

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRAIRIE LAND MILLWRIGHT SERVICES, INC.,
Petitioner,

v.

SIOUX STEEL COMPANY,
Patent Owner.

Case IPR2016-01873
Patent 8,967,937 B2

Before NEIL T. POWELL, JAMES A. TARTAL, and
GEORGE R. HOSKINS, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. *Background*

Prairie Land Millwright Services, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–28 of U.S. Patent No. 8,967,937 B2 (Ex. 1001, “the ’937 patent”). Paper 9 (“Pet.”). Patent Owner, Sioux Steel Company, filed a Preliminary Response. Paper 46 (“Prelim. Resp.”). In view of those submissions, we instituted an *inter partes* review of claims 1–28. Paper 50 (“Institution Decision” or “Dec. on Inst.”). Subsequently, Patent Owner filed a Patent Owner Response (Paper 61, “PO Resp.”), and Petitioner filed a Reply (Paper 66, “Pet. Reply”).

We have jurisdiction over this proceeding under 35 U.S.C. § 6(b). After considering the evidence and arguments of the parties, we determine that Petitioner has not proven by a preponderance of the evidence that claims 1–28 are unpatentable. *See* 35 U.S.C. § 316(e). We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a).

B. *Related Matters*

The parties note the following related case: *Sioux Steel Co. v. Prairie Land Millwright Svcs., Inc.*, No. 1-16-cv-02212-JBG/SMF (N.D. Ill.). Pet. 7; Paper 45, 1.

C. The Pending Grounds of Unpatentability

We instituted trial based on the following grounds of unpatentability:

References	Statutory Basis	Challenged Claim(s)
Dixon ¹ , Berreau ² , and Borowski ³	35 U.S.C. § 103(a)	1–4 and 6–11 ⁴
Dixon, Berreau, Borowski, and Vander Schaaf ⁵	35 U.S.C. § 103(a)	5
Dixon, Berreau, Borowski, and Sudenga ⁶	35 U.S.C. § 103(a)	12–28

Petitioner also relies on a Declaration from Bruce Meyer. Ex. 1039. Patent Owner relies on Declarations from James E. Maness. Exs. 2001, 2012.

¹ U.S. Patent No. 6,499,930 to Dixon, iss. Dec. 31, 2002 (Ex. 1007).

² U.S. Patent Application Publication No. 2005/0254922 to Berreau et al., published Nov. 17, 2005 (Ex. 1013).

³ Canadian Patent Application No. CA2312068 to Borowski, published Dec. 20, 2001 (Ex. 1019).

⁴ Petitioner identifies a “First Ground” as being “Obviousness of Claims 1-28 under 35 USC § 103(a) in view of U.S. Patent 6,499,930 to Dixon; U.S. Published Patent Appl'n. 2005/0254922 to Berreau et al.; Canadian Published Patent Appl'n. 2,312,068 to Borowski; U.S. Patent 3,175,676 to Vander Schaaf; and Sudenga Industries, Inc. Press Release.” Pet. 14 (emphasis omitted). Petitioner does not, however, cite each of the listed references with respect to each of the challenged claims. For example, Petitioner asserts that Dixon, Berreau, and Borowski render claims 1–4 and 6–11 obvious. *Id.* Based on the combinations of references that Petitioner cites as rendering different claims obvious, we identify the grounds as those listed in this table.

⁵ U.S. Patent No. 3,175,676 to Vander Schaaf, iss. Mar. 30, 1965 (Ex. 1032).

⁶ Sudenga Industries, Inc. “Series II Sweep Augers,” November 1, 2004 (Ex. 1035).

D. The '937 Patent

The '937 patent discloses a modular storage bin sweep system. Ex. 1001, 4:31–34. In particular, the '937 patent discloses a system using paddles to sweep particulate matter across a bin's floor. *Id.* at 4:35–37. According to the '937 patent, “[s]weep systems have been utilized in storage bins for moving particulate matter across the floor of the bin to a desired location, such as a sump located at the center of the bin, where the particulate matter may be transported under the floor and out of the bin.” *Id.* at 1:11–15. The '937 patent explains that its system “is highly suitable for use in round storage bins,” but is not limited to such use. *Id.* at 4:42–47.

The '937 patent shows a top view of one embodiment of its system in Figure 2, which is reproduced below. *Id.* at 3:33–34.

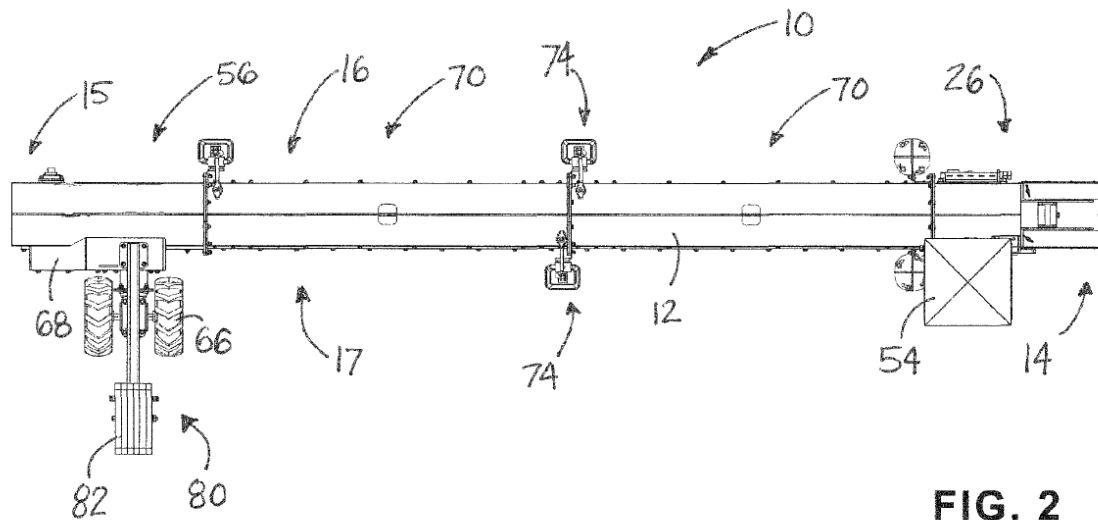


Figure 2 shows system 10, including sweep assembly 12, which comprises power unit 26, drive unit 56, and linking units 70. *Id.* at 4:48–50; 5:32–33. The '937 patent discloses that sweep assembly 12 “may include two units, but often includes more than two units in the linear array.” *Id.* at 4:62–63.

The '937 patent elaborates that:

The number of units in the array of the sweep assembly may typically be a function of the distance between the central area and the peripheral area of the bin interior so that the length of the sweep assembly generally approximates the distance between the areas (which in the case of a round bin is approximately the radius of the bin interior). The units may have different lengths that may be utilized in the linear array of units to achieve substantial correspondence between the length of the sweep assembly and the radius of the bin.

Id. at 4:63–5:5.

The '937 patent also discloses that sweep assembly 12 may include paddles 18 mounted on an endless loop 20 (not shown in Figure 2) extending between inboard 14 and outboard 15 ends of sweep assembly 12.

Id. at 5:13–31. Endless loop 20 and paddles 18 are shown in Figure 8, reproduced below. *Id.* at 3:56–59, Fig. 8.

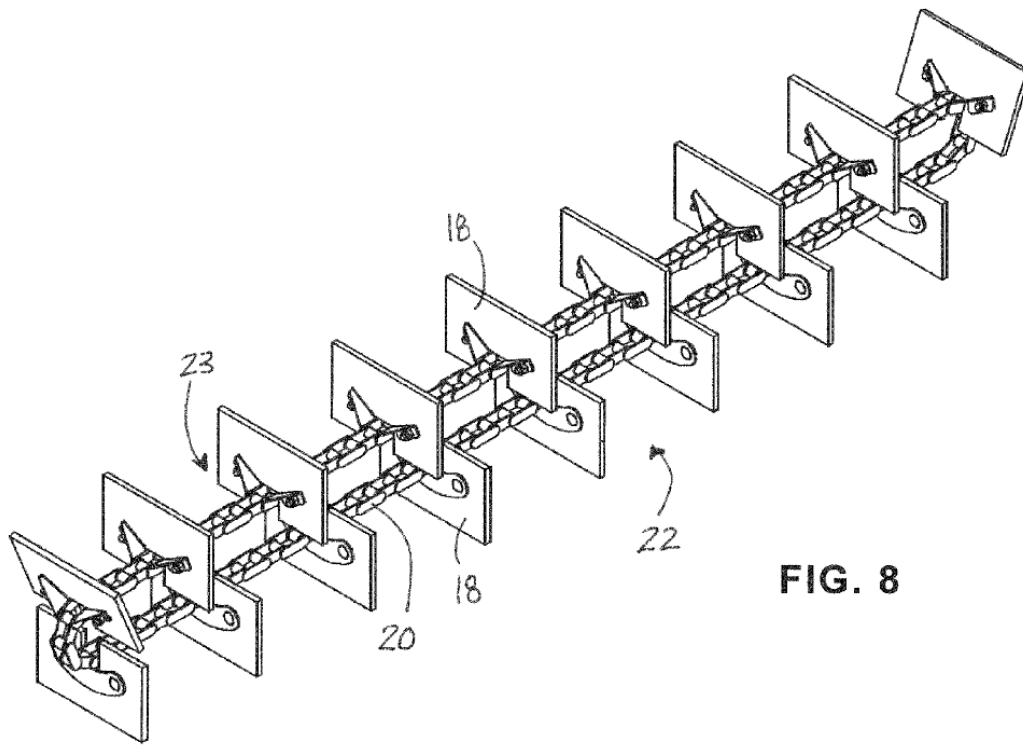


Figure 8 shows paddles 18 mounted to both lower stretch 22 and upper stretch 23 of endless loop 20. *Id.* at 5:25–28.

Power unit 26 moves paddles 18 along sweep assembly 12. *Id.* at 5:37–38. A portion of power unit 26 is shown in more detail in Figure 7, reproduced below. *Id.* at 3:52–55.

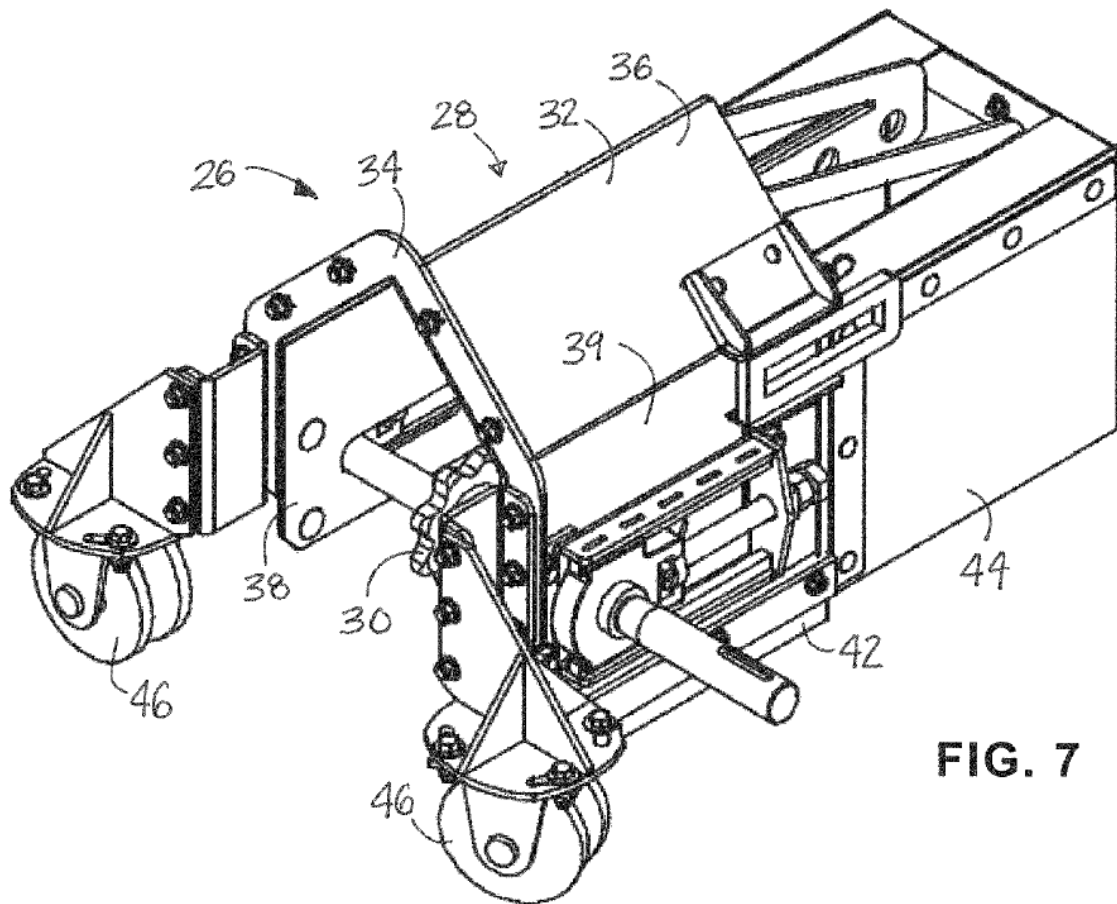


FIG. 7

Figure 7 shows first base portion 28 of power unit 26. *Id.* First base portion 28 includes first housing segment 32. *Id.* at 5:52–56. First base portion 28 also includes center support 44 extending from an end of first housing segment 32. *Id.* at 6:7–8. Center support 44 “is configured to engage the sump (or a structure associated with the sump) to hold the center

support 44 at the sump and cause the sweep assembly to rotate about the sump.” *Id.* at 6:9–11.

First base portion 28 “carries a portion of the succession of interconnected paddles.” *Id.* at 5:42–43. First base portion 28 includes drive member 30 (in this case, a toothed sprocket) “on which a portion of the endless loop member 20 is engaged” (not shown in Figure 7). *Id.* at 5:43–45. For moving paddles 18 along sweep assembly 12, power unit 26 includes motor 50 (not shown in Figure 7) operable to rotate rotatable member 30. *Id.* at 6:43–48.

Drive unit 56 serves to move sweep assembly 12 across the underlying surface. *Id.* at 6:51–54. In some embodiments, drive unit 56 includes wheels 66, which engage the surface beneath sweep assembly 12. *Id.* at 7:21–24. Drive unit 56 is shown in perspective view in Figure 5, which is reproduced below. *Id.* at 3:41–43.

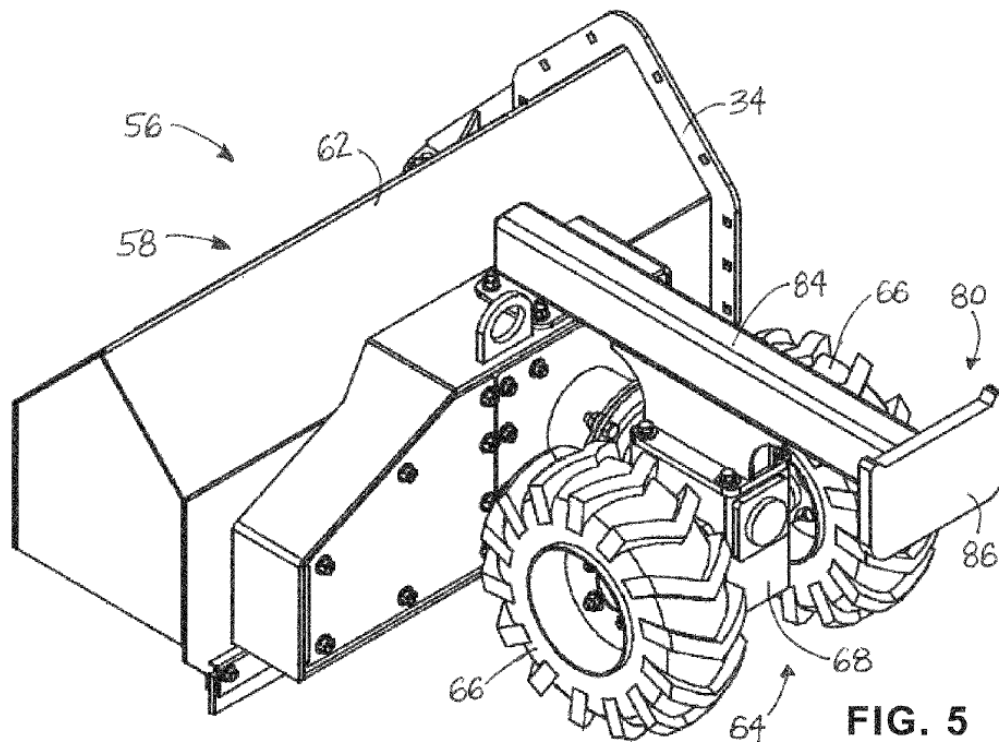


Figure 5 shows drive unit 56, comprising second base portion 58 and ground engaging portion 64, which includes wheels 66. *Id.* at 6:60–62, 7:12–15, 7:21–24. The '937 patent discloses that drive unit 56 may be positioned at the outward end of sweep assembly 12, as shown in Figures 1 and 2. *Id.* at 6:54–55. The '937 patent discloses that some embodiments may also have additional drive units “interspersed between linking units 70 of the sweep assembly at location[s] between the inboard and outboard ends.” *Id.* at 6:54–59.

Figure 17, which is reproduced below, schematically shows a series of components for transmitting power from motor 50 to wheels 66. *Id.* at 4:23–25, Fig. 17.

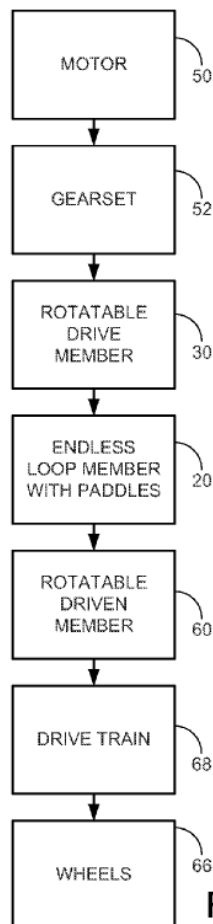


FIG. 17

Figure 17 shows motor 50 connected to wheels 66 by gearset 52, rotatable drive member 30, endless loop member 20, rotatable driven member 60, and drive train 68. *Id.* at Fig. 17.

The '937 patent also discloses that sweep assembly 12 may include a pivot unit. *Id.* at 9:31–34. One view of an embodiment of pivot unit 90 is shown in Figure 11, reproduced below.

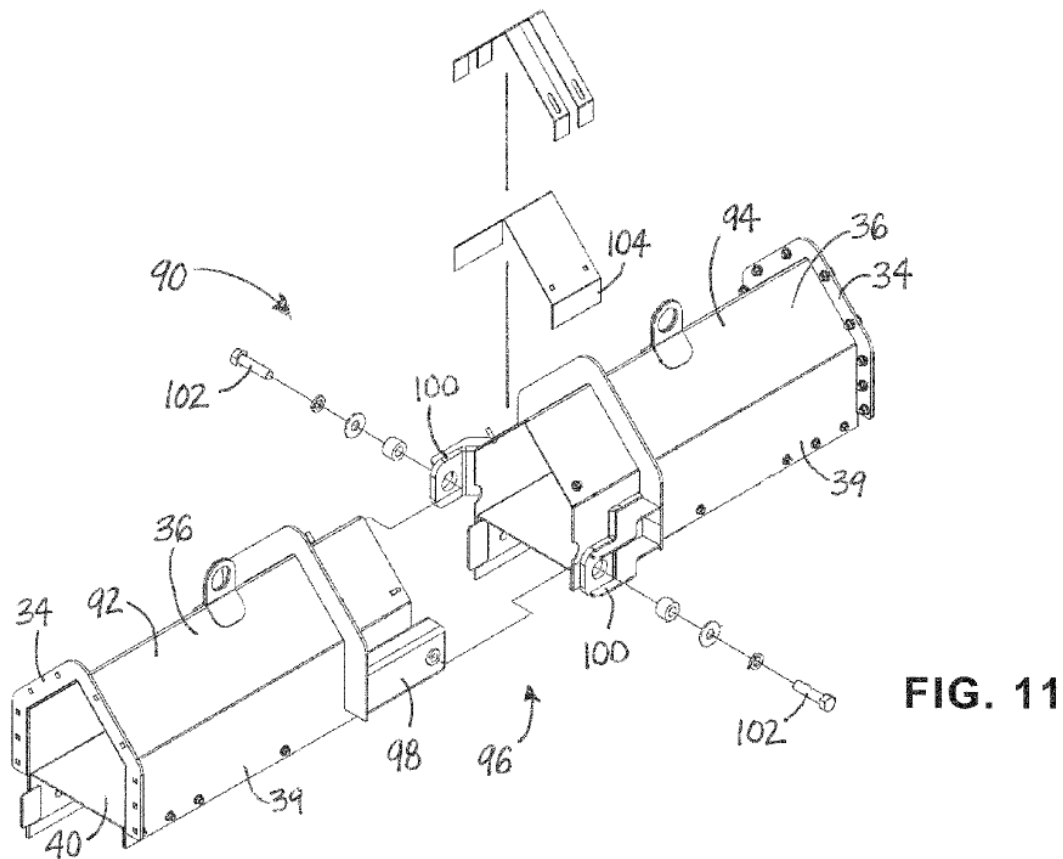


Figure 11 shows structure of pivot unit 90, including sections 92, 94 and pivot structure 96. *Id.* at 9:31–38. Section 92 includes pivot arms 98 extending outward. *Id.* at 9:38–40. Section 94 includes pivot tabs 100. *Id.* at 9:40–41. Pivot pins 102 fasten pivot arms 98 to pivot tabs 100. *Id.* at 9:41–43. Accordingly, sections 92, 94 may pivot about a substantially

horizontal axis relative to one another. *Id.* at 9:31–34. “Similar to the linking units, the opposite ends of the connected sections 92, 94 may have connecting flanges that permit connection of the pivot unit to other units of the sweep assembly.” *Id.* at 9:49–52. This “allows a degree of flexibility or pivotability in the linear array of units in the sweep assembly 12,” which “may be useful for situations where the ability for some sections of the sweep assembly to move vertically in a somewhat independent manner from other sections is desirable.” *Id.* at 9:23–28.

Some embodiments may integrate a pivot unit with a drive unit to form combination unit 120, shown in Figures 12 and 13. Figure 12 is reproduced below.

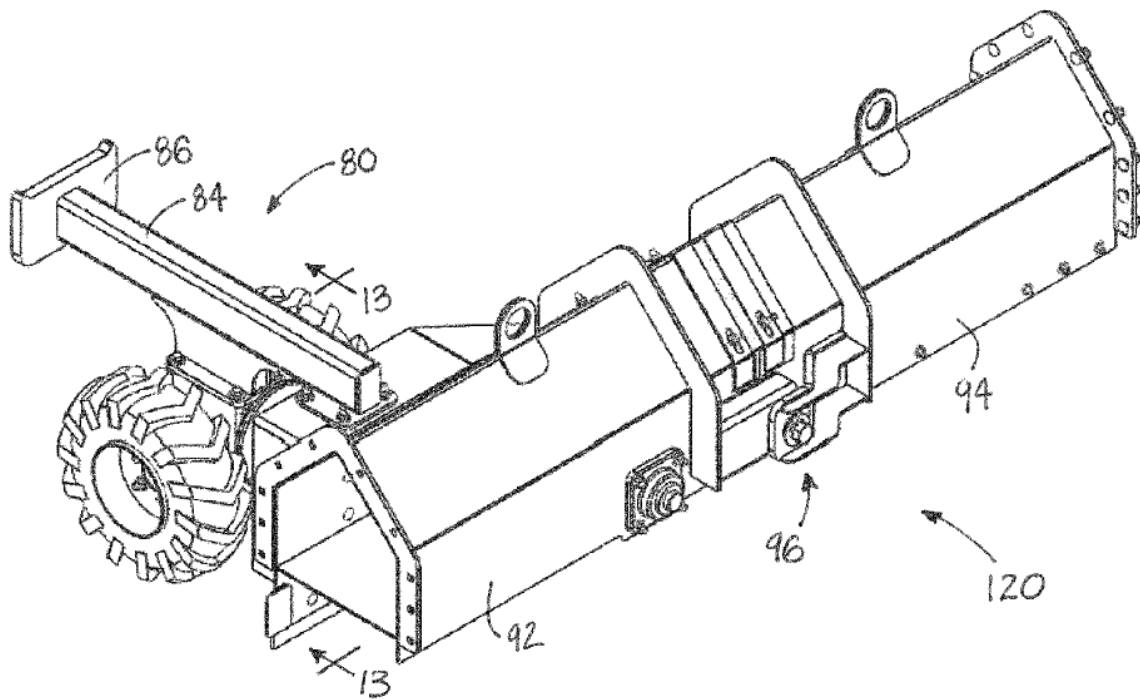


FIG. 12

Figure 12 is a perspective view of combination unit 120. *Id.* at 4:5–7, 9:53–55. Combination unit 120 includes first section 92, second section 94, and

pivot structure 96. *Id.* at 9:57–60. “[C]ombination unit 120 may also include elements of the drive unit 56 previously described, such as surface engaging portion 58 including a wheel 66, or a pair of wheels and a drive train 68.” *Id.* at 9:60–63. A sectional view of combination unit 120 appears in Figure 13, which is reproduced below.

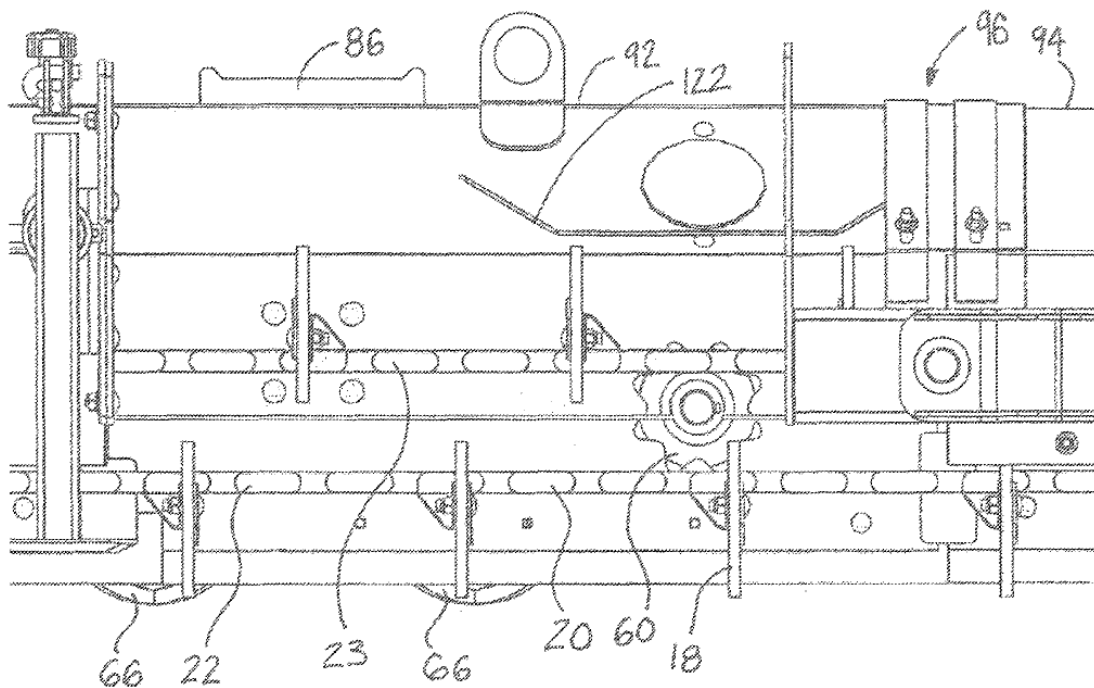


FIG. 13

Figure 13 shows first section 92 and second section 94 connected by pivot structure 96. *See id.* at Fig. 13. Figure 13 also shows that combination unit 120 includes rotatable driven member 60 engaged to endless loop member 20. *Id.* at 9:65–67. Thus, “[t]he drive train and the wheels of the combination unit 120 may be driven by the endless loop member 20 carrying the paddles.” *Id.* at 9:63–65.

E. Illustrative Claim

Of the challenged claims, claim 1 is independent, and claims 2–28 depend from claim 1. Claim 1 is illustrative of the challenged claims and recites:

1. A modular storage bin sweep system utilizing paddles to sweep particulate matter across a floor surface of a bin, the system comprising:
 - a sweep assembly including at least two units connectable together in a substantially linear array along a longitudinal axis, each of the units having a unit longitudinal axis, the sweep assembly having an inboard end for locating toward a center of the bin and an outboard end for locating toward a peripheral area of the bin, each of the at least two units having a longitudinal axis, the sweep assembly comprising:
 - a plurality of interconnected paddles movable in a succession on a path along at least a portion of the sweep assembly between the inboard and outboard ends;
 - at least one of the at least two units comprising a power unit configured to move the succession of paddles along the path of the sweep assembly;
 - at least one of the at least two units comprising a drive unit configured to carry a portion of the succession of interconnected paddles and move the sweep assembly with respect to a surface of the bin below the sweep assembly, the drive unit being positioned toward the outboard end from the inboard end of the sweep assembly, the drive unit including a surface engaging portion configured to engage a surface below the sweep assembly and move the sweep assembly with respect to the surface, the surface engaging portion comprising at least one surface engaging wheel resting on the surface of the bin; and
 - at least one of the at least two units comprising a pivot unit configured to carry a portion of the succession of interconnected paddles, the pivot unit including a pair of connected sections with each section being connected to an

adjacent said unit of the array, the pivot unit including a pivot structure positioned between and connecting the sections to permit pivoting of a first section with respect to a second section and thereby to permit a degree of pivotability of the unit longitudinal axes of the adjacent units with respect to each other in the array of units of the sweep assembly.

Ex. 1001, 10:46–11:17.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R.

§ 42.100(b); see *In re Cuozzo Speed Techs., LLC*, 136 S. Ct. 2131, 2142–46 (2016).

Relevant to our analysis below, claim 1 recites “a pivot unit configured to carry a portion of the succession of interconnected paddles.” Ex. 1001, 11:7–9. Petitioner does not address the construction of this claim language in the Petition, arguing instead that most claim terms “are facially clear and should be given their plain and ordinary meaning.” Pet. 11; see *also id.* at 10–12 (identifying other claim terms that “benefit from reference to the specification to inform or define their meaning”). Patent Owner argues in its Response that a person of ordinary skill in the art, in the context of the ’937 patent, would have understood the ordinary meaning of the term “pivot unit configured to carry a portion of the succession of paddles” to require a physical configuration that includes a pivoting function together with a structural configuration that carries a succession of paddles between sections of the pivot unit. PO Resp. 13–14 (citing Ex. 2012 ¶¶ 57–63). In

particular, Patent Owner does not argue that the claim term “carry” is used in any manner other than its plain and ordinary meaning. *See id.* at 15 (focusing instead on whether a “pivot unit” requires “a housing segment at least partially defining an interior”). While Petitioner disputes Patent Owner’s arguments with regard to the recited “pivot unit” and housing, Petitioner does not suggest that the claim term “carry” is used in any manner other than its plain and ordinary meaning. Pet. Reply 3–4.

In view of this, and consistent with the Specification, we understand that the claim language “configured to carry a portion of the succession of interconnected paddles” uses “carry” in accordance with its plain and ordinary meaning as supporting the paddles while they move. The pivot unit/drive unit embodiment shown in Figure 13 presents an example consistent with this. This pivot unit/drive unit includes rotatable driven member 60. *See* Ex. 1001, Fig. 13. Endless loop member 20 engages rotatable driven member 60. *Id.* at 9:65–67. Specifically, rotatable driven member 60 is engaged to an underside of upper stretch 23 of endless loop member 20, in a position to support a portion of the weight of endless loop member 20 and the weight of a portion of paddles 18. *Id.* at Fig. 13, Fig. 8. Accordingly, the embodiment of pivot unit/drive unit shown in Figure 13 is configured to support the weight of a portion of paddles 18 via rotatable driven member 60 while paddles 18 move. Indeed, the Specification consistently uses “carry” according to its plain and ordinary meaning. For example, the Specification discloses “endless loop member 20 carrying the paddles” (*id.* at 5:13–31) and that “power unit 26 may comprise a first base portion 28 which carries a portion of the succession of interconnected paddles 18” (*id.* at 5:41–43). Endless loop member 20 and first base portion

28 of power unit 26 support paddles 18 while they move. Endless loop 20 directly supports paddles 18, which mount to endless loop 20. *See id.* at 5:19–22, Figs. 8, 13. Base portion 28 of power unit 26 supports paddles 18 via endless loop 20, which mounts to rotatable driven member 30 of base portion 28. *See id.* at 5:41–51, Figs. 7, 8.

Petitioner and Patent Owner address the constructions for certain other claim terms. *See* Pet. 10–12; PO Resp. 13–15. We determine no claim term requires express construction in this case. We interpret the claims only to the extent necessary to resolve the parties’ dispute. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

B. Alleged Obviousness of Claims 1–4 and 6–11 over Dixon, Berreau, and Borowski

Petitioner asserts claims 1–4 and 6–11 would have been obvious over Dixon, Berreau, and Borowski. Pet. 14–23. Petitioner asserts that Dixon teaches a bin sweep system that uses paddles to move particulate matter in a bin. *Id.* at 14. Petitioner contends that Dixon’s sweep assembly includes most of the limitations of independent claim 1. *Id.* at 14–15.

Figure 4 of Dixon is reproduced below.

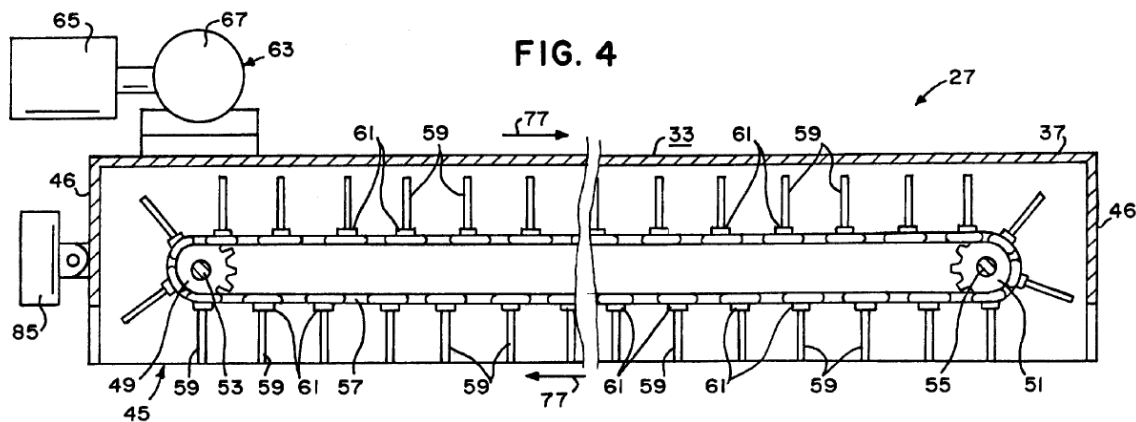


Figure 4 of Dixon shows a cross-sectional view of sweep conveyor 27. See Ex. 1007, 2:3–5, 2:38–48. Dixon’s sweep conveyor 27 includes elongated frame 33, which has a hood with top panel 39, side walls 41, 43 (not shown in Figure 4), and end walls 46. *Id.* at 2:46–56. Sweep conveyor 27 includes sprockets 49, 51 rotatably attached to frame 33. *Id.* at 2:64–3:15. Sweep conveyor 27 also includes roller chain 57 passing around sprockets 49, 51, as well as paddles 59 mounted on roller chain 57. *Id.* at 3:16–22. Sweep conveyor 27 has power means 63 for rotating one of sprockets 49, 51 to move roller chain 57, and paddles 59 to sweep grain. *Id.* at 3:35–39. Additionally, “sweep conveyor 27 preferably includes drive means 79 for causing the frame 33 to rotate about the well 25” (not shown in Figure 4). *Id.* at 3:58–59.

Petitioner asserts that Dixon teaches a “power unit” and a “drive unit,” as recited in independent claim 1. Pet. 14–15. Petitioner asserts that Dixon’s “power unit” is at inboard sweep end 35. *Id.* at 15. Petitioner asserts that Dixon’s “drive unit” is at outboard sweep end 37. *Id.*

Petitioner notes that Dixon does not teach certain limitations in independent claim 1. For example, Petitioner states that Dixon does not teach:

inter alia, the sweep unit including at least two units connectable together in a substantially linear array along a longitudinal axis, each of the units having a unit longitudinal axis; at least one of the units comprising the aforementioned power unit; at least one of the units comprising the aforementioned drive unit; and at least one of the units comprising a pivot unit including a pair of connected sections with each section being connected to an adjacent unit of the array, the pivot unit including a pivot structure positioned between and connecting the sections to permit pivoting of a first section with respect to a second section, thereby permitting a degree of pivotability of the unit longitudinal axes of the adjacent units with respect to each other.

Pet. 15–16. Addressing these aspects of the claims, Petitioner asserts that a person of ordinary skill in the art would have been motivated to make certain changes to Dixon’s disclosed apparatus, based on the teachings of Berreau and Borowski. *Id.* at 16–20.

Petitioner relies on Berreau as teaching modular construction of a bin sweep. *Id.* at 16–18. Petitioner asserts that Berreau teaches “an auger sweep – which is an art-recognized equivalent to a paddle sweep . . . – including at least two units connectable together in a substantially linear array along a longitudinal axis,” and which includes other features consistent with claim 1’s recitations regarding the “units.” *Id.* at 16–17. Petitioner contends that, in view of Berreau, a person of ordinary skill in the art would have been motivated “to construct the *Dixon* sweep from modular units, including a power unit, a drive unit, and intermediate linking units, to facilitate construction of a sweep having a desired length, as suggested by *Berreau*.” *Id.* at 17.

Petitioner also states that “[s]uch a *Dixon/Berreau* sweep would still lack the pivot unit recited in claim 1.” *Id.* at 18. In addressing the claimed pivot unit, Petitioner cites Borowski. *Id.* at 18–20. Figure 1 of Borowski is reproduced below.

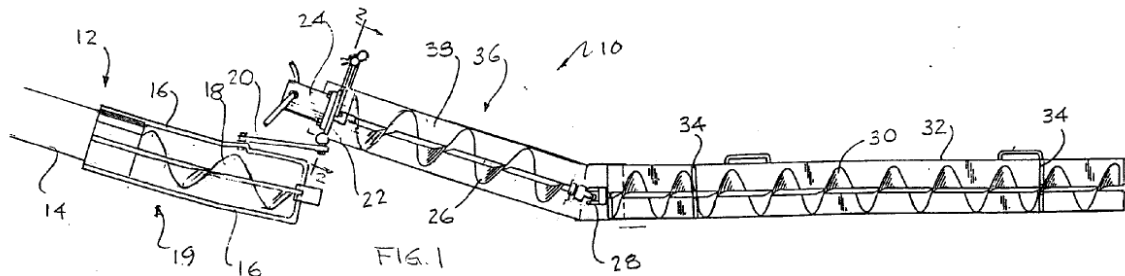


Figure 1 of Borowski shows bin sweep 10, including hydraulic motor 24, inner flying section 26, universal joint 28, outer flying section 30, backboard 32, and shield 38. Ex. 1019, 2:15–16, 2:24–25, 3:2–12.

Petitioner asserts that universal joint 28 couples inner flying section 26 to outer flying section 30, “allowing the sweep to ‘move up and down as necessary as the sweep progresses around the bin.’” Pet. 18 (quoting Ex. 1019, 2:4–6). Petitioner further asserts that shield 38 and backboard 32 are “coupled to ‘allow[] free, universal movement of the shield on the backboard so as to not restrain relative movements of the inner and outer [sweep] flying sections at the universal joint.’” *Id.* (quoting Ex. 1019, 4:1–4). In view of this, Petitioner asserts that “both the auger and its adjacent ‘casing’ (shield and backboard) are pivotally coupled.” *Id.*

Petitioner contends that Borowski would have motivated a person of ordinary skill in the art “to add one or more pivots along the length of *Dixon* as modified by *Berreau* (i.e., between the modular units of modified *Dixon*).” *Id.* Petitioner asserts that combining the teachings of the

references in this manner would result in a sweep system having the “pivot unit” of claim 1, elaborating that

at least one of the at least two units of the *Dixon/Berreau* sweep, e.g., an intermediate linking unit between the power and drive units (as suggested by *Berreau*’s intermediate unit 10 between its power and drive units 24 and 26, *see* EX. 1013, FIG. 3), would comprise a pivot unit configured to carry a portion of the succession of interconnected paddles, the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array (as where the pivot is added between the “subunits” of *Berreau*’s intermediate unit, *see* EX. 1013, FIG. 4), the pivot unit including a pivot structure positioned between and connecting the sections to permit pivoting of a first section with respect to a second section and thereby to permit a degree of pivotability of the unit longitudinal axes of the adjacent units with respect to each other in the array of units of the sweep assembly. Thus, all features of claim 1 are met by the *Dixon/Berreau/Borowski* sweep.

Id. at 19–20.

Patent Owner argues that Petitioner has not demonstrated adequately how the cited prior art references allegedly would have rendered obvious all of the various details that the claimed “pivot unit” requires. PO Resp. 15–19. For example, Patent Owner contends that Petitioner has not demonstrated that the asserted references, in combination, teach a pivot unit “configured to carry a portion of the succession of interconnected paddles.”

Id. at 16–17.

In response, Petitioner does not assert that any of the disclosed references teaches a “pivot unit configured to carry a portion of the succession of interconnected paddles.” Rather, Petitioner asserts that combining certain features of the different references would produce such a pivot unit. Specifically, Petitioner reiterates that it would have been obvious

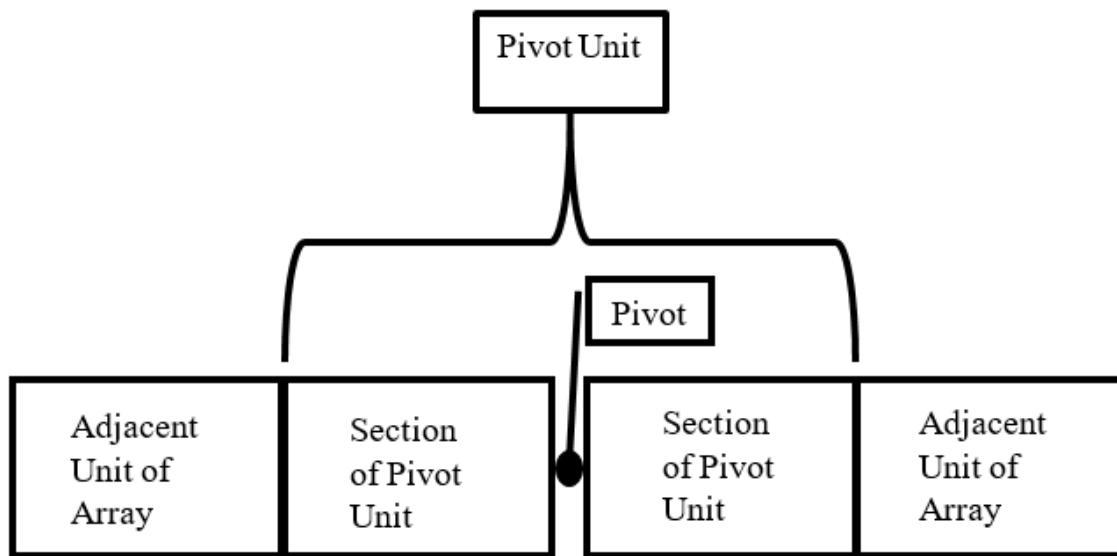
in view of Berreau to modularize Dixon's bin sweep (Pet. Reply 6–8), and that it would have been obvious in view of Borowski to add one or more pivots between modules (*id.* at 8–10). Petitioner asserts:

With this modification, the *Dixon/Berreau/Borowski* sweep would have the pivot unit of claim 1: at least one of the at least two units of the *Dixon/Berreau* sweep, e.g., an intermediate linking unit between the power and drive units (as suggested by *Berreau's* intermediate unit 10 between its power and drive units 24 and 26, FIG.3), would comprise a pivot unit configured to carry a portion of the succession of interconnected paddles, the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array (as where the pivot is added between the “subunits” 30a/46a/46b/46c and 30b/46d/46e/46f of *Berreau's* intermediate unit, FIG.4), the pivot unit including a pivot structure positioned between and connecting the sections to permit pivoting of a first section with respect to a second section and thereby to permit a degree of pivotability of the unit longitudinal axes of the adjacent units with respect to each other in the array of units of the sweep assembly. Thus, all features of claim 1 are met by the *Dixon/Berreau/Borowski* sweep.

Id. at 10.

Claim 1 recites “the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array.”

Ex. 1001, 11:9–11. For illustration, we provide below a drawing that schematically shows such an arrangement.



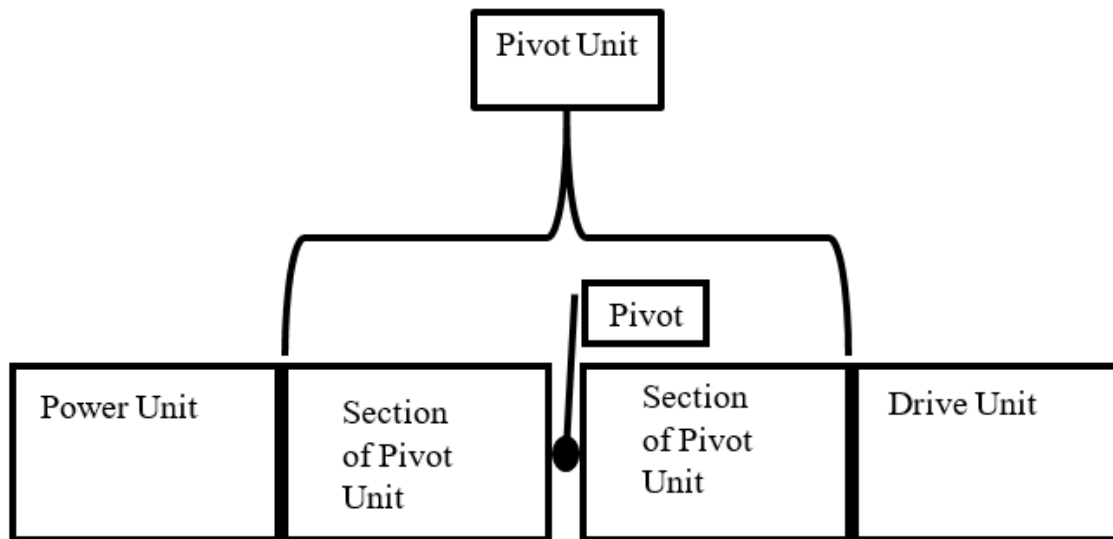
The drawing above shows a pivot unit that includes two sections connected to one another, with each section also connected to an adjacent unit of the array.

Petitioner contends that such a configuration would have been obvious. Specifically, Petitioner argues that it would have been obvious to “construct the *Dixon* sweep from modular units, including a power unit, a drive unit, and intermediate linking units” (Pet. 17), and to include a pivot between two sections in such a position that

an intermediate linking unit between the power and drive units (as suggested by *Berreau*’s intermediate unit 10 between its power and drive units 24 and 26, see EX. 1013, FIG. 3), would comprise a pivot unit configured to carry a portion of the succession of interconnected paddles, the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array (as where the pivot is added between the ‘subunits’ of *Berreau*’s intermediate unit, see Ex. 1013, Fig. 4).

Id. at 19–20. Thus, following Petitioner’s reasoning as we understand it, Petitioner indicates that it would have been obvious to modify *Dixon*’s

sweep into modular units, including a pivot unit in the intermediate portion. For illustrative purposes, we provide below a schematic drawing of such a configuration.⁷



The drawing above shows an array with a pivot unit in the intermediate portion of the array, the pivot unit including a pivot structure connected between two sections, which are connected to the drive unit and power unit, respectively.

Assuming, *arguendo*, that it would have been obvious to modify Dixon's bin sweep into modules arranged in this manner, Petitioner has not explained how or why it would have been obvious for the pivot unit to "be configured to carry a portion of the succession of interconnected paddles," as recited in claim 1. Dixon's Figure 4 is reproduced below.

⁷ If the configuration we show schematically is not what Petitioner intended, then we determine that Petitioner has not provided a sufficiently clear explanation of what the allegedly obvious configuration would have been to support sufficiently its obviousness contentions.

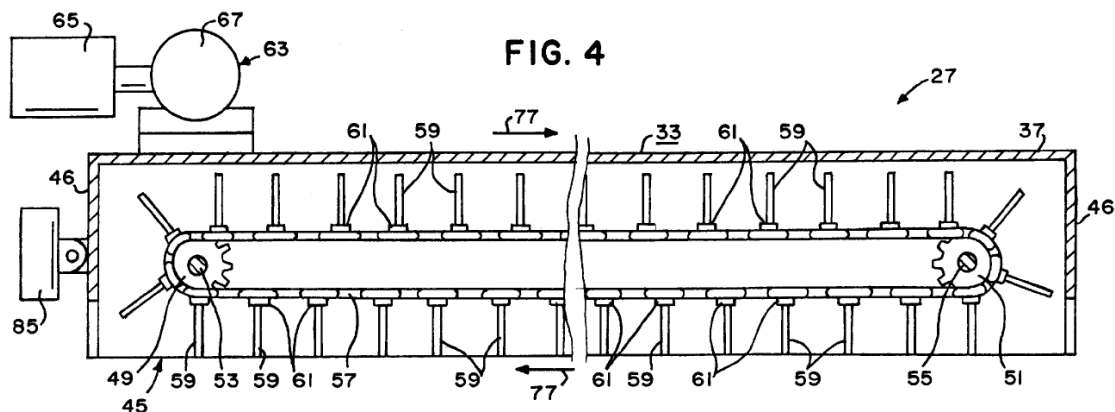
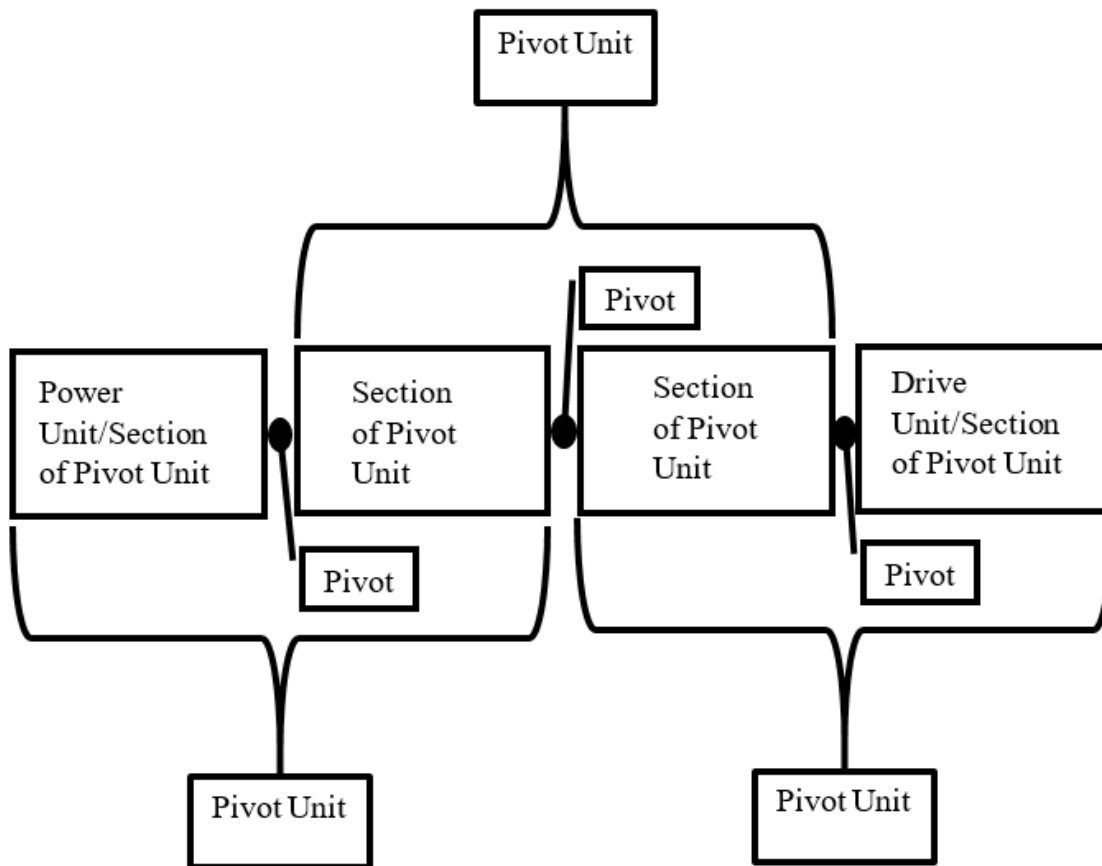


Figure 4 provides a cross-sectional view of Dixon's sweep conveyor 27. Ex. 1007, 2:10–12, 2:38–45. Sprockets 49, 51 at the ends of Dixon's sweep conveyor 27 carry (i.e., support) roller chain 57 and paddles 59. *Id.* at Fig. 4, 2:64–3:1, 3:16–22.

Petitioner does not provide evidence or explanation demonstrating that the intermediate portion of Dixon's sweep conveyor 27 carries, to any extent, roller chain 57 or the succession of paddles 59. Accordingly, Petitioner has not shown that making the intermediate portion of Dixon's sweep a modular pivot unit (as Petitioner suggests would have been obvious) would produce a pivot unit “configured to carry a portion of the succession of interconnected paddles.” And Petitioner provides no reasoning or evidence persuading us that it would have been obvious, in addition to making Dixon's intermediate portion a pivot unit, to further modify the intermediate portion to carry a portion of the succession of interconnected paddles. Thus, Petitioner's assertion that it would have been obvious to make the intermediate portion of Dixon's sweep a modular pivot unit fails to demonstrate obviousness of all of the limitations of claim 1.

Petitioner presents arguments that it would have been obvious also to include pivots in other locations, but these arguments also fail to

demonstrate that the asserted references, in combination, teach all of the limitations of the claimed “pivot unit.” Specifically, Petitioner asserts that it also would have been obvious to add pivots between the intermediate unit and one or both of the end units, i.e., the power unit and drive unit. Pet. 18–19. Following Petitioner’s reasoning as we understand it, such a modification would apparently produce pivot units forming the ends of the linear array, as depicted in the drawing below.⁸



⁸ Again, if the configuration we show schematically is not what Petitioner intended, then Petitioner has not provided a sufficiently clear explanation of what the allegedly obvious configuration would have been to support sufficiently its obviousness contentions.

The drawing above shows an array with pivots included adjacent the power unit and the drive unit, as well as in the intermediate portion. Assuming, *arguendo*, that it would have been obvious to so modify Dixon's sweep conveyor 27 to have pivot units at the ends, Petitioner does not demonstrate that either of the pivot units at the ends would meet the limitation of claim 1 of "the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array," as required by claim 1. In particular, Petitioner does not present persuasive evidence that the proposed modification would result in either the power unit or the drive unit being connected to an adjacent unit of the array. Instead, the power unit and the drive unit each merely form one section of a "pair of connected sections" in a pivot unit, without further "being connected to an adjacent said unit of the array." Ex. 1001, 11:7–11. Thus, Petitioner's contention that it would have been obvious to include pivots adjacent the power unit and the drive unit also fails to demonstrate that all of the limitations of claim 1 would have been obvious.⁹

For the foregoing reasons, with claim 1 using "carry" according to its plain and ordinary meaning, Petitioner does not demonstrate obviousness of claim 1. Moreover, even if claim 1 used "carry" in a manner different from its plain and ordinary meaning, Petitioner has still failed to demonstrate obviousness of claim 1 by a preponderance of the evidence. In response to Patent Owner's assertion that Petitioner failed to explain how it would have

⁹ As to the pivot unit in the intermediate portion of this example, Petitioner still has not provided any explanation of how it would have been configured to carry a portion of the paddles, that is, support the weight of a portion of paddles.

been obvious for the pivot unit to be configured to carry a portion of the paddles (PO Resp. 16–17), Petitioner does not waive from its position that the term “carry” has any meaning other than its plain and ordinary (see Pet. 11–12). Nor and does Petitioner offer persuasive evidence of how the allegedly obvious modifications would result in the claimed invention. Instead, Petitioner responds with nothing more than the conclusory assertion that modularizing Dixon’s sweep and adding a pivot would result in a pivot unit configured to carry a portion of the paddles. Pet. Reply 9–11. Petitioner cites no expert testimony to support this proposition. *See id.*; *see also* Pet. 19–20 (presenting substantially same proposition without citing expert testimony). The proposition presented by Petitioner cannot stand on the conclusory assertion Petitioner offers.

Regarding dependent claims 2–4 and 6–11, Petitioner’s assertions do not cure the foregoing deficiencies in Petitioner’s contention that independent claim 1 would have been obvious. With respect to claim 4, for example, Petitioner asserts that it would have been obvious “to provide a pivot on the drive unit of the *Dixon/Berreau/Borowski* sweep discussed above with respect to claim 1 above, e.g., between the outer drive unit and an adjacent intermediate linking unit.” Pet. 21. Here again, Petitioner does not provide evidence or explanation of how the allegedly obvious modification would have resulted in “a pivot unit configured to carry a portion of the succession of interconnected paddles, the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array,” as required by claim 1 (and thus, claim 4). For example, in view of Petitioner identifying Dixon’s “drive unit” as being at outboard sweep end 37, Petitioner does not explain how including the

drive unit as part of the pivot unit would result in the pivot unit including a pair of connected sections with each section being connected to an adjacent said unit of the array.

For the foregoing reasons, Petitioner has not demonstrated by a preponderance of the evidence that claims 1–4 and 6–11 would have been obvious over Dixon, Berreau, and Borowski.

C. Alleged Obviousness of Claim 5 over Dixon, Berreau, Borowski, and Vander Schaaf

Petitioner’s assertions regarding claim 5, which depends from claim 1, do not cure the above-described deficiencies in its assertions that claim 1 would have been obvious. Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claim 5 would have been obvious.

D. Alleged Obviousness of Claims 12–28 over Dixon, Berreau, Borowski, and Sudenga

Petitioner’s assertions regarding claims 12–28, which depend from claim 1, do not cure the above-described deficiencies in its assertions that claim 1 would have been obvious. Accordingly, Petitioner has not demonstrated by a preponderance of the evidence that claims 12–28 would have been obvious.

III. CONCLUSION

Having evaluated the Petition, its underlying supporting evidence, Patent Owner’s Response, and Petitioner’s Reply we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–4 and 6–11 are unpatentable based on Dixon, Berreau, and Borowski, that claim 5 is unpatentable based on Dixon, Berreau, Borowski, and Vander

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Schaaf, or that claims 12–28 are unpatentable based on Dixon, Berreau, Borowski, and Sudenga.

IV. ORDERS

After due consideration of the record before us, it is:

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1–28 of the '937 patent are unpatentable;

FURTHER ORDERED that this is a Final Written Decision under 35 U.S.C. § 318(a), and that parties to the proceeding seeking judicial review of the decision under 35 U.S.C. § 319 must comply with the notice and service requirements of 37 C.F.R. § 90.2

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