

***Inter Partes* and Post Grant Reviews of Vermeer Patents**

Kubota North America Corporation v. Vermeer Manufacturing Company

IPR2025-00167 (USP 9,321,386)
IPR2025-00168 (USP 9,321,386)
IPR2025-00169 (USP 9,321,386)
IPR2025-00170 (USP 9,975,750)
IPR2025-00171 (USP 10,202,266)
IPR2025-00381 (USP 11,465,891)
PGR2025-00016 (USP 12,098,063)

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Representing Petitioner Kubota North America



Introduction

*Summary of the patented technology and
prosecution history*



Compact Tool Carriers Having Loader

Compact tool carriers are also known as mini skid steers, mini track loaders, or compact utility loaders (CULs).^[1] The Vermeer patents claims use “compact tool carrier” or “loader apparatus.”^[2]

Vermeer Patents, EX1001

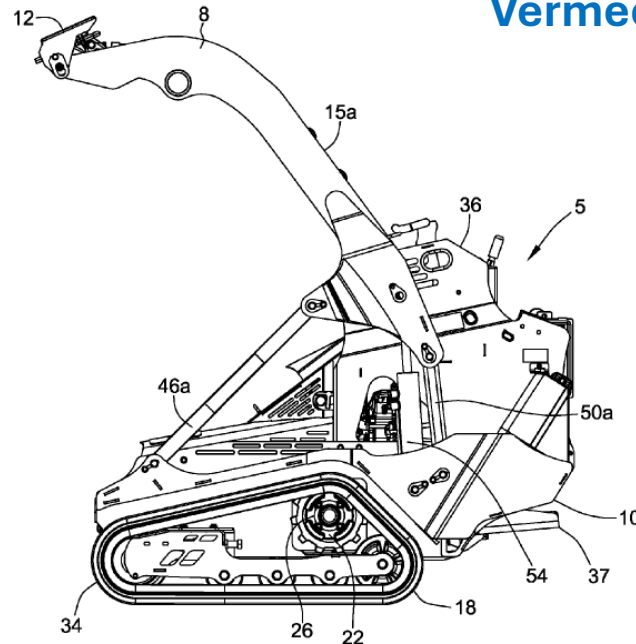


FIG. 3

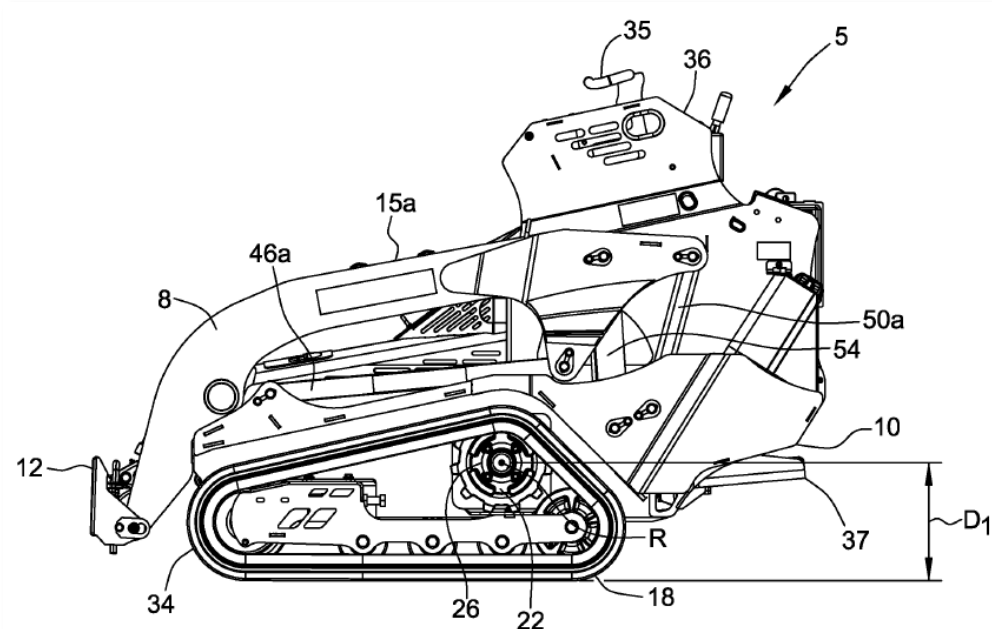


FIG. 2

'386 patent, EX1001, FIGs. 2, 3

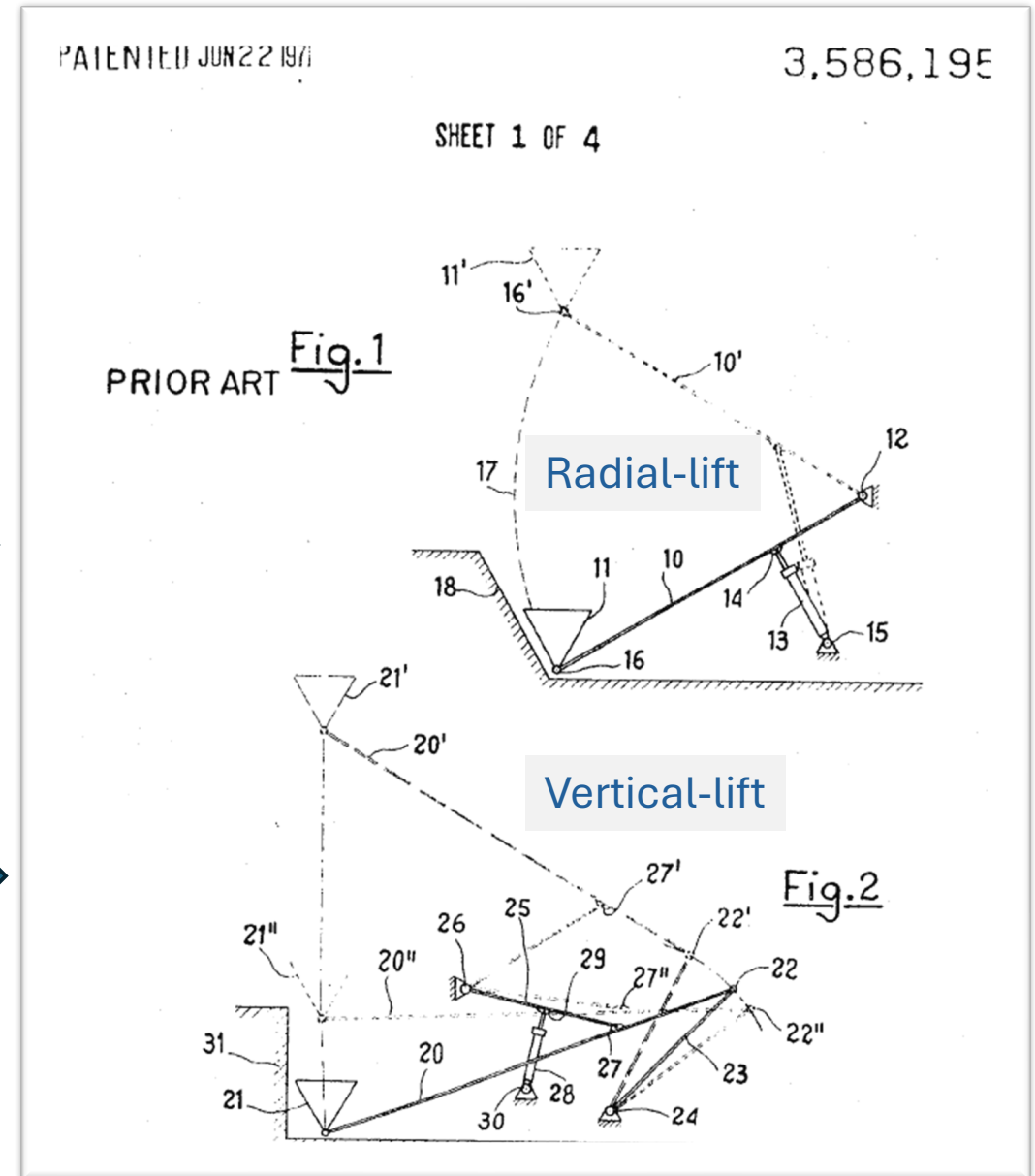
Vertical Lift Loaders

Two conventional configurations of loaders are characterized by how the loader attaches to a frame:

- **Radial-lift loaders** - two-bar mechanism where the loader arm is attached to a frame by a direct pivot connection
- **Vertical-lift loaders** – four-bar mechanism where the loader arm attaches to intermediary parts—linkage, actuator—which are attached to a frame by a direct pivot connection.



Petition [3]



Claim 1 of the '386 Patent

According to the PO, the inventive concept is a **compact tool carrier** or **CUL** with **vertical lift**

CUL:

*A **compact tool carrier** configured for standing or walk-behind operator control and having a longitudinal axis and a mass of less than about 1500 kg, the compact tool carrier comprising:*

- a loader having an arm**, the loader being adapted to carry a tool;*
- a mainframe for supporting the loader, the mainframe having a first side and a second side, and having a front end and a rear end relative to the longitudinal axis, the mainframe comprising an engine bracket that extends from the first side toward the second side for mounting an engine to the mainframe, the engine bracket being spaced from the rear end of the mainframe,*
- the loader arm not being directly attached to the mainframe;***
- a linkage pivotally attached to the first side of the mainframe and pivotally attached to the loader arm;***
- an actuator pivotally attached to the first side of the mainframe and pivotally attached to the loader arm; and***
- a control station having operator controls for propelling the compact tool carrier forward and for raising and lowering the loader, the control station being mounted toward the rear of the compact tool carrier and adapted to allow for standing or walk-behind operation.*

**Vertical
Lift:**

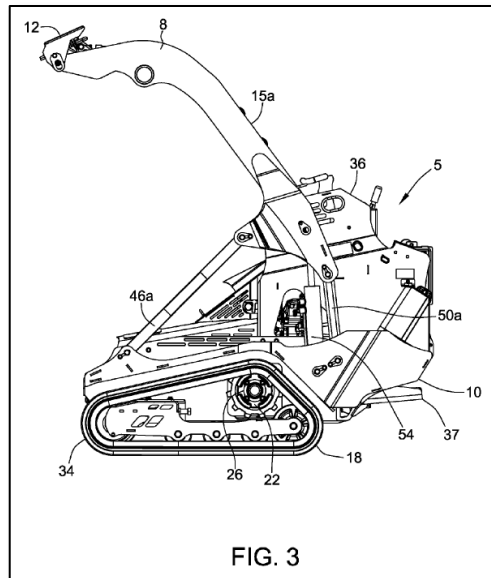
-00167, EX1001, 6:34-56; see also, POR, 10, 65; Pet. Resp, 2



Prosecution History

The claims at issue were previously rejected over a combination of references, including a larger skid steer with vertical lift loader arm and a CUL with radial lift loader arm.^[4]

Vermeer (PO) patented
CUL with vertical lift

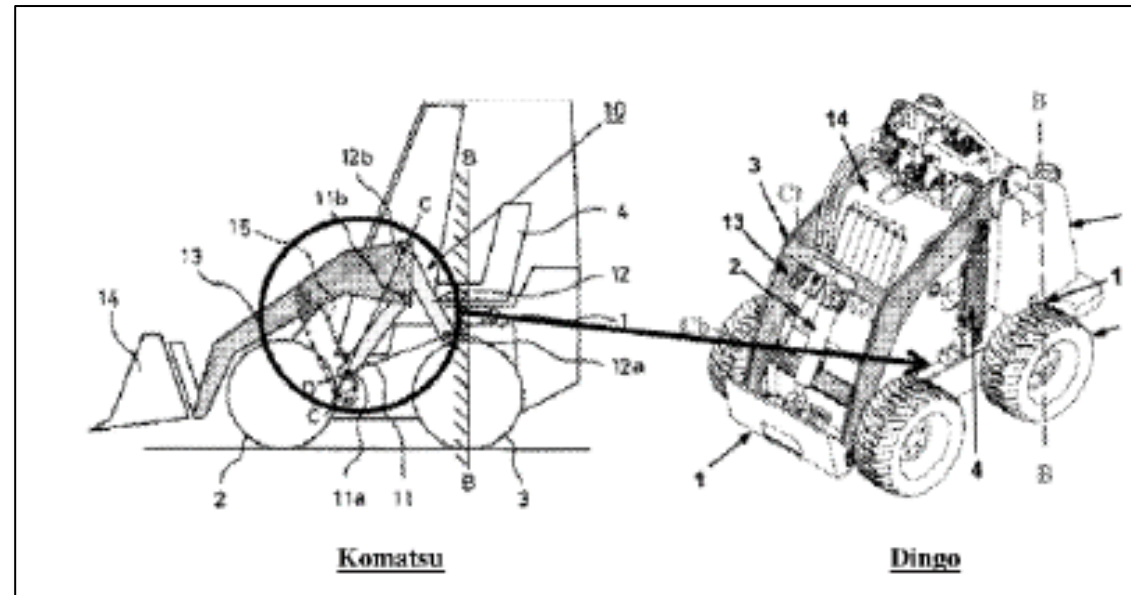


'386 patent, EX1001, FIG. 3

Two Prior Art References:

Full-size loader with vertical lift

CUL with radial lift

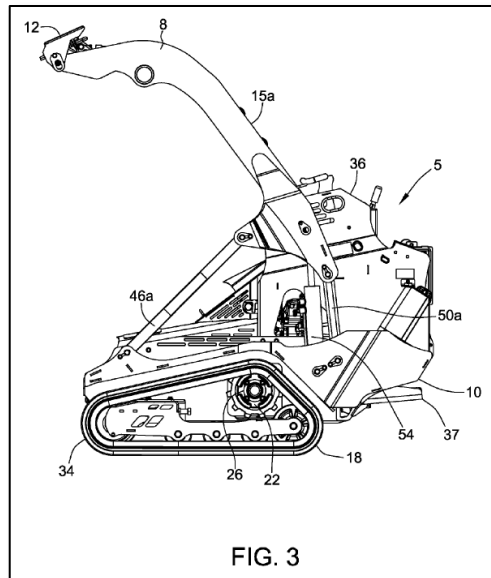


Pet., POR [5]

KR996

Unlike the prior art in the previous Office actions, the present IPR/PGR relies on KR996, a published Korean patent that explicitly teaches a CUL with vertical lift (undisputed).

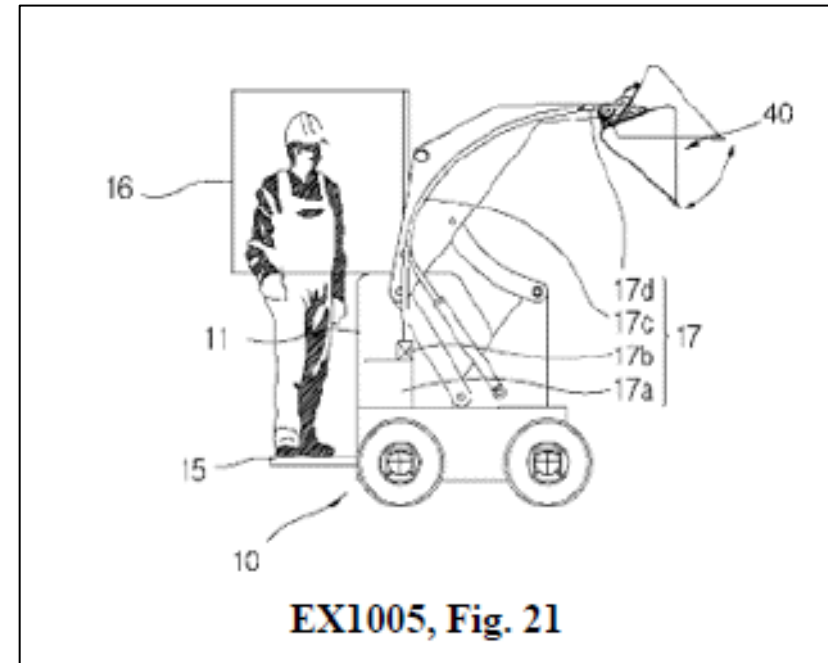
Vermeer (PO) patented
CUL with vertical lift



'386 patent, EX1001, FIG. 3

Single Prior Art Reference:

KR996 teaches a CUL with vertical lift



Pet. [6]

Summary of Grounds

Prior Art	Statute	'386 Pat	'750 Pat	'266 Pat	'891 Pat	'063 Pat
KR996	102			✓	✓	✓
KR996	103		✓	✓	✓	✓
+Bares (tracks)	103	✓	✓	✓	✓	
+JP705 (engine bracket)	103	✓				✓
+Beltrami (low pivot points)	103	✓	✓	✓		
+Bares (engine, pocket) (not contested)				✓		✓
+McIlwraith (pocket) (not contested)	103	✓				
+SAE (weight) (not contested)	103				✓	

Inst. Dec. [7]

Agenda

- Introduction
- KR996 – *mainframe*
 - “*mainframe incorporates a single weldment*”
- Bares – *tracks*
- JP705 – *engine bracket*
- Beltrami – low pivot points
- Secondary Considerations

Mainframe

a mainframe for supporting the loader

e.g., '386 Patent, claim 1

**Construction from Institution Decision:
“primary supporting structure”**

Inst. Decision [8]

Mainframe and Related Claim Terms

Claim 1 of '386 Patent

*A compact tool carrier configured for standing or walk-behind operator control and having a longitudinal axis and a mass of less than about 1500 kg, the compact tool carrier comprising:
a loader having an arm, the loader being adapted to carry a tool;
a **mainframe** for supporting the loader, the mainframe having a first side and a second side, ...*

Claim 1 of '266 Patent

*A loader apparatus configured for standing operator control and comprising:
a loader adapted to carry a tool, the loader being moveable ...
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; ...*

Claim 7 of '266 Patent

*A loader apparatus for standing or walk-behind operator control and comprising: ...
a loader adapted to carry a tool...
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; ...*

Board's Construction of Mainframe

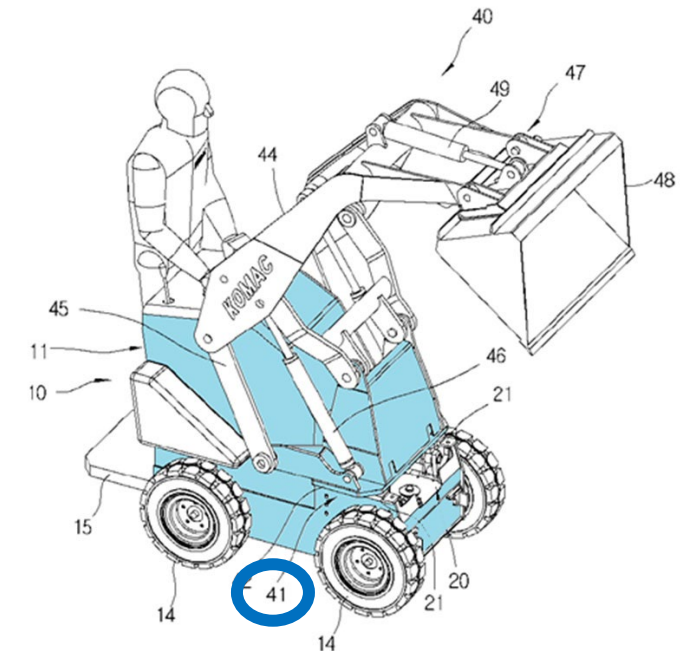
The Board construed *mainframe* to be a “primary supporting structure” without a requirement for “unitary construction or lack of separability.”

Board's Institution Decision:^[9]

We construe “mainframe” to mean a primary supporting structure. Both Patent Owner and Petitioner agree that the mainframe need not have a unitary construction or lack of separability. See e.g., Pet. Init. CC Br. 5, PO. Reply CC Br. 3.

At this stage of the proceeding, Petitioner persuades us that when KR996's loader is attached to the compact tool carrier, fixture 41 is part of the mainframe or primary supporting structure of the compact tool carrier. See Pet. 36–39; Pet. Init. CC. Br. 5 n.6. Fixture 41 has a lower plate 42 and

KR996, Fig. 9 ^[10]



Board's Construction of Mainframe

Petitioner shows that the fixture frame 41 of the KR996 loader is present during operation of the loader and is part of the primary supporting structure.

Petition: ^[11]

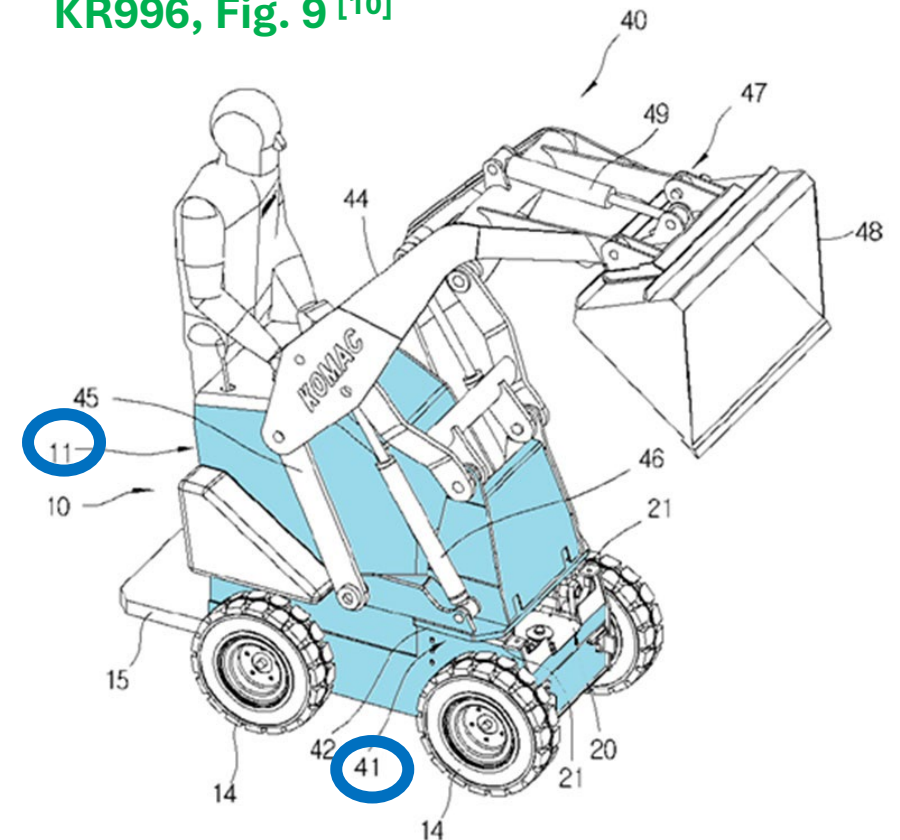
the *mainframe* includes the **bracket** to which the link 45 and the boom cylinder 46 attach, as well as the **frame protrusion**, connected to the bracket, to which the forward link attaches. ... KR996's *mainframe* also includes **frame portions** in addition to those providing direct attachment to the intermediary parts including the **main body 11** and **side plates 12**.

While KR996 describes embodiments of its frame in two portions, **when in operation** the mainframe of the vehicle is in **one piece providing support for the loader**.

Petitioner Response: ^[12]

Whether the assembly of body 11 and fixture 41 can be done by an operator near a job site does not negate the fact that when assembled, the vehicle body 11 and the loader unit fixture 41 together form the primary supporting structure of the CUL and are for *supporting the loader*.

KR996, Fig. 9 ^[10]



PO Incorrectly Argues a New Construction, but even PO's Expert Agrees KR996 Still Meets it

PO's argument for KR996: [13]

"A POSITA would have understood that the mainframe of the machine encompasses *only* the primary supporting structure of the machine, and not supporting structure that is selectively removable during various operations of the machine—only components that are a fundamental part of the machine and always present during all aspects of its operation are the 'mainframe.'"

PO Expert Dr. Fleming: [14]

And so that's -- that's how that operates. And so when you have it configured for operation as a loader, then you would be having loads going through that fixture and through that combination plate down into the mainframe of machine.

Q. Would you say that when you're operating as a loader that the detachable fixture is a critical component of the machine?

A. I mean, it's one of many components that are critical. So when you're operating as

Incorporates a Single Weldment

The compact tool carrier as set forth in claim 1 wherein the mainframe incorporates a single weldment.

e.g., '386 patent, claim 2

“Incorporates a Single Weldment”

The Petition asserts that “incorporates” is open-ended, but also presented in the alternative that it would be obvious for the mainframe to consist of a single weldment. *See, e.g.:*

Petition recognizes that *incorporates a single weldment* is open-ended: ^[15]

POSITA would have found it obvious to form **one or more portions of the mainframe** of KR996 as a *single weldment*

Petition also presents, in the alternative: ^[16]

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.

PO recognizes this: ^[17]

Kubota’s petition argued that (1) it **would have been obvious to weld “portions” of KR996’s frame** together (to form a single weldment), and (2) **if not, JP705’s mainframe “consists of one single weldment.”**

“*Incorporates A Single Weldment*” Is Different From “*Is A Single Weldment*”

Petitioner Reply: ^[18]

Claim 3 [Vermeer’s ’063 patent], which Petitioner did not challenge, recites:

- “wherein the mainframe **is** a single weldment”

contrasted with the present Claim 7, which recites:

- “wherein the mainframe **incorporates** a single weldment.”

Institution Decision:

See Bd. of Regents of the Univ. of Texas Sys. v. BENQ Am. Corp., 533 F.3d 1362, 1371 (Fed. Cir. 2008)

(“Different claim terms are presumed to have different meanings.”) (citing *CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co.*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different meanings.”))

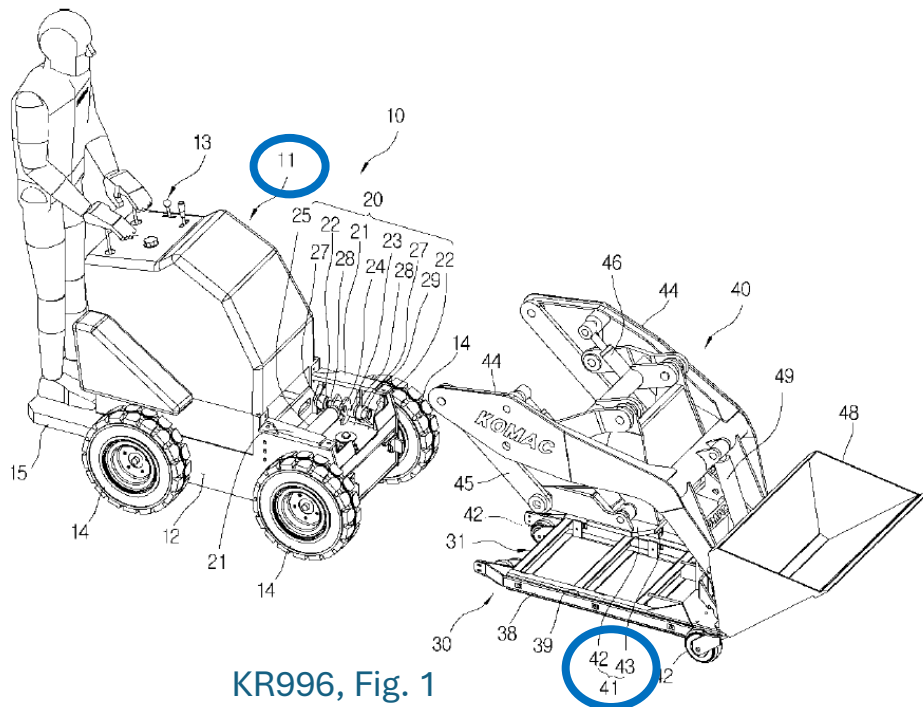
-00171, ID (Paper 15), 19



Experts Agree: KR996 Mainframe “incorporates” a Single Weldment

Pet. Expert Dr. Velinsky: [20]

a POSITA would have found it obvious to form other portions of the mainframe of KR996 as part of a *single weldment* as use of welding to join components of a support frame for a loader apparatus was a well-known method of attachment.



PO Expert Dr. Fleming: [21]

Q. Is it likely that the **main body 11** is all welded together?
A. I don't know that the patent says that it's completely welded or not. When I look at the layout of it, I see that **it's most likely -- mostly, if not entirely, welded** just based on what I can -- what I can see from the -- the design of the structure.

Q. For **fixture 41** is it likely ... that it is also all welded together ...?

A. I would give the same answer as I gave for the main body, that the layout of the structure, it did appear that it **was mostly, if not all, welded**.

Benefits for Mainframe Consisting of a Single Weldment

Benefits of welding are numerous.

Pet. Expert Dr. Velinsky: ^[22]

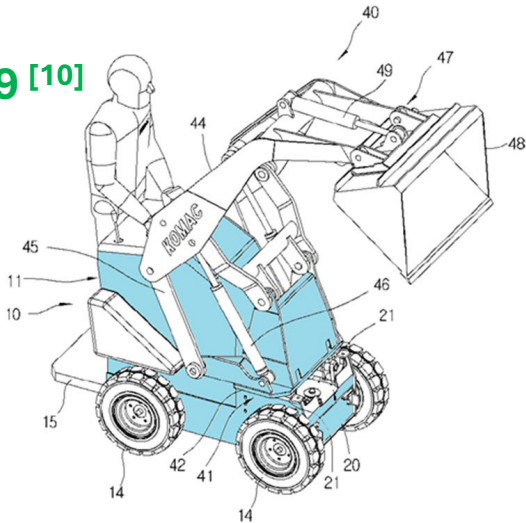
106. A POSITA would recognize that there are known trade-offs in the engineering or design choice between a single weldment and attachment by, for example, nuts and bolts. These factors include aesthetics (e.g., a weld can provide a smooth surface), ease of manufacturability of the component (e.g., welding is a simple, easy to apply process), reliability of the attachment, positioning the surrounding components (e.g., placement of the engine in the loader apparatus), replaceability of parts, structural rigidity, and/or costs including as discussed above with reference to JP705.

Experts Agree: A Dedicated Loader has Advantages

Pet. Expert Dr. Velinsky: ^[23]

a dedicated machine is less complex, requires less attachment points, and has fewer components, and is thus less likely to fail. Also, a dedicated machine is usually less expensive than a machine that can convert from one type (e.g., loader) to another type of machines.

KR996, Fig. 9 ^[10]



PO Expert Dr. Fleming: ^[24]

Q. Is it ever advantageous to have a separate dedicated machine?

...

A. There can be.

...

Q. Is there ever a job situation where it would be advantageous just to have a loader?

A. There would be.

Allied: “Although modification of the movable blades may impede the quick change functionality disclosed by Caterpillar [the primary prior art reference], [a] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.” *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016), (citing *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006)).

One-Piece Construction is Obvious

KR996 teaches a loader, and it would be obvious for a loader to have a mainframe that consists of a single weldment. Also, this point was made by the examiner in the previous prosecution, and this was not rebutted.

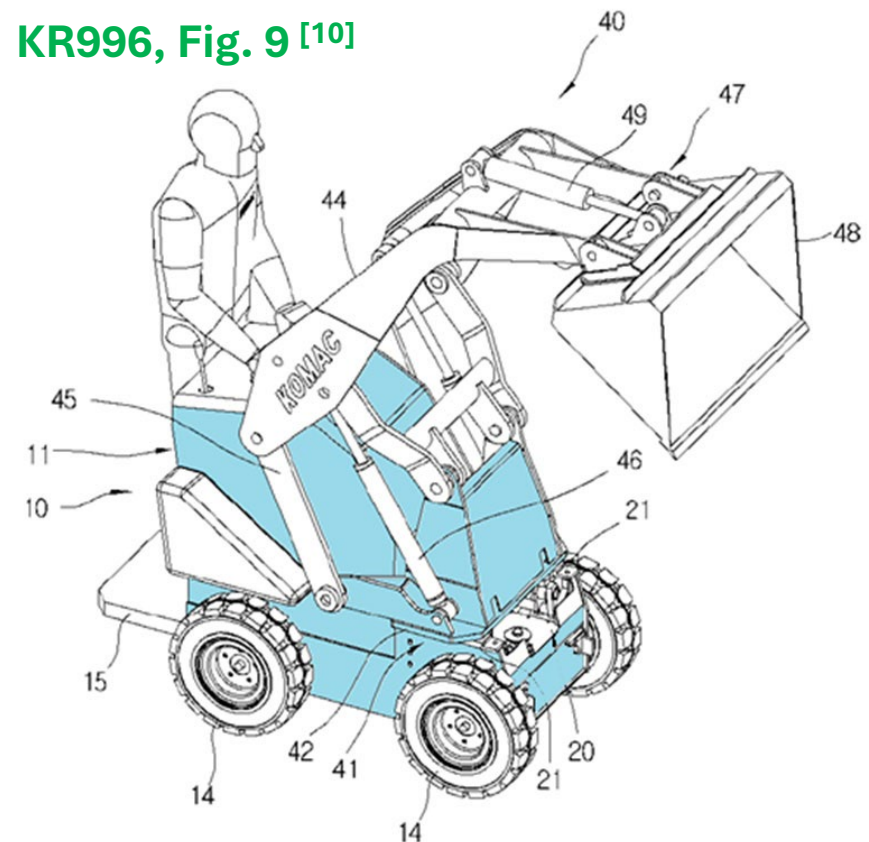
Examiner's rejection of claim 3 of '063 patent ("is a single weldment"): [25]

"[i]t would have been an obvious choice of mechanical design to manufacture the resulting mainframe as a one-piece integral unit." Citing *In re Larson*, 340 F.2d 965, 968 (CCPA 1965)

Petition: [25]

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.")

KR996, Fig. 9 [10]



Obviousness

The remaining grounds address whether it is obvious for KR996 to use engine brackets, tracks, or to have low pivot points.

Prior Art	Statute	'386 Pat	'750 Pat	'266 Pat	'891 Pat	'063 Pat
KR996	102			✓	✓	✓
KR996	103		✓	✓	✓	✓
+Bares (tracks)	103	✓	✓	✓	✓	
+JP705 (engine bracket)	103	✓				✓
+Beltrami (low pivot points)	103	✓	✓	✓		
+Bares (engine, pocket) (not contested)				✓		✓
+McIlwraith (pocket) (not contested)	103	✓				
+SAE (weight) (not contested)	103				✓	

Inst. Dec. [7]

Tracks (Bares)

a drive mechanism comprising tracks for propelling the compact tool carrier over a supporting surface, the drive mechanism having a rotational axis

e.g., '386 patent, claim 55

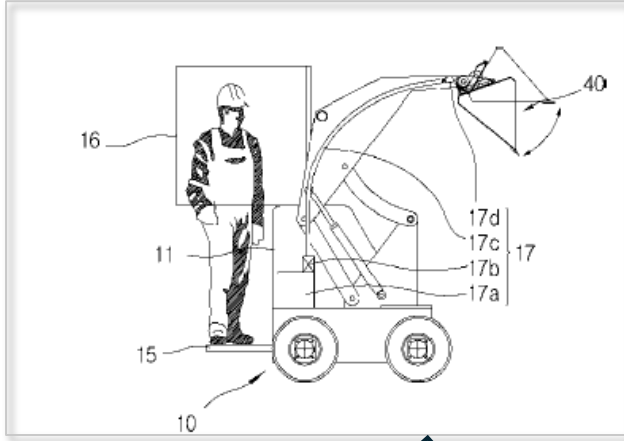
.....
drive mechanism for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R

e.g., '750 patent, claim 19

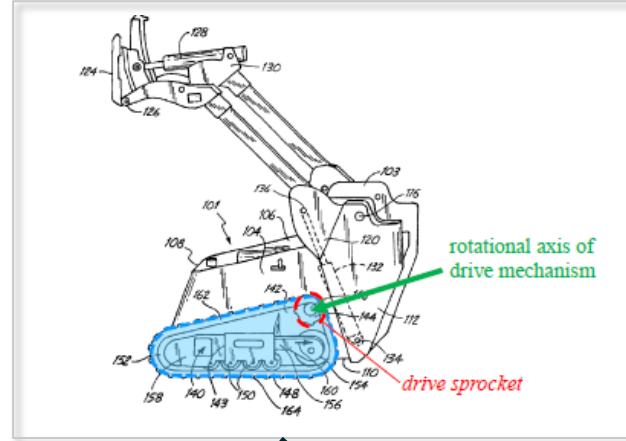
Reasons to Combine Bares' Tracks

Petition presented reasons to use tracks, which were un rebutted.

KR996, FIG. 21 :



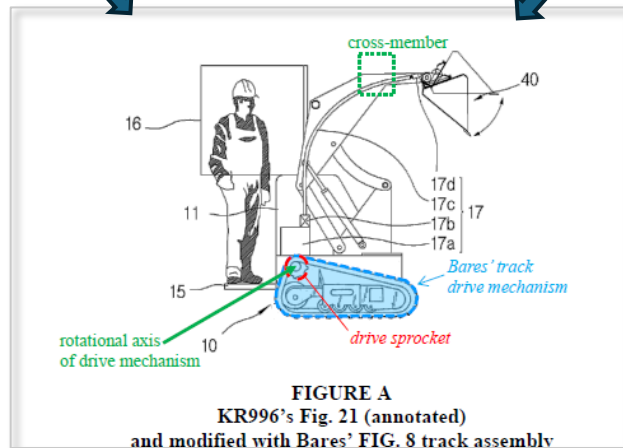
Bares, FIG. 8 : [27]



Petition and Dr. Velinsky support obvious to use Bares' tracks on KR996:[26]

- “**similar vehicle type[]** with a similar mainframe”
- For a CUL ,“a drive mechanism of either a wheeled assembly or a track assembly was a **well-known alternative**”

Combination : [27]



Advantages of tracks :

- “**providing lower ground pressure...** mitigat[ing] impact to said surface”
- “significantly larger contact patch ... much higher torque transmitted to the ground without slippage, i.e., **better traction**”
- “continuous tread provides **ability to cross holes** and trenches”

KR996's CUL is for Varied Terrain, Including Outdoors

Patent Owner argues KR996 is only used indoors, and would not benefit from having tracks.^[28] This is wrong.

- The Petition discusses how KR996 explicitly describes its CUL being used outdoors ^[29]:

KR996, [0002]

“...building interior demolition, **road maintenance, snow removal, and towing, as well as quick and effective operations for fruit farming, gardening, and landscaping.**”

- Dr. Velinsky also discusses “KR996 provides for use in deconstruction work, which can provide **uneven terrain and debris that its vehicle must traverse, which would benefit from a tracked configuration.**”^[30]
 - Petitioner’s Reply discusses additional evidence (e.g., EX1057, EX1056) that confirms indoor demolition CULs use tracks.^[31]

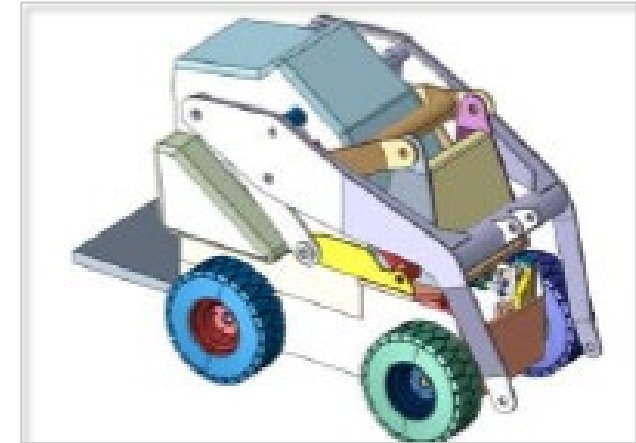
PO's Improper Bodily Incorporation

PO Expert Dr. Fleming relies on improper bodily incorporation of each structure of the references.^[32]

Dr. Fleming:

“As part of my work in the matter, I created a three-dimensional (3D) computer aided design (CAD) model of the vehicle using the drawings in the KR996 patent.”

-00167, EX2016, ¶121



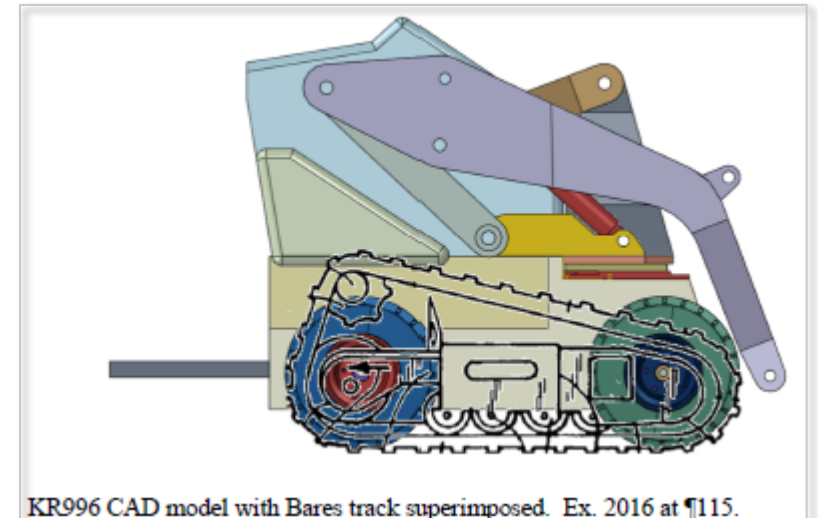
-00167, EX2016, ¶121

Dr. Fleming:

Q. So would you describe that as trying to bodily incorporate the tracks from Bares onto the KR996 machine? ... Just **taking the exact figure as it is from Bares onto the exact figure as it is in KR996 and see if they work.**

A. **Yeah**, from a high level I would say that's how we ended up scaling those, was tracking the track from Bares and overlaying it on there while maintaining the same track -- track length that we had on the KR996.

EX1043, 98

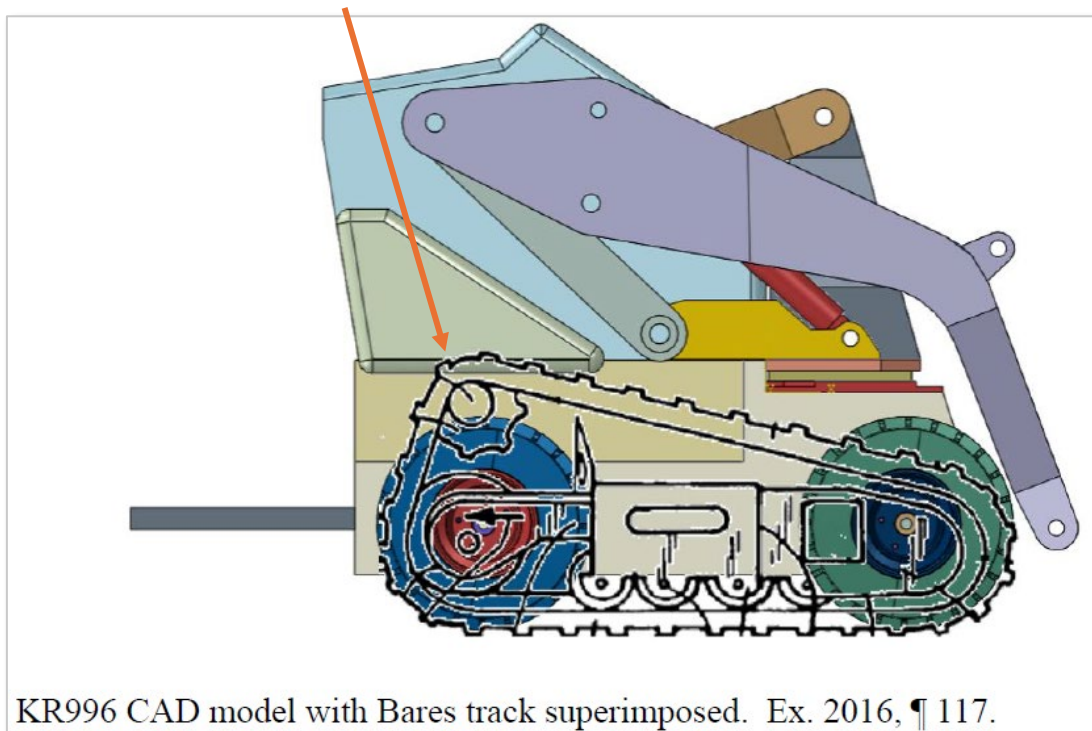


KR996 CAD model with Bares track superimposed. Ex. 2016 at ¶115.

-00168, POR, 52

PO's Improper Bodily Incorporation

PO expert Dr. Fleming argued that tracks could not be added due to “significant interference” with this “tank structure.”



KR996 CAD model with Bares track superimposed. Ex. 2016, ¶ 117.

-00169, POR, 52

PO Expert Dr. Fleming:

Q. So you did no design or engineering or modification in an attempt to make it work?

...

A. I did not try to redesign the KR996. ...

EX1043, 97 [33]

Bodily Incorporation is not the Test - *Allied*

Case law makes clear bodily incorporation is wrong.

“Contrary to Allied’s position, ‘it is **not necessary** that [Caterpillar and Ogawa] **be physically combinable** to render obvious the [‘489 patent].’ *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983); see also *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (*en banc*) (‘Etter’s assertions that Azure **cannot be incorporated** in Ambrosio are **basically irrelevant**, the criterion being 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.’). ‘**The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.**’ *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). See also *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *In re Keller*, 642 F.2d at 425), but rather whether “a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention,” *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007).”

Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC, 825 F.3d 1373, 1381 (Fed. Cir. 2016).

Cited and discussed throughout proceeding. See, e.g., ^[34]



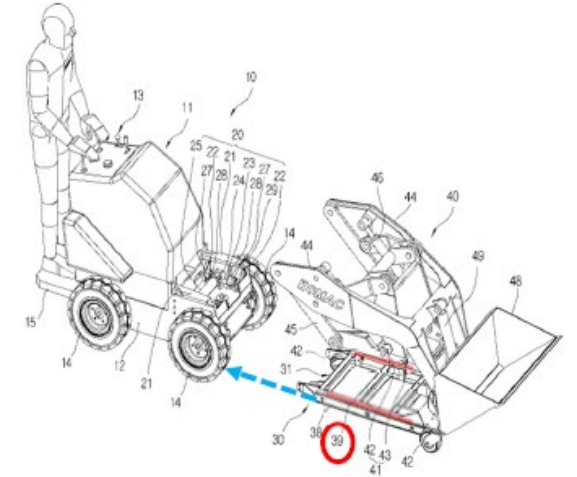
More PO Improper Bodily Incorporation

PO argues that KR996's tires are required, and that tracks cannot engage with the bogie, this is improper bodily incorporation and wrong.^[35]

PO's bodily incorporation arguments are not the test. The true test is "whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole." *Allied*, citing *In re Etter*.

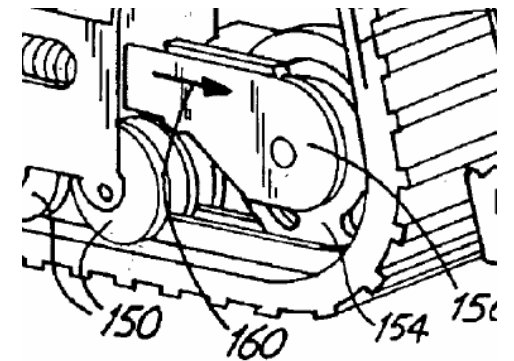
KR996 is readily combinable with Bares :

- Multiple claims of the KR996 patent do not recite wheels of the vehicle. EX1005, 2. ^[36]
- KR996 describes features (liner 39) adjustable to compensate any variation. EX2021, 96 (Velinsky); Ex1005, [0005], [0053]. ^[37]
- Bares' tracks are positioned at the same location as wheels, rotates in the same direction, and are relatively thick. EX1010, FIG. 7, arrow 160A, track thickness 148, 5:29-38. ^[38]



adjustable thickness liner (39)

EX1005, Fig. 1 ^[37]



EX1010, Fig. 7 (portion)

Routine Engineering Efforts

PO's Expert Dr. Fleming agrees it is routine engineering to configure drive mechanism components: [39]

Q: Similarly for the hydraulics...An engineer or design team could design...the proper hydraulic mechanism for this machine?

A: That would be **one thing that is done as far as the design work** is to come up with hydraulic pumps, hydraulic lines, routing, hydraulic cylinders for making the...hydraulics work.

EX1043, 35-36

Q: ...routine design engineering for a person of ordinary skill in the art to make a wheeled version of this compact utility loader? ...

A: ...there would have to be some structural changes probably. **But there are compact utility loaders with wheels and some with tracks...I would say that's routine. Obviously it would be...some design challenges but something that could be done by a person of skill in the art.**

EX1043, 39

But Dr. Fleming did no engineering in his evaluation of tracks on KR996: [39]

Q: So you did no design or engineering or modification in an attempt to make it work?

A: **I did not try to ...**

EX1043, 97

Engine Bracket (JP705)

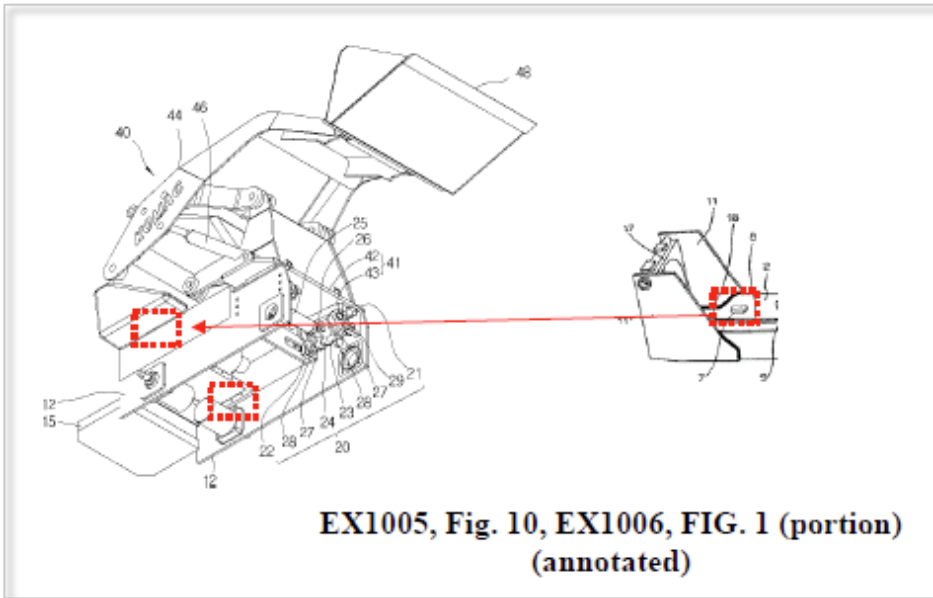
the mainframe comprising an engine bracket that extends from the first side toward the second side for mounting an engine to the mainframe, the engine bracket being spaced from the rear end of the mainframe

e.g., '386 patent, claim 1

Reasons to Combine JP705's Bracket

The Petition presented reasons to use an engine bracket, which are unrebutted.

The Petition and Dr Velinsky presented the following advantages of combining JP705's engine brackets: [40]



-00167, Petition, 35 [40A]

- “**reduces the number of fastening parts** (such as a bolt, nut, collar, or the like) required and ...[reducing] **component costs and weight**”
- “receiving surface as advantageously, a ‘**smooth, continuous surface**’”
- “allowing the **engine to serve as structural support**”
- “**efficient loading** of an engine”
- “bracket extending from the sides of the mainframe as this positions the engine ... **providing balance**”
- “**increasing the stiffness** of the connection between the two parallel frame elements”

PO's Improper Bodily Incorporation

The combination is JP705's teaches an engine bracket extending from mainframe sides.^[41]
PO argues that JP705's engine brackets are in a larger machine, not a CUL.

- **PO argues:**
 - “Kubota has provided the Board with no evidentiary basis on which to conclude a POSITA would use JP705's engine bracket in the much smaller KR996 machine.”
e.g., -000167, Sur-Reply, 19.
- “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*, citing *In re Keller*
- **The Petition identified:** ^[42]
 - “KR996 and JP705 are analogous art to the '386 Patent because they are in the **same field of endeavor**, [and] ... they are reasonably pertinent to a **same problem** faced by the inventor—mounting components onto a frame to effectuate the operation of a vehicle.” ^[42]

Low Pivot Points (Beltrami)

The claims in the Beltrami Grounds all recite a relative position of the attachment pivot points being “*less than*” some parameter. The briefing collectively refers to these claims as requiring the pivot points being “relatively low” or being “positioned relatively low on the mainframe.”

POR, 10. See *also*, EX1001, 5:10-6:8 (lacking criticality).

PO's Dispute is Over Lowering KR996's Pivot Points

Petition showed, in detail, that each claim's recited locations of the pivot points are obvious.^[43]

At no time in any of its briefing did Patent Owner contest *individually* any of the claims. Instead, the Patent Owner generally disputes whether there is any motivation or reason for the pivot points of KR996 to be “**positioned relatively low on the mainframe.**” -00169, POR, 10 citing EX1001, 5:4-7; see also, e.g.:

- “For these reasons, Beltrami would not have motivated a POSITA to **change the locations of the pivot points** of the KR996 machine.” -00169, POR, 58.
- “Velinsky’s proposed motivation to combine also fails because KR996 affirmatively teaches away from **lowering the pivot points** for the linkages and actuators.” *Id.*, 59
- “A POSITA would recognize that **moving the pivot points further down** on KR996 would not be possible” *Id.*, 59-60.
- “Even if a POSITA had extracted some potential reason to **lower the pivot points** as Velinsky suggests, ...” *Id.*, 61.

Benefits of Low Pivot Points are Well-Recognized and Fundamental

Lower Frame Requirements	Petition, 67, 74-78 Beltrami, EX1008, 3:35-41; EX1003, ¶¶149 , 174-178 (discussing less structure above attachment), citing EX1006, EX1008, EX1012
Lower Center of Gravity (Stability)	Petition, 67-68, 75-77 Beltrami, EX1008, 3:35-45; EX1003, including ¶¶163-165 (lower center of mass, stability, tipping), “Benefits of Providing Low Pivot Points were well understood” ¶¶183-184 (lower center of gravity) citing EX1008, EX1009, EX1011
Lower costs (frame)	Petition, 77-78 EX1003, “Benefits of Providing Low Pivot Points were well understood” including ¶¶183-184 (frame material and cost) citing EX1012
Improved Visibility (operator)	Petition, 77-78 EX1003, “Benefits of Providing Low Pivot Points were well understood” including ¶¶183-184 (visibility, operator’s line of sight) citing: EX1011, EX1009

Exemplary citations to -000167. See also, [43]



Beltrami Explicitly Teaches Modifying Pivot Points, Advantages of Low Pivot Points

“Beltrami explains the well-known knowledge in vehicle design and four-bar mechanisms generally: the locations of the pivot point connections between each of these intermediate parts and the mainframe are **result-affecting variables** that can be selected based on desired performance.” [44]

- Beltrami: 5:61-65, 4:35-50 discusses moving pivot points in a vertical-lift to modify load path
- Beltrami: 3:35-45 states “the **pivot points 24, 26 and 30** [those connecting linkages/actuator and frame of the vertical-lift] **can be kept 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 center of gravity undergo an unnecessarily large shifting.”

PO Expert Dr. Fleming Agrees on Benefits of Low Pivot Points

PO Expert Dr. Fleming ^[45] :

A. Well, like I said, when you have all of your support structure, **your pivot points down low**, then you **just have to design the mainframe to support it down low**. You don't have to have some kind of a tower structure that you would have to support that. Then **your support is lower so you should lower the center of gravity so hopefully have a more stable machine**. And then when you're -- you've got some kind fore-aft loads, those loads are going through a lower structure. As opposed to having something that's up high that may be shifting your center of gravity front to back, you know, which was an issue for radial arm machines.

EX1043, 63

A. ...when you're turning, for instance, you've got a force that's essentially ... centrifugal force that's pushing it to the side. **So your side-to-side stability and your side-to-side movement will be affected by how high the center of gravity is.** ...

Q. And these were all true when you were designing in the early 2000s for Case?

A. Yes. These are **fundamental principles that I'm telling you.**

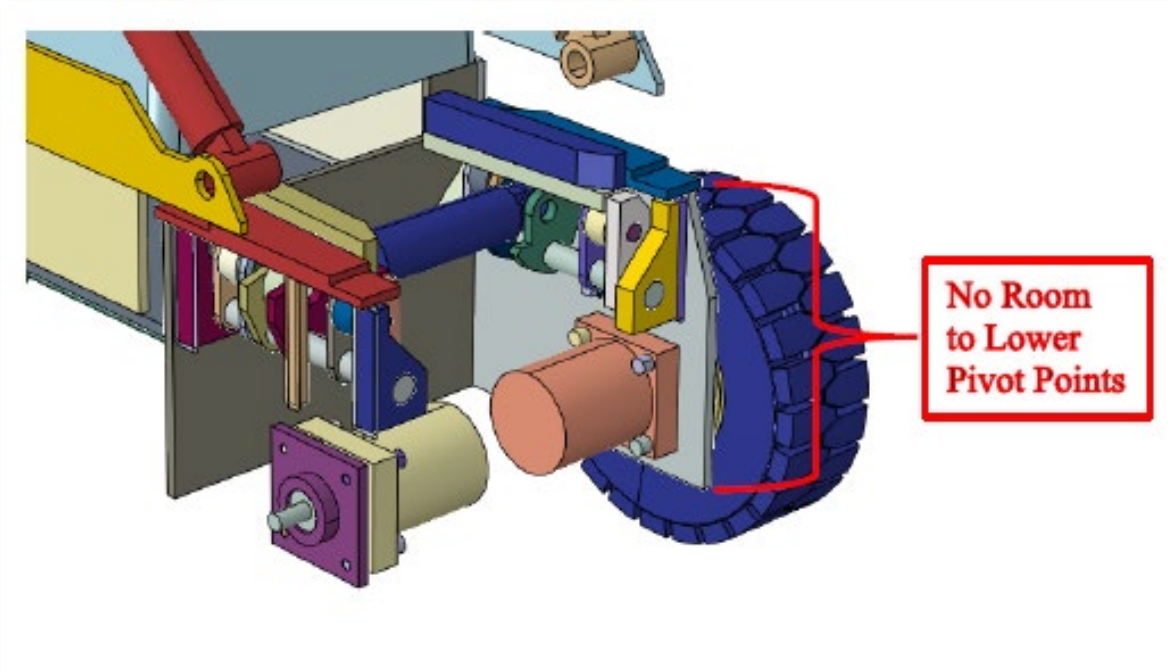
EX1043, 78



PO's Improper Bodily Incorporation

PO's Argument:

PO expert Dr. Fleming argued that a drive motor is in the way of lower pivot points in his created CAD model.



-00169, POR, 60

Petitioner's Further Responses :

Pet. Reply^[46]:

- “Bares’ tracked configuration has *no drive motor* at the front wheels so that component is simply not there to cause the interference alleged by PO. See EX1010, FIG. 3, 8 (drive motor 16B, 146 at raised, rear sprocket).”

Pet. Expert Dr. Velinsky^[47]:

- POSITA would have known to address any interference and space constraints. See EX1003, (discussing modifying linkage shape, into/out of plane configurations, applying safety fences/barriers, etc.)

PO expert Dr. Fleming agrees^[48]:

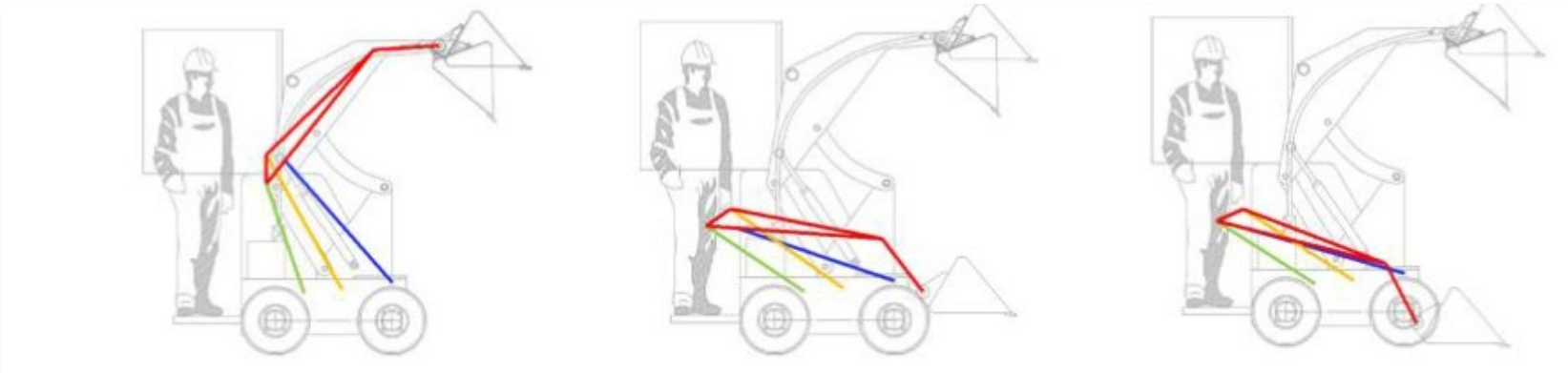
- a drive motor can be moved and comes in different shapes and sizes. See EX1043, 38-42, 44 (describing “routine...something that could be done” by POSITA, rear-wheel powered assembly: “drive with chains going to the front and rear wheels”, varying drive motor size/shape).

Improper Bodily Incorporation

Pet. Expert Dr. Velinsky provided a kinematic diagram of the KR996 showing how it would work including with a lower pivot point. ^[50]

PO expert Dr. Fleming replied with his own kinematic diagram of KR996 that “would not work.” -00167, POR, 54. In addition to relying on bodily incorporation, this at best shows that Dr. Fleming can make engineering choices that do not work.

PO Expert Dr.
Fleming:



-00167, POR, 55

Dr. Fleming ^[49]:

A. I'm not sure if you can make this configuration work or not.
Q. Did you try?
A. I did not try to fix Dr. Velinsky's designs, no.

EX1043, 122-123

Compared to Pet. Expert Dr. Velinsky ^[47]:

A POSITA would have had the knowledge to arrange components of the four-bar mechanism and the drive mechanism to not interfere with each components' respective function. ...

See, e.g. -00167, EX1003, ¶215

Reasonable Expectation of Success in Providing Vertical-Lift

PO Expert Dr. Fleming:

“During the entire period that engineers were trying to enhance these characteristics of compact utility loaders [before 2015], a **wide variety** of full-size skid steer **vertical-lift machines** were **available** on the market.”

-00171, EX2016, ¶45

Pet. Expert Dr. Velinsky ^[50A]:

“**Four-bars** are...a **very simple mechanism** widely employed across various machines. Due to its wide use, this type of mechanism is **introduced early in undergraduate mechanical engineering courses** in which detailed methods of design and analysis are taught.”

-00171, EX1003, ¶33

Q. if the four-bar mechanism interferes with something such as the tracks or other member of the machine, would you consider it routine design engineering to modify the four-bar mechanism to accommodate that interference?...

A: I mean, obviously **you can't have a machine that has that interference**. So there **would be some design work that would be done to eliminate that interference**. And that would involve – you know, that could potentially involve structure. That could involve **moving internal components** such as engine and drive line components, things like that. So it's **something that can be done**. But depending on what and where the interference is, it could be quite involved to make those changes.

EX1043, 59-60 [49]

“POSITA would have understood in designing the application of the mechanism, specific shapes of the links may be determined...in the actual design, the links are not restricted to be perfectly straight. **One of the design considerations is arrangement of components such that there is no interference with the operation of the mechanism**. The **linkages may be modified** in shape, ... a jog of the linkage **into/out of the plane**, to **accommodate other features** of the equipment such as a drive mechanism, operator area, safety fences or barriers, and the like.”

-00171, EX1003, ¶203



Secondary Considerations

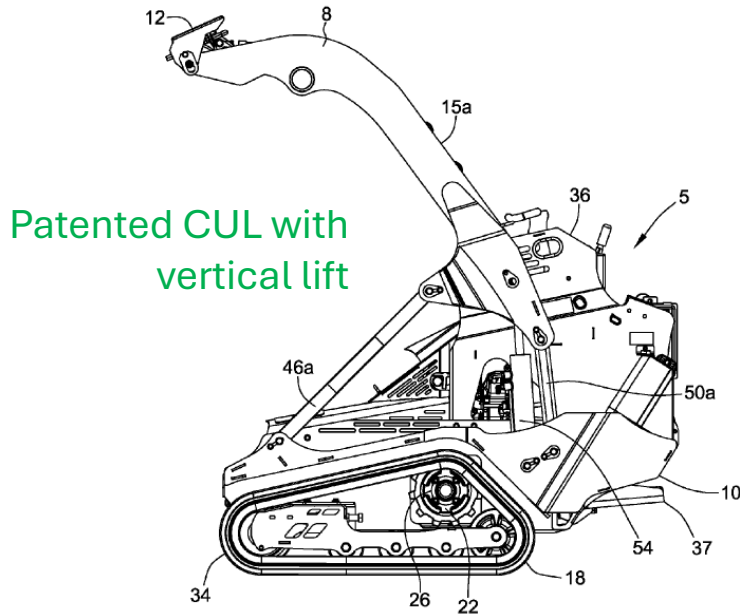
Discussed throughout the Patent Owner's Response and Sur-Reply



Prior Art is Strong—KR996 Was Not Before The Office

Unlike the prior art in the previous Office actions, the present IPRs/PGR Reply on KR996, a published Korean patent that explicitly teaches a CUL with vertical lift. ^[51]

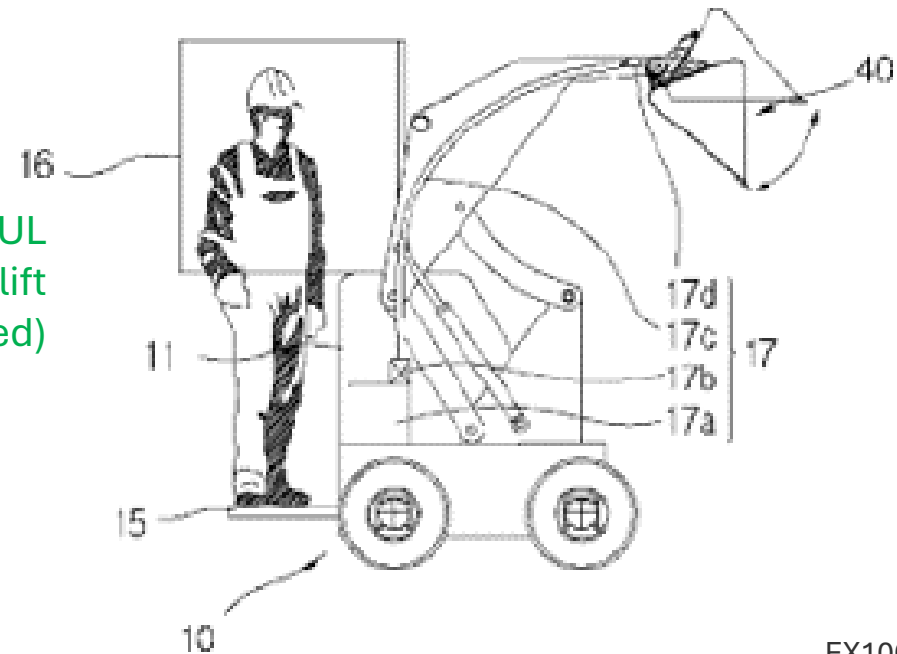
Vermeer Patent



-00167, EX1001, FIG. 3

KR996

KR996 prior art CUL with vertical lift (undisputed)



EX1005, FIG. 21
e.g., -00167, Pet. 23

KR996 Anticipates Claims

KR996 anticipates or renders *prima facie* obvious (obvious features undisputed) multiple claims.

Prior Art	Statute	'386 Pat	'750 Pat	'266 Pat	'891 Pat	'063 Pat
KR996	102			✓	✓	✓
KR996	103		✓	✓	✓	✓
+Bares (tracks)	103	✓	✓	✓	✓	
+JP705 (engine bracket)	103	✓				✓
+Beltrami (low pivot points)	103	✓	✓	✓		
+Bares (engine, pocket) (not contested)				✓		✓
+McIlwraith (pocket) (not contested)	103	✓				
+SAE (weight) (not contested)	103				✓	

Inst. Dec. [7]

KR996 is Strong

The remaining grounds address whether it is obvious to use engine brackets, tracks, or low pivot points.

Prior Art	Statute	'386 Pat	'750 Pat	'266 Pat	'891 Pat	'063 Pat
KR996	102			✓	✓	✓
KR996	103		✓	✓	✓	✓
+Bares (tracks)	103	✓	✓	✓	✓	
+JP705 (engine bracket)	103	✓				✓
+Beltrami (low pivot points)	103	✓	✓	✓		
+Bares (engine, pocket) (not contested)				✓		✓
+McIlwraith (pocket) (not contested)	103	✓				
+SAE (weight) (not contested)	103				✓	

Inst. Dec. [7]

Alleged Secondary Considerations

Lack Nexus

PO's secondary considerations are premised on the assertion that PO was the first to invent a CUL with vertical lift. It is undisputed that they were not—KR996 explicitly illustrates a CUL with vertical lift. [52]

- Magazine recognition directed to the introduction of “vertical lift to the compact tool carrier market.” citing -00168, POR, 59-60.
- Hearsay testimony from Vermeer's Product Manager regarding the “popularity of vertical-lift machines.” *Id.*
- Inventor's testimony that his vertical-lift machine has “greater lift capacity than its radial-lift counterpart.” *Id.*, 62.
- Hearsay stories of Toro engineers developing vertical-lift machines cobbled from portions of depositions taken from a different litigation. *Id.*, 61-66.
- Some of Kubota's customers prefer vertical-lift machines. *Id.*, 67-75.
- PO Expert Dr. Fleming agrees that the evidence of secondary considerations is directed to vertical-lift. EX1043, 123 (“The evidence of secondary considerations, is that directly primarily to vertical lift? A. I would say primarily, yes.”).

Alleged Secondary Considerations

Lack Nexus

PO's secondary considerations are premised on the assertion that PO was the first to invent a CUL with vertical lift. It is undisputed that they were not – KR996 discloses a CUL with vertical lift. ^[53]

***Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1364 (Fed. Cir. 2023)**

“But our 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’**”—not necessarily well-known. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013) (emphasis added) (quoting *Ormco Corp. v. Align Technology, Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006)); see also *Ethicon Endo-Surgery, Inc. v. Covidien LP*, 812 F.3d 1023, 1034 (Fed. Cir. 2016) (“**[I]f the feature that creates the commercial success was known in the prior art, the success is not pertinent.**” (quoting *Ormco*, 463 F.3d at 1312)).”

Cited and discussed in Petition, Pet. Reply. See [53].

Toro's Development Story is Incomplete and Hearsay

As discussed in Petitioner's Motion to Exclude, the Toro Development Story was not made while testifying in the current proceeding and is being offered as evidence for the truth of the matter asserted.^[54]

Deposition testimony and documents from Toro engineers (Toro's Development Story) obtained in the Toro Litigation was cited in the Toro Reexam



Toro Litigation
(concluded)

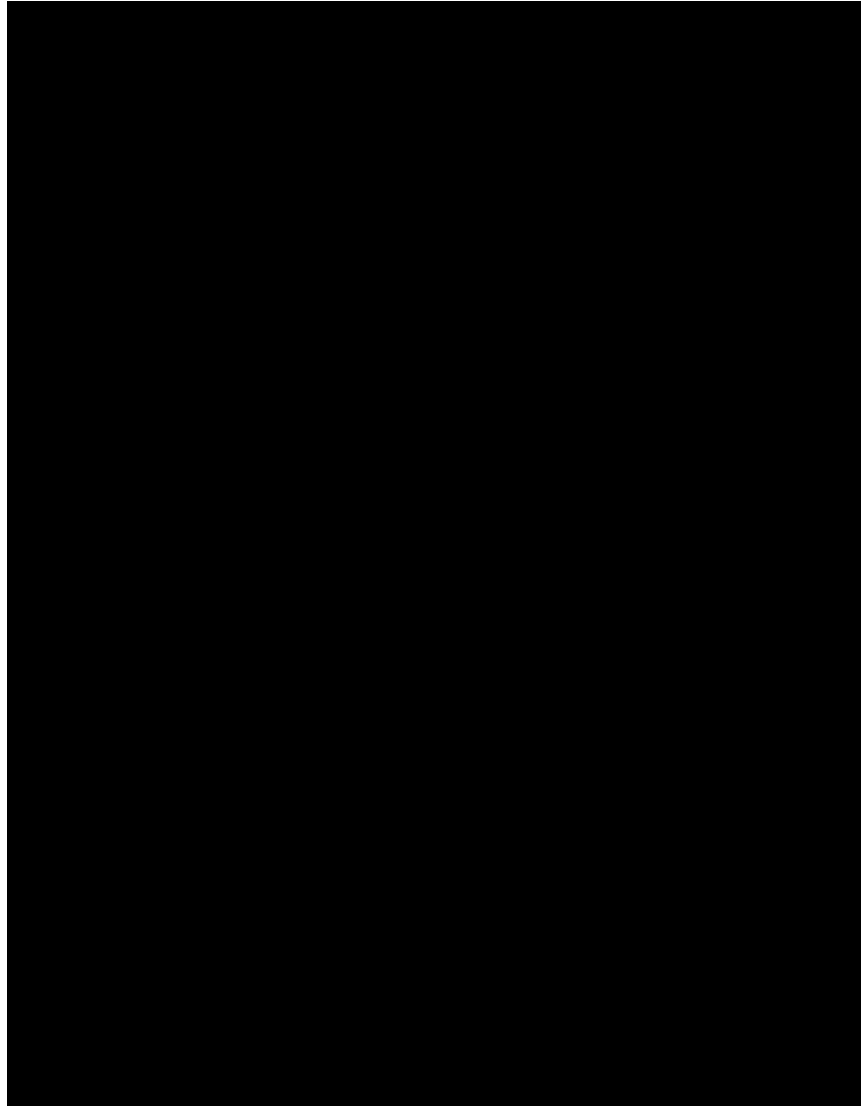
PO now wants to rely on Toro's Development Story for the truth of the matter asserted in the present IPRs/PGR.

Kubota Litigation
(stayed)



Kubota IPRs/PGR
(ongoing)

Dealer Surveys are Not Evidence of Copying



PO expert Dr. Fleming agrees it is common industry practice to survey the market.

EX1046, 110, 120; e.g., -00168 Pet. Reply, 29

EX2027, p. 24

Conclusion

- KR996 teaches a “mainframe”
 - KR996’s *mainframe* includes a single weldment
 - If *consisting of* one-piece construction is required, this is obvious
- PO’s arguments rely on improper bodily incorporation
- Engine brackets, tracks, and low pivot points are fundamental
- No secondary considerations of nonobviousness

Rebuttal Slides



Petitioner's Certified Translations are Proper

Petitioner's affiant, Mr. Maeshiro, testifies that

- “that the translation represents a true, correct, and faithful translation from Korean to English” and
- “that all statements made herein of my own knowledge are true.”

-00167, Pet. Opp to MTE (Paper 48), 2-4.

Patent Owner:

- did **not** depose Petitioner's affiant, Mr. Maeshiro, regarding the certified translations;
- did **not** obtain its own alternative certified translations; and
- has **not** identified a single error or inaccuracy in any of the certified translations

-00167, Pet. Opp TO MTE (Paper 48), 3.

Robert Bosch LLC et al. v. Westport Fuel Systems Canada INC, IPR2023-00293 Paper 37 at 53 (P.T.A.B. Feb. 3, 2025) (denying motion to exclude where “**Patent Owner has not provided an alternative translation...nor has Patent Owner deposed Petitioner's translator regarding the certified English translation provided by Petitioner in Exhibit 1006.**”).

Cited and discussed -00167, Pet. Opp to MTE (Paper 48), 7-8.

Google v. 138 East LCD, IPR2024-00958, Paper 43 (P.T.A.B. Dec. 18, 2025) (granting motion to exclude where proponent “**fail[ed] to make the affiant [translator] available for deposition .**”).

Cited and discussed -00167, Pet. Opp to MTE (Paper 48), 6-7; PO's MTE (Paper 44), 5-6.



Dr. Velinsky is a Qualified Expert

- Ph.D. in Theoretical & Applied Mechanics (1981)
- Professor in the Department of Mechanical & Aerospace Engineering, University of California, Davis (1989+)
- Director of the Advanced Highway Maintenance & Construction Technology Research Center of Department of Mechanical & Aerospace Engineering, University of California, Davis (1991- 2016)
 - “design and development of automated highway maintenance and construction machines”

-00167, EX1003, ¶¶ 8-10

Dr. Velinsky's CULs

Patent Owner Counsel: "Do you recognize this machine [Deposition Ex. B (EX2041), 11, Figure 2.2] to be the tethered mobile routing robot that your team created?" (25:4-6)

Dr. Velinsky: "the picture...was a development stage in the laboratory during the development part of the machine where we were ensuring that we could follow cracks and so on..." (26:22-27:4)

Patent Owner Counsel: "do you consider this [Deposition Ex. B (EX2041), 11, Figure 2.2] to be a compact utility loader? (28:5-6)

Dr. Velinsky: "The road-going machine definitely was. This could be considered one." (28:7-8)

-00167, Petitioner's Authorized Paper (Paper 41), 1 citing EX2039

Patent Owner Counsel: "And not limited to what we've looked at here [exhibits relating to AHMCT Research Center], are there any others that are closer [to machine depicted in Vermeer patent]?" (50:4-5 [49:20-22]).

Dr. Velinsky: "we looked at ones that were in laboratory testing in a laboratory. We actually have wheeled robots that worked on the roadway that were parted and were operated out in actual operations, so those would be -- I also have a mower that would -- I believe consider -- I believe is a compact utility loader as well. It was a device for -- a wheeled mobile device for mowing. ...We designed the device...[t]he wheeled robot that the mower would attach to." (50:7-14).

-00167, Petitioner's Authorized Paper (Paper 41), 3 citing EX2039



Dr. Velinsky's CULs

yourself home projects. Compact tool carriers are walk-behind units or include a platform on which the operator may stand during use. Compact tool carriers are generally defined (e.g., ISO 6165 (2012) and SAE J2752) as “a self-propelled crawler or wheeled machine having an operating mass of less than 1500 kg with a rigid frame, having either a pedestrian operating position or a 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.” The tool carriers may be attached to

-00167, EX1001, 1:21-28

Patent Owner Counsel: “Vermeer’s ‘386 patent...Column 1...[u]nder the heading ‘Background,’ there is a description of compact tool carrier...[a]pplying this definition of compact tool carrier ...[to the] mobile robot [of] Exhibits A [EX2040] and B [EX2041] don’t have these features, correct?” (29:2-31:4)

Dr. Velinsky: “I’m looking at this now after quite a period of time, but a self-propelled machine certainly meets that, certainly has a mass less than 1500 kilograms, certainly has a rigid frame and generally defined as such. And so my definition fits that. It’s a machine that -- also our machines can operate remotely with teleoperation from someone walking on the roadway. So generally our machines do meet this definition, and in my opinion they do.” (31:6-15)

Patent Owner’s Counsel: So did your machine have a pedestrian operating position or a standing operator platform at the rear of the machine? (31:16-18)

Dr. Velinsky: “Our machines can be operated by a pedestrian remotely, yes. Teleoperation, that’s what we’re talking about. I believe in the patent it also talks about that as well, that in addition to riding on it, you can operate it, for example, wirelessly or connected with a wire it has.” (31:19-32:2)

Dr. Velinsky: “we certainly have interchangeable equipment, and the ones we’re looking at don’t have lift arms on them, no” (32:12-14)

-00167, Petitioner’s Authorized Paper (Paper 41), 2-3 citing EX2039

KR996 Does Not Teach Away

“[A] statement that a particular combination is not a **preferred embodiment does not teach away absent clear discouragement** of that combination.” *Syntex (U.S.A.) LLC v. Apotex, Inc.* 407. F.3d 1371, 1380 (Fed. Cir. 2005), citing *In re Fulton*, 391 F.3d at 1199-1200. See also, *Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017) (“A reference that ‘merely expresses a **general preference** for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into’ the claimed invention does not teach away”), quoting *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013).

-00016, Pet Reply, 5

In re Zhang, 654 Fed. Appx. 488, 490 (Fed. Cir. 2016) (“**While a prior art reference may indicate that a particular combination is undesirable for its own purposes, the reference can nevertheless teach that combination if it remains suitable for the claimed invention.**”)

-00016, Pet Reply, 6-7



Summary of Applicable Claims

Prior Art	Statute	'386 Pat	'750 Pat	'266 Pat	'891 Pat	'063 Pat
KR996	102			1-7, 10-13, 28	1-8, 10	4, 7-12
KR996	103		1-15, 17, 19	1-7, 10-13, 28	1-8, 10	4, 7-12
+JP705 (engine bracket)	103	1-13, 15, 17, 19-87				5, 6
+Bares (tracks)	103	37, 40, 55-63, 68-85	16, 19-36	14-16, 19-27	9	
+Beltrami (low pivot points)	103	15, 17, 19-20, 23-30, 55-63, 66-69, 80-85	19-36	14-16, 19-27		
+Bares (engine, pocket)	103		1-18	8, 9		13, 14
+McIlwraith (not contested))	103	65				
+SAE (not contested)	103				8	

Board's Construction is Consistent with Art

The Board's construction that *mainframe* is a “primary supporting structure” and is “not required to be always present and not selectively removable.” This is consistent with how the term is used in the art.

Petitioner's Reply illustrated Bobcat manual:

This example manual illustrates “main frame” to include separately removable components

BOB-TACH	50-10-1
Installation	50-10-2
Lever And Wedge Removal	50-10-3
Removal	50-10-1
Seal Removal And Installation	50-10-3
BOTTOM ACCESS PANEL	50-90-1
Removal and Installation	50-90-1
INSTRUMENT PANEL	50-50-1
Removal and Installation	50-50-1
FUEL TANK	50-40-1
Removal And Installation	50-40-1
GRAB BAR	50-60-1
Removal and Installation	50-60-1
HOOD	50-70-1

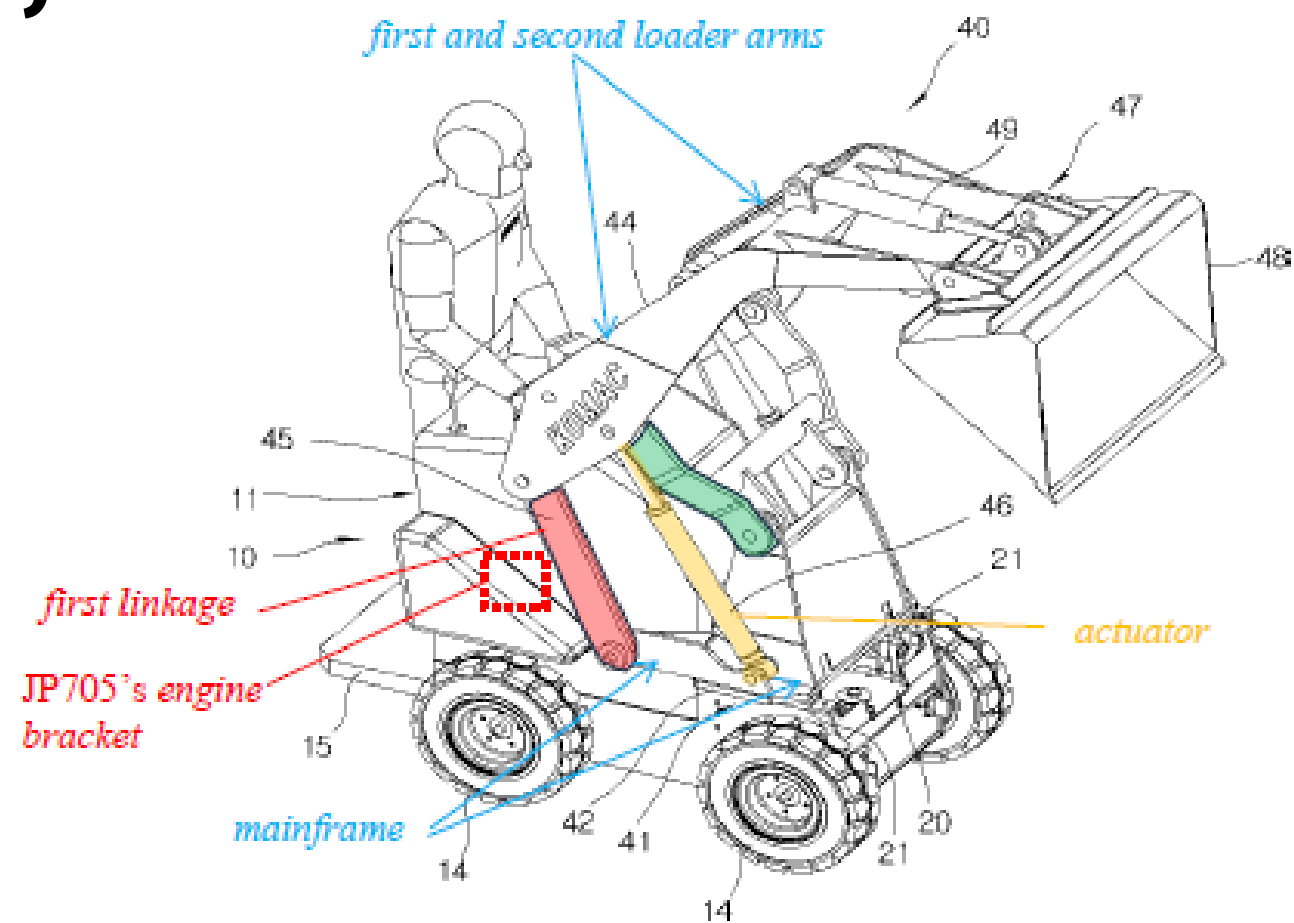
ale

Diagram illustrating the construction of the term "main frame" in the Bobcat manual. The diagram shows a table of contents with entries for various components and their removal/installation procedures. A blue oval labeled "MAIN FRAME" is drawn around the "BOB-TACH" entry. A blue arrow points from the text "This example manual illustrates 'main frame' to include separately removable components" to the "MAIN FRAME" oval. Another blue arrow points from the same text to the "BOTTOM ACCESS PANEL" entry. A third blue arrow points from the same text to the "FUEL TANK" entry. A black box labeled "MAIN FRAME" is located in the bottom right corner of the table of contents.

See also, -00167, Pet. Resp., 8 citing various prior art references

-00167, Pet. Reply, 9 citing EX1051, 217

KR996, FIG. 9



EX1005, Fig. 9
(annotated)

-00167, Pet., p. 41

Citations



Citations: Introduction

Petition (“Pet”)
 EX1003 (Dr. Velinsky Declaration)
 Institution Decision (“ID”)
 Patent Owner’s Response (Confidential) (“POR”)
 Petitioner’s Reply (“Pet. Reply”)
 EX1042 (Dr. Velinsky Declaration),
 EX1043 (Dr. Fleming Deposition transcript)

Slide 3

[1]	-00167, POR 9; Pet 9
	-00168, POR 9; Pet 10
	-00169, POR 8; Pet 10
	-00170, POR 9; Pet. 9
	-00171, POR 9; Pet. 9
	-00381, POR 9; Pet 8-9
	-00016, POR 9; Pet. 9

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[2]	-00167, compact tool carrier
	-00168, compact tool carrier
	-00169, compact tool carrier
	-00170, compact tool carrier
	-00171, loader apparatus
	-00381, loader apparatus
	-00016, compact tool carrier

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[3]	-00168, Pet 10-11
	-00167, Pet 9-10
	-00169, Pet 10-11
	-00170, Pet 9-10
	-00171, Pet 9-10
	-00381, Pet 9
	-00016, Pet 9

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[4]	-00167, Pet 14-15
	-00168, Pet 15
	-00169, Pet 14-15
	-00170, Pet 12-15
	-00171, Pet 16
	-00381, Pet 15
	-00016, Pet 14

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[5]	-00170, Pet 14; POR 14
	-00167, POR 14
	-00168, POR 14
	-00169, POR 14
	-00171, POR 14
	-00381, POR 15
	-00016, POR 14

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[6]	-00167, Pet 22-23		-00171, Pet 22-24
	-00168, Pet. 22-24		-00381, Pet 21-23
	-00169, Pet 20-22		-00016, Pet 19-21
	-00170, Pet 21-23		

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[7]	-00167, ID 7		-00171, ID 8
	-00168, ID 6		-00381, ID 8
	-00169, ID 8		-00016, ID 4
	-00170, ID 8		



Citations: Mainframe

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[8]	-00167, ID 25
	-00168, ID 24
	-00169, ID 26
	-00170, ID 26
	-00171, ID 27
	-00381, N/A “loader support”
	-00016, ID 19

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[9]	-00167, ID 34
<i>see also:</i>	-00168, ID 33
	-00169, ID 35
	-00170, ID 36
	-00171, ID 38-40
	-00381, ID 21-22
	-00016, ID 28-29

Slide 12, 13

[10]	EX1042, ¶4
<i>See:</i>	-00167, Pet. Reply 12, 14
	-00168, Pet. Reply 11, 13-14
	-00169, Pet. Reply 15
	-00170, Pet. Reply 11
	-00171, Pet. Reply 12
	-00381, Pet. Reply 14-15
	-00016, Pet. Reply 13

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[11]	-00016, Pet 26-27, EX1003, ¶67
<i>See also:</i>	-00167, Pet 30-32 (fn6), EX1003, ¶74
	-00168, Pet 33-34 (fn 5), EX1003, ¶¶74-75
	-00169, Pet 31-32 (fn 4), EX1003, ¶76
	-00170, Pet 27-28, EX1003, ¶¶67-68
	-00171, Pet 27, EX1003, ¶65
	-00381, Pet 29-31, EX1003, ¶¶72-76

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[12]	-00016, Pet. Reply 13-14
<i>See also:</i>	-00167, Pet. Reply 12
	-00168, Pet. Reply 11-12
	-00169, Pet. Reply 15
	-00170, Pet. Reply 11
	-00171, Pet. Reply 12
	-00381, Pet. Reply 15

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[13]	-00167, POR 30
<i>See also:</i>	-00168, POR 30
	-00169, POR 31
	-00170, POR 29
	-00171, POR 30
	-00381, POR 30
	-00016, POR 30

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[14]	EX1043, 105
<i>See:</i>	-00167, Pet. Reply 10-11
	-00168, Pet. Reply 10
	-00169, Pet. Reply 14
	-00170, Pet. Reply 10
	-00171, Pet. Reply 11
	-00381, Pet. Reply 14
	-00016, Pet. Reply 12



Citations: Single Weldment

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[15]	-00170, Pet 38
	-00171, Pet 39-40
	-00381, Pet 47
	-00016, Pet. 37
See <i>also</i> , discussing portions in addition to that of JP705's engine bracket	
	-00168, Pet 46
	-00169, Pet 45-46
	-00167, Pet 42

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[16]	-00171, Pet 40-41
See <i>also</i> , alternative of "To the extent Patent Owner argues...consists[consisting] of ..."	
	-00170, Pet 38
	-00381, Pet 48
	-00016, Pet 37
	-00168, Pet 47
	-00169, Pet 47
	-00167, Pet 43

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[17]	-00167, PO Sur-Reply 18
	-00168, PO Sur-Reply 18 (reciting same)
	-00169, PO Sur-Reply 18 (reciting same)
See <i>also</i> , ("Petition argued it would have been obvious to weld 'portions' of KR996's frame together (to form a single weldment).")	
	-00170, PO Sur-Reply 18
	-00171, PO Sur-Reply 18
	-00381, PO Sur-Reply 19
	-00016, PO Sur-Reply 17

Citations: Single Weldment

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[18]	-00016, Pet. Reply 16
See also:	-00168, Pet. Reply 15
	-00169, Pet. Reply 19
	-00170, Pet. Reply 14
	-00171, Pet. Reply 15
	-00381, Pet. Reply 17-18
	-00167, Pet. Reply 17

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[20]	-00167, EX1003, ¶105 (Pet 42)
See also: each discussing obvious to form portions	
	-00167, EX1003, ¶104-105; Pet 42
	-00168, EX1003, ¶116-117; Pet 46
	-00169, EX1003, ¶122-123; Pet 46
	-00170, EX1003, ¶101; Pet 38
	-00171, EX1003, ¶98; Pet 40
	-00381, EX1003, ¶123; Pet 47
	-00016, EX1003, ¶68, 98, 122; Pet 27, 37-38

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[21]	EX1043, 113-114
See:	-00167, Pet. Reply 16
	-00168, Pet. Reply 14-15
	-00169, Pet. Reply 19
	-00170, Pet. Reply 13
	-00171, Pet. Reply 14-15
	-00381, Pet. Reply 17
	-00016, Pet. Reply 15-16

Citations: Single Weldment

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[22]	-00167, EX1003, ¶106 (Pet. 42)
See also: Each discussing benefits of welding	
	-00167, EX1003, ¶60; Pet 25-26
	-00168, EX1003, ¶60, 118; Pet 26-27, 46-47
	-00169, EX1003, ¶124; Pet 46
	-00170, EX1003, ¶102; Pet 38-39
	-00171, EX1003, ¶99; Pet 40
	-00381, EX1003, ¶124; Pet 47
	-00016, EX1003, ¶99; Pet 37-38

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[23]	EX1042, ¶5
See:	-00167, Pet. Reply 17-18
	-00168, Pet. Reply 15-16
	-00169, Pet. Reply 19-20
	-00170, Pet. Reply 14-15
	-00171, Pet. Reply 15-16
	-00381, Pet. Reply 18
	-00016, Pet. Reply 17

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[24]	EX1043, 103-104
See:	-00167, Pet. Reply 18
	-00168, Pet. Reply 15-16
	-00169, Pet. Reply 20
	-00170, Pet. Reply 14
	-00171, Pet. Reply 15-16
	-00381, Pet. Reply 18
	-00016, Pet. Reply 17

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[25]	-00016, EX1002, 194 rejecting claim 3 Pet 38 (EX1002, <i>in re Larson</i>)
See also: Each discussing original pros. examiner's findings and <i>in re Larson</i>	
	-00167, Pet 42-43
	-00168, Pet 46-47
	-00169, Pet 46
	-00170, Pet 39
	-00171, Pet 40
	-00381, Pet 48
	-00016, Pet 38

Citations: Tracks

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[26]	-00168, Pet. 72-73
see also,	-00168, EX1003, ¶¶157-161
	-00169, Pet 54-55; EX1003, ¶¶141-145
	-00170, Pet 60-61; EX1003, ¶¶155-159
	-00171, Pet 66-67; EX1003, ¶¶160-165
	-00381, Pet 63-64; EX1003, ¶¶157-161

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[27]	-00168, Pet 76
see also,	-00168, EX1003, ¶165
	-00169, Pet 63; EX1003, ¶¶158-159
	-00170, Pet 63-64; EX1003, ¶163
	-00171, Pet 75; EX1003, ¶174
	-00381, Pet 67-68; EX1003, ¶¶166-167

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[28]	-00167, PO Sur-Reply 4
	-00168, PO Sur-Reply 4
	-00169, PO Sur-Reply 4
	-00170, PO Sur-Reply 4
	-00171, PO Sur-Reply 4
	-00381, PO Sur-Reply 4

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[29]	-00167, Pet 21
	-00168, Pet 22
	-00169, Pet 20
	-00170, Pet 21
	-00171, Pet 22
	-00381, Pet 19
	-00016, Pet 19

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[30]	-00168, EX1003, ¶160, Pet 73
	-00169, EX1003, ¶144, Pet 55
	-00170, EX1003, ¶158, Pet 61
	-00171, EX1003, ¶163, Pet 67
	-00381, EX1003, ¶160, Pet 64

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[31]	-00168, Pet. Reply 17
	-00169, Pet. Reply 21
	-00170, Pet. Reply 16
	-00171, Pet. Reply 17
	-00381, Pet. Reply 19-20

Citations: Tracks

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[32]	-00167, Pet. Reply 2-4
	-00168, Pet. Reply 3-5
	-00169, Pet. Reply 4-5
	-00170, Pet. Reply 3-4
	-00171, Pet. Reply 3-4
	-00381, Pet. Reply 4-5
	-00016, Pet. Reply 3-4

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[33]	-00168, Pet. Reply 3-5, 22-23
	-00167, Pet. Reply 2-4, 25
	-00169, Pet. Reply 4-5, 24-25
	-00170, Pet. Reply 3-4, 20-21
	-00171, Pet. Reply 3-4, 21
	-00381, Pet. Reply 4-5, 24-25

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[34]	-00016, Pet. Reply 3-6; Pet. 18-19
	-00167, Pet. Reply 3-5; Pet. 20
	-00168, Pet. Reply 4; Pet. 21
	-00169, Pet. Reply 5-7; Pet. 19-20
	-00170, Pet. Reply 4-6; Pet. 20
	-00171, Pet. Reply 4-5; Pet. 21-22
	-00381, Pet. Reply 5-7; Pet. 19-20

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[35]	-00168, Pet. Reply 18-21
	-00169, Pet. Reply 22-24
	-00170, Pet. Reply 16-19
	-00171, Pet. Reply 18-20
	-00381, Pet. Reply 20-23

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[36]	-00168, Pet. Reply 18 citing EX1002, 2 “claiming vehicle 10 without limitation to its drive mechanism”
	-00169, Pet. Reply 22
	-00170, Pet. Reply 16
	-00171, Pet. Reply 18
	-00381, Pet. Reply 20

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[37]	-00168, Pet. Reply 19-20 discussing “liner (39)” “EX1005, [0005], [0053].”
	-00169, Pet. Reply 22-23
	-00170, Pet. Reply 17-18
	-00171, Pet. Reply 18-19
	-00381, Pet. Reply 21-22

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[38]	-00168, Pet. Reply 20-21 citing EX1051, EX1010
	-00169, Pet. Reply 22-23
	-00170, Pet. Reply 18-19
	-00171, Pet. Reply 19-20
	-00381, Pet. Reply 22-23

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[39]	-00168, Pet. Reply 22-24
	-00169, Pet. Reply 24-25
	-00170, Pet. Reply 20-22
	-00171, Pet. Reply 21-22
	-00381, Pet. Reply 24-26



Citations: Engine Bracket

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[40]	-00167, Pet 25-26, 33-34; EX1003, ¶¶57-60 See <i>also</i> , Pet. Reply 13-14
See <i>also</i> :	-00168, Pet 26-27; EX1003, ¶¶57-60; Pet. Reply 12-13
	-00169, Pet 24-25, 33; EX1003, ¶¶57-60; Pet. Reply, 16-17
	-00016, Pet 48-50; EX1003, ¶¶129-134; Pet. Reply, 18-20

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[40A]	-00167, Pet 35; EX1003, ¶82
See <i>also</i>	-00169, Pet 35; EX1003, ¶84
	-00016, Pet 53; EX1003, ¶141
	-00168, Pet 35-36; EX1003, ¶78, 82

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[41]	-00167, Pet. Reply 14; Pet 25-27
	-00168, Pet. Reply 12- 13; Pet 26-28
	-00169, Pet. Reply 16- 17; Pet 24-26
	-00016, Pet. Reply 18- 19; Pet 48-50

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[42]	-00167, Pet 24-25; EX1003, ¶54
See <i>also</i> :	-00168, Pet 25-26; EX1003, ¶54
	-00169, Pet 23-24; EX1003, ¶54
	-00016, Pet 47-48; EX1003, ¶126

Citations: Low Pivot Points

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[43]	-00167, Pet 68-91; EX1003, ¶¶86-240
	-00169, Pet 64-93; EX1003, ¶134-235
	-00170, Pet 68-95; EX1003, ¶¶175-254
	-00171, Pet 66-103; EX1003, ¶166-242

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[44]	-00167, Pet 66-67, 75; EX1003, ¶¶162-163, 181 See also, EX1003, ¶178-179, 191 (including discussing personal experience with pivot point determination)
See also	-00169, Pet 57, 69; EX1003, ¶148-149, 174 See also, EX1003 ¶171-172, 184 (discussing personal experience with pivot point determination)
	-00170, Pet 70, 79-80; EX1003, ¶¶179-180, 203-204 See also, EX1003 ¶201-202 (discussing personal experience with pivot point determination)
	-00171, Pet 68-69, 82-83; EX1003, ¶167, 190, 192, and EX1003 ¶¶187-188, 198 (discussing personal experience with pivot point determination)

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[45]	-00167, Pet. Reply, 20
	-00169, Pet. Reply, 27
	-00170, Pet. Reply, 23
	-00171, Pet. Reply 23-24

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[46]	-00169, Pet. Reply 28
See also	-00167, Pet. Reply 24
	-00170, Pet. Reply 25
	-00171, Pet. Reply 26

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[47]	-00169, EX1003, ¶¶189-191, 218; Pet. 77, 82
	-00171, EX1003, ¶¶203-205; Pet 87
	-00170, EX1003, ¶¶217-219; Pet 83-84
	-00167, EX1003, ¶¶194-195, 215; Pet. 86

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[48]	-00167, Pet. Reply 23-24
	-00169, Pet. Reply 25
	-00170, Pet. Reply 21-22
	-00171, Pet. Reply 21-22

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[49]	-00170, Pet. Reply 21, 25-27
	-00167, Pet. Reply 25
	-00169, Pet. Reply 24, 28-30
	-00171, Pet. Reply 21-22, 27-28

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[50]	-00171, EX1003, ¶¶195-213; Pet 85-87
	-00167, EX1003, ¶¶188-202, 215; Pet. 84-86
	-00170, EX1003, ¶¶209-227; Pet 82-85
	-00169, EX1003, ¶¶181-199; Pet. 75-77

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[50A]	-00169, EX1003, ¶32, Pet 11; EX1003, ¶189, Pet 77
	-00170, EX1003, ¶33; Pet 10 EX1003, ¶217, Pet 83-84
	-00171, EX1003, ¶33; Pet 10; EX1003, ¶203, Pet 87
	-00167, EX1003, ¶32, Pet 10 EX1003, ¶194, 215 Pet 86

Citations: Secondary Considerations

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[51]	-00168, Pet 16; Pet. Reply, 26
See also,	-00167, Pet 15; Pet. Reply 27
	-00169, Pet 15-16; Pet. Reply 31
	-00170, Pet 16; Pet. Reply 29
	-00171, Pet 16; Pet. Reply 30
	-00016, Pet 14; Pet. Reply 22
	-00381, Pet 15; Pet. Reply 28

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[52]	-00168, Pet. Reply 24-26
See also,	-00170, Pet. Reply 28-29
	-00016, Pet. Reply 26-28
	-00381, Pet. Reply 26-28
	-00171, Pet. Reply 29-30
	-00169, Pet. Reply 31-32
	-00167, Pet. Reply 26-27

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[53]	-00168, Pet 16; Pet. Reply 24-26
See also,	-00167, Pet 15; Pet. Reply 26-27
	-00169, Pet 15-16; Pet. Reply 31-32
	-00170, Pet 16; Pet. Reply 28-29
	-00171, Pet 16-17; Pet. Reply 29-30
	-00016, Pet 14; Pet. Reply 21-22
	-00381, Pet 15; Pet. Reply 26-28

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[54]	-00016, Pet. Reply, 23-25; Paper 35 (Pet. Motion to Exclude)
	-00167, Pet Reply 29; Paper 43
	-00169, Pet Reply 32; Paper 44
	-00170, Pet. Reply, 30; Paper 42
	-00171, Pet. Reply, 30; Paper 42
	-00168, Pet Reply, 27; Paper 43
	-00381, Pet. Reply, 29; Paper 42

