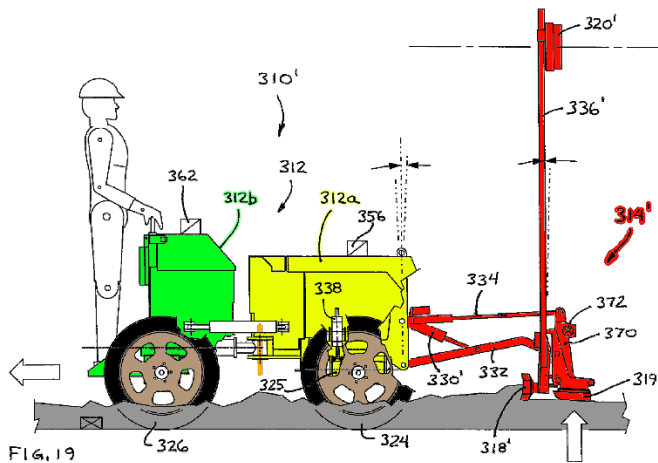


Ex-1004, Fig.3

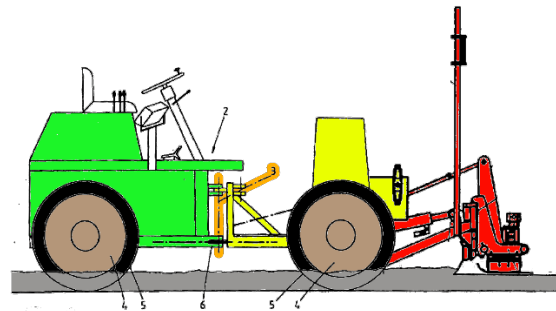
242. Jochems-Quenzi thus discloses “wherein said wheeled unit comprises a pair of front wheels (e.g., wheels (4) (brown)) supporting a front frame portion (e.g., second frame part (2) (green)) and a pair of rear wheels (e.g., wheels (4) (brown)) supporting a rear frame portion (e.g., first frame part (1) (yellow)), wherein said screed head (e.g., Quenzi’s screed head (red)) is supported at a rearward end of said rear frame portion (e.g., at right side of frame part 1).”

11. **Dependent Claim 11: “The wheeled concrete screeding device of claim 10, wherein said wheeled unit comprises an articulatable wheeled unit and wherein said front frame portion is articulatable relative to said rear frame portion about a generally vertical pivot axis when said wheeled unit is supported at a generally horizontal support surface.”**

243. The '366 Patent describes its “articulatable wheeled base” as including frame portions that connect to form a “hinged articulated frame to steer the machine in either the left or right direction.” Ex-1001, 13:38-62, 14:10-11. Like the '366 Patent, Jochems explicitly teaches **“a first frame part 1 and a second frame part 2 which are hingedly connected to each other at the vertical hinge axis 3.”** Ex-1004, 2:30-34. Specifically, Jochems discloses “[b]y using a hydraulic cylinder 6, a simple and light control of the machine is rendered possible and **the first frame part 1 and the second frame part 2 can be set up under very different angles with respect to each other.**” Ex-1004, 3:14-17. Jochems Figure 1, below, depicts its wheeled concrete screeding device with first (1) (yellow) and second (2) (green) frame parts articulable relative to one another via vertical hinge axis (3) (orange) and supported at a generally horizontal support surface:



Ex-1001, Fig.19



Jochems-Quenzi

244. Jochems further discloses its articulatable wheeled concrete screeding device is supported at a generally horizontal support surface. Specifically, Jochems teaches “...the machine can be moved without problems through the poured concrete.” Jochems further discloses “a plastic foil or a clay cloth” is “often used...onto which the liquid concrete is poured.” Ex-1004, 1:46-47. Jochems teaches “[a]n object of the invention is therefore to provide a machine which enables to achieve striking off concrete floor surfaces...without damaging the foil materials...” Ex-1004, 1:53-56.

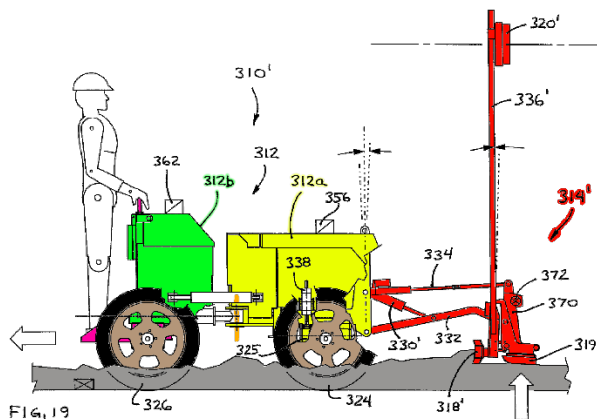
245. Jochems-Quenzi thus discloses “wherein said wheeled unit comprises an articulatable wheeled unit [e.g., first and second frame parts (1, 2)] and wherein said front frame portion [e.g., second frame part (2) (yellow)] is articulatable relative to said rear frame portion [e.g., first frame part (1) (green)] about a generally vertical pivot axis [(e.g., vertical hinge axis (3) (orange))] when said wheeled unit is

supported at a generally horizontal support surface (e.g., on a plastic foil or a clay cloth and any subfloor).”

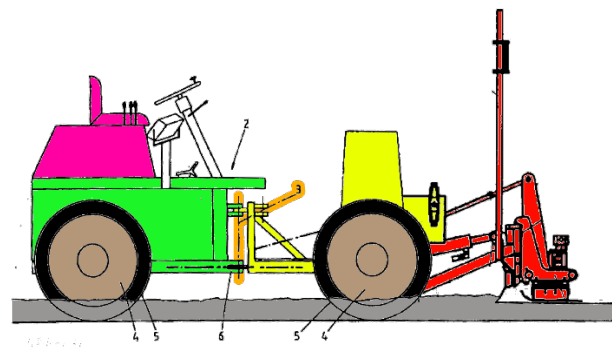
12. **Dependent Claim 12: The wheeled concrete screeding device of claim 11, wherein said front frame portion includes a platform at its forward end, and wherein said platform supports an operator of said wheeled concrete screeding device during operation of said wheeled concrete screeding device.**

246. Jochems teaches “the second frame part is **equipped with the different mechanic and hydraulic control members of the machines.**” Ex-1004, 2:35-38.

As shown below, Jochems discloses the second frame part (2) (green) includes a platform (pink) at the forward end with a seat to support an operator and controls, including a steering wheel and pedals, for Jochems’ machine (also pink):



Ex-1001, Fig.19



Ex-1004, Fig.1

247. Jochems-Quenzi thus discloses “wherein said front frame portion includes a platform at its forward end [e.g., top platform of second frame part (2) (pink)], and wherein said platform supports an operator [e.g., seat on top platform of

second frame part (2)] of said wheeled concrete screeding device during operation of said wheeled concrete screeding device [e.g., using steering wheel, pedal, and controls].”

13. Independent Claim 13

248. The Jochems-Quenzi combination discloses each and every limitation of claim 13, rendering it obvious.

249. In my opinion, Claim 13’s preamble is analogous to limitation 1[preamble] and disclosed by the Jochems-Quenzi combination for the reasons I provide above in Section I.C.2.a, incorporated here.

250. In my opinion, Claim 13’s limitation 13.1 is analogous to limitation 1.3 and claim 11 and disclosed by the Jochems-Quenzi combination for the reasons I provide above in Sections I.C.2.c and I.C.11, incorporated here.

251. In my opinion, Claim 13’s limitation 13.2 is analogous to limitation 1.4 and disclosed by the Jochems-Quenzi combination for the reasons I provide above in Section I.C.2.d, incorporated here.

252. In my opinion, Claim 13’s limitation 13.3 is analogous to limitation 1.5 and claim 2 and disclosed by the Jochems-Quenzi combination for the reasons I provide above in Sections I.C.2.e and I.C.3, incorporated here.

253. In my opinion, Claim 13's limitation 13.4 is analogous to limitation 1.6 and disclosed by the Jochems-Quenzi combination for the reasons I provide above in Section I.C.2.f, incorporated here

254. In my opinion, Claim 13's limitation 13.5 is analogous to claim 5 and disclosed by the Jochems-Quenzi combination for the reasons I provide above in Section I.C.6, incorporated here.

255. As such, in my opinion, claim 13 is rendered obvious by the Jochems-Quenzi combination.

14. Dependent Claim 14: The wheeled concrete screeding device of claim 13, wherein said grade establishing element comprises an auger disposed behind said plow member, and wherein said auger is generally vertically adjustable with said plow member, and wherein said rearward end of said grade establishing element comprises a rearward end of said auger and wherein said vibratable member is pivotally attached at said rearward end of said auger.

256. Claim 14 is analogous to claims 3, 4, and 5 and is disclosed by the Jochems-Quenzi combination for the reasons provided above. *Supra* Sections I.C.4-I.C.6. Claim 14 is rendered obvious by the Jochems-Quenzi combination.

- 15. Dependent Claim 15: The wheeled concrete screeding device of claim 13, wherein said front frame portion includes a platform at its forward end, and wherein said platform supports an operator of said wheeled concrete screeding device during operation of said wheeled concrete screeding device.**

257. Claim 15 is analogous to claim 12 and is disclosed by the Jochems-Quenzi combination for the reasons provided above. *Supra* Section I.C.12. Claim 15 is rendered obvious by the Jochems-Quenzi combination.

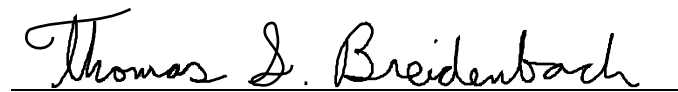
II. CONCLUSION

258. For the reasons set forth above, in my opinion, all the limitations of claims 1-15 of the '366 Patent are rendered unpatentable as obvious by the above cited prior art.

III. OATH

259. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further 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 and that such willful false statements may jeopardize the results of these proceedings.

Executed on October 24, 2023 in Maple Grove, MN 55369.

A handwritten signature in cursive script, reading "Thomas S. Breidenbach", is written over a horizontal line.

Thomas S. Breidenbach

Appendix A

Thomas S. Breidenbach, P.E.

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Maple Grove, MN 55369

Mobile Telephone: 612.300.6900

Email: breid_t@yahoo.com

Work Experience

Inventor/Entrepreneur

- Geothermal Heat Exchanger and Installation Methods Development – U.S. Patent 9,897,347 and others pending
- Aerodynamic Device Development - Develop and experiment with prototypes and file patent applications on aerodynamic devices for use behind trucks
- Prosecuted U.S. Patents 7,374,230; 7,380,868; 7,618,086; 7,784,854; 7,845,708; 7,850,224; 7,857,376; 8,272,680; and others pending
- Inventor of over 30 U.S. and foreign patents and additional applications
- U.S. Patents 7,850,224 and 8,272,680 were asserted in 15-cv-1877-BRO-MAN - US C.D. of CA resulting in a preliminary injunction and favorable settlement

U.S. Patent Agent: Beckman Coulter, Inc., Chaska, MN; March 2017 to March 2023

- Draft and file patent applications
- Conduct disclosure interviews and follow-up with inventors
- Evaluate reports of invention in light of prior art searches
- Conduct searches for patentability and invalidation using outside search firm
- Coordinate prosecution of U.S. and foreign patent applications with outside counsel

U.S. Patent Agent: Merchant & Gould P.C., Minneapolis, MN; February 2007 to March 2017

- Drafted and filed patent applications primarily in the mechanical arts
- Prepared responses to USPTO office actions, including appeals
- Conducted disclosure interviews and follow-up with inventors
- Evaluated reports of invention in light of prior art searches
- Conducted searches for patentability and searches to invalidate patents
- Coordinated prosecution of foreign patent applications with foreign associates
- Prosecuted incoming foreign patent applications as U.S. patent applications

Sr. Design Engineer: Tetra Pak Gable Top Systems, Inc., Minneapolis, MN; November 2000 to December 2006

- Developed prototype of infrared pre-heater – U.S. Patent App. 2009/0025871
- Developed concept for seal-less fill pump – U.S. Patent App. 2008/0187449
- Lead Engineer for carton handling system – Awarded U.S. Patents 7,080,726; 7,077,259; and 7,059,466
- Involved with the direct injection molding of plastic spouts onto cartons – Awarded U.S. Patent 7,313,895
- Proficient user of SolidWorks, Pro/Engineer, Pro/Mechanism, Pro/Mechanica, Pro/Intralink, and MS Office software
- Member of Tetra Pak's Global Simulation Network and Local Technical Intelligence Committee
- Directed design work at Tetra Pak's suppliers
- ISO 9001 Internal Auditor

Sr. Design Engineer: Caterpillar Paving Products, Brooklyn Park, MN;
March 1995 to November 2000

- Responsible for mainframe design, analysis, prototype build, and testing on PM-465 Road Milling Machine, AP-655C Paving Machine, asphalt paving screeds, and grade sensing and measurement hardware
- Led component projects including track systems, cutting chambers, operator stations, and grade sensing & measurement system with kickback detection
- Directed the work of drafters, designers, R&D mechanics, and engineers assigned to the above
- Coordinated with buyers and outside suppliers for outsourced services and components
- Awarded U.S. Patents 5,879,056 and 5,924,819
- Proficient user of SolidWorks, Pro/Engineer, Pro/Mechanica, Pro/PDM, and MS Office software
- Served on Corporate Web and Corporate Concurrent Product and Process Development Steering Committees

Sr. Design Engineer: Boeing, Seattle, WA; June 1989 to March 1995

- Designed and analyzed six-component force/moment transducers used in wind tunnel testing
- Conceived, designed, and successfully tested prototype force transducer that used laser interferometers as sensing element
- Awarded U.S. Patent 5,446,546; EP 0 706 644 B1; and EP 0 793 079 B1
- Coordinated laser force transducer project with optical experts from Boeing Defense and Space Group
- Worked on a variety of other wind tunnel projects interfacing with internal customers, drafters, vendors, machine shops, and electrical instrumentation engineers
- Member of New Wind Tunnel Complex development team
- October 1994 Engineering Employee of the Month

Automotive Repairman: My father's repair shop, Reynolds, ND; Schumacher Goodyear, Grand Forks, ND; and The Firestone Store, Grand Forks, ND in Jr. & Sr. High School and College

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References References and work reviews available upon request