UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KUBOTA NORTH AMERICA CORPORATION,
Petitioner,

v.

VERMEER MANUFACTURING COMPANY,
Patent Owner.

IPR2025-00167
U.S. Patent No. 9,321,386

Filed: September 3, 2025

PATENT OWNER'S RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,321,386

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EXHIBITS

Exhibit	Description
2001	February 28, 2025 Patent Office Announcement
2002	U.S. Patent No. 7,695,236 ("Green")
2003	U.S. Patent No. 8,821,104 ("Yasuda")
2004	U.S. Patent Pub. 2016/0244937A1
2005	U.S. Patent No. 5,542,814
2006	Summary: Problems with the Disclosure in KR996
2007	Excerpts from Oxford Dictionary
2008	Dingo Operators Manual
2009	Dingo Parts Catalog
2010	Scheduling Order from Parallel Litigation (ECF No. 34)
2011	Kubota's Amended Answer and Counterclaims from Parallel Litigation (ECF No. 39)
2012	Amended Scheduling Order from Parallel Litigation (ECF No. 41)
2013	Judge Pittman's Specific Requirements from Parallel Litigation
2014	Excerpt of Kubota's Invalidity Contentions from Parallel Litigation
2015	*RESERVED*
2016	Declaration of Mark Fleming
2017	U.S. Patent No. 5,004,398
2018	U.S. Patent No. 5,666,794
2019	U.S. Patent No. 8,160,785
2020	U.S. Patent No. 9,039,344
2021	August 19, 2025 Deposition Transcript of Steven Alan Velinsky
2022	Exhibit 2 to August 19, 2025 Deposition Transcript of Steven Alan Velinsky
2023	TX1000 Infringement Contentions
2024	CTX50 Claim Charts
2025	CTX100 Claim Charts
2026	"Innovative Iron Awards: Toro and Vermeer Compact Tool Carriers", Compact Equipment Magazine, December 22, 2015.
2027	Petitioner's Confidential Document Production
2028	"Kubota enters stand-on track-loader segment with new SCL1000", SAE, March 12, 2020.
2029	Transcript for "Kubota's New SCL 1000 Stand-on Skid Steer" Video, ForConstructionPros, March 11, 2020

2030	Transcript for "Kubota Gets into the Stand-on Track Loader Market" Podcast, ForConstructionPros, March 11, 2020
2031	Transcript for "Kubota Expert Breaks Down the SCL1000" Video, EquipmentWorld, September 30, 2020
2032	"Kubota unveils its first mini skid steer, the SCL1000", Equipment World, March 12, 2020 (updated March 14, 2020)
2033	*RESERVED*
2034	*RESERVED*
2035	*RESERVED*
2036	*RESERVED*
2037	Declaration of Richard L. Brophy
2038	Stipulated Protective Order

CLAIM APPENDIX

Claim No.[1]	Description
1.0	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:
1.1	a loader having an arm, the loader being adapted to carry a tool;
1.2a	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,
1.2b	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,
1.2c	the loader arm not being directly attached to the mainframe;
1.3	a linkage pivotally attached to the first side of the mainframe and pivotally attached to the loader arm;
1.4	an actuator pivotally attached to the first side of the mainframe and pivotally attached to the loader arm; and
1.5	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.
2	The compact tool carrier as set forth in claim 1 wherein the mainframe incorporates a single weldment.
3	The compact tool carrier as set forth in claim 1 wherein the loader arm is a first loader arm and the linkage is a first linkage, the loader comprising a second loader arm and the compact tool carrier comprising a second linkage pivotally attached to the second side of the mainframe and pivotally attached to the second loader arm.

[1] For purposes of this Response, and for ease of reference, Vermeer uses the same claim limitation numbering as the Petition.

Claim No.[1]	Description
4	The compact tool carrier as set forth in claim 3 wherein the actuator is a first actuator, the compact tool carrier comprising a second actuator, the second actuator being pivotally attached to the second side of the mainframe and pivotally attached to the second loader arm.
5	The compact tool carrier as set forth in claim 1 comprising a drive mechanism comprising tracks or wheels, the drive mechanism being attached to the mainframe.
6	The compact tool carrier as set forth in claim 1 comprising an engine to propel a drive mechanism, the engine being attached to the engine bracket.
7	The compact tool carrier as set forth in claim 1 wherein the actuator is a hydraulic cylinder.
8	The compact tool carrier as set forth in claim 1 wherein each loader arm incorporates a single weldment.
9	The compact tool carrier as set forth in claim 1 wherein the control station is mounted toward the rear of the compact tool carrier, the compact tool carrier comprising an operator platform for standing operation of the compact tool carrier, the difference between the height of the control station and the height of the platform being at least 90 cm.
10	The compact tool carrier as set forth in claim 1 wherein the control station is mounted toward the rear of the compact tool carrier, and the height of the control station from a surface supporting the compact tool carrier is at least 90 cm.
11	A method for operating the compact tool carrier as set forth in claim 1, the method comprising standing behind the compact tool carrier and operating the control station to propel the compact tool carrier forward and/or raise or lower the loader.
12	The method as set forth in claim 11 wherein the control station is operated while standing on an operator platform or while standing on a surface supporting the compact tool carrier.
13	The compact tool carrier as set forth in claim 1 further comprising a tool attached to the loader, the tool being selected from the group consisting of a bucket, auger, fork, stump grinder, tiller and roller.
15.0	A compact tool carrier comprising:
15.1	a loader adapted to carry a tool;

Claim No.[1]	Description
15.2a	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,
15.2b	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,
15.2c	each side having a top and a bottom, the first side of the mainframe having at least two pivot points relative to the loader,
15.2d	the loader not being directly attached to the mainframe;
15.3	a linkage pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader;
15.4	an actuator pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader;
15.5a	a drive mechanism comprising tracks or wheels for propelling the compact tool carrier over a supporting surface, the drive mechanism being attached to the mainframe about a rotational axis, the compact tool carrier having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis and bottom of the compact tool carrier being separated by a vertical distance Dl, the rotational axis and the bottom of the first side of the mainframe being separated by a vertical distance D5,
15.5b	the rotational axis and the pivot point at which the linkage is attached to the mainframe being separated by a vertical distance D2, the rotational axis and the pivot point at which the actuator is attached to the mainframe being separated by a vertical distance D4, D2 and D4 each being less than 1.5 times Dl and each being less than twice D5; and
15.6	a control station having operator controls for propelling the compact tool carrier forward and for raising and/or 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.
17	The compact tool carrier as set forth in claim 15 wherein the second side of the mainframe comprises two pivot points, each vertical distance between the rotational axis and a pivot point being less than 1.5 times Dl.

Claim No.[1]	Description
19	The compact tool carrier as set forth in claim 15 wherein the first side of the mainframe comprises a top most pivot point, the top most pivot point and the top of the first side of the mainframe being separated by a vertical distance D6, D6 being less than about 1.5 times DS.
20	The compact tool carrier as set forth in claim 15 further comprising a tool attached to the loader, the tool being selected from the group consisting of a bucket, auger, fork, stump grinder, tiller and roller.
21	The compact tool carrier as set forth in claim 1 wherein the linkage is a first linkage, the first linkage being pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader arm at a second pivot point, the actuator being attached to the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point, the compact tool carrier further comprising a second linkage pivotally attached to the first side of the mainframe at a fifth pivot point and pivotally attached to the loader arm at a sixth pivot point, wherein as the loader travels from a down position to a vertically raised position, the first, second, third, fourth, fifth, and sixth pivot points are (1) disposed between the operator controls and a bottom of the mainframe or (2) disposed forward of the control station.
22	The compact tool carrier as set forth in claim 21 further comprising an operator platform for standing operation of the operator controls of the control station, the operator platform being located toward a rear of the compact tool carrier such that the first pivot point, third pivot point, and fifth pivot point are disposed forward of the operator platform.
23	The compact tool carrier as set forth in claim 15 wherein D2 and D4 are each less than 1.75 D5.
24	The compact tool carrier as set forth in claim 15 wherein D2 and D4 are each less than 1.5 D5.
25	The compact tool carrier as set forth in claim 15 wherein D2 and D4 are each less than Dl.
26	The compact tool carrier as set forth in claim 15 wherein D2 and D4 are each less than 0.75 Dl.

Claim No.[1]	Description
27	The compact tool carrier as set forth in claim 15 wherein the linkage is a first linkage, the compact tool carrier further comprising a second linkage pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader, the rotational axis and the pivot point at which the second linkage is attached to the mainframe being separated by a vertical distance D3, D3 being less than 1.5 times Dl.
28	The compact tool carrier as set forth in claim 15 wherein the linkage is a first linkage, the compact tool carrier further comprising a second linkage pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader, wherein the mainframe comprises a forward-most pivot point with (1) the pivot point at which the first linkage is attached to the mainframe, (2) the pivot point at which the actuator is attached to the mainframe, or (3) the pivot point at which the second linkage is attached to the mainframe being the forward-most pivot point, a vertical distance between the rotational axis and the forward-most pivot point being less than Dl.
29	The compact tool carrier as set forth in claim 15 wherein the linkage is a first linkage, the compact tool carrier further comprising a second linkage pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader, wherein the mainframe comprises a forward-most pivot point with (1) the pivot point at which the first linkage is attached to the mainframe, (2) the pivot point at which the actuator is attached to the mainframe, or (3) the pivot point at which the second linkage is attached to the mainframe being the forward-most pivot point, a vertical distance between the rotational axis and the forward-most pivot point being less than 0.75 Dl.

Claim No.[1]	Description
30	The compact tool carrier as set forth in claim 15 wherein the linkage is a first linkage, the compact tool carrier further comprising a second linkage pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader, wherein the mainframe comprises a forward-most pivot point with (1) the pivot point at which the first linkage is attached to the mainframe, (2) the pivot point at which the actuator is attached to the mainframe, or (3) the pivot point at which the second linkage is attached to the mainframe being the forward-most pivot point, a vertical distance between the rotational axis and the forward-most pivot point being less than 1.5 D5.
64	The compact tool carrier as set forth in claim 1 further comprising an operator platform for standing operation of the operator controls of the control station, the operator platform extending from the mainframe.
65	The compact tool carrier as set forth in claim 64 wherein least a portion of the operator platform is forward of the rear end of the mainframe.
66	The compact tool carrier as set forth in claim 15 wherein the pivot point at which the actuator is attached to the first side of the mainframe is above the rotational axis.
67	The compact tool carrier as set forth in claim 15 wherein the pivot point at which the linkage is attached to the first side of the mainframe is disposed above the tracks or wheels.

I. INTRODUCTION

Kubota challenges the validity of claims 1–13, 15, 17, 19–30, and 64–67 of Vermeer's U.S. Patent No. 9,321,386.[2] Kubota's obviousness arguments are all premised on Korean Patent No. 10-1041996 ("KR996"). Kubota fails to advance any legitimate basis to conclude that a person of ordinary skill in the art would modify KR996's specialized vehicle—with its hydraulically actuated mechanism for coupling various attachments—or otherwise combine the teachings of the prior art references in the manner Kubota imagines. In fact, Kubota's arguments also contradict (or ignore) clear evidence—including the express teaching of the references themselves—undermining its superficial, hindsight reconstruction of how a POSITA[3] would view the KR996 machine and what modifications, if any, they would make to it.

Kubota and its expert, Dr. Velinsky attack the Challenged Claims by applying an improper construction of "mainframe." Under the Board's preliminary

[2] As used herein, "the '386 Patent" means U.S. Patent No. 9,321,386 and "Challenged Claims" means the claims 1–13, 15, 17, 19–30, and 64–67 of the '386 Patent.

[3] As used herein, "POSITA" means a person having ordinary skill in the art as of the earliest effective filing date of the '386 Patent, February 20, 2015.

construction, Kubota's obviousness argument fails. The multiple discrete *and removable* structures Kubota identifies in its petition are not the *primary* supporting structure of the machine.

At the institution stage, the Board deferred to Kubota's expert, Velinsky, as Vermeer had not yet presented expert testimony. As explained below, however, cross-examination revealed that Velinsky's testimony should be given little or no weight by the Board. Velinsky admitted he does not know how the components of a compact utility loader machine ("CUL") are arranged, (2) has never operated a CUL, (3) has almost no knowledge of the kinds of tools used on a CUL, (4) has never designed a CUL or full-size skid steer machine, (5) never bothered interviewing Kubota engineers to understand what common design constraints apply to CUL machines, and (6) does not have experience using the kinds of 3D modeling tools required to fully understand and assess Kubota's proposed modifications to KR996. Given the foregoing, Velinsky is not equipped to assist the Board in determining whether a POSITA would have been motivated to make the changes to the CUL disclosed in KR996 that Kubota asserts in its Petition.

The methodology Velinsky applied for conducting his validity assessment was also fundamentally flawed for at least the following reasons: (1) he delegated complete responsibility for determining how a POSITA would modify KR996 to Kubota's legal counsel, (2) he admits blindly adopting legal counsel's proposed

design without ever assessing *whether that design would function or could be adapted to the primary reference's machine*, (3) he applied an improperly expansive construction of "mainframe" that is inconsistent with the Board's interpretation of that term, (4) he used mere hindsight implementation of the solution revealed in the '386 Patent as his test for obviousness, (5) he proposed modifications that removed a key inventive feature from the prior art on which he relies; (6) he cherry picked individual teachings from prior art references and ignored others that directly undermined any motivation to combine, and (7) he confirmed in deposition that he affirmatively refused to consider any objective evidence of non-obviousness.

Put simply, Velinsky lacks any relevant experience, and his opinions and conclusions are severely tainted by a flawed methodology that consists of hindsight and *ipse dixit* aimed at achieving Kubota's goal of invalidating Vermeer's patent.

Vermeer's Patent Owner Response is supported by the testimony of Dr. Fleming, a mechanical engineer with a Ph.D in Theoretical and Applied Mechanics. In stark contrast to Kubota's expert, Fleming has years of hands-on industry experience as a design and manufacturing engineer participating in the development of full-size skid steer loaders, including the overall structure and configuration, loader arms, bucket assemblies, and controls of those machines. Ex. 2016, ¶¶1-6. Fleming has operated and inspected compact utility loaders, including

the commercial embodiment of the '386 Patent. He also conducted a detailed analysis of the specialized KR996 machine, including by creating detailed CAD models of it to assist his analysis. Based on his thorough analysis, Fleming explains why a POSITA (a) would not have considered removable portions of the KR996 machine to be part of the *primary* supporting structure or "mainframe," (b) would not been motivated to make the modifications to the KR996 machine, (c) would not have had a reasonable expectation of success in making those modifications, and (d) would not have considered the Vermeer invention described in the Challenged Claims obvious.

II. LEGAL BACKGROUND

A. Petitions Based on Obviousness

A petition based on obviousness under 35 U.S.C. § 103 must address (1) "the scope and content of the prior art;" (2) "differences between the prior art and the claims at issue;" (3) "the level of ordinary skill in the pertinent art;" and (4) "secondary considerations [such] as commercial success, long felt but unsolved needs, failure of others, etc." *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). "An obviousness determination requires finding both that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable

expectation of success in doing so." *CRFD Rsch., Inc. v. Matal*, 876 F.3d 1330, 1340 (Fed. Cir. 2017) (internal quotation marks and citation omitted). "A prior patent must be considered in its entirety, i.e., as a whole, including portions that would lead away from the invention in suit." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987); *In re Enhanced Sec. Research, LLC*, 739 F.3d 1347, 1355 (Fed. Cir. 2014) ("§ 103 does not permit a court to stitch together an obviousness finding from discrete portions of prior art references without considering the references as a whole").

"[W]here the motivation to combine rests on a modification alleged to improve the primary reference . . . the Board may consider whether the modification renders the reference inoperable for its intended function in deciding whether a POSA would have a motivation to combine the references, even if that function is not a feature of the claimed device at issue." *Cook Grp. Inc. v. Bos. Sci. Scimed, Inc.*, 809 F. App'x 990, 1000 (Fed. Cir. 2020) (the Board did not err in finding a POSITA would not have been motivated to combine the presented references when "the loss of key functions in the primary reference . . . supports a finding of no motivation to combine."); *see also In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (no motivation to combine where the proposed modification to the prior art "would be rendered inoperable for its intended purpose"); *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1376 (Fed. Cir. 2021) (proposed

modification of the prior art not obvious where the Board "ignored the express disclosure [in the prior art] that teaches away from the claimed invention and relied on teachings from other references that were not concerned with the particular problems [the prior art] sought to solve"). In determining whether a motivation to combine exists, "the benefits, both lost and gained, should be weighed against one another." *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (noting that this is "consistent with the longstanding principle that the prior art must be considered for all its teachings, not selectively"). Therefore, a motivation to combine is absent when the proposed modification would make a more complex and less efficient product, or "yield an unappetizing combination." *Id*.

"There is no suggestion to combine . . . if a reference teaches away from its combination with another source." *Tec Air, Inc. v. Denso Mfg. Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999). "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant . . . [or] if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant." *Id.* (citing *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). "If when combined, the references 'would produce a seemingly

inoperative device,' then they teach away from their combination." *Id.; see also Chemours Co. FC, LLC,* 4 F.4th at 1376.

A motivation to combine cannot be based on hindsight. "To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability." *Sensonics Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (citing *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983)). The invention instead "must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made." *Id.* (citing *Interconnect Planning Corp. v. Feil,* 774 F.2d 1132, 1138 (Fed. Cir. 1985)).

B. Objective Indica of Non-Obviousness

Objective indicia of nonobviousness includes unexpected results, skepticism, copying, commercial success, praise by others, failure by others, and long-felt need. *Mintz v. Dietz & Watson, Inc*., 679 F.3d 1372, 1379 (Fed. Cir. 2012). "[O]bjective indicia 'may often be the most probative and cogent evidence of nonobviousness in the record,'" and "help turn back the clock and place the claims in the context that led to their invention." *Id*. at 1378. Objective indicia of nonobviousness "must always when present be considered en route to a

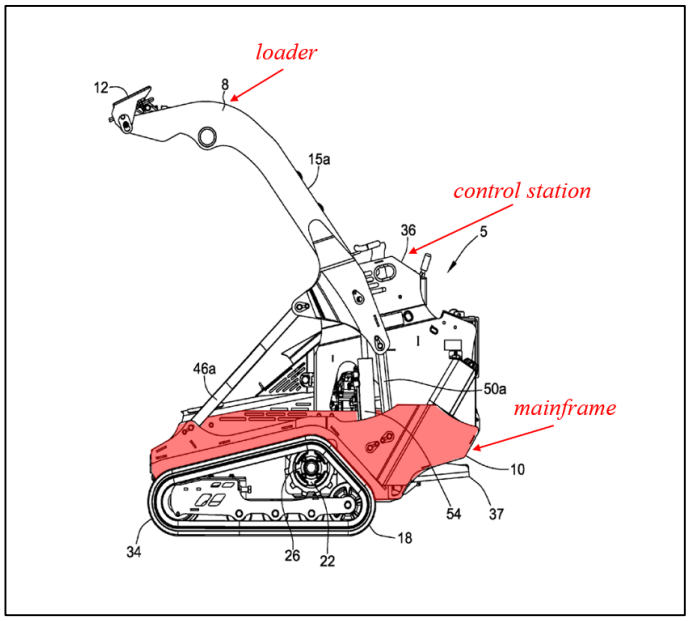
determination of obviousness." *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc*., 699 F.3d 1340, 1349 (Fed. Cir. 2012); *see also Apple Inc. v. Samsung Elecs. Co*., 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc). Objective indicia of nonobviousness are "relevant to the obviousness inquiry 'if there is a nexus between the claimed invention and the [objective indicia of nonobviousness].'" *In re Affinity Labs of Tex., LLC*, 856 F.3d 883, 901 (Fed. Cir. 2017) (quoting *Ormco Corp. v. Align Tech., Inc*., 463 F.3d 1299, 1312 (Fed. Cir. 2006)). The Federal Circuit has explained that "there is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product and that product is the invention disclosed and claimed in the patent." (internal citations omitted). *Immunex Corp. v. Sandoz Inc.*, 964 F.3d 1049, 1067 (Fed. Cir. 2020).

III. U.S. PATENT NO. 9,321,386

A. Overview of the '386 Patent

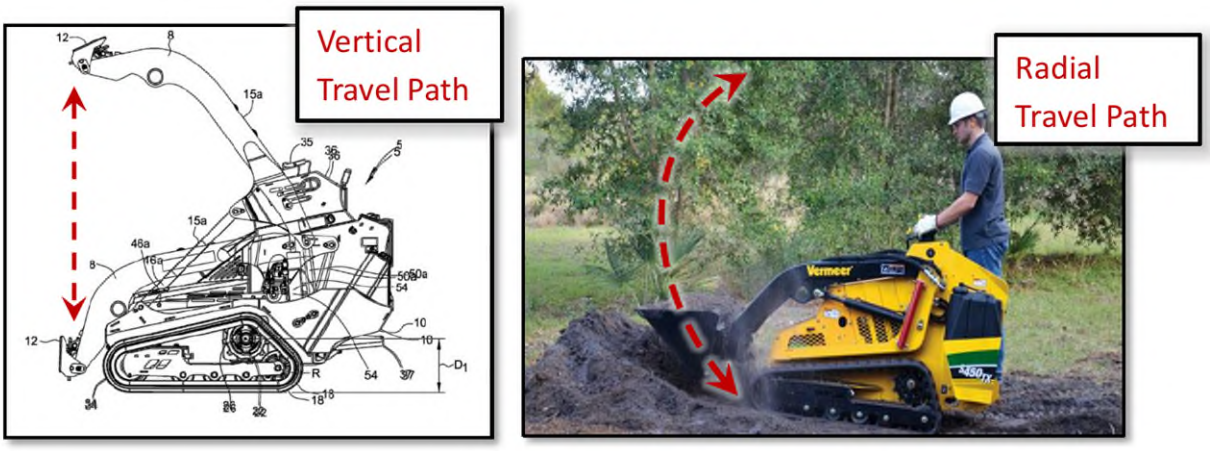
The '386 Patent, titled "Low Profile Compact Tool Carriers," issued on April 26, 2016. Ex. 1001 at Cover Page. It claims priority to Provisional Application No. 62/118,860, which was filed on February 20, 2015. *Id.* The '386 Patent is directed to "[c]ompact tool carriers having a loader mounted to a low-profile mainframe." *Id.* at Abstract, 1:12–13.

Compact tool carriers—also known as mini skid steers, mini track loaders, or compact utility loaders—are distinguishable from full-size skid steers in weight, size, and complexity. *Id.* at 1:34–36. As the name suggests, they are smaller than full-size skid steers, resulting in the need for a different method of operation. *Id.* at 1:32–36. The operator controls the compact tool carrier using the control station, generally while standing or walking behind the machine. *Id.* at 1:59–61, 3:34–45. The controls are used "for propelling the compact tool carrier forward and for raising and lowering the loader." *Id.* at 1:56–58.



Ex. 1001 at Fig. 3 (shading and annotations added). This method of operation differs from conventional or full-size skid steers, in which the user typically operates the machine from a seated position near the front of the machine. *Id.* at 1:32–34.

Because compact tool carriers are smaller, lighter, and configured differently than full-size skid steers, designing them requires overcoming myriad unique engineering challenges. One main challenge is maximizing lift capacity without significantly increasing the size and weight of the machines. The '386 Patent's solution involves, *inter alia*, a compact tool carrier having loader arms attached via linkages to a low-profile mainframe to achieve a substantially vertical-lift path as the loader is raised and lowered—rather than a radial path. Ex. 1001 at 6:2–6.



The vertical-lift mechanism results in an increased lift capacity, largely because it keeps the load as close to the machine as possible throughout the travel path of the loader arm. *Id.* at 6:6–8 ("The vertical travel path of the loader 8 is more effective relative to conventional travel paths for compact tool carriers 5 as the carrier 5 may operate closer to other structures."). This is particularly advantageous for users of compact tool carriers that are working in tight spaces and need to lift heavy loads. *Id.* at 1:17–19.

The compact tool carrier in the '386 Patent also has a low-profile mainframe. *Id.* at 1:12–13, 5:64–67. This means that "the pivot points [attaching the linkages and actuators to the mainframe] are positioned relatively low on the mainframe[,] allowing its height to be reduced." *Id.* at 5:4–7. This results in several benefits. For example, "the mass of the mainframe 10 and the resulting cost of the carrier 5 may be reduced." *Id.* at 5:62–64. "Further, such a low-profile mainframe 10 improves visibility for the operator and allows the center of gravity in the carrier 5 to be lowered[,] which improves stability." *Id.* at 5:64–67.

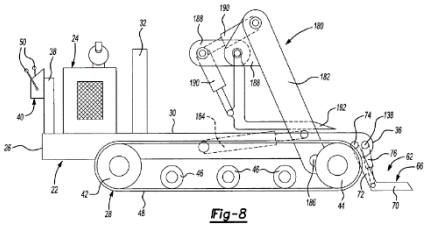
The foregoing components of the compact tool carrier, along with other limitations disclosed in the '386 Patent, result in a small and powerful machine that is well-suited for a variety of projects.

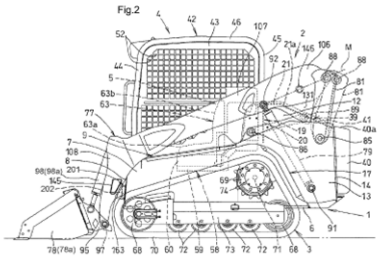
B. Prosecution History

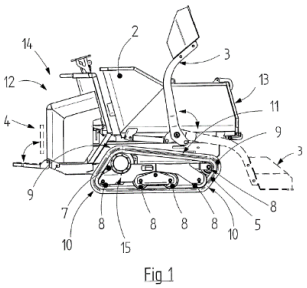
The '386 Patent was the first patent issued to Vermeer in connection with its vertical-lift compact utility loader invention. After the '386 Patent issued in 2016, the Patent Office issued several related patents on Vermeer's invention, including U.S. Patent Nos. 9,975,750, 10,202,266, 11,465,891, and 12,098,063. In the nine years since the '386 Patent issued, Vermeer's patents have survived multiple *ex parte* reexaminations. As briefly summarized below, the Patent Office's prior vetting of the validity of the '386 Patent has been very thorough—generating thousands of pages of file histories. *See* Exs. 1002; 1029; 1030; 1031. The

consistent result from the Patent Office's prior scrutiny has been to confirm the patentability of the Challenged Claims.

The '386 Patent issued from U.S. Patent Application No. 14/691,649 ("the '649 Application"), which was filed on April 21, 2015. Ex. 1001 at Cover Page. The '649 Application claims priority to Provisional Application No. 62/118,860 ("the '860 Application"), filed on February 20, 2015. *Id.* During the original examination, the examiner rejected certain claims based on various prior-art references, including full-size loaders with vertical-lift loader arms and various small machines, shown below:







Ex. 1002 at 76–78; Ex. 2002 (U.S. Patent No. 7,695,236, "Green") at Fig. 8; Ex. 2003 (U.S. Patent No. 8,821,104, "Yasuda") at Fig. 2; Ex. 1033 (U.S. Patent Pub. US2009/0116943, "Valere") at Fig. 1. Vermeer responded by amending its claims to add limitations that focused on key aspects of the invention, including the location of the pivotal connections between the mainframe and the linkage and actuator. Ex. 1002 at 57 (adding requirement that the linkage and actuator be "pivotally attached to the first side of the mainframe"). These important claim

limitations distinguished Vermeer's invention from the cited prior art. *Id*. at 66–68.

The examiner also rejected various claims based on a combination of Yasuda with U.S. Patent No. 6,695,568 (Ex. 1009, "Bares '568"). Ex. 1002 at 52–54. Bares '568 disclosed a radial-lift mini skid steer:

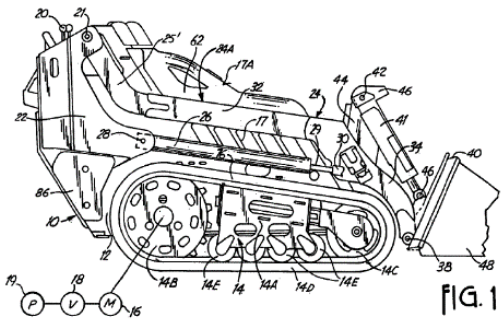


FIG. 1

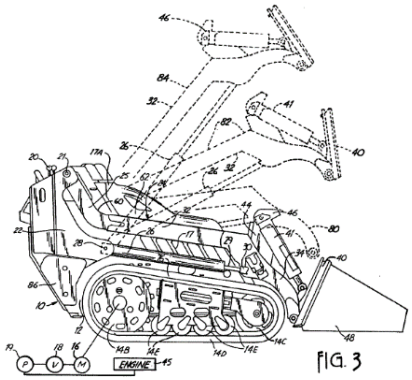
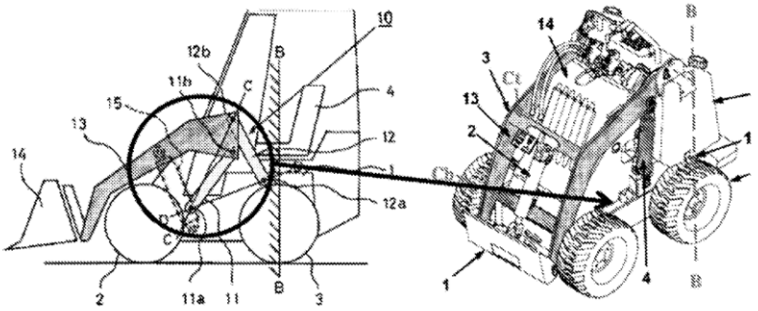


FIG. 3

Ex. 1009 at Figs. 1 and 3. Vermeer explained why it would not have been obvious to use the vertical-lift style loader arms of Yasuda's full-size machine on a mini skid steer frame like Bares '568—including by adding limitations to distinguish the specific Yasuda/Bares '568 combination asserted by the examiner. Ex. 1002 at 42–48, 12–25. The Patent Office allowed Vermeer's amended claims and the '386 Patent issued on April 26, 2016.

The '386 Patent has also survived two rounds of *ex parte* reexaminations initiated by a third party, the Toro Company. *See* Exs. 1029; 1030; 1031. Toro submitted numerous *ex parte* reexamination requests, arguing that it would have been obvious to implement a vertical-lift loader arm configuration on a compact

utility loader. *See* Ex. 1029 at 233–275, Ex. 1031 at 447–529. In support of these assertions, Toro presented a number of hypothetical combinations of compact utility loaders with vertical-lift loader arm configurations (taken from full-size machines):



Komatsu **Dingo**

Ex. 1031 at 483 (proposing replacing the radial-lift loader arms of the Dingo compact utility loader with the vertical-lift loader arms of the Komatsu full-size loader); Ex. 1029 at 252, 256 (proposing replacing the radial-lift loader arms of the Vermeer S450TX compact utility loader with the vertical-lift loader arms of the Mustang full-size loader).

Toro pursued invalidation of Vermeer's patent, despite having filed its own application to protect its vertical-lift mini skid steer machine design. In its application, Toro described the challenge of implementing high-reach, vertical-lift loader arms on a compact machine as "difficult if not impossible due to size and durability constraints." Ex. 2004 (Toro's U.S. Patent Pub. 2016/0244937A1) at

[0007].[4] As part of its response to Toro's reexamination challenges, Vermeer presented the Patent Office with various evidence of objective indicia of non-obviousness—much of it obtained from Toro's internal files. For example, during its litigation against Toro, Vermeer discovered that Toro engineers had struggled for years with the challenge of increasing lift capacity on a mini-skid steer machine. Toro invested more than a decade of work and large sums of money into the design and prototyping of various alternative machines (none of them incorporating vertical lift) in an effort to solve this problem. *See* Ex. 1031 at 30–56.

After a lengthy reexamination process, including a detailed review of Toro's efforts to solve the problem ultimately resolved by Vermeer's invention disclosed in the '386 Patent, Vermeer overcame all of the validity challenges and the Patent Office confirmed the patentability of the '386 Patent's Challenged Claims. Ex. 1001 at April 12, 2018 Ex Parte Reexamination Certificate and January 24, 2020 Ex Parte Reexamination Certificate.

[4] Toro attempted to walk back this representation to avoid an inconsistency with its obviousness assertions.

IV. SUMMARY OF THE PETITION

A. Grounds

The Petition includes three alleged obviousness grounds in support of its request to cancel the Challenged Claims. Petition at 19–20. All three grounds depend on KR996. *Id.* at 20. Kubota argues that a POSITA would have been motivated to modify the machine disclosed in KR996 to yield the compact utility loaders defined in the Challenged Claims. First, the Petition argues Claims 1–13, 21–22, and 64 are obvious based on proposed modifications of KR996's machine in light of Japanese Publication of Unexamined Patent Application No. 2004-17705 ("JP705"). *Id.* at 21–59. Second, the Petition argues that Claim 65 is obvious based on proposed modifications of KR996's machine in light of JP705 and U.S. Patent No. 6,397,967 ("McIlwraith"). *Id.* at 59–64. Third, Kubota argues that Claims 15, 17, 19–20, 23–30, 66, and 67 are obvious based on proposed modifications of KR996's machine in light of JP705 and U.S. Patent No. 3,586,195 ("Beltrami"). *Id.* at 64–91.

B. The Prior Art References Relied on by Kubota

1. KR996

Korean Patent No. 10-1041996, titled "Environmentally Friendly Construction Equipment for Building Deconstruction Work," was published on

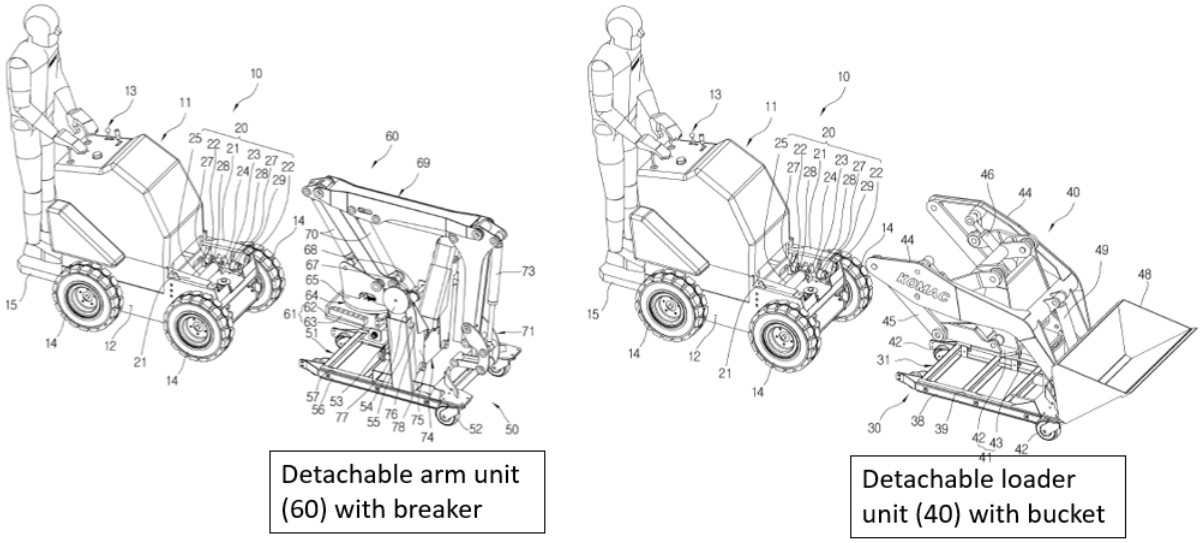
June 16, 2011. Ex. 1005.[5] KR996 "relates to construction equipment for green building deconstruction work" that "can easily attach and detach various dismantling equipment to the vehicle according to the form of the deconstruction work." Ex. 1005 at [0001].

The problem that KR996 set out to solve was specific to demolition work conducted inside buildings. In the conventional arrangement, an urban demolition team would use two separate machines in pairs: a mini excavator with a concrete breaker or crusher for demolition work and a mini loader with a bucket for hauling

[5] Kubota relies on a number of foreign language documents, including KR996 and JP705. Under 37 C.F.R. 42.63, Kubota was required to file "a translation of the document into English and an affidavit attesting to the accuracy of the translation" for KR996 (Ex. 1005), JP705 (Ex. 1006), and Ex. 1014. Kubota failed to submit an affidavit from the person who prepared the translation, violating the requirements of Federal Rule of Evidence 602, 604, 702, and 802 and 37 C.F.R. §§ 1.68, 42.73(b). And for Ex. 1011, Kubota did not provide any certified translation. Therefore, on June 25, 2025, Patent Owner served objections, noting these failures. Paper 19. The deadline for Kubota to serve Supplemental Evidence in response to these objections has passed and Kubota opted not to do so. Vermeer will address this in a separate motion to exclude under 37 C.F.R. 42.64(c).

away the debris. *Id*. at [0003]–[0006]. The problem with this conventional arrangement, according to KR996, was that "the skid loader is idle while the mini excavator is crushing, and vice versa, the mini excavator is idle while the skid loader is bucketing," resulting in inefficiencies and extra expense associated with owning and maintaining two separate machines—each used only half of the time. *Id*. at [0007]–[0008].

To solve this purported problem, KR996 discloses a modular construction vehicle with a quickly detachable loader assembly and a quickly detachable breaker assembly:



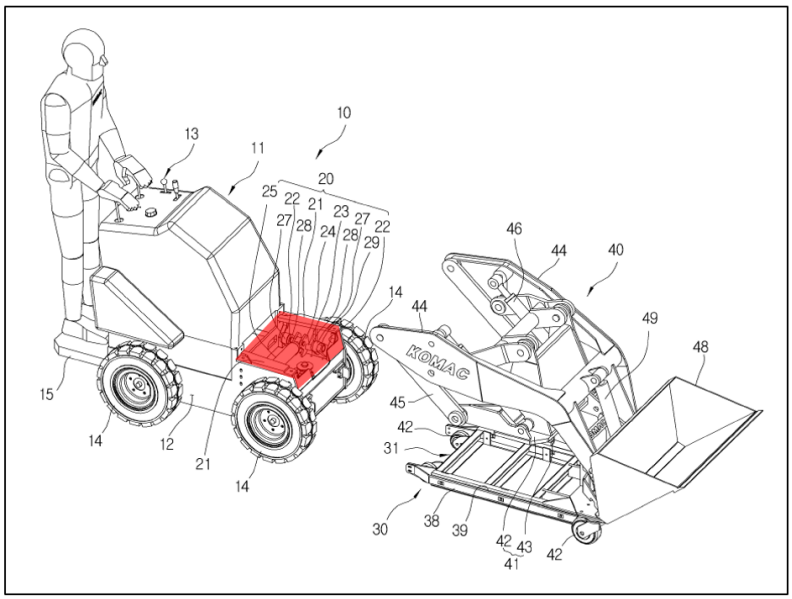
Ex. 1005 at Fig. 14, Fig. 1 (annotations added).

As Figures 1 and 14 illustrate, KR996 discloses three unique pieces of equipment: the vehicle itself (10), a loader unit (40), and an arm unit (60). The vehicle (10), which appears on the left side of Figures 1 and 14 above, includes a

main body (11), control unit (13), the attachment mechanism or "detachable part" (20), and four wheels (14). Ex. 1005 at Figs. 1, 14, [0116]–[1045]. The two detachable components—the loader unit (40) and the arm unit (60)—are separate from the vehicle (10), as illustrated on the right side of Figures 1 and 14.

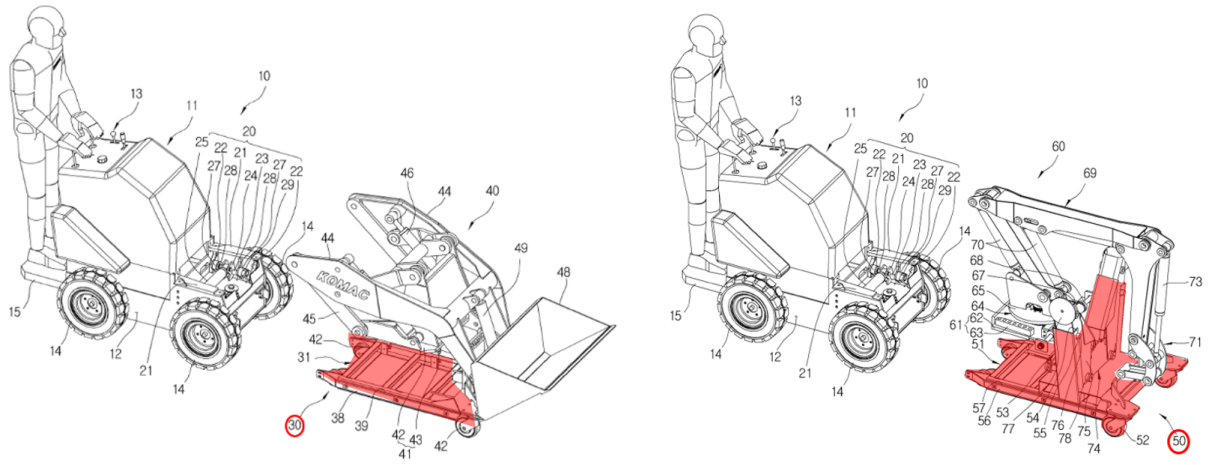
KR996 touts this easy and quick attachable/detachable feature throughout the disclosure as the key purpose and inventive concept of this machine. *See, e.g.*, Abstract ("the present invention can easily and quickly detach the loader unit"), [0012] ("The purpose of the present invention is to provide construction equipment for green building deconstruction work, which enables the easy and quick attachment and detachment of a bucket and a breaker with a single vehicle, to solve the aforementioned problems."), [0013] ("Another object of the present invention is to provide construction equipment for green building deconstruction work, which allows the boom assembly, bucket attachment, and bucket combined loader unit as a whole, and the boom assembly, breaker attachment, and breaker combined arm unit as a whole to be selectively detachable . . . ."); [0069], [0088].

KR996 discloses a complex, hydraulically actuated attachment mechanism that purports to enable the quick and easy detachment functionality. This quick attachment mechanism is highlighted in red below:



Ex. 1005 at Fig. 1 (shading added).

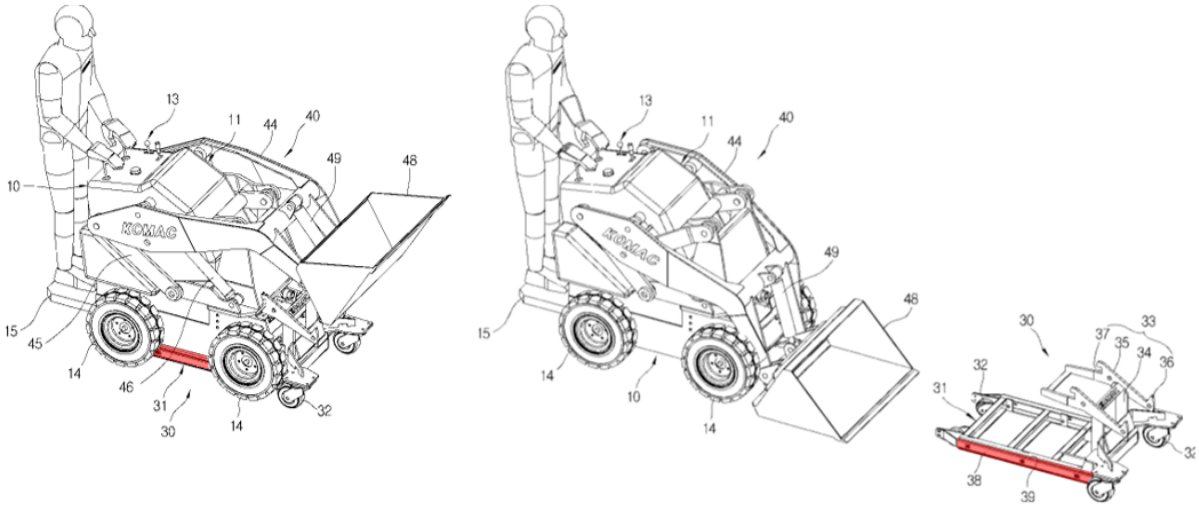
To enable the quick and easy detachment of the loader unit (40) and arm unit (60), KR996 describes wheeled "bogie" units (30 and 50) on which the loader unit (40) and arm unit (60) are stored when the other attachment is in use. Those "bogies" are shaded in red in the figures below:



Ex. 1005 at Fig. 1, Fig. 14, [0041].

KR996 explains how the bogie unit specifically interacts with the machine to achieve the quick-and-easy detachability of the loader unit and arm unit. Ex. 1005 at [0036]. Specifically, the bogies of KR996 include guide plates (38, 56) that are designed to engage with the lower inner surface of the tires of the machine. When the vehicle is propelled forward, the rotation of the wheels—and specifically the tire sidewalls—pull the guide plates towards the machine to enable connection of the loader unit or arm unit to the machine. Once the loader unit or arm unit is attached, the operator reverses the machine to propel it backwards, away from the bogie. The sidewall of the wheel then pushes the guide plate of the bogie away from the machine. Ex. 1005 at [0052], [0060].

KR996 also teaches that shims ("liner (39)") are inserted between the bogie and guide plates to fine tune the positioning of the guide plates to ensure they interface properly with the interior sidewalls of the machine's wheels. Ex. 1005 at [0053]; Ex. 2016 at ¶¶72-73. This interaction between the inner surface of the tires and the guide plates of the bogies is a critical feature of the invention disclosed in KR996 that enables the quick-and-easy detachability feature. Ex. 1005 at [0052], [0060], [0069], [0071], [0074], [0078], [0080], [0083], [0086]–[0087]. Figures depicting this critical operation of the KR996 invention are presented below with the guide plates highlighted in red:

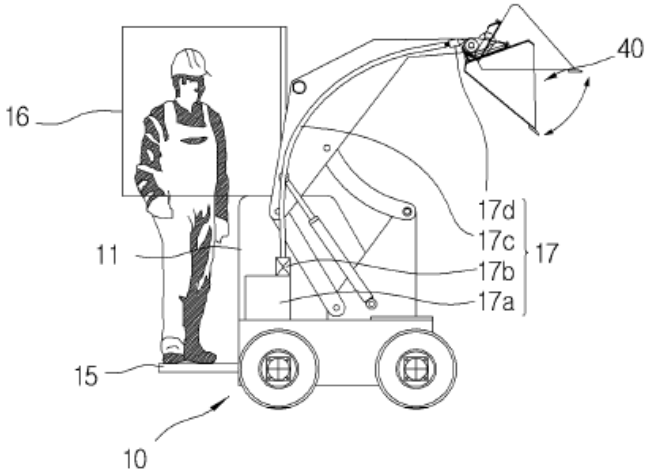


Ex. 1005 at Figs. 7, 8 (shading added).

It is important to note that the invention described in KR996 operates in a variety of different modes. In one of these modes, the machine is operated *without any attachment* so that it can be transported to the construction site and maneuvered between various attachment bogies. In a second mode, the machine is brought into contact with the breaker attachment bogie so that the attachment mechanism can be manipulated to cause the breaker to attach to the machine or be deposited onto the bogie. In a third mode, the machine is operated with the breaker attached to, for example, break up construction debris. In a fourth mode, the machine is brought into contact with the loader attachment bogie and the attachment mechanism manipulated to attach the loader to the machine or to deposit it onto the bogie. And in a fifth mode, the machine is operated with the loader attached to, for example, clear construction debris from the site. Importantly, the key improvement of KR996 is a

single machine that is capable of performing in *all* of these various modes of operation. Ex. 2016 at ¶¶74, 147-148.

KR996 also teaches including a safety fence (16) to protect the operator from flying debris and a watering device (17) to suppress dust generation. *Id*. at [0089]–[0092]. These two features are depicted in Figures 21 and 22. These high-level schematics depict the safety fence simply as a box (16) surrounding the operator, with no further details:



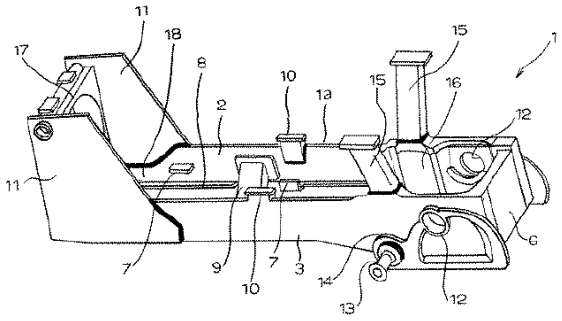
Although these features (safety fence and watering device) depicted in Figures 21 and 22 are not relevant to the issues before the Board, the lack of specific detail in these figures is representative of the overall lack of disclosure in KR996 regarding how to actually implement the ideas set forth therein. Attached as Exhibit 2006 is a summary of some of the inconsistencies and significant problems with the machine depicted in KR996. In addition to these problems, Fleming has also identified a number of reasons why the quick attachment mechanism and bogie

concepts described in KR996 would not work in a real-world construction environment. Ex. 2016 at ¶¶75-79.

There is no evidence that the machine described in KR996 has ever been built—either in prototype form or as a commercial product.

2. JP705

JP705 is directed to large construction vehicles, "such as a bulldozer, hydraulic excavator, and the like." Ex. 1006 at Abstract, [0002]. JP705 discloses a simplified mainframe having short attachment points to mount various components like the engine. *Id.* at Abstract, [0012]. These short attachment points "eliminate interference with the various on-board devices." *Id*. at [0012]. This mainframe, which is designed and configured for use with a full-size bulldozer or excavator is illustrated in Figure 1:

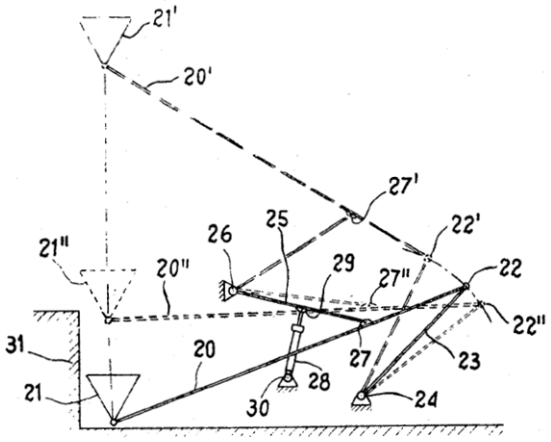


Id. at Fig. 1; Ex. 2016 at ¶¶82-83.

3. Beltrami

U.S. Patent No. 3,586,195 to Beltrami is directed to a device for digging and lifting that has a grabber or excavating bucket. Ex. 1008 at 1:6–16. The loader of

Beltrami includes two parallel supporting arms with each arm being connected to a pair of "connecting rods" to form an "articulated quadrilateral so as to impart to the bucket a substantially vertical path." *Id*. at Abstract.



Ex. 1008 at Fig. 2.

V. LEVEL OF ORDINARY SKILL IN THE ART

Kubota asserts that a POSITA in February of 2015 "would have had a Bachelor of Science degree in Mechanical or Agricultural Engineering and two years of experience in the mechanical design of machines, or have had equivalent knowledge and experience." Ex. 1003 at ¶19. Kubota also argues that "[l]ack of professional experience can be remedied by additional education, and vice versa." *Id.*

For purposes of this Response, Vermeer does not dispute the definition of level of skill possessed by a POSITA set forth in the Petition and notes that it substantially tracks Vermeer's definition.[6]

VI. CLAIM CONSTRUCTION

A. Construction of "Mainframe"

As discussed in detail below, Kubota's obviousness challenge is based entirely on an incorrect view of what constitutes the "mainframe" of the compact tool carrier defined in the Challenged Claims. All the Challenged Claims require that the linkages and actuators that support the loader arms be "pivotally attached" or "pivotally connected" to the "mainframe" of the compact tool carrier. Under a proper construction of the "mainframe" term, Kubota's prior art fails to teach that requirement.

As the Board noted in the Institution Decision, the plain and ordinary meaning of "mainframe" to a POSITA is "primary supporting structure." Paper 16

[6] Vermeer asserts that a POSITA, as of the earliest effective filing date claimed in the '386 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 machines, or have had equivalent knowledge and experience.

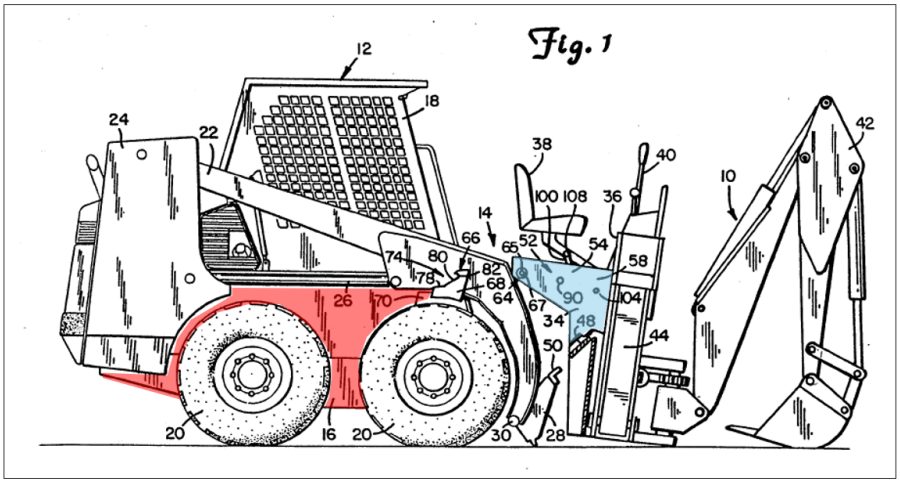
at 19-25. Dr. Fleming agrees that this is consistent with how a POSITA would interpret the term "mainframe." Ex. 2016 at ¶¶88-93.

This construction is consistent with the plain meaning of the words "main" and "frame." "Frame" simply means a rigid supporting structure. Ex. 2007 (defining the noun "frame" as "the rigid supporting structure of a vehicle, aircraft, or other object"). And the addition of "main" to "frame" simply indicates that this frame is the primary—or most important—frame of the vehicle. *Id*. (defining the adjective "main" as "chief in size or importance").

As the *primary* frame of the compact utility loader, the "mainframe" represents the core structure of the machine to which the other components attach. This is borne out in the '386 Patent specification. Ex. 1001 at 2:2–3 ("The drive mechanism is attached to the mainframe."), 3:20–24 (same), 3:62–64 (upper frame supporting the control station is attached to mainframe), 4:10–12 (engine and drive mechanism including tracks or wheels are connected to the mainframe), 4:13–18 (loader arms connected to mainframe), 4:35–42 (actuators connected to mainframe), 5:52–55 (mainframe includes an engine bracket for connecting and supporting the engine); Ex. 2016 at ¶¶88-93.

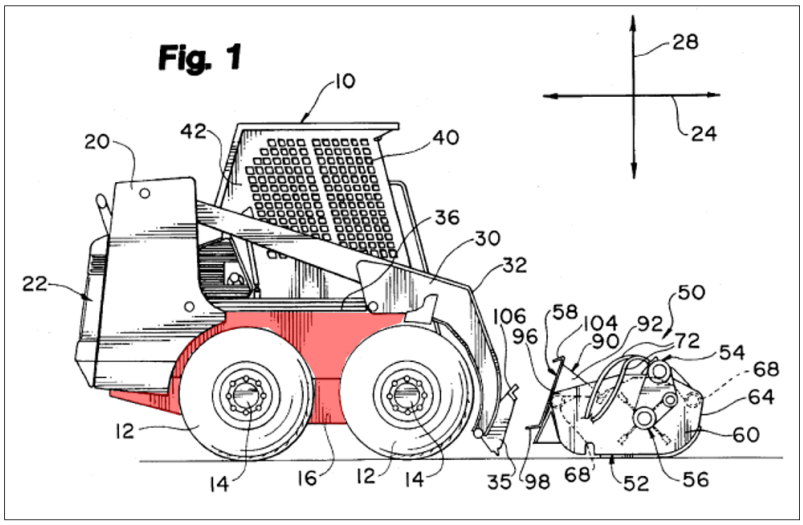
Other patent references in this art use mainframe in the same manner, further demonstrating the plain and ordinary meaning of this term as of February 2015. A prime example of the art's treatment of the "mainframe" term in configuration

similar to that found in KR996 is present in the below reference which distinguishes the "main frame 16" (red) of the machine from the "carrier frame 34" (blue) of the *selectively removable* backhoe attachment 10:



Ex. 2017 (U.S. Patent No. 5,004,398) at Fig. 1 (shading added), 3:22-47.

Another prime example is U.S. Patent No. 5,666,794, which distinguishes the "main frame assembly" (16), which is the primary supporting structure of the machine, from various secondary supporting structures, including "upright members" (20) and the supporting structure of the selectively removable mower attachment (50) (e.g., the case (52) and its components, including the front and rear structural tubes (68), the quick attachment receiver (58) and its gussets (90), side plates (92), and top plate (94)):



Ex. 2018 (U.S. Patent No. 5,666,794) at Fig. 1 (shading added), 3:46-51, 4:46-62, 5:41–55; *see also* Ex. 1006 (JP705 prior art relied on by Kubota) at [0002] ("main frames . . . constitute a main part of a chassis in various types of work vehicles . . . .").

Construction machines with selectively removable equipment or attachments were well known in the art before the earliest effective filing date of the '386 Patent. *See, e.g.*, Ex. 1001 at 1:21–28 ("Compact tool carriers are generally defined (e.g., ISO 6165 (2012) and SAE J2752) as 'a self-propelled crawler or wheeled machine having . . . either front-mounted interchangeable equipment or lift arms with an attachment bracket capable of coupling to the interchangeable, front-mounted attachments.' The tool carriers may be attached to a variety of interchangeable tools such as buckets, augers, forks, stump grinders, tillers, rollers and the like."); Ex. 2018 (U.S. Patent No. 5,666,794) at 1:38–41 ("Attachments

such as an auger, a grapple, sweeper, landscape rake, snowblower or backhoe, some of which may include their own hydraulic motor, are sometimes mounted to a boom assembly on the front of the skid steer loader."); Ex. 2019 (U.S. Patent No. 8,160,785) at 1:45–53; Ex. 2020 (U.S. Patent No. 9,039,344) at 1:61-62 ("Different types of work tool accessories are interchangeably attached and released from the machine 10").

For this reason, a functional appeal of skid steer loaders is the ability to use a wide variety of work tool accessories or attachments for a variety of different uses. These work tool accessories or attachments are often powered by the loader's hydraulic system and include, for example, excavators, earth augers, specialized buckets, hydraulic breakers, snow blowers, trenchers, cement mixers, rippers, backhoes, pallet forks, wheel saws, etc."). Ex. 2016 at ¶92.

A POSITA would have understood that the mainframe of the machine encompasses *only* the primary supporting structure of the machine, and not any 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." Ex. 2016 at ¶93. The term "mainframe" does not apply to attachments that are routinely disconnected and left aside while the machine continues to perform other work. Ex. 2016 at ¶¶89-91.

Proper interpretation of the term "mainframe" excludes the removable fixture 41 of KR996 which, in turn, disposes of Kubota's Petition.

VII. ARGUMENT

A. Velinsky's Testimony Should Be Given Little or No Weight.

Kubota relies on the testimony of its hired expert, Velinsky, to support its obviousness allegations regarding the Challenged Claims. Because Velinsky lacks necessary experience and employed a flawed methodology for assessing obviousness, his testimony should be disregarded.

Velinsky is a retired professor who has been in academia since 1983. Ex. 1036 at 1; Ex. 2021 at 7:16-8:10, 17:23-25. He has no experience designing machines like the compact tool carriers at issue in this proceeding. Ex. 2021 at 18:4-24:15 (categorizing design work done in connection with a tethered robot as "mini skid steer" work—even though that robot did not carry an operator, did not have hydraulically actuated arms or booms, was incapable of changing attachments, and only weighed "a few hundred pounds"). Velinsky also lacks any familiarity with how the components of these machines are typically configured or packaged within a machine. He struggled to describe how even the simplest of components (*e.g.*, the engine, hydraulic pump, and cooling radiators) were positioned within a machine. Ex. 2021 at 24:16-28:7. He also knows nothing about the kinds of attachments these machines accept. Other than the jackhammer

specifically addressed in the KR996 reference, *he could not name a single other hydraulically powered attachment that can be used with a compact tool carrier*. Ex. 2021 at 29:2-30:16. Velinsky also conceded that he did nothing to investigate the performance characteristics that drive demand for these machines, has never operated a compact tool carrier, did not operate or even inspect any of the physical machines sold by the parties to this dispute, and did not ask to speak with a single engineer at Kubota about the challenges they face when designing these machines. Ex. 2021 at 12:6-13:1; 33:19-34:5; 35:8-36:1.

Velinsky also admitted that he has no experience or capabilities with CAD or finite element analysis software—basic tools that would be known to a POSITA and used for designing machines in the industry during the critical timeframe at issue in this proceeding. Ex. 2021 at 13:2-14:11. Because he lacked the necessary skills, Velinsky relied on Kubota's attorneys to create the CAD drawings that appear in his declaration. *Id*. at 14:12-17:11. Velinsky also admitted that he did not determine the locations for the various pivot points that he proffers for his hypothetical modified machine, instead leaving those critical decisions to Kubota's attorney. *Id*. at 15:1-17:2. Kubota's attorneys then handled the work of designing the configuration (pivot points, actuator length, linkage lengths, etc.) that appears in Velinsky's declaration. *Id*. at 15:1-17:11. Having delegated this effort entirely to Kubota's attorneys, Velinsky is unaware of the analysis or considerations that

went into the hypothetical modified KR996 machine. Velinsky admitted that there likely would have been interfering components in the KR996 that could cause problems with the proposed redesign appearing in his declaration, but he chose not to deal with those complications and simply assumed Kubota's attorney would handle it. *Id*. at 17:3-11 ("You know, clearly there were parts that would need to be avoided, but I was gonna leave the specifics to the person that was moving the links run [sic] – the pivots run [sic]."). Velinsky's analysis was so superficial that he failed to even consider whether the key inventive aspect of the device taught in KR996—the hydraulic mechanism for coupling attachments—still exists in "his" hypothetical redesign. *Id*. at 108:7-109:8; 135:22-136:2. In fact, he failed to consider whether or where *any* of the components of the machine disclosed in KR996 would be located in the modified machine, or whether those components would be compatible with the modifications he proposes. Id. at 130:14-132:6; 134:25-135:21.

In essence, Velinsky treated KR996 like a Mr. Potato Head doll and stuck whatever he wanted wherever he wanted—without performing any engineering analysis or assessment whatsoever. For this reason alone, his opinions are pure *ipse dixit* and should be disregarded.

Velinsky also failed to consider any objective indicia of non-obviousness—including the evidence that was an express part of the reexamination prosecution

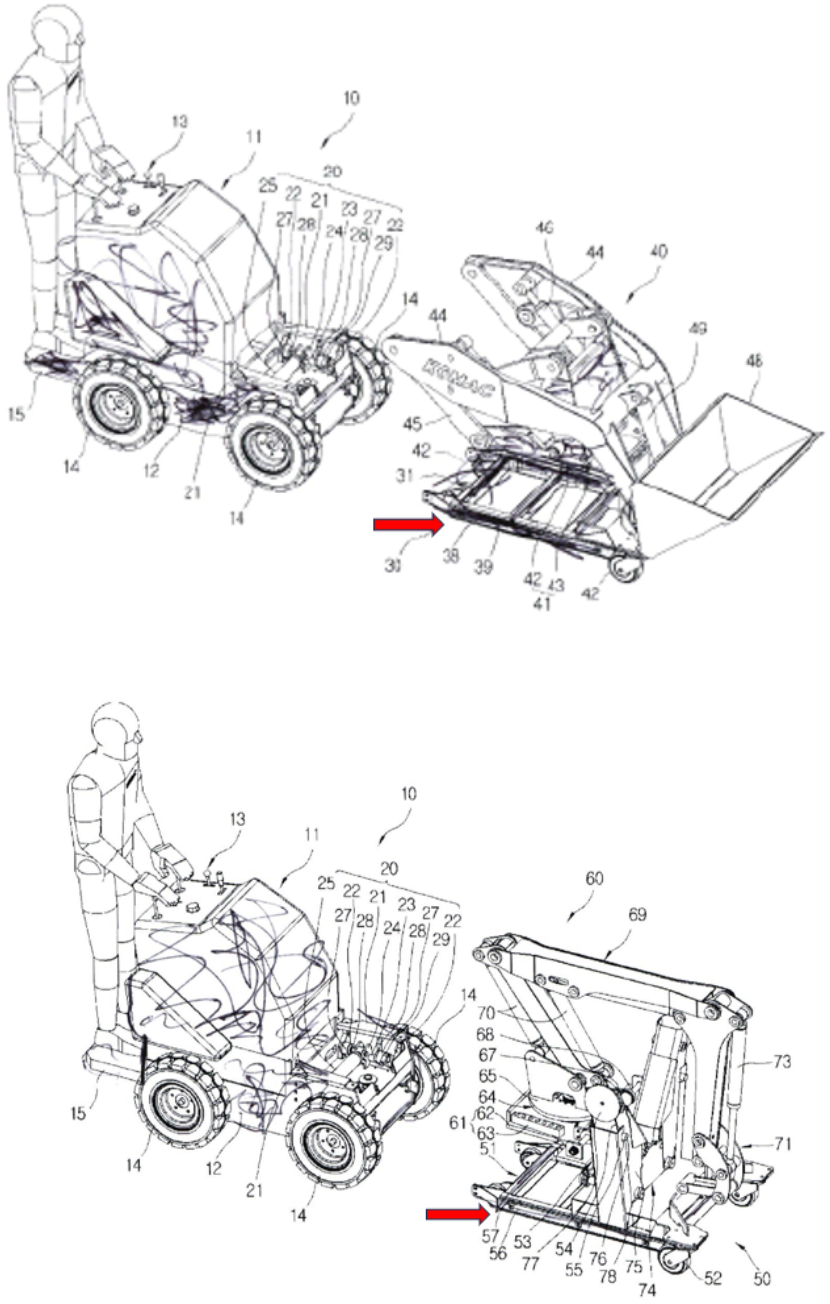
histories. *Id*. at 56:10-62:2, 58:12-13 ("I . . . didn't use that in any way in establishing my opinions in the case."). In fact, he admitted that no amount of objective indicia evidence would have caused him to find Vermeer's patent non-obvious. *Id*. at 61:11-62:2.

Velinsky also freely admitted to conducting his analysis using impermissible hindsight. Ex. 2021 at 52:21-56:9, 54:7-10 ("Q. And so this is the approach that you take throughout your declaration, you list a limitation and then you find where it is in the prior art, right? A. Yes, that's correct."). He explained that the question he asked himself when assessing obviousness was: "would it have been obvious for a skilled artisan to incorporate a vertical lift path on a mini skid steer machine." Ex. 2021 at 64:18-25; *see also* Ex. 1003 at ¶161. This is *the wrong question*, because it uses the solution taught in Vermeer's patent as a blueprint. *Sensonics Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (citing *W.L. Gore & Assoc. v. Garlock, Inc*., 721 F.2d 1540, 1553 (Fed. Cir. 1983) ("To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability.").

Velinsky's testimony regarding the key "mainframe" limitations in the claims of the '386 Patent should also be given no weight. In addressing the

"mainframe" requirements, Velinsky applied a claim construction that was expressly rejected by the Board in the Institution Decision. Ex. 1003 at ¶74; Ex. 2021 at 65:10-66:17; Paper 16 at 19-25, 34.

Velinsky was unable to provide any cogent articulation of the meaning of "mainframe" that guided his analysis. Ex. 2021 at 65:10-73:13. Further, cross examination revealed that Velinsky applied an improper and overly expansive view of "mainframe," which was not limited to elements constituting the "primary" supporting structure of the vehicle. For example, during cross examination Velinsky was asked to use a pen to shade in those portions of KR996 that he considered part of the "mainframe" of the machine. *Id*. at 118:20-120:25. This exercise revealed that Velinsky considered even the *frame* of both of the "bogies" (30 and 50), used exclusively to store the attachments for the machine, a part of the "mainframe":



Ex. 2022 (Velinsky Depo. Ex. 2) at Fig. 1 and Fig. 14 (red arrows added).

Put simply, cross examination revealed that Velinsky's proposed modified KR996 machine—and Kubota's IPR based on that machine—is not the result of an

intellectually rigorous analysis and does not reflect the legitimate perspective of a skilled artisan prior to the '386 Patent. Velinsky's hypothetical modifications are unencumbered by any of the litany of real-world challenges that design engineers in this space grapple with when engineering a compact utility loader.

Given these significant flaws in Velinsky's qualifications and analysis, the Board should disregard his opinions when assessing the patentability of the Challenged Claims.

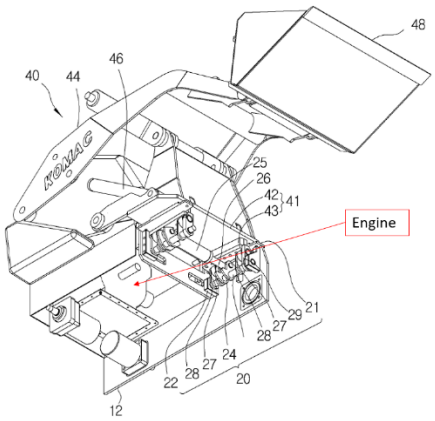
B. Kubota's Ground I Arguments Fail.

Kubota has failed to demonstrate a reasonable likelihood that it would prevail with respect to at least one of the Challenged Claims identified in Ground I. Kubota's Ground I arguments have a fatal flaw: KR996 fails to disclose the limitations requiring that the linkage and actuator be pivotally attached *to the mainframe*. This was a key limitation added by Vermeer during prosecution that reflects the claimed invention. The detachable loader disclosed in KR996 has a fundamentally different configuration. Kubota fails to grapple with this important difference, much less demonstrate a legitimate basis for the Board to bridge this chasm.

1. Kubota's purported rationale for combining KR996 with JP705 lacks merit.

Kubota asks the Board to conclude that a POSITA would modify KR996 by incorporating the engine bracket taught in JP705 into the design of the construction vehicle disclosed in KR996. Kubota asserts that a POSITA would use both the type of engine bracket taught in JP705 and its location to modify the KR996 machine. There are several fundamental problems with this argument.

First, as shown below, KR996 discloses an engine and, necessarily, a mechanism for securing the engine:

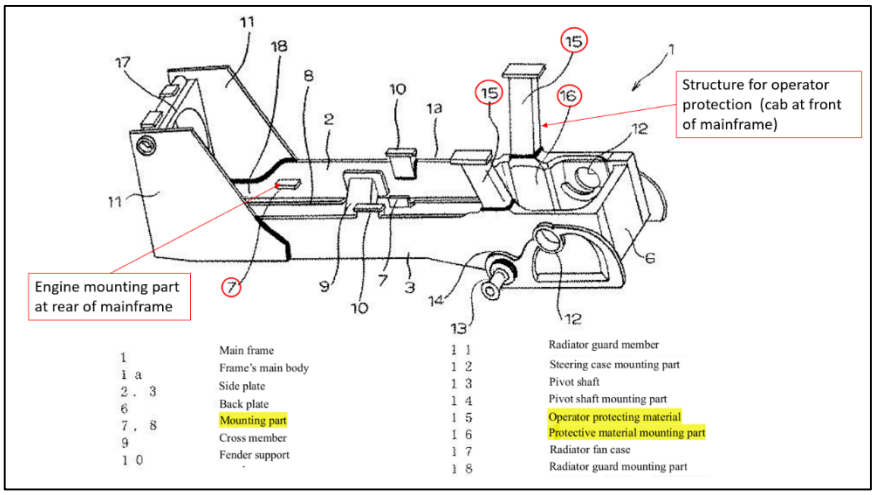


Ex. 1005 at Fig. 12 (annotation added). By failing to recognize this fact, Kubota's rationale for modifying KR996 to include the engine bracket in JP705 fails. A POSITA would not be motivated to combine JP705 when the engine of KR996 is already secured to the machine. Ex. 2016, ¶¶94-97.

Second, Kubota incorrectly asserts that KR996 and JP705 disclose "substantially similar" vehicles. These references relate to two completely

different categories of machines, with disparate sizes and engine types/sizes. Unlike KR996, JP705 describes a mainframe used for large work vehicles such as bulldozers and hydraulic excavators. Ex. 1006, [0001]. Given this incompatibility, a POSITA would not be motivated to incorporate JP705's mainframe or brackets into the KR996 machine. Ex. 2016, ¶¶94-97.

The location of the engine bracket in JP705 is also problematic. Ex. 2016, ¶¶94-97. Unlike KR996, JP705's engine is located *behind the operator's cab* of the full-size machine:



Ex. 1006 at Fig. 1 (annotations added); Ex. 2016, ¶96.

2. Kubota's proposed combination fails to satisfy all the limitations of the Challenged Claims.

Even assuming Kubota's combination, the invalidity argument still fails because the Challenged Claims require linkages and an actuator that pivotally

attach to the side *of the mainframe*. Ex. 2016 at ¶¶137-138. These attachments are depicted in Figures 2 and 5 from Vermeer's patent:

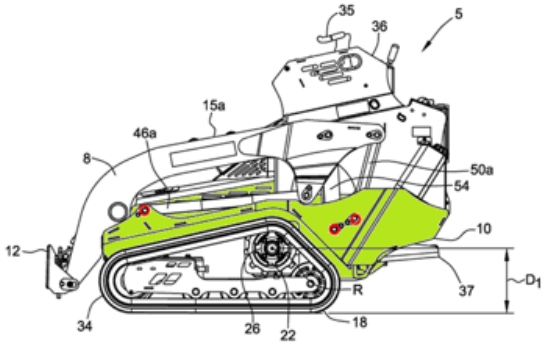


FIG. 2

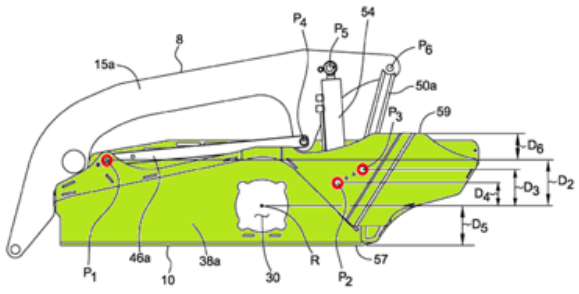


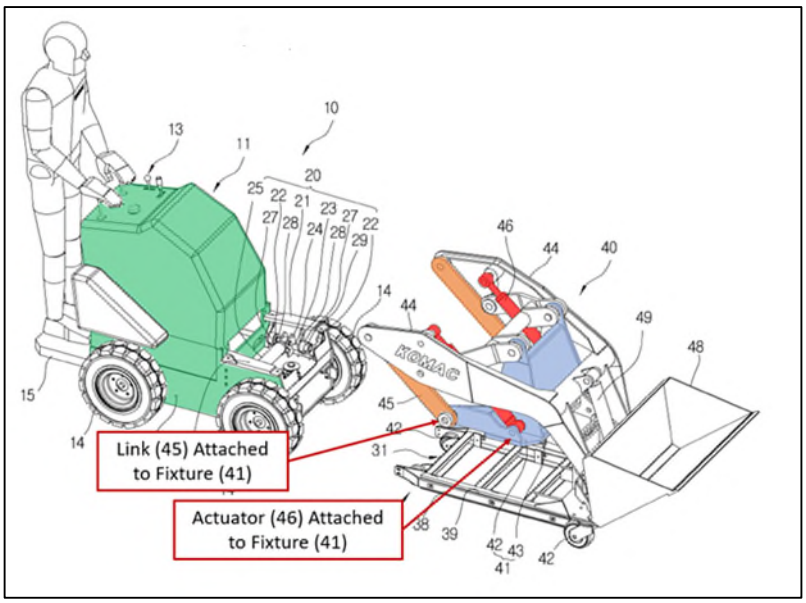
FIG. 5

Ex. 1001 at Figs. 2, 5 (mainframe shaded green, pivotal connections circled in red); Ex. 2016 at ¶¶137-138..

When applying the term "mainframe" to the KR996 reference, Velinsky applied the following definition: "body of the compact tool carrier that supports the loader." Ex. 1003 at ¶74. But, this construction has already been rejected by the Board in its Institution Decision at 19–25, 34.

Velinsky and Kubota argue that multiple discrete components disclosed in KR996, when combined, constitute a "mainframe." Petition at 30–31, fn. 6; Ex. 1003 at ¶74. Similarly, to satisfy the pivotal-attachment limitations appearing in claims 1–13, 21–22, and 64, Kubota and Velinsky are forced to assert that the removable fixture (41) of the loader arm *attachment* constitutes a part of the "mainframe" of the machine. *See* Petition at 36–39, 43–47, 54–55; Ex. 1003 at

¶¶89–98, 109–114, 140–142. The removable attachment Kubota and Velinsky rely on is depicted below in blue:



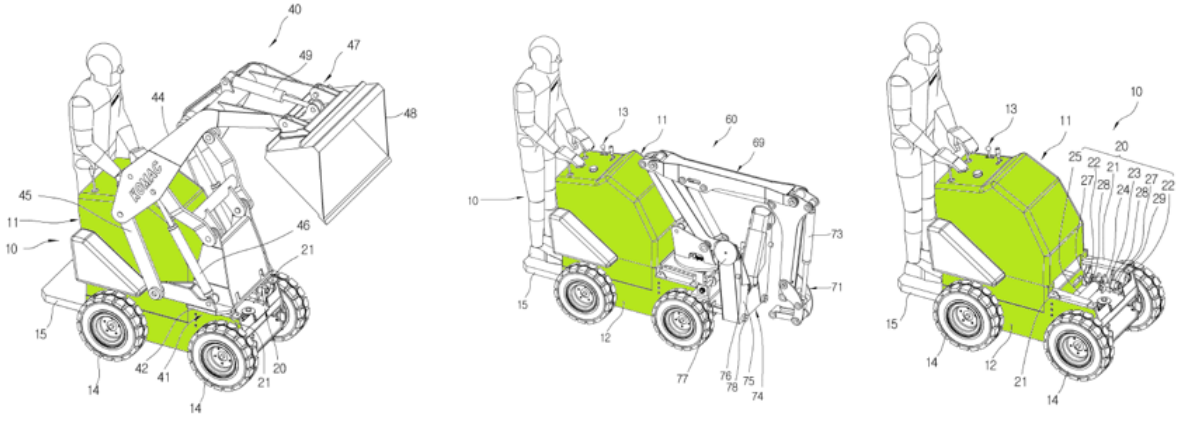
Ex. 2016, ¶143.

A POSITA would not consider the detachable fixture (41) to be a part of the mainframe (i.e., primary supporting structure) of KR996's machine. Ex. 2016, ¶¶144-151.

As discussed above, the machine described in KR996 operates in a number of different modes. During many of those modes (e.g., when (1) neither attachment is mounted, (2) the breaker unit attachment is mounted or (3) when the machine is performing its attaching or detaching function) the machine is operated with the structure Kubota and Velinsky call the "mainframe" *completely disconnected from the machine*. Ex. 2016, ¶¶74, 146.

KR996 expressly teaches that fixture (41) is routinely detached from the machine and left aside while the machine performs other work. Ex. 1005 at Abstract ("[t]herefore, *the present invention can easily and quickly detach the loader unit with a bucket and the arm unit with a breaker installed on a vehicle*, thereby greatly reducing the economic burden of purchasing expensive heavy equipment, and significantly saving time and expenses for the maintenance of heavy equipment."), [0001], [0011], [0012], [0013]; Ex. 2016, ¶148.

Given this disclosure, a POSITA would consider fixture (41) to be *secondary* structure, in contrast to the true "mainframe," main body (11), which is present during all modes of operation (shown in green highlight below):



Ex. 1005, Figs. 1, 9, 19 (shading added); Ex. 2016, ¶149.

KR996 expressly corroborates this perspective by distinguishing fixture (41) from the "main body (11)" in descriptions of the invention. Ex. 1005 at [0018], [0043], [0054], Fig. 1; Ex. 2016, ¶150.

For the reasons set forth above, the combination of KR996 and JP705 does not satisfy all of the limitations of claims 1–13, 21–22, and 64, and does not therefore render those claims obvious. Ex. 2016, ¶¶135-151.

3. The combination of KR996 and JP705 fails to disclose the linkages and actuator attached to a single-weldment mainframe, as required by claim 2.

Claim 2 depends from independent claim 1 and further requires that the "mainframe incorporates a single weldment." For claim 2, Kubota and Velinsky argue a POSITA would have been motivated to weld the main body (11) and fixture (41) together to create a single weldment mainframe.

In support of this position, Kubota relies on the fact that welding is "a well-known method of attachment" and that JP705 teaches the use of a welded mainframe. *See* Petition at 42–43; Ex. 1003 at ¶¶103–108. But Kubota fails to provide any motivation for a POSITA to weld the fixture (41) to the main body (11) of the KR996 machine.

In fact, KR996 teaches away from fusing fixture (41) to the main body (11) of the machine, because doing so would destroy the key detachability feature that characterizes the KR996 invention. Ex. 1005 at Abstract, *see also id*. at [0001], [0011]–[0015]; Ex. 2016, ¶154. Accordingly, a POSITA would not have been motivated to create the weldment that Kubota and Velinsky suggest. Ex. 2016 at ¶¶154-155. "A prior patent must be considered in its entirety, i.e., as a whole,

including portions that would lead away from the invention in suit." *Panduit Corp. v. Dennison Mfg. Co*., 810 F.2d 1561, 1568 (Fed. Cir. 1987); *see also In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (no motivation to combine where the proposed modification to the prior art "would be rendered inoperable for its intended purpose"); *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1376 (Fed. Cir. 2021) (proposed modification of the prior art not obvious where the Board "ignored the express disclosure [in the prior art] that teaches away from the claimed invention and relied on teachings from other references that were not concerned with the particular problems [the prior art] sought to solve"); *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (affirming finding of no motivation to combine where modification would "yield an unappetizing combination").

C. Kubota's Ground II Arguments Fail.

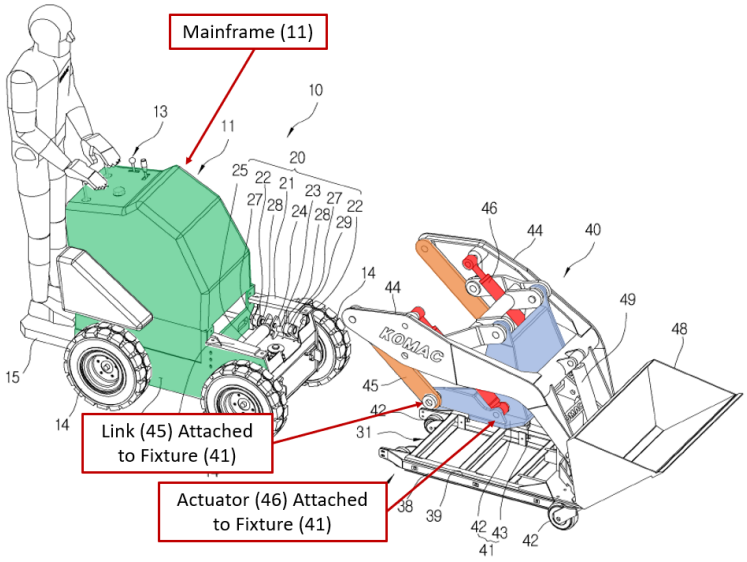
Ground II involves one dependent claim (claim 65), relating to the positioning of the operator platform. Kubota relies on an additional prior-art reference (McIlwraith) in connection with that limitation. But for all the remaining limitations in claims 1 and 64—from which claim 65 depends—Kubota relies on the same arguments made in Ground I. Therefore, Ground II fails for the same reasons explained above for Ground I.

D. Kubota's Ground III Arguments Fail.

In Ground III, Kubota asserts obviousness based on a purported combination of the teachings of KR996, JP705, and Beltrami. Specifically, Kubota argues that a POSITA would dramatically redesign the construction vehicle disclosed in KR996 to move the pivot points connecting the linkages and actuators to locations lower on the vehicle (closer to the ground). *See*, *e.g.*, Petition at 74–91, Ex. 1003 at ¶¶178–202. As explained below, Kubota fails to show that a POSITA would be motivated to make these drastic changes to the construction vehicle, that a POSITA would have a reasonable expectation of succeeding in making those changes, or that such changes would yield the subject matter required by the Challenged Claims.

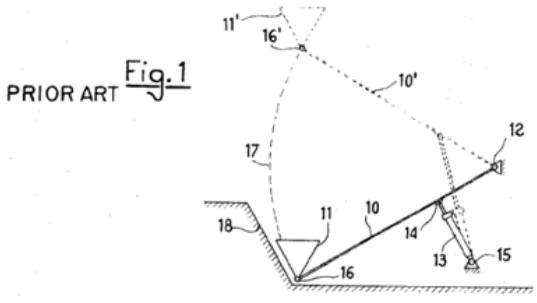
1. Kubota's purported rationale for combining the teachings of KR996, JP705, and Beltrami to dramatically redesign the construction vehicle of KR996 lacks merit.

As discussed above relating to Ground I, the linkages actuators of KR996 are *not* pivotally connected to the first side of the mainframe. Instead, they are connected to fixture (41), which is part of the *removable* loader unit attachment (40):



Ex. 1005 at Fig. 1 (shading and annotations added).

Kubota relies on Beltrami to assert that a POSITA would be motivated to lower the locations of the pivot points connecting the linkages and actuators in KR996. *See, e.g.*, Petition at 74–91, Ex. 1003 at ¶¶163, 177–202. But Beltrami does not include such a teaching. Ex. 2016 at ¶99. Beltrami teaches the benefits of transitioning away from a conventional radial-lift linkage (Figure 1 below) and toward a vertical-lift linkage (Figure 2 below) on a full-size skid steer machine.


PRIOR ART Fig. 1

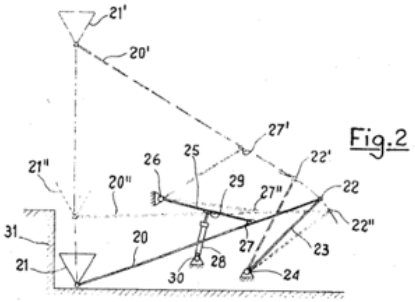


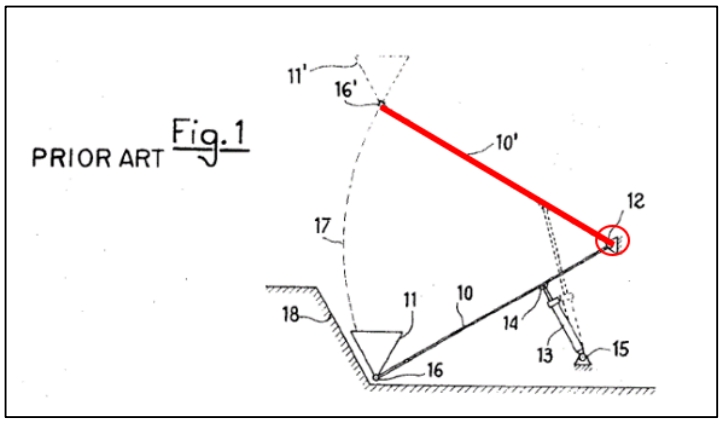
Fig. 2

Ex. 1008 at Fig. 1, Fig. 2, 2:41–3:7 (describing the drawbacks of the convention radial-lift configuration shown in Fig. 1), 3:8–45 (describing the advantages of a vertical-lift configuration shown in Fig. 2 over the conventional radial-lift configuration shown in Fig. 1); Ex. 2016 at ¶99.

Because KR996 already incorporates a vertical-lift configuration, it therefore already enjoys the benefits allegedly taught by Beltrami. A POSITA would not, therefore, be motivated to look to Beltrami to incorporate a technology that KR996 already implements. Ex. 2016 at ¶100.

To support his position, Velinsky asserts that "Beltrami describes that benefits of positioning the location of these pivot point attachments low on the equipment include decreasing the frame requirements and maintaining a low center of gravity." Ex. 1003 at ¶163 (citing Ex. 1008 at 3:35–41). *This is wrong.* Velinsky fundamentally misunderstands or misstates the teachings of Beltrami. Ex. 2016 at ¶¶101-103.

Historically, engineers placed the pivot point for radial-lift machines as high as possible on the mainframe to maximize lift height. Beltrami teaches that by transitioning to a vertical lift configuration, the pivot points can be lower *than they would be for an equivalent radial-lift machine*:



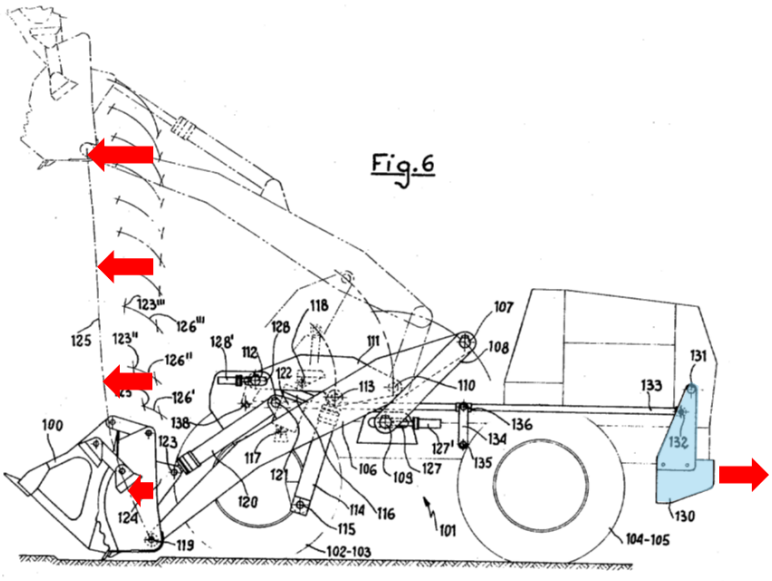
Ex. 1008 at Fig. 1 (annotations added), 2:63–68 (discussing the "inconveniently high level" of the pivot point 12 in radial lift machines, which would necessarily require the supporting frame to extend to at least the height of this point), 3:35–38 (discussing one advantage of vertical lift or radial lift is allowing the pivot points to be lower on the machine so "that no supporting frame is needed"); Ex. 2016 at ¶103. Because KR996 does not rely on a radial-lift loader arm mechanism and does not, therefore, incorporate an extended supporting frame at an "inconveniently high level," Beltrami provides instructions to do away with a structure *that already does not exist on the KR996 device*. Accordingly, a skilled artisan would not seek out Beltrami to solve a problem that does not plague the KR996 device—namely, a radial-lift loader arm. Ex. 2016 at ¶103.

Velinsky's assertion that Beltrami teaches the advantage of pursuing a *low* center of gravity is also wrong. Ex. 2016 at ¶104. The portion of Beltrami that Velinsky relies on addresses a completely different issue—the forward and aft

shifting of the center of gravity that a radial lift machine experiences when it lifts a load. Ex. 1008 at 2:69–72. Ex. 2016 at ¶¶104-106.

Because the loader arm on a radial-lift machine travels in an arcuate path, any weight being lifted moves further forward and causes the center of gravity of the machine to shift forward, creating a risk of tipping. Ex. 2016 at ¶¶104-106. Beltrami explains that transitioning to a vertical lift path avoids the forward center of gravity shift, thereby decreasing the risk of tipping.

Beltrami goes on to recognize that it may sometimes be advantageous to design a path for the machine's arm that allows it to be close to the machine when low and far away when at the top of its travel. Ex. 1008 at Fig. 6, 5:50-54; Ex. 2016 at ¶105. Because this configuration would cause the very same shifting center of gravity problems Beltrami identified with radial machines, Beltrami proposes an embodiment with a moveable ballast (highlighted in blue below) that shifts rearward as the machine lifts its load to counteract the forward tipping tendency:

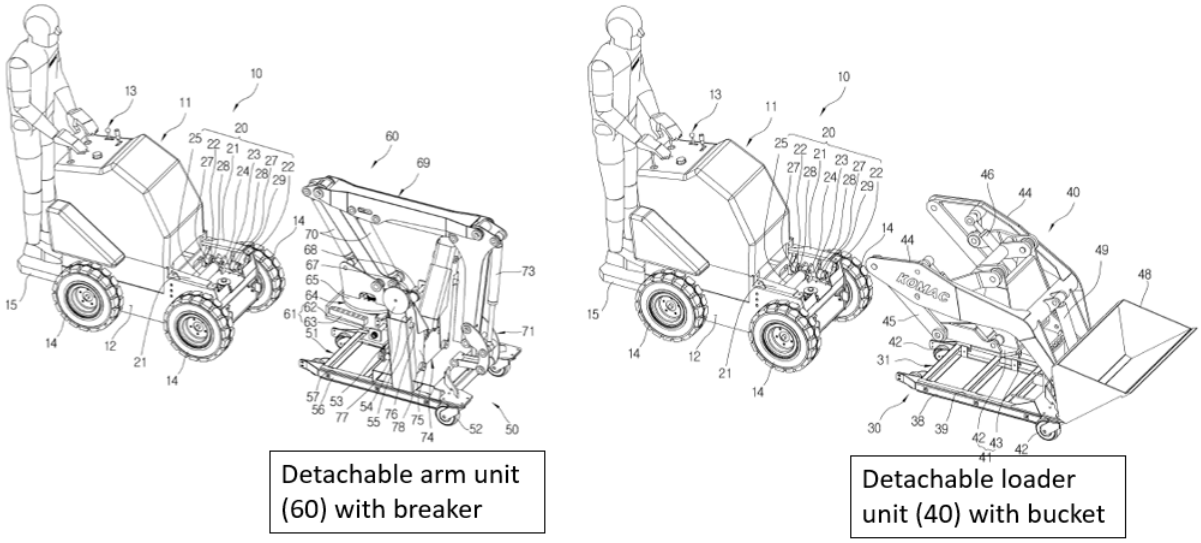


Ex. 1008 at Fig. 6, 6:1-25; 2016 at ¶105. Beltrami's discussion of the shifting center of gravity is *forward and aft*, not *up and down* as Velinsky suggests. In deposition, Velinsky conceded this point. Ex. 2021 at 116:1–20. Put simply, KR996 does not teach the concept of lowering the pins of a pre-existing vertical lift machine or lowering the center of gravity of a machine.

For these reasons, Beltrami would not have motivated a POSITA to change the locations of the pivot points of the KR996 machine. Velinsky claims that various other prior art references corroborate his interpretation of Beltrami, but those assertions also lack merit. Ex. 2016 at ¶¶107-111.

Velinsky's proposed motivation to combine also fails because KR996 affirmatively teaches *away* from lowering the pivot points for the linkages and actuators. Ex. 2016 at ¶¶112-119. As discussed above, KR996 teaches the use of a

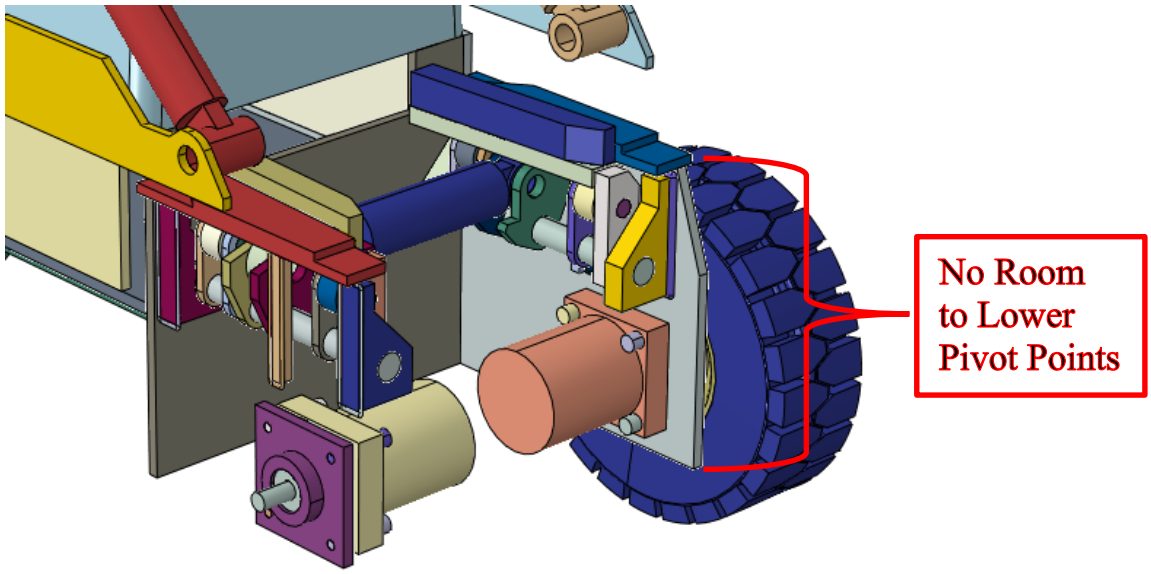
complicated, hydraulically activated mechanism to selectively couple a loader arm attachment or breaker attachment:



Ex. 1005 at Fig. 14, Fig. 1 (annotations added), [0012], [0013]; Ex. 2016 at ¶¶112-119.

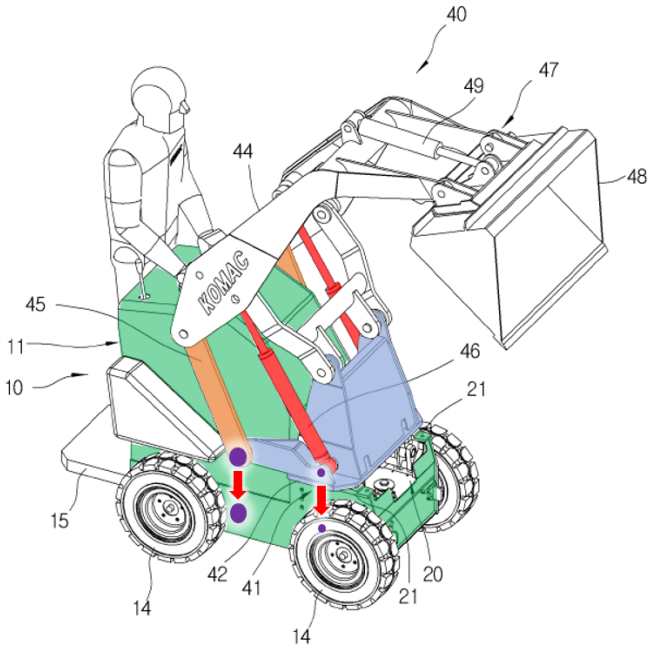
The detachability feature enabled by the hydraulic mechanism is repeatedly emphasized as the key inventive concept of KR996. *See*, *e.g.*, *id.* at Abstract ("the present invention can easily and quickly detach the loader unit "), [0012], [0013], [0088], [0069]; Ex. 2016 at ¶114.

A POSITA would recognize that moving the pivot points further down on KR996 would not be possible due to the space constrains presented by the wheel motor and hydraulically actuated mounting mechanism. This can be seen in Fleming's the 3D CAD model of KR996:



Ex. 2016 at ¶¶124-126; 173.

The only way to move the pivot points lower would be to *remove* the hydraulically actuated mounting mechanism altogether and attach the pivot points to the mainframe (main body 11) of the machine:



Ex. 1005 at Fig. 9 (shading and annotations added).

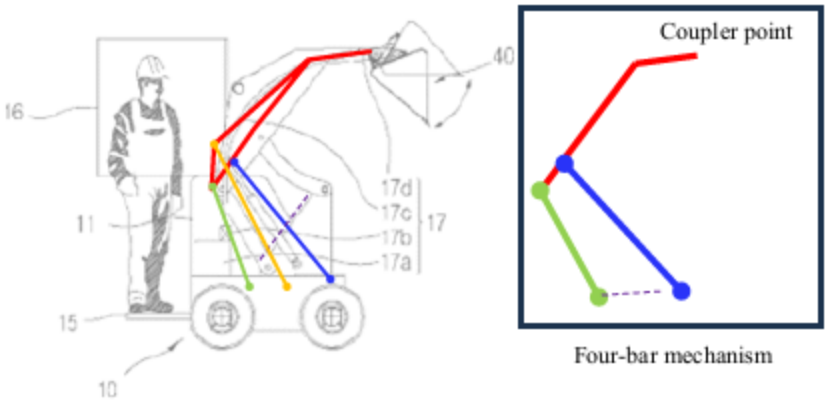
Shifting the pivot points to the mainframe would destroy the critical removability feature touted as the key inventive concept of the KR996 machine. Ex. 2016 at ¶¶118. Kubota's proposed modification is therefore improper because it would render the vehicle unsatisfactory for its intended purpose. *See In re Gordon*, 733 F.2d at 902 (Fed. Cir. 1984); *Chemours*, 4 F.4th at 1376 (Fed. Cir. 2021) (proposed modification of the prior art not obvious where the Board "ignored the express disclosure [in the prior art] that teaches away from the claimed invention and relied on teachings from other references that were not concerned with the particular problems [the prior art] sought to solve");

Even if a POSITA had extracted some potential reason to lower the pivot points as Velinsky suggests, loss of the removability feature would far outweigh

any potential benefit gained from that modification. *Henny Penny*, 938 F.3d at 1332.

Even if a POSITA were motivated to lower the pivot points of KR996 as Velinsky suggests, they would not have a reasonable expectation of succeeding. Ex. 2016 at ¶120.

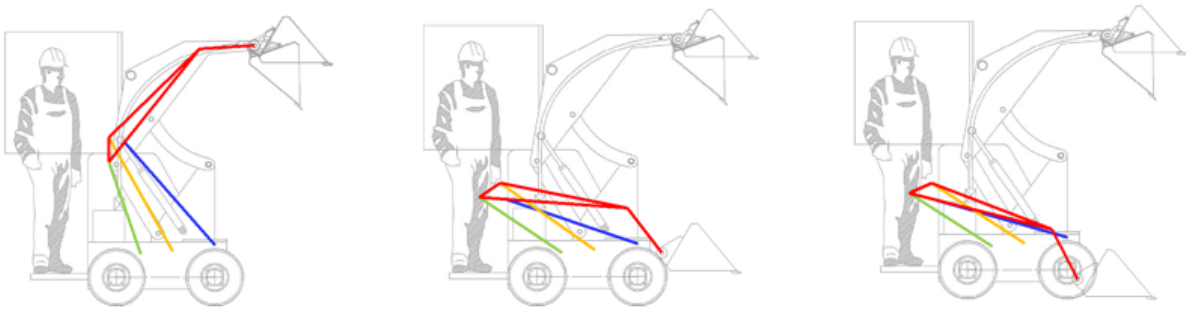
Velinsky's proposed modification to KR996 is shown below:



EX1005, FIG. 21
(annotated)

Ex. 1003 ¶¶188-202; Ex. 1004 (animation).

Fleming modeled Velinsky's hypothetical modified machine and determined that it simply would not work. Ex. 2016 at ¶¶121, 132-133. Kinematic modeling of the modified machine revealed that the linkages Velinsky proposed would not lower the machine's arm to the ground (a necessary position for the useful operation of a compact utility loader) due to interference between the arm and the vehicle's frame and tires, as shown below:



Ex. 2016 at ¶132.

Modeling also shows that Velinsky's flawed configuration allows the linkages and loader arm to extend into the operator area—presenting significant safety risks that a POSITA would know to avoid when designing machines of this type. Ex. 2016 at ¶133.

It is unsurprising that Velinsky's proposed model does not work, considering he admitted in deposition that he did not create this hypothetical modified version of KR996 and instead relied on Kubota's legal counsel to decide all the important characteristics of the modified design (*e.g.*, pivot points, linkage lengths, actuator lengths, etc.). Ex. 2021 at 14:12-17:11.

It is also worth noting that the parties agree a POSITA would only have two years of experience in the design of machines. Given that limited experience, a POSITA would not be equipped to undertake the significant and complicated task of redesigning an entire compact tool carrier to accommodate a modified vertical lift system. As discussed below, evidence presented in an earlier reexamination

demonstrates that an entire engineering team at the Toro Company invested multiple years of development time, employed complex finite element analysis tools, and spent several million dollars to accomplish this task, and that team still assessed their risk of failure as "high." Ex. 1030 at 51-57.

In view of the foregoing, a POSITA (a) would not have been motivated by Beltrami to make any alterations or modifications to the KR996 machine, (b) would have been affirmatively taught by KR996 *not* to destroy the critical removability feature of that invention by moving the pivot points off of the fixture (41) and onto the main body (11) of the machine, and (c) would not have had a reasonable expectation of success in making the changes proposed by Kubota due to spacing constraints, fundamental limitations in range of functionality, safety risks presented by that alternative design, and a fundamental lack of necessary skill. Ex. 2016 at ¶¶98-134.

2. Kubota's proposed combination fails to satisfy all the limitations of the Challenged Claims.

In Ground III, Kubota primarily relies on many of the same arguments relating to KR996 discussed above for Ground I. In fact, for most of the claim limitations of independent claim 15, Kubota incorporates by reference its arguments from Ground I. *See* Petition at 68–69. Importantly, this includes the key limitations discussed above relating to the linkage and actuator being pivotally

attached to the first side of the mainframe. For the same reasons set forth above, Kubota's arguments fail in Ground III. Even if a POSITA would have modified KR996 with JP705 and Beltrami, this modified machine would still fail to satisfy the claim limitations requiring the linkages and actuator to be pivotally connected to the "mainframe" as explained in Vermeer's response to Ground I. Ex. 2016 at ¶¶159-160.

3. The combination of KR996, JP705, and Beltrami fails to disclose the relative pivot point locations required by claims 15, 17, 19–20, 23–30, 66–67.

Claims 15, 17, 19–20, 23–30, 66–67 all require that the pivot points at which the linkage(s) and actuator connect to the mainframe of the machine satisfy certain specific positional requirements relative to one or more of the following reference measurements: (1) the vertical distance between the rotational axis of the drive mechanism and bottom of the compact tool carrier (where it contacts the ground) (D1) and (2) the vertical distance between the rotational axis of the drive mechanism and the bottom of the first side of the mainframe (D5). These various vertical distances required by the claims are depicted in Figures 2 and 5:

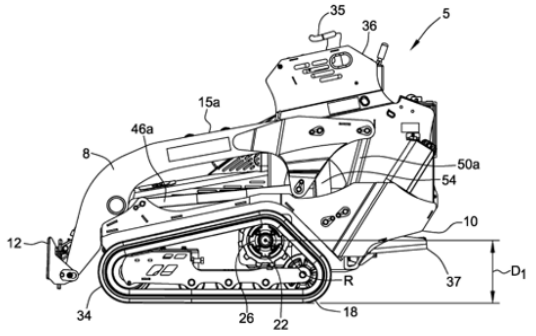


FIG. 2

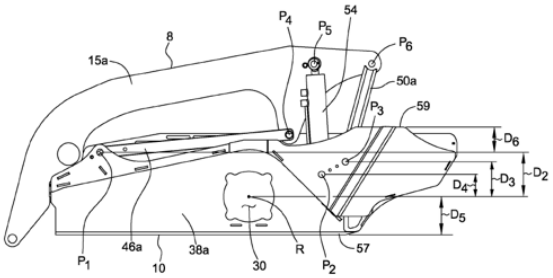
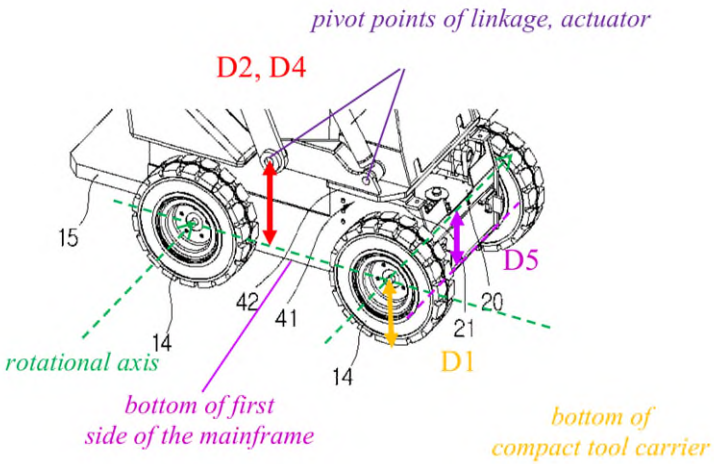


FIG. 5

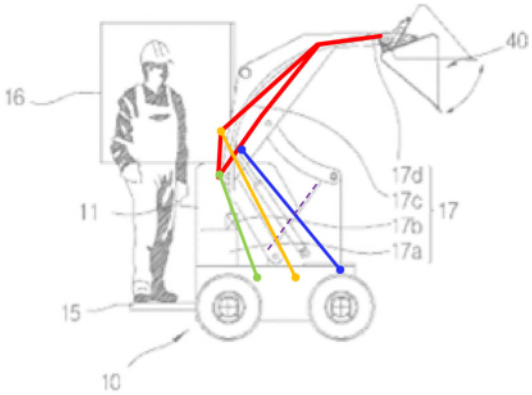
	Reference points for measuring the vertical distance	
D1	rotational axis	bottom of compact tool carrier where the drive mechanism contacts the ground
D2	rotational axis	pivot point at which a first linkage is attached to the mainframe
D3	rotational axis	pivot point at which a second linkage is attached to the mainframe
D4	rotational axis	pivot point at which actuator is attached to the mainframe
D5	rotational axis	bottom of the first side of the mainframe
D6	top of the first side of the mainframe	top most pivot point

Claim 15 includes the following requirement: "D2 and D4 each being less than 1.5 times D1 and each being less than twice D5." All of the other claims addressed in Ground 3 depend from claim 15 and, therefore, also include this requirement.

When addressing these relative vertical distance limitations, Kubota again relies on a hypothetical modified KR996 machine. First, it is not clear exactly what modification Kubota is proposing. For example, Velinsky cites to Figure 9 of KR996 to identify D1, D2, D4, and D5:



Ex. 1003 at ¶173. But when he proposes a modified version of the machine with lowered pivot points, Velinsky relies on the schematic in Figure 21 used to show the concept of the safety fence 16 and watering device 17:



Ex. 1003 at ¶¶192–193.

Velinsky was not sure whether his proposed modified machine retained the detachability feature taught in KR996. Ex. 2021 at 108:7-109:8; 135:22-136:2. As a result, even Velinsky cannot meaningfully opine that the alternative design

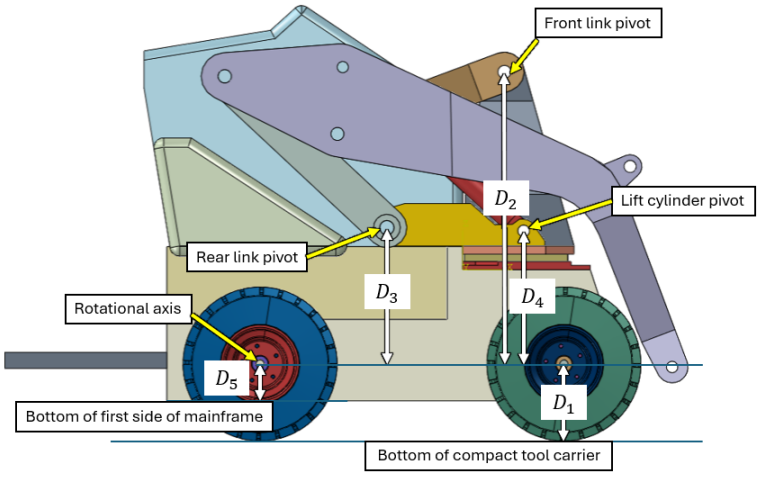
depicted above meets the claim limitations requiring the linkages and actuator to be pivotally attached to the mainframe.

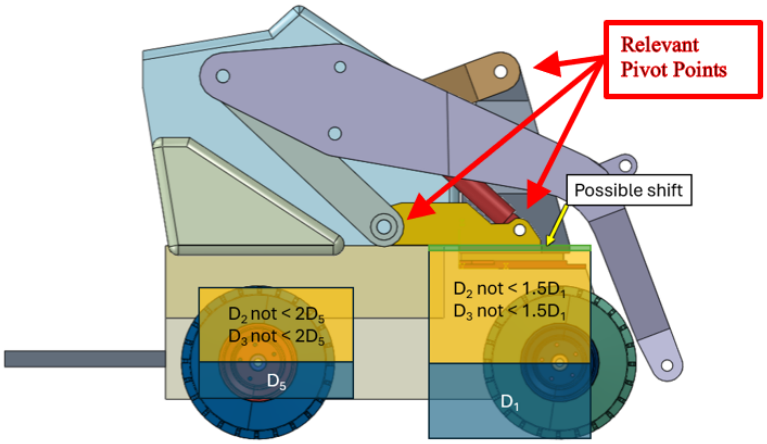
To the extent Kubota argues that a POSITA would have been motivated to move the pivot points connecting the linkages and actuator of the loader unit off the removable fixture (41) and onto the main body (11), that argument fails. As already discussed, such a modification would destroy the selective removability feature described as the key innovation in KR996. Ex. 2016 at ¶118. There is no teaching present in any of the references identified by Kubota that would motivate a POSITA to fundamentally change the design of KR996 to destroy the key functional attribute of the machine. Ex. 2016 at ¶¶117-118.

In addition, a POSITA would not have been motivated to make the changes proposed by Kubota because the hypothetical modified machine results in a *lengthened* actuator (yellow in the figure above) and also attaches that actuator *directly to the loader arm*, whereas Beltrami teaches that the actuator should be connected *to an intermediate linkage* to achieve a shorter, beneficial actuator throw. Ex. 1008 at 3:41-45 ("It is clear that by *connecting the connecting jack 28 to the middle of the connecting rod*, a relatively short-stroke movement is obtained. Such a short-stroke movement *permits use of a sturdier lifting arm or jack* than is employed with prior art devices.") (emphasis added). Ex. 2016 at ¶167.

Further, a POSITA would have recognized that lowering the position of the pivot points while maintaining the removability feature would not have been feasible given the design of the KR996 machine. Ex. 2016 at ¶¶168-175. As discussed above, the hydraulic motor and hydraulic attachment mechanism leave no room for the pivot points to be moved further down.

If a POSITA tried to move the pivot points as low as possible on the KR996 machine, while still retaining the detachability feature, that modification would only result in a slight shift of the pivot points, which would not meet the vertical distance limitations required by Claim 15 or its dependent Challenged Claims. Ex. 2016 at ¶¶168-175. By modeling the KR996 machine in CAD, Fleming was able to demonstrate this fact:





Ex. 2016 at ¶¶168-175.

For these additional reasons, Kubota's argument that a POSITA would have found the subject matter of claims 15, 17, 19–20, 23–30, 66–67 obvious should be rejected.

VIII. SECONDARY INDICIA OF NON-OBVIOUSNESS

The obviousness inquiry requires the consideration of any evidence relating to the various secondary indicia of non-obviousness. *See Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) ("As we have repeatedly held, 'evidence rising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness.'"). The Federal Circuit has recognized that this objective evidence is a critical part of the obviousness inquiry because "evidence of secondary considerations may often be the most probative and cogent evidence in the record." *Id.* "It may often establish that an invention appearing to have been

obvious in light of the prior art was not." *Id*. This objective evidence must be "considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art." *Id*.

Disregarding this clear mandate, Kubota's expert reached his conclusions regarding obviousness without considering any of the evidence of secondary indicia of non-obviousness—*even though he was aware of this evidence*, which was presented during the prior reexaminations and part of the prosecution history record that he reviewed. Ex. 2021 at 56:10-62:2, 58:12-13 ("I . . . didn't use that in any way in establishing my opinions in the case."). Velinsky asserted that he need not consider this evidence because it was presented to the Patent Office in connection with a different obviousness challenge. Ex. 1003 at ¶26. There is no legal support for this proposition and it does not justify Velinsky's head-in-the-sand approach to analyzing obviousness. Regardless, he testified that even if he were confronted with significant objective indicia evidence, he would not have considered it relevant to his obviousness assessment. Ex. 2021 at 61:11-62:2.

Kubota also refused to engage with Vermeer's objective indicia evidence in its Petition. Although Kubota takes vague pot shots at the indicia evidence previously presented to the Patent Office, it purposefully avoids specifically engaging with that potent evidence. *See* Petition at 15-16. This is not a typical proceeding where Kubota is unaware of secondary indicia evidence until a Patent

Owner injects it into the proceeding. Substantial objective indicia evidence was previously presented to the Patent Office during the reexaminations which repeatedly confirmed the patentability of the '386 Patent's claims. In light of the Federal Circuit's clear mandate that this evidence "must be considered," when present, Kubota was obligated to address this evidence as part of its Petition. *Transocean,* 699 F.3d at 1349; *see, e.g.*, *Coalition for Affordable Drugs V LLC v. Hoffman-LaRoche, Inc.*, IPR2015-01792, Paper 14 at 18 (PTAB, Mar. 11, 2016) (denying institution where petitioner failed to address secondary indicia evidence submitted during prosecution); *Merial Ltd. v. Virbac*, IPR2014-01279, Paper 13 at 27 (PTAB, Jan. 22, 2015) (same); *Omron Oilfield & Marine Inc. v. MD/TOTCO*, IPR2013-00265, Paper 11 at 11, 12-13, 16 (PTAB, Oct. 31, 2013) (denying institution where petitioner failed to address objective indicia successfully argued in prior reexamination). Kubota's failure to address Vermeer's substantial objective indicia evidence should weigh in favor of the validity of Vermeer's patent.

For purposes of the discussion that follows, Fleming has reviewed the configuration of Vermeer and Toro's vertical lift compact tool carrier machines and confirmed that they practice claims of Vermeer's patent. Ex. 2016 at ¶181

A. Commercial Success and Industry Praise

A product's commercial success and industry praise is evidence of non-obviousness when "the product that is commercially successful is the invention disclosed and claimed in the patent." *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294, 1310–11 (Fed. Cir. 2010); *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1367–68 (Fed. Cir. 2012) (reversing obviousness decision based on evidence of commercial success and industry praise). The prosecution histories included evidence of commercial success and praise of products that practice the '386 Patent.

Vermeer and Toro were the first companies to launch vertical-lift compact utility loaders. The earliest models of these vertical-lift machines were Vermeer's CTX50, Vermeer's CTX100, and Toro's TX1000.

Vermeer's CTX50

Vermeer's CTX100

Toro's TX1000

These vertical-lift compact utility loaders are covered by the '386 Patent. Ex. 2016 at ¶181, Ex. 2024 and 2025. These commercial embodiments of the claimed compact utility loader received significant praise in the industry after they were released. For example, after the release of the CTX50, Vermeer received an

"Innovative Iron Award" from Compact Equipment Magazine. Ex. 2026 at 1–2; Ex. 1029 at 183. This award is given to companies "that have changed the commercial equipment market…with their unique, interesting, and innovative machines, engines, and technologies." Ex. 2026 at 1; Ex. 1029 at 183. Compact Equipment Magazine also celebrated Toro's TX1000 and noted that "Toro and Vermeer were the first manufacturers to introduce vertical lift to the compact tool carrier market." Ex. 2026 at 1–2; Ex. 1029 at 186. Compact Equipment Magazine specifically cited the vertical-lift path (responsible for its increased lift capacity and higher lift height) as an enhancement that made Vermeer's CTX50 a "game-changer." Ex. 2026 at 2; Ex. 1029 at 183.

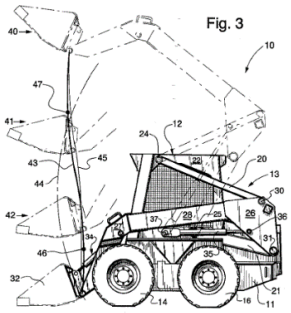
This industry praise was consistent with the machine's commercial success. During the Toro reexaminations, Vermeer's Product Manager for compact utility loaders testified that the popularity of vertical-lift machines caused its total sales of compact utility loaders to double, and that the percentage of those sales comprising vertical-lift machines increased from 11% to 37% within the first three years. Ex. 1030 at 128, 302. Toro's 2015 Annual Statement similarly boasted a significant increase in compact utility loader sales following the launch of its TX1000 machine. Ex. 1029 at 185. Because these commercial embodiments are covered by the '386 Patent claims, the commercial success and industry praise is fairly attributed to the patented invention.

B. Skepticism at the Time of Invention

"Evidence of industry skepticism . . . weighs in favor of non-obviousness." *Neptune Generics, LLC v. Eli Lilly & Co.*, 921 F.3d 1372, 1377-78 (Fed. Cir. 2019) (affirming Board's reliance on evidence of skepticism and noting that "our caselaw . . . recognizes a range of third-party opinion that can constitute skepticism."). The evidence submitted to the Patent Office during the reexaminations further demonstrated that at the time of Vermeer's invention, there was skepticism within the industry that vertical lift was a viable option for compact utility loaders due to their small size and complexity.

For example, before Toro developed its first vertical lift compact utility loader, its engineers identified significant challenges inhibiting the development of a vertical-lift mechanism, including "failures" caused by "[l]oader arm complexity and durability," as well as the "[i]ncreased weight, cost, and time" required "to develop the arm." Ex. 1030 at 54. When Toro finally developed a viable solution, it filed a patent application for its vertical-lift compact utility loader. In that application it noted that the industry considered this loader arm configuration "difficult if not impossible due to size and durability constraints."

[0007] Finally, the vertical reach of the loader arms on compact utility loaders is somewhat limited. While high lift loader arms are known on full size skid steer loaders as disclosed in U.S. Pat. No. 5,542,814, the use of such high lift loader arms on a compact utility loader has been considered difficult if not impossible due to size and durability constraints. Accordingly, it would be a further advance in the art to provide a way of safely and durably providing high lift loader arms on compact utility loaders to extend the vertical reach of such loaders. For example, this would allow a compact utility loader to dump debris or materials at higher elevations than previously, thus allowing the use of larger trucks to accept such debris or materials for transport.



Ex. 2004 (Toro's U.S. Patent Pub. 2016/0244937A1) at [0007] (highlighting added); Ex. 2005 (U.S. Patent No. 5,542,814) at Fig. 3. This evidence further undermines Kubota's obviousness assertions. *Neptune*, 921 F.3d at 1377-78. The Patent Office previously credited this evidence in affirming the patentability of the '386 Patent claims. *See, e.g.*, Ex. 1029 at 34.

C. Unexpected Results

The prosecution histories relating to the '386 Patent also contained evidence showing that the claimed invention surpassed expectations. For example,

this evidence showed that the machine claimed in the '386 Patent achieved 32% *greater* lift capacity than its radial-lift counterpart of similar size and weight. Ex. 1029 at 142. During reexamination of the '386 Patent, the Patent Office recognized that Vermeer's 32% increase in lift capacity without increasing the machine's weight "was unexpected." Ex. 1029 at 34, 74.

D. Long-felt but Unresolved Need

The prosecution histories also contain significant evidence of a long-felt need for a solution to the problem of low lift capacity on compact tool carriers. Since the first machine was released more than three decades ago (Ex. 1029 at 121, 173), customers have desired greater lift capacity for these nimble machines—but "not at the expense" of a heavier machine or wider footprint. Ex. 1030 at 39–41.

The evidence of record demonstrates that skilled engineers—including those working for some of the industry's leading manufacturers—struggled for many years to find ways to meaningfully increase the lift capacity and lift height of compact tool carriers without increasing their size and weight. Ex. 1030 at 39-41.

During prior litigation against The Toro Company involving the '386 Patent, Vermeer acquired internal documents and deposition testimony that shed light on Toro's decade-long pursuit of a solution to the problem of compact tool carrier lift capacity. Those documents show that Toro's engineers tried for years—and repeatedly failed—to meaningfully increase the lift capacity of their compact tool carrier machines. Ex. 1030 at 36-50.

Toro's development story, presented in detail in Vermeer's prior reexamination history (*e.g.*, Ex. 1030 at 36-57), provides cogent and unbiased evidence of the significant long felt need for a solution to increased lift capacity and the true inventive nature of the machine disclosed in Vermeer's patent.

Since at least 2000, Toro recognized the need to increase the lift capacity of its compact tool carrier machines. *Id.* at 41-42. For more than a decade thereafter—from 2000 until 2015—Toro devoted its significant research and development resources to solving that problem. *Id.*

Despite the fact that a wide variety of full-size skid steer machines with vertical lift systems were available on the market during that period (*Id.* at 47), not a single Toro engineer proposed adapting that technology for use on their compact tool carrier machines. *Id.* at 45-46. During this period, Toro was acutely aware of the need to increase lift capacity, but never designed a single prototype *or even made a single sketch of a compact tool carrier with vertical lift*. *Id.* This fact directly undermines Kubota's hindsight argument in the present Petition that a POSITA would have been motivated to turn to materials regarding full-size machines—even vertical lift disclosures like Beltrami—to modify a compact tool carrier machine. There are too many differences between the two categories of machines for teachings relating to one to apply to the other.

Instead of conceiving of a vertical lift device, Toro's engineers obtained incremental lift capacity improvements through the usual strategy of making their machines bigger and heavier. *Id.* at 42, 48-49. While Toro's engineers attempted to conceive new designs to address lift capacity, including a prototype that would shift

weights backward during operation to increase lift capacity, those designs were determined not to be viable and were mothballed. *Id.* at 50.

Even once Toro conceived of the idea of implementing vertical lift on a compact tool carrier, it was unsure whether the concept was viable. Toro conducted feasibility studies to investigate whether implementing vertical lift would even be possible. *Id.* at 51. Toro's feasibility study kicked off a multi-year effort to design a custom vertical-lift linkage for a compact tool carrier. *Id.* at 51-54.

Notably, Toro's engineers recognized that they could not simply "adapt" the vertical lift system from a full-size machine (like Kubota wrongly proposes a POSITA would do with Beltrami). Instead, Toro's engineers recognized that a unique linkage system would need to be designed from scratched so that it could be specifically tailored to the unique challenges presented by a compact tool carrier. The diagram Toro created for its feasibility study—like Kubota's proposed modification to KR996—was "crude," and Toro's lead designer admitted in deposition it "was not an acceptable design." *Id.* at 53.

Toro's internal documents show that its custom vertical lift linkage was difficult to design, required serial redesign, and introduced significant risks to the project. *Id.* at 53-54. For example, Toro's Project Risk and Risk Management Plan identified loader arm failure as a "high" likelihood due to the design's complexity and related concerns regarding durability. *Id.* at 54. That same document shows

that Toro's engineers were running iterative rounds of finite element analysis to assess problem areas in the design and recognized the potential need to reengineer the design altogether. *Id.* These documents, generated in 2014—shortly before Vermeer filed the application for its '386 patent—*by a team of highly competent engineers with many years of experience designing compact tool carriers* contradict Kubota's baseless assertion that it would be a routine matter for a POSITA (an engineer with only two years of design experience) to use the vague teachings of Beltrami (relating to a full-size machine) to modify the KR996 machine by fundamentally redesigning its mainframe and loader arm linkage configuration.

Toro devoted a team of engineers to the same design project, and it took them years of development, complex finite element analysis, and millions of dollars to finally arrive at a solution. *Id.* at 51. Even then, Toro considered the project high risk. *Id.* at 54. Given this evidence, Kubota's assertion that it would have been obvious for a POSITA *with only two years of design experience* to modify KR996 using the teachings of Beltrami rings particularly hollow.

Indeed, the Patent Office found this direct record of Toro's actual research and development efforts to be "*substantial and direct evidence* that those of ordinary skill in the art (the engineers, developers, managers, etc. at Toro), over the course of several years and through multiple modifications of the Dingo series of CULs, did not find it obvious to employ a vertical lift loader arm arrangement on a CUL." Ex.

1031 at 16; Ex. 1030 at 16. If it would not have been obvious for Toro to design a vertical lift loader on its compact tool carrier, it also would not be obvious for a POSITA (with far less experience than Toro's engineering team) to completely redesign the mainframe and loader linkages of KR996.

E. Copying

Kubota produced internal documents in this proceeding[7] from the time period shortly after Vermeer and Toro launched their "game changer" vertical-lift compact utility loaders. Ex. 2026; Ex. 1029 at 183. These internal Kubota documents show that when Kubota designed its first compact utility loader it

[redacted]

[7] Kubota agreed to produce sixteen documents in this proceeding. The Bates numbering on these documents is from the co-pending litigation. Kubota rejected Vermeer's attempt to seek additional discovery on this topic and the parties agreed to this small production as a compromise to resolve the discovery dispute. Kubota contends that these documents contain sensitive business information and have marked them Confidential under the Board's Protective Order.

1. Results from Kubota's Dealer Surveys

Vermeer and Toro were the first companies to launch vertical-lift compact utility carriers in 2015. Ex. 2026 at 1; Ex. 1029 at 186. At that time, Kubota had no compact utility loader on the market or in development. [redacted] Ex. 2027 at 130–131. The questions primarily focused on [redacted]. *Id.*

These surveys showed that [redacted] This is evidenced by several survey responses. *See*, e.g., Ex. 2027 at 24, 31, 37, 38, 40, 42, 44, 53, 54, 59, 62, 64, 66, 68, 71, 77, 79, 103; *see also* Ex. 2028 at 1–2. For example, [redacted] Ex. 2027 at 31. A different company echoed this sentiment, advising Kubota [redacted]" *Id.* at 53 (emphasis in original). In addition, a contractor said [redacted] *Id.* at 44. A distributor expressed a desire for [redacted]

[redacted] *Id.* at 62. One business owner even mentioned that he [redacted] *Id.* at 79.

Second, consumers [redacted]. *See*, *e.g.*, Ex. 2027 at 39, 53–55, 70, 77, 79. For example, one respondent emphasized [redacted] *Id.* at 53. A different company said that [redacted] *Id.* at 54.

Third, consumers frequently recognized [redacted]. *See*, *e.g.*, Ex. 2027 at 24, 34, 64, 68, 74, 103, 105. One dealership said that [redacted] *Id.* at 74.

Kubota admits that it heavily relied on the results of its industry surveys to develop its first compact utility loader, the SCL1000. For example, when debuting the SCL1000 at a 2020 trade show, Kubota explained that it decided to launch a vertical-lift compact utility loader after it "did several surveys, took the machine out as a prototype, got feedback, [and] made changes" based on that feedback. Ex. 2029 at 6; Ex. 2030 at 2–4, 15, 27–30; Ex. 2031 at 6, 15, 35; Ex. 2032 at 2; Ex. 2028 at 1 ("The SCL1000…specifically fill[s] the requests from contractors in the marketplace.").

2. Kubota's Competitor Research

As part of its efforts to design its first-ever compact utility loader, Kubota's internal documents show that [redacted]. Ex. 2027 at 1, 5, 12, 14–22; *see also* Ex. 2030 at 2–4, 15 and Ex. 2031 at 35. This research focused on [redacted]. Ex. 2027 at 1, 5, 12, 14–22, 110.

By 2017, Kubota [redacted]

[redacted]

Ex. 2027 at 6.

Kubota further analyzed [redacted]

[redacted]

[redacted]

Ex. 2027 at 12 (shading added); *see also* Ex. 2027 at 15, 20.

In fact, Kubota specifically researched [redacted]

[redacted]

Ex. 2027 at 86.

Ex. 2027 at 87.

Ex. 2027 at 89.

Kubota concluded that [redacted]. Ex. 2027 at 12–13. [redacted]

Ex. 2027 at 48; *see also* Ex. 2027 at 50.

Ex. 2027 at 13.

3. Kubota's Proposed Specifications for its Compact Utility Loader

. Ex. 2027 at 50–52, 114.

Ex. 2027 at 52 (annotations added).

Kubota and Velinsky opted not to engage with any of this objective evidence of non-obviousness. This evidence further confirms that the invention claimed in the '386 Patent would not have been obvious to a person of ordinary skill in the art.

IX. CONCLUSION

Based on the arguments presented in this Response, Kubota has failed to demonstrate that any of the Challenged Claims of the '386 Patent are obvious.

Date: September 3, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

Under 37 C.F.R. § 42.6(e), the undersigned certified that on September 3, 2025, a copy of Patent Owner's Response was served via electronic mail on the following attorneys of record:

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME REQUIREMENTS UNDER 37 C.F.R. § 42.24

Under 37 C.F.R. § 42.24(d), the undersigned certifies that the Patent Owner's Response complies with the type-volume requirements of 37 C.F.R. § 42.24(a)(1)(i) because it contains 13,986 words, excluding the parts of the Response exempted by 37 C.F.R. § 42.24(a).

This Response also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(2)(iii) and (iv).

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