

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Kubota North America Corporation,
Petitioner

IPR2025-00171
U.S. Patent No. 10,202,266

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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PETITIONER’S EXHIBIT LIST

EX1001	Vermeer Patent U.S. Patent No. 10,202,266 (the “’266 Patent”)
EX1002	Vermeer Patent Prosecution History Prosecution History of U.S. Patent No. 10,202,266
EX1003	Declaration of Steven Velinsky under 37 C.F.R. § 1.68
EX1004	Appendix A to Declaration of Steven Velinsky
EX1005	Korean Patent No. 10-1041996 including original Korean language document, certified English translation, and certification of translation (“KR996”)
EX1006	JP2004017705A including original Japanese language document, certified English translation, and certification of translation (“JP705”)
EX1007	U.S. Patent No. 6,397,967 (“McIlwraith”)
EX1008	U.S. Patent No. 3,586,195 (“Beltrami”)
EX1009	U.S. Patent No. 6,695,568 (“Bares ’568”)
EX1010	U.S. Patent No. 6,832,659 (“Bares”)
EX1011	JPH 11140900 to Komatsu (“Komatsu”)
EX1012	U.S. Patent No. 6,474,933 (“Hoechst”)
EX1013	U.S. Patent Application Publication No. 2008/0197588 to Azure (“Azure”)
EX1014	Korean Patent No. 10-1023528 including original Korean language document, certified translation, and certification (“KR528”)
EX1015	SAE International J2752 JUN2010 (“SAE J2752”), Surface Vehicle

	Recommended Practice, Personal Protection – Compact Tool Carriers
EX1016	International Organization for Standardization (ISO) 6165 (2012)
EX1017	International Organization for Standardization (ISO) 3457 (2003)
EX1018	Reserved
EX1019	Complaint, 4:24-cv-00799-P
EX1020	Claim Construction in Case No: 4-17-CV-76-CRW-HCA (Vermeer Corporation v. The Toro Company) (terminated)
EX1021	U.S. Patent Application Publication No. 2007/0128012 A1 (“Yamada”)
EX1022	U.S. Patent No. 8,545,163 (“Yasuda”)
EX1023	N. Sclater, et al., Mechanisms and Mechanical Devices Sourcebook, Fourth Edition, Table of Contents, Chapter 1, Chapter 5
EX1024	N. Nariman-Zadeh, et al., “Pareto optimal synthesis of four-bar mechanisms for path generation,” 26 March 2008
EX1025	Four-Bar Coupler-Point Curves, Chapter 6
EX1026	H Nolle, Linkage Coupler Curve Synthesis: A Historical Review – II. Developments after 1875*, 7 July 1973
EX1027	Wen-Tzong Lee, et al., “Developments in quantitative dimensional synthesis (1970-present): four-bar path and function generation” 2017
EX1028	Theory of Machines and Mechanisms, Shigley, J.E. and Uicker, J.J. Jr., McGraw Hill, 1980, Table of Contents, Chapter 1, Chapter 2
EX1029	Ex Parte Reexamination 90/014,269
EX1030	<i>Reserved</i>
EX1031	<i>Reserved</i>
EX1032	U.S. Patent Publication Appl. 2010/0168933 (“Rorabaugh”)
EX1033	U.S. Patent Publication Appl. 2009/0116943 (“Valere”)
EX1034	United States District Court – National Judicial Caseload Profile

EX1035	U.S. Patent No. 3,828,873 (“Oestmann”)
EX1036	<i>Curriculum Vitae</i> of Steven Velinsky

I. INTRODUCTION

Pursuant to 35 U.S.C. §§311, 314(a), and 37 C.F.R. §42.100, Kubota North America Corporation and Kubota Tractor Corporation (together “Petitioner”) respectfully request the Board review and cancel as unpatentable under 35 U.S.C. §103 claims 1-16 and 19-28 (all claims) (hereinafter, “Challenged Claims”) of U.S. Patent No. 10,202,266 (“the ’266 Patent,” EX1001).

The ’266 Patent describes a compact tool carrier for standing or walk-behind operation having a loader arm mounted to a mainframe using linkage(s) and an actuator. EX1001, 1:19-35, 4:21-43, FIGS. 1, 3. As shown below and confirmed in the Declaration of Dr. Velinsky (EX1003, *see also* EX1036), this configuration of a compact tool carrier was already known. The references presented in this Petition render obvious the Challenged Claims.

II. GROUNDS FOR STANDING

Petitioner certifies that the ’266 Patent is eligible for IPR and that Petitioner is not barred or estopped from requesting IPR challenging the patent claims. 37 C.F.R. §42.104(a).

III. NOTE

Petitioner cites to exhibits’ original page numbers except for non-English documents for which the certified translation is cited. **Emphasis** in quoted material has been added. Claim terms are generally presented in *italics*.

IV. BACKGROUND

The '266 Patent relates to earth-moving machinery and particularly to a compact tool carrier that was well-known as of the earliest claimed priority date. This section describes background technology related to the claimed subject matter predating the '266 Patent, supported by Dr. Velinsky's declaration. *See* EX1003, ¶¶7-39.

The '266 Patent is titled "Low Profile Compact Tool Carriers," which it continues to describe as tool-mounted machines capable of working in tight spaces for utility or do-it-yourself home projects. EX1001, Title, 1:21-23. Compact tool carriers are "self-propelled crawler[s] or wheeled machine[s] having an operating mass of less than 1500 kg with a rigid frame, having either a [pedestrian operating] position or standing operator platform at the rear of the machine and either front-mounted interchangeable equipment or lift arms with an attachment bracket capable of coupling to interchangeable, front-mounted attachments." EX1001, 1:25-33 (citing SAE Standard J2752 [EX1015]). A compact tool carrier may also be referred to as a compact utility loader (CUL) or mini-skid steer. EX1003, ¶¶29-30; EX1029, p. 148.

As Patent Owner has recognized, there are generally two conventional loader configurations: a vertical lift loader and a radial lift loader. EX1003, ¶¶31-39; EX1029, pp. 421, 293, 184, 150. Each of these loader configurations was known

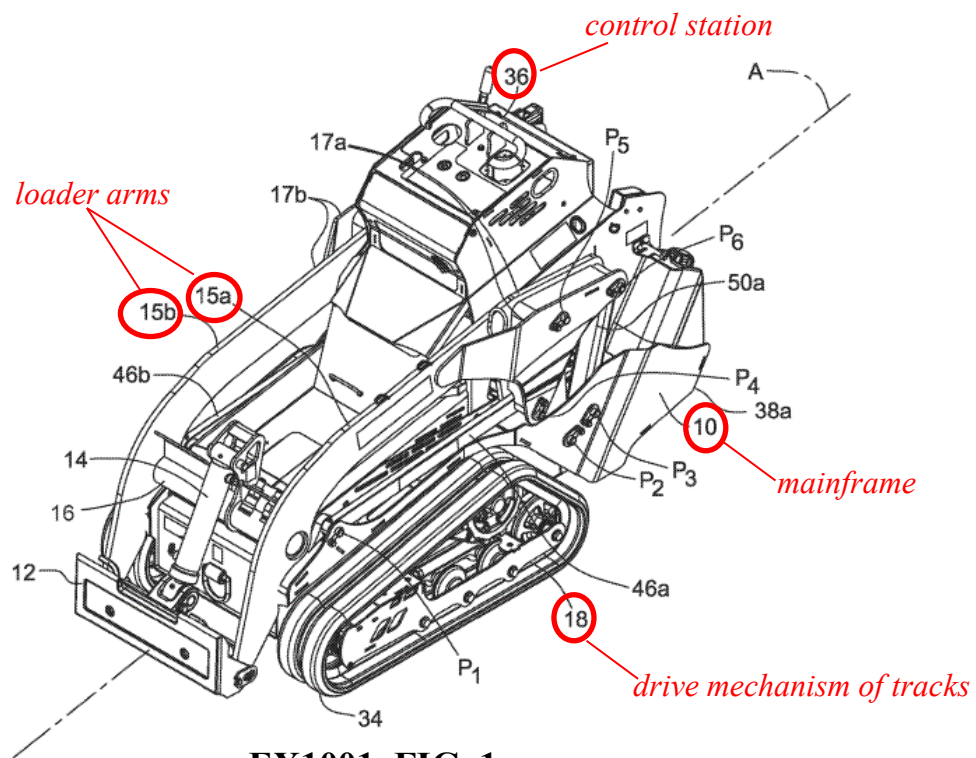
well-before the '266 Patent and are based on basic engineering mechanisms. EX1029, pp. 148-149. Radial lift loaders implement a two-bar mechanism where the loader arm is attached to a frame by a direct pivot connection. EX1003, ¶¶31-32 citing EX1008, FIG. 1; EX1009. The vertical lift loader attaches the loader arm to a frame indirectly through intermediary parts of linkages and an actuator configured in a four-bar mechanism. EX1003, ¶¶33-39 citing EX1025-EX1028 textbooks discussing mechanisms, EX1024 discussing synthesis, and EX1001, EX1005, EX1008, EX1014 illustrating vertical lift; EX1029, pp. 148-149.

V. SUMMARY OF THE '266 PATENT

The '266 Patent issued February 12, 2019, and was subject to an *ex parte* reexamination proceeding resulting in the '266 Patent having claims 1-16 and 19-28. The '266 Patent claims priority to USP 9,975,750 and USP 9,321,386 (“the '386 Patent”); patents which the Petitioner has also requested *inter partes* review.

The '266 Patent relates to a compact tool carrier having a loader (with two arms) designed for operation by an operator standing at the rear of the carrier. EX1001, 1:21-25. In its background, the '266 Patent asserts such compact tool carriers “may be distinguished from much larger conventional skid steers in which an operator is seated in the operating position.” EX1001, 1:36-40. A tool such as a bucket or auger may be provided as a front-mounted attachment. EX1001, 1:33-36.

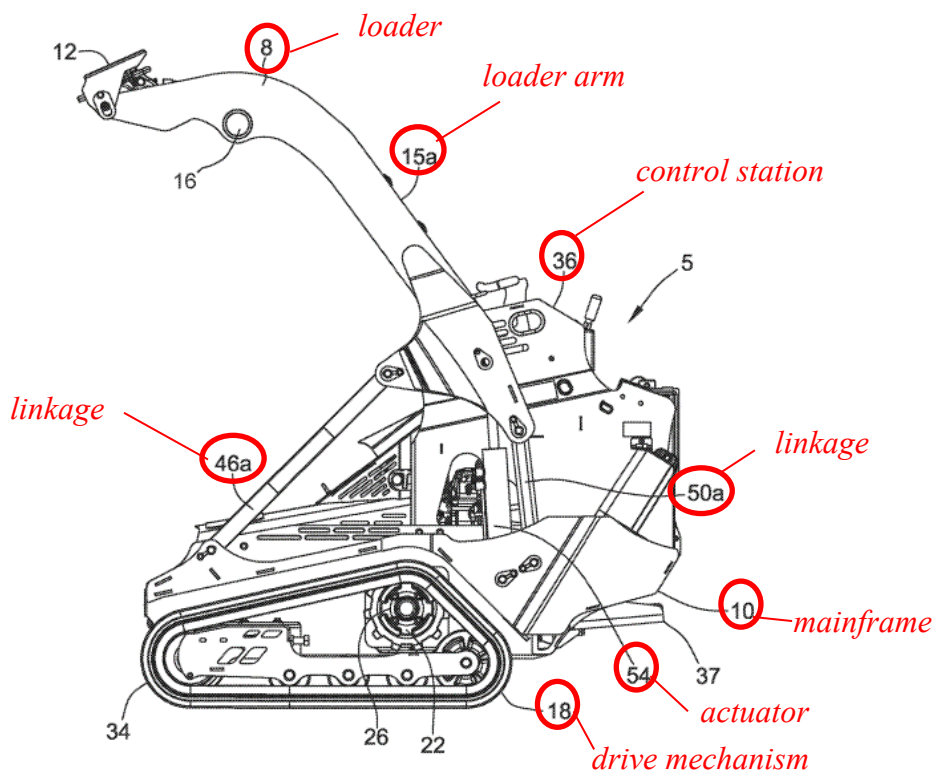
FIGS. 1 and 3 are illustrative of a compact tool carrier 5 including loader 8 having loader arms 15a, 15b and supported by mainframe 10. EX1001, 2:46-56. A drive mechanism 18 is attached to the mainframe 10 and may include tracks 34 or wheels. EX1001, 3:21-31. A control station 36 provides controls for the operator. EX1001, 3:32-39, 4:8-10.



EX1001, FIG. 1
(annotated)

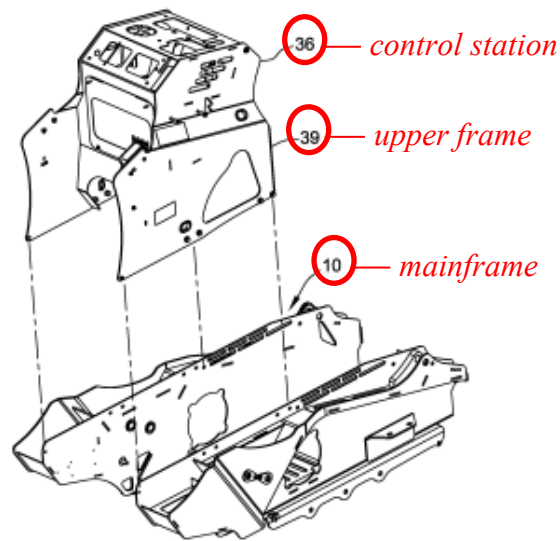
The first loader arm 15a is pivotally connected to a first side 38a of mainframe 10 and the second loader arm 15b is pivotally connected to a second side of mainframe 10. EX1001, 4:21-24. Each loader arm is attached to a respective side of the mainframe by linkages 46a/50a and an actuator 54 (e.g., a hydraulic cylinder).

EX1001, 4:24-54. Dr. Velinsky confirms this configuration was known to Persons of Ordinary Skill in The Art (POSITA) as a vertical lift loader based on a four-bar mechanism providing a path generation of the motion of the tool attachment plate 12. EX1003, ¶¶40-43. FIG. 1 above is illustrative of the carrier with the loader in a down position; FIG. 3 below is illustrative of the carrier with the loader in a raised position. EX1001, 2:28-33.



**EX1001, FIG. 3
(annotated)**

FIG. 7 is a perspective view of a mainframe 10 and an upper frame 39, which has a control station 36 attached to the upper frame 39. EX001, 3:64-66.



**EX1001, FIG. 7
(annotated)**

VI. PROSECUTION HISTORY

A. Original Prosecution

By preliminary amendment, applicant added text to the specification introducing the term “barrier guard,” a term not in the as-filed specification, indicating its support was from the incorporation by reference of industry standard SAE J2752 (EX1015). EX1002, pp. 120-122.

In a first action the Examiner rejected some claims over (U.S. Patent No. 3,074,572, “Ulinski”) in view of Bares ’568 (EX1009) or Ulinski alone, while indicating allowable subject matter. EX1002, pp. 52-54. In response, Applicant incorporated the allowable matter, illustrated by prosecution claim 23, which issued as claim 19:

23. (Currently amended) A loader apparatus for standing or walk-behind operator control and comprising:

a machine structure comprising a mainframe and an upper frame, the machine structure defining a barrier guard;

a control station having operator controls toward a rear of the loader apparatus;

an actuator pivotally attached to the mainframe;

a front linkage pivotally attached to the mainframe;

a rear linkage pivotally attached to the mainframe; and

a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position, the front linkage being pivotally attached to the loader at a front linkage pivot point, the rear linkage being pivotally attached to the loader at a rear linkage pivot point, wherein: [[,]]

in the down position, the front linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard; and

as the loader travels from the down position to the vertically raised position, the rear linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

EX1002, pp. 41-42

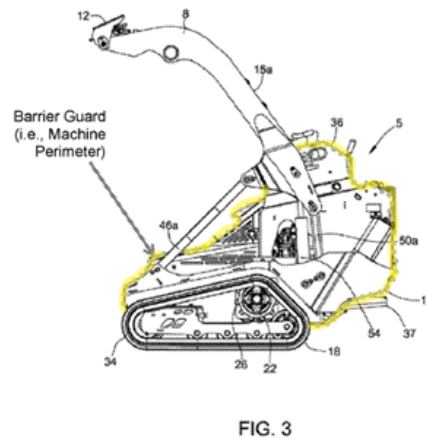
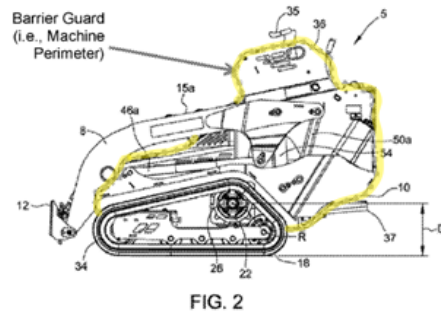
A Notice of Allowance subsequently issued and did not include a reason for allowance. EX1002, pp. 3-7.

B. Reexamination Proceeding (90/014,148)

The claims went through a series of rejections (and several newly introduced claims were ultimately canceled by Patent Owner), but independent claim 1 was confirmed and independent claims 7, 14, 19, and 25 were amended to include no

seat or recite the pivot point attachments (and their locations) and found patentable.

During the reexamination, a priority dispute arose for claims reciting a “barrier guard.” Patent Owner contended priority was fully supported by the ’266 Patent’s FIGS. 2 and 3 as annotated in that proceeding by Patent Owner:



EX1029, p. 242
(annotation in original, highlighting added)

The Examiner continued to find a lack of support for certain limitations related to the barrier guard and pivot point locations (including those similar to claims 19 and 25), but did not reject others. EX1029, pp. 29-30.¹

¹ Support for the claims is not a subject of this petition.

Claims were also rejected over a framework of modifying a compact loader apparatus to replace its radial lift with a vertical lift disclosed on a larger skid steer equipment. EX1029, pp. 336-338. The Examiner withdrew the rejection based on Patent Owner's evidence of the development process and statements of Toro, third party requester, with respect to placing a vertical lift on a compact loader. EX1002, pp. 146-152.

C. Previously Alleged Secondary Considerations

Patent Owner has, during the previous *ex parte* proceeding(s), entered evidence supporting secondary considerations of the '266 Patent including its claim 1. Such evidence carries little weight in this *inter partes* proceeding. **First**, such factors must be assessed anew in light of this entirely different obviousness framework, which in context of the scope of claim 1, illustrates KR996 teaches or suggests all elements. **Second**, Patent Owner's evidence relates entirely to the alleged non-obviousness of replacing a radial lift mechanism of a compact tool carrier with a vertical lift mechanism. A vertical lift mechanism on a compact tool carrier was known in the art as shown here by KR996. And "case law makes clear that 'objective evidence of nonobviousness **lacks a nexus** if it exclusively relates to a feature that was 'known in the prior art'[.]'" *See Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1364 (Fed. Cir. 2023) citing *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013). For example, "if the feature that creates the commercial success

was known in the prior art, the success is not pertinent.” *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1312. **Third**, Vermeer’s evidence should not be given substantial weight as it suffers from numerous deficiencies including reliance on declarations from interested parties (i.e., inventor of the ’266 Patent alleges long-felt need and skepticism); alleged praise based on Patent Owner’s presentation of its loader as the first to provide vertical lift, which it was not; statements particular to a third-party Toro and its development process that have no relevance here; reliance on performance data limited to one vertical lift mechanism in comparison with one radial lift mechanism, which merely recognizes a predictable different lift path.² **Finally**, secondary considerations, even if they do exist, would not overcome the clear obviousness shown here. *See Genentech, Inc. v. Sandoz, Inc.*, 55 F.4th 1368, 1378 (Fed. Cir. 2022).

VII. EFFECTIVE PRIORITY DATE OF THE ’266 PATENT

The ’266 Patent claims priority through a chain of continuations to a provisional application filed on February 20, 2015. Determining whether the ’266

² “To be particularly probative, evidence of unexpected results must establish that there is a difference between the results obtained and those of the closest prior art, and that the difference would not have been expected [by POSITA].” *Bristol-Myers Squibb Co. v. Teva Pharms. USA, Inc.*, 752 F.3d 967, 977 (Fed. Cir. 2017).

Patent is entitled to an earlier priority date is unnecessary in this proceeding, however, as all of the cited and relied-upon prior art predates the earliest claimed date. Accordingly, Petitioner has not undertaken a priority date analysis and does not waive any right or opportunity to dispute the priority date in this or another forum where relevant.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

POSITA in February 2015 (the earliest effective filing date claimed in the '266 Patent) would have had at least a Bachelor of Science degree in Mechanical or Agricultural Engineering and two years of experience in the design of vehicles, or have had equivalent knowledge and experience. Lack of professional experience can be remedied by additional education, and vice versa. EX1003, ¶¶17-20, 52.

IX. CLAIM CONSTRUCTION

Claim terms in IPR are construed according to their “ordinary and customary meaning” to those of skill in the art. 37 C.F.R. §42.100(b). EX1003, ¶53.

Independent Claims 19 and 25 recites a “barrier guard”: The '266 Patent states, “[t]he upper frame 39 and mainframe 10 define the machine structure around the operator’s area, wherein the perimeter of the machine structure...forms a barrier guard.” EX1001, 3:64-4:4, *see also*, 4:30-34 (“barrier guard of the perimeter of the

machine structure.”)³ During the prosecution, Patent Owner annotated a perimeter of the machine structure designating it a “barrier guard.” EX1029, p. 243. *See also*, EX1020, p. 5 where Patent Owner proposed this construction, which was adopted by that court. Thus, Petitioner applies a construction of a “barrier guard” as *a perimeter of the machine structure* for the purposes of this proceeding. EX1003, ¶¶45-53.

Petitioner submits, for the purposes of this proceeding and the grounds presented herein, no other claim term requires express construction.⁴ *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

³ The ’266 Patent describes a perimeter of the machine structure as “defined by the projection of the profile onto a vertical plane passing through the longitudinal axis,” without limiting the location or orientation of this “vertical plane.” EX1001, 4:1-4.

⁴ A district court previously discussed construction of certain claim terms in the ’266 Patent. *See* EX1020. Petitioner was not a party to that case, and the case involved different points of dispute from this IPR proceeding. Petitioner reserves its rights to: (1) respond to assertions by Patent Owner that any claim term requires construction for the purposes of this IPR proceeding; and (2) seek construction of any claim term in other forums as appropriate.

X. RELIEF REQUESTED AND THE REASONS FOR THE REQUESTED RELIEF

Petitioner asks that the Board institute a trial for *inter partes* review and cancel claims 1-16 and 19-28⁵ (all claims) of the '266 Patent in view of the analysis below.

A. Prior Art Patents and Printed Publications

The following references are pertinent to the grounds of unpatentability explained below:

1. KR 10-1041996 (“KR996”)(EX1005); stemming from Korean Application 10-2009-0033050, which was published as 10-1041996 on June 16, 2011 (and published as 10-2009-0110253 in October 2009); prior art under 35 U.S.C. §102(a)(1).
2. U.S. Patent No. 6,832,659 (“Bares”) (EX1010); filed October 30, 2002 and issued December 21, 2004; prior art under 35 U.S.C. §102(a)(1).
3. U.S. Patent No. 3,586,195 (“Beltrami”) (EX1008); filed December 23, 1968; issued June 22, 1971; prior art under 35 U.S.C. §102(a)(1).

KR996 was not considered nor cited during prosecution of the '266 Patent. Beltrami was cited, but not discussed; Bares was not cited but shares some disclosure with Bares '568, which was discussed, Bares is used as a secondary reference to show

⁵ Claims 17 and 18 were canceled by reexamination certificate.

conventional features.

B. Statutory Grounds for Challenges

This Petition, supported by the declaration of Dr. Velinsky (EX1003) (*see also* Appendix A of Declaration at EX1004), requests cancellation of claims 1-16 and 19-28 under the following Grounds:

Grounds	Claims	Basis
#1	1-7, 10-13, and 28	35 U.S.C. §§102/103 over KR996
#2	8-9	35 U.S.C. §103 over KR996 and Bares
#3	14-16, 19-27	35 U.S.C. §103 over KR996, Bares, and Beltrami

Petitioner’s §103 obviousness grounds rely on the combined teachings of the references and not on a physical incorporation of elements. *See in re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012). “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference[.]” *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (quoting *in re Keller*, 642 F.2d 413, 425 (C.C.P.A. 1981)). Instead, the question is whether “a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention[.]” *Id.* (quoting *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)). *See also, in re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (explaining that whether one reference can be incorporated in another is “basically

irrelevant” since the test for obviousness is “not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole”).

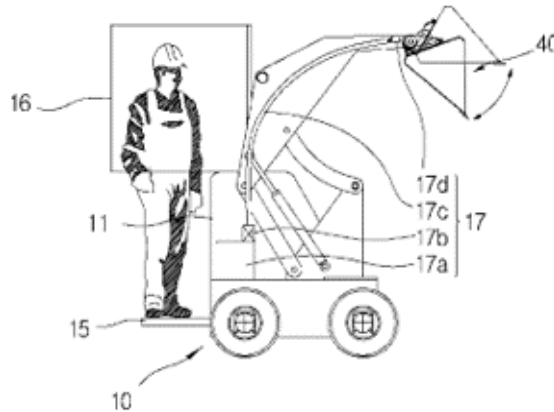
Petitioner also cites below to additional prior art as evidence of the background knowledge of POSITA and to provide contemporaneous context to support Petitioner’s assertions regarding what POSITA would have understood from the prior art in the grounds. *See Yeda Research v. Mylan Pharm. Inc.*, 906 F.3d 1031, 1041 (Fed. Cir. 2018) (affirming the use of “supporting evidence relied upon to support the challenge”); 37 C.F.R. §42.104(b).

C. Ground 1

1. KR996 (EX1005)

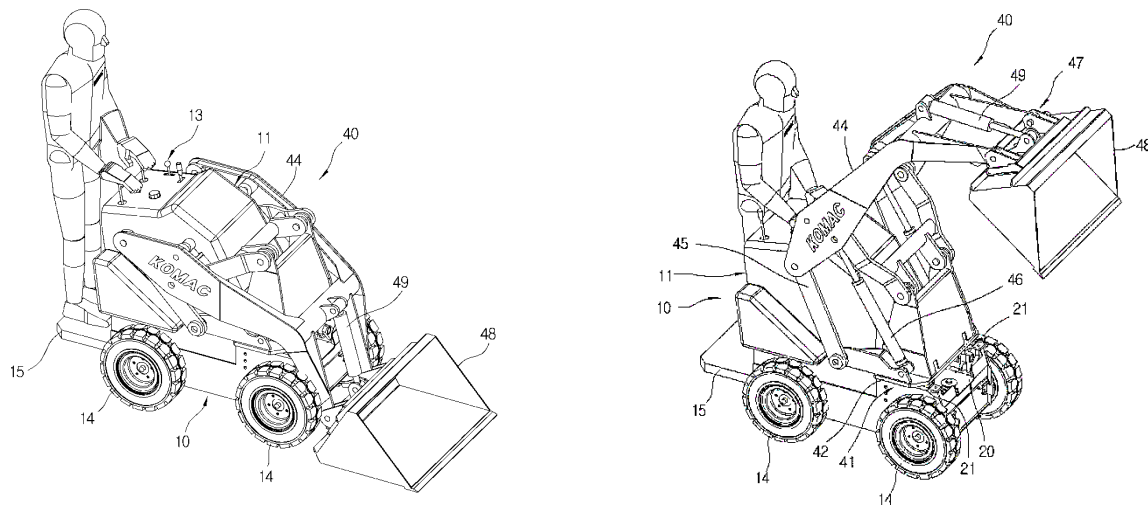
KR996 is entitled “Environmentally Friendly Construction Equipment for Building Deconstruction Work.” EX1005, (54). KR996 describes construction equipment that “can enter narrow buildings and carry out dismantling work inside the building” and “efficiently perform difficult tasks in narrow spaces, allowing for efficient operations such as building interior demolition, road maintenance, snow removal, and towing.” EX1005, [0001]-[0002]. In particular, KR996 provides a vehicle 10 to which a loader unit 40 or an arm unit 60 is attached. EX1005, [0041], Figs. 1-13, 21 illustrating loader unit 40 and Figs. 14-20, 22 illustrating arm unit 60. Fig. 21, reproduced below, illustrates a side elevation of the vehicle with loader unit

40 and including safety fence 16. EX1005, [0113]-[0114].



EX1005, Fig. 21

The vehicle 10 includes a control unit 13 for operating of the vehicle including the installed unit (here the loader unit 40) by an operator positioned on a folding safety step 15 at the rear of the vehicle. EX1005, [0042], [0049], [0072], Figs. 8-9. The loader 40 includes a boom 44 connected to the mainframe of the vehicle by intermediary parts—a link 45, a link (unlabeled), and a boom cylinder 46. *Id.* Fig. 8 and Fig. 9 are illustrative of the loader in low and raised positions, respectively.

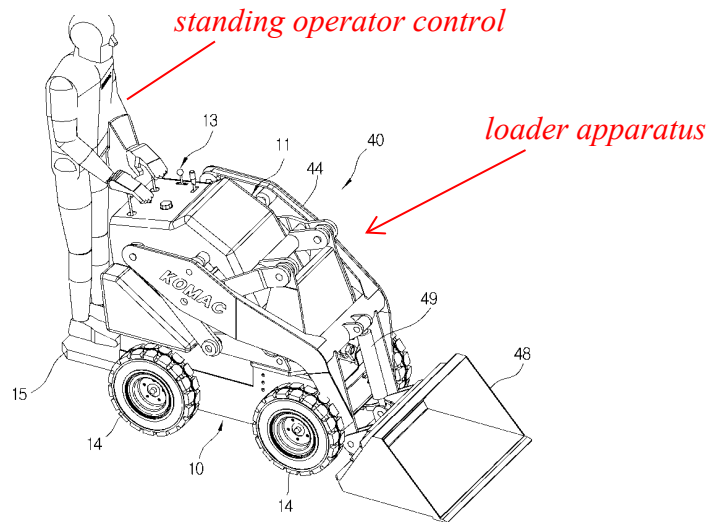


EX1005, Fig. 8 (portion), Fig. 9

2. Claim 1

[1.0] A loader apparatus configured for standing operator control and comprising:

To the extent the preamble is limiting, KR996 discloses or renders it obvious. EX1003, ¶¶54-60. As discussed above, KR996 describes a self-propelled (operator ride-on) vehicle (*a loader apparatus*) capable of carrying interchangeable equipment for building deconstruction work providing maneuverability in small spaces and having the functionality of a mini skid loader with an attachment of a bucket to a loader unit 40. EX1005, Abstract, [0001]-[0013]. KR996's apparatus is *configured for standing operator control* from safety step 15.



**EX1005, Fig. 8 (portion)
(annotated)**

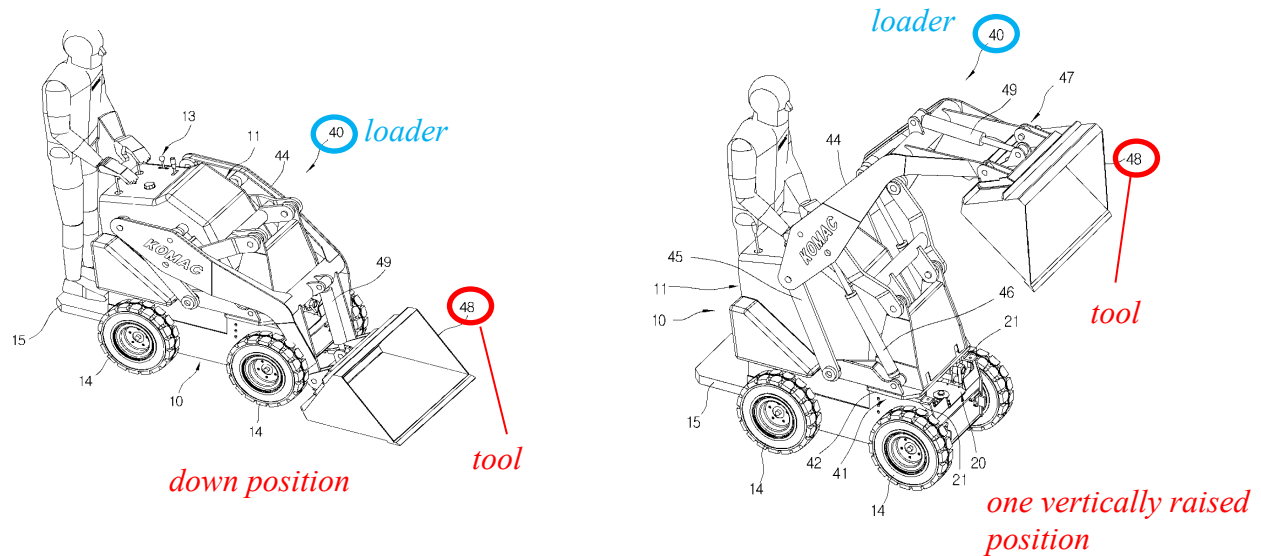
See also, EX1005, [003] (“foldable safety step...allowing the operator to board”), [0049]. This is the same configuration for operation control as provided in the ’266 Patent. EX1001, 3:39-44 (“As used herein, ‘**standing operation**’ generally refers to operation in which the operator **stands on a platform** attached to the compact tool carrier[.]”)

Thus, KR996’s vehicle provides the *loader apparatus*.

[1.1] a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position;

KR996 provides a loader including loader unit 40, which is *moveable between a down position* (e.g., Fig. 8) and a *vertically raised position* (e.g., Figs. 7, 9). EX1005, (57), [0016], [0036], [0040], [0054], [0131], Figs. 7-9. The loader unit 40

(loader) of KR996 is adapted to carry a bucket 48 (tool), which is attached the boom 44 of the loader unit 40. EX1005, claim 1, [0054], [0074], Figs. 8-9, 21; *see also*, EX1001, 1:25-35 (“tools such as buckets, augers...and the like.”)



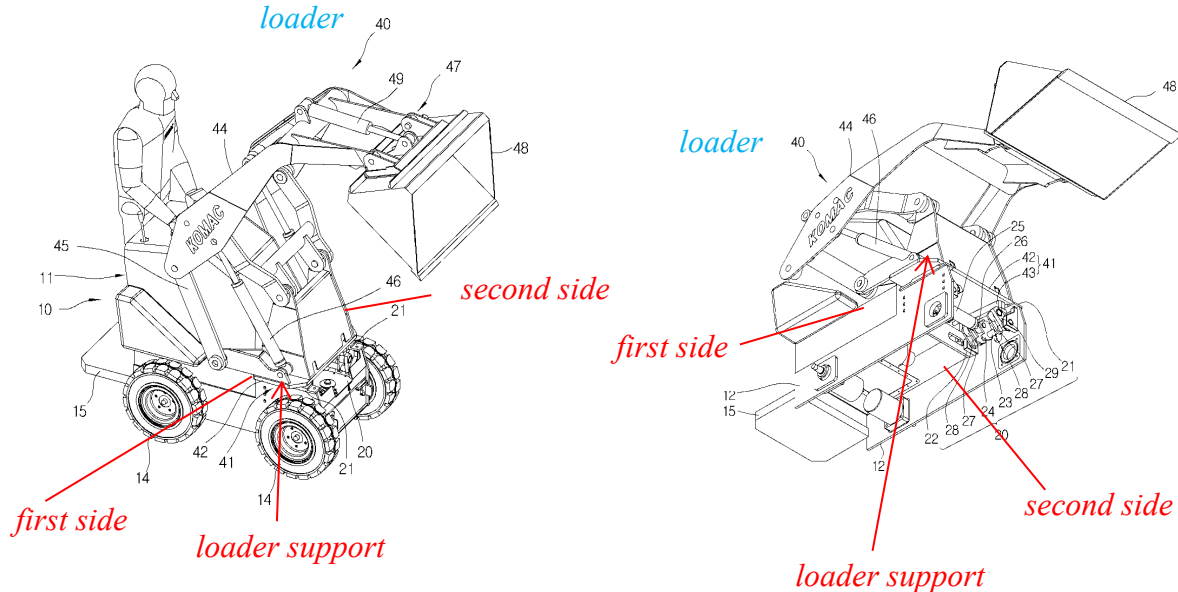
**EX1005, Fig. 8 (portion) and Fig. 9
(annotated)**

Thus, KR996 teaches [1.1]. EX1003, ¶¶61-63.

[1.2] a loader support for supporting the loader, the loader support having a first side and a second side, the loader being free from direct attachment to the loader support;

KR996’s vehicle includes a *loader support* having *first* and *second* side[s].

EX1003, ¶¶64-68; EX1005, Figs. 8-10.

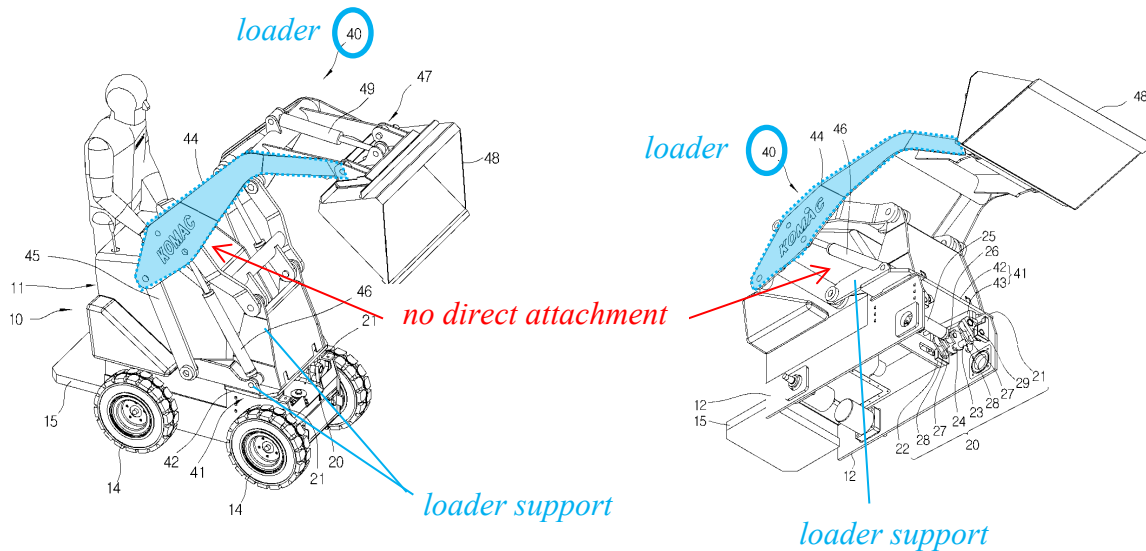


**EX1005, Figs. 9, 10
(annotated)**

KR996's loader support includes portions (brackets) to which the boom cylinder 48, link 45 attach to, portion of the lower frame where the forward link attaches, and/or other components that form a weight-bearing structure to support the loader and other features such as control station, drive mechanism. KR996's loader support is *for supporting the loader* as the loader unit 40 and its boom 44 are attached to the support by linkages and an actuator as discussed below.

KR996's loader is also *free from direct attachment to the loader support* as loader unit 40 and its boom 44 are attached to the loader support only through intermediary parts (links and a boom cylinder, discussed in [1.3]-[1.5]). This is the same configuration as the '266 Patent, which attaches a loader arm to a frame

through linkages and an actuator. EX1003, ¶66 citing EX1001, FIG. 3, 4:21-43.

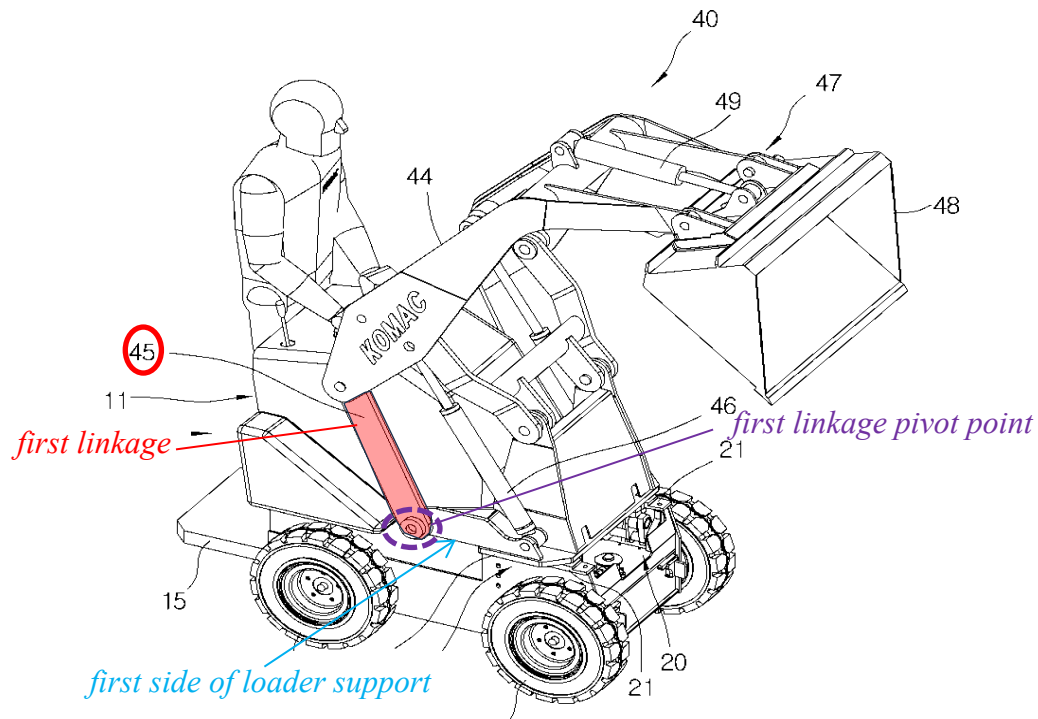


**EX1005, Figs. 9, 10
(annotated)**

Dr. Velinsky explains this is a feature of a four-bar mechanism. EX1003, ¶67 showing schematic illustrations. Thus, [1.2] is taught by KR996. EX1003, ¶¶64-68.

[1.3] a first linkage pivotally attached to the first side of the loader support at a first linkage pivot point;

KR996 illustrates a link 45 (*first linkage*) pivotally attached to the first side of the loader support at a first linkage pivot point. EX1005, Figs. 4-5, 7-10, 21, [0054] (“A boom (44) connected by a link (45)...”), [0134].



EX1005, Fig. 9
(annotated)

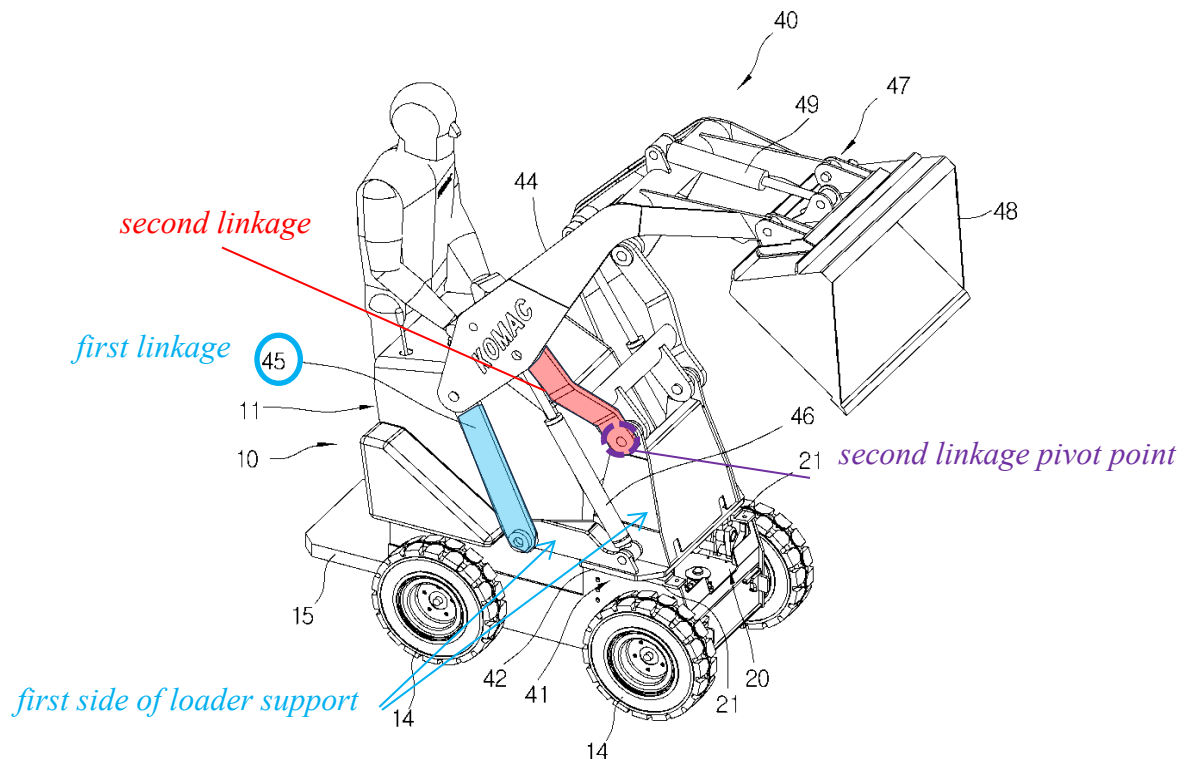
KR996 Figs. 8-9 illustrate the pivot point attachments connections as they show rotary motion of the joints at each end of the link. Dr. Velinsky confirms the nature of the attachment is pivotable to effectuate the raising and lowering of the boom 44 through the mechanism of the loader. EX1003, ¶¶71-73 citing EX1008, EX1023, EX1028 each discussing four-bar mechanism pivot attachments. This is consistent with '266 Patent's disclosure of a loader linkage (*e.g.*, 50*a*) pivotally attached to a bracket portion 40 on the first side of the mainframe 10 and pivotally attached to the loader arm. *See, e.g.*, EX1001, FIG. 3, 4:4-29. The portion of the vehicle to which the link 45 is directly attached is part of the *loader support* as it supports (*e.g.*,

provides weight-bearing frame for) the loader unit 40.

Thus, [1.3] is taught by KR996. EX1003, ¶¶69-74.

[1.4] a second linkage pivotally attached to the first side of the loader support at a second linkage pivot point;

KR996 illustrates another link (*second linkage*) pivotally attached to the first side of the loader support at a second linkage pivot point. EX1005, claim 1, [0054], [0134], Figs. 1-10.



**EX1005, Fig. 9
(annotated)**

KR996's Figs. 8-9 illustrate the *pivot* point as they show rotary motion of the joint.

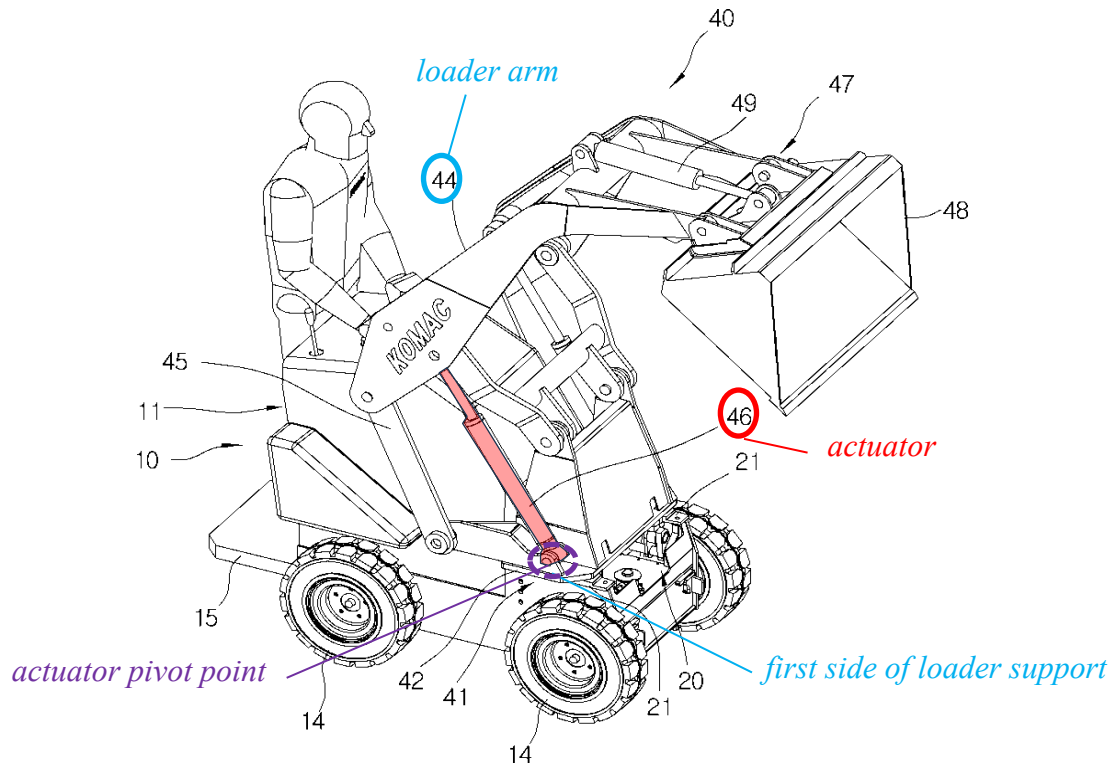
Dr. Velinsky confirms the link (*second linkage*) is *pivotably attached* to effectuate

the raising and lowering of the boom 44. EX1003, ¶77 citing EX1023, EX1028, EX1008 discussing four-bar mechanisms. As in [1.3], this is consistent with '266 Patent's disclosure of the attachment of its loader linkage. The portion of the frame to which the link attaches is part of the *loader support* as it provides a weight-bearing portion of the frame supporting the loader unit 40.

Thus, [1.4] is taught by KR996. EX1003, ¶¶75-79.

[1.5] *an actuator pivotally attached to the first side of the loader support at an actuator pivot point;*

KR996 describes a boom cylinder 46 (*actuator*) that drives the movement of boom 44, which is the arm of the loader unit 40. EX1005, [0054], *see also*, claim 1, [0134], Figs. 8-9, 21. The boom cylinder 46 (*actuator*) *is attached to the first side of the loader support at an actuator pivot point*. Fig. 9 below is illustrative:



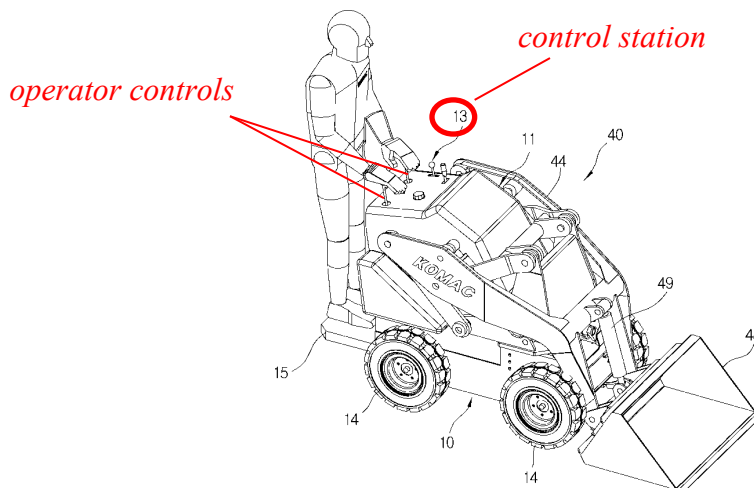
**EX1005, Fig. 9
(annotated)**

KR996's Figs. 8-9 illustrate the pivot point attachment as they show rotary motion of the joint as well as the joint at the opposing end of the actuator. Dr. Velinsky confirms the boom cylinder an *actuator* and is *pivotably attached* to effectuate the raising and lowering of the boom 44 in the loader mechanism of KR996. EX1003, ¶¶82-83 describing a cylinder being interchangeable with an actuator and discussing the pivotable connection of the actuator in a four-bar mechanism. The portion of the frame to which the boom cylinder 48 attaches is part of the *loader support* as it provides a weight-bearing portion of the frame supporting the loader unit 40.

Thus, [1.5] is taught by KR996. EX1003, ¶¶80-84.

[1.6] a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader; and

KR996 describes a control unit 13 (*control station*) to “operate the equipment while the worker is on board at the rear.” EX1005, [0042], Figs. 1, 8-9. The control unit 13 has *operator controls*. EX1005, Figs. 1, 8-9, 21. The *operator controls* are for *propelling the loader forward*, which is a standard movement of the vehicle in operation. EX1005, Abstract (“when the vehicle moves forward...”), [0016]-[0017], [0033] (“allowing the operator to board...when driving”), [0072], claim 1. The control unit 13 is also for *raising and lowering* the loader unit 40 (*loader*) including the boom 44. “When the loader unit (40) is coupled to the vehicle (10)...the control unit (13) of the vehicle (10) can be operated to **operate the loader unit (40)**.” EX1005, [0072].

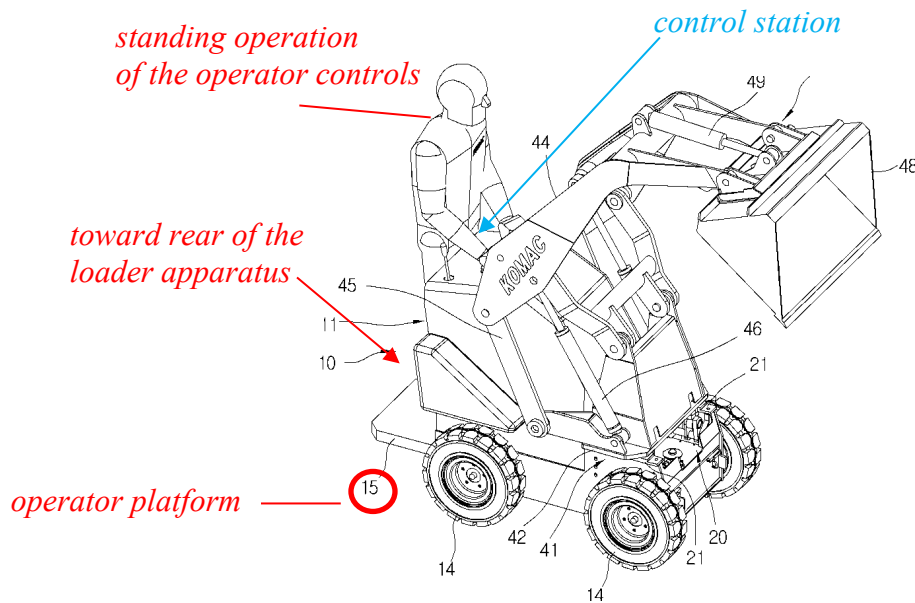


**EX1005, Fig. 8 (portion)
(annotated)**

Thus, [1.6] is taught by KR996. EX1003, ¶¶85-87.

[1.7] *an operator platform for standing operation of the operator controls of the control station, the operator platform being located toward a rear of the loader apparatus such that the first linkage pivot point, second linkage pivot point, and the actuator pivot point are disposed forward of the operator platform, the first linkage pivot point, second linkage pivot point, and the actuator pivot point being disposed below the operator controls of the control station.*

First, KR996 describes a safety step 15 (*operator platform*) for *standing operation of the operator controls* of the control unit 13 (*control station*). EX1005, Figs. 1-14, 21, [0033] (“a **foldable safety step** is installed on the lower rear part of the vehicle, allowing the **operator to board** and alight from the vehicle **when driving** and fold it towards the body of the vehicle when stopped.”), [0049], [0118]. The safety step 15 (*operator platform*) is *located toward a rear of the vehicle (loader apparatus)*.



EX1005, Fig. 9
(annotated)

Second, each of the *first linkage pivot point*, *second linkage pivot point*, and *actuator pivot point* ([1.3]-[1.5]) are *disposed forward* of the safety step 15 (*operator platform*). And these points are disposed *below the operator controls* of the control unit 13 (*control station*). Fig. 9 is illustrative of each:

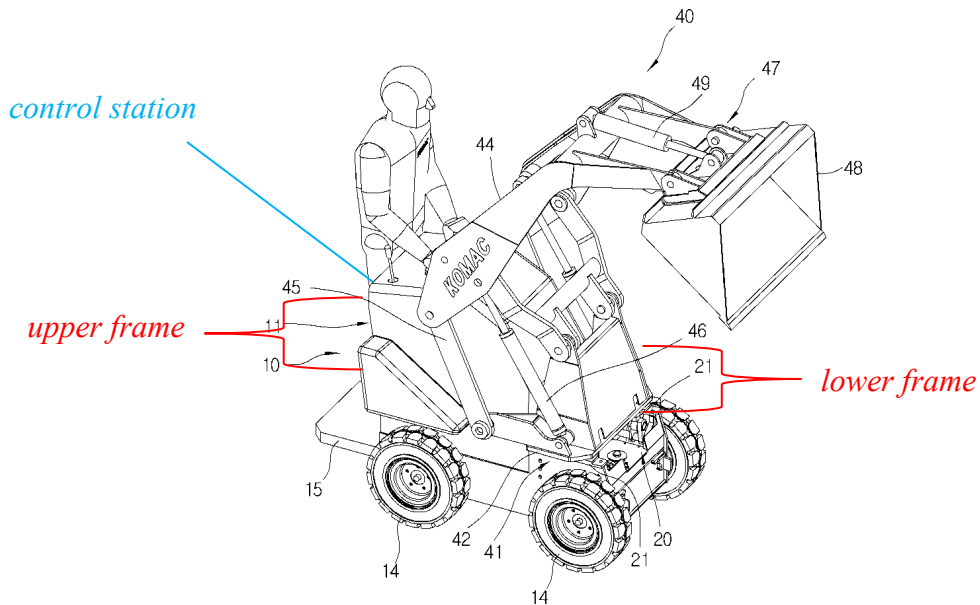
the attachment points low on the loader support to lower the center of gravity of the apparatus and reduce the frame requirements. EX1003, ¶91 referring to claim 14.

Thus, KR996 discloses or renders obvious [1.7] and claim 1 in its entirety. EX1003, ¶¶88-92.

3. Claim 2

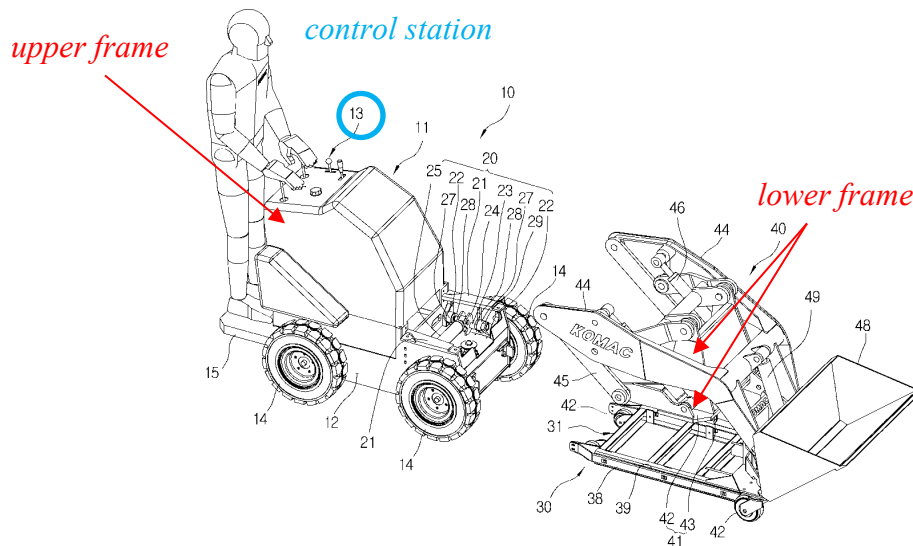
[2] *The loader apparatus as set forth in claim 1 wherein the loader support comprises a lower frame and an upper frame, the control station being mounted to the upper frame.*

KR996 teaches or renders obvious claim 1, and KR996's *loader support* also includes two portions of the frame. The control unit 13 (*control station*) is *mounted* on the main body 11, which forms at least part of the *upper frame*. EX1005, [0017] ("a control unit installed..."). The *lower frame* includes portions of the loader support where the linkages/actuator attach.



EX1005, Fig. 9
(annotated)

The '266 Patent does not use the term “lower frame” in the specification and merely illustrates in FIG. 7, an upper frame 39. *See* EX1001, 3:63-66. To the extent Patent Owner asserts the *upper frame* and *lower frame* must be separable as in its FIG. 7, KR996’s Fig. 1 also illustrates its frame has a first portion of main body 11 (*upper frame*) where the control station is attached, which is separable from portion of the loader support where the linkages/actuator are attached (*lower frame*), which are combined in operation.



EX1005, Fig. 1
(annotated)

Thus, KR996 discloses or renders obvious claim 2. EX1003, ¶¶93-95.

4. Claim 3

[3] *The loader apparatus as set forth in claim 1 wherein the loader support incorporates a single weldment.*

KR996 teaches or renders obvious claim 1 and also renders obvious a loader support *incorporat[ing] a single weldment*, single weldment is a term not defined by the '266 Patent but used in the alternative with “fasteners (e.g., nuts and bolts).” See EX1001, 2:56-58.

POSITA would have found it obvious to *incorporate* one or more portions of the loader support of KR996 as a *single weldment* as use of welding to join

components of such a frame was a well-known method of fabrication. EX1003, ¶98 citing, e.g., EX1006, [0020] (“general mounting means such as welding or the like”), EX1022, 4:50-11:25, EX1010.

POSITA would have recognized there are known trade-offs in the attachment choice between a weld and, for example, nuts and bolts. EX1003, ¶99 considering factors such as aesthetics, manufacturability, reliability of the connection. One benefit is connecting pieces by a weld allows for forming a smooth, continuous surface. EX1003 ¶99, citing EX1006, [0031] (“attaching means such as welding...to form a smooth, continuous surface.”). During the prosecution that led to the ’266 Patent, the Office similarly found this limitation to be an obvious design choice, a determination not disputed by the Applicant. EX1002, pp. 26, 63. And case law affords similar construction design choices are *prima facie* obvious. *In re Larson*, 340 F.2d 965, 968 (CCPA 1965) (court affirms rejection of claims including “that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.”) Welding is a well-known, easy to implement connection. *Id.* citing EX1006, [0016].

To the extent Patent Owner argues that certain components of the mainframe are required to be coupled together as a weldment, this is not recited by the open-ended term *incorporates*. However, as discussed above, POSITA would have had reason to form KR996’s loader support consisting of a *single weldment* recognizing

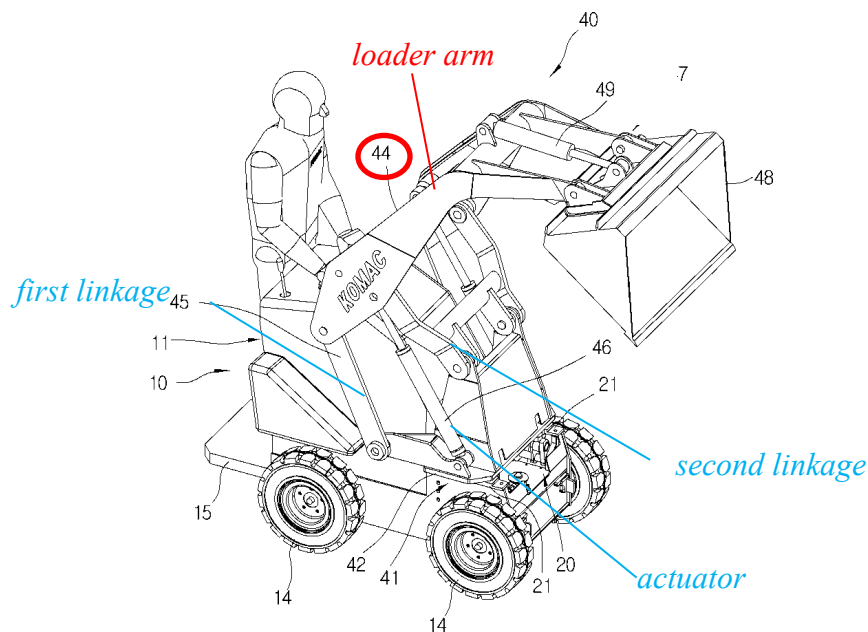
the fastening method was well within their skill set and provides the benefits discussed above when predictably forming a welded structure. EX1003, ¶100 discussing unitary frame.

Thus, claim 3 is rendered obvious by KR996. EX1003, ¶¶96-101.

5. Claim 4

[4] *The loader apparatus as set forth in claim 1 wherein the loader comprises a loader arm, the loader arm being pivotally connected to the first side of the loader support.*

KR996 teaches or renders obvious claim 1 and also provides the loader unit 40 (*loader*) includes a boom 44 (*loader arm*) *pivotally connected to the first side of the loader support* through linkages/actuator, which are pivotally attached to the boom 44 (*loader arm*) and the loader support. *See* [1.3]-[1.5]. EX1005, [0133], claim 1, [0054], Figs. 1-13, 21.



**EX1005, Fig. 9
(annotated)**

KR996's Figs. 7-9 illustrate the pivotally connected features and Dr. Velinsky confirms the nature of the attachment is *pivotable* to effectuate the raising and lowering of the boom 44 in a four-bar mechanism. EX1003, ¶104. This is the same configuration for *pivotally connected* as provided in the '266 Patent. EX1001, 4:21-26 ("The first loader arm 15a is pivotally connected to the first side 38a of the mainframe 10...The loader arm[] and side[] of the mainframe 10 each include three pivot points for pivoting the loader 8 relative to the mainframe 10.")

Thus, KR996 discloses or renders obvious claim 4. EX1003, ¶¶102-106.

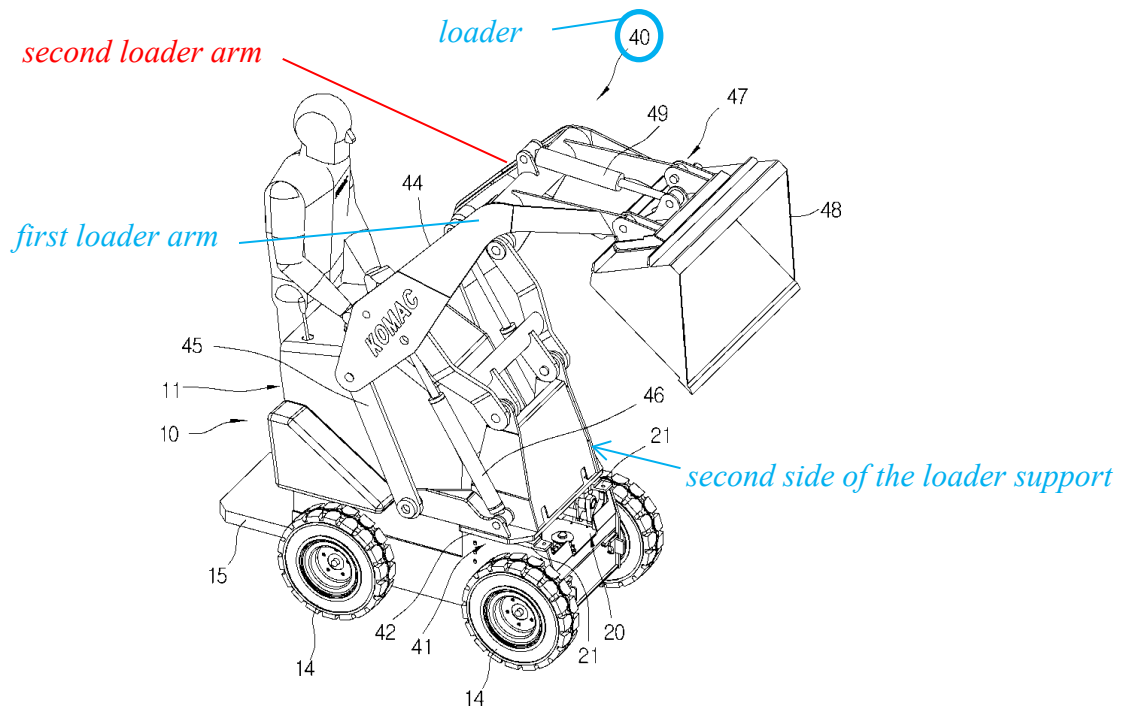
6. Claim 5

[5] The loader apparatus as set forth in claim 4 wherein the first and second linkages are pivotally attached to the loader arm.

7. Claim 6

[6] The loader apparatus as set forth in claim 4 wherein the loader arm is a first loader arm, the loader comprising a second loader arm, the second loader arm being pivotally connected to the second side of the loader support.

KR996 teaches or renders obvious claim 4 and boom 44 (*loader arm*) of [4] is a *first loader arm* and a second boom 44 (*second loader arm*) is connected to the *second side of the loader support*. EX1005, claim 1, [0054], [0133], Figs. 1-13, 21.



**EX1005, Fig. 9
(annotated)**

The second boom 44 (*second loader arm*) is *pivotally connected* to the *second side of the loader support*, just like described with respect to the first loader arm in [4] as the second side of the loader and attachment thereto is the same as the first side,

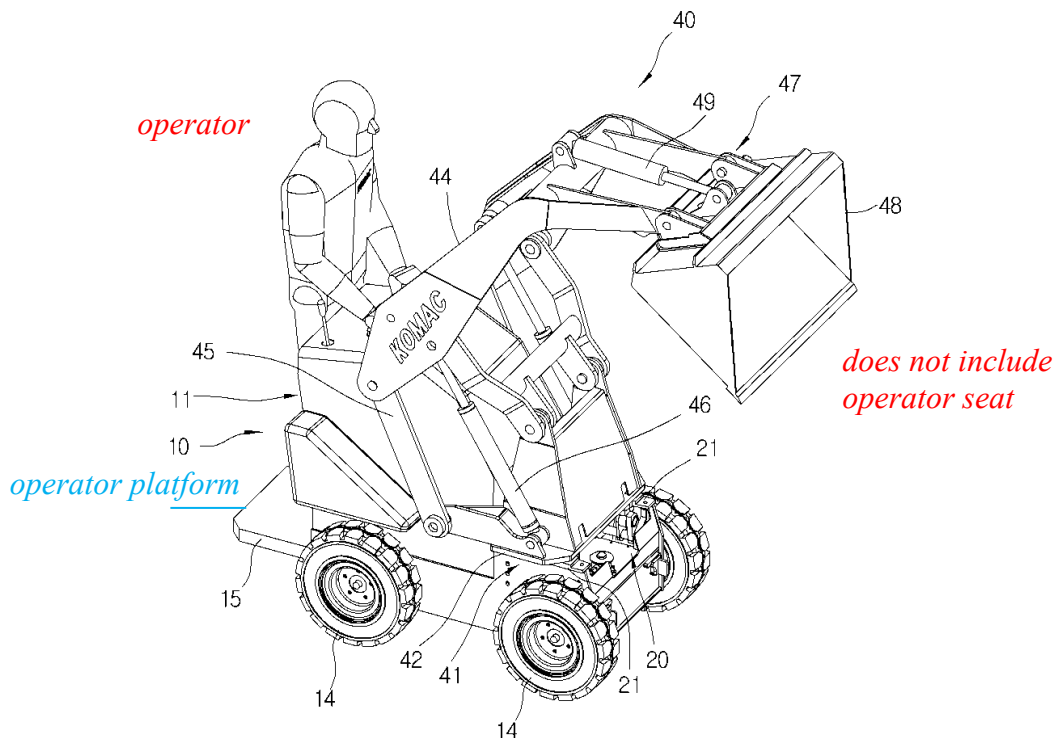
i.e., a four-point mechanism. EX1003, ¶114; EX1005, Figs. 2-3, 5, 11.

Thus, KR996 discloses or renders obvious claim 6. EX1003, ¶¶112-115.

8. Claim 28

[28] The loader apparatus as set forth in claim 1 wherein the loader apparatus does not include an operator's seat.

KR996 teaches or renders obvious claim 1 and its vehicle *does not include an operator's seat*. Fig. 9 is illustrative of the operator position being standing on a safety step 15.



**EX1005, Fig. 9
(annotated)**

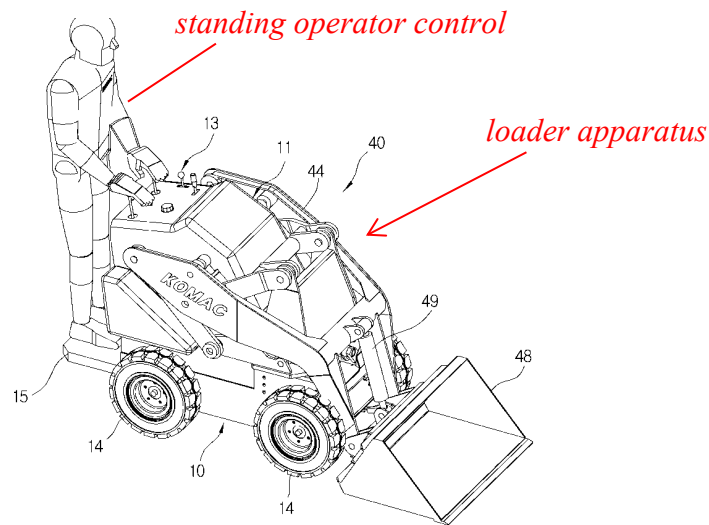
EX1005, Figs. 9, 21, [0090] (“driver, who is standing upright”).

Thus, KR996 discloses or renders obvious claim 28. EX1003, ¶¶116-118.

9. Claim 7

[7.0] A loader apparatus for standing or walk-behind operator control and comprising:

To the extent the preamble is limiting, KR996 discloses it. See [1.0].



**EX1005, Fig. 8 (portion)
(annotated)**

To the extent both standing operation and walk-behind operation are required, POSITA would recognize KR996's safety step provides this capability. EX1003, ¶120 citing EX1005, p. 4, [0033], “**folding** safety step;” EX1013 illustrating a folding step provides both walk-behind and standing/riding platform operation, [0004]–[0006], [0008], FIG. 4.

Thus, KR996 teaches a vehicle that provides the *loader apparatus*. EX1003,

¶¶119-120.

[7.1] *a control station having operator controls toward a rear of the loader apparatus;*

KR996 provides a control unit 13 (*control station*) as shown in [1.6] that is *toward a rear of the loader apparatus* and is illustrated with *operator controls*.

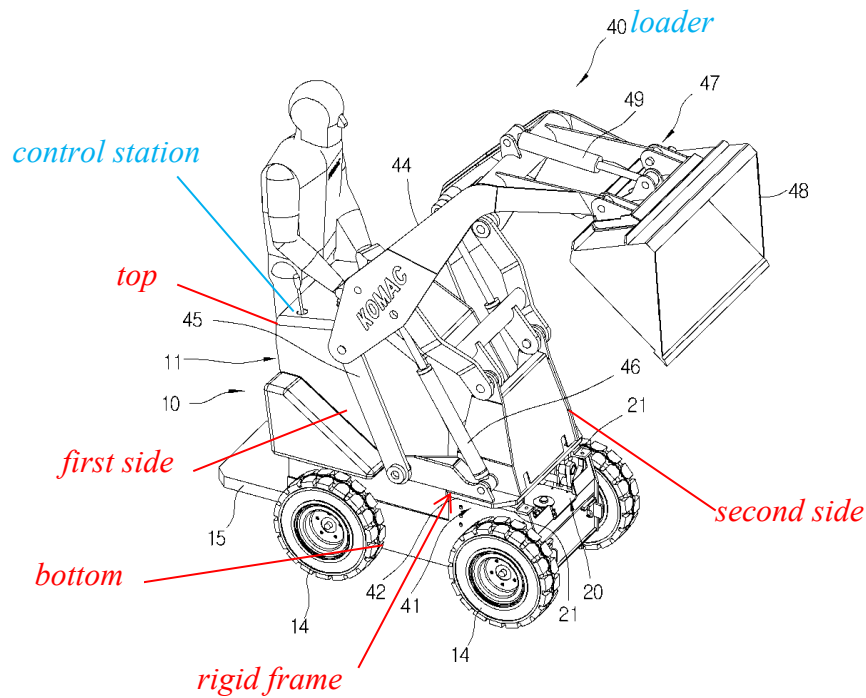
EX1003, ¶121; EX1005, Figs. 8-9, 21.

[7.2] *a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position;*

As discussed in [1.1], KR996 describes *a loader* including loader unit 40, which is *moveable between a down position* (Fig. 8) *and a vertically raised position* (see Figs. 7-9) and *adapted to carry a tool* such as bucket 48. EX1003, ¶122.

[7.3] *a rigid frame for supporting the control station and the loader, the rigid frame having a first side, a second side, a top, and a bottom;*

The '266 Patent specification use the term “rigid frame” only its background portion when discussing conventional equipment. See EX1001, 1:25-33. KR996 provides the same *rigid frame* in a load-resisting structure having *first/second sides* and a *top/bottom*, which supports the control unit 13 (*control station*). KR996's *rigid frame* includes that supporting the loader unit 40 (e.g., attachment with links/boom cylinder) and the portion supporting the control station 13 (e.g., main body 11). Fig. 9 is illustrative:



**EX1005, Fig. 9
(annotated)**

KR996’s *rigid frame* is for supporting the control station as control unit 13 is attached to it. EX1005, [0017] (“a **control unit installed** to operate the equipment while a worker is on board at the rear”). Further, POSITA would have understood the construction of KR996 to follow what is suggested by industry standards, which provides the framework of such a compact loader carrier to be a “rigid frame.” EX1003 ¶¶123-124 citing EX1015 p. 2 (“self-propelled crawler or wheeled

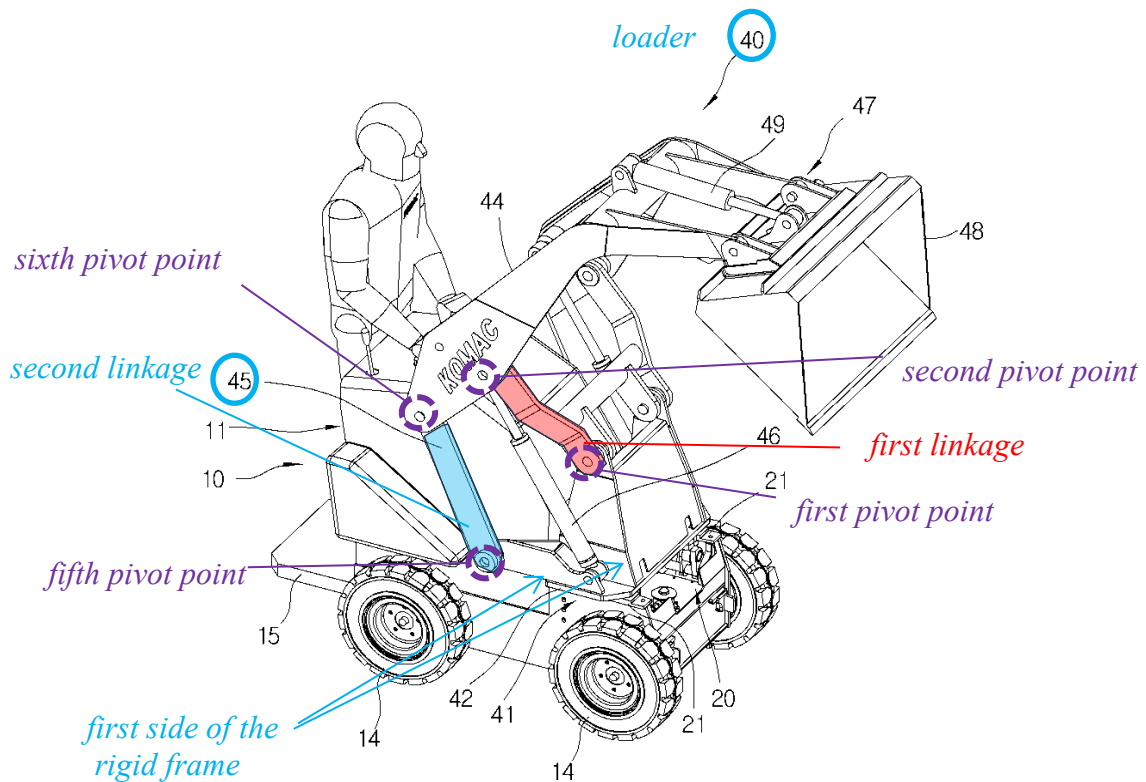
machine...with a **rigid frame...**)⁶ EX1003, ¶¶123-124.

[7.4] a first linkage pivotally attached to the first side of the rigid frame at a first pivot point and pivotally attached to the loader at a second pivot point; ...

[7.6a] a second linkage pivotally attached to the first side of the rigid frame at a fifth pivot point and pivotally attached to the loader at a sixth pivot point,

KR996 illustrates a link providing *a first linkage pivotally attached to the first side of the rigid frame at a first linkage pivot point and pivotally attached to boom 44 (an arm of the loader) at a second pivot point. See [1.4].* And KR996 illustrates link 45 providing *a second linkage pivotally attached to the first side of the rigid frame at a fifth pivot point and pivotally attached to boom 44 (an arm of the loader) at a sixth pivot point. See [1.3].* EX1005, claim 1, [0054] (“A boom (44) connected by a link (45)...”), [0134], Figs. 1-10.

⁶ The '266 Patent claims use different terms for the frame structure *loader support*, *rigid frame*, *machine structure*, *mainframe*, *lower frame* each include the weight-bearing portion at least supporting the loader and/or other features (e.g., drive mechanism, control unit), which are also shown by KR996's frame.

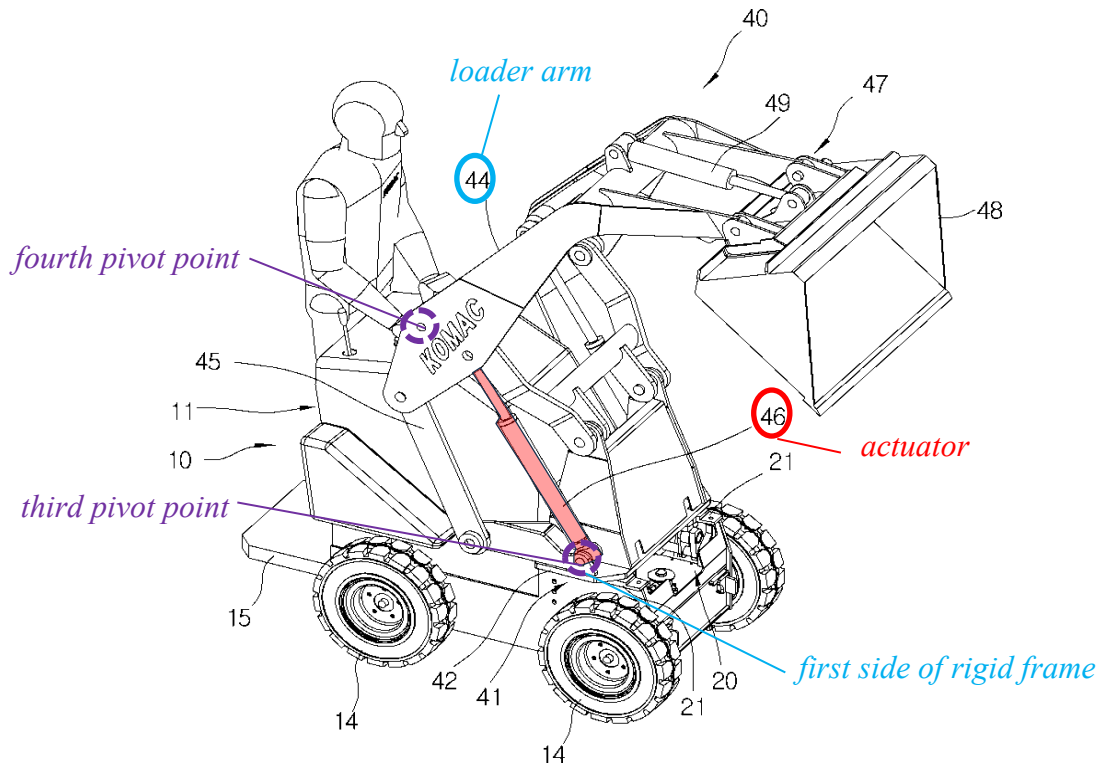


**EX1005, Fig. 9
(annotated)**

As in [1.3]-[1.4], the nature of the attachment is *pivotable* to effectuate the raising and lowering of the boom 44. EX1003, ¶¶125-126.

[7.5] an actuator pivotally attached to the first side of the rigid frame at a third pivot point and pivotally attached to the loader at a fourth pivot point; and

KR996 describes boom cylinder 46 (*actuator*) driving the loader unit 40 (*loader*). See [1.5]. The boom cylinder 46 (*actuator*) is *pivotally attached to the first side of the loader support at a third pivot point and pivotally attached to the boom 44 (an arm of the loader) at a fourth pivot point.*



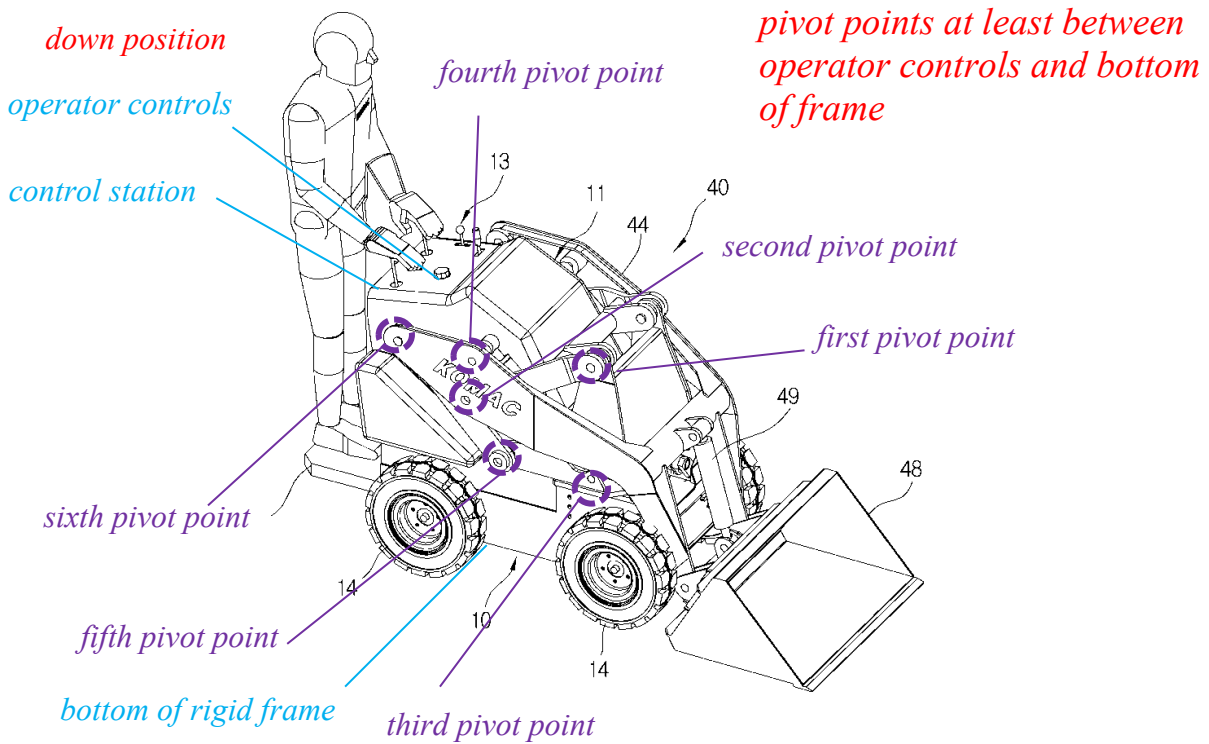
**EX1005, Fig. 9
(annotated)**

As in [1.5], the boom cylinder is *pivotably attached* to effectuate the raising and lowering of the boom 44. EX1003, ¶¶127-129.

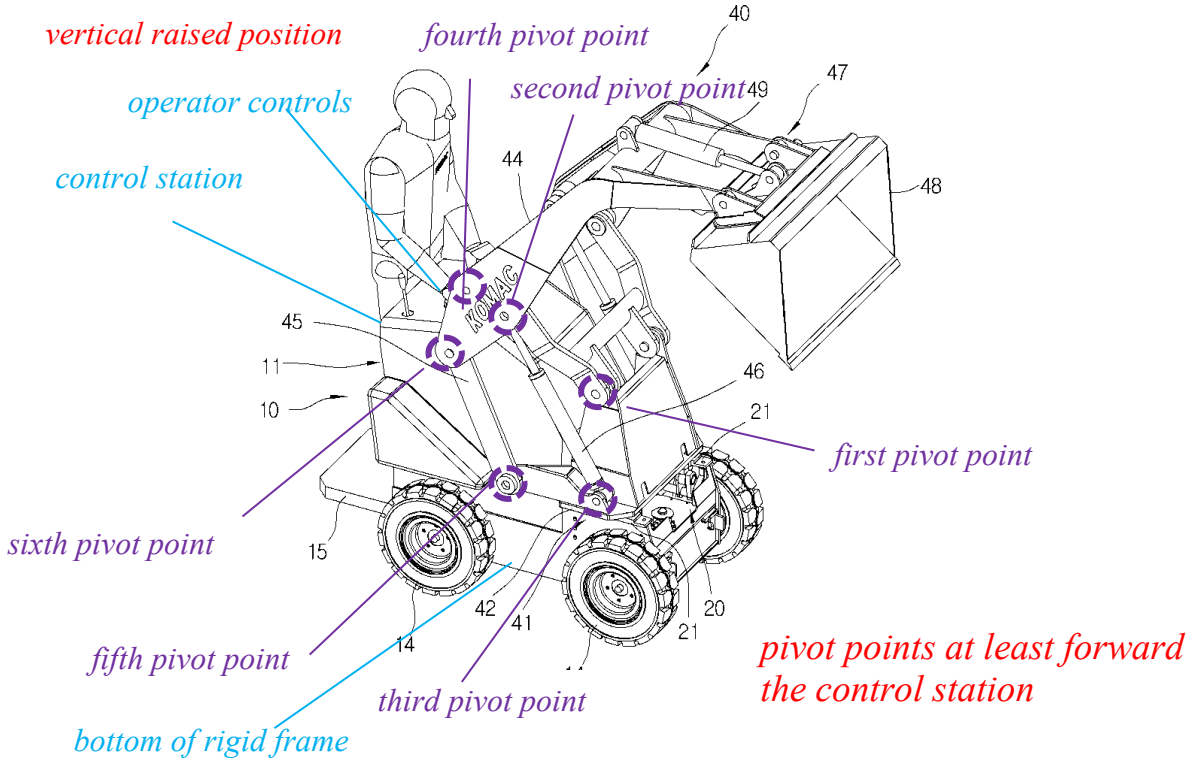
[7.6b] wherein, as the loader travels from the down position to the vertically raised position, the first, second, third, fourth, fifth and sixth pivot points are (1) disposed between the operator controls and the bottom of the rigid frame and/or (2) disposed forward of the control station; and,

KR996 illustrates as loader unit 40 travels from *a down position* (Fig. 8) to a *vertically raised position* (e.g., Figs. 7, 9), the *first, second, third, fourth, fifth, and sixth pivot points* are (1) *disposed between the operator controls* of control unit 13

and the bottom of the rigid frame and/or (2) disposed forward of the control unit 13 (control station). KR996's Figs. 7-9 are illustrative:

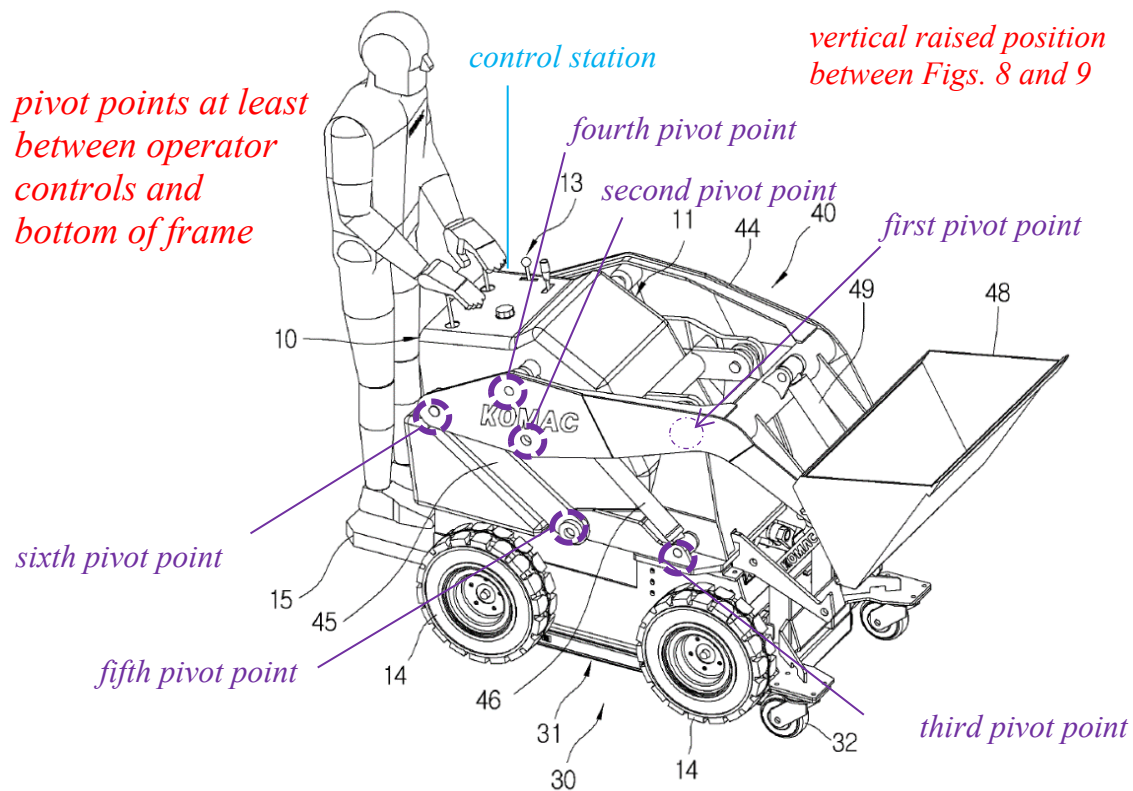


EX1005, Fig. 8 (portion)
(annotated)



**EX1005, Fig. 9
(annotated)**

Fig. 7 of KR996 is also illustrative of a *vertically raised position*:



**EX1005, Fig. 7
(annotated)**

EX1003, ¶¶130-131.

To the extent Patent Owner argues KR996's figures are insufficiently to scale to explicitly illustrate the claimed location of pivot points, it would have been obvious. First, plain inspection of KR996's figures suggest to POSITA to apply these claimed pivot point connections. EX1003, ¶132. Second, POSITA would have recognized placing pivot point attachments to the rigid frame low to lower the gravity center and reduce frame requirements. *Id.* referencing [14]. Third, POSITA would have recognized benefits to provide an environment around the operator free

from hazard, thus moving the pivot points forward and/or below the controls with which the operator interacts. *Id.* citing EX1017.

[7.7] *wherein the loader apparatus does not include an operator's seat.*

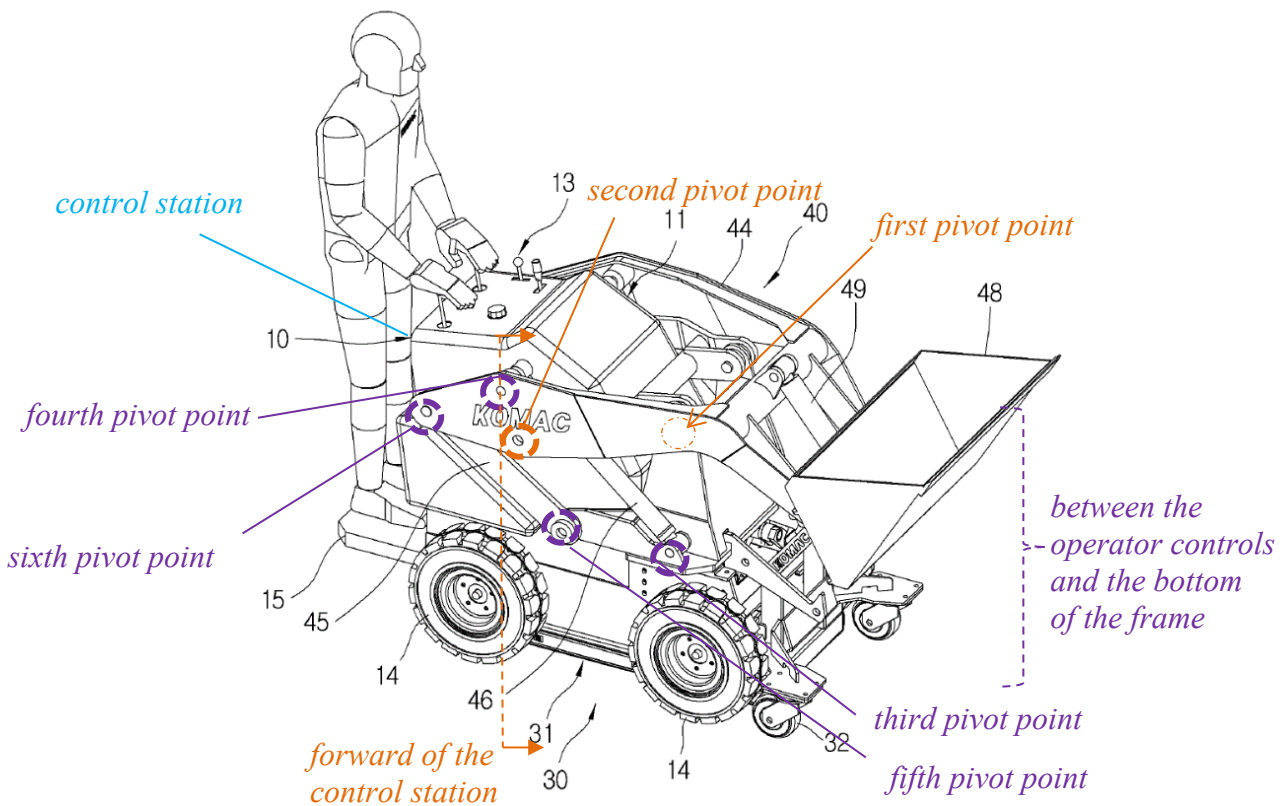
KR996's vehicle *does not include an operator's seat*. EX1005, Figs. 7-9, 21, [0033], [0049]. EX1003, ¶133.

Thus, claim 7 is taught or rendered obvious by KR996. EX1003, ¶134.

10. Claim 10

[10] *The loader apparatus as set forth in claim 7 wherein, in the vertically raised position, the first and second pivot points are disposed forward of the control station and the third, fourth, fifth and sixth pivot points are disposed between the operator controls and the bottom of the rigid frame.*

KR996 teaches or renders obvious claim 7 and illustrates in a *vertically raised position* (e.g., Fig. 7), the *first and second pivot points* of the first linkage are *disposed forward of the control unit 13 (control station)* and the *third, fourth, fifth, and sixth pivot points* (boom cylinder 46 and second link 45) are *disposed between the operator controls of the control unit 13 and bottom of the rigid frame.*



EX1005, Fig. 7
(annotated)

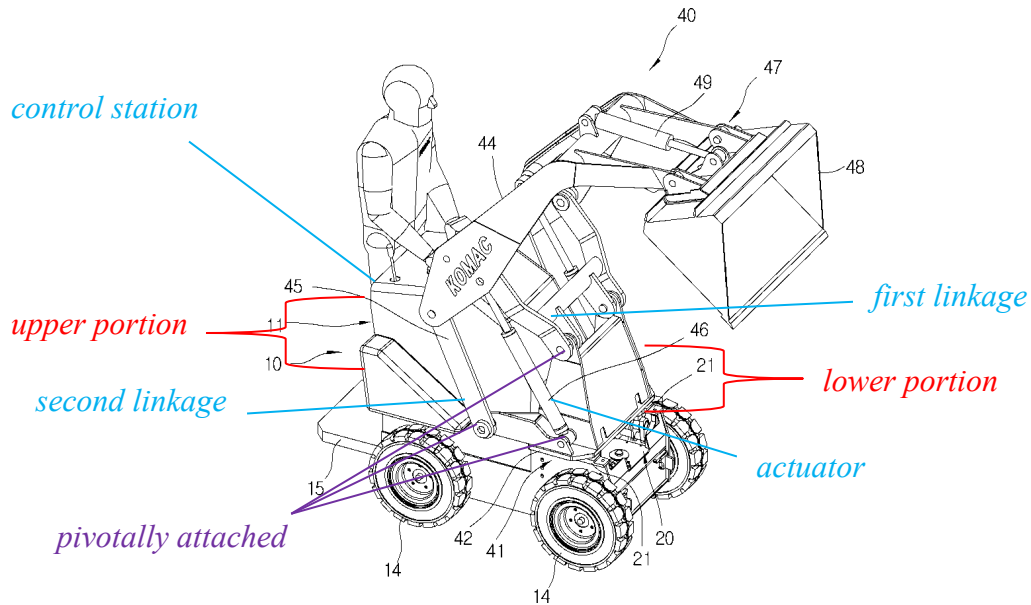
Thus, claim 10 is taught or rendered obvious by KR996. EX1003, ¶¶135-137.

11. Claim 11

[11] The loader apparatus as set forth in claim 7 wherein the rigid frame comprises a lower portion and an upper portion attached to the lower portion, the first linkage, the second linkage and the actuator each being pivotally attached to the lower portion, the upper portion supporting the control station.

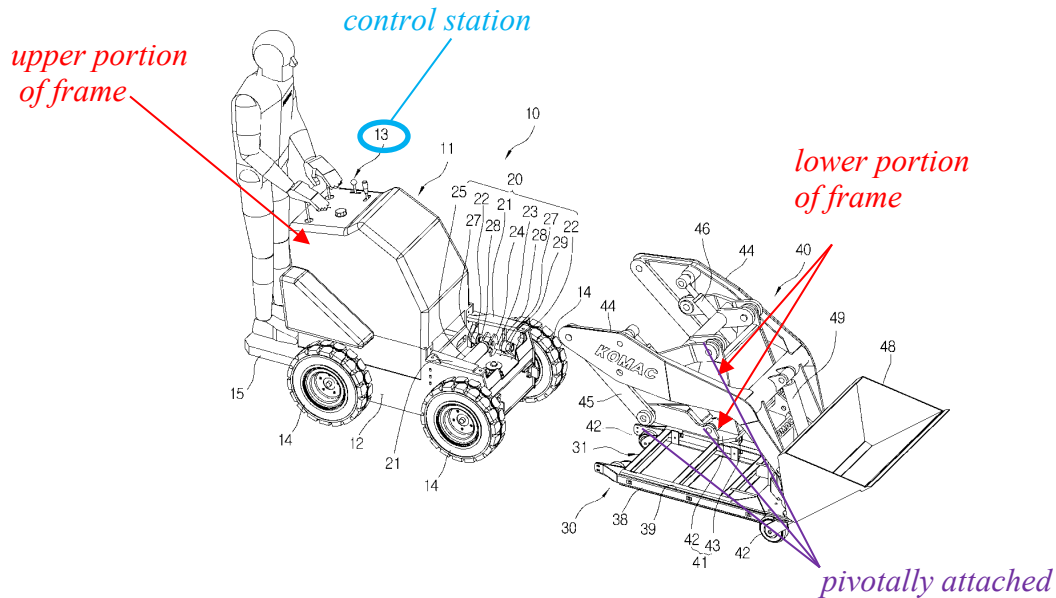
KR996 teaches or renders obvious claim 7 and KR996's *rigid frame* includes a lower portion and an upper portion attached to the lower portion when in operation. The upper portion includes main body 11 and is supporting the control

unit 13 (*control station*). EX1005, [0016] (“a control unit installed...”). And the *lower portion* includes portion of the rigid frame having pivot point attachments to the linkages/actuator. Fig. 9 is illustrative of the portions together in operation:



**EX1005, Fig. 9
(annotated)**

To the extent Patent Owner asserts the upper and lower portions must be separable, KR996 also teaches this.



**EX1005, Fig. 1
(annotated)**

Thus, KR996 discloses or renders obvious claim 11. EX1003, ¶¶138-140.

12. Claim 12

[12] *The loader apparatus as set forth in claim 7 wherein the rigid frame comprises a lower frame and an upper frame, the control station being attached to the upper frame.*

KR996 teaches or renders obvious claim 7 and provides KR996's *rigid frame* includes *a lower frame* and *an upper frame* with control unit 13 (*control station*) *attached* to the *upper frame*, as discussed above in [11].

Thus, KR996 discloses or renders obvious claim 12. EX1003, ¶141.

13. Claim 13

[13] *The loader apparatus as set forth in claim 7 wherein the rigid frame incorporates a single weldment.*

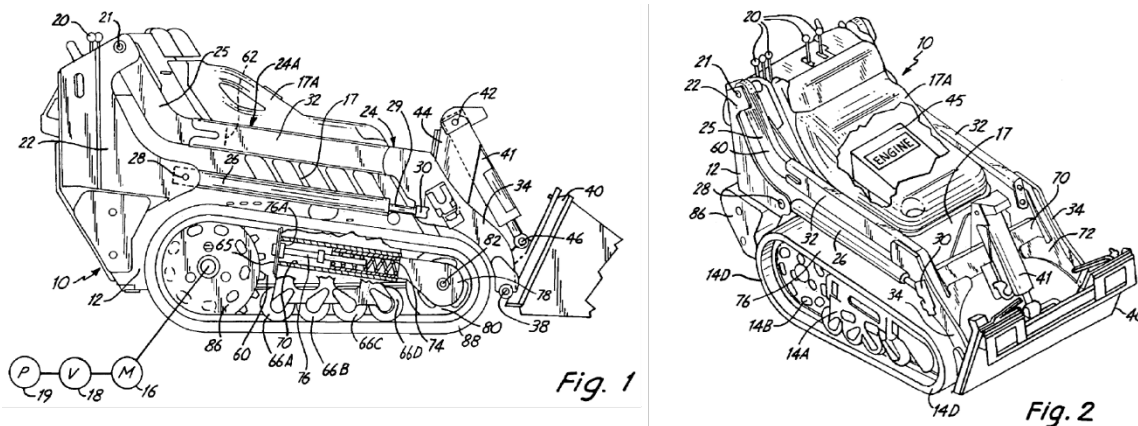
KR996 teaches or renders obvious claim 7 and it would have been obvious for the *rigid frame* of KR996 to *incorporate[] a single weldment*, as discussed in [3].

Thus, KR996 discloses or renders obvious claim 13. EX1003, ¶¶142-143.

D. Ground 2 : KR996 and Bares

1. Bares (EX1010)

Bares “relates to a small...walk behind loader that is, in the form shown, track propelled.” EX1010, 1:33-36. Bares provides a side and perspective views in FIGS. 1-2. EX1010, 2:14-16.

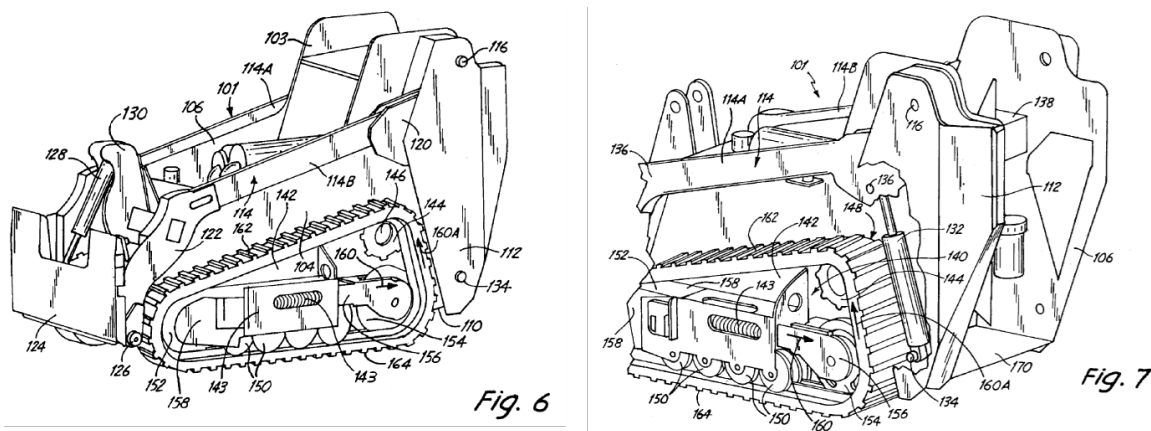


EX1010, FIGS. 1, 2

A track assembly 14 is on each side of the loader for propelling the loader in a forward or reverse direction through use of drive hydraulic motors indicated

generally at 16, which are operated through a pump 19 “driven by an internal combustion engine 45 mounted on the [frame 12].” EX1010, 2:35-47.

Bares also describes modified embodiment where a drive motor 146 and a drive sprocket 144 are raised above a tensioner idler wheel. EX1010, 1:59-63, 5:24-29, FIGS. 6-8.



EX1010, FIGS. 6, 7

Bares describes its loader can be a “walk behind unit, or can have a support platform 170 for supporting an operator.” EX1010, 5:55-57. Bares also recognizes in lieu of track assemblies, wheels are also a common configuration for this type of vehicle. EX1010, 2:1-11, 4:44-51.

2. Reasons to Combine KR996 and Bares (KR996-Bares)

KR996 and Bares are analogous art to the '266 Patent because they are in the same field of endeavor as the '266 Patent, pertaining to working vehicles (*e.g.*, earth-

moving equipment) and in particular, self-propelled vehicles with a stand or walk behind operation and a loader. EX1003, ¶¶144-148; EX1005, Abstract, [0001], FIG. 21; EX1010, 5:55-57, FIGS. 1-8; EX1001, 1:21-35, 2:61-3:5, FIG. 1. KR996, Bares, and '266 Patent are also each reasonably pertinent to a same problem faced by the inventor regarding the need to provide compact tool carriers with a relatively low-profile, compact design. EX1005, [0008]-[0009], [0012]; EX1001, 1:36-40, 2:61-3:5; EX1010, 1:46-58.

POSITA would have been motivated, and found it easy, to combine the frame extension of Bares with KR996 to produce a predictable and beneficial configuration of guarding the operator's environment. EX1003, ¶149. POSITA would have recognized a benefit as extending the frame provides operator protection suggested by industry standards. *Id.* citing ISO 3457 (EX1017). ISO 3457 would have suggested to POSITA to provide Bares' extension of the mainframe to provide a barrier between the KR996's operator and the drive mechanism as should a hazard exist, a "guard that restricts the movement of a person's body or a part of it, in order to avoid its contact with a machine component or exposure to other, similar hazards" is required. EX1017, p. 7. By providing the extension of the frame of Bares to that of KR996, a barrier is provided between an operator and the equipment (e.g., drive mechanism and/or loader) avoiding contact with the drive mechanism/loader and/or debris generated. POSITA would have had a reasonable expectation of success in

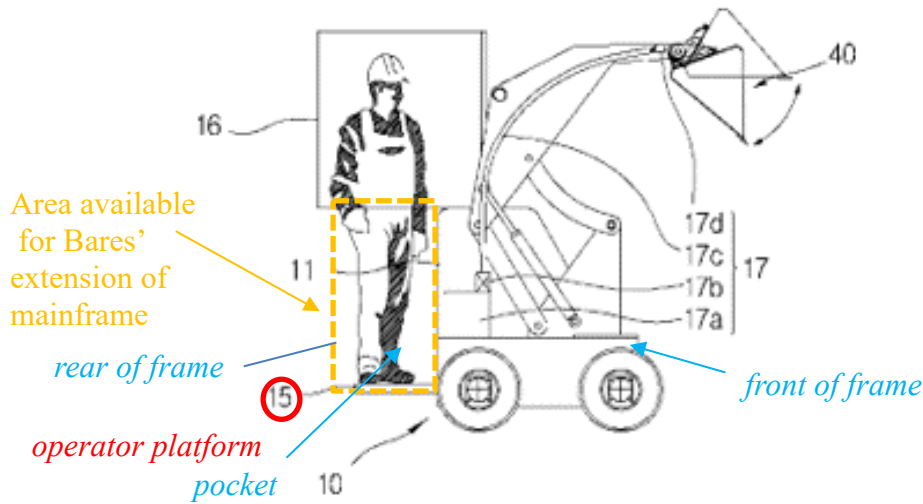
implementing the configuration as it merely extends a portion of the existing frame adjacent the safety step 15 of KR996 adjacent the operator. EX1003, ¶149 citing EX1007 at 3:19-24, FIGS. 1-3.

Further reasons to combine the teachings of Bares are provided in Ground 3.

3. Claim 8

[8] *The loader apparatus as set forth in claim 7 wherein the rigid frame defines a pocket toward a rear of the rigid frame to partially surround an operator.*

KR996 teaches and/or renders obvious claim 7 including providing a *rigid frame*. KR996 also describes an operator's safety step 15 that extends from the rear of the rigid frame. EX1005, Figs. 1, 7-10, 21, [0033], [0049]. Bares similarly describes an operator step at the rear of its compact loader—"platform 170." EX1010, 5:55-57, FIG. 7. Bares illustrates a portion of a *mainframe*—side plates 104, 106—extends such that platform 170 is at least partially within a *pocket* defined by the frame extension. FIG. 7 of Bares is illustrative:



EX1005, Fig. 21
(annotated)

EX1003, ¶152.

Thus, claim 8 is rendered obvious by KR996 and Bares. EX1003, ¶¶150-153.

4. Claim 9

[9] *The loader apparatus as set forth in claim 8 further comprising an operator platform at least partially within the pocket.*

KR996-Bares renders obvious claim 8 and provides a safety step 15 (*operator platform*) at least partially within the pocket provided by the frame extension of Bares. See [8].

Thus, claim 9 is rendered obvious by KR996 and Bares. EX1003, ¶¶154-156.

E. Ground 3: KR996, Bares, and Beltrami

Claims 14-16 and 19-27 are rendered obvious by KR996 in combination with the teachings of Bares, which describes not only extending the frame as discussed

above, but also a track assembly, and Beltrami teaches pivot point attachment techniques for vertical lift loaders. Bares is discussed above, Beltrami below, and below discusses their reasons to combine.

1. Beltrami (EX1008)

Beltrami, a patent issued in June 1971, is directed to digging and lifting devices “fitted on tractors or like tracked, half-tracked, wheeled or like self-propelling means, which comprise a standard bucket adapted to be driven upwardly...to dump the soil or other excavated material.” EX1008, 1:5-15. Beltrami begins reviewing an “already well known” loader configuration with arm(s) supporting a bucket at one end and with an opposite end(s) directly, pivotally connected with a stationary pivot point providing a curved lift path. EX1008, 1:16-52, 2:41-3:7; FIG. 1. POSITA would recognize this as the radial lift loader. EX1003, ¶¶31-32, 157-159.

Beltrami then describes a **vertical** lift loader where the arms are not directly connected to the body of the vehicle rather attached using two connecting rods (linkages) and a hydraulic jack (actuator), which are pivotally attached to raise the loader arm and mounted bucket in a more vertical manner. *See* EX1008, FIGS. 2-4, 1:57-2:25, 3:12-34. As discussed below, Beltrami recognizes a desire optimize the pivot point connections and keep them “**in such a low position on the vehicle** that no supporting frame is needed...and finally a lifting can be performed without

having the equipment gravity center to undergo an unnecessarily large shifting.”
EX1008, 3:35-45.

2. Reasons to Combine KR996 and Bares (KR996-Bares)

Bares and KR996 are analogous art to the '266 Patent as in Ground 2.

Further, POSITA would have been motivated to combine the teachings of Bares' drive mechanism with KR996 to produce a predictable and beneficial configuration of a track assembly on KR996's vehicle. EX1003, ¶¶160-164. The simple substitution of Bares' track assembly for the wheels in the KR996 vehicle would have been predictable with a reasonable expectation of success as both KR996 and Bares relate to similar vehicle types with a similar mainframe having a drive mechanism attached thereto.

Further, designing this vehicle type with a drive mechanism of either a wheeled assembly or a track assembly was a known alternative. EX1003, ¶162 citing EX1032, [0011] describing a compact tool carrier having a track or “[a]lternatively...a wheeled unit[.]” EX1009, 4:30-39 and Bares, 2:1-2. Industry standards further recognize these assemblies as two common alternatives: “self-propelled **crawler** [track assembly] **or wheeled** machine.” EX1003, ¶162 citing EX1015, p. 2, EX1016, p. 5 (“self-propelled [] machine on **wheels, crawlers or legs[.]**”) Dr. Velinsky confirms that it was a known practice to market compact tool carriers such as KR996 and Bares to provide the buyer a choice of a wheel

configuration or a track configuration. EX1003, ¶163.

In some desired applications for the vehicle, POSITA would have had reason to replace the wheel assembly, which can provide more pressure to the supporting surface of the vehicle, with a track assembly, which can provide a reduced pressure to the supporting surface. EX1003, ¶¶163-164. The choice to provide the track assembly can be driven by the surface composition and/or need to mitigate impact to said surface intended for the vehicles use. For example, track assembly, providing lower ground pressure, can be advantageous on soft surfaces. Moreover, the significantly larger contact patch (surface area in contact with the ground) of a track assembly allows for higher torque transmitted to the ground without slippage, i.e., better traction. *Id.* Also, by having a continuous tread, tracked vehicles have the ability to cross holes and trenches in which wheels would sink. *Id.*

POSITA would have recognized a reasonable expectation of success in providing a track assembly on the KR996 vehicle as track assemblies were well known in the art and perform the same function as the wheel drive mechanism illustrated in KR996. This is simple substitution of one known, equivalent element for another to obtain predictable results and perform the same function. EX1003, ¶165.

3. Reasons to KR996-Bares and Beltrami

KR996-Bares and Beltrami are analogous art to the '266 Patent because they are in the same field of endeavor of earth-moving machinery. EX1001, 1:21-35; EX1005, Abstract; EX1008, 1:5-15. In fact, each of KR996-Bares and Beltrami, like the '266 Patent, are directed to earth-moving machinery with a vertical lift style loader. EX1003, ¶166 citing EX1001, FIG. 1; EX1005, Fig. 9; EX1008, Fig. 2-6, 2:10-15. KR996-Bares and Beltrami are also analogous art to the '266 Patent because they are reasonably pertinent to a same problem faced by the inventor of configuring a vertical lift path for the tool in operation. EX1001, 1:41-43; EX1005, Figs. 8-9.

POSITA would have been motivated to combine the teachings of Beltrami including locating the pivot point attachment of intermediary parts **low** on the mainframe and KR996-JP705-Bares to produce a predictable and beneficial loader configuration. EX1003, ¶¶167-170. As discussed above, KR996-Bares and Beltrami describe a similar loader configuration of a four-bar mechanism that uses intermediate parts of linkages and an actuator pivotally attached to a frame move the loader arm. EX1005, Figs. 8-9; EX1008, Figs. 2-3, 6. Beltrami explains the well-known knowledge in vehicle designs and four-bar mechanisms: the locations of the pivot point connections between the linkages and the mainframe are result-affecting variables that can be selected based on desired performance. EX1008, 4:35-50 (“The

path [] can be modified at the convenience both in the manufacturing stage e.g. by an **arrangement of pivot points...**"); 5:61-67 ("Even in the latter embodiment **the shape of the path 125** can be **modified** by the previously specified means adapted to **change the position of pivot points** and in particular of pivot points 109 and 112 [pivot points between vehicle frame and rods (links)].") Thus, POSITA would have recognized that a design of a vehicle such as KR996's includes determining pivot point locations, because it was well-known that pivot point locations are result-affecting design variables for desired performance, as explained by Beltrami. EX1003, ¶167.

In considering the pivot point locations, POSITA would have had reason to further apply Beltrami's teachings of locating the pivot point attachments between the intermediate parts (linkage(s)/actuator) and the mainframe **low** on the mainframe, near the rotational axis such that the distance between the pivot points and the axis is, for example, less than the distance between the axis and the ground/bottom of the mainframe. EX1003, ¶¶168-170. Beltrami describes that benefits of positioning the location of these pivot points low on the equipment include decreasing the frame requirements and maintaining a low center of gravity. EX1008, 3:35-41. POSITA would recognize that these benefits stem from basic engineering principles. EX1003, ¶¶168-169 describing center of mass and reduction of structural needs. These same benefits would be gained by providing the pivot

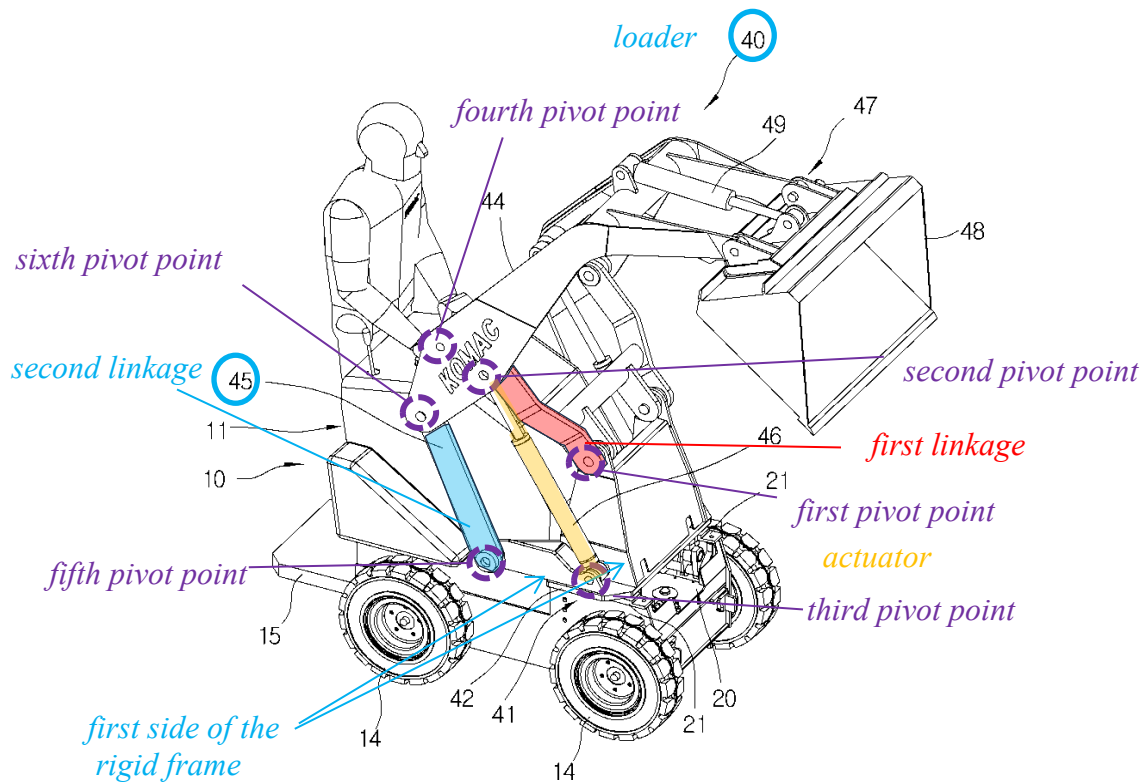
points of the similarly configured loader of KR996 low on its frame, in particular, a relatively small vertical distance from the rotational axis of its drive mechanism. Thus, the proposed combination of Beltrami is merely applying a known technique to a known device (*e.g.*, Beltrami's technique of providing low pivot points in a vehicle using intermediate parts for connecting a loader arm, with KR996's using pivotally attached connection between the loader arm and intermediate parts) ready for improvement (*e.g.*, decreasing the frame requirements and/or lowering the center of gravity) to yield predictable results. EX1003, ¶170.

The results of combining Beltrami's technique with KR996-Bares would have been predictable and with a reasonable expectation of success since both KR996 and Beltrami relate to similar vehicles with a vertical lift loader. Modifying the vehicle of KR996-Bares to provide lower pivot points would have been a straightforward and simple matter well within the skills of POSITA during a typical vehicle design process. EX1003, ¶171. And Dr. Velinsky has confirmed the functionality of these lower pivot point connections. EX1003, ¶¶171, 195-214 discussing four-bar mechanisms and kinematic simulation of Appendix A.

5. Claim 14

The analysis of claim 14 is the same as that for claims 1 and/or 7 in Ground 1, with additional elements discussed below the cross-referencing chart. EX1003, ¶172.

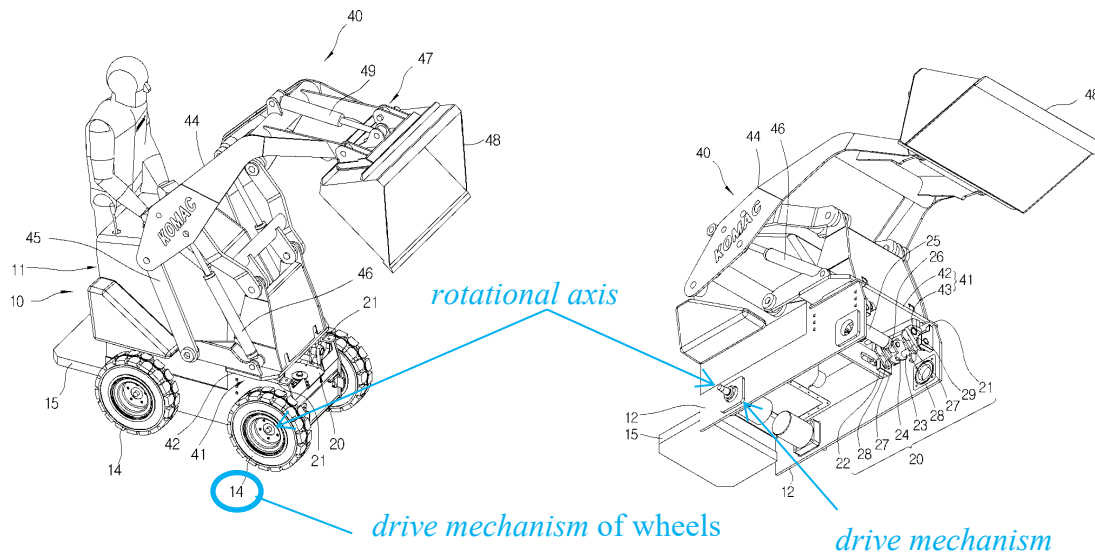
	<i>Claim</i>	Refer to analysis in:
[14.0]	<i>A loader apparatus for standing or walk-behind operator control and comprising:</i>	[7.0]
[14.1]	<i>a loader adapted to carry a tool;</i>	[7.2] including loader unit 40 (<i>loader</i>) carrying bucket 48 (<i>tool</i>)
[14.2]	<i>a loader support for supporting the loader, the loader support having a first side and a second side, the loader being free from direct attachment to the loader support;</i>	[1.2] KR996's frame provides a <i>loader support</i>
[14.3]	<i>a first linkage pivotally attached to the first side of the loader support at a first pivot point and pivotally attached to the loader at a second pivot point;</i>	[7.4] including link (<i>first linkage</i>)
[14.4]	<i>an actuator pivotally attached to the first side of the loader support at a third pivot point and pivotally attached to the loader at a fourth pivot point; and</i>	[7.5] including boom cylinder 46 (<i>actuator</i>)
[14.5]	<i>a second linkage pivotally attached to the first side of the loader support at a fifth pivot point and pivotally attached to the loader at a sixth pivot point; and</i>	[7.6a] link 45 (<i>second linkage</i>)
[14.6]	<i>a drive mechanism...less than 1.5 times DI.</i>	See below



EX1005, Fig. 9
(annotated)

[14.6a] *a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R , the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance $D5$...the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance $D1$*

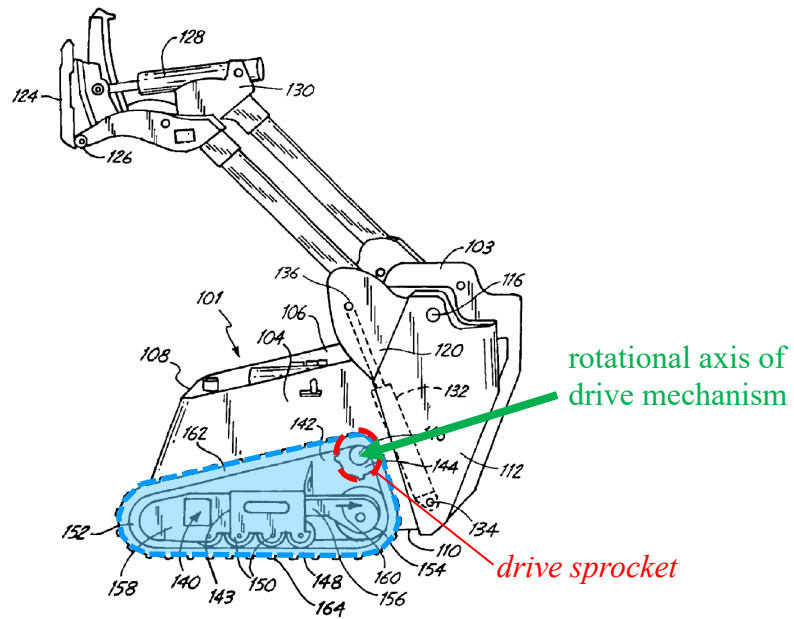
KR996 describes *a drive mechanism* including “wheels (14)” having a rotational axis and for propelling the vehicle (loader apparatus) over a supporting surface (e.g., ground). EX1005, [0042], Figs. 1, 8-10. EX1003, ¶173.



**EX1005, Figs. 9, 10
(annotated)**

It would have been an obvious, simple substitution of KR996's wheeled assembly *drive mechanism* for a track assembly as discussed in the reasons to combine Bares above, and below. Bares illustrates a track assembly (*drive mechanism*) for *propelling* a small loader vehicle. EX1010, Figs. 1, 8, 2:36-40, 3:24-32, 5:18-43. Bares illustrates each track assembly includes a frame 142, a drive sprocket 144 (*drive sprocket*) and wheels 150, 154 over which a track 148 is mounted. EX1010, 5:18-42, FIGS. 6-8. Bares explains its drive mechanism, as is common for drive mechanisms, is *for propelling the loader apparatus over a supporting surface*. See EX1010, 2:37-39 (“[ground drive] assembly [] on each side of the loader for **propelling the loader in forward and reverse directions.**”), 5:18-43 (“to power the unit and **propel it over the ground.**”) And Bares’ drive sprocket 144 driven by

motor 146 defines, and rotates above, *a rotational axis*, just like in the '266 Patent. Bares' drive mechanism as illustrated and on KR996's provides these same features.



**EX1010, FIG. 8
(annotated)**

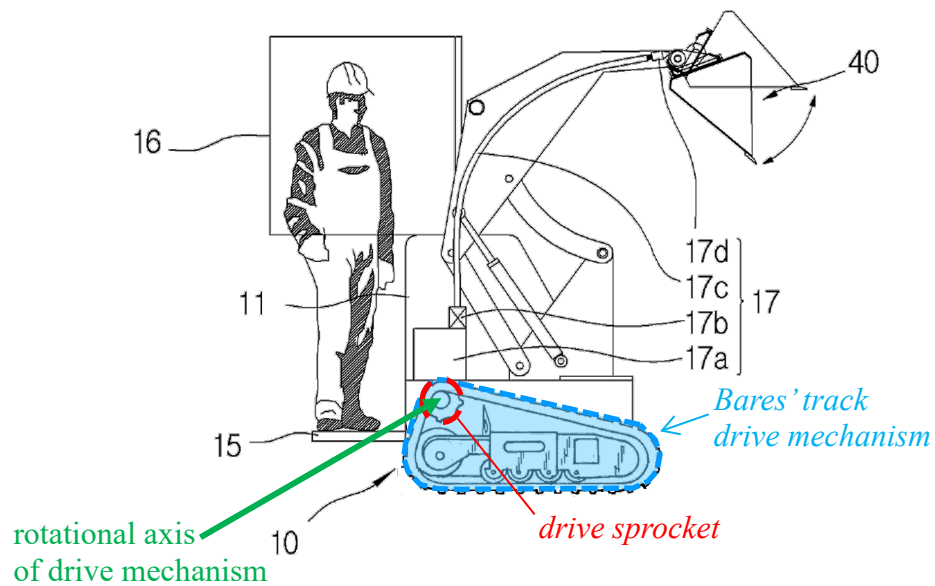
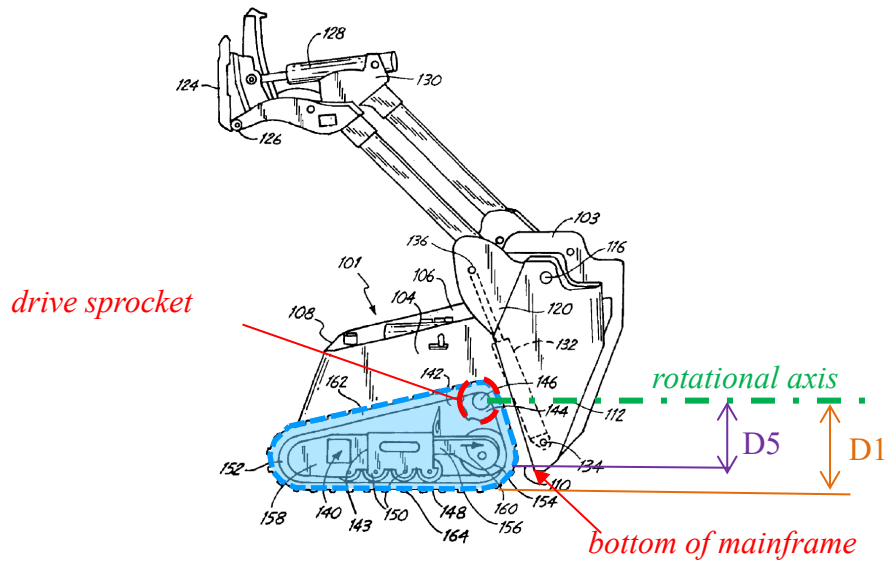


**FIGURE A
KR996's Fig. 21 (annotated)
and modified with Bares' FIG. 8 track assembly**

EX1003, ¶174 including Figure A, which has Bares' track assembly of FIG. 8, flipped and lead lines/labels removed substituted for KR996 Fig. 21's wheel assembly.

KR996's vehicle with Bares' track assembly has a *bottom* at which track 148 of the track assembly (*drive mechanism*) *contacts the supporting surface* (e.g., ground). The *rotational axis* and *bottom of the first side of the loader support* are separated by a *vertical distance D1*. EX1003, ¶175 explaining D1 is a typical variable selected in vehicle design such as wheel size. And the *rotational axis* and the *bottom of the first side of the loader support* are separated by a *vertical distance D5*. EX1003, ¶176 explaining D5 is a typical variable selected vehicle design such as clearance, center of gravity, stress distribution. Each of KR996 and Bares illustrate D1 and D5 (EX1005, Fig. 9; EX1010, Fig. 8), and the distances remain in KR996-Bares.



**EX1010, FIG. 8
(annotated)**

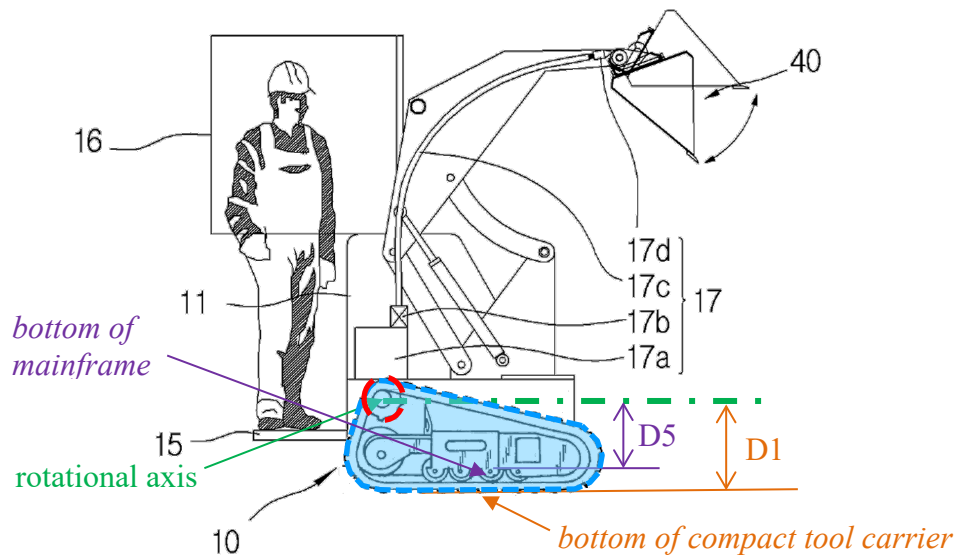
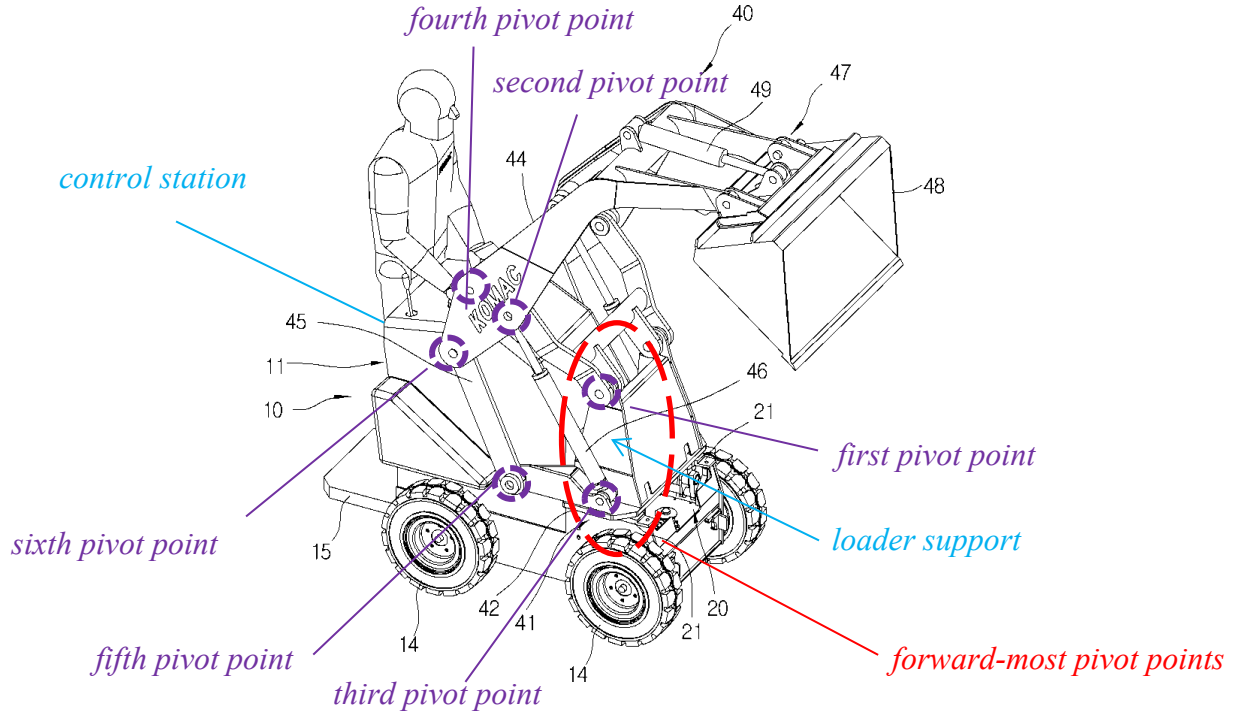


**FIGURE A
KR996's Fig. 21 (annotated)
and modified with Bares' FIG. 8 track assembly**

EX1003, ¶¶177-178. The vertical distances D1 and D5 are required for the functionality of the carrier, i.e., the sprocket 144 defining the rotational axis is disposed above bogie wheels 150 and guide wheel 152, which are over the track 148 that contacts the supporting surface. Thus, there is a vertical distance from the ground that at least provides space for these components (i.e., D1). As to D5, KR996 and Bares both illustrate the bottom of the mainframe, while above the ground to provide clearance, is below the rotational axis by a vertical distance to allow for distribution of stress of supporting the loader arm, drive mechanism, and other attachments and provide a benefit of a lower center of gravity of the equipment. Dr. Velinsky also confirms a raised drive sprocket is well-known and design considerations suggest advantages of raising sprocket (e.g., increase in protection from damage (e.g., debris or harsh conditions) and ease of connection to drive system) thus providing vertical distance D1 and D5. EX1003, ¶¶178-179 citing EX1035, EX1015.

[14.6b] the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point,

KR996 describes the *forward-most pivot point* is the *first pivot point* or the *third pivot point* of [14.3], [14.4]. Fig. 9 is illustrative:



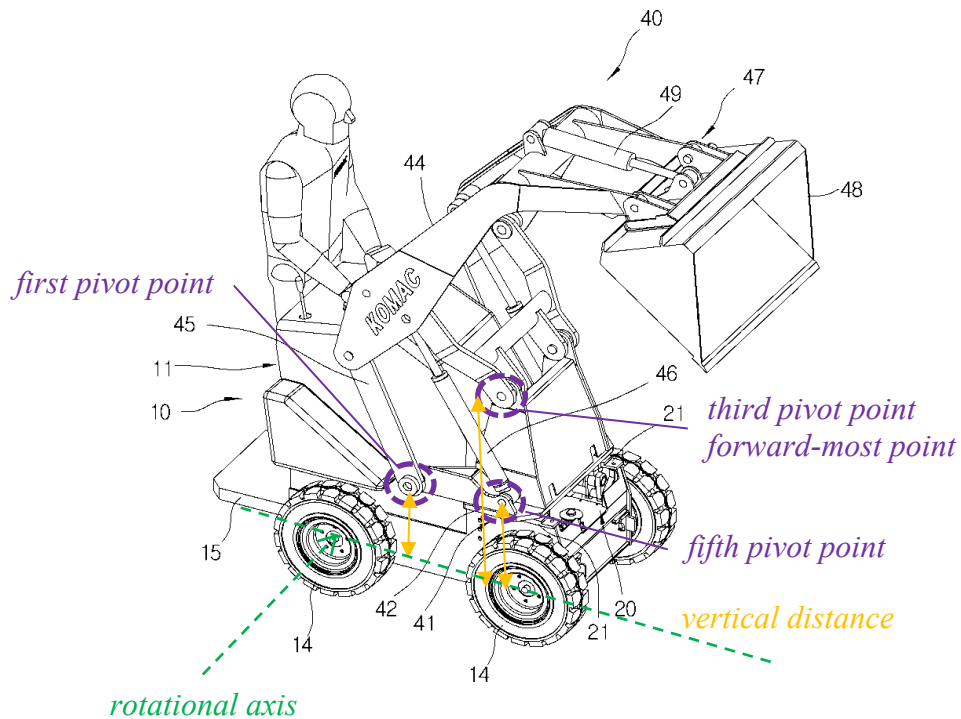
EX1005, Fig. 9
(annotated)

This configuration also is in KR996-Bares in light of the teachings of Beltrami, as discussed below. EX1003, ¶¶180-181.

[14.6c] a vertical distance between the rotational axis R and the forward-most pivot point being less than $0.75 D5$, ...the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times $D1$, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times $D1$, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times $D1$.

KR996 teaches, including through plain inspection of its figures, that there is a vertical distance between each of the first, third, and fifth pivot point[s], those at

which the links (*first/second linkages*) and boom cylinder 48 (*actuator*) are attached to the *loader support*, respectively, and *rotational axis R*. EX1005, Figs. 8-9, 21. In the context of KR996 alone, Fig. 9 is illustrative:



**EX1005, Fig. 9
(annotated)**

EX1003, ¶182. In the KR996-Bares vehicle, this vertical distance would also be present, though as discussed above, the rotational axis is raised in implementing Bares' track assembly, which decreases the vertical distances between the pivot points and the rotational axis.

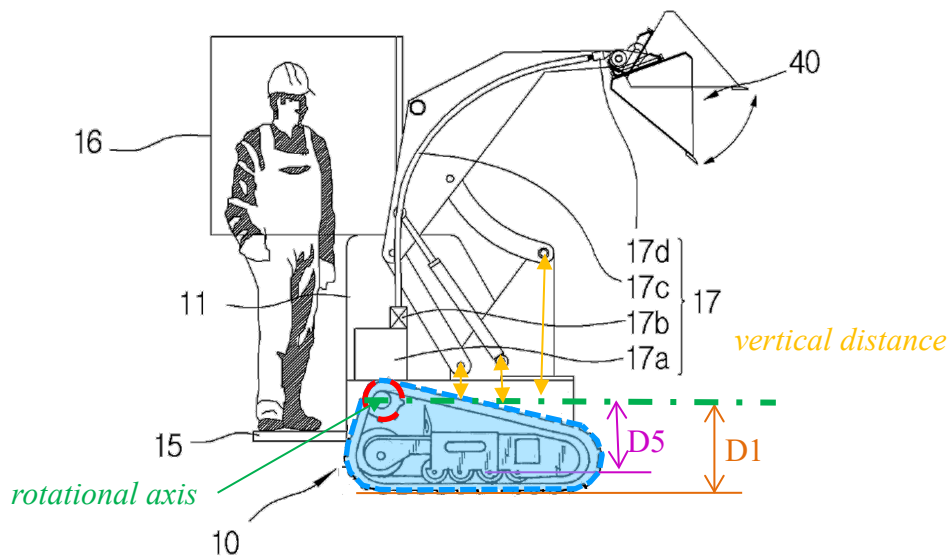


FIGURE A
KR996's Fig. 21 (annotated)
and modified with Bares' FIG. 8 track assembly

EX1003, ¶183.

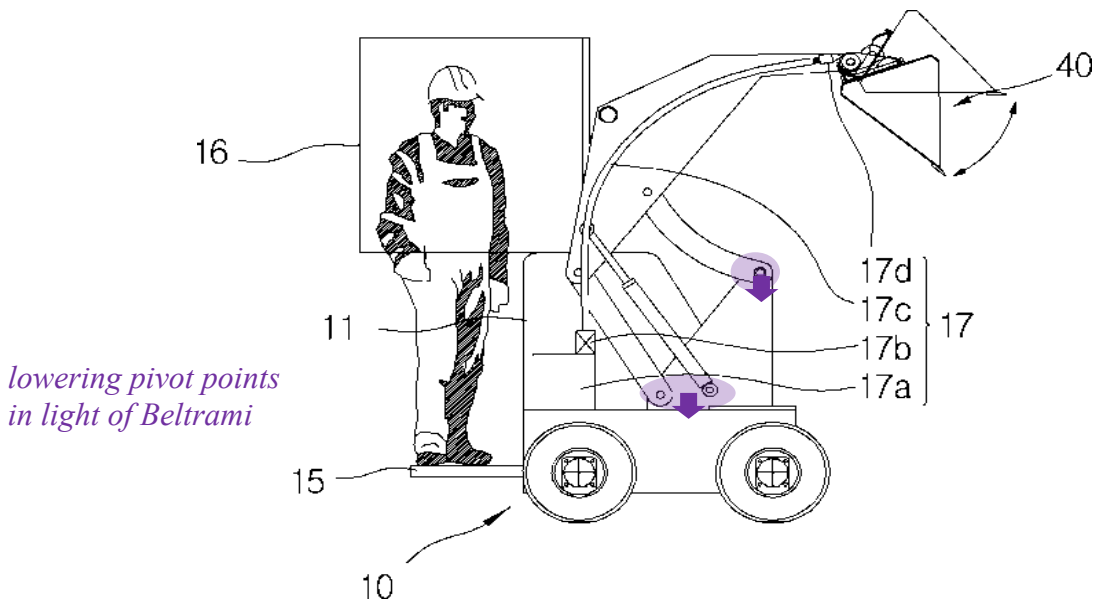
In FIGURE A, *first pivot point* and the *fifth pivot point* appear by simple inspection to be within the recited dimension. Further, POSITA would have recognized a benefit to configure each of the vertical distances between linkage/actuator pivot point connections and the rotational axis each being *less than 1.5 times D1* and the *forward-most pivot point* of said points *being less than 0.75 D5* in KR996-Bares vehicle in light of the teachings of Beltrami as discussed in the reasons to combine Beltrami and further discussed below.

First, KR996 teaches the same vertical lift loader with pivot points between

the same intermediary parts (linkages/actuator) as the '266 Patent. EX1003, ¶¶184-189. And optimization within prior art conditions or through routine experimentation supports a finding of obviousness. *In re Williams*, 36 F.2d 436, 438 (CCPA 1929) (“It is a settled principle of law that a mere carrying forward of an original patented conception involving **only change of** form, proportions, or **degree**, or the substitution of equivalents doing the same thing as the original invention, **by substantially the same means, is not such an invention as will sustain a patent**, even though the changes of the kind may produce better results than prior inventions.”) Dr. Velinsky explains that it was a routine practice when designing a four-bar mechanism for a vehicle to consider placement of pivot points between linkages/actuator and the mainframe depending on the desired design specifications. EX1003, ¶¶186-189. Beltrami also confirms decades prior to the '266 Patent, modifying positions of the relevant pivot points affected the design goals and was a known technique. EX1008, 4:35-40, 3:35-45.

Second, Beltrami also explicitly describes benefits to providing the pivot point attachment locations **low** on the frame of the vehicle (*i.e.*, minimizing the vertical distance with the rotational axis). Beltrami explains “[a]mongst the various advantages, the following ones are to be emphasized: the pivot points 24, 26 and 30 [two linkages and actuator] **can be kept in such a low position on the vehicle that no supporting frame is needed; the arm can be lifted with nearly constant**

power input and speed; and finally a lifting can be performed without having the equipment gravity center to undergo an unnecessarily large shifting.” EX1008, 3:35-41, 2:69-75. POSITA would recognize that general physics principals dictate that lowering the attachment of the loader arm lowers the center of gravity (driven by attachment and decrease in mainframe discussed below), which reduces risk of tipping. EX1003, ¶¶189-194. POSITA would also recognize lowering the pivot points reduces the mainframe requirements thus reducing mainframe size, cost and improving operator visibility. EX1003, ¶¶189-193 including citing Beltrami, 3:35-41, which suggests no “supporting frame” is needed with low pivot points, which one would suggest allows for removing right-side frame, triangular portion of KR996.



EX1005, Fig. 21
(annotated)

EX1003, ¶190.

Further, it would have been obvious to position the pivot points as claimed: vertical distances *less than 1.5 times D1* and the forward-most pivot point *less than 0.75 D5*. The '266 Patent provides **no** specific advantage, benefit, or surprising result to any one of the myriads of claimed relative dimensions related to these pivot points including those of Claim 14. Instead, the '266 Patent espouses only general benefits in general terms:

By positioning the pivot points relatively low on the mainframe 10, the mass of the mainframe 10 and the resulting **cost** of the carrier 5 may be reduced. Further, such a low-profile mainframe 10 **improves the visibility for the operator** and **allows the center of gravity** of the carrier 5 to be **lowered** with improves its stability.

EX1001, 6:7-12. These **same** advantages of the location of pivot points locations—“relatively low”—were known well before the earliest priority date claimed by the '266 Patent. As discussed above, Beltrami explicitly recognizes advantages of a lower center of gravity and a reduction in frame. EX1008, 3:35-41, 2:69-75. POSITA would also have recognized providing pivot points low on the mainframe, and closer to the axis, for the exact same benefits touted in the '266 Patent as these naturally occurring consequences, dictated by physics principals, and were well-recognized in the art. EX1003, ¶¶191-194 including citing EX1012, 3:56-64 (“...the

rear **pivot** of link 50 is substantially directly vertically above the rear axle 17, and it is **much closer to the axle** than in previous designs. The **number of structural components** between the points of attachment of the boom to the loader frame and the wheel attachment to the loader frame is **reduced**...the shorter load bearing paths **simplifies and reduces the costs** in the overall load and carrying structure.”), EX1011 discussing visibility and stability; EX1009 discussing “visibility” and lowering the center of gravity; EX1006, [0010].

Thus, POSITA would have had the skillset, desire, and motivation to provide the pivot points low (*i.e.*, minimizing vertical distance between the pivot points and the rotational axis) to provide, for example, a compact size mainframe and a low center of gravity of the carrier as taught by Beltrami by lowering the attachment pivot points of the links and boom cylinder in the context of KR996-Bares to the extent it is required. And to implement the pivot point attachments of the first/third/fifth pivot points than 1.5 times D1 and the vertical distance of the forward most point less than 0.75 times D5. EX1003, ¶¶190-214 including citing Beltrami (3:35-42) suggesting not needing to provide a supporting frame such as the portion of mainframe of KR996 that extends vertically, EX1021 explaining benefits of mounting attachments of four-bar mechanism at “same level.”

Dr. Velinsky provides an example of a comparison of the kinematic drawings of the four-bar mechanism as illustrated in KR996, and KR996-Bares and also an

example implementation of the four-bar mechanism as modified in light of Beltrami's teachings:

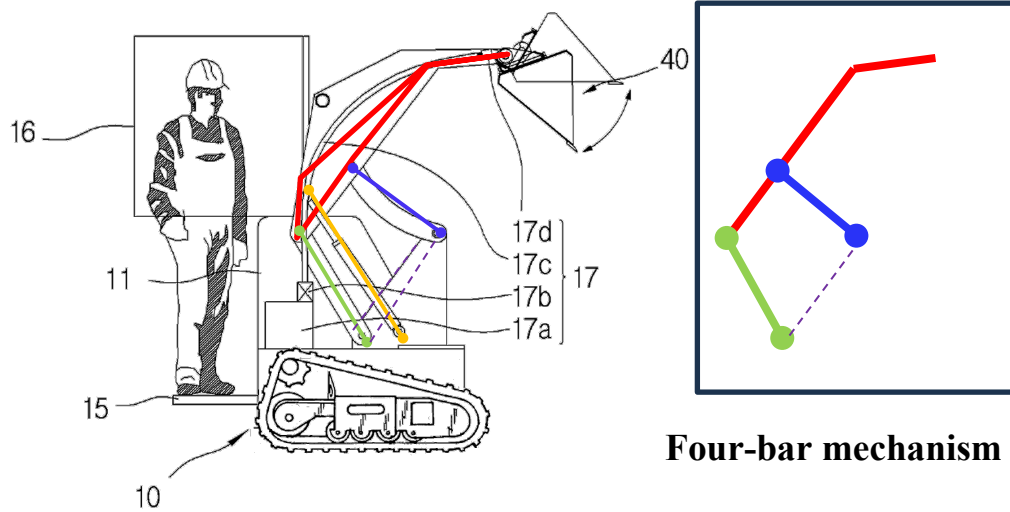
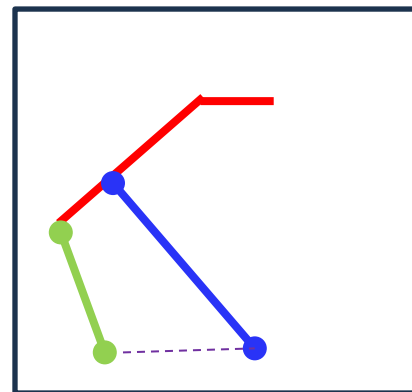
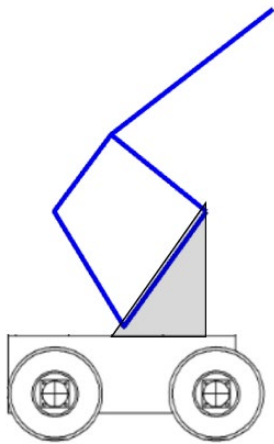


Figure A
KR996-Bares
(annotated)

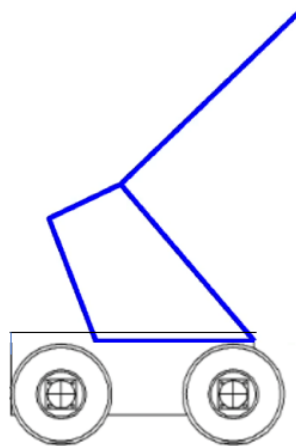
Figure A
(annotated)
with lowered pivot points



EX1003, ¶¶201-202. Further, a simulation illustrating the predictable functionality (e.g., travel distance from a low to vertically raised position) of the KR996 as-illustrated mechanism and the as-modified mechanism in Appendix A (EX1004) illustrates the modification can be easily applied with predictable results of maintaining the loader path.



**Screen Shot of Simulation
in Appendix A of
KR996 as configured**



**Screen Shot of Simulation
in Appendix A of
KR996 as modified**

EX1003, ¶¶207-213. POSITA would also have the knowledge to arrange components (e.g., mainframe, drive mechanism, lift mechanism) to provide suitable functionality without interference. EX1003, ¶¶203-205.

Thus, claim 14 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶172-215.

6. Claim 15

[15] *The loader apparatus as set forth in claim 14 wherein the loader support comprises a lower frame and an upper frame, the loader apparatus further comprising a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader, the control station being attached to the upper frame.*

KR996-Bares-Beltrami renders obvious claim 14 and KR996 further describes control unit 13 (*control station*) having *operator controls for propelling the loader and raising and lowering the loader* as discussed in [1.6] where the control unit 13 is attached to an *upper frame* of the *loader support*, which also includes a *lower frame* as illustrated in [2].

Thus, claim 15 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶216-218.

7. Claim 16

[16] *The loader apparatus as set forth in claim 14 wherein the loader support incorporates a single weldment.*

KR996-Bares-Beltrami renders obvious claim 14 and it would have been obvious to form the loader support of KR996 *incorporat[ing] a single weldment* as illustrated in [3]. *See also*, EX1010, frame 12, 4:8-10, 4:31-35. Thus, claim 16 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶219.

8. Claim 19

The analysis of claim 19 is the same claims 7, 12 and 14, with additional elements discussed below the cross-referencing chart. EX1003, ¶220.

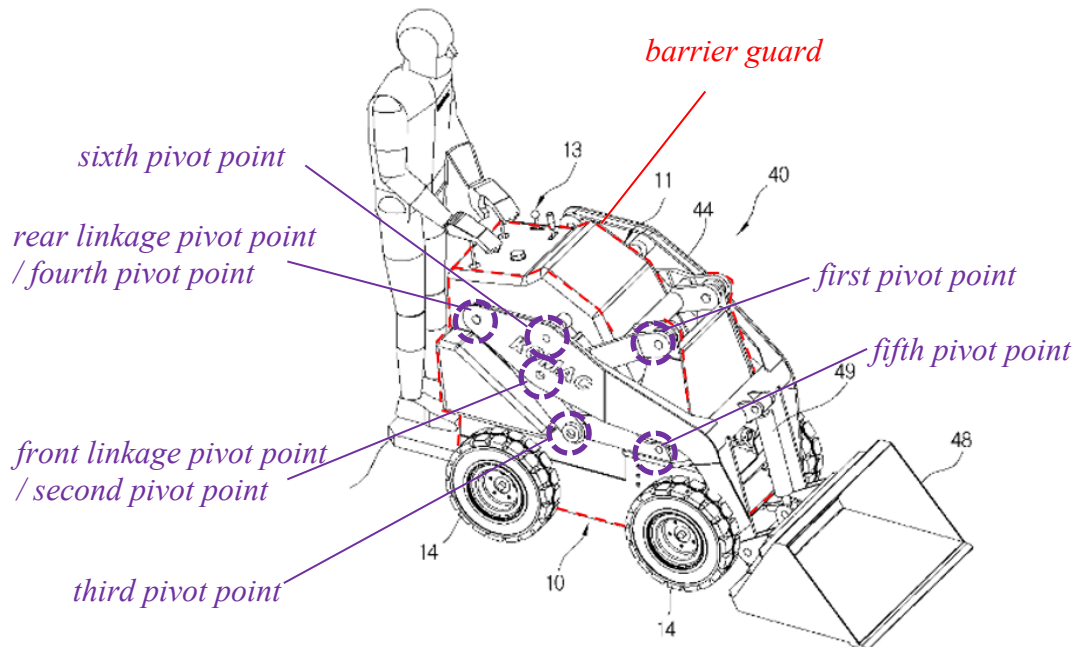
	<i>Claim</i>	See the analysis in:
[19.0]	<i>A loader apparatus for standing or walk-behind operator control and comprising:</i>	[7.0]
[19.1a]	<i>a machine structure comprising a mainframe and an upper frame,</i>	[12] where <i>rigid frame</i> analysis applies to <i>machine structure</i> and <i>mainframe</i> applies to <i>lower frame</i>
[19.1b]	<i>the machine structure defining a barrier guard;</i>	below
[19.2]	<i>a control station having operator controls toward a rear of the loader apparatus;</i>	[7.1] including control unit 13 (<i>control station</i>)
[19.3]	<i>an actuator pivotally attached to the mainframe;</i>	[7.5] including boom cylinder 46 (<i>actuator</i>)
[19.4]	<i>a front linkage pivotally attached to the mainframe;</i>	[7.4] including a link (<i>front linkage</i>)
[19.5]	<i>a rear linkage pivotally attached to the mainframe;</i>	[7.6a] including link 45 (<i>rear linkage</i>)
[19.6]	<i>a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position,</i>	[7.2] including loader unit 40 (<i>loader</i>) carrying bucket

		48 (<i>tool</i>)
[19.7]	<i>the front linkage being pivotally attached to the mainframe at a first pivot point and being pivotally attached to the loader at a front linkage pivot point, the front linkage pivot point being a second pivot point, the rear linkage being pivotally attached to the mainframe at a third pivot point and being pivotally attached to the loader at a rear linkage pivot point, the rear linkage pivot point being a fourth pivot point, the actuator being pivotally attached to the mainframe at a fifth pivot point and being pivotally attached to the loader at a sixth pivot point, wherein:</i>	[7.5], [7.4], [7.6a] discussing the pivot point attachments having different nomenclature, annotated below
[19.8]	<i>in the down position, the front linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard; and as the loader travels from the down position to the vertically raised position, the rear linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard; and</i>	below
[19.9]	<i>a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1,</i>	[14.6a] including Bares' tracked <i>drive mechanism</i> including drive sprocket 144 (<i>drive sprocket</i>), Figure A

[19.10]	<i>the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times D1, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times D1.</i>	[14.6c] including Beltrami’s teachings of low pivot points applied to KR996-Bares
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[19.1b] *the machine structure defining a barrier guard*

First, as discussed above in VI.A, VI.B, IX, the term “barrier guard” was added to the ’266 Patent by preliminary amendment, Applicant relied upon incorporated, industry standard (EX1015) as basis for its addition, and Patent Owner described its meaning as perimeter of the machine structure. Under this construction, the machine structure of KR996 and its perimeter also provides a *barrier guard* as illustrated in representative Fig. 8 below.



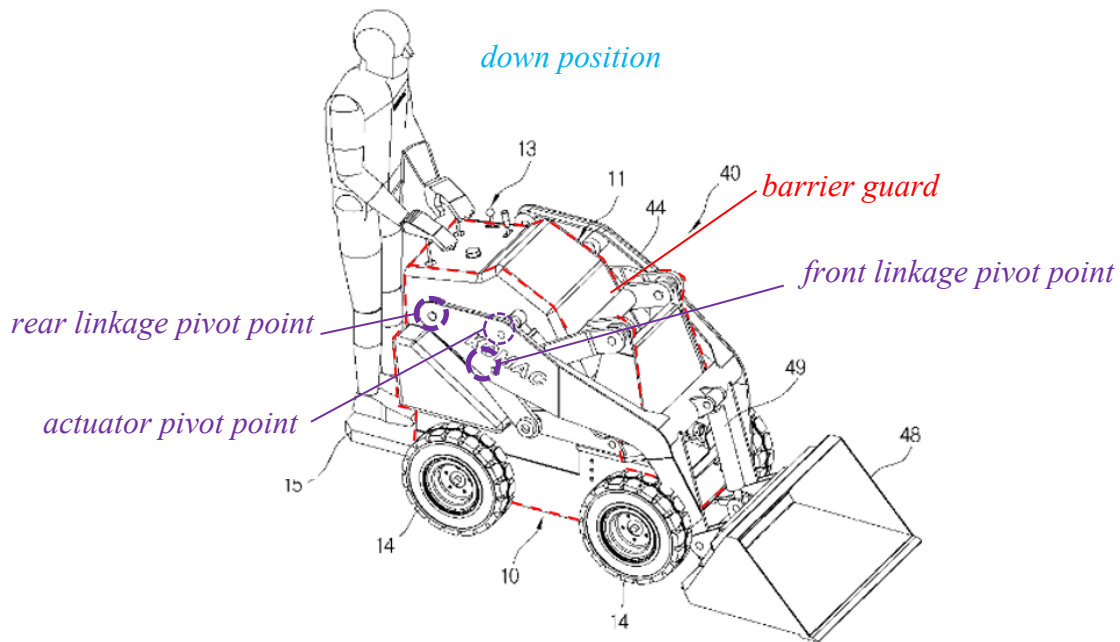
**EX1005, FIG. 8 (portion)
(annotated)**

KR996 also describes a safety fence 16 (Fig. 21) that serves to protect the operator from “flying debris,” providing a barrier guard under a broader construction. EX1005, [0089]-[0090]. Thus, KR996 discloses this element. EX1003, ¶¶221-222.

[19.8] in the down position, the front linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard; and as the loader travels from the down position to the vertically raised position, the rear linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard; and

First, KR996 illustrates the *front linkage pivot point* is disposed within the *barrier guard* and/or *disposed forward of the barrier guard* in a *down position*. EX1005, Fig. 8. And in this *down position*, the *rear linkage pivot point* is also *disposed within the barrier guard* and/or *disposed forward of the barrier guard*. Fig.

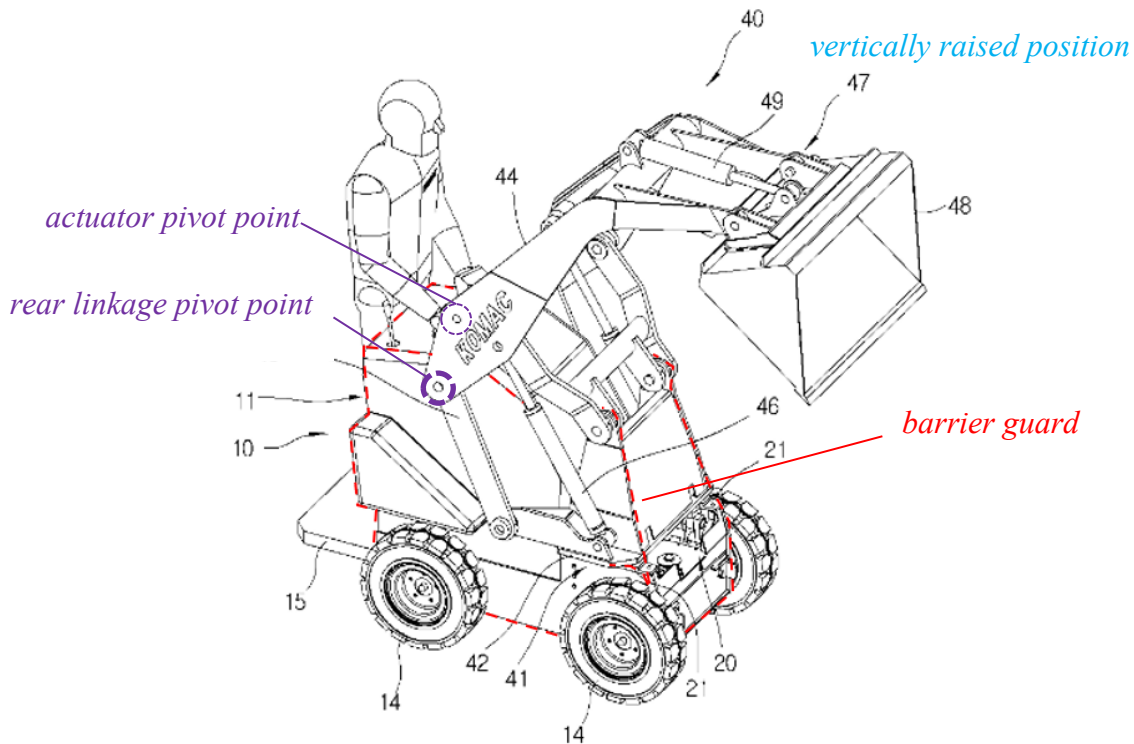
8 is illustrative.



**EX1005, Fig. 8 (portion)
(annotated)**

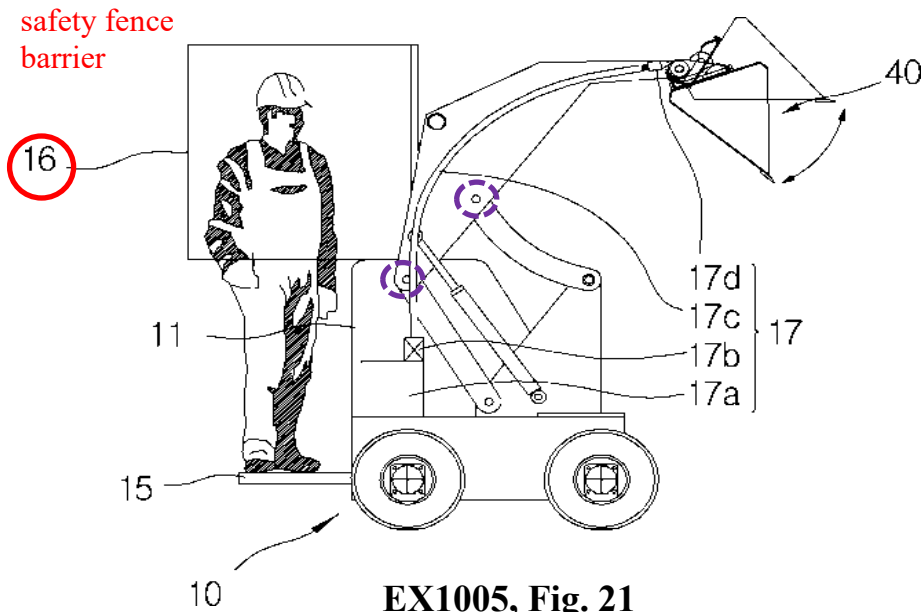
And as the loader travels to a *vertically raised position* (e.g., Fig. 9), the *rear linkage point* is *disposed within the barrier guard* and/or *forward of the barrier guard*.

EX1005, Figs. 7, 9, 21.



**EX1005, Fig. 9
(annotated)**

See also, Figs. 21 and 7 where the rear linkage pivot point is lower in a vertically raised position. Fig. 21 shows the rear linkage point within the perimeter of the machine. And each of these configurations remains in KR996-Bares-Beltrami. See Figure A. Further, the referenced pivot points are each also in front of the safety fence 16, which is between the operator and the loader unit 40, at the down and vertically raised position. EX1005, Fig. 21.



**EX1005, Fig. 21
(annotated)**

Thus, claim 19 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶223-226.

9. Claim 20

[20] *The loader apparatus as set forth in claim 19 wherein, in the down position, the rear linkage pivot point is disposed within the barrier guard.*

KR996-Bares-Beltrami render obvious claim 19 and KR996 illustrates in the down position (Fig. 8) the rear linkage pivot point is disposed within the barrier guard as defined by the perimeter of the tool. See [19]. This condition remains in KR996-Bares-Beltrami. Thus, claim 20 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶227-229.

10. Claim 21

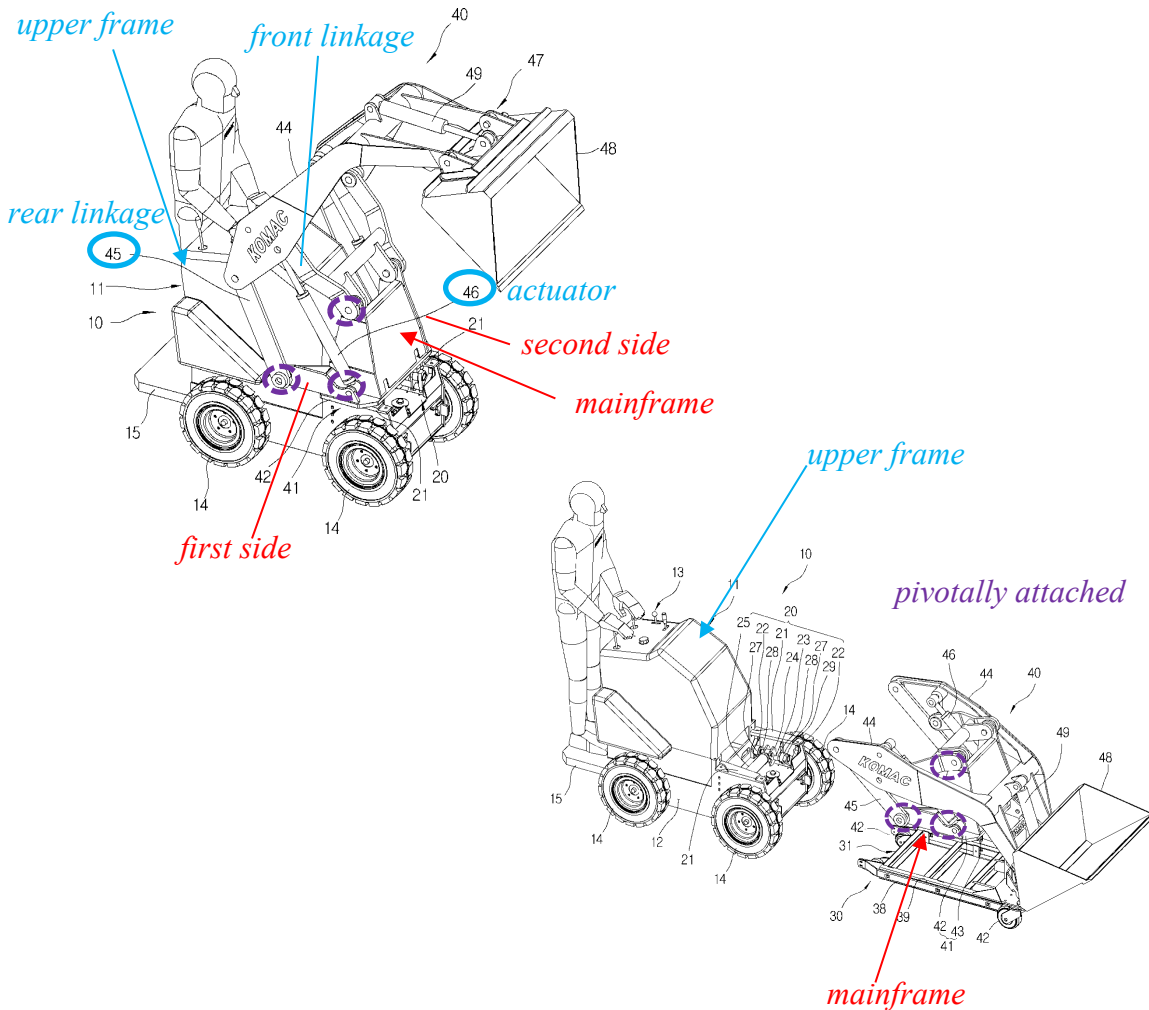
[21] *The loader apparatus as set forth in claim 19 wherein the actuator is pivotally attached to the loader at an actuator pivot point, wherein, in the down position, the actuator pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.*

KR996-Bares-Beltrami render obvious claim 19 and KR996 illustrates boom cylinder 46 (*actuator*) is pivotally attached to the boom 44 of the loader unit 40 (*loader*) and this *actuator pivot point* is disposed within and/or forward of the barrier guard in the *down position* (see Fig. 8). See [19.8] including annotated KR996, Fig. 8. Further, the actuator pivot point is disposed forward of the safety fence 16. See EX1005, Fig. 21. Each of these conditions remains in KR996-Bares-Beltrami. Thus, claim 21 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶230-232.

11. Claim 22

[22] *The loader apparatus as set forth in claim 21 wherein the mainframe has a first side and a second side, the rear linkage, actuator and front linkage each being pivotally attached to the first side of the mainframe.*

KR996-Bares-Beltrami render obvious claim 21 and the KR996 *mainframe* has a *first side and a second side* where each of the two linkages and actuator each are pivotally attached.



EX1005, Fig. 9, Fig. 1
(annotated)

Thus, claim 22 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶233-235.

12. Claim 23

[23] *The loader apparatus as set forth in claim 19 wherein the loader is free from direct attachment to the mainframe.*

KR996-Bares-Beltrami render obvious claim 19 and KR996, like Beltrami, also teaches a *loader is free from direct attachment* to the mainframe as it is connected by linkages/actuator. See [1.2], a four-bar mechanism and analysis to loader support applying equally to *mainframe*. Thus, claim 23 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶236-237.

13. Claim 24

[24] *The loader apparatus as set forth in claim 19 wherein the mainframe incorporates a single weldment.*

KR996-Bares-Beltrami render obvious claim 19 and KR996 also renders obvious a *mainframe incorporat[ing] a single weldment* as discussed in [3] (analysis to loader support applying equally to *mainframe*). Thus, claim 24 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶238.

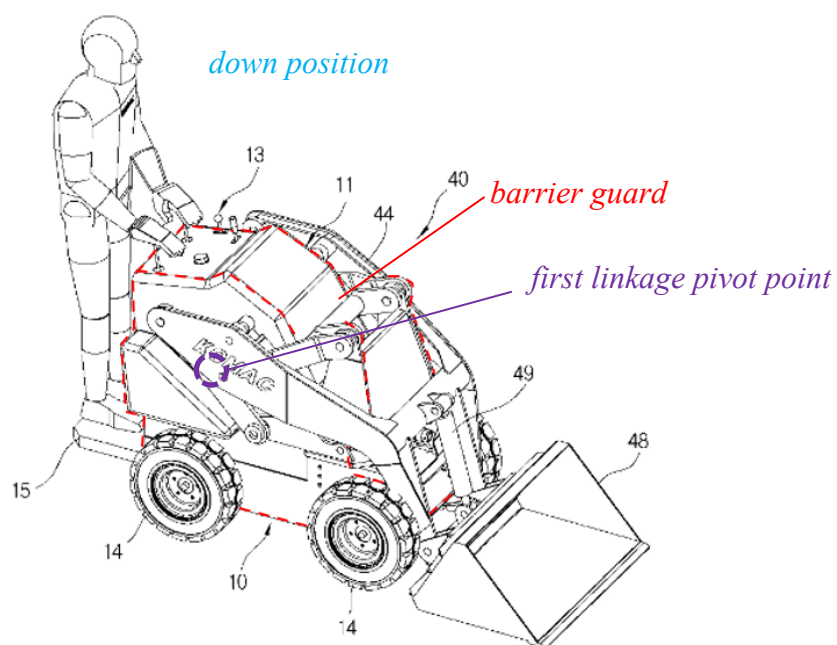
14. Claim 25

Claim 25 recites the same limitations as previously discussed, with different terminology for the linkages and numerical identifiers for the pivot points. Corresponding portions are referenced below, and a mapping of exemplary Fig. 9 of KR996 is provided for reference of the terminology of claim 25. EX1003, ¶239.

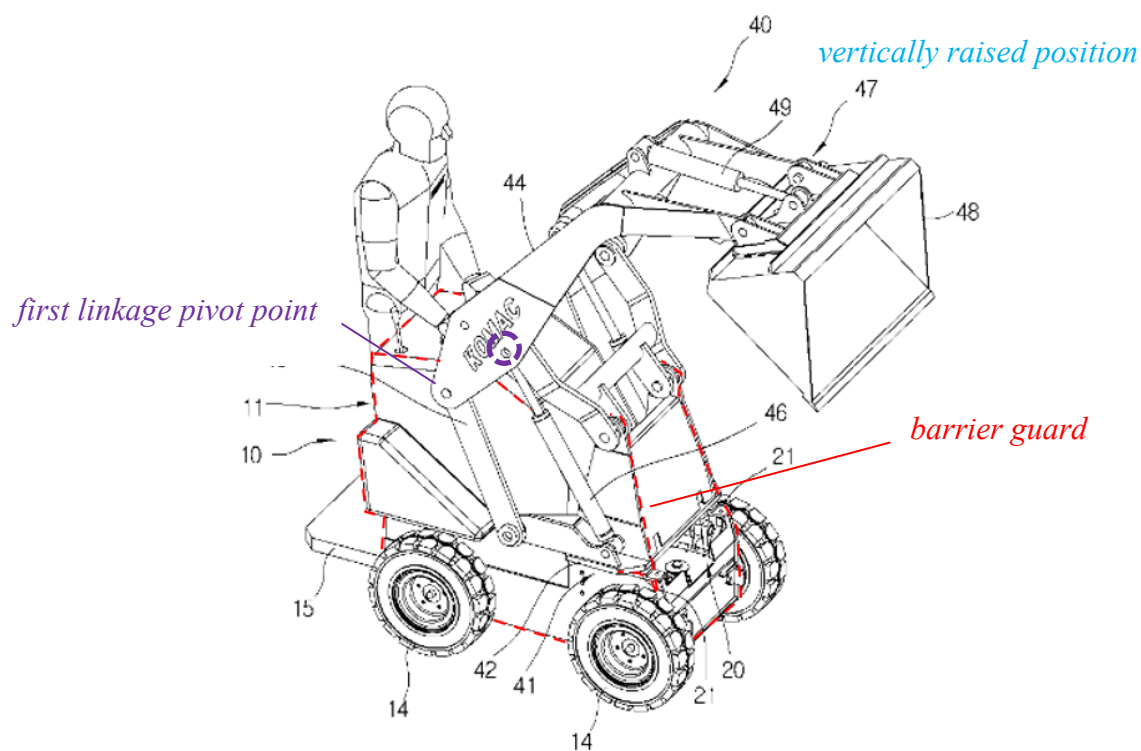
	<i>Claim</i>	See the analysis for:
[25.0]	<i>A loader apparatus for standing or walk-behind operator control and comprising:</i>	[7.0]
[25.1]	<i>a machine structure comprising a mainframe and an upper frame, the machine structure defining a barrier guard;</i>	[19.1a]-[19.1b]

[25.2]	<i>a control station having operator controls toward a rear of the loader apparatus;</i>	[7.1] including control unit 13 (<i>control station</i>)
[25.3]	<i>an actuator pivotally attached to the mainframe;</i>	[7.5] including boom cylinder 46 (<i>actuator</i>)
[25.4]	<i>a first linkage pivotally attached to the mainframe;</i>	[7.4] including a forward link (<i>first linkage</i>)
[25.5]	<i>a second linkage pivotally attached to the main frame;</i>	[7.6a] including link 45 (<i>second linkage</i>)
[25.6a]	<i>a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position,</i>	[7.2] including loader unit 40
[25.6b]	<i>the first linkage being pivotally attached to the mainframe at a first pivot point and being pivotally attached to the loader at a first linkage pivot point, the first linkage pivot point being a second pivot point, the actuator being pivotally attached to the mainframe at a third pivot point and being pivotally attached to the loader at a fourth pivot point, the second linkage being pivotally attached to the mainframe at a fifth pivot point and being pivotally attached to the loader at a sixth pivot point, wherein:</i>	[7.4] , [7.5], [7.6a] links 45 and boom cylinder 48, analysis to rigid frame applying to <i>mainframe</i> (labeled points below)
[25.6e]	<i>in the down position, the first linkage pivot point is disposed within the barrier guard; and as the loader travels from the down position to the vertically raised position, the first linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard; and</i>	below

[25.7]	<i>a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1,</i>	[14.6a] including Bares' tracked assembly (<i>drive mechanism</i>) having a drive sprocket 144 (<i>drive sprocket</i>) combined with KR996
[25.8]	<i>the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times D1, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times D1.</i>	[14.6a, c] including Beltrami's teachings of lowering pivot point attachments to the mainframe of KR996-Bares. Figure A.



EX1005, Fig. 8 (portion)
(annotated)



EX1005, Fig. 9
(annotated)

Further, the referenced pivot point is also forward of the safety fence 16, which is between the operator and the loader unit 40. EX1003, ¶241, EX1005, Fig. 21. All of these configurations continue in KR996-Bares-Beltrami.

Thus, claim 25 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶¶239-242.

15. Claim 26

[26] *The loader apparatus as set forth in claim 25 wherein the mainframe incorporates a single weldment.*

KR996-Bares-Beltrami render obvious the apparatus of claim 25 and it would have been obvious to form KR996's *incorporat[ing] a single weldment* as discussed in [3], the loader support analysis applying equally to the *mainframe*. Thus, claim 26 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶243.

16. Claim 27

[27] *The loader apparatus as set forth in claim 25 wherein the loader is free from direct attachment to the mainframe.*

KR996-Bares-Beltrami render obvious the loader apparatus of claim 25 and KR996, like Beltrami, describes the *loader is free from direct attachment to the mainframe* as in [1.2], the loader support analysis applying equally to the *mainframe*. Thus, claim 27 is rendered obvious by KR996, Bares, and Beltrami. EX1003, ¶244.

XI. DISCRETIONARY DENIAL IS INAPPROPRIATE

A. NO BASIS FOR 35 U.S.C. § 325(D) DENIAL

The combinations of references presented in the grounds above have not previously been presented to the Office. KR996, the primary reference, was not cited or considered by the Examiner during prosecution or reexamination of the '266 Patent. Further, predominately all of the analysis during the '266 Patent prosecution and reexamination was directed to an obviousness framework of placing a vertical lift configuration loader arm disclosed on a larger tractor onto a compact tool carrier, which is **not** proposed here. In fact, the Examiner concluded the final reexamination proceeding of the '266 Patent reiterating that there was only one reference of record that included a vertical lift loader on a compact tool carrier.⁷ Here, KR996, which was not of record, shows in a single embodiment, a vertical lift configuration of a loader arm on a compact tool carrier, and thus is not cumulative to the previous presentations.

⁷ “Ulinski (U.S. Patent 3,074,572[]) is the only reference of record which uses linkages to indirectly attach loader arms to a standing or walk-behind machine to achieve vertical lift.” EX1030, p. 13. Ulinski was distinguished on other features.

Beltrami was merely cited in an IDS in the reexamination, and Bares was not cited nor discussed but shares some disclosure with Bares '568, which was discussed. Bares is used here a secondary reference illustrating conventional features of a track assembly and in combination with new reference, KR996. Accordingly, the prior art, arguments and grounds raised here were not previously before to the Office. Accordingly, discretionary denial under 35 U.S.C. § 325(d) is not appropriate.

B. NO BASIS FOR DENIAL UNDER THE 35 U.S.C. §314/*FINTIV*

The Board balances six factors in considering denial under § 314. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (Mar. 20, 2020) (precedential). These factors strongly favor institution as this Petition presents compelling evidence of unpatentability of all Challenged Claims. And moreover, the district court case is in its very early stages, without a scheduling order or opening of fact discovery, as the Patent Owner just served the complaint on September 18, 2024. *See* EX1019. Petitioner has diligently worked to prepare the petitions. The current average time-to-trial for the district court hearing the co-pending litigation is 19.8 months (mid-May 2026). EX1026 (NDTX mean time); *in re Apple Inc.*, 979 F.3d 1332, 1350 (Fed. Cir. 2020). Here, the final written decision is due May 2026. If the median time-to-trial is around the same time or after the projected statutory deadline for the

PTAB's final written decision, this weighs against discretion. Inefficiency concerns are minimal.

C. DISCRETIONARY DENIAL UNDER *GENERAL PLASTIC* IS NOT APPROPRIATE

The '266 Patent has not been challenged in any prior IPR petition, so none of *General Plastic* discretionary institution factors apply to this Petition. *See General Plastic Indus. Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16 (Sept. 6, 2016) (Section II.B.4.i. precedential).

XII. CONCLUSION

Petitioner has established a reasonable likelihood that the Challenged Claims are unpatentable.

Respectfully submitted,

Dated: November 15, 2024
HAYNES AND BOONE, LLP
2801 N. Harwood St., Suite 2300
Dallas, Texas 75201
Customer No. 27683

/David M. O'Dell/
David M. O'Dell
Lead Counsel for Petitioner
Registration No. 42,044

XIII. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real party-in-interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that the real party-in-interest is Petitioner Kubota North America Corporation and Kubota Tractor Corporation.

B. Related matters

Pursuant to 37 C.F.R. § 42.8(b)(2), to the best knowledge of the Petitioner, the '266 Patent is or was involved in the following cases:

Case Heading	Number	Court	Filed	Status
<i>Vermeer Manufacturing Company, vs. Kubota North America Corporation and Kubota Tractor Corporation</i>	4:24-cv-00799-P	NDTX	August 20, 2024	pending
<i>Vermeer Corporation vs. The Toro Company</i>	4-17-CV-00076	SDIA	Feb. 28, 2017	Terminated

Petitioner is also concurrently filing petitions for *inter partes* review (“IPR”) of U.S. Patents related to the ’266 patent. Petitioner is also concurrently filing petitions for *inter partes* review (“IPR”) of patents related to the ’266 patent.

Patent Number	Challenged Claims	Proceeding No.	Filing Date
9,321,386 Petition A	1-13, 15, 17, 19-30, 64-67	IPR2025-00167	November 14, 2024
9,321,386 Petition B	31-49, 70-79, 86-87	IPR2025-00168	November 14, 2024
9,321,386 Petition C	50-63, 68-69, 80-85	IPR2025-00169	November 14, 2024
9,975,750	1-36 (all claims)	IPR2025-00170	November 14, 2024

C. Lead and back-up counsel and service information

Lead Counsel

David M. O’Dell
HAYNES AND BOONE, LLP
2801 N. Harwood Street, Suite 2300
Dallas, TX 75201

Phone: (972) 739-8635
Fax: (214) 200-0853
david.odell.ipr@haynesboone.com
USPTO Reg. No. 42,044

Back-up Counsel

Kelly Gehrke Lyle
HAYNES AND BOONE, LLP
2801 N. Harwood Street, Suite 2300
Dallas, TX 75201

Phone: (512) 867-8528
Fax: (214) 200-0853
kelly.lyle.ipr@haynesboone.com
USPTO Reg. No. 62,332

Back-up Counsel

Hong Shi
HAYNES AND BOONE, LLP
2801 N. Harwood Street, Suite 2300
Dallas, TX 75201

Phone: (512) 867-8440
Fax: (214) 200-0853
hong.shi.ipr@haynesboone.com
USPTO Reg. No. 69,009

Back-up Counsel

Greg Michelson
HAYNES AND BOONE, LLP
2801 N. Harwood Street, Suite 2300
Dallas, TX 75201

Phone: (949) 202-3022
Fax: (214) 200-0853
greg.michelson.ipr@haynesboone.com
USPTO Reg. No. 44,940

Back-up Counsel

John Russell Emerson
HAYNES AND BOONE, LLP
2801 N. Harwood Street, Suite 2300
Dallas, TX 75201

Phone: (214) 651-5328
Fax: (214) 200-0853
Russ.Emerson.ipr@haynesboone.com
USPTO Reg. No. 44,098

Please address all correspondence in this proceeding to lead and back-up counsel. Petitioner consents to service in this proceeding by email at the addresses above.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 13,650. Pursuant to 37 C.F.R. § 42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: November 15, 2024

/David M. O'Dell/
David M. O'Dell
Lead Counsel for Petitioner
Registration No. 42,044

CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e) and 37 C.F.R. § 42.105, service was made on Patent Owner as detailed below.

Date of service November 15, 2024

Manner of service FEDERAL EXPRESS

Documents served Petition for *Inter Partes* Review Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104 of USP 10,202,266;
Petitioner's Power of Attorney;
Petitioner's Exhibit List;
Exhibits EX1001 – EX1017, EX1019-EX1030 and EX1032-1036

Persons served Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard, Suite 1800
St. Louis, MO 63105

/David M. O'Dell/
David M. O'Dell
Lead Counsel for Petitioner
Registration No. 42,044