IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	Brian James Petersen et al.
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Filing Date:	July 3, 2012
Title:	SEED CARRIER WITH PIVOTING CONVEYOR

DECLARATION OF DOUGLAS S. PRAIRIE, P.E.

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3. [16.2] a base positioned below said main hopper; 31

4. [16.3] a support arm having first and second ends; 33

5. [16.4] a first coupling connecting said first end of said support arm with said base, ... 35

6. [16.5] said first coupling being rotatable about a first vertical axis of rotation, and 35

7. [16.6] said first end of said support arm being rotatable about a first horizontal axis of rotation; 37

8. [16.7] a conveyor having a longitudinal axis and first and second ends, a conveyor hopper at said first end, and a conveyor discharge at said second end; and 39

9. [16.8] a second coupling connecting said second end of said support arm with said conveyor at an approximate center of gravity of said

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10.[16.9] said conveyor being rotatable about said first conveyor axis of rotation between an unloading position wherein said conveyor hopper is disposed below said main hopper discharge to receive agricultural product from said main hopper and a loading position wherein said conveyor discharge is disposed above said main hopper to dispense agricultural product into said main hopper.....46

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3. [16.2] a base positioned below said main hopper;.....80

4. [16.3] a support arm having first and second ends;.....81

5. [16.4] a first coupling connecting said first end of said support arm with said base,.....81

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7. [16.6] said first end of said support arm being rotatable about a first horizontal axis of rotation; 85

8. [16.7] a conveyor having a longitudinal axis and first and second ends, a conveyor hopper at said first end, and a conveyor discharge at said second end; and....85

9. [16.8] a second coupling connecting said second end of said support arm with said conveyor at an approximate center of gravity of said conveyor, said second coupling defining a first conveyor axis of rotation that is not parallel to said conveyor longitudinal axis, and....89

10.[16.9] said conveyor being rotatable about said first conveyor axis of rotation between an unloading position wherein said conveyor hopper is disposed below said main hopper discharge to receive agricultural product from said main hopper and a loading poition wherein said conveyor discharge is disposed above said main hopper to dispense agricultural product into said main hopper....90

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Claim 16	
[16.pre]	A seed or grain tender comprising:
[16.1]	a main hopper having a main hopper discharge;
[16.2]	a base positioned below said main hopper;
[16.3]	a support arm having first and second ends;
[16.4]	a first coupling connecting said first end of said support arm with said base,
[16.5]	said first coupling being rotatable about a first vertical axis of rotation, and
[16.6]	said first end of said support arm being rotatable about a first horizontal axis of rotation;
[16.7]	a conveyor having a longitudinal axis and first and second ends, a conveyor hopper at said first end, and a conveyor discharge at said second end; and
[16.8]	a second coupling connecting said second end of said support arm with said conveyor at an approximate center of gravity of said conveyor, said second coupling defining a first conveyor axis of rotation that is not parallel to said conveyor longitudinal axis, and
[16.9]	said conveyor being rotatable about said first conveyor axis of rotation between an unloading position wherein said conveyor hopper is disposed below said main hopper discharge to receive agricultural product from said main hopper and a loading position wherein said conveyor discharge is disposed above said main hopper to dispense agricultural product into said main hopper.
Claim 17	
[17]	The seed or grain tender of claim 16, wherein said first vertical axis of rotation extends through said main hopper discharge.

Claim 18	
[18]	The seed or grain tender of claim 16, wherein said first conveyor axis of rotation extends through said approximate center of gravity of said conveyor.
Claim 19	
[19]	The seed or grain tender of claim 16, wherein said first horizontal axis extends through said first end of said support arm.
Claim 20	
[20]	The seed or grain tender of claim 16, wherein said second end of said support arm terminates at or near said second coupling.
Claim 21	
[21]	The seed or grain tender of claim 16, wherein said conveyor includes an internal elevator for moving seed or grain from said conveyor hopper to said conveyor discharge.
Claim 22	
[22]	The seed or grain tender of claim 16, further comprising a hydraulic piston extending at an acute angle relative to a horizontal plane to connect with a portion of said support arm spaced from said first horizontal axis of rotation.
Claim 23	
[23]	The seed or grain tender of claim 16, further comprising a stand coupled with said first end of said conveyor and movable between a stowed position allowing said conveyor hopper to be positioned below said main hopper discharge when said conveyor is in said unloading position and an extended position supporting said conveyor hopper above the ground when said conveyor is in said loading position.

I, Douglas S. Prairie, declare as follows:

I. INTRODUCTION

1. I have been retained as a technical expert by Par-Kan Company, LLC ("Par-Kan" or "Petitioner"). I understand that Par-Kan is requesting that the Patent Trial and Appeal Board institute an *inter partes* review ("IPR") proceeding with respect to U.S. Patent No. 8,967,940 ("the '940 patent") (Ex. PK-1001).

2. I have been asked to provide my independent analysis of the '940 patent in light of certain prior-art references, and I have done so based on my personal knowledge and experience.

3. Based on my independent analysis of the '940 patent and the references cited in this Declaration, as well as my personal knowledge and experience, it is my opinion that the device described in claims 16–23 of the '940 patent would have been obvious to a person having ordinary skill in the art at the time of the alleged invention, for the reasons I explain below.

4. I am not, and never have been, an employee of Par-Kan. I received no compensation for this Declaration beyond my normal hourly rate based on my time actually spent analyzing the '940 patent, the prior-art references cited below, and various issues related thereto. I will not receive any added compensation based on the outcome of any IPR or other proceeding involving the '940 patent.

II. QUALIFICATIONS

5. In formulating my opinions, I have relied on my knowledge, training, and experience in the relevant field. My education and experience are described more fully in the attached curriculum vitae (Appendix A). For ease of reference, I have highlighted certain information below.

6. I am an agricultural engineer with over 25 years of experience in machine design and product development solutions, specializing in agriculture machinery and precision seeding technology.

7. I hold a B.S. in Agricultural Engineering (with a focus on power and machinery) from South Dakota State University, which I received in 1997. I also hold a M.S. in Mechanical Engineering (with a business emphasis) from Boise State University, which I received in 2004.

8. I am a registered Professional Engineer in the State of Idaho.

9. I am currently employed in Brookings, South Dakota as a lecturer at South Dakota State University ("SDSU") in the Agriculture and Biosystems Engineering ("ABE") Department. I joined SDSU in August 2016. SDSU is a premier land grant research and teaching institution and is the first and only university in the world to offer a four-year B.S. degree in Precision Agriculture. My courses include ABE 314 Agriculture Power and Machinery; ABE 411/422 Capstone Design; ABE 350 Hydraulic Systems; ABE 464 Monitoring and Controls;

AST 412 Fluid Power Technology; and AST 313 Farm Machinery Management. My courses involve every aspect of the design, operation, service, and ownership of agriculture machinery, including planting and seeding technologies. My students include Agriculture and Biosystems Engineers, Mechanical Engineers, Electrical Engineers, Agriculture Technology students and Precision Agriculture students. These students enter the workforce into a wide variety of career paths, including design of agriculture machinery systems, design of livestock structures, design of manure management systems, livestock farm owners and operators, and many other agriculture careers.

10. Before joining SDSU in August of 2016, I worked in the agriculture and construction equipment industry for 20 years in roles ranging from design engineering to product and sales management. My experience includes design of planting and seeding equipment, design of concrete placing and cutting equipment, construction project management, design of high horsepower trash pumps, product/sales management of precision agriculture control systems, and research on cellulosic ethanol production systems.

11. From October 1996 until July 2000, I worked for Case Corporation, a large manufacturer of construction and agricultural equipment, as a New Product Development Engineer for Case's Planting and Seeding Division. In that role, I helped develop the SDX 30 and SDX 40 single-disc, no-till planter programs from

conception to production. Some of this work is described in U.S. Patents 6,386,127, 6,640,732, and 6,644,223. I also helped develop pneumatic seed delivery systems to row crop planter seed meters (U.S. Patents 5,915,312 and 6,047,652).

12. From February 2003 until September 2005, I worked for Bratney Companies as a Construction/Mechanical Project Engineer. Bratney provides equipment design, engineering, and construction services to seed, food, grain, and feed facilities around the world.

13. From December 2007 through the present, I have provided freelance agricultural, mechanical, and industrial design engineering through my own company, Prairie West LLC. Examples of this work include mechanical engineering analysis and documentation for a micro corn-to-ethanol production facility, structure design analysis for a mobile hydraulic car crushing system, and industrial design and product development for a child stroller manufacturer.

14. From March 2010 until March 2015, I worked for Raven Industries, first as a Project Manager for planting, seeding, and harvesting product lines and then as the North American Sales Manager for precision agriculture technology. Raven Industries specializes in precision agriculture, high-performance specialty films, and lighter-than-air technologies. At Raven Industries, I oversaw development and launch of multiple planting products, including OmniRow Planter Controls, OmniSeed Air Seeder Controls, UHarvest Grain Cart Monitoring System, and

SmartYield Pro Yield Monitoring System. The OmniRow product line was the first aftermarket planter control system that allowed individual rate control of row crop planter seed meters. The OmniSeed seeder control was a revolutionary aftermarket and OEM technology that provided a comprehensive seeder control package within a single platform. Leading the development and launch of these products gave me firsthand exposure to all the major planter and seeding equipment manufactures and their technologies.

15. I am a named inventor on 8 patents and 1 pending patent application. These patents are generally directed to seed delivery systems, agricultural implements, and concrete machinery. Examples include U.S. Patent No. 5,915,312, titled *Pneumatic Seed Delivery System*, which describes a pneumatic system for providing grain from a grain bin to a grain meter using air flow; U.S. Patent No. 6,047,652, titled *Seed Planter Distribution System*, which describes a system for receiving airborne seed from a source and transferring the seed to seed metering bins; U.S. Patent Nos. 6,386,127, 6,640,732, and 6,644,223, titled *Disc Opener for a Seed Planter*, which describe a disc-style opener assembly for opening a furrow in the ground; and U.S. Patent Application No. 13/842,326, titled *Multi-Seed Planter Control System and Method for the Same*, which describes a method of automatically planting two or more seed types, including monitoring a planter's location and having remotely adjustable planting characteristics.

16. I am a member of multiple professional organizations, including the American Society of Agricultural and Biological Engineers (ASABE) and American Society of Mechanical Engineers (ASME).

17. I have consulted as an expert witness on previous intellectual property disputes involving patents. My work in this capacity includes reviewing and analyzing accused products, reviewing and analyzing patents, writing expert reports, and providing deposition testimony.

III. LEGAL PRINCIPLES

18. In forming my analysis and conclusions expressed in this Declaration, I have applied the legal principles described in the following paragraphs, which were provided to me by counsel for the Petitioner.

A. Person of Ordinary Skill in the Art

19. I understand that the factors considered in determining the ordinary level of skill in a field of art include: the level of education and experience of persons working in the field; the types of problems encountered in the field; the teachings of the prior art regarding solutions to such problems; and the sophistication of the technology at the time of the alleged invention. I understand that a person of ordinary skill in the art (also referred to herein as a "skilled artisan") is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the

factors above and knowledge of all relevant prior-art references, including the references I cite below.

B. Obviousness

20. I have been informed that a patent claim is invalid as "obvious" if it would have been obvious to a skilled artisan at the time of the alleged invention, taking into account (1) the scope and content of the prior art, (2) the differences between the prior art and the claims, (3) the level of ordinary skill in the art, and (4) any so called "secondary considerations" of non-obviousness, which include: (i) long-felt but unresolved need for the claimed invention, (ii) commercial success attributable to the claimed invention, (iii) unexpected results of the claimed invention, and (iv) copying of the claimed invention by others.

21. I understand that a claim can be obvious in light of a single prior-art reference or multiple prior-art references. To be obvious in light of a single prior-art reference or multiple prior-art references, there must be a reason that would have prompted a skilled artisan to modify or supplement the single prior-art reference, or to combine two or more references, in a manner that provides the elements of the claimed invention. This reason may come from a teaching, suggestion, or motivation to combine, either explicitly or implicitly from the reference(s) themselves, the knowledge or "common sense" of a skilled artisan, or the nature of the problem to be solved. The reason may also come from a design need or market pressure to solve

a problem, provided there are a finite number of identified, predictable solutions. I have been informed that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. I also understand it is improper to rely on hindsight in making the obviousness determination.

22. I understand that an obviousness determination also requires that a skilled artisan would have had a reasonable expectation of success. This concept has been explained to me as relating to the relative likelihood or predictability—from the perspective of a skilled artisan—of successfully modifying the prior art in a manner that would meet the claimed limitations of the patent being challenged. I understand that the expectation of success need only be "reasonable" and, thus, does not require the absolute certainty gleaned from physically creating the proposed modification to the prior art.

C. Claim Interpretation

23. I understand that, for purposes of my analysis in this *inter partes* review proceeding, the terms appearing in the patent claims should be interpreted according to their ordinary and customary meaning. In determining the ordinary and customary meaning, I understand that the words of a claim are first given the plain meaning they would have had to a person of ordinary skill in the art at the time of the alleged invention. I also understand that the specification and file history may be used to

construe a claim term. Moreover, I understand that even treatises and dictionaries may be used, albeit under limited circumstances, to determine the meaning attributed by a person of ordinary skill in the art to a claim term.

IV. PERSON OF ORDINARY SKILL IN THE ART

24. Based on my knowledge and experience in the field and my review of the ’940 patent and its file history, I believe that a skilled artisan would have had a Bachelor of Science degree in mechanical engineering, agricultural engineering, or a related discipline and at least two years of professional experience in a field related to agricultural machinery. Such experience could be obtained through research and study in a graduate program or through comparable exposure through industry employment. Additional years of experience could substitute for education, and additional years of education could substitute for experience.

25. My analysis and conclusions expressed in this Declaration are based on the perspective of a skilled artisan having this level of knowledge and skill. My education, technical expertise, and personal knowledge discussed in Section II meet the qualifications of a skilled artisan. Furthermore, I have significant experience training and educating persons meeting the qualifications of a skilled artisan, and I am familiar with the perspective of a skilled artisan.

V. MATERIALS CONSIDERED

26. As part of my independent analysis for this Declaration, I have considered the following: the ’940 patent (Ex. PK-1001) and its prosecution history (Ex. PK-1002); the background knowledge/technologies that were commonly known to persons of ordinary skill; my own knowledge and experience gained from my work in the field; my experience in teaching and advising others in this field; and my experience working with others involved in this field. In addition, I have analyzed the patents, publications, and materials listed herein and in Par-Kan’s Petition for *inter partes* review of the ’940 patent.

27. Although I cite and quote selected portions of various references in this Declaration, these citations and quotations are merely examples. A skilled artisan would have viewed each reference in its entirety and in combination with other references. Accordingly, I intend the references identified in this Declaration to be viewed as incorporated in their entireties.

VI. OVERVIEW OF THE ’940 PATENT

A. Background of the Technology

28. “Conveyors have been used in the transportation of grain since the 1800’s.” Ex. PK-1021 ¶ 1. “[C]onveyors are ideal appliances in that they can run at relatively high speeds with a moderate expenditure of power.” *Id.*

29. Grain or seed tenders with built-in conveyors that can rotate between loading and unloading positions have existed since at least the 1990s. For example,

U.S. Patent No. 5,888,044 to Gregory Eugene Baskerville ("Baskerville") describes such a seed tender and was filed in 1996. *See* Ex. PK-1008. Specifically, Baskerville describes a "bulk seed cart" having "a seed bin . . . to which a conveyor is removably connected." *Id.* at Abstract. The conveyor can be "swiveled 180 degrees" between a position "for unloading seed from the cart" and a position in which seed is "loaded into the seed cart via the conveyor" from "a nearby source of seed, such as another seed cart, a stationary bin, a truck or railroad car, etc., with the conveyor being directed toward the seed bin in the seed cart." *Id.* The following figures depict the loading and unloading positions:

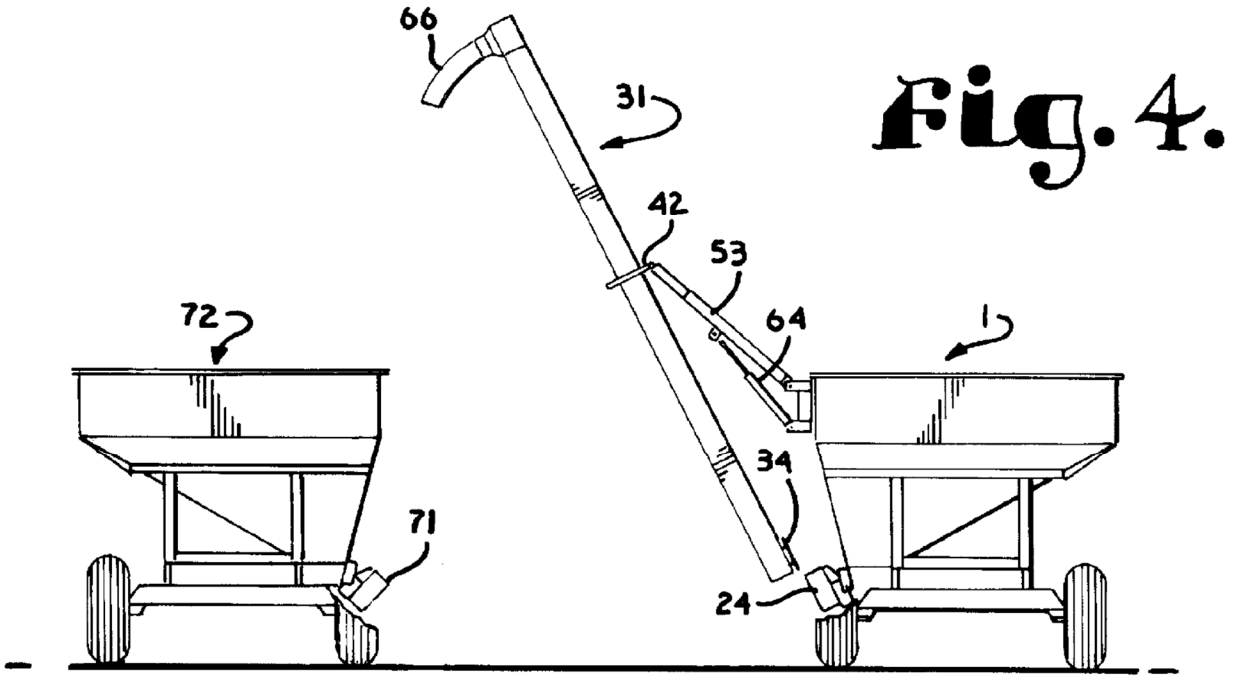
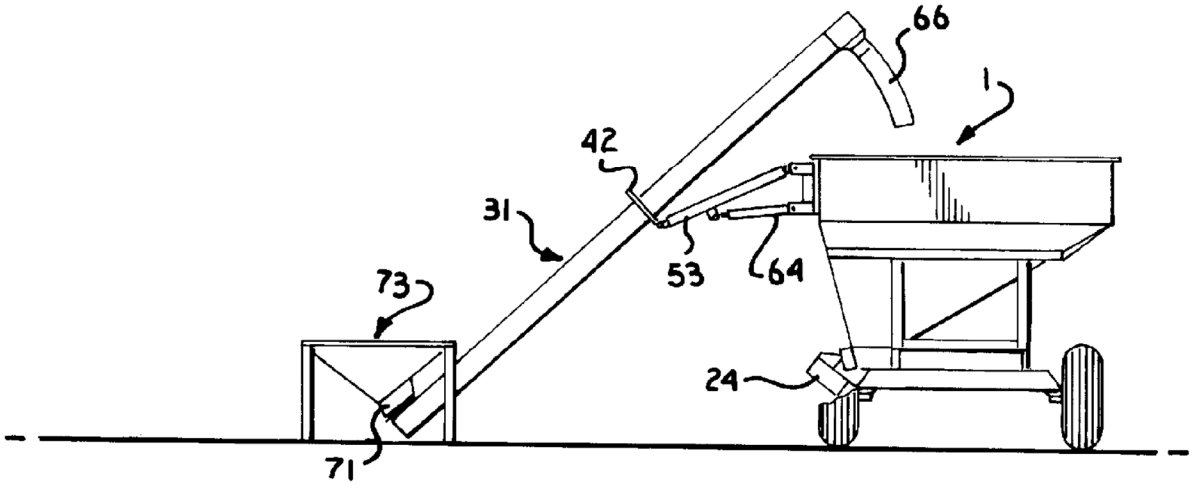


Fig. 4.

Id. at Fig. 4.

Fig. 5.



Id. at Fig. 5.

30. Moreover, using a rotatable support arm or boom to connect a conveyor to a grain or seed tender was well known by the time of the ’940 patent’s earliest possible effective filing date (February 15, 2007). For example, as shown above, Baskerville’s conveyor is “supported by a telescoping boom mounted on the side of the cart” that “can be raised or lowered” and “pivoted from side to side.” *Id.* As another example, Canadian Patent No. CA 2462001 C to Bob Cochran et al. (“Cochran”) discloses a series of hinged brackets (e.g., “swing bracket 82” and “swing bracket 83”) for rotatably connecting a conveyor to an agricultural commodity tender:

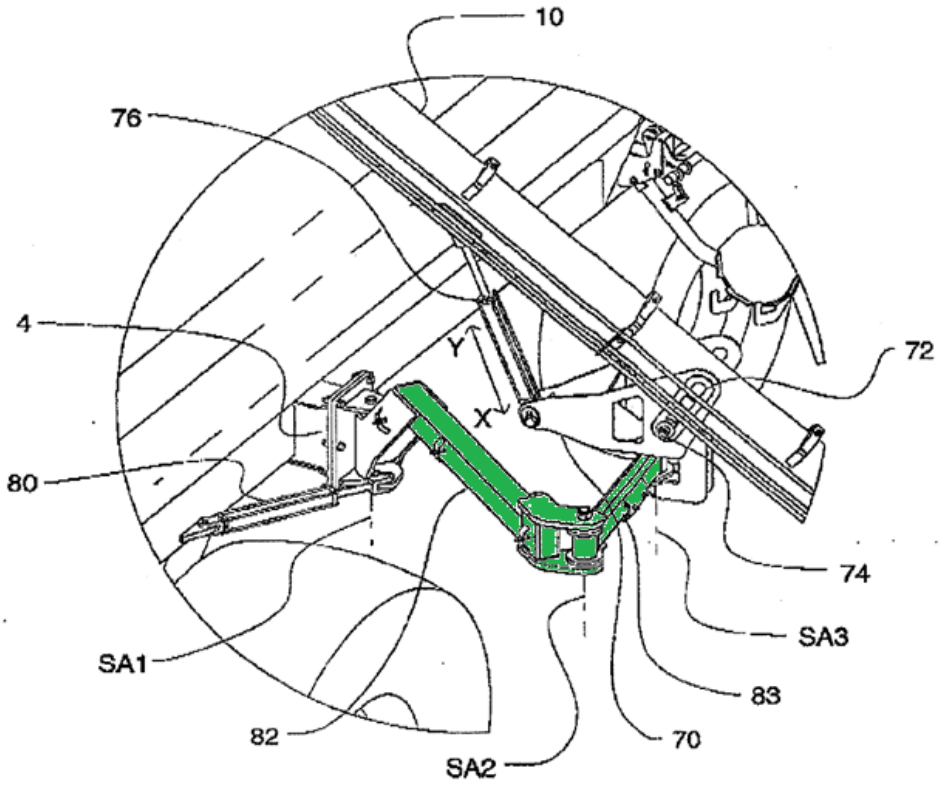


FIG. 8

Ex. PK-1010 at Fig. 8 (color added), 18:1–12.

31. As yet another example, U.S. Patent Publication No. 2008/0173521 to Lindsay David Hitch ("Hitch") discloses a "pivotable mounting bracket 12" for connecting a conveyor to a grain tender:

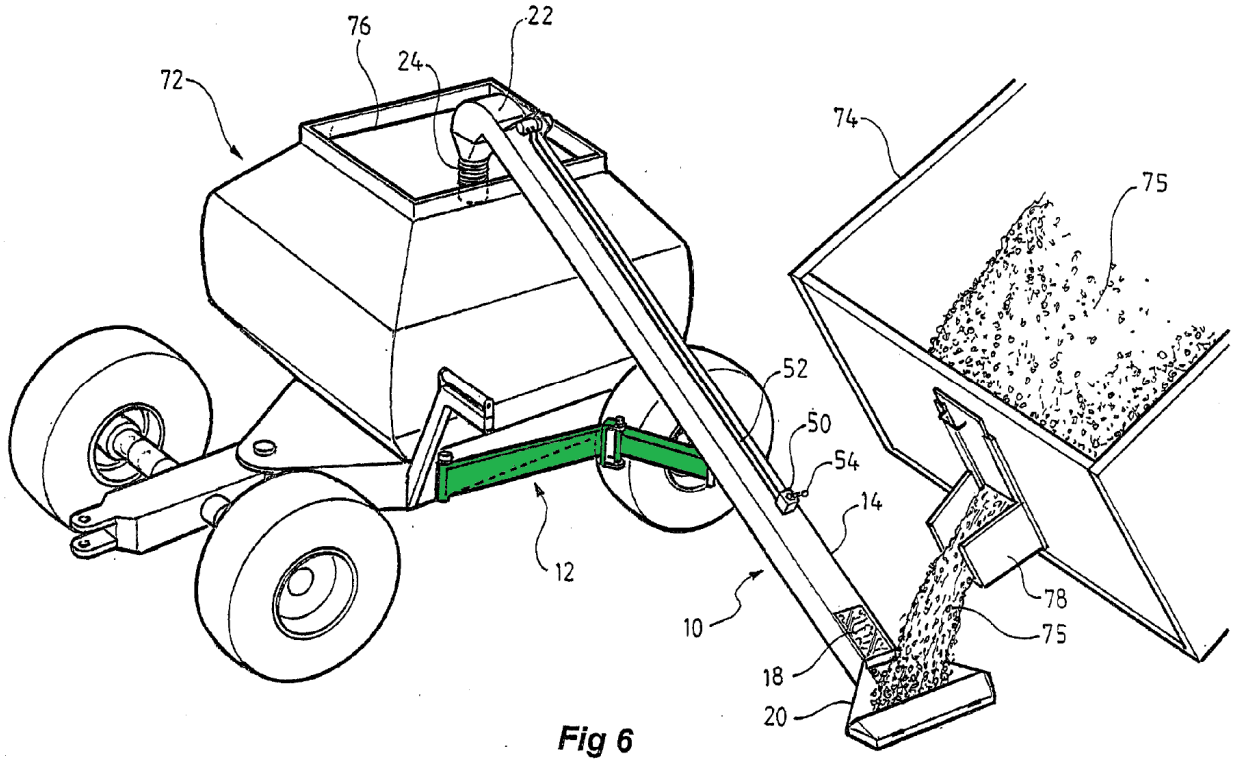


Fig 6

Ex. PK-1021 at Fig. 6 (color added), ¶¶ 37, 49.

B. Description of the ’940 Patent

32. The ’940 patent discloses a seed carrier 100 comprising a main hopper 105 for carrying seeds, a conveyor 104 for conveying seeds, and a support arm 102 for supporting the conveyor. Ex. PK-1001 at Abstract, 2:65–3:1. The support arm 102 is “pivotably coupled to a base . . . so that the support arm 102 is rotatable about a vertical axis.” *Id.* at 3:39–41. Similarly, the conveyor 104 is “pivotably coupled with the support arm [102] by a coupling 103” to “allow the conveyor to be rotated between [a seed] loading and unloading position.” *Id.* at 3:1–3, 2:1-4.

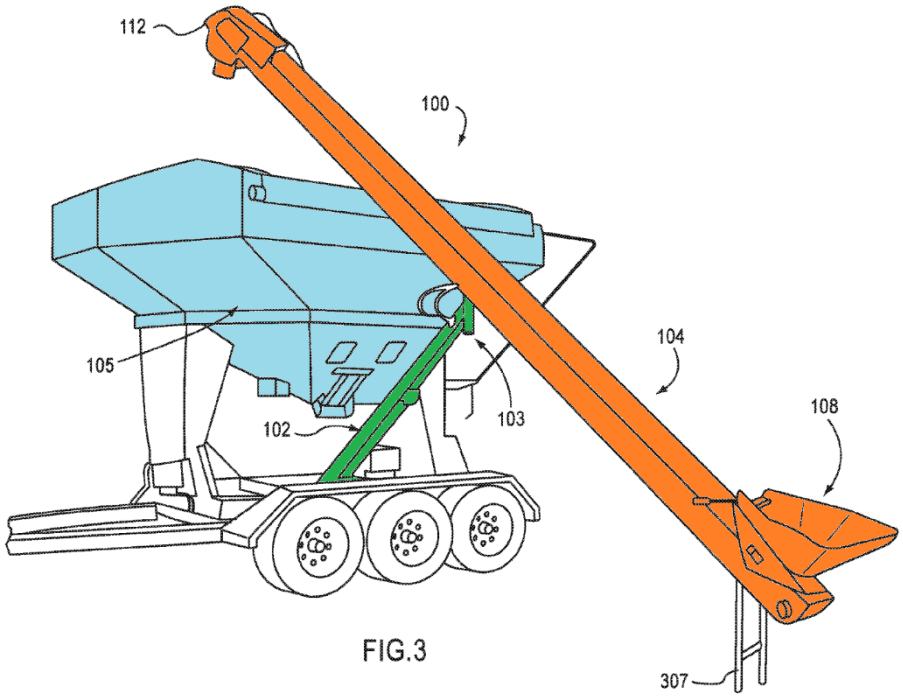


FIG.3

Id. at Fig. 3 (color added) (depicting conveyor 104 in loading position).

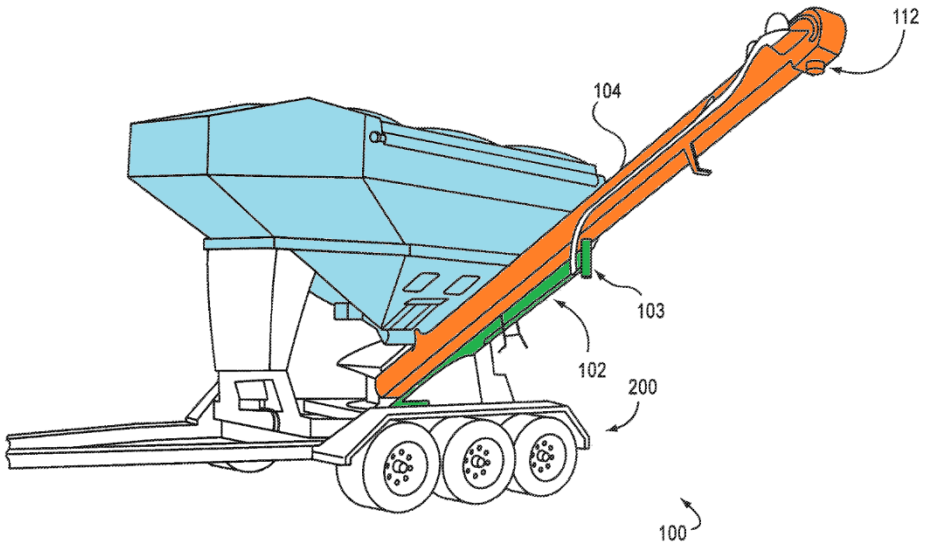


FIG.2

Id. at Fig. 2 (color added) (depicting conveyor 104 in unloading position).

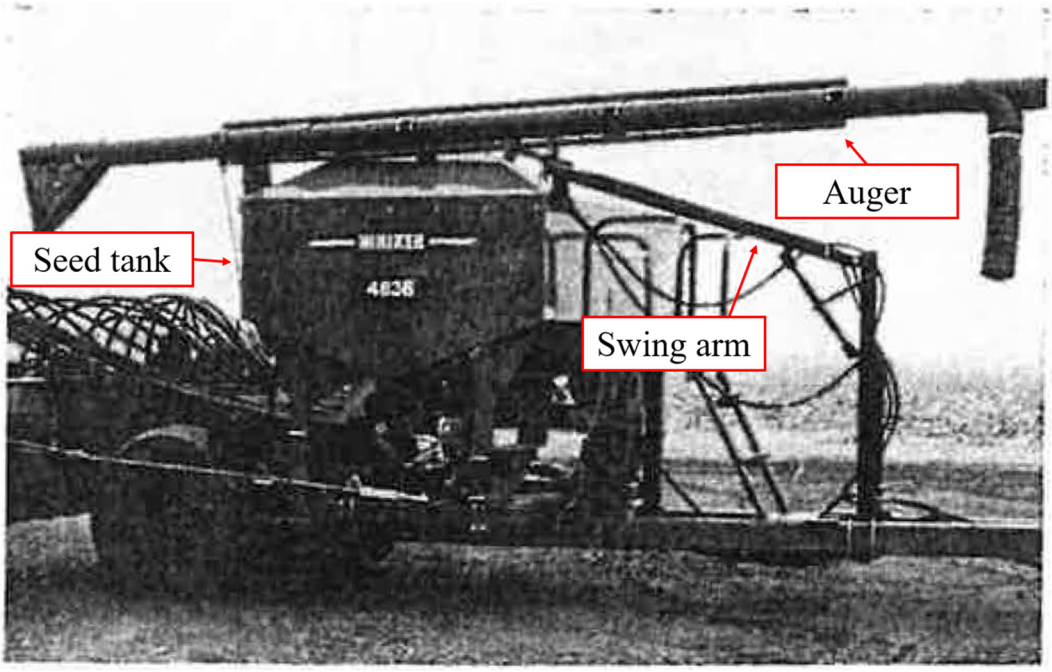
33. The ’940 patent’s earliest possible effective filing date is February 15, 2007. For purposes of my obviousness analysis, I have assumed (but do not concede) that the claims are entitled to claim priority to that date.

VII. GROUND 1: HINIKER MANUAL IN VIEW OF HINIKER WEBPAGE (AND, IF NECESSARY, JOHNSON AND/OR MORRIS)

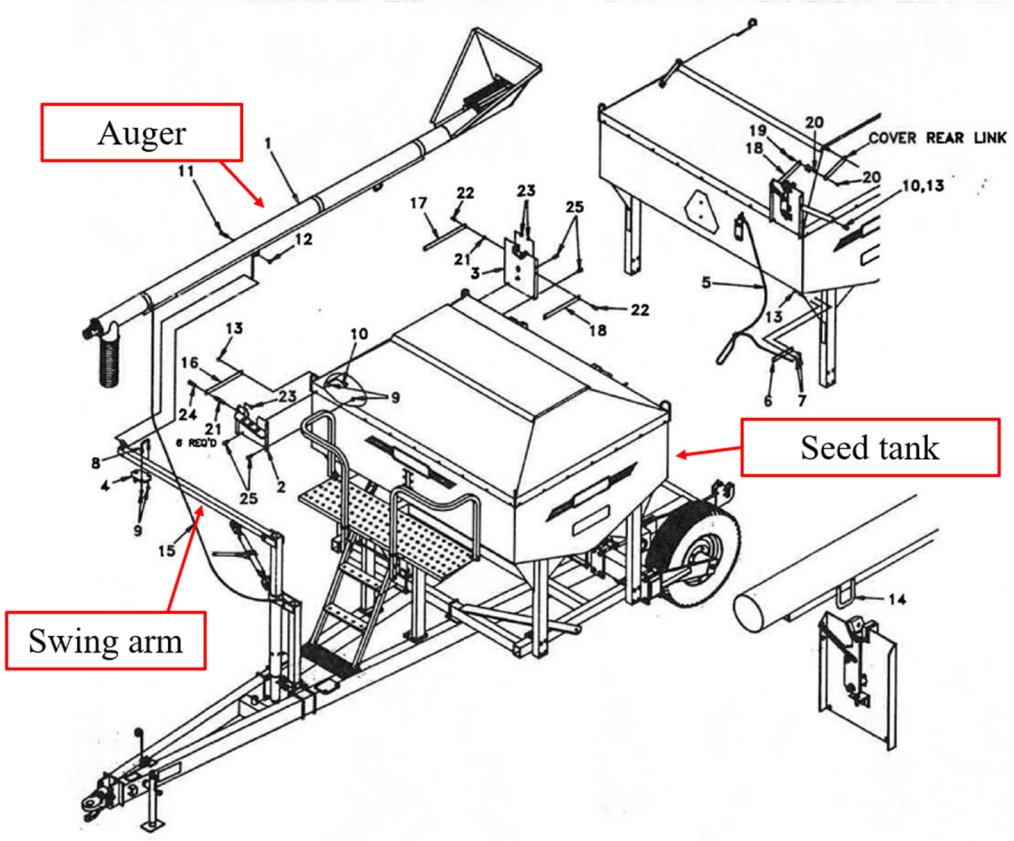
34. Having reviewed the challenged claims of the ’940 patent, as well as the Assembly Manual for Hiniker Company’s Part Number 80504785 REV A (“Hiniker Manual”) and a page on Hiniker Company’s website (“Hiniker Webpage”), it is my opinion that claims 16 and 18–21 would have been obvious to a skilled artisan at the time of the alleged invention based on Hiniker Manual in view of Hiniker Webpage.

A. Overview of Hiniker Manual

35. Hiniker Manual discloses the Hiniker Company 4800 Series Air Seeder, an air seeder comprising a seed tank and an auger conveyor mounted on a “swing arm”:

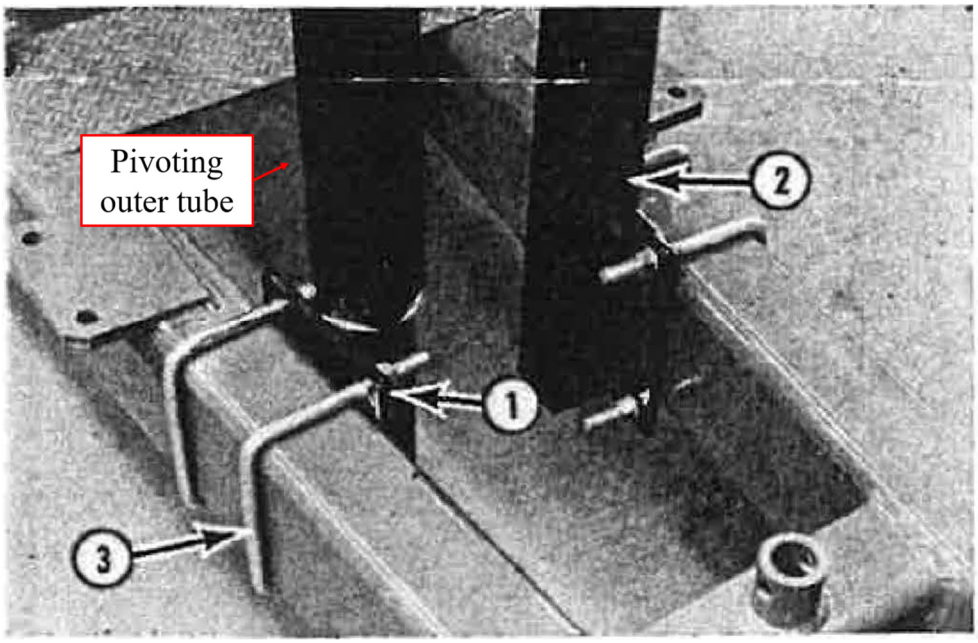


Ex. PK-1004 at 25 (annotated).

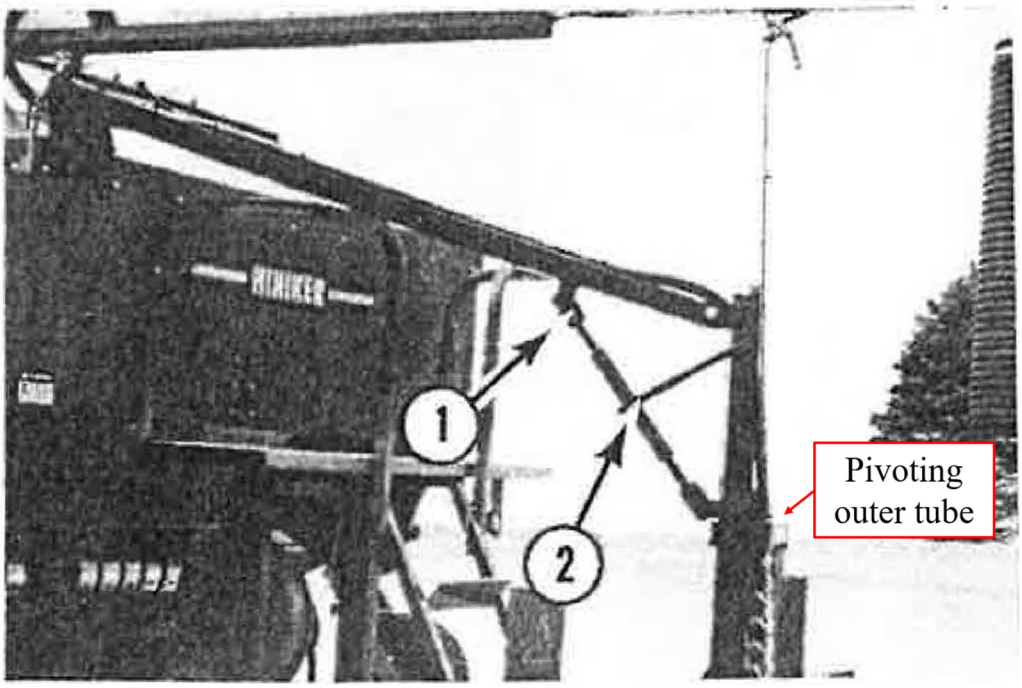


Id. at 38 (annotated); *see also id.* at 37 (referring to "swing arm").

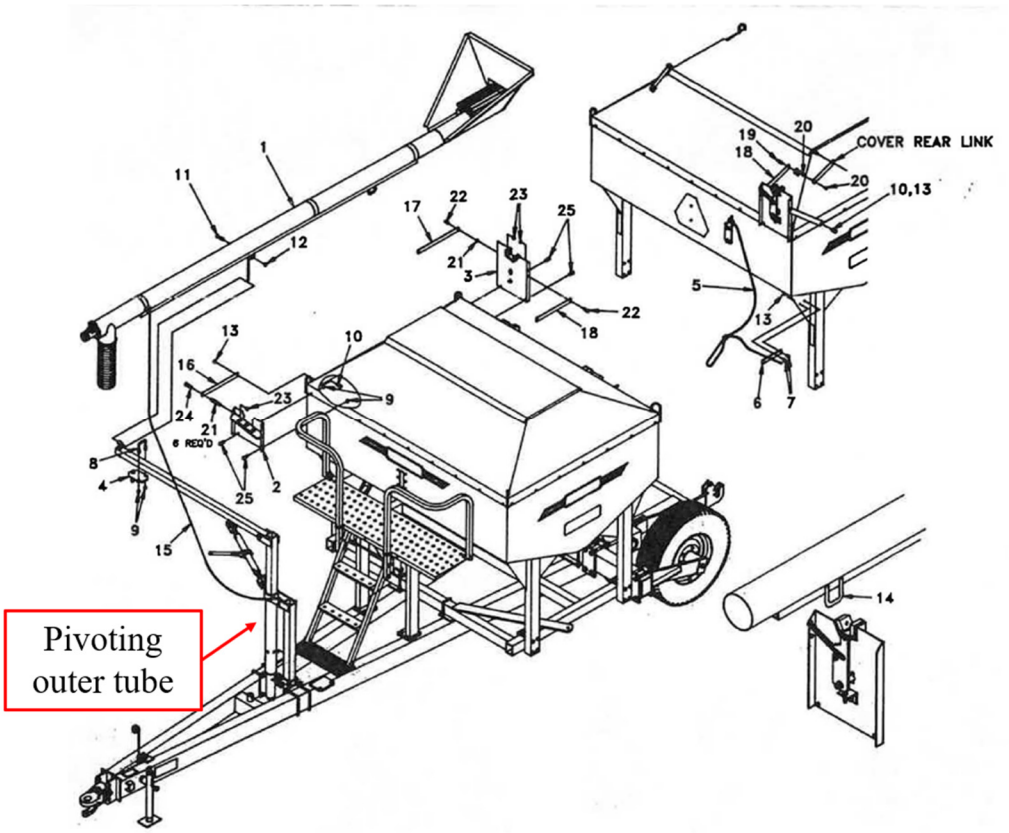
36. The swing arm is connected to a vertical "pivoting outer tube" that "allows the fill auger to rotate easily." *Id.* at 36, 37.



Id. at 37 (annotated).



Id. (annotated).



Id. at 38 (annotated).

37. I note that Hiniker Company was (and still is) a well-known manufacturer of agricultural machinery at the time Hiniker Manual was published, which I understand was on January 2, 2001. According to its website, Hiniker Company has been in the agricultural equipment business since 1970. https://www.hiniker.com/about-us/ (accessed August 28, 2024). I have personally used Hiniker equipment and can attest they are an innovative and well-respected company within the agricultural equipment industry.

B. Overview of Hiniker Webpage

38. Hiniker Webpage is a page on Hiniker Company's website describing the features of the Hiniker Company 4800 Series Air Seeder. *See* Ex. PK-1005; *see also* Ex. PK-1018 (showing that Hiniker Webpage is a subpage of the "4800 Air Seeder" page on Hiniker Company's website). Hiniker Webpage states that although the 4800 Series Air Seeder's auger is referred to as a "[f]ill" auger, it "may be used to both fill ***and empty*** the seed hopper when changing seed varieties." Ex. PK-1005 (emphasis added).

C. Reasons to Combine Hiniker Manual and Hiniker Webpage

39. In my opinion, a skilled artisan would have been motivated to combine Hiniker Manual's and Hiniker Webpage's teachings.

40. Hiniker Manual and Hiniker Webpage describe the same product family, the Hiniker Company 4800 Series Air Seeder. *See* Ex. PK-1004 at Cover (referring to "4800 Air Seeder"); Ex. PK-1017 ¶ 3 (declaring Hiniker Manual "was distributed to each purchaser of the Hiniker 4800 Air Seeder S/N - 104"); Ex. PK-1018 (showing that Hiniker Webpage is a subpage of the "4800 Air Seeder" page on Hiniker Company's website). A skilled artisan would have looked to both references together because they are from the same company and provide complementary disclosures of the same product family. Indeed, Hiniker Manual provides details that Hiniker Webpage does not, and vice versa. For example, Hiniker Manual explains

how to assemble and operate the auger, Ex. PK-1004 at 36–41, and Hiniker Webpage explains that the auger "may be used to both fill and empty the seed hopper," Ex. PK-1005. Thus, a skilled artisan would have been motivated to combine the teachings of Hiniker Manual and Hiniker Webpage.

41. A skilled artisan also would have had a reasonable expectation of success in combining the teachings of Hiniker Manual and Hiniker Webpage. Because both references describe the same product family, a skilled artisan would have known that combining the references was not only achievable, but also had already been achieved by Hiniker. A skilled artisan also would have viewed this combination as requiring no more than routine skill since it had already been done. Accordingly, a skilled artisan would have had a reasonable expectation of success in achieving the combination.

42. For the remainder of this Declaration, I refer to the proposed combination of Hiniker Manual and Hiniker Webpage as "the Hiniker combination."

D. Independent Claim 16

43. In this section, I compare each limitation of claim 16 to the Hiniker combination. As explained below, it is my opinion that the Hiniker combination satisfies each limitation of claim 16 and, thus, that claim 16 as a whole would have been obvious to a skilled artisan at the time of the alleged invention.

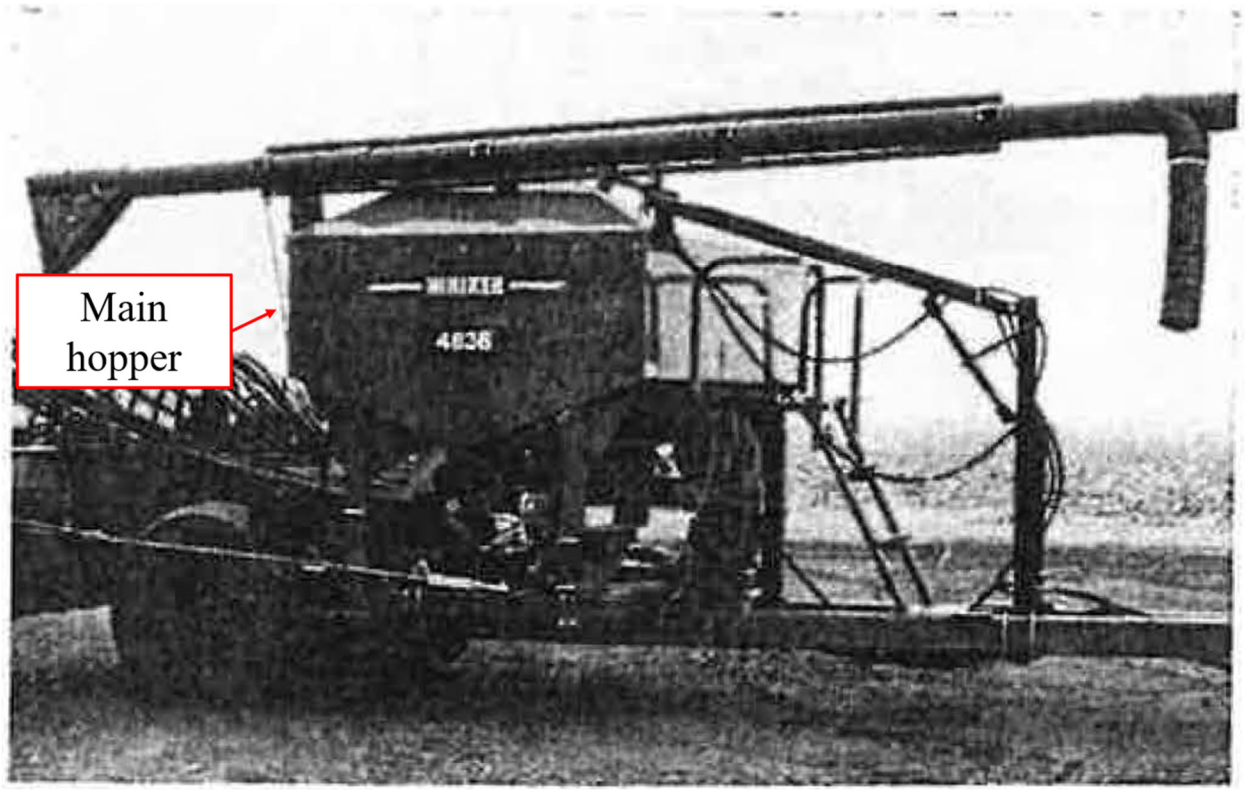
1. [16.pre] A seed or grain tender comprising:

44. I understand that the preamble is not a limitation. Regardless, the Hiniker combination discloses a seed or grain tender. The '940 patent equates a "tender" with a "carrier." Ex. PK-1001 at 1:43–46 (referring to "a seed tender or carrier"); *id.* at 1:16–17 ("The present invention relates generally to a conveyor system for a grain or seed carrier."); *id.* at Abstract ("A seed carrier includes a main hopper coupled with a frame via leg members."); *id.* at Title ("Seed Carrier with Pivoting Conveyor"). Hiniker Manual discloses an "air seeder cart" comprising a "tank" for carrying seeds. Ex. PK-1004 at Cover, 36. In other words, Hiniker Manual discloses a seed carrier. Thus, because the Hiniker combination is a seed carrier (i.e., seed tender), it satisfies the preamble.

45. If the Board finds that the Hiniker combination is not a tender, it would have been obvious to apply the combination to a tender. The Hiniker combination is analogous to a tender with additional components for planting seeds. A skilled artisan would have been motivated to design a tender based on this combination, but without the seed-planting components, to achieve the benefits I discuss in § VII.C above. A skilled artisan also would have reasonably expected success in doing so because it would merely require removing the seed-planting components.

2. [16.1] a main hopper having a main hopper discharge;

46. The Hiniker combination discloses this limitation. Hiniker Manual discloses that the Hiniker combination has a "seed tank" (main hopper) having an "outlet" (main hopper discharge):



Ex. PK-1004 at 25 (annotated); *see also id.* (referring to "seed tank outlet").

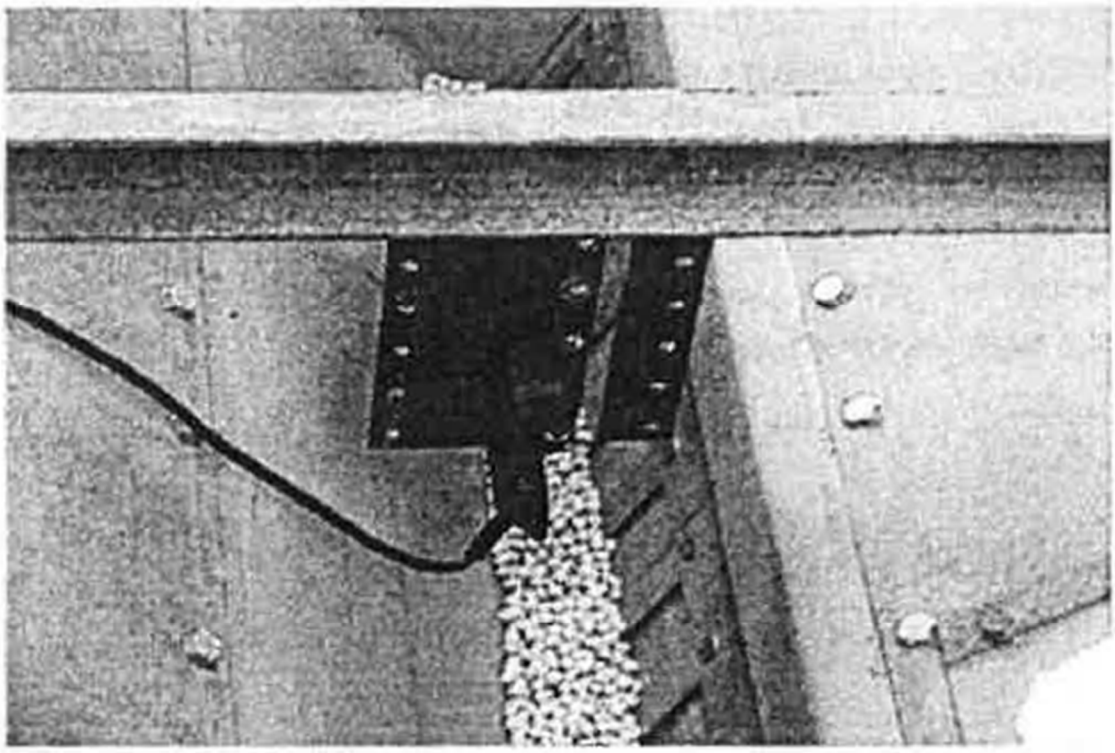
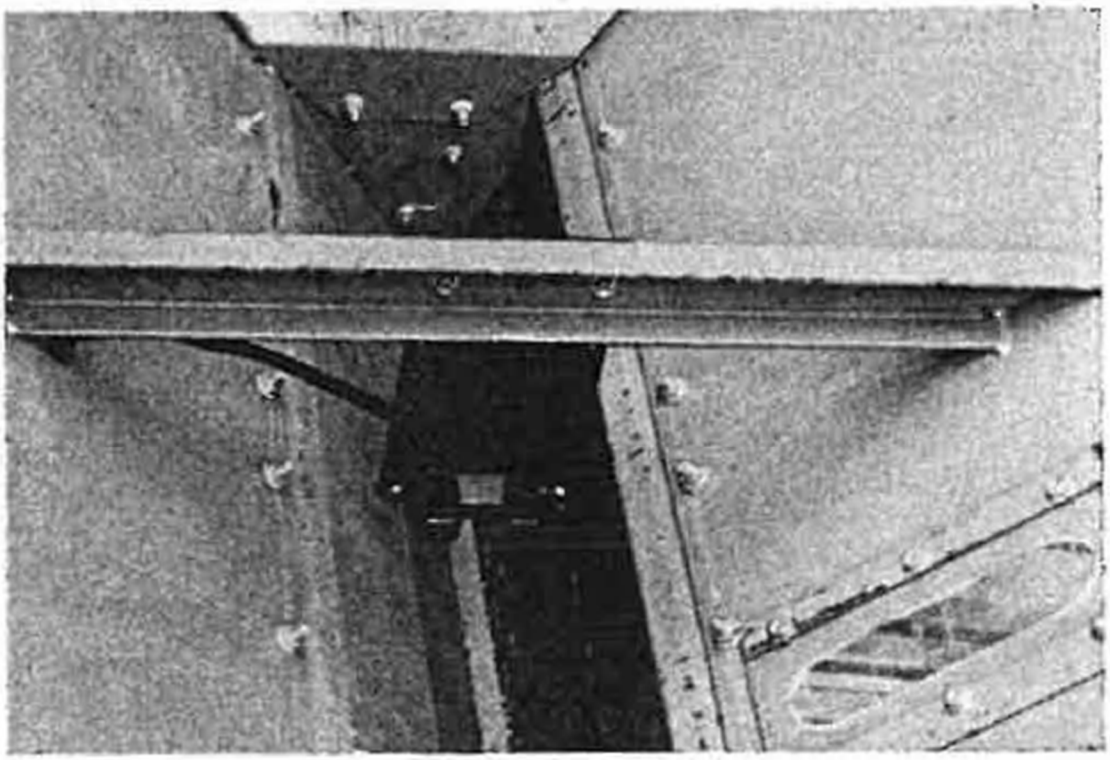
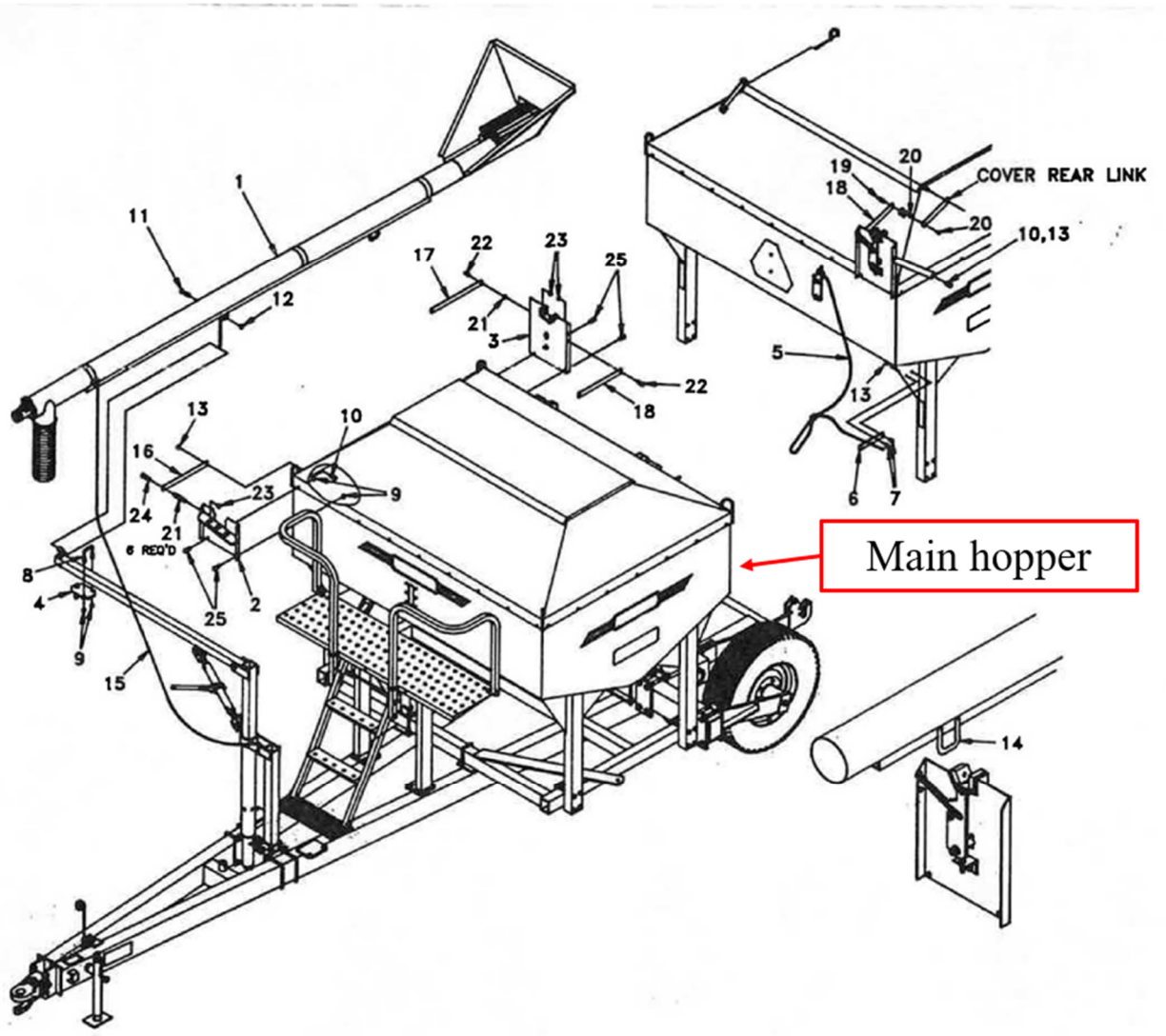


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Id. at 46.

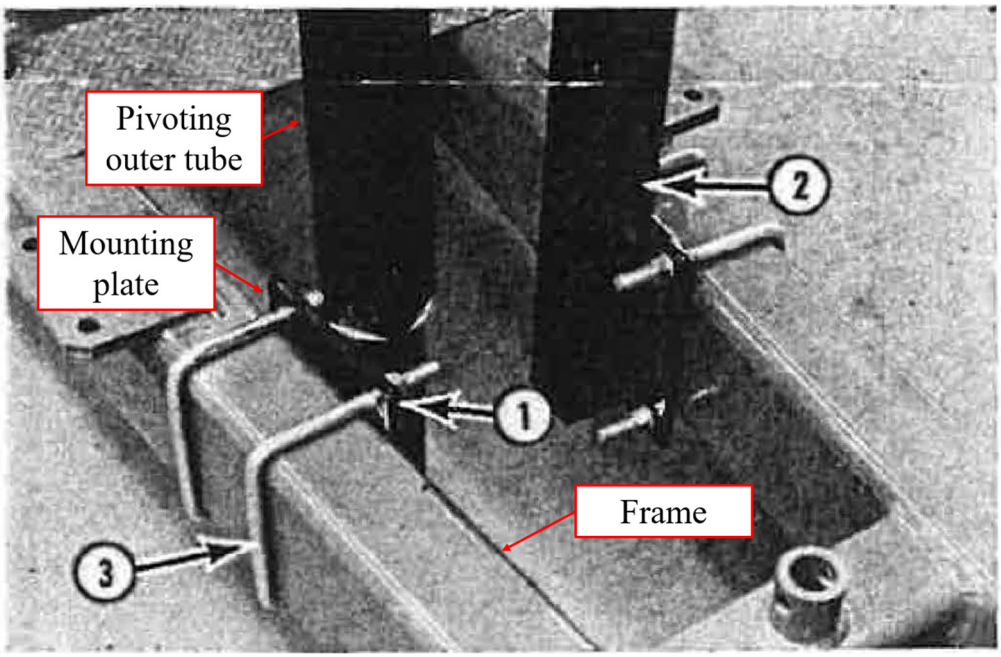


Id. at 38 (annotated); *see also* Ex. PK-1005 ("Two easily accessible slide gates permit complete hopper cleanout without any scooping."); Ex. PK-1001 at 1:44–45 ('940 patent stating the "main hopper" is "for holding seed").

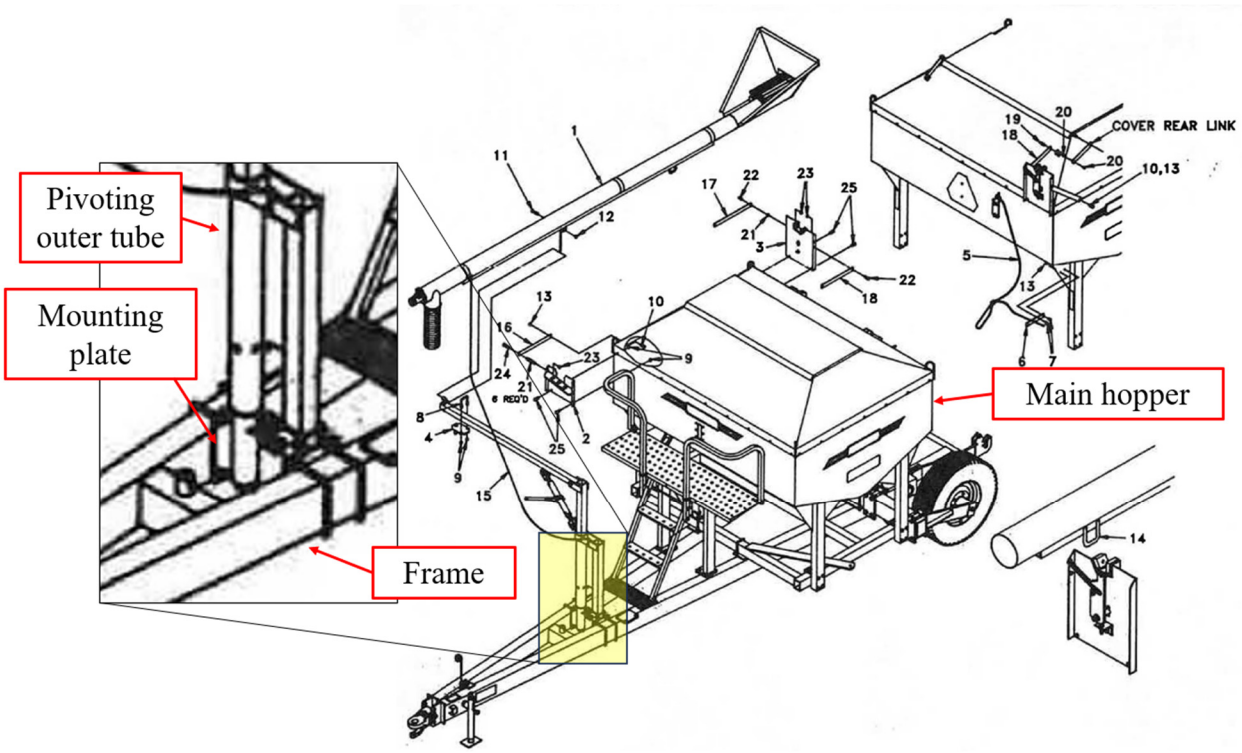
3. [16.2] a base positioned below said main hopper;

47. The Hiniker combination discloses this limitation. Hiniker Manual discloses that the Hiniker combination comprises a "mounting plate" (base) that is

positioned below the main hopper and coupled (1) with the tender's frame via u-bolts and (2) with the "swing arm" via the "pivoting outer tube." Ex. PK-1004 at 37.



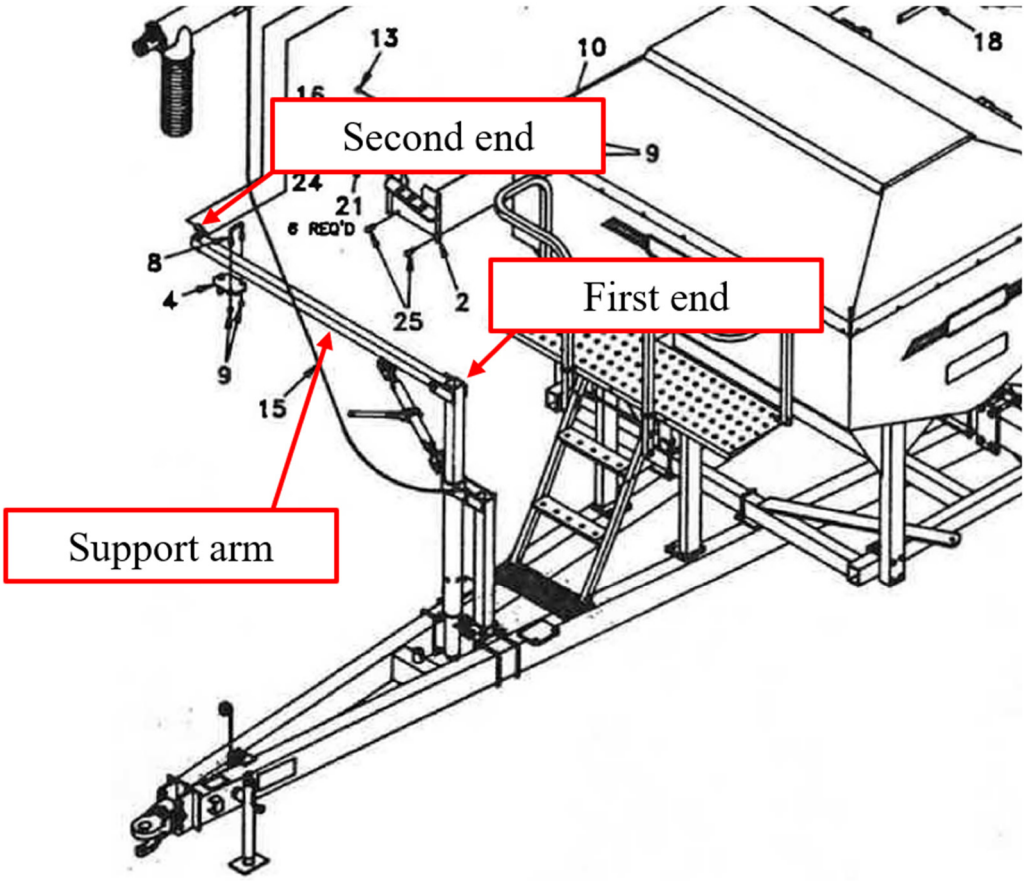
Id. (annotated).



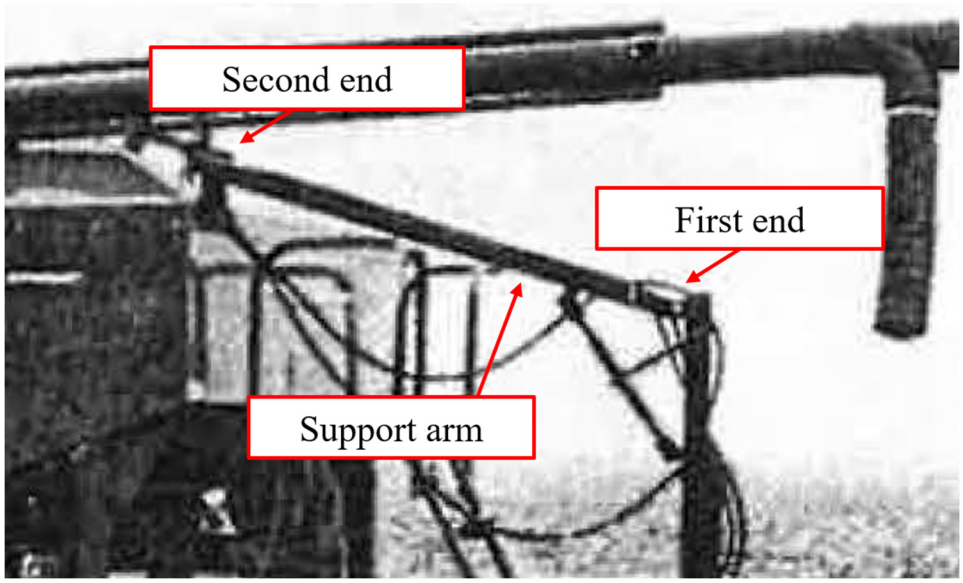
Id. at 38 (annotated); *see also* Ex. PK-1001 at Abstract ('940 patent similarly describing the base as, for example, a "plate" that is "coupled with the frame" and "rotatably coupled" with a "support arm").

4. [16.3] a support arm having first and second ends;

48. The Hiniker combination discloses this limitation. Hiniker Manual discloses a "swing arm" (support arm) having first and second ends. Ex. PK-1004 at 37.



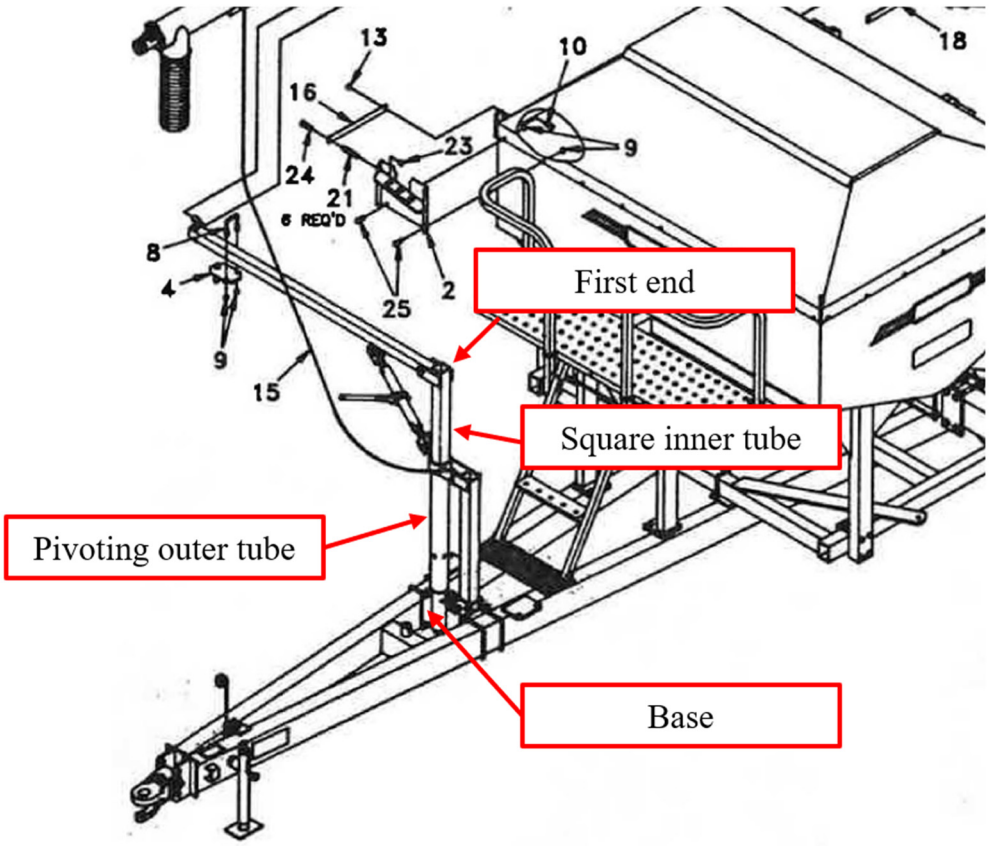
Id. at 38 (annotated).



Id. at 25 (annotated).

5. [16.4] a first coupling connecting said first end of said support arm with said base,

49. The Hiniker combination discloses this limitation. Hiniker Manual discloses a first coupling that (1) comprises the "pivoting outer tube" and a square inner tube and (2) connects the first end of the support arm with the base:



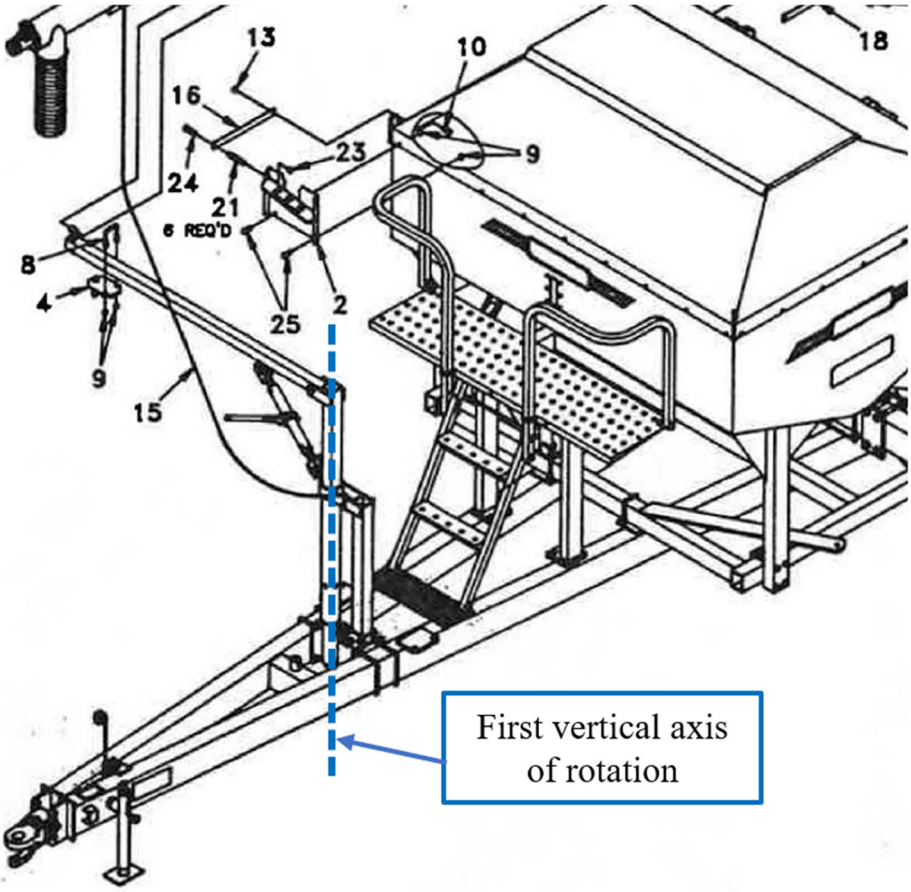
Ex. PK-1004 at 38 (annotated); *id.* at 37 (referring to "pivoting outer tube").

6. [16.5] said first coupling being rotatable about a first vertical axis of rotation, and

50. The Hiniker combination discloses this limitation. As shown above in § VII.D.5, the first coupling of the Hiniker combination includes a "***pivoting*** outer tube" that is vertical. Ex. PK-1004 at 37 (emphasis added).

51. Further, Hiniker Manual depicts the support arm at different angles relative to the longitudinal axis of the frame, which demonstrates that the support arm can rotate about the first coupling. *Compare id.* at 25 (showing support arm parallel to frame's longitudinal axis), *with id.* at 38 (showing support arm perpendicular to frame's longitudinal axis).

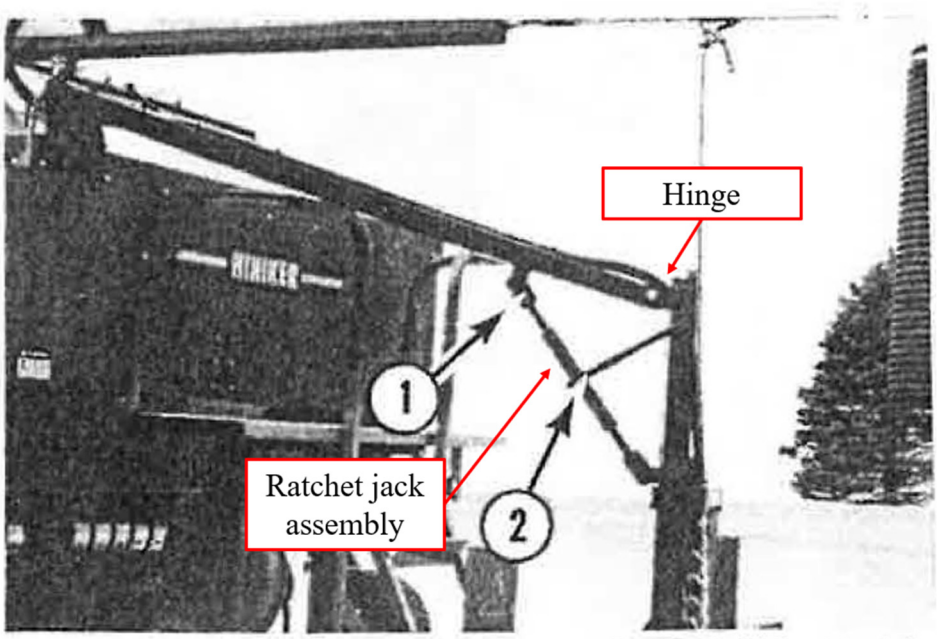
52. Hiniker Manual also states that the auger attached to the support arm can "rotate easily." *Id.* at 36. Thus, the first coupling of the Hiniker combination is rotatable about a first vertical axis of rotation:



Id. at 38 (annotated).

7. [16.6] said first end of said support arm being rotatable about a first horizontal axis of rotation;

53. The Hiniker combination discloses this limitation. Hiniker Manual discloses that the first end of the support arm is connected to the first coupling via a hinge and "ratchet jack assembly":

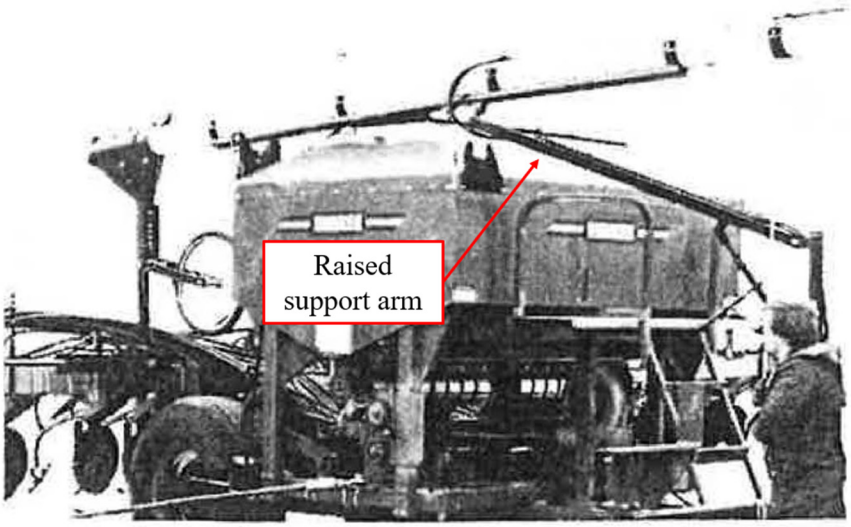


Pin ratchet jack assembly to swing arm (arrow 1) with tahe pin provided. Install ratchet jack lever (arrow 2) with the pin provided.

Id. at 37 (highlighted, annotated).

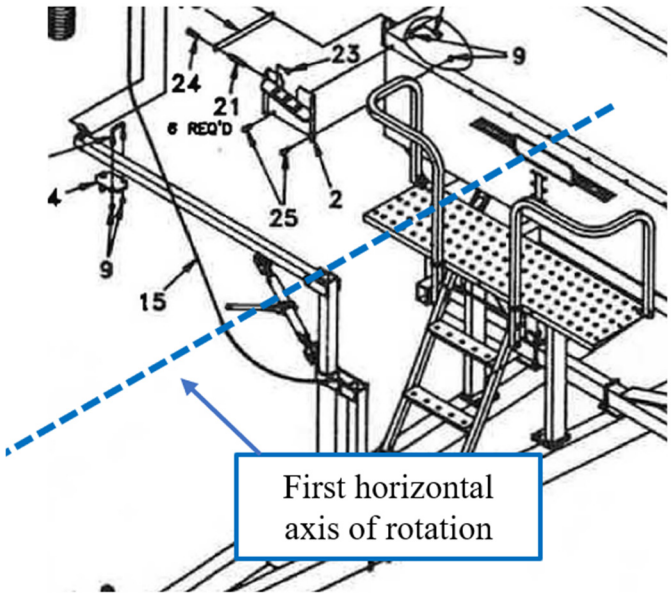
54. Hiniker Manual further discloses that the ratchet jack assembly is, as its name suggests, used to jack the support arm up and down:

3. Ratchet auger out of front auger support.



Id. at 41 (highlighted, annotated); *see also id.* ¶ 4 (instructing user to "lower the auger to the correct height for filling, by using the ratchet").

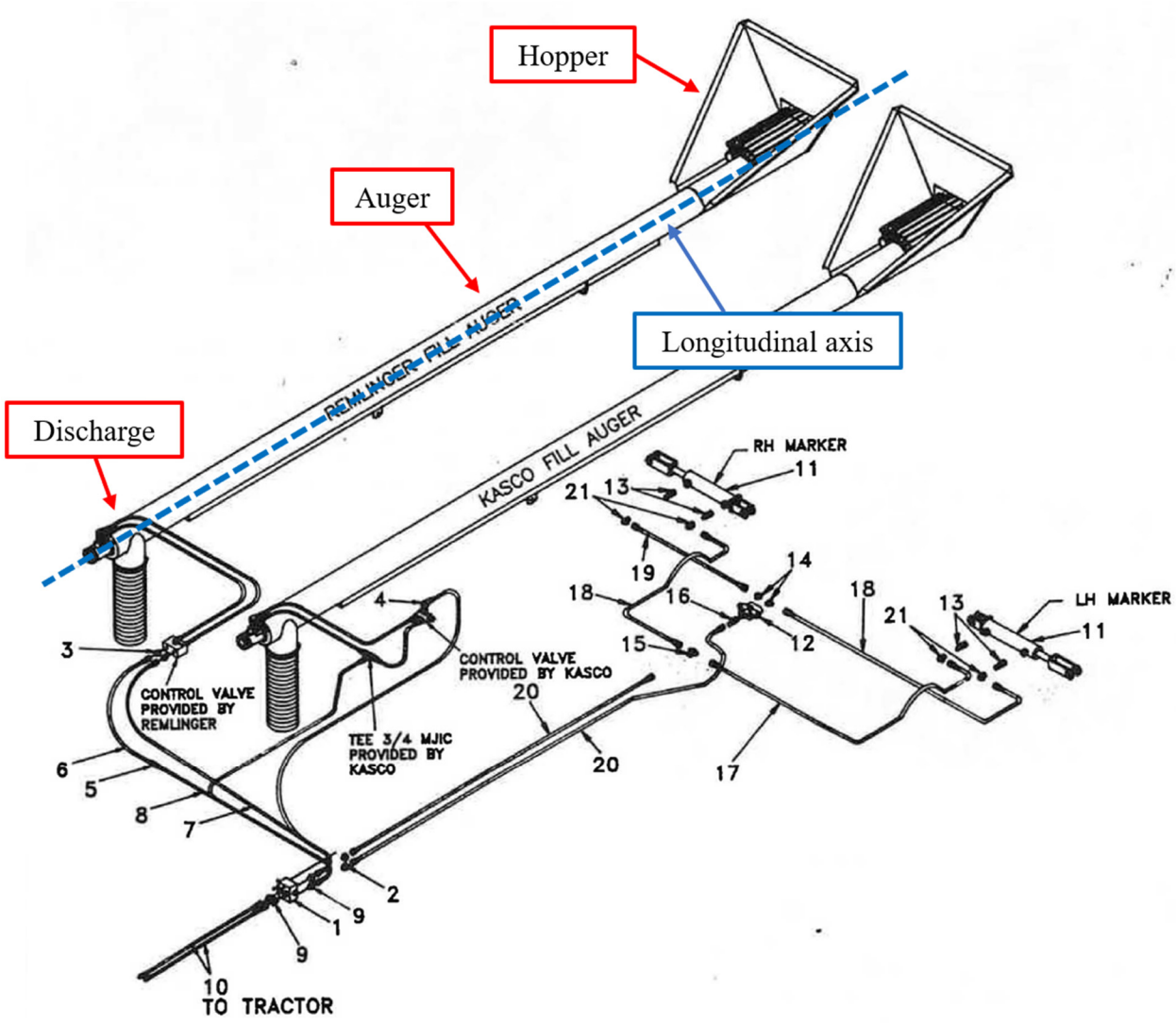
55. Thus, the first end of the support arm is rotatable about a first horizontal axis of rotation:



Id. at 38 (annotated).

8. [16.7] a conveyor having a longitudinal axis and first and second ends, a conveyor hopper at said first end, and a conveyor discharge at said second end; and

56. The Hiniker combination discloses this limitation. Hiniker Manual discloses an auger conveyor having a longitudinal axis, a "hopper end" (first end), a discharge end (second end), a "hopper" at the first end, and a discharge at the second end:



Id. at 42 (annotated); *see also id.* at 41 (referring to "hopper end of auger").

57. An auger is a type of conveyor (a screw-type conveyor). Indeed, the '940 patent identifies "[a]uger systems" as an example of "***[c]onveyor*** systems for moving grain, seed, etc." that were "well known." Ex. PK-1001 at 1:21–24 (emphasis added). It also acknowledges that augers "are used to rapidly ***move [i.e., convey]*** grain such as feed or the like." *Id.* (emphasis added).

58. Several references available before the '940 patent's earliest possible effective filing date confirm that an auger is a type of conveyor. For example, U.S. Patent No. 6,994,039 to Tom J. Beck ("Beck"), filed March 3, 2005, discloses "[a]n ***auger conveyor*** [that] is rotatably mounted within the auger housing and is adapted to ***convey*** the seed . . . ." *See* Ex. PK-1019 at 2:37–40 (emphasis added). Moreover, U.S. Patent No. 7,500,814 to Bradley J. Meyer ("Meyer"), filed October 11, 2005, states that "[a]n air cart as described above typically includes a ***conveyor in the form of an auger*** or belt which is primarily used for loading the one or more tanks, but may also be used for unloading the one or more tanks." Ex. PK-1020 at 1:33–36 (emphasis added); *id.* at 2:43–45 ("In the embodiment shown, ***conveyor 32 is in the form of an auger***, but may also be in the form of a belt if desired." (emphasis added)). Thus, the auger of the Hiniker combination is a conveyor.

59. Alternatively, if the Board finds that an auger is not a conveyor, it is my opinion that it would have been obvious to replace the auger of the Hiniker combination with a conveyor belt in view of U.S. Patent Pub. No. 2005/0158155 to

Eric Johnson et al. ("Johnson"). Ex. PK-1006. Johnson warns that "augers tend to grind or split at least some of [the] kernels of grain," which "not only can engender mechanical problems, e.g. jamming or degradation of the auger or structure around the auger, it can destroy or damage the grain"—"an increasingly important issue in today's agriculture" because certain seed or grain is "highly valued." Ex. PK-1006 ¶ 9. Johnson also warns that "augers have inherent safety issues" because they "can grab or pull on clothing and [are] dangerous to the extremities of workers." *Id.* ¶ 12. To solve these problems, Johnson discloses "an endless conveyor belt" for "unloading grain bins." *Id.* at Abstract. According to Johnson, replacing an auger with a conveyor belt "provides relatively gentle handling of grain," is more "efficient" and "economical," "deters harmful [e]ffect on quality of the grain or seeds," and is "safe" and "simple to use and maintain." *Id.* ¶¶ 18–20, 130. Johnson therefore would have motivated a skilled artisan to replace the auger in the Hiniker combination with a conveyor belt.

60. A skilled artisan also would have had a reasonable expectation of success in replacing the Hiniker combination's auger with a conveyor belt. By the '940 patent's earliest possible effective filing date, conveyor belts were well-known components for transporting seed or grain. Indeed, the '940 patent admits that conveyor belts were "well known" and commonly used at the time of the alleged invention. Ex. PK-1001 at 1:21–24. Another prior-art reference confirms

"[c]onveyors have been used in the transportation of grain since the 1800's." Ex. PK-1021 ¶ 1. And the Hiniker-Johnson combination would use a conveyor belt according to its known function (conveying seed or grain) to achieve predictable results (e.g., safe and efficient transport of seed or grain). Therefore, a skilled artisan would have reasonably expected success with this modification.

9. [16.8] a second coupling connecting said second end of said support arm with said conveyor at an approximate center of gravity of said conveyor, said second coupling defining a first conveyor axis of rotation that is not parallel to said conveyor longitudinal axis, and

61. The Hiniker combination discloses this limitation. Hiniker Manual discloses a "swing arm pivot" (second coupling) connecting the second end of the support arm with the auger conveyor:

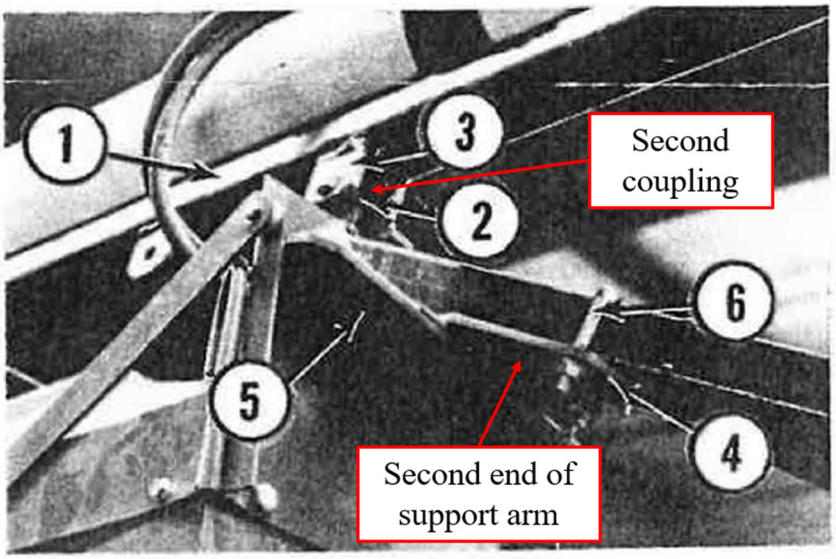
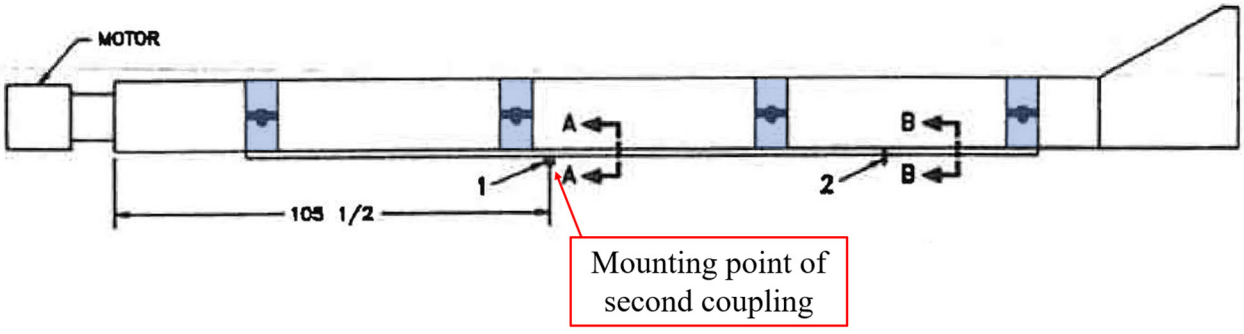


PHOTO NO. 4146

Install fill auger assembly (arrow 1) on to the swing arm pivot (arrow 2). The Kasco auger has pivot bracket in place. The Reminger auger two support tab (arrow 3) must be welded onto bottom channel. See (page 39) for proper location.

Ex. PK-1004 at 37 (highlighted, annotated).

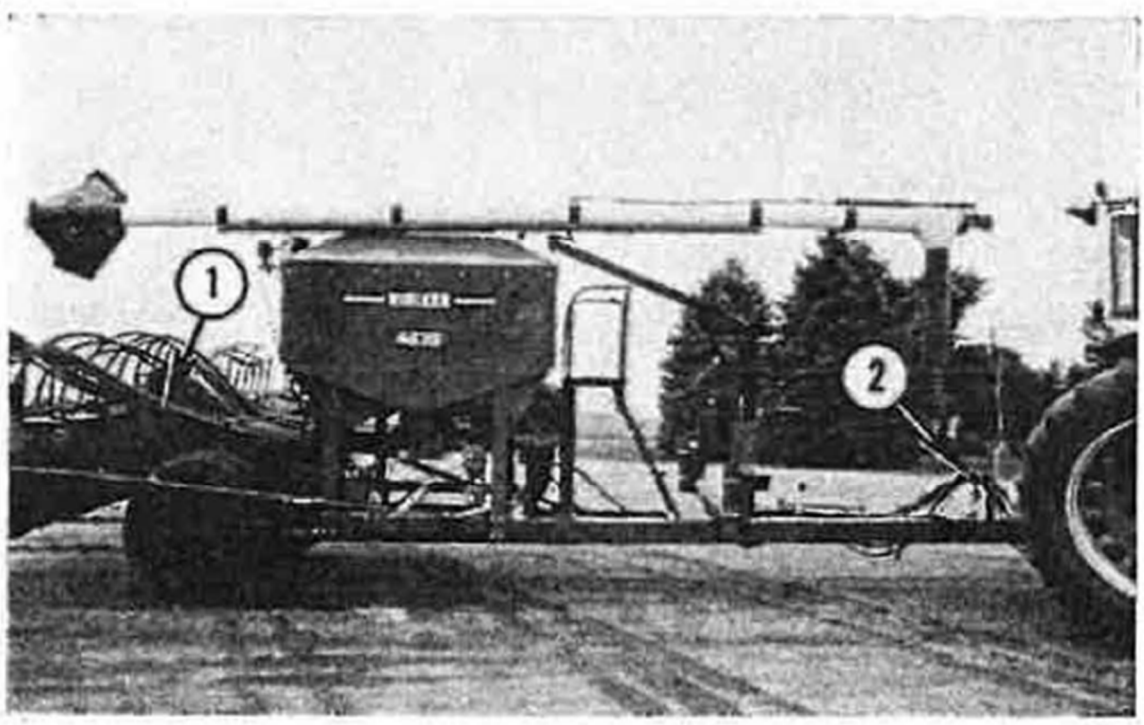
62. Further, Hiniker Manual discloses that the second coupling is located at an approximate center of gravity of the auger conveyor:



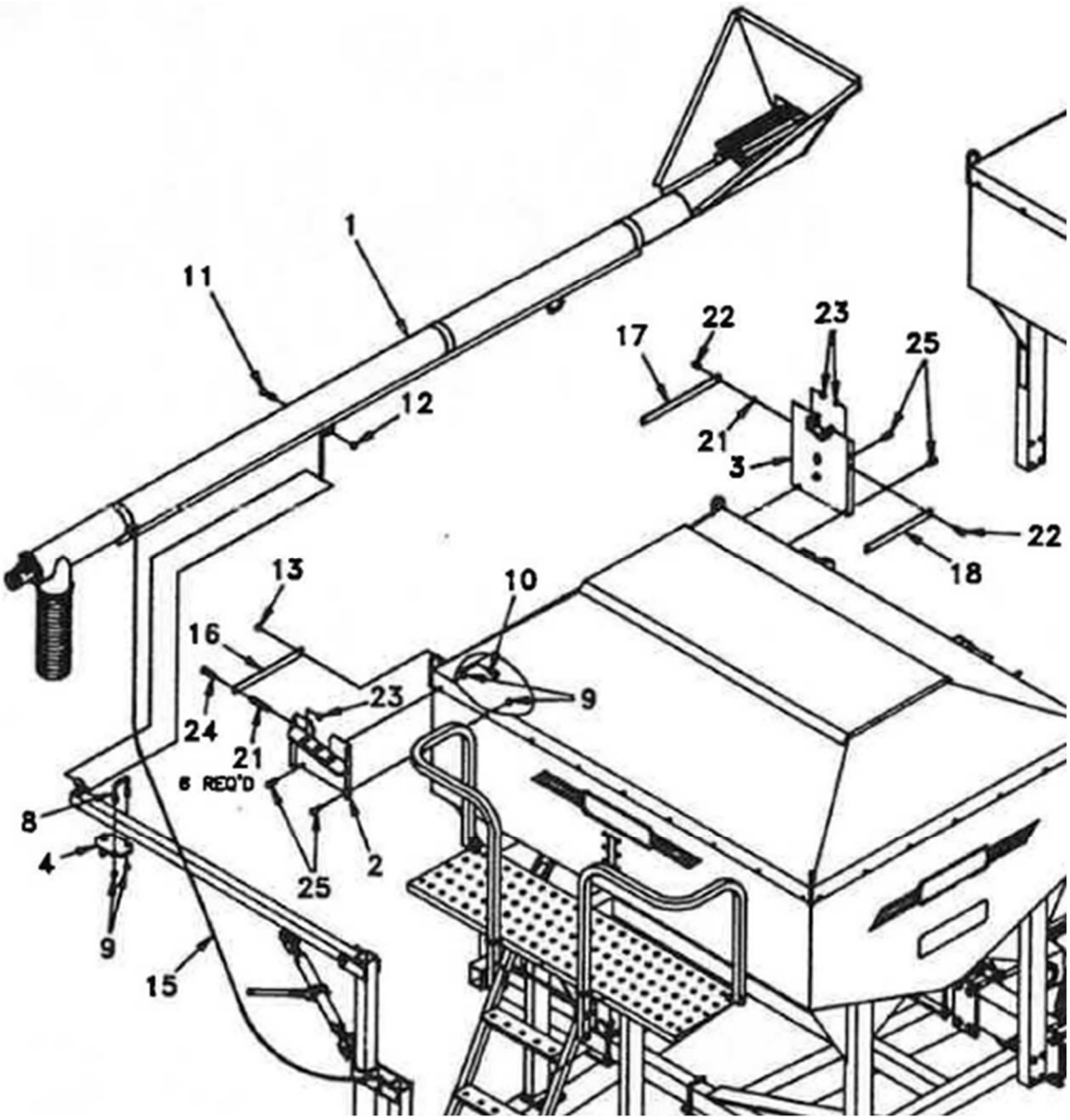
Id. at 39 (highlighted, annotated); *see also id.* at 40 ("The auger must be ***balanced*** in the support assembly with slightly more weight on the hopper end." (emphasis

added)); *id.* at 39 (noting that "if auger is not balanced properly, the clamps [highlighted blue above] can be loosened and the auger moved until it is balanced").

63. Hiniker Manual also discloses that the auger conveyor can rotate about the second coupling between (1) a position in which the auger conveyor is in approximately the same plane as the support arm, *see id.* at 30, and (2) a position in which the auger conveyor is perpendicular to the support arm, *see id.* at 38:

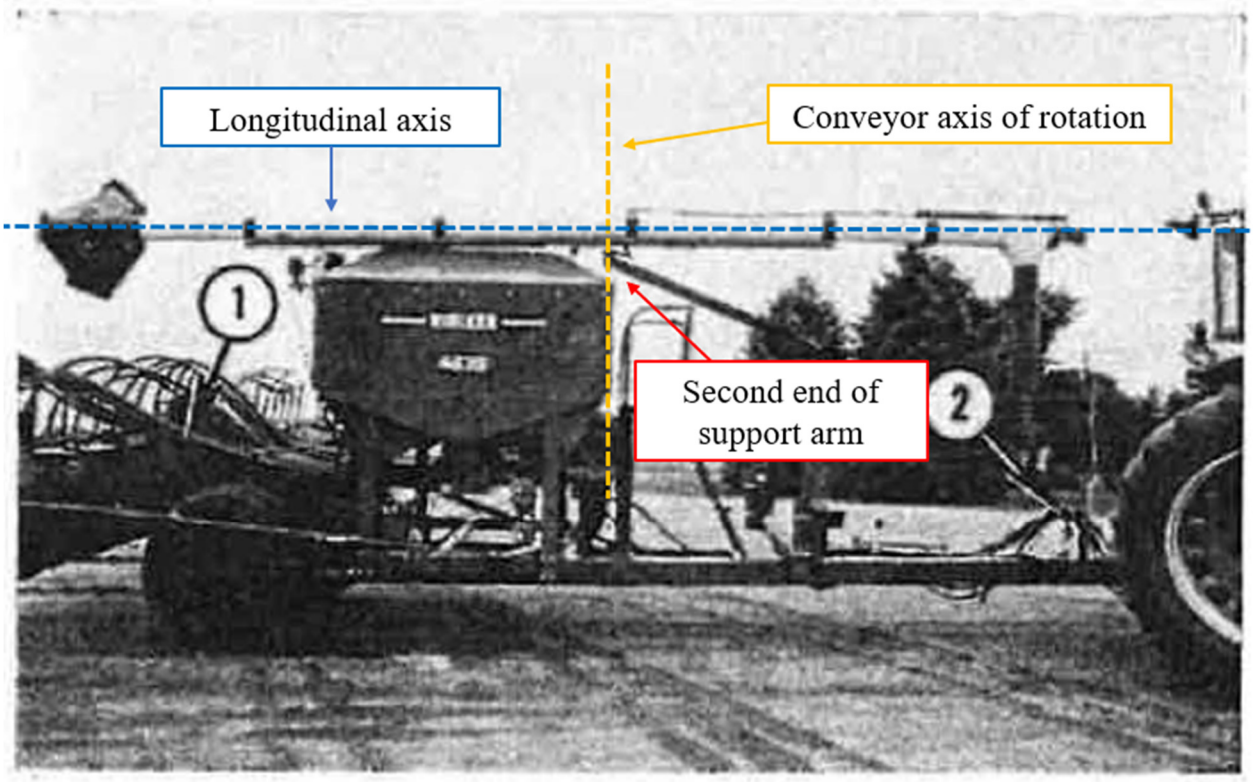


Id. at 30 (showing auger in approximately same plane as support arm); *see also id.* at 37 (same).



Id. at 38 (excerpted) (showing auger perpendicular to support arm). Thus, the second coupling defines a first conveyor axis of rotation.

64. Finally, this conveyor axis of rotation is not parallel to the conveyor longitudinal axis:



Id. at 30 (annotated).

> ***10. [16.9] said conveyor being rotatable about said first conveyor axis of rotation between an unloading position wherein said conveyor hopper is disposed below said main hopper discharge to receive agricultural product from said main hopper and a loading position wherein said conveyor discharge is disposed above said main hopper to dispense agricultural product into said main hopper.***

65. The Hiniker combination discloses this limitation.

66. **Loading Position:** To load the main hopper, Hiniker Manual instructs the user to "lift [the] auger out of [the] rear cradle and maneuver [it] to the desired position," "[w]ith the hopper end of [the] auger on the ground" and the discharge end "lower[ed] . . . to the correct height for filling":

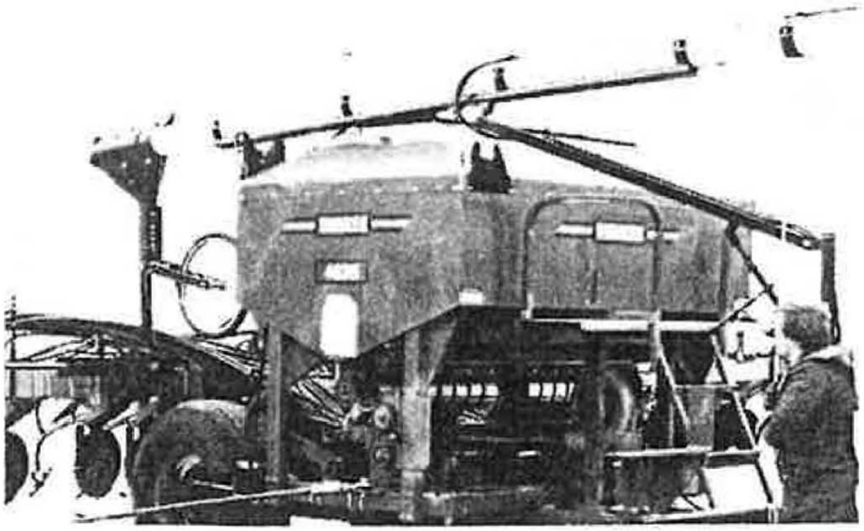


PHOTO NO. 4081

4. Pull rope to lift auger out of rear cradle and maneuver to the desired position. With the hopper end of auger on the ground, lower the auger to the correct height for filling, by using the ratchet. Reverse procedure for transport. Make sure the auger is secured both in the front and rear saddle before transport.

Id. at 41 (highlighted); *see also id.* at 36 (noting the auger can "rotate easily for use in the field"); Ex. PK-1001 at Fig. 3, 3:26–27 ('940 patent similarly disclosing that the conveyor hopper sits on the ground when the conveyor is in the "loading position").

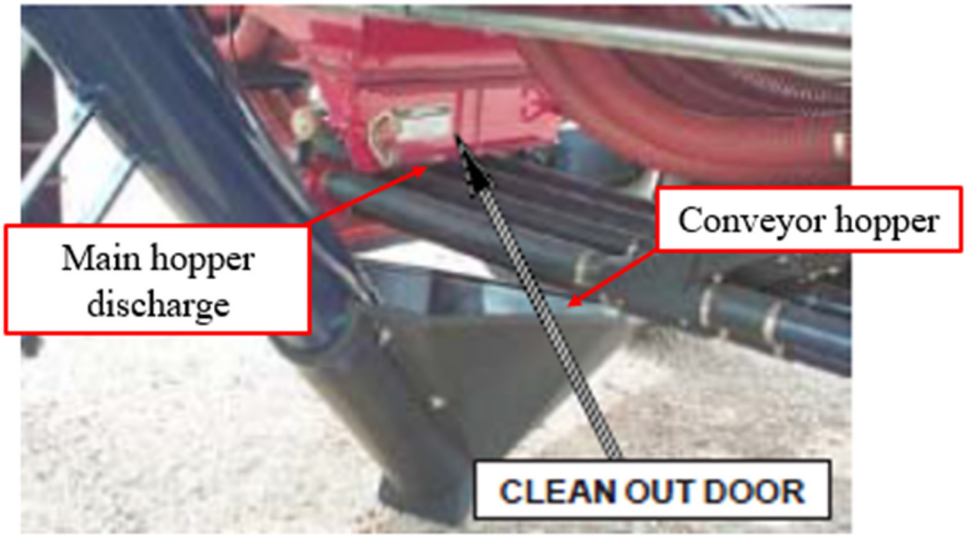
67. Thus, the Hiniker combination's auger conveyor is rotatable about its axis of rotation to a loading position wherein the conveyor discharge is disposed above the main hopper to dispense agricultural product (seed or grain) into the main hopper.

68. **Unloading Position:** Hiniker Webpage discloses that "[t]he auger may be used to both fill ***and empty*** the seed hopper when changing seed varieties." Ex. PK-1005 (emphasis added). A skilled artisan would have readily understood that to empty the seed hopper using the auger conveyor, as Hiniker Webpage instructs, the auger conveyor must be rotated about its axis of rotation to a position in which the auger conveyor is disposed below the main hopper discharge. (A skilled artisan also would have recognized that the seed tube would obviously need to be moved from the discharge to allow product to flow from the discharge to the conveyor hopper.) The Hiniker combination thus teaches or suggests an unloading position wherein the conveyor hopper is disposed below the main hopper discharge to receive agricultural product (seed or grain) from the main hopper.

69. Alternatively, if Hiniker Website does not teach or suggest the unloading position, it is my opinion that the unloading position would have been obvious in view of Morris Industries Ltd.'s 7000 Series Air Cart ("Morris"). As I explain in § X below, Morris discloses a seed tender with an auger conveyor mounted to a support arm that allows the auger conveyor to rotate between a loading position and, as shown below, an unloading position:



Ex. PK-1009 at 5-27 (red annotations added).

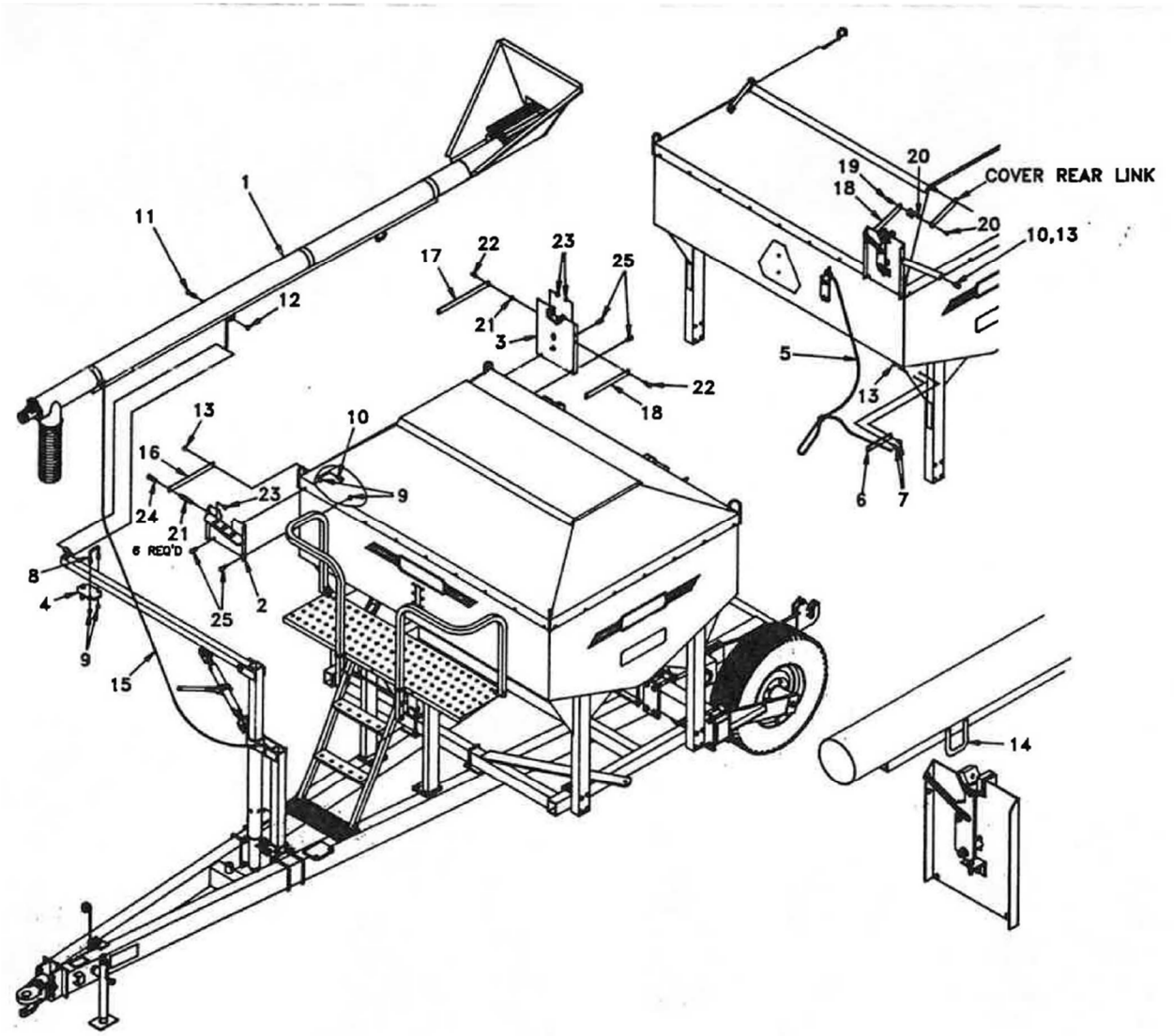


Id. (red annotations added); *see also id.* (instructing operator to "[p]osition auger under the tank to be emptied").

70. It is my opinion that, in seeking to understand Hiniker Webpage's disclosure that the auger conveyor of the Hiniker combination can "empty the seed hopper," Ex. PK-1005, a skilled artisan would have looked to Morris for guidance. As shown above, Morris's seed tender resembles that of the Hiniker combination. Further, the Hiniker references and Morris are in the same technical field (seed or grain conveyor systems) and address the same problem (improved transport of seed or grain using a conveyor). Ex. PK-1004 at 36 ("The fill auger support . . . allows the fill auger to rotate easily for use in the field or for transporting."); *id.* at 40 ("The Fill Auger is designed for one-man operation."); Ex. PK-1009 at 4-4 ("The optional hydraulic auger is designed to make loading and unloading product from the Air Cart tank very simple and easy."). Both Morris and Hiniker Webpage, moreover, discuss using their respective auger conveyors for loading and unloading the main hopper. Ex. PK-1005; Ex. PK-1009 at 5-25, 5-27. Thus, a skilled artisan would have turned to Morris for guidance in implementing the Hiniker combination.

71. After consulting Morris, a skilled artisan would have readily realized that the Hiniker combination's second coupling ("swing arm pivot") already allows the auger conveyor to rotate about the first conveyor axis of rotation from a loading position to an unloading position without any modifications. Indeed, the drawing below shows that the second coupling must allow the conveyor to rotate

approximately 180° about its vertical axis, from the depicted storage position to the loading position (wherein the discharge end is positioned above the main hopper):



Ex. PK-1004 at 38.

72. This range of rotational motion is more than adequate to instead rotate the conveyor to the unloading position, which requires less than 90° of rotation from the above-depicted storage position.

73. The Hiniker combination's readiness to accommodate the unloading position makes sense given that Hiniker Webpage states "[t]he auger may be used to both fill and empty the seed hopper" and does not mention the need for any modifications to achieve that result. Ex. PK-1005. Accordingly, it is my opinion that if Hiniker Webpage does not disclose the unloading position, the unloading position would have been obvious in view of Morris.

74. Because the Hiniker combination (or, alternatively, the combination of the Hiniker references, Johnson, and/or Morris) satisfies each limitation of claim 16, it is my opinion that claim 16 as a whole would have been obvious to a skilled artisan at the time of the alleged invention.

E. Dependent Claim 18

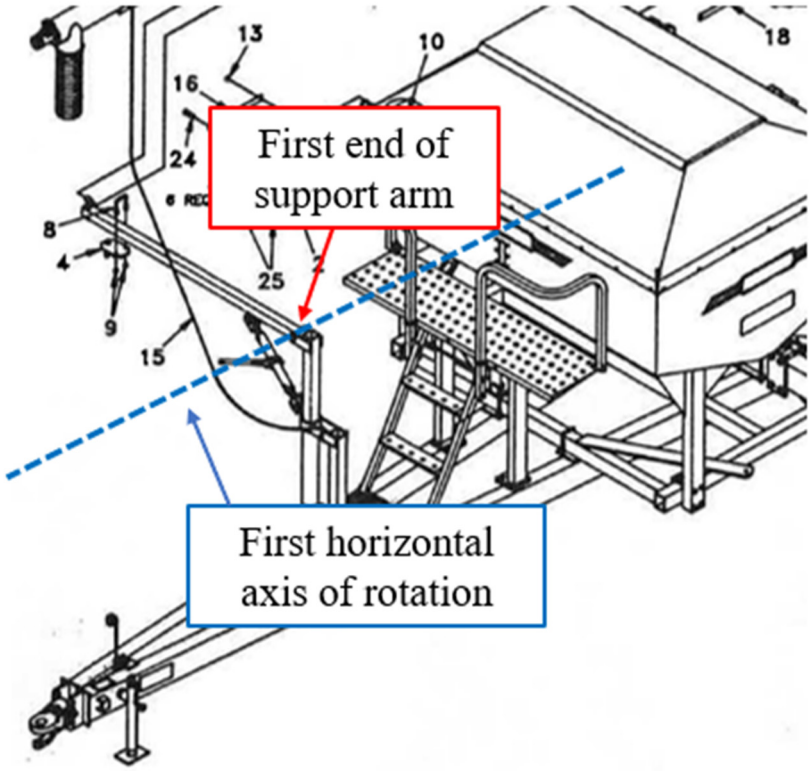
18. The seed or grain tender of claim 16, wherein said first conveyor axis of rotation extends through said approximate center of gravity of said conveyor.

75. The Hiniker combination discloses this limitation. As shown in § VII.D.9 above, Hiniker Manual discloses that the first conveyor axis of rotation extends through the approximate center of gravity of the conveyor:

F. Dependent Claim 19

19. The seed or grain tender of claim 16, wherein said first horizontal axis extends through said first end of said support arm.

76. The Hiniker combination discloses this limitation. As shown in § VII.D.7 above, the first horizontal axis of rotation extends through the first end of the support arm:



Ex. PK-1004 at 38 (annotated).

G. Dependent Claim 20

20. The seed or grain tender of claim 16, wherein said second end of said support arm terminates at or near said second coupling.

77. The Hiniker combination discloses this limitation. As shown in § VII.D.9 above, the second end of the support arm terminates at or near the second coupling ("swing arm pivot"):

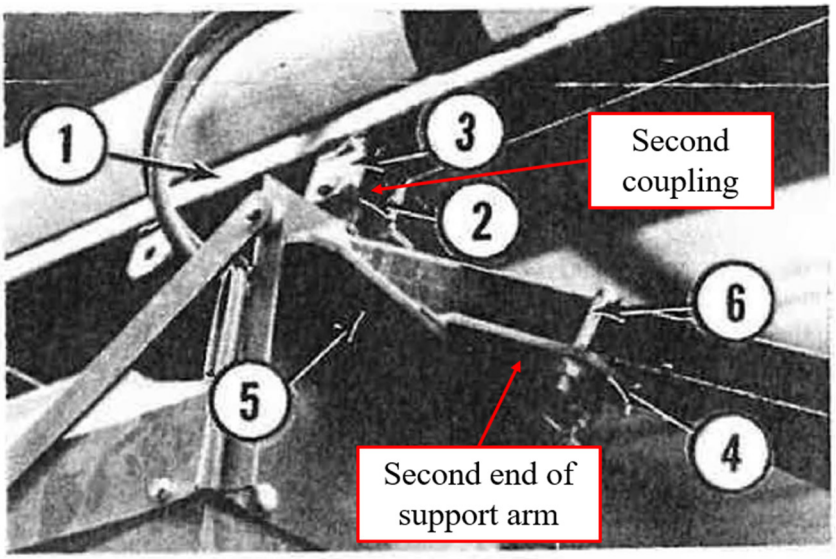


PHOTO NO. 4146

Install fill auger assembly (arrow 1) on to the swing arm pivot (arrow 2). The Kasco auger has pivot bracket in place. The Reminger auger two support tab (arrow 3) must be welded onto bottom channel. See (page 39) for proper location.

Ex. PK-1004 at 37 (highlighted, annotated).

H. Dependent Claim 21

21. The seed or grain tender of claim 16, wherein said conveyor includes an internal elevator for moving seed or grain from said conveyor hopper to said conveyor discharge.

78. The Hiniker combination discloses this limitation. As explained in § VII.D.8 above, the Hiniker combination has an auger conveyor. Further, the '940 patent acknowledges that augers "are used to rapidly move grain such as feed or the like." Ex. PK-1001 at 1:21–24. And Hiniker Manual teaches that the auger conveyor moves product from "the hopper end of [the] auger on the ground" to the discharge

end at "the correct height for filling." Ex. PK-1004 at 41. Thus, the auger conveyor of the Hiniker combination includes an internal elevator for moving seed or grain from the conveyor hopper to the conveyor discharge.

79. If the Board finds that an auger is not a conveyor, then the alternative Hiniker-Johnson combination also discloses this limitation. As explained in § VII.D.8, it is my opinion that it would have been obvious to replace the Hiniker combination's auger with Johnson's conveyor belt. The '940 patent, moreover, identifies conveyor belts as an example of an internal elevator. Ex. PK-1001 at 3:15–20 ("In one embodiment, the [internal] elevator is a motor-driven belt type elevator coupled onto rollers at both ends of the conveyor."). Accordingly, it is my opinion that, regardless of whether an auger is a conveyor, claim 21 would have been obvious.

VIII. GROUND 2: HINIKER MANUAL IN VIEW OF HINIKER WEBPAGE AND FURRER

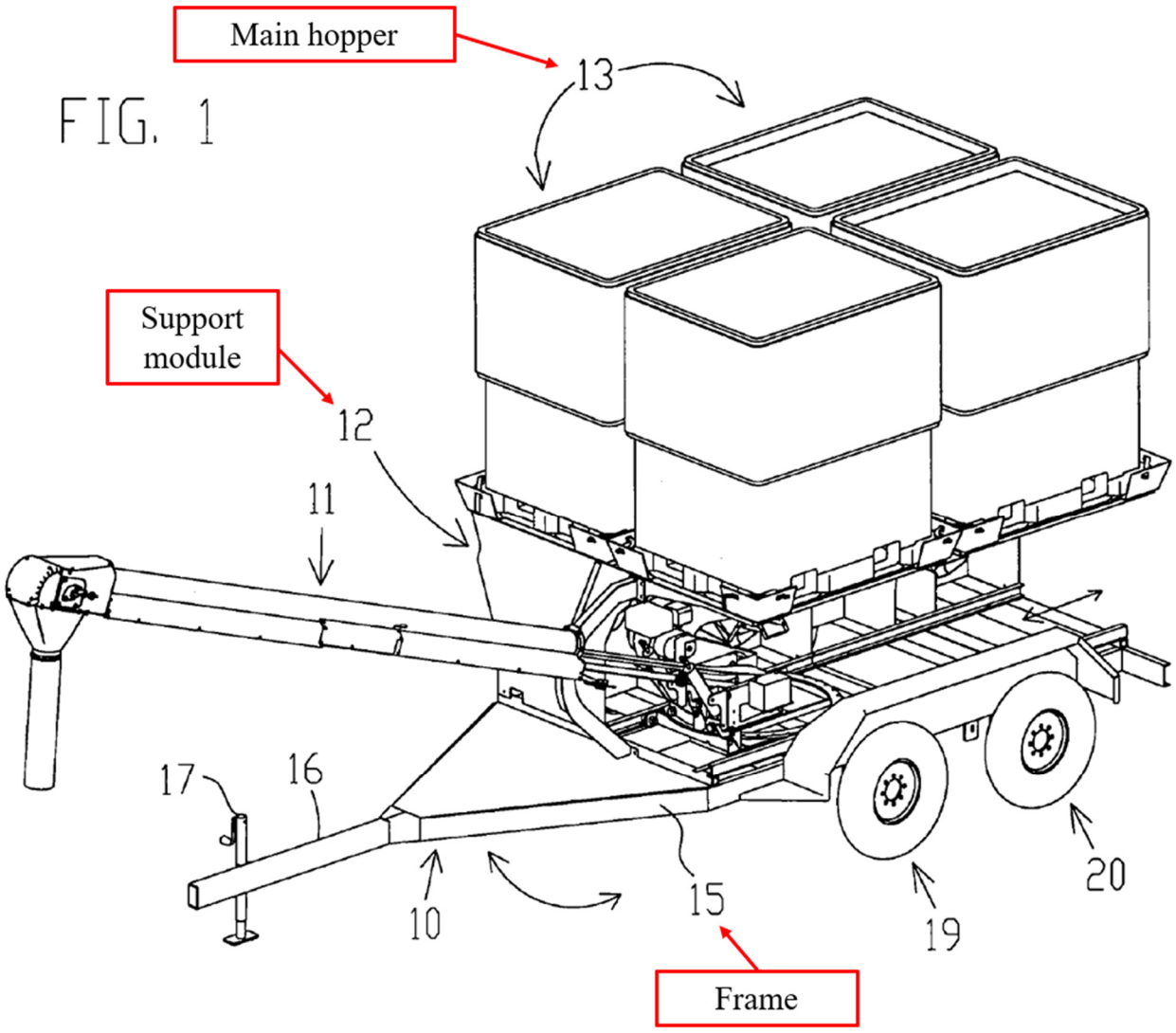
80. Having reviewed claim 17, as well as Hiniker Manual, Hiniker Webpage, and U.S. Patent No. 7,500,817 to G. Jason Furrer et al. ("Furrer"), it is my opinion that claim 17 would have been obvious over the Hiniker combination of Ground 1 in view of Furrer.

81. Claim 17 recites: "The seed or grain tender of claim 16, wherein said first vertical axis of rotation [of the support arm's first coupling] extends through said main hopper discharge."

82. As I explain below, Furrer discloses this limitation, and it would have been obvious to modify the Hiniker combination to incorporate Furrer's teachings. Thus, claim 17 as a whole would have been obvious to a skilled artisan at the time of the alleged invention.

A. Furrer Discloses a First Coupling Rotatable About a Vertical Axis Extending Through the Main Hopper Discharge

83. Like the Hiniker references, Furrer discloses a seed tender comprising a conveyor. Ex. PK-1007 at Abstract. Unlike the Hiniker references, however, Furrer's seed tender further comprises a "support module 12" that supports its main hopper ("individual storage bins 13") above "frame 15":



Id. at Fig. 1 (annotated), 3:59–67.

84. Another difference is that Furrer discloses a "turret 28" (which the '940 patent refers to as a "base") positioned below the main hopper and "rotatable about a vertical axis":

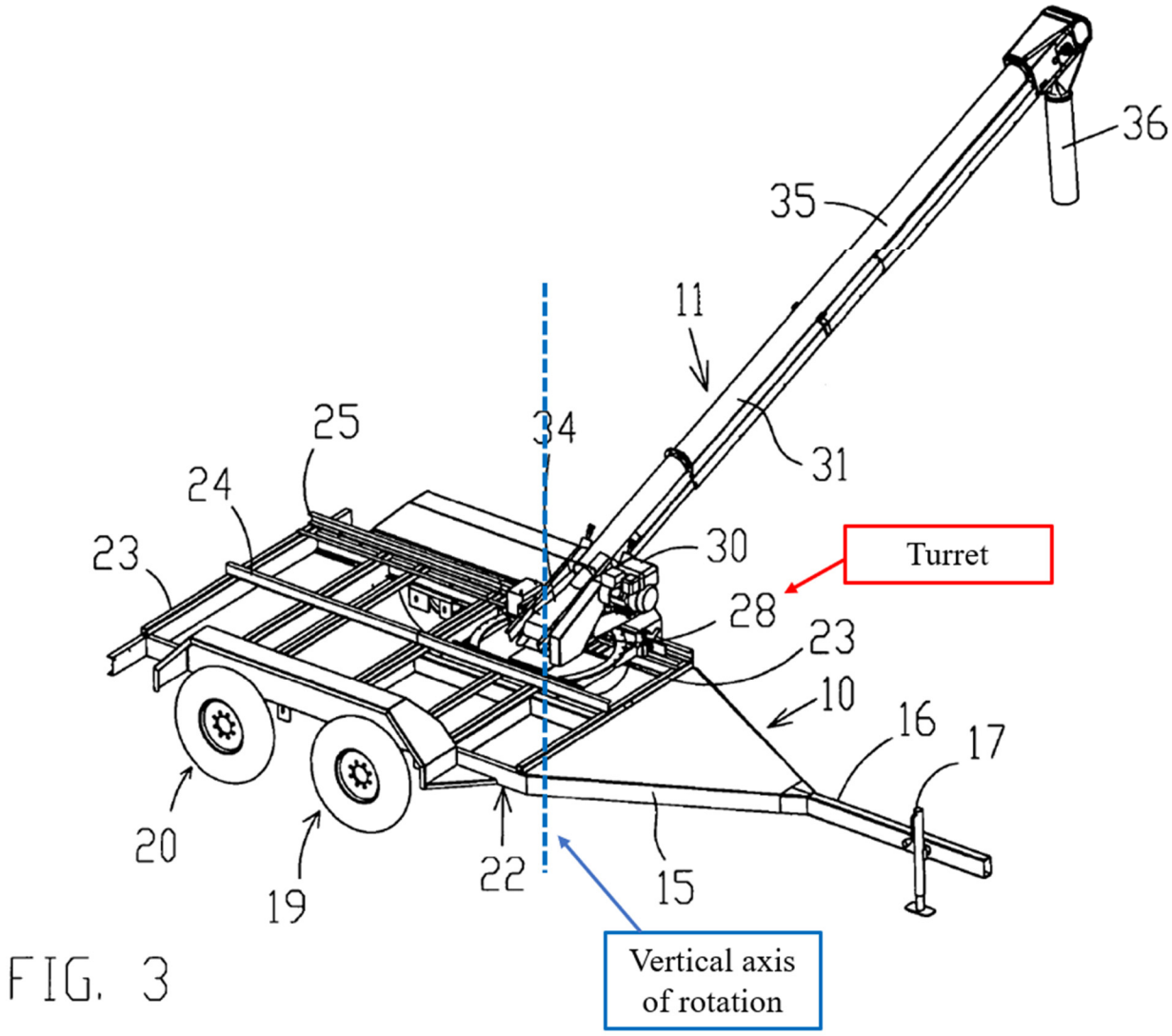
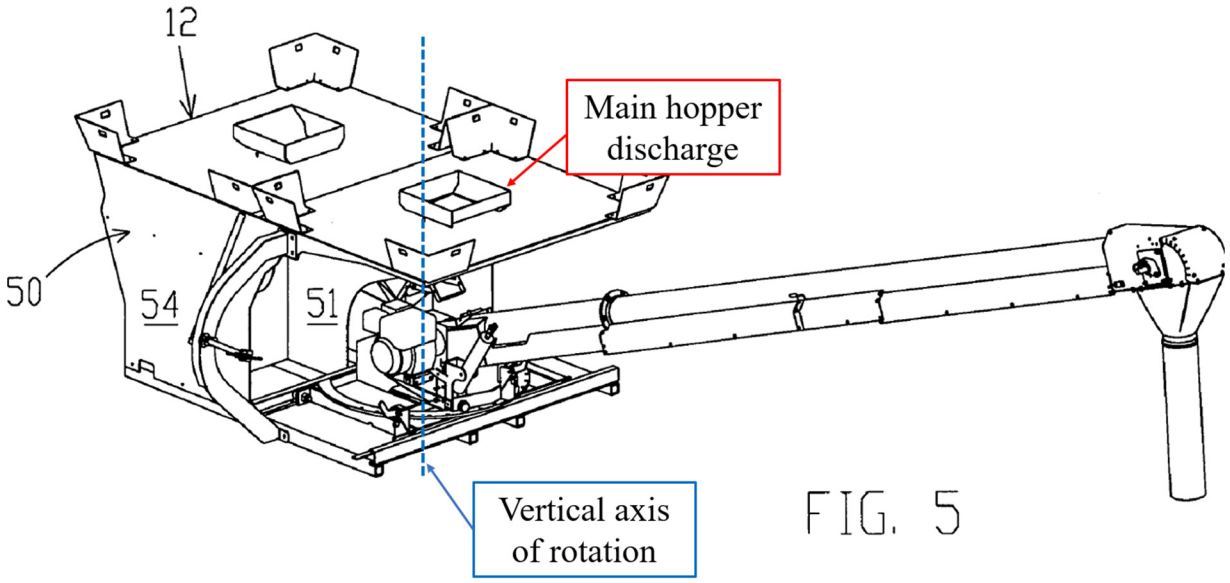


FIG. 3

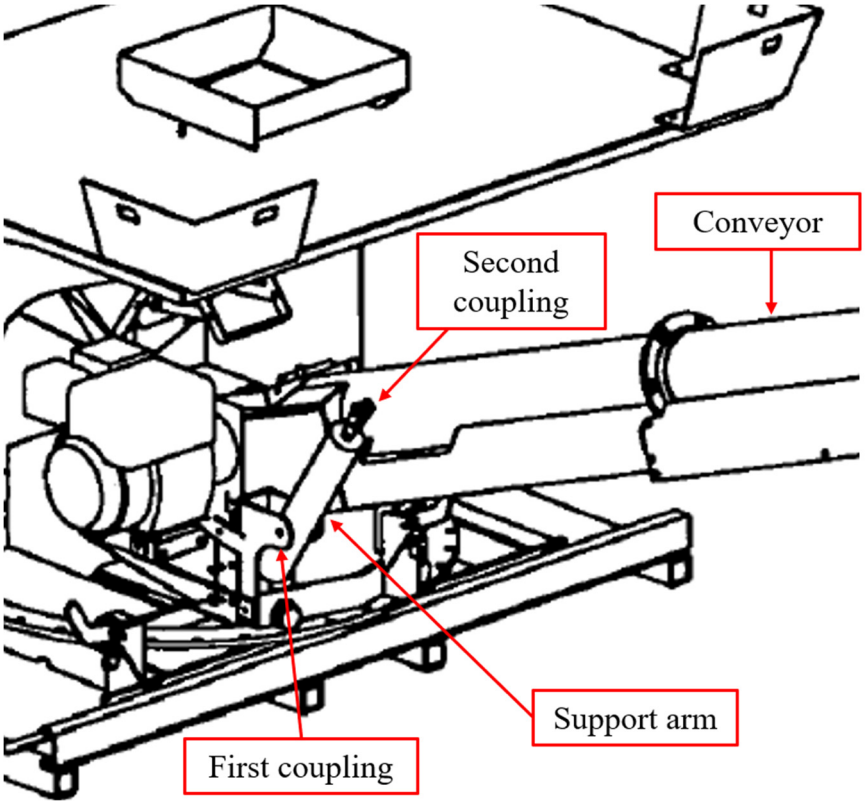
Id. at Fig. 3 (annotated), Abstract, 1:64–65, 4:26–29; *see also* Ex. PK-1001 at Figs. 4–5, 3:38–65, Abstract (depicting and describing "base 401" as a horizontal circular "plate" that is "free to rotate about its vertical axis"—i.e., a turret).

85. As shown below, the turret's vertical axis of rotation extends through a discharge of the main hopper:



Id. at Fig. 5 (annotated).

86. Furrer's tender further comprises a support arm having (1) a first end connected to the turret via a first coupling and (2) a second end connected to the conveyor via a second coupling:



Id. (excerpted, annotated).

87. Because the first coupling of Furrer's support arm is connected to the turret (base), and because the turret is rotatable about a vertical axis extending through a discharge of the main hopper, the first coupling is rotatable about a vertical axis of rotation that extends through said main hopper discharge. Accordingly, Furrer discloses the limitation of claim 17.

B. Reasons to Modify the Hiniker Combination in View of Furrer

88. A skilled artisan would have been motivated to modify the Hiniker combination to incorporate Furrer's teachings. Specifically, a skilled artisan would have been motivated to (1) open at least part of three sides of the space under the

main hopper (e.g., like Furrer does with its support module 12) and (2) position the first end of the Hiniker support arm in that open space, with its vertical axis of rotation extending through the main hopper discharge (e.g., like Furrer does with the first end of its support art connected to the turret 28). There are several reasons why a skilled artisan would have been motivated to make these modifications.

89. First, a skilled artisan would have looked to the Hiniker references and Furrer together because they are in the same technical field (seed or grain conveyor systems) and address the same problem (improved transport of seed or grain). *See* Ex. PK-1004 at 36 ("The fill auger support . . . allows the fill auger to rotate easily for use in the field or for transporting."); *id.* at 40 ("The Fill Auger is designed for one-man operation."); Ex. PK-1007 at 1:44–49 ("It is thus desirable to have a seed tender which is not only portable and adaptable to the various situations found in different farms and areas, but which is capable of handling large volumes and considerable weight of seed, and which is also capable of carrying seed containers of different volumes and/or configurations, for maximum flexibility.").

90. Second, Furrer discloses that opening the space below the main hopper and positioning the first end of the support arm in that open space provides "great flexibility and adaptability in the positioning of the conveyor, whether for unloading or for transport or storage." Ex. PK-1007 at 4:51–53. For example, "[t]he conveyor may be turned . . . about its vertical axis between: (i) a side position for unloading

seed, (ii) a forward position and extending forwardly wherein the conveyor is located between the sides of the trailer and in front of it, for transport, or (iii) to the rear and extending rearwardly, for unloading or transport." *Id.* at 2:27–32. Furrer further states that "when the conveyor is in the forward position, it can be used . . . for unloading in a forward location." *Id.* at 4:43–45. By contrast, in the Hiniker combination, because the main hopper is not raised above the frame and the support arm is connected to the side of the main hopper, the conveyor cannot unload seed forwardly or rearwardly, and it has only one storage position. Thus, to achieve Furrer's stated benefits ("great flexibility and adaptability in the positioning of the conveyor, whether for unloading or for transport or storage"), a skilled artisan would have been motivated to modify the Hiniker combination so the first end of its support arm is under the main hopper and the support arm is rotatable between "a side position for unloading seed" and a forward or rear position "for transport," as Furrer teaches. Ex. PK-1007 at 2:27–32, 4:43–53.

91. Finally, the proposed modifications would lower the center of gravity of the seed tender, making it more stable and less likely to tip over. Positioning the first end of the support arm below the main hopper (1) lowers the support arm, (2) lowers the auger conveyor, and (3) shortens or obviates the Hiniker pivoting outer tube and square inner tube. Each of these changes would lower the seed tender's center of gravity, which increases its stability. Thus, a skilled artisan would

have been motivated to make the proposed modifications to achieve improved stability.

92. A skilled artisan also would have had a reasonable expectation of success in modifying the Hiniker combination to incorporate Furrer's teachings. These modifications would have been a routine design change, requiring merely the addition of known components (e.g., structures like Furrer's support module 12 and turret 28) according to their known functions (supporting the main hopper above the frame and enabling the support arm to rotate about a vertical axis extending through the main hopper discharge) to achieve predictable results (e.g., "great flexibility and adaptability in the positioning of the conveyor" and greater stability). Ex. PK-1007 at 4:51–53. Therefore, a skilled artisan would have reasonably expected success with these modifications.

93. Because Furrer discloses the limitation of claim 17 and a skilled artisan would have been motivated to modify the Hiniker combination to incorporate Furrer's teachings, it is my opinion that claim 17 as a whole would have been obvious to a skilled artisan at the time of the alleged invention.

IX. GROUND 3: HINIKER MANUAL IN VIEW OF HINIKER WEBPAGE AND BASKERVILLE

94. Having reviewed claims 22 and 23, as well as Hiniker Manual, Hiniker Webpage, and U.S. Patent No. 5,888,044 to Gregory Eugene Baskerville

("Baskerville"), it is my opinion that claims 22 and 23 would have been obvious over the Hiniker combination of Ground 1 in view of Baskerville.

A. Overview of Baskerville

95. Baskerville discloses a bulk seed cart with a conveyor for loading and unloading seed into and out of the cart. Ex. PK-1008 at Abstract. The conveyor is "pivotably attached" to a support arm ("telescoping boom 53") via a hinge 54, allowing the conveyor to pivot between loading and unloading positions. *Id.* at Figs. 4–5, 4:42–43. The support arm 53 is "pivotably attached to the upper sidewall 16 of the seed bin 11" such that it can pivot up and down and left to right. *Id.* at Fig. 3, 1:12–15, 4:53–56; *compare* Fig. 1 (showing support arm 53 in declined position), *with* Fig. 2 (showing support arm 53 in inclined position).

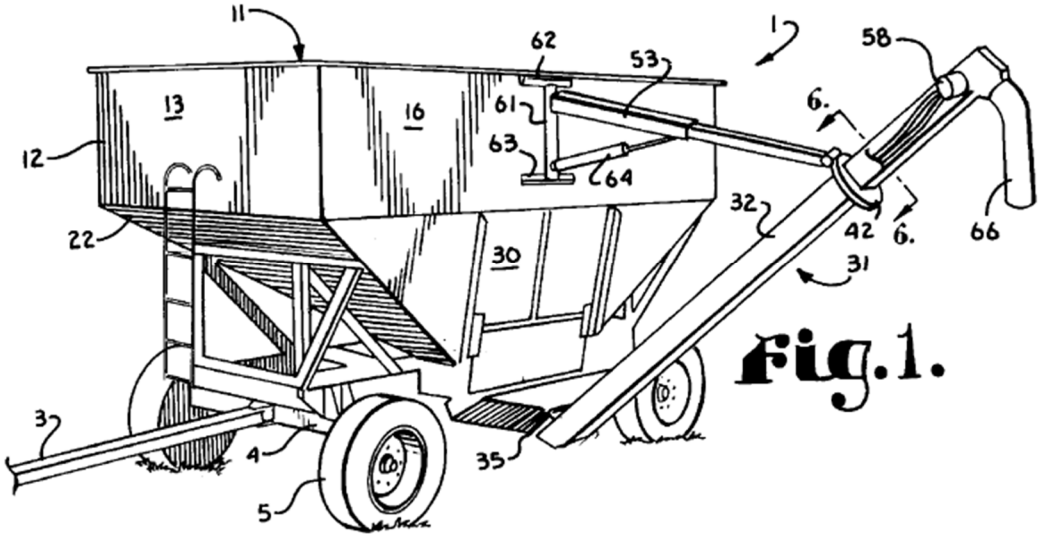
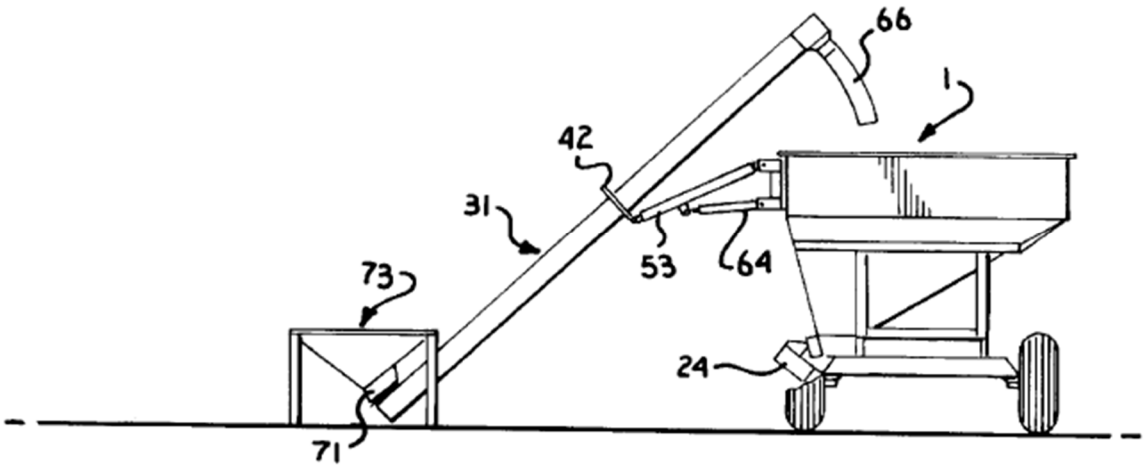


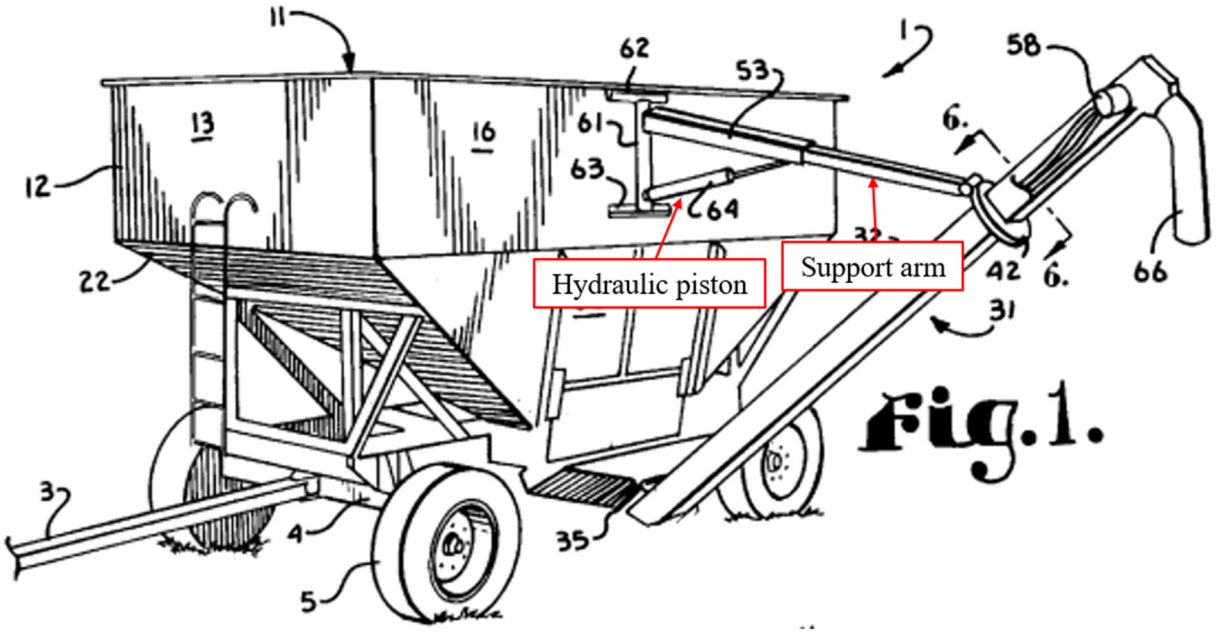
Fig.1.

Id. at Fig. 1 (depicting conveyor in unloading position).



Id. at Fig. 5 (depicting conveyor in loading position).

96. To assist with vertical pivoting, Baskerville discloses a "hydraulic lifting cylinder 64" (hydraulic piston) connected with the support arm:



Id. at Fig. 1 (annotated); 4:53–58; *see also id.* at 5:25–41 (discussing hydraulic system that "supplies and returns pressurized hydraulic fluid to the lifting cylinder 64").

B. Dependent Claim 22

22. The seed or grain tender of claim 16, further comprising a hydraulic piston extending at an acute angle relative to a horizontal plane to connect with a portion of said support arm spaced from said first horizontal axis of rotation.

97. This claim would have been obvious over the Hiniker combination in view of Baskerville. Baskerville discloses that its hydraulic piston extends at an acute angle (< 90°) relative to a horizontal plane to connect with a portion of the support arm spaced from the first horizontal axis of rotation:

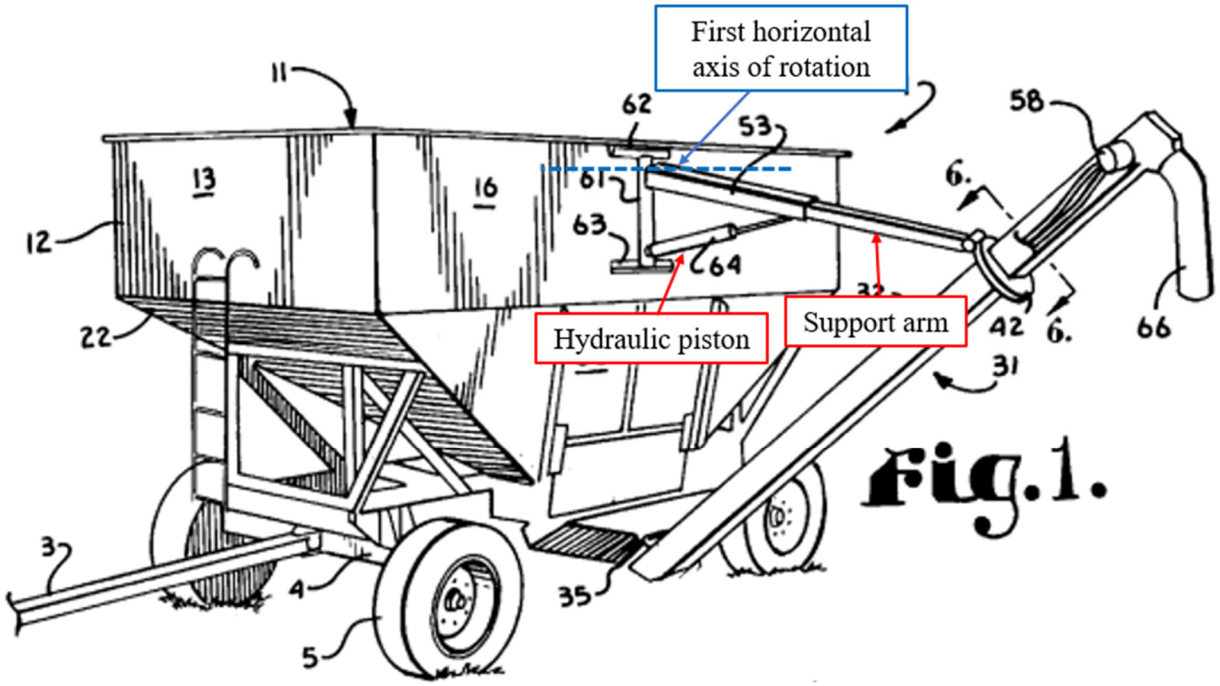


Fig. 1.

Ex. PK-1008 at Fig. 1 (annotated).

98. A skilled artisan would have been motivated to incorporate a hydraulic piston like Baskerville's into the Hiniker combination. Specifically, a skilled artisan would have been motivated to replace the Hiniker "ratchet jack assembly" with a hydraulic piston like Baskerville's.

99. First, a skilled artisan would have looked to the Hiniker references and Baskerville together because they are in the same technical field (seed or grain conveyor systems) and address the same problem (improved transport of seed or grain). Ex. PK-1004 at 36 ("The fill auger support . . . allows the fill auger to rotate easily for use in the field or for transporting."); *id.* at 40 ("The Fill Auger is designed for one-man operation."); Ex. PK-1008 at 1:54–56 ("[I]t is clear that a need exists for an improved bulk seed cart with a self contained conveyor which can be used both for loading and for unloading the seed cart.")).

100. Second, Baskerville touts that its hydraulic piston helps lift and lower the conveyor, "dampen[s] any dramatic shifts in the position of the [support arm]," and allows the operator to "remotely control the lifting and lowering of the [support arm]," which makes the machine "much safer and more reliable." Ex. PK-1008 at 5:25–52. Because Baskerville touts the benefits of its hydraulic piston, a skilled artisan would have been motivated to incorporate a similar piston into the Hiniker combination.

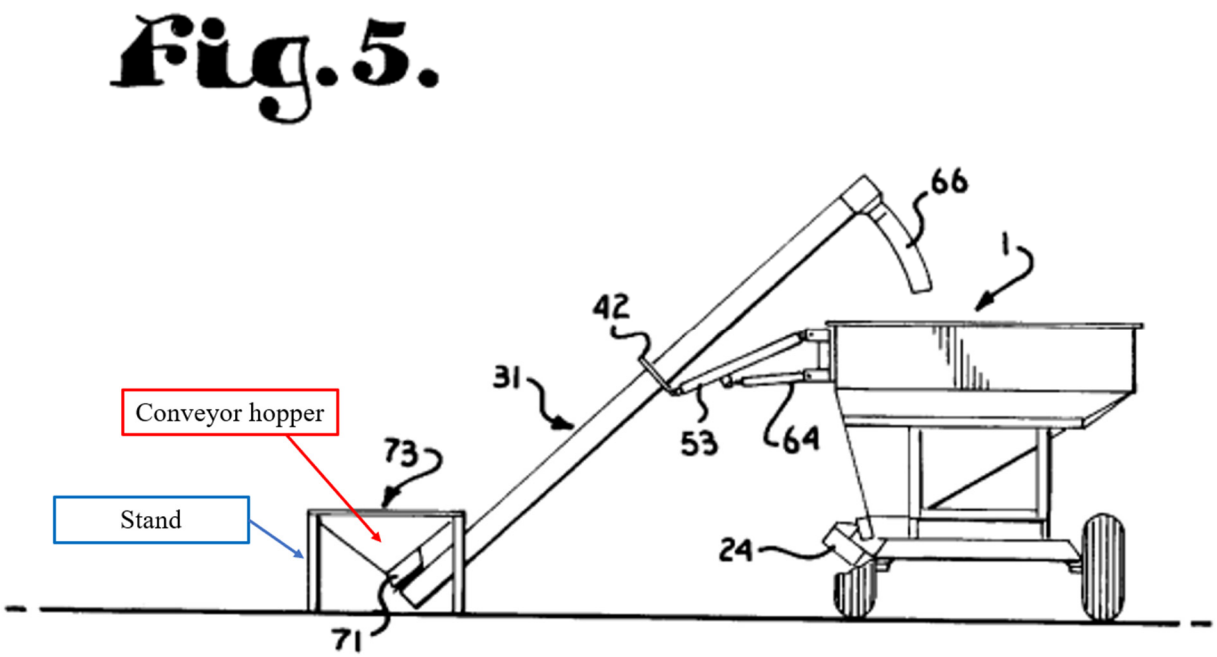
101. A skilled artisan also would have had a reasonable expectation of success in incorporating a hydraulic piston into the Hiniker combination. By the '940 patent's earliest possible effective filing date, hydraulic pistons were well-known components for actuating and dampening. Moreover, adding a hydraulic piston to the Hiniker combination would have been routine, requiring merely the addition of

a known component according to its known function (actuating and dampening) to achieve a predictable result (the ability to lift and lower the conveyor remotely and dampen movement of the support arm). Therefore, a skilled artisan would have reasonably expected success with this modification.

C. Dependent Claim 23

23. The seed or grain tender of claim 16, further comprising a stand coupled with said first end of said conveyor and movable between a stowed position allowing said conveyor hopper to be positioned below said main hopper discharge when said conveyor is in said unloading position and an extended position supporting said conveyor hopper above the ground when said conveyor is in said loading position.

102. This claim would have been obvious over the Hiniker combination in view of Baskerville. Baskerville discloses a "companion seed bin 73" (stand) that can be "engaged with" (coupled with) the conveyor to support the conveyor hopper above the ground when the conveyor is in the loading position:



Ex. PK-1008 at Fig. 5 (annotated), 5:12–16.

103. In my opinion, a skilled artisan would have been motivated to include a stand like Baskerville's in the Hiniker combination for two reasons. First, providing a stand reduces the vertical distance between the conveyor hopper and the outlet of the seed or grain source (e.g., another seed or grain tender, a semi-trailer, or a railroad car), thus reducing spillage. Second, a stand lifts the conveyor off the ground, which helps keep it clean from dirt, mud, manure, and other contaminants that could interfere with and degrade the exposed moving parts of the Hiniker conveyor. Because a skilled artisan would have readily recognized these benefits, he would have been motivated to include a stand like Baskerville's in the Hiniker combination.

104. Baskerville also teaches that its stand is movable between the "engaged" (extended) position shown above and a disengaged (stowed) position. *See* Ex. PK-1008 at 5:12–16 (noting the stand can be "engaged with" the conveyor), Figs. 1–4, 9 (depicting the conveyor without the stand). A skilled artisan would have understood that the disengaged position corresponds to the claimed "stowed position" because it necessarily involves detaching the stand and putting it somewhere (i.e., stowing it). Alternatively, it would have been obvious to convert the disengaged position to a stowed position by stowing the stand somewhere (e.g., in a dedicated stowage compartment on the tender). A skilled artisan would have been motivated to stow the stand somewhere to, for example, avoid losing or running over it.

105. If Patent Owner contends that the stand must remain coupled with the first end of the conveyor when in the stowed position (even though the claim does not say so), it would have been obvious to modify the stand in this manner. For example, it would have been obvious to modify the stand's legs to fold up *in situ* for storage, like the well-known kickstand of a bicycle. A skilled artisan would have been motivated to make this modification because it would be more convenient than removing the stand from the conveyor and storing it somewhere else, and it would eliminate the risk of losing or running over the stand. And this modification would have been routine, requiring merely the addition of, for example, a hinge and spring for each leg, like a bicycle kickstand, according to their known functions (allowing

the leg to fold up and down) to achieve predictable results (extended and stowed positions). Thus, even if the Board finds that the stand must remain coupled with the first end of the conveyor when in the stowed position, it would have been obvious to modify the stand to meet that requirement.

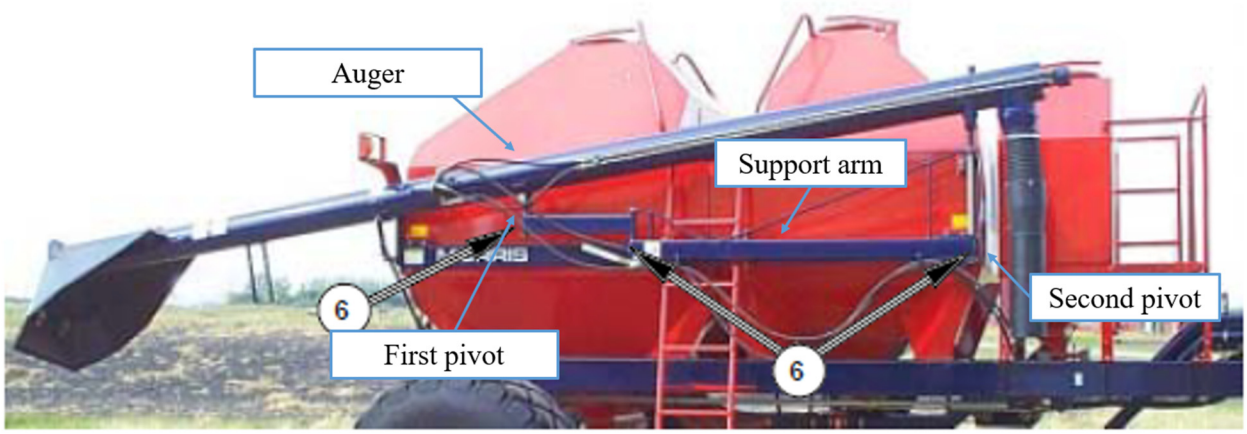
106. Accordingly, it is my opinion that claim 23 would have been obvious over the Hiniker combination in view of Baskerville.

X. GROUND 4: MORRIS IN VIEW OF FURRER

107. Having reviewed claims 16–21, as well as the Operator's Manual for the Morris Industries Ltd. 7000 Series Air Cart ("Morris") and Furrer, it is my opinion that claims 16–21 would have been obvious over the combination of Morris and Furrer.

A. Overview of Morris

108. Morris discloses a seed tender with an auger to transport seed and other product. Ex. PK-1009 at 5-25. The auger is mounted to a support arm via a first pivot, and the support arm is mounted to the seed tender via a second pivot:



Id. at 7-7 (blue annotations added).



Id. at 5-27 (showing unloading position).

109. The pivots allow the auger to rotate between the above-depicted unloading position, in which it discharges seed out of the seed tender, to the below-depicted loading position, in which it discharges seed into the seed tender:



Id. at 5-25 (loading position).

110. I note that Morris Industries Ltd. was (and still is) a well-known manufacturer of agricultural machinery at the time Morris was published, which I understand was on or before August 13, 2006. According to its website, Morris Industries Ltd. has been in business since 1929. https://morrisequipment.ca/about/ (accessed August 23, 2024). While employed as a product development engineer for CaseIH in the late 1990's, I personally evaluated Morris air seeders and air carts for their advanced feature sets. Later in my career as a product manager at Raven

Industries, I assisted with the development of aftermarket kits for Morris air seeders and carts.

B. Overview of Furrer

111. Furrer likewise discloses a seed tender with a conveyor for transporting seed. Ex. PK-1007 at Abstract. As I discuss in § VIII.A above, Furrer's seed tender further comprises a "support module 12" that supports its main hopper ("individual storage bins 13") above "frame 15," a base ("turret 28") positioned below the main hopper and "rotatable about a vertical axis," and a support arm coupled to the base at its first end and to the conveyor at its second end. *Id.* at Abstract, 1:64–65, 3:59–67, 4:26–29.

C. Reasons to Modify Morris in View of Furrer

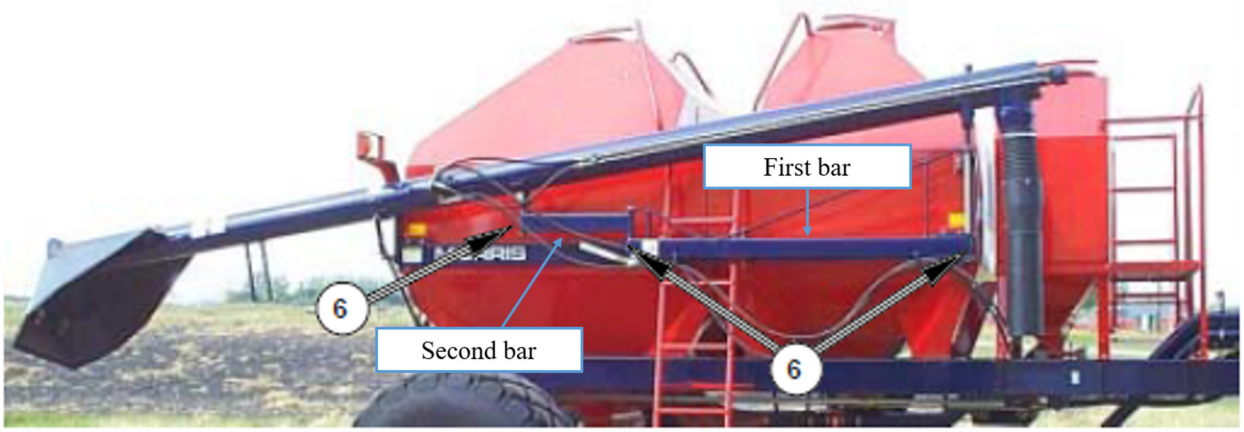
112. In my opinion, a skilled artisan would have been motivated to modify Morris to incorporate Furrer's teachings. Specifically, a skilled artisan would have been motivated to (1) raise the main hopper and create a space under it that is open on parts of three sides (e.g., like Furrer does with its support module 12) and (2) add a rotatable base similar to Furrer's turret 28, with its vertical axis of rotation extending through the main hopper discharge, and connect the first end of the Morris support arm to that base (e.g., like Furrer does with the first end of its support arm connected to the turret 28). There are three reasons why a skilled artisan would have been motivated to make these modifications.

113. First, a skilled artisan would have looked to Morris and Furrer because they are in the same technical field (seed or grain transport systems) and address the same problem (improved transport of seed or grain). Ex. PK-1009 at 4-4 ("The optional hydraulic auger is designed to make loading and unloading product from the Air Cart tank very simple and easy."); Ex. PK-1007 at 1:44–49 ("It is thus desirable to have a seed tender which is not only portable and adaptable to the various situations found in different farms and areas, but which is capable of handling large volumes and considerable weight of seed, and which is also capable of carrying seed containers of different volumes and/or configurations, for maximum flexibility.").

114. Second, Furrer discloses that raising the main hopper above the base and positioning the first end of the support arm in that open space provides "great flexibility and adaptability in the positioning of the conveyor, whether for unloading or for transport or storage." Ex. PK-1007 at 4:51–53. For example, "[t]he conveyor may be turned . . . about its vertical axis between: (i) a side position for unloading seed, (ii) a forward position and extending forwardly wherein the conveyor is located between the sides of the trailer and in front of it, for transport, or (iii) to the rear and extending rearwardly, for unloading or transport." *Id.* at 2:27–32. Further, "when the conveyor is in the forward position, it can be used . . . for unloading in a forward location." *Id.* at 4:43–45. By contrast, in Morris, because the main hopper is not

raised above the frame and the support arm is connected to the side of the main hopper, the conveyor cannot unload seed forwardly or rearwardly, and it has only one storage position (on the side). Thus, to achieve Furrer's stated benefits ("great flexibility and adaptability in the positioning of the conveyor, whether for unloading or for transport or storage"), a skilled artisan would have been motivated to modify Morris's seed tender so the first end of its support arm is under the main hopper and the support arm is rotatable between "a side position for unloading seed" and a forward or rear position "for transport," as Furrer teaches. *Id.* at 2:27–32, 4:43–53.

115. Finally, incorporating Furrer's teachings permits replacement of Morris's folding support arm with a rigid support arm, which provides several benefits. As shown below, Morris's support arm is a two-bar linkage:



Ex. PK-1009 at 7-7 (annotated).

116. This two-bar linkage allows the support arm to change its effective length by increasing or decreasing the angle between the two bars (i.e., straightening

or folding the support arm). Such variable length is necessary in Morris's tender to maintain the conveyor at the correct distance from the main hopper.

117. Incorporating Furrer's teachings, however, would obviate the need for a variable-length support arm. By coupling the support arm below the main hopper discharge, as Furrer teaches, the support arm need not have a variable length to maintain the conveyor at the correct distance from the main hopper. Rather, the support arm can be a single bar because rotating the support arm about its first axis of rotation does not change the distance of the conveyor from the main hopper. A skilled artisan would have recognized two benefits of this modification: (1) it reduces the complexity of the support arm by eliminating a hinge, and (2) it makes the position of the conveyor easier to control by eliminating the need for the operator to straighten or fold the support arm to correctly position the conveyor. Accordingly, a skilled artisan would have been motivated to incorporate Furrer's teachings to gain those benefits.

118. A skilled artisan also would have had a reasonable expectation of success in modifying Morris to incorporate Furrer's support teachings. These modifications would have been a routine design change, requiring merely the addition of known components (e.g., structures like Furrer's support module 12 and turret 28) according to their known functions (supporting the main hopper above the frame and enabling the support arm to rotate about a vertical axis) to achieve

predictable results (e.g., "great flexibility and adaptability in the positioning of the conveyor"). Ex. PK-1007 at 4:51–53. Therefore, a skilled artisan would have reasonably expected success with these modifications.

119. For the remainder of this Declaration, I refer to the proposed combination of Morris and Furrer as "the Morris-Furrer combination."

D. Independent Claim 16

1. [16.pre] A seed or grain tender comprising:

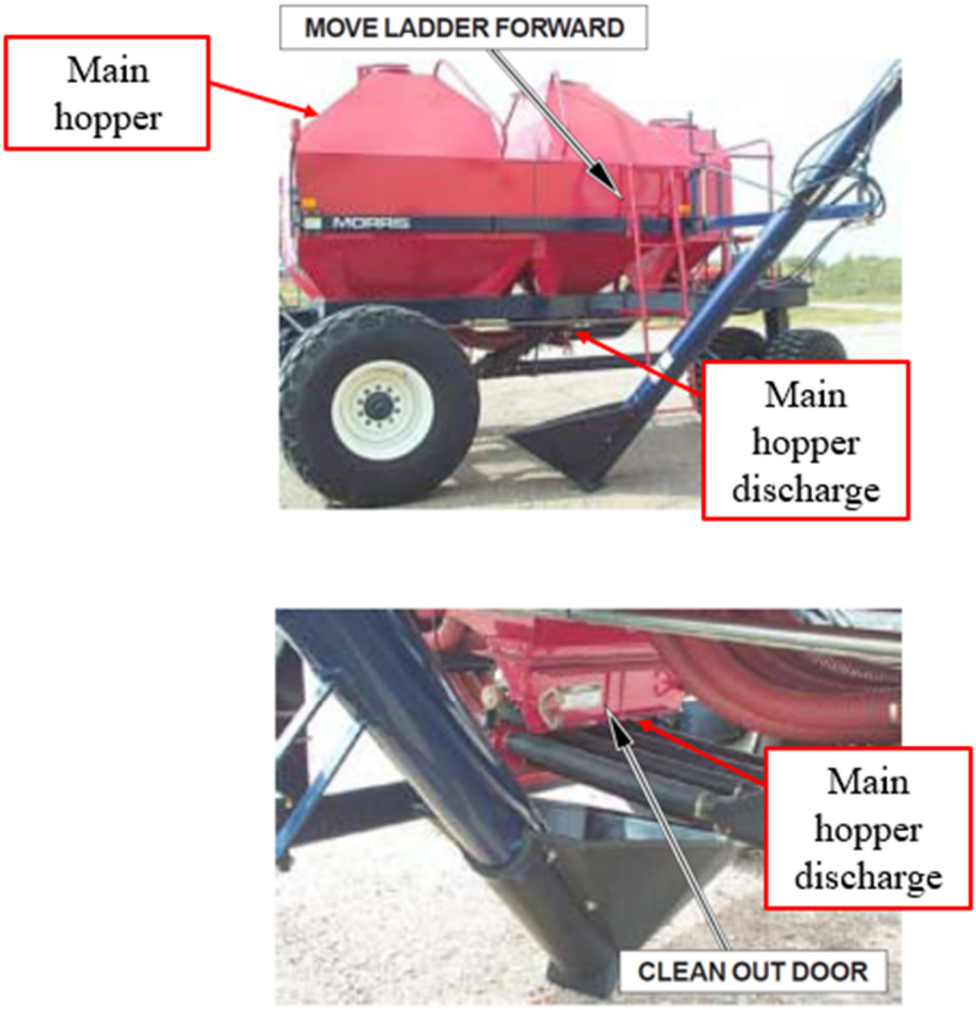
120. I understand that the preamble is not a limitation. Regardless, the Morris-Furrer combination discloses a seed tender because the '940 patent equates a "tender" with a "carrier," Ex. PK-1001 at Title, Abstract, 1:16–17, 1:43–46, and Morris discloses a cart having a tank for ***carrying*** seeds. Ex. PK-1009 at 4-4, 5-4, 5-25. In other words, Morris discloses a seed carrier. Thus, Morris discloses the preamble.

121. If the Board finds that the Morris-Furrer combination is not a tender, it would have been obvious to apply the Morris-Furrer combination to a tender. The Morris-Furrer combination is analogous to a tender with additional components for planting seeds. A skilled artisan would have been motivated to design a tender based on the Morris-Furrer combination, but without the seed-planting components, to achieve the benefits discussed in § X.C above. A skilled artisan also would have

reasonably expected success in doing so because it would merely require removing the seed-planting components.

2. [16.1] a main hopper having a main hopper discharge;

122. The Morris-Furrer combination discloses this limitation. For example, Morris's seed tender has a "tank" (main hopper) into and from which "product" such as "seed" is discharged. *Id.* at 5-4, 5-25, 5-27. Moreover, Morris's main hopper has a "clean out door" (main hopper discharge):



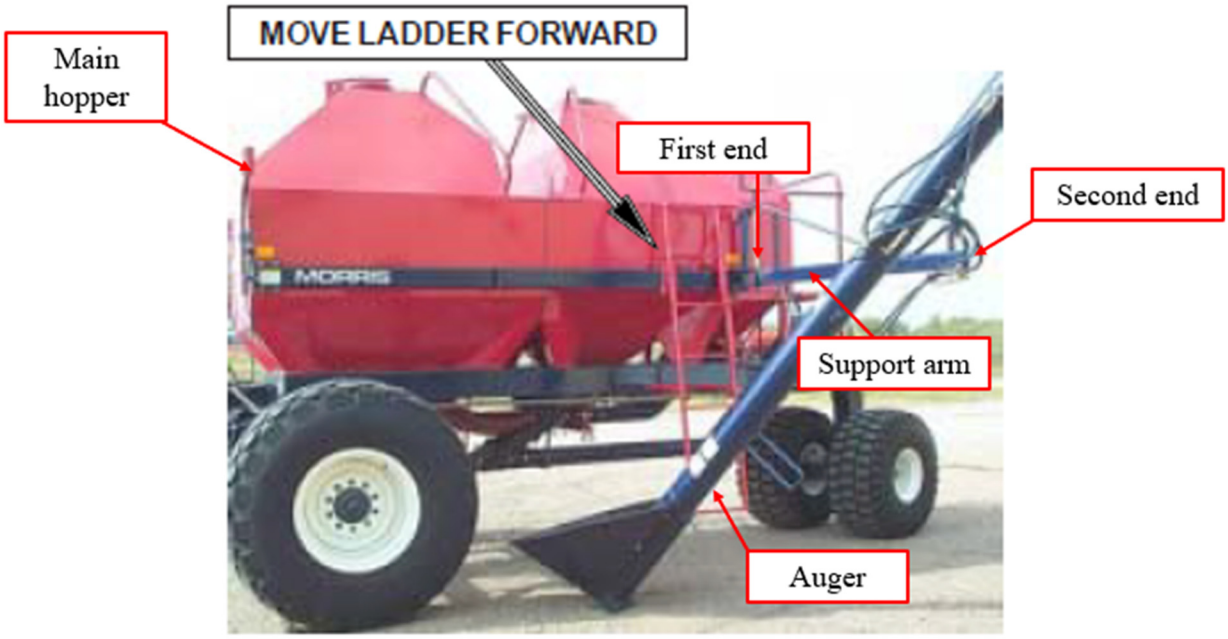
Id. at 5-27 (red annotations added).

3. [16.2] a base positioned below said main hopper;

123. The Morris-Furrer combination discloses this limitation. As I discuss in § X.C above, a skilled artisan would have been motivated to modify Morris to (1) raise the main hopper and create a space under it that is open on parts of three sides and (2) add a base similar to Furrer's turret 28 and connect the first end of the Morris support arm to that base, as in Furrer.

4. [16.3] a support arm having first and second ends;

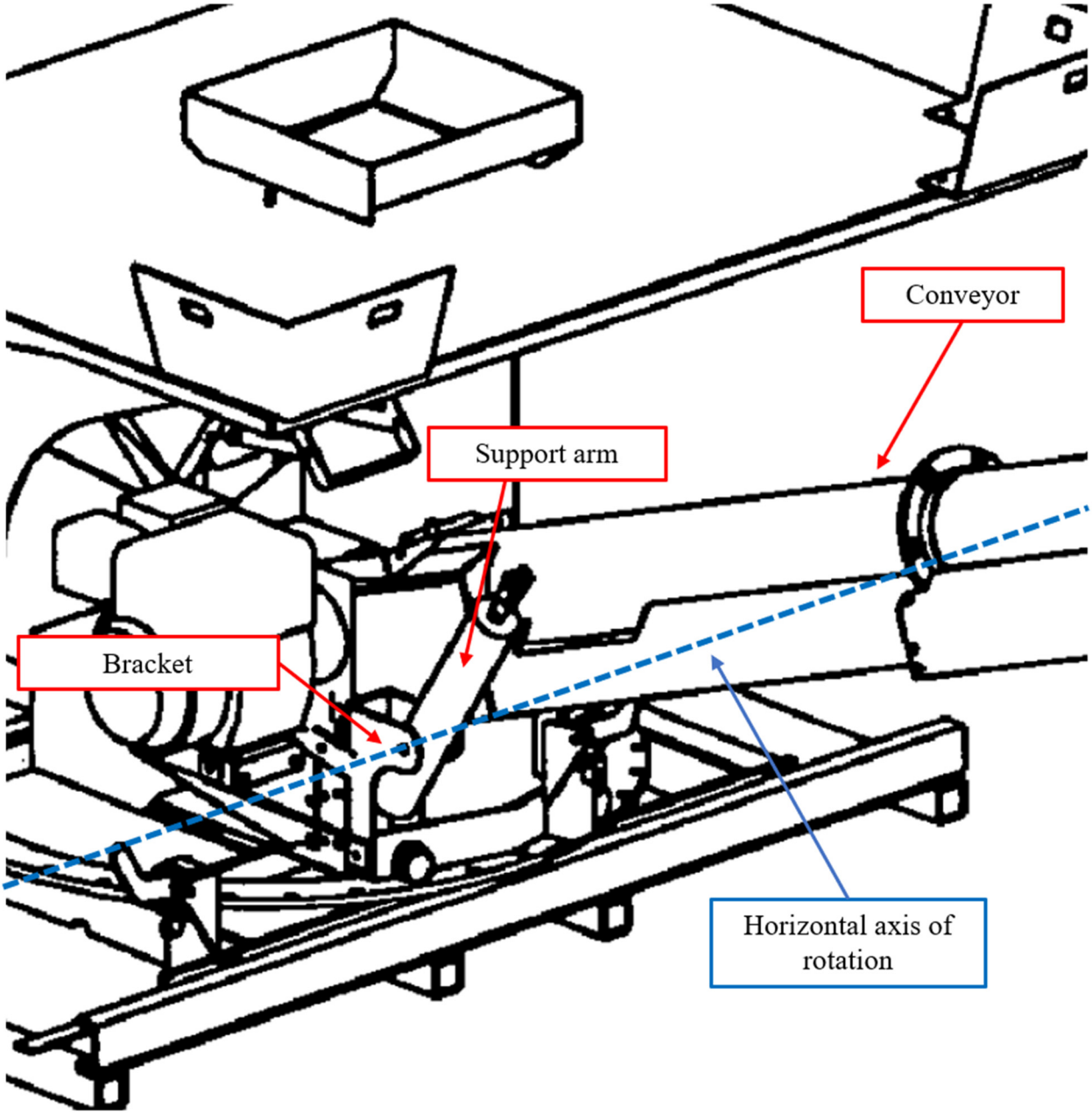
124. The Morris-Furrer combination discloses this limitation. For example, Morris discloses a support arm that mounts the auger to the seed tender and has a first (tender-side) end and a second (auger-side) end:



Id. at 5-27 (red annotations added).

5. [16.4] a first coupling connecting said first end of said support arm with said base,

125. The Morris-Furrer combination discloses this limitation. As I discuss in § X.C above, a skilled artisan would have been motivated to modify Morris by adding a base similar to Furrer's turret 28 and connecting the first end of the Morris support arm to that base, as in Furrer. To make that connection, a skilled artisan would have used a first coupling like the bracket shown below so the first end of the support arm can rotate about a horizontal axis, as in Furrer:



Ex. PK-1007 at Fig. 5 (excerpted, annotated); *see also id.* 4:45–47 (noting the conveyor "may be rotated to a wide range of angles, both vertical and horizontal").

126. A skilled artisan would have recognized several benefits to adding this degree of freedom. For example, Furrer states that when the conveyor is in the unloading position, the ability to lower the conveyor discharge "permits [the

receiving] grain containers or bins carried on a trailer to be mounted at a lower elevation, thus lowering the center of gravity of the trailer and providing greater stability in transport, as well as during unloading." *Id.* at 2:44–48. Furrer further states that the converse ability to raise the conveyor during unloading "permits unloading to be accomplished at greater heights than heretofore [achievable] using conventional techniques." *Id.* at 2:48–53. Furrer thus teaches that by adding this degree of freedom, "the system accommodates a number of different applications, from loading grain drills to loading individual hoppers for row crop planters to loading larger central seed storage hoppers on a planter or seed drill which have a higher reach." *Id.* at 6:26–35. Moreover, other prior art teaches that this additional degree of freedom "allows discharged seed to be directed at virtually any desired location or height along the conveyor side of the seed cart." Ex. PK-1008 at 5:1–5.

127. Although Morris might allow some limited flexibility in the height of the discharge end (e.g., using an optional "spout extension," *see* Ex. PK-1009 at 4-4), adding Furrer's additional degree of freedom would enable a greater range of heights and provide more precise control over the height. Accordingly, in modifying Morris's tender to include Furrer's teachings, a skilled artisan would have been motivated to connect the first end of the support arm to the base using a coupling similar to Furrer's bracket.

128. A skilled artisan also would have had a reasonable expectation of success in modifying Morris this way. Making this connection merely requires, for example, adding a coupling like Furrer's bracket and reorienting the "pivot" (hinge) at the first end of Morris's support arm, from vertical to horizontal. These modifications would have required nothing more than routine skill because the coupling and hinge would be used according to their known functions (allowing rotation) to achieve predictable results (rotation about a horizontal axis at the first end of the support arm). Therefore, a skilled artisan would have reasonably expected success in connecting Morris's support arm to the base using a coupling similar to Furrer's bracket.

6. [16.5] said first coupling being rotatable about a first vertical axis of rotation, and

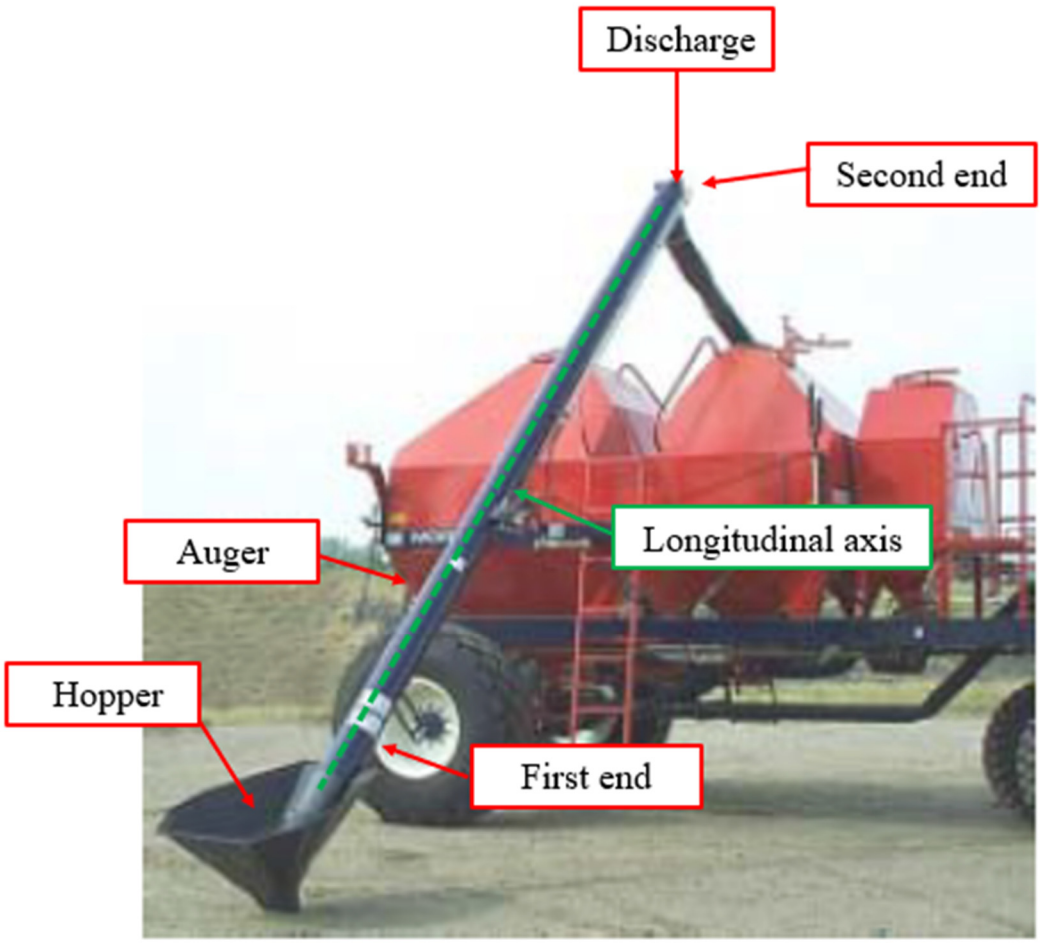
129. The Morris-Furrer combination discloses this limitation. As I discuss in §§ X.C and X.D.5 above, a skilled artisan would have been motivated to modify Morris by adding a rotatable base with a vertical axis of rotation, similar to Furrer's turret 28, and connecting the first end of the Morris support arm to that base using a first coupling, similar to Furrer's bracket. Thus, in the Morris-Furrer combination, the first coupling is rotatable about a first vertical axis of rotation.

7. [16.6] said first end of said support arm being rotatable about a first horizontal axis of rotation;

130. The Morris-Furrer combination discloses this limitation. As I explain in § X.D.5 above, the first end of the support arm in the Morris-Furrer combination connects to a coupling like Furrer's bracket that makes the first end of the support arm rotatable about a first horizontal axis of rotation (it pivots up and down).

8. [16.7] a conveyor having a longitudinal axis and first and second ends, a conveyor hopper at said first end, and a conveyor discharge at said second end; and

131. The Morris-Furrer combination discloses this limitation. For example, Morris discloses an auger (conveyor) having a longitudinal axis, first and second ends, a "hopper" at the first end and a "spout" (discharge) at the second end:



Ex. PK-1009 at 5-25 (instructing operator to "[o]pen lids on tank and insert spout" and "[b]ack truck to the hopper" to load the seed).

132. Morris's auger is a conveyor. As I discuss in § VII.D.8 above, an auger is a type of conveyor. Ex. PK-1001 at 1:21–24; Ex. PK-1019 at 2:37–40 ("An ***auger conveyor*** is rotatably mounted within the auger housing and is adapted to ***convey*** the seed . . . ." (emphasis added)); Ex. PK-1020 at 1:33–36 ("An air cart as described above typically includes a ***conveyor in the form of an auger*** or belt which is primarily used for loading the one or more tanks, but may also be used for unloading

the one or more tanks." (emphasis added)); *id.* at 2:43–45. Thus, Morris's auger is a conveyor.

133. Even if Morris's auger were not a conveyor, it would have been obvious to replace Morris's auger with Furrer's conveyor in the Morris-Furrer combination. Furrer discloses a "conveyor 11" having a longitudinal axis, first and second ends, an "inlet hopper 34" (conveyor hopper) at the first end, and a "discharge tube 36" (conveyor discharge) at the second end:

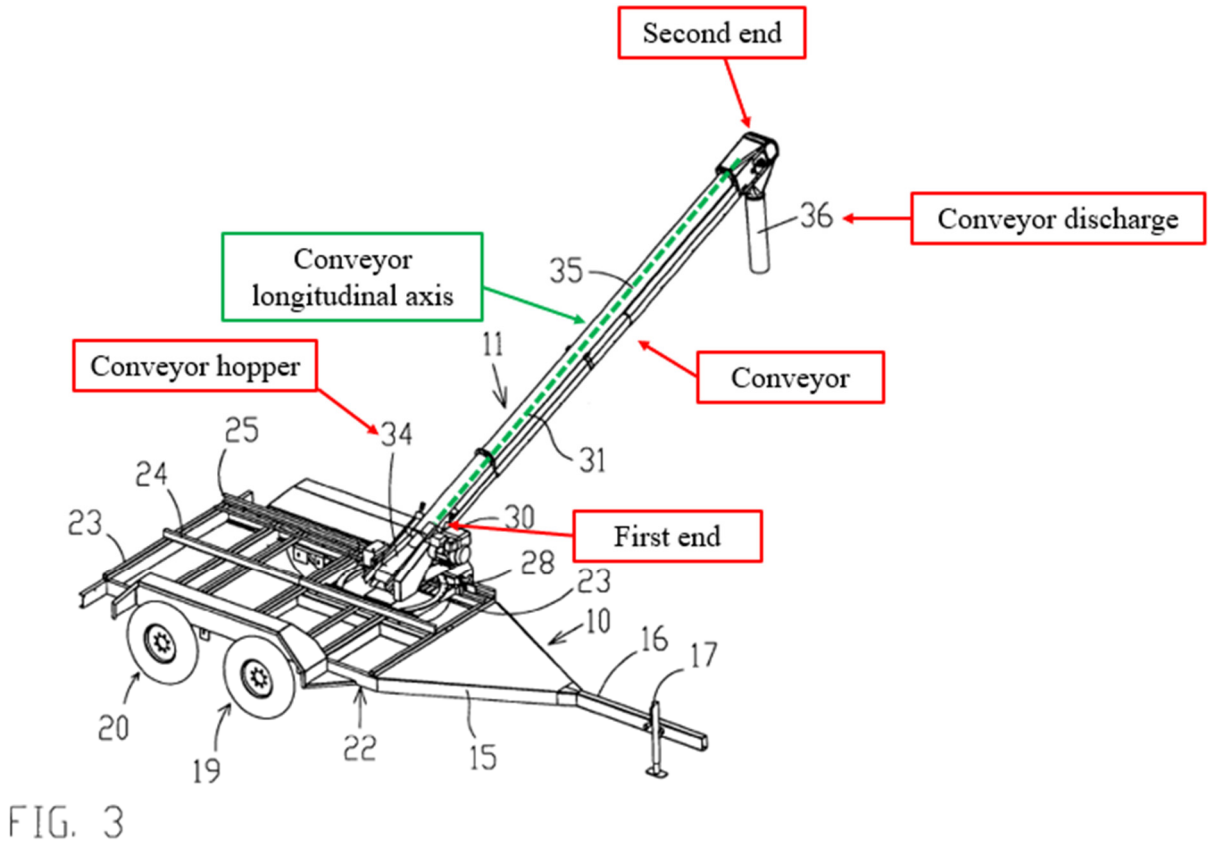


FIG. 3

Ex. PK-1007 at Fig. 3 (annotated), 4:34–38.

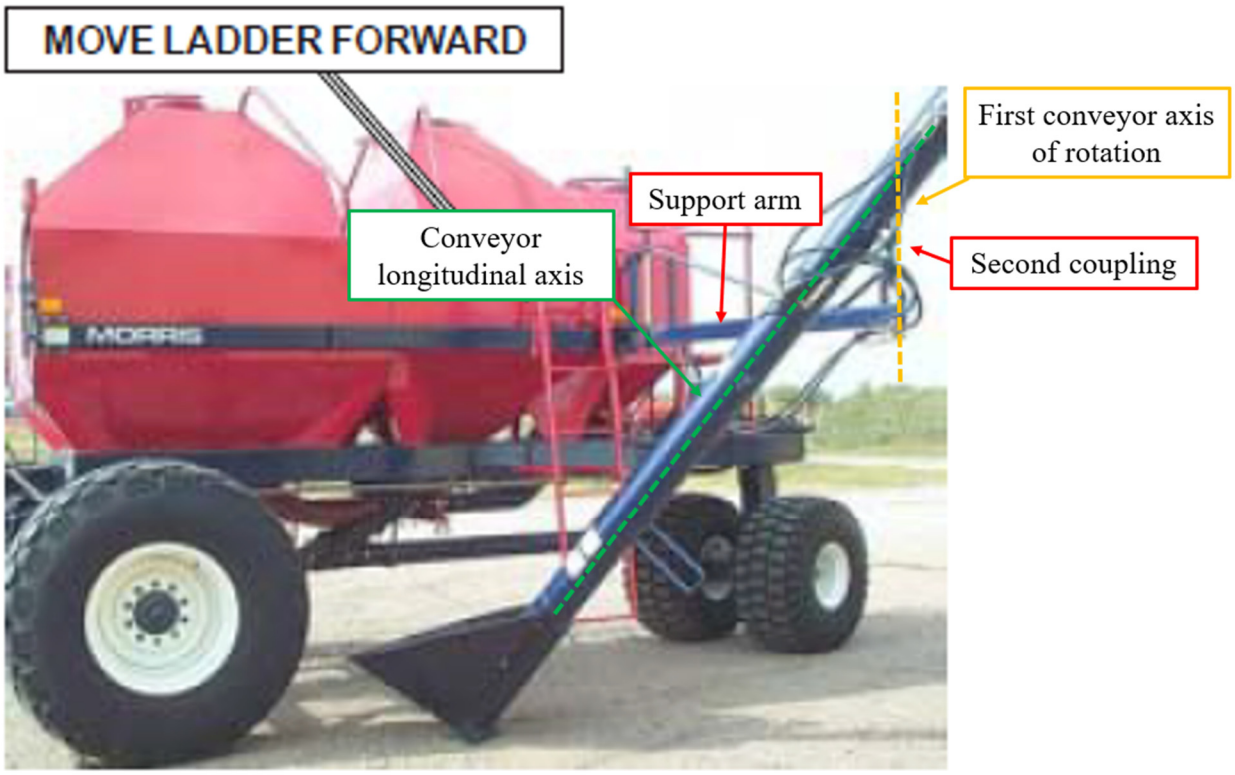
134. A skilled artisan would have been motivated to replace Morris's auger with Furrer's conveyor because conveyors were known to provide several benefits

over augers. For example, Furrer teaches that using a conveyor to transfer seed is "preferred" over using an auger. *Id.* at 4:34–35; *see also id.* at 4:33–34 ("Although less desirable, the conveyor could be an auger."). Similarly, Hitch teaches that "conveyors are ideal appliances in that they can run at relatively high speeds with a moderate expenditure of power." Ex. PK-1021 ¶ 1. Hitch further states that conveyors "are ideal for use with grain" and "are also capable of rendering good service in handling other materials such as seeds and fertilizer." *Id.* ¶ 2. Indeed, the background section of the '940 patent acknowledges that conveyors were "well known" and "often used for moving more expensive payload, such as seed." Ex. PK-1001 at 1:21–24. These known benefits would have motivated a skilled artisan to use a conveyor, rather than an auger, in the Morris-Furrer combination.

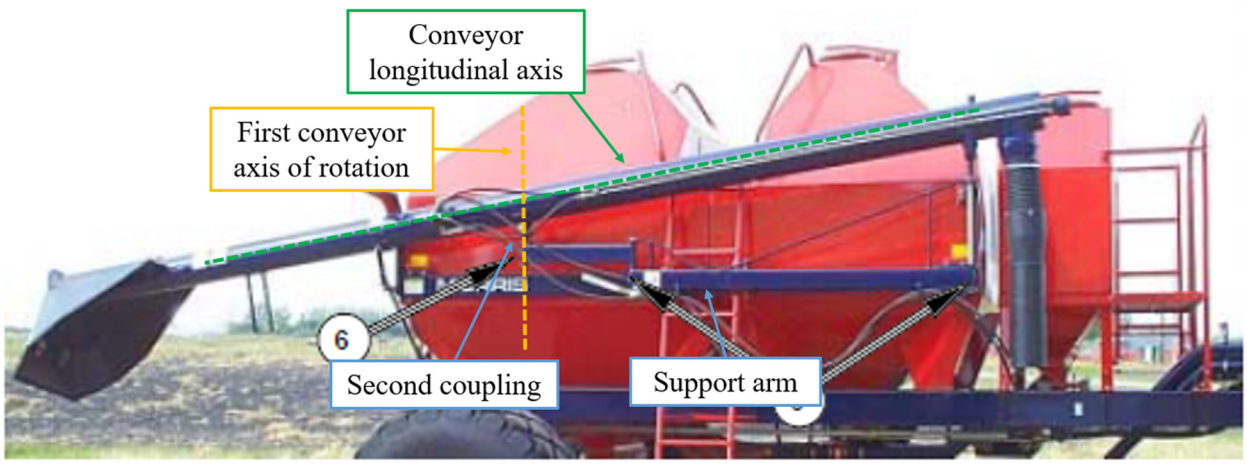
135. A skilled artisan also would have had a reasonable expectation of success in modifying Morris to use a conveyor rather than an auger. As the '940 patent acknowledges, conveyors were "well known" and commonly used at the time of the alleged invention. Ex. PK-1001 at 1:21–24. In fact, "[c]onveyors have been used in the transportation of grain since the 1800's." Ex. PK-1021 ¶ 1. And the Morris-Furrer combination would use a conveyor according to its known function (conveying seed or grain) to achieve predictable results (e.g., efficient transport of seed or grain). Therefore, a skilled artisan would have reasonably expected success with this modification.

9. [16.8] a second coupling connecting said second end of said support arm with said conveyor at an approximate center of gravity of said conveyor, said second coupling defining a first conveyor axis of rotation that is not parallel to said conveyor longitudinal axis, and

136. The Morris-Furrer combination discloses this limitation. As shown below, Morris discloses a second coupling connecting the second end of the support arm with the conveyor at an approximate geometric center of the conveyor, said second coupling defining a first conveyor axis of rotation that is not parallel to the conveyor longitudinal axis:



Ex. PK-1009 at 5-27 (colored annotations added).



Id. at 7-7 (colored annotations added).

137. Furthermore, the conveyor's approximate geometric center corresponds to its approximate center of gravity because the conveyor has an approximately uniform cross-section from end to end. I acknowledge that the exact center of gravity is offset from the exact geometric center because the conveyor hopper adds weight to the conveyor's first end. The claim, however, uses the term "approximate," not "exact." And, in any event, as shown above, the second end of the support arm is coupled with the conveyor slightly toward its first (heavier) end, which is approximately where its center of gravity lies. Thus, Morris discloses that the second end of the support arm is coupled with the conveyor at an approximate center of gravity of the conveyor.

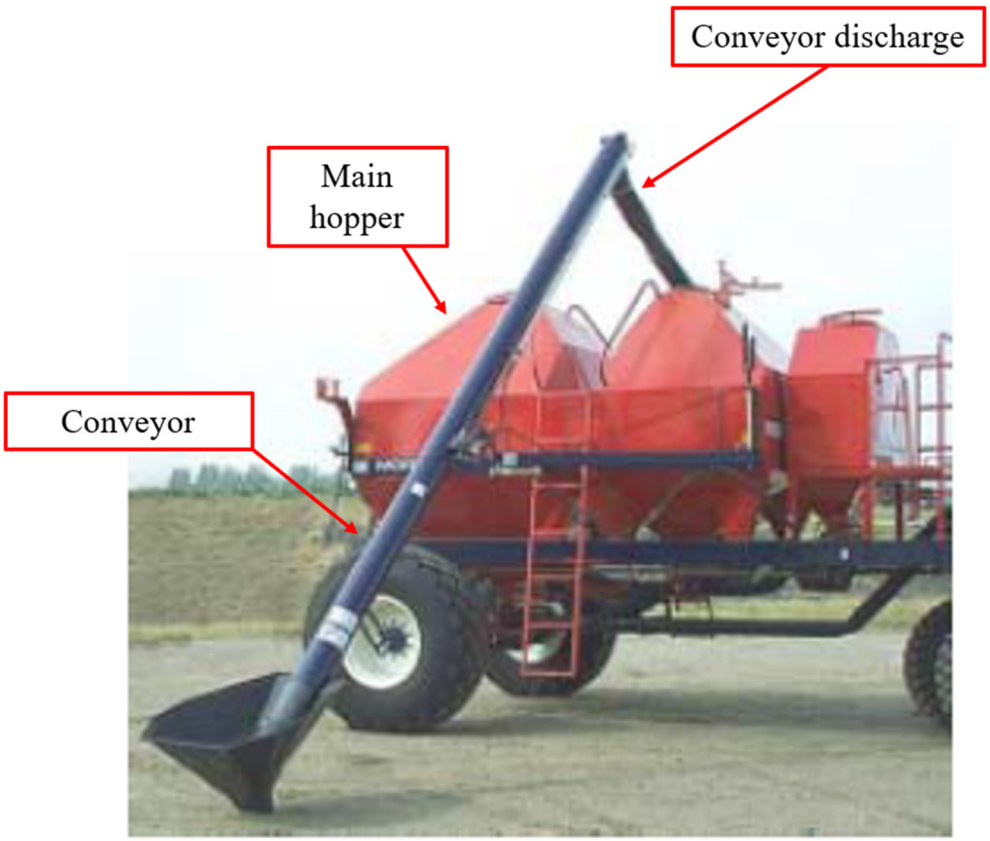
138. If Patent Owner disputes this point, it would have been obvious to modify Morris to couple the second end of the support arm with the conveyor at its approximate center of gravity. A skilled artisan would have been motivated to do so

because it would balance the conveyor, making it easier to manipulate—either by hand, using a motor or hydraulic piston, or some other means. A skilled artisan also would have reasonably expected success in making this modification because, as I explain in § VII.D.9 above, others had already accomplished balancing a conveyor on a support arm.

> ***10. [16.9] said conveyor being rotatable about said first conveyor axis of rotation between an unloading position wherein said conveyor hopper is disposed below said main hopper discharge to receive agricultural product from said main hopper and a loading position wherein said conveyor discharge is disposed above said main hopper to dispense agricultural product into said main hopper.***

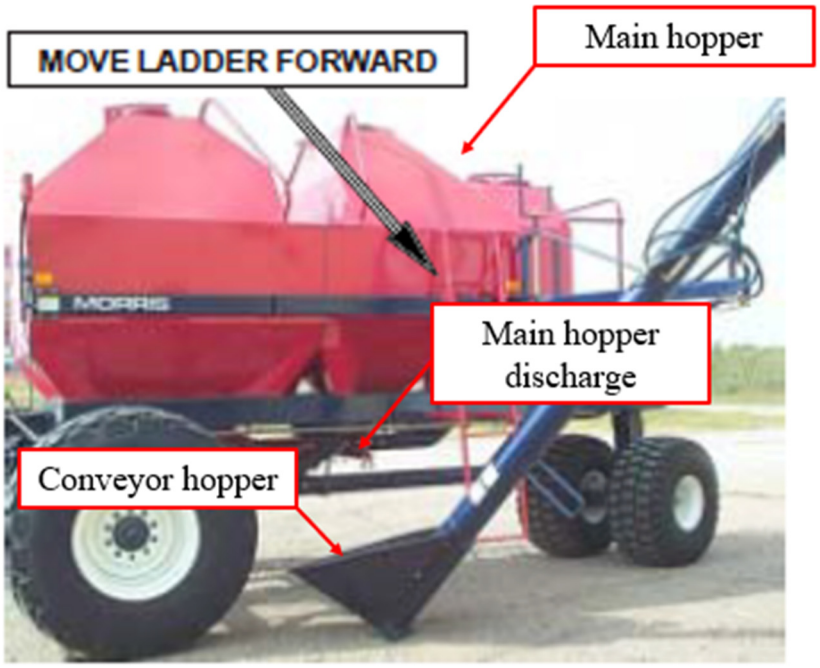
139. As I explain below, the Morris-Furrer combination discloses this limitation.

140. **Loading Position:** Morris discloses a loading position wherein the conveyor discharge is disposed above the main hopper to dispense agricultural product (seed or grain) into the main hopper:

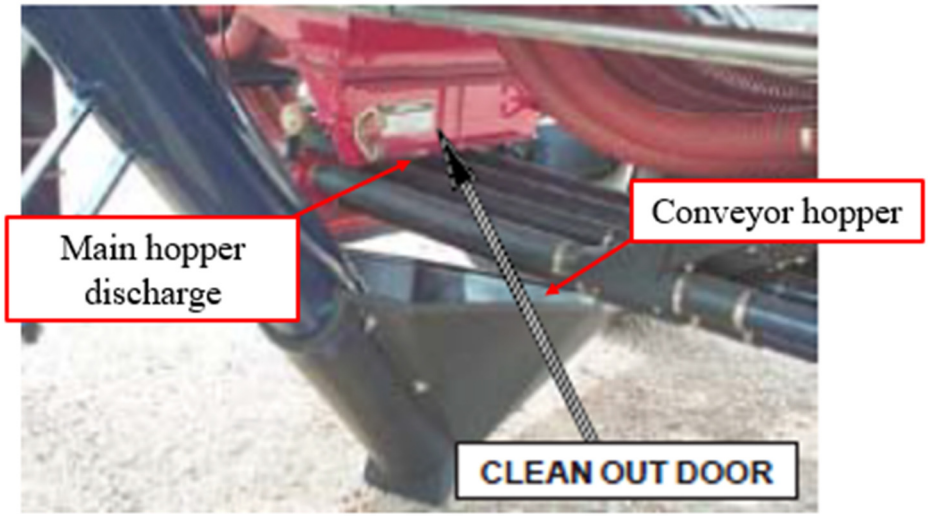


Id. at 5-25 (annotated); *see also id.* (instructing operator to "[o]pen lids on tank and insert spout" and "[a]uger product into tank until product is visible").

141. **Unloading Position:** Morris discloses an unloading position wherein the conveyor hopper is disposed below the main hopper discharge to receive agricultural product (seed or grain) from the main hopper.



Id. at 5-27 (red annotations added); *see also id.* (instructing operator to "[p]osition auger under the tank ***to be emptied***" (emphasis added)).



Id. (red annotations added).

142. To switch between these positions, the conveyor is rotatable about the first conveyor axis of rotation, as shown above. *See also* Ex. PK-1007 at 7-7 (showing "auger pivots").

143. Because the Morris-Furrer combination satisfies each limitation of claim 16, it is my opinion that claim 16 as a whole would have been obvious to a skilled artisan at the time of the alleged invention.

E. Dependent Claim 17

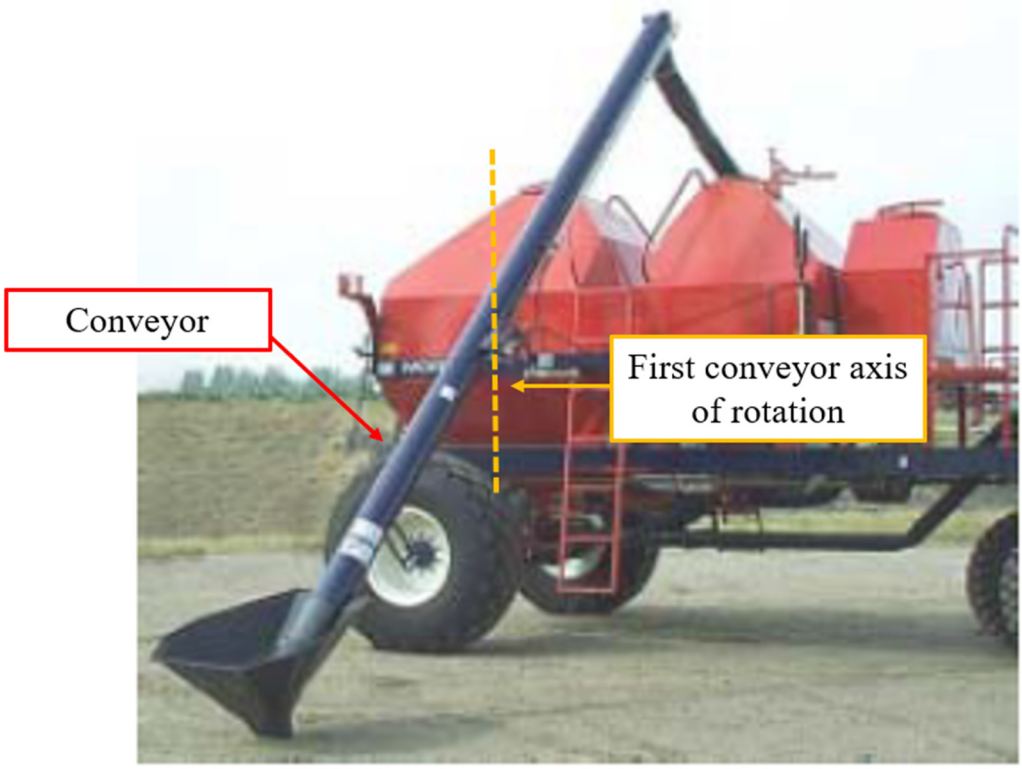
17. The seed or grain tender of claim 16, wherein said first vertical axis of rotation extends through said main hopper discharge.

144. The Morris-Furrer combination discloses this limitation. As I discuss in §§ X.C and X.D.5 above, a skilled artisan would have been motivated to modify Morris by adding a rotatable base having a vertical axis of rotation that extends through the main hopper discharge, similar to Furrer's turret 28, and connecting the first end of the Morris support arm to that base using a first coupling. Thus, in the Morris-Furrer combination, the first vertical axis of rotation of the first coupling extends through the main hopper discharge.

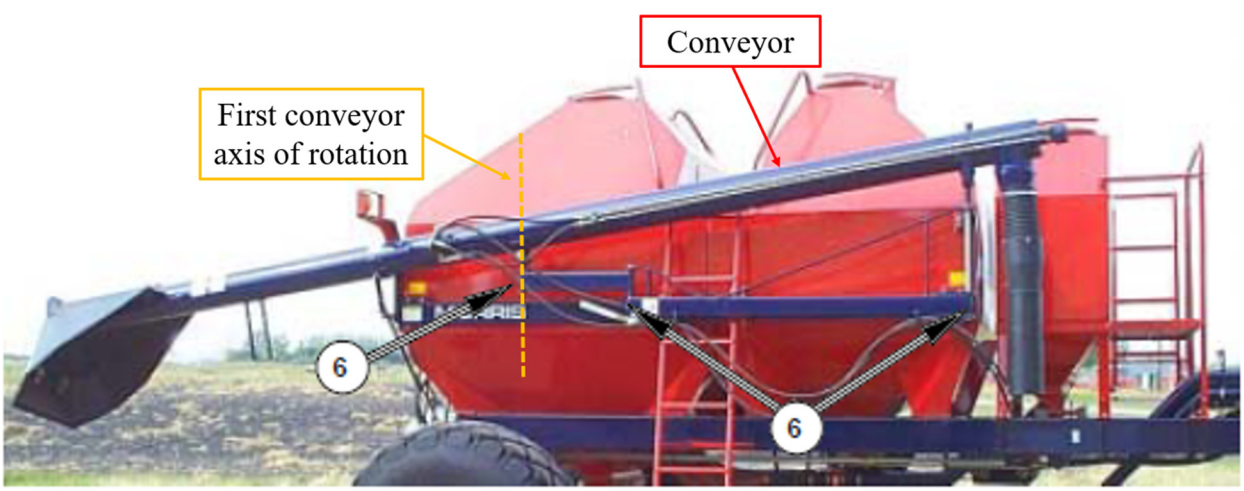
F. Dependent Claim 18

18. The seed or grain tender of claim 16, wherein said first conveyor axis of rotation extends through said approximate center of gravity of said conveyor.

145. The Morris-Furrer combination discloses this limitation. For example, the below images of Morris show that the first conveyor axis of rotation extends through the approximate geometric center of the conveyor:



Ex. PK-1009 at 5-25 (annotated).



Id. at 7-7 (colored annotations added).

146. As I explain in § X.D.9, the conveyor's approximate geometric center corresponds to its approximate center of gravity. In that section, I further explain

that, in the alternative, it would have been obvious to modify the Morris-Furrer combination to couple the second end of the support arm with the conveyor at its approximate center of gravity, in which case the conveyor axis of rotation extends through the approximate center of gravity of the conveyor.

G. Dependent Claim 19

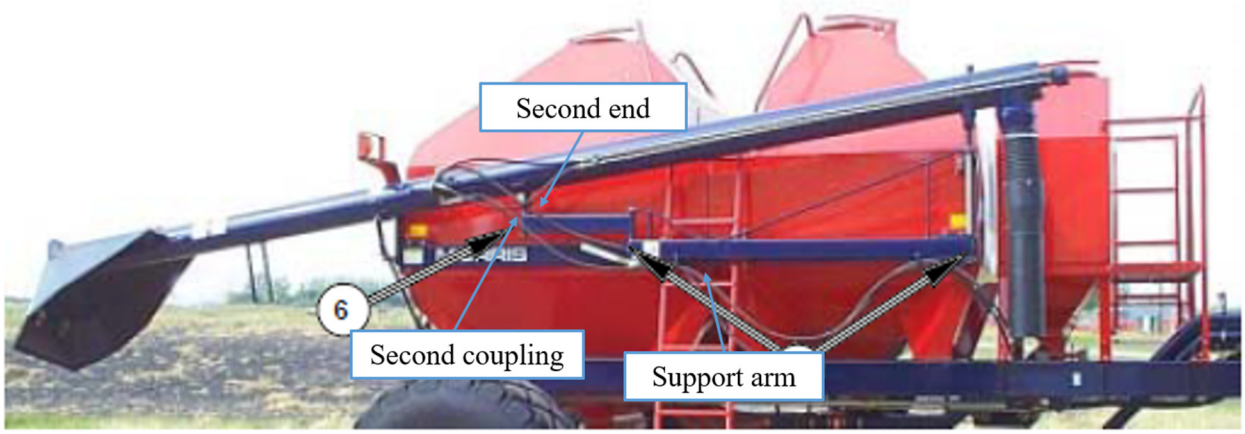
19. The seed or grain tender of claim 16, wherein said first horizontal axis extends through said first end of said support arm.

147. The Morris-Furrer combination discloses this limitation. As shown in § X.D.5 above, the first horizontal axis of rotation extends through the first end of the support arm.

H. Dependent Claim 20

20. The seed or grain tender of claim 16, wherein said second end of said support arm terminates at or near said second coupling.

148. The Morris-Furrer combination discloses this limitation. For example, the below images of Morris show that the second end of the support arm terminates at or near the second coupling:



Ex. PK-1009 at 7-7 (blue annotations added).

I. Dependent Claim 21

21. The seed or grain tender of claim 16, wherein said conveyor includes an internal elevator for moving seed or grain from said conveyor hopper to said conveyor discharge.

149. The Morris-Furrer combination discloses this limitation. For example, Morris's conveyor comprises an auger (internal elevator) for moving seed or grain from the conveyor hopper to the conveyor discharge. *Id.* at 4-4, 5-25, 5-27. Moreover, the '940 patent acknowledges that an auger can "rapidly move grain such as feed or the like." Ex. PK-1001 at 1:21–24. Likewise, Furrer's conveyor includes "a tubular housing 31 in which the seed is moved by" a motor-driven "cleated belt" (internal elevator) from the conveyor hopper to the conveyor discharge. Ex. PK-1007 at 4:29–39.

XI. GROUND 5: MORRIS IN VIEW OF FURRER AND BASKERVILLE

150. Having reviewed claims 22 and 23, as well as Morris, Furrer, and Baskerville, it is my opinion that claims 22 and 23 would have been obvious over the Morris-Furrer combination of Ground 4 in view of Baskerville.

A. Dependent Claim 22

22. The seed or grain tender of claim 16, further comprising a hydraulic piston extending at an acute angle relative to a horizontal plane to connect with a portion of said support arm spaced from said first horizontal axis of rotation.

151. In my opinion, it would have been obvious to modify the Morris-Furrer combination in view of Baskerville to include the hydraulic piston described in this claim.

152. As I explain in § IX.B above, Baskerville discloses a hydraulic piston extending at an acute angle (< 90°) relative to a horizontal plane to connect with a portion of the support arm spaced from its first horizontal axis of rotation.

153. A skilled artisan would have been motivated to incorporate a hydraulic piston similar to Baskerville's into the Morris-Furrer combination. Baskerville teaches that its hydraulic piston helps lift and lower the conveyor, "dampen[s] any dramatic shifts in the position of the [support arm]," and allows the operator to "remotely control the lifting and lowering of the [support arm]," which makes the machine "much safer and more reliable." Ex. PK-1008 at 5:25–52. Because Baskerville touts the benefits of its hydraulic piston, a skilled artisan would have been motivated to incorporate a similar piston into the Morris-Furrer combination.

154. A skilled artisan also would have had a reasonable expectation of success in incorporating a hydraulic piston like Baskerville's into the Morris-Furrer combination. Hydraulic pistons were well known by the '940 patent's earliest possible effective filing date. Moreover, adding a hydraulic piston to the Morris-Furrer combination would have been routine, requiring merely the addition of a known component according to its known function (actuating and dampening) to achieve a predictable result (the ability to lift and lower the conveyor remotely and dampen movement of the support arm). Therefore, a skilled artisan would have reasonably expected success with this modification.

B. Dependent Claim 23

23. The seed or grain tender of claim 16, further comprising a stand coupled with said first end of said conveyor and movable between a stowed position allowing said conveyor hopper to be positioned below said main hopper discharge when said conveyor is in said unloading position and an extended position supporting said conveyor hopper above the ground when said conveyor is in said loading position.

155. In my opinion, it would have been obvious to modify the Morris-Furrer combination in view of Baskerville to include the stand described in this claim. As I explain in § IX.C above, Baskerville discloses such a stand. A skilled artisan would have been motivated to include a stand like Baskerville's in the Morris-Furrer combination for at least two reasons. First, providing a stand reduces the vertical distance (i.e., the gap) between the conveyor hopper and the outlet of the seed source (e.g., another seed tender, a semi-trailer, or a railroad car), thus reducing spillage.

Second, a stand lifts the conveyor off the ground, which helps keep it clean from dirt, mud, manure, and other contaminants that could interfere with and degrade the conveyor's moving parts. A skilled artisan would have readily recognized these benefits and thus been motivated to include a stand similar to Baskerville's in the Morris-Furrer combination. Thus, it would have been obvious to modify the Morris-Furrer combination in view of Baskerville to include a stand.

156. If Patent Owner contends that the stand must remain coupled with the first end of the conveyor when in the stowed position, it would have been obvious to modify the stand in this manner, as I discuss in § IX.C above.

XII. ADDITIONAL REMARKS

157. I currently hold the opinions expressed in this Declaration. But my analysis may continue, and I may acquire additional information and/or attain additional insights that may result in added observations.

158. I declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare 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 the Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Dated: 9-11-24 By: Denise Shannon

DOUGLAS S. PRAIRIE, P.E.

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PROFESSIONAL ENGINEER

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MISSION STATEMENT

Provide innovative education, business and product development solutions

SKILLS SUMMARY

• Engineering Education	• Product Management	• Engineering Management
• Precision Agriculture	• Business Development	• Contract Negotiations
• Fluid Power Systems	• P&ID Development	• Design for Manufacturing
• Higher Education	• Sales Management	• Stress & Failure Analysis
• Off-Highway Equipment	• Intellectual Property	• Feasibility Cost Studies
• Project Management	• Biofuels	• GD&T
• Product Development	• Industrial Equipment	• Engine Emission Regs
• Lean Manufacturing	• Agricultural Equipment	• Machine Design

EXPERIENCE

South Dakota State University, Brookings, SD; www.sdstate.edu; *August 2016 to present*
Lecturer for Agriculture and Biosystems Engineering Department
- Ag Power and Machinery, Fluid Power Systems, Instrumentation and Controls, ABE Senior Design
- Advisor for International Quarter Scale tractor club; Awarded 3 Championships over the last 8 years
- Advisor for Fluid Power Club; Awarded 2nd place for Fluid Power Bike competition 2023

Prairie West LLC, *December 2007 to present*
Freelance Agriculture, Mechanical and Industrial Design Engineer
- Expert legal witness for Deere vs AGCO planter patent infringement case
- CAD 2D to 3D conversion project of industrial grain handling equipment. Project involved the architecture of multiple complex part and assembly configuration structures within SolidWorks.

POET Research, Sioux Falls, SD www.poet.com; *June 2015 to June 2016*
Mechanical Research Manager for POET's Research and Innovation Group
- POET Research was responsible for the development and support of novel technologies related to corn ethanol, cellulosic ethanol, and corn derived industrial products and processes.

Raven Industries, Sioux Falls, SD www.ravenprecision.com; *November 2014 to March 2015*
North American Sales Manager of Precision Agriculture Technology
- Sales Leadership for a team of 15 account managers spread across the United States and Canada
- Sales Forecasting and Analysis for hundreds of accounts totaling over $60 million in annual sales
- Contract Negotiations with OEM and after-market distribution partners

Raven Industries, Sioux Falls, SD www.ravenprecision.com; *March 2010 to November 2014*
Product Manager of Planting, Seeding and Harvest Control Product Lines
- Led development and launch of OmniRow Planter Controls, OmniSeed Air Seeder Controls, UHarvest Grain Cart Monitoring System, and SmartYield Pro Yield Monitoring System
- Business Development of an industry leading Multi-Hybrid planter control system
- Team Lead for Raven SmartQuote Guided Sales and Quotation Tool
- Grew product line sales from a few thousand $ into multi-million $ per year business segments
- Recipient of four ASABE AE 50 Product Innovation Awards
- Member of Raven Leadership Council

DOUGLAS S. PRAIRIE, P.E.

EXPERIENCE CONTINUED

Bratney Companies, Boise, ID www.bratney.com; *February 2003 to September 2005*
Construction/Mechanical Project Engineer of Industrial Processes

- Developed and Executed proposals for multiple design-build construction projects
- Project Managed the construction and startup of a green field alfalfa cleaning and bagging facility

Multiquip, Boise, ID www.multiquip.com; *Dec 2000 to Feb 2003; Sept 2005 to Dec 2007*
Engineering Department Manager for Light Construction Equipment Manufacturer

- Manage a team of 15 engineers, designers, drafters, and technicians tasked with supporting the safety and technical demands of 200+ plus finished goods.
- Manage a $1.3 million annual budget for engineering product support and product development.
- Coordinate with product managers, manufacturing, quality, purchasing, marketing, and suppliers
- Responsible for designing equipment to latest global safety and homologation standards
- Coordinate intellectual property development with patent attorneys

Case Corporation, Fargo, ND www.cnh.com; *October 1996 to July 2000*
New Product Development Engineer for Planting and Seeding Division

- Developed SDX 30 and SDX 40 single disc planter programs from conception to production

Ag-Chem Equipment Co., Jackson, MN www.agcocorp.com; *May 1996 to September 1996*

- Performed and analyzed engine dynamometer tests, hydraulic tests, and other product tests utilizing data acquisition systems

PATENTS

- Inventor on U.S. Patent # 5,915,312 & 6,047,652: *Pneumatic Seed Delivery System*
- Inventor on U.S. Patent # 6,116,172: *Shank Mounted Row Crop Opener*
- Inventor on U.S. Patent # 6,386,127 6,640,732 & 6,644,223: *Disc Opener for a Seed Planter*
- Inventor on U.S. Patent # 6,454,019: *Ag Implement Down Pressure System*
- Inventor on U.S. Patent # 7,497,522: *Concrete Saw Stay Level Handlebars,*
- Patent Pending: *Multi-Hybrid Planter Controls and Combine Yield Monitor Systems.*

SOFTWARE

SolidWorks CAD and Simulation, LabVIEW, MathCAD, Visio, CREO, AutoCAD, SAP R/3, Visual Basic, Working Model, Microsoft Office and Microsoft Project

EDUCATION

BOISE STATE UNIVERSITY (BSU) Boise, ID www.boisestate.edu
Masters of Mechanical Engineering with Business Emphasis
Graduation Date: December 2004 GPA: 3.5/4.0
Project Paper: *Design of a Conceptual Biodiesel Production Facility*

SOUTH DAKOTA STATE UNIVERSITY (SDSU), Brookings, SD www.sdstate.edu
BS Agricultural Engineering with Power and Machinery Focus
Graduation Date: May 1997 GPA: 3.6/4.0

ASSOCIATIONS

- Certified with Carew International Dimensions of Professional Selling® Program
- Member of FarmHouse Fraternity www.farmhouse.org
- Member of Society of Automotive Engineers www.sae.org
- Member of American Society of Mechanical Engineers www.asme.org
- Member of American Society of Agricultural and Biological Engineers www.asabe.org
- SolidWorks User Group

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EXPERT WITNESS CASE HISTORY

Testimony and/or Deposition

1. Precision Planting, LLC and AGCO CORP (Petitioners) vs DEERE and COMPANY (Patent owner), Case Numbers: IPR2019-01044; IPR2019-010446; IPR2019-01050; IPR2019-01052; IPR2019-01053; IPR2019-01054; IPR2019-01055 (USPTO Patent Trial and Appeal Board). Multiple reports and approximately 40 hours of deposition.
2. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2023-01161 (USPTO Patent Trial and Appeal Board). Declaration testimony on behalf of Patent Owner
3. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2024-00004 (USPTO Patent Trial and Appeal Board). Declaration testimony on behalf of Patent Owner
4. Nuhn Industries Ltd. (Plaintiff) v. Bazooka Farmstar, LLC (Defendant), Case No.. 3:22-cv-00015, (S.D. Iowa). Expert reports on behalf of Plaintiff

Patent Infringement and Patent Litigation

1. Wilmer Cutler Pickering Hale and Dorr LLP, Washington D.C. (2018 -2020). Deere and Company (Plaintiff) vs AGCO and Precision Planting (Defendants). Patent Infringement Review Expert for U.S. Patent Numbers: 8,671,856; 8,813,663; 8,850,998; 9,480,199; 9,510,502; 9,661,799; 9,686,906; 9,699,955; 9,807,922; 9,807,924; 9,820,429; 9,861,031; 10,004,173. Working on behalf of the defendant.
2. Harness, Dickey & Pierce, P.L.C. Washington D.C. (2023-present). Bazooka-Farmstar, LLC (Petitioner) v. Nuhn Industries LTD,. (Patent Owner). Patent validity case. Review Expert of US Patent No. 11,358,425. Working on behalf of Patent Owner.

Product Liability and Safety Litigation

1. Marlow, Woodward & Huff, PLLC, Yankton SD (2023). Dwayne Schmitz (Plaintiff) vs Clark Equipment Co. (Defendants). Product liability and safety review. Working on behalf of the Plaintiff. Work involved a safety test report and declaration report.