US009975750C1

(12) EX PARTE REEXAMINATION CERTIFICATE (11636th)
United States Patent
Thomas et al.

(10) Number: US 9,975,750 C1
(45) Certificate Issued: *Feb. 3, 2020

(54) **LOW PROFILE COMPACT TOOL CARRIERS**

(71) Applicant: **Vermeer Manufacturing Company**, Pella, IA (US)

(72) Inventors: **Brad Thomas**, Pleasant Hill, IA (US); **Louis Hartke**, Pella, IA (US); **Greg Langenfeld**, Bettendorf, IA (US); **Matt Hutchinson**, Pella, IA (US)

(73) Assignee: **VERMEER MANUFACTURING COMPANY**, Pella, IA (US)

Reexamination Request:
No. 90/014,148, Jun. 6, 2018

Reexamination Certificate for:
Patent No.: **9,975,750**
Issued: **May 22, 2018**
Appl. No.: **15/062,801**
Filed: **Mar. 7, 2016**

(*) Notice: This patent is subject to a terminal disclaimer.

Related U.S. Application Data

(63) Continuation of application No. 14/691,649, filed on Apr. 21, 2015, now Pat. No. 9,321,386.

(60) Provisional application No. 62/118,860, filed on Feb. 20, 2015.

(51) **Int. Cl.**

B66F 9/065	(2006.01)
B66F 9/06	(2006.01)
E02F 3/96	(2006.01)
B66F 9/075	(2006.01)
E02F 3/34	(2006.01)
E02F 9/08	(2006.01)
B60P 1/48	(2006.01)
B66F 9/22	(2006.01)
E02F 9/20	(2006.01)

(52) **U.S. Cl.**
CPC ***B66F 9/065*** (2013.01); ***B60P 1/483*** (2013.01); ***B66F 9/06*** (2013.01); ***B66F 9/0759*** (2013.01); ***B66F 9/07572*** (2013.01); ***B66F 9/07577*** (2013.01); ***B66F 9/22*** (2013.01); ***E02F 3/3405*** (2013.01); ***E02F 3/3414*** (2013.01); ***E02F 3/96*** (2013.01); ***E02F 9/08*** (2013.01); ***E02F 9/205*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

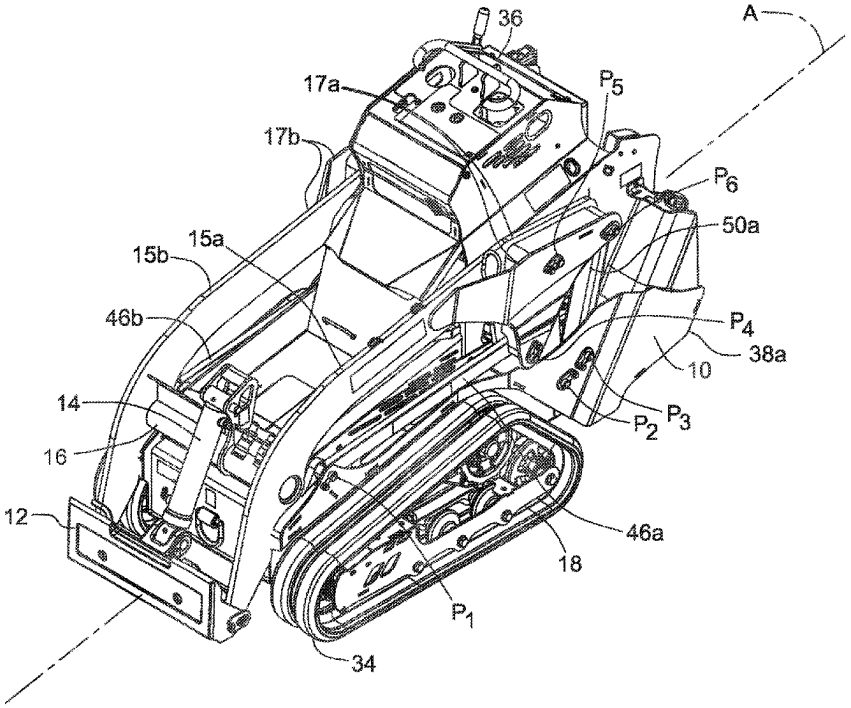
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/014,148, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — Russell D Stormer

(57) **ABSTRACT**

Compact tool carriers having a loader mounted to a low-profile mainframe are disclosed. In some embodiments, the pivot points of the mainframe about which the loader is pivoted are low relative to the mainframe to reduce the mainframe size and to lower the center of gravity to improve the stability of the compact tool carrier during use.



EX PARTE REEXAMINATION CERTIFICATE

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-6**, **8-17**, **19**, **20** and **22-33** is confirmed.

Claims **7**, **18** and **34** are determined to be patentable as amended.

New claims **35** and **36** are added and determined to be patentable.

Claim **21** was not reexamined.

7. The compact tool carrier as set forth in claim **1** wherein *each of* the first, second, third, fourth, fifth and sixth pivot points **[**are**]** *is, individually,* (1) disposed between the operator controls and a bottom of the mainframe or (2) disposed forward of the **[**control station**]** *operator controls* as the loader moves from a down position to a vertically raised position.

18. The compact tool carrier as set forth in claim **14** wherein each cross-member is disposed *fully* forward of the second pivot point **[**and**]**, the fourth pivot point, *and the sixth pivot point*.

34. The compact tool carrier as set forth in claim **30** wherein each cross-member is disposed *fully* forward of the second pivot point **[**and**]**, the fourth pivot point, *and the sixth pivot point*.

35. The compact tool carrier as set forth in claim 19 wherein the first and fifth pivot points are above the rotational axis and the vertical distance between the rotational axis R and each of the first and fifth pivot points is less than twice D5.

36. The compact tool carrier as set forth in claim 19 wherein the drive mechanism comprises tracks or wheels and the first pivot point is above the tracks or wheels and the vertical distance between the rotational axis R and the first pivot point is less than twice D5.

* * * * *

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,148* .

PATENT UNDER REEXAMINATION *9975750* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Notice of Intent to Issue Ex Parte Reexamination Certificate	**Control No.** 90/014,148	**Patent Under Reexamination** 9975750	
	Examiner RUSSELL D STORMER	**Art Unit** 3993	**AIA Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ Prosecution on the merits is (or remains) closed in this *ex parte* reexamination proceeding. This proceeding is subject to reopening at the initiative of the Office or upon petition. *Cf.* 37 CFR 1.313(a). A Certificate will be issued in view of
   (a) ☑ Patent owner's communication(s) filed: 2/6/2019 and 10/25/2019.
   (b) ☐ Patent owner's failure to file an appropriate timely response to the Office action mailed: _____.
   (c) ☐ Patent owner's failure to timely file an Appeal Brief (37 CFR 41.31).
   (d) ☐ The decision on appeal by the ☐ Board of Patent Appeals and Interferences ☐ Court dated _____
   (e) ☐ Other: _____.
2. The Reexamination Certificate will indicate the following:
   (a) Change in the Specification: ☐ Yes ☑ No
   (b) Change in the Drawing(s): ☐ Yes ☑ No
   (c) Status of the Claim(s):
      (1) Patent claim(s) confirmed: 1-6,8-17,19-20 and 22-33.
      (2) Patent claim(s) amended (including dependent on amended claim(s)): 7,18 and 34
      (3) Patent claim(s) canceled: _____.
      (4) Newly presented claim(s) patentable: 35-36.
      (5) Newly presented canceled claims: _____.
      (6) Patent claim(s) ☐ previously ☐ currently disclaimed: _____
      (7) Patent claim(s) not subject to reexamination: 21.
3. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
4. ☑ Note the attached statement of reasons for patentability and/or confirmation. Any comments considered necessary by patent owner regarding reasons for patentability and/or confirmation must be submitted promptly to avoid processing delays. Such submission(s) should be labeled: "Comments On Statement of Reasons for Patentability and/or Confirmation."
5. ☐ Note attached NOTICE OF REFERENCES CITED (PTO-892).
6. ☐ Note attached LIST OF REFERENCES CITED (PTO/SB/08 or PTO/SB/08 substitute).
7. ☐ The drawing correction request filed on _____ is: ☐approved ☐disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐None of the certified copies have
   ☐been received.
   ☐not been received.
   ☐been filed in Application No. _____.
   ☐been filed in reexamination Control No. _____.
   ☐been received by the International Bureau in PCT Application No. _____.

   * Certified copies not received: _____.
9. ☐ Note attached Examiner's Amendment.
10. ☐ Note attached Interview Summary (PTO-474).
11. ☐ Other: _____.

All correspondence relating to this reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

/RUSSELL D STORMER/ Primary Examiner, Art Unit 3993	/Eileen Lillis/ /Sara Clarke/ SPRS, CRU-3993 Patent Reexamination Specialist

cc: Requester (if third party requester)

Notice of Intent to Issue Reexamination Certificate

Brief Summary of the Prosecution History

On June 6, 2018, reexamination was requested by a third party requester for claims 1-20 and 22-34 of United States Patent Number 9,975,750 to Thomas et al. ("the '750 patent") and assigned Control Number 90/014,148 ("the '148 proceeding").

On August 3, 2018 an Order was mailed granting reexamination of claims 1-20 and 22-34.

On December 6, 2018, a non-final Office action was mailed rejecting claims 1-20 and 22-34.

A Response was filed February 6, 2019 amending claims 7, 18, and 34, and adding new claims 35 and 36.

A Supplemental Response was filed October 25, 2019 (the "Supplemental Response") to submit documents related to the ongoing litigation between the Requester Toro and Patent Owner Vermeer.

Scope of Reexamination

With the amendment filed February 6, 2018, claims 1-20 and 22-36 are within the scope of this merged proceeding. Reexamination of claim 21 was neither requested nor ordered.

STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

The following is an Examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding.

It would not have been obvious to combine the teachings of Dingo® 322 Operator's Manual and Dingo® 322 Parts Catalog (referred to collectively as "Dingo"), and Japanese Patent Application JP 11-140900 to Komatsu Ltd. ("Komatsu") to arrive at the invention set forth in claims 1 and 18, and in particular:

Claim 1. A compact tool carrier configured for standing operator control and having a mass of less than about 1500 kg, comprising:

a loader having an arm adapted to carry a tool;

a mainframe for supporting the loader;

the loader arm being free from direct attachment to the mainframe;

a first linkage 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;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point; and

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point.

Claim 19. A compact tool carrier comprising:

a loader adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader at a second pivot point;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader at a fourth pivot point;

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader at a sixth pivot point; and

a drive mechanism having a drive sprocket defining a rotational axis R, the rotational axis R and the bottom of the compact tool carrier being separated by a vertical distance D1, the rotational axis R and a bottom of the first side of the mainframe being separated by a vertical distance D5, the rotational axis R and each of the first, third, and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point also being less than 1.5 times D1, the vertical distance between the rotational axis R and the fifth pivot point also being less than 1.5 times D1, the first side of the mainframe comprising a forward-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5.

Dingo teaches a compact tool carrier having many of the claimed features, but the loader arm is directly attached to the mainframe and the structure lacks a linkage.

Komatsu teaches an arrangement in which a loader arm is indirectly attached to a mainframe through a pair of linkages 11, 12. Komatsu shows various arrangements of the linkages and described advantages of using linkages as opposed to direct attachment. Komatsu applies these teachings to a skid-steer loader, a vehicle/machine somewhat larger than the claimed compact tool carrier and not designed for standing or walk-behind operation since the operator is seated within a cab.

The Request proposed a rejection of claims 1 and 19 as obvious in view of Dingo and Komatsu. See pages 57-58 and 68-69. The Request notes the many advantages of a vertical lift design and describes the linkages of Komatsu. The Request concedes differences between Dingo and Komatsu, but states: "All changes required to adapt

Komatsu's linkage to Dingo would be well-within the level of ordinary skill in the art." See page 51. The Request also asserts the advantages (of Komatsu's vertical lift arrangement) "unquestionably establish the motivation" for one of ordinary skill in the art to replace Dingo's radial lift arrangement with Komatsu's vertical lift linkage; and "[t]he obviousness of the substitution cannot be denied." See page 50.

As such, it would appear that one of ordinary skill in the art would have found it obvious that Komatsu's teachings of using linkages to indirectly attach the loader arms to the mainframe could be applied to a compact tool carrier ("CUL").[1]

The rejection proposed in the Request was set forth more or less unchanged in the non-final Office action mailed December 6, 2018.

The documents submitted with the Supplemental Response show that Toro itself (the Requester) did not find it obvious to replace the radial lift of a Dingo-type machine with a vertical lift such as that taught by Komatsu.

Both vertical lift and radial lift loader arm arrangements are old and well-known in the loader art, as are the advantages and disadvantages of each. Examples of vertical lift arms are shown in U.S. patents to Yamada et al. and Layko et al., both cited in the subject '750 patent. Examples of radial lift arrangements are found in U.S. patent to Bares et al cited in the subject '750 patent, and in Dingo. Komatsu provides multiple

[1] During this proceeding, the terms "mini skid-steer loader," "compact tool carrier," and "compact utility loader" have been used (by the Requester, the Patent Owner, the Examiner, and the prior art and non-patent literature) to refer to a standing or walk-behind machine such as that set forth in the claims. CUL is now used in place of the other terms.

examples of vertical lift arrangements in figures 1, 5-8, 11, and 12, and a radial lift in figure 13.

Vertical lift arrangements use linkages to attach the loader arms to the frame, while the arms in a radial lift are generally directly pivotally attached to the frame. The use of a pair of linkages to create a so-called four-bar linkage appears to be the most common arrangement for a vertical lift, although other arrangements are known. See the references cited in the '750 patent.

Ulinkski (U.S. Patent 3,074,572; cited in the subject '750 patent) is the only reference of record which uses linkages to indirectly attach loader arms to a standing or walk-behind machine to achieve a vertical lift. However, Ulinski uses a single linkage 27, a crank arm 24, and a bell crank 32 to raise the tool 16, 20 in a vertical lift path. Further, neither actuator 29, 36 is pivotally attached to the levers 17, 19 which are used in place of a loader arm. As such, claims 1 and 19 define over Ulinski.

A substantial number of the documents submitted in the Supplemental Response show that for years Toro worked to increase the pin height of the loader arms as one of a number of improvements on their Dingo and other machines. For example, see pages 26-29 (Toro-0000787-790) of the "W298: Next Gen TX" document included with the Supplemental Response. Many more documents are discussed on pages 3-26 of the Remarks submitted by Patent Owner. These documents show that for years Toro directed these efforts to the radial lift arms used on Dingo machines (as opposed to substituting a vertical lift arrangement for the radial lift).

Other documents filed with the Supplemental Response show that those involved at Toro knew of vertical lift arrangements as a possible solution to increasing pin height and/or lift capacity. For example, see the transcript of the video deposition of James A. Kuemper ("Kuemper;" Exhibit 1 at page 179):

> A. We want -- we wanted to be able to make higher lift capacity with more reach and a higher height than any other machine that we had before this.
>
> Q. You said anyone can put vertical lift on a machine. What is that opinion based on?
>
> A. Well, if you're talking about a simple four-bar linkage. I mean four-bar linkage has been around for ages. I mean I learned about four-bar linkage when I went to school out in Willmar drafting design technology.

The transcript of the video deposition of Neil B. Borenstein ("Borenstein;" Exhibit 2 at pp. 147-148) also discusses vertical lift:

> A. I think at this point was the point we -- where -- this document here is where we started talking about vertical lift.[2]
>
> Q. So before that document, you're not aware of any instance in which any Toro engineer thought of putting vertical lift on a compact utility loader, right?
>
> A. No, I can't -- I can't say that. Um, I think -- I think because the vertical lift concept is known on skid-steer loaders and compact track loaders and numerous models are marketed in both designs, we were all aware of that, and we all had thought that wouldn't it be -- you know, we'd like to -- someday that concept may be appropriate for a CUL.

As pointed out on pages 13-15 of the Supplemental Response to Office Action ("Response"), it was not until the development of the TX-1000 that Toro employed a

[2] Pages 144-146 were not included in Exhibit 2, and the document in question does not appear to be identified in the submitted pages of the video transcript.

vertical lift in a CUL. See, for example, Kuemper at page 88 where Mr. Kuemper states his belief that the concept of a vertical lift was not pursued by Toro until the TX-1000.

When Toro decided to develop a CUL with a vertical lift, they did not employ a four-bar linkage in the TX-1000. As asserted in the last paragraph of page 6 of Response, "Toro's engineers followed a completely different design path" than proposed as obvious in the Request, and that this resulted in the "design of an entirely new mainframe and vertical lift loader mechanism" as shown in U.S. Patent 9,970,176.

Similar assertions are made by Toro on pages 2-4 of Toro's Opening Claim Construction Brief submitted with the Supplemental Response.

Indeed, a review of Toro's 9,970,176 patent (the "176 patent) shows an upper loader arm 20 indirectly attached to the machine through a pair of lower arms 22, 24, which are pivotally attached at one end to the rear portion of arm 20 at pivot points 26, 28, respectively. While the arms 24 are pivotally connected to a support beam 34 at their second ends, the second ends of arms 22 are welded to a cross beam 46. The support beam 34 is part of a support assembly 33 which is mounted on the mainframe, and as such, the loader arms 22, 24 are not pivotally attached directly to the mainframe.

Even if the arms 22, 24 are considered to be analogous to linkages, the structural arrangement of the arms 20, 22, and 24 is very different than a four-bar linkage assembly such as taught by Komatsu.

Therefore, the documents submitted in the Supplemental Response provide *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. In addition, when those of ordinary skill in the art at Toro did design a vertical lift arrangement for a CUL, they did not find it obvious to look to larger machines for known vertical lifts (such as the four-bar linkage of Komatsu) and adapt those teachings to an existing CUL. Instead, the evidence shows that they chose to design an entirely new mainframe and vertical lift loader mechanism.

Additional evidence submitted by Patent Owner in the response filed February 6, 2019, has also been fully considered.

In particular, the Declaration of Lois Hartke is persuasive to show that designing a vertical lift having a four-bar linkage requires considerable experimentation and a combination such as of Dingo and Komatsu would not have been obvious at least because it would require undue experimentation. See pages 6-20.

Therefore, based on consideration of the entire record, by a preponderance of the evidence, the Examiner is persuaded that it would ***not*** have been obvious to those of ordinary skill in the art, at the time of the invention, to modify Dingo in view of the teachings of Komatsu to arrive at the invention as recited in independent claims 1 and 19.

Dependent claims 2-18, 20, and 22-36 are found allowable/patentable at least for their dependency to their respective independent claims.

Any comments considered necessary by PATENT OWNER regarding the above statement must be submitted promptly to avoid processing delays. Such submission by the patent owner should be labeled: "Comments on Statement of Reasons for Patentability and/or Confirmation" and will be placed in the reexamination file.

EXAMINER'S AMENDMENT

The amendments to claims 7, 18, and 34, filed February 6, 2019, do not comply with 37 C.F.R. 1.530. These claims are amended as shown below:

7. (Amended) The compact tool carrier as set forth in claim 1 wherein each of the first, second, third, fourth, fifth and sixth pivot points [are] is, individually, (1) disposed between the operator controls and a bottom of the mainframe or (2) disposed forward of the operator controls [control station] as the loader moves from a down position to a vertically raised position.

18. (Amended) The compact tool carrier as set forth in claim 14 wherein each cross-member is disposed fully forward of the second pivot point, [and] the fourth pivot point, and the sixth pivot point.

34. (Amended) The compact tool carrier as set forth in claim 30 wherein each cross-member is disposed fully forward of the second pivot point, [and] the fourth pivot point, and the sixth pivot point.

Correspondence

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
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By FAX to: (571) 273-9900
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For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/RUSSELL D STORMER/
Primary Examiner, Art Unit 3993

Russell D. Stormer
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Conferee: /SC/

Conferee: /E.D.L/
SPRS, Art Unit 3993

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,148	9975750
	Certificate Date	Certificate Number
		C1

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
JAMES W. MILLER, ATTORNEY 527 MARQUETTE AVENUE SUITE 1960, RAND TOWER MINNEAPOLIS, MN 55402

LITIGATION REVIEW ☑	/rds/ (examiner initials)	08 November 2019 (date)
Case Name		Director Initials
Vermeer Manufacturing Company v. The Toro Company; 4:14cv76; U.S. District - Iowa Southern (Central) OPEN		SJS for JC

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
None	

Bibliographic Data

Application No: 90/014,148

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /RUSSELL D STORMER/ (Examiner's Signature) ____ (Initials)

Title: LOW PROFILE COMPACT TOOL CARRIERS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/06/2018	414	3993	Veermer-750Reex
RULE			

APPLICANTS

INVENTORS

9975750

VERMEER MANUFACTURING COMPANY PELLA, IA, UNITED STATES

THE TORO COMPANY (3RD PTY REQ.) BLOOMINGTON, MN, UNITED STATES

CONTINUING DATA

This application is a REX of 15062801 03/07/2016 PAT 9975750

15062801 is a CON of 14691649 04/21/2015 PAT 9321386

14691649 has PRO of 62118860 02/20/2015

FOREIGN APPLICATIONS

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,148	06/06/2018	9975750	Veermer-750Reex	1098

76656 7590 11/26/2019

Patent Docket Department
Armstrong Teasdale LLP
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EXAMINER	
STORMER, RUSSELL D	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
11/26/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

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120 SOUTH 6TH STREET
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MINNEAPOLIS, MN 55402-1829

Date: November 26, 2019

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90014148
PATENT NO. : 9975750
ART UNIT : 3993

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

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(For Requester)

In re Thomas *et al.*
Ex Parte Reexamination Proceeding
Control No. 90/014,148
Filed: June 6, 2018
For: U.S. Patent No.: 9,975,750

DECISION DISMISSING PETITION

This decision addresses patent owner's October 25, 2019 petition in *ex parte* reexamination proceeding **90/014,148** entitled "PETITION TO SUSPEND RULE 37 C.F.R. § 1.111 PERSUANT TO 37 CFR §1.183".

Patent owner's October 25, 2019 petition under 37 CFR 1.183, and the record as a whole, are before the Director of the Central Reexamination Unit.

SUMMARY

Patent owner's October 25, 2019 petition under 37 CFR 1.183 is dismissed as **Moot.**

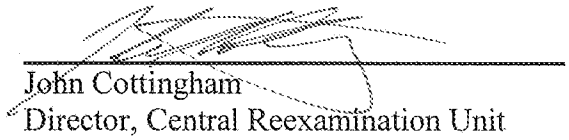
DECISION

The patent owner requests, in their October 25, 2019 petition that the provisions of 37 CFR 1.111(a)(2) be waived to permit entry and consideration of the supplemental reply filed October 25, 2019 concurrently with the instant petition as a matter of right.

A review of the record indicates that the Examiner issued a Notice of Intent to Issue an *Ex Parte* Reexamination Certificate (NIRC) even date with the mailing of this decision. The NIRC entered Patent Owner's October 25, 2019 supplemental reply pursuant to 37 CFR 1.111(a)(2), and further indicated that that all pending claims in the merged Rexamination proceeding were confirmed/allowed.

Accordingly, the relief requested by Patent Owner in their October 25, 2019 petition was granted by the Examiner in the NIRC mailed even date with this decision and the petition is thus moot.

- Patent owner's October 25, 2019 petition under 37 CFR 1.183 is dismissed as **Moot.**
- The present ex parte reexamination proceeding will be forwarded to the Office of Publications for issuance of a reexamination certificate
- Any inquiry concerning this communication should be directed Stephen J. Stein at (571) 272-7724.



John Cottingham
Director, Central Reexamination Unit

Bibliographic Data

Application No: 90/014,148

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /RUSSELL D STORMER/ (Examiner's Signature) ____ (Initials)

Title: LOW PROFILE COMPACT TOOL CARRIERS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/06/2018	414	3993	Veermer-750Reex
RULE			

APPLICANTS

INVENTORS

9975750

VERMEER MANUFACTURING COMPANY PELLA, IA, UNITED STATES

THE TORO COMPANY (3RD PTY REQ.) BLOOMINGTON, MN, UNITED STATES

CONTINUING DATA

This application is a REX of 15062801 03/07/2016 PAT 9975750

15062801 is a CON of 14691649 04/21/2015 PAT 9321386

14691649 has PRO of 62118860 02/20/2015

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

STATE OR COUNTRY

ADDRESS

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

FILING FEE RECEIVED

$12,000

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,148	06/06/2018	9975750	Veermer-750Reex	1098

76656 7590 11/26/2019

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

EXAMINER	
STORMER, RUSSELL D	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
11/26/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
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Alexandria, VA 22313-1450
www.uspto.gov

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

JAMES W. MILLER, ATTORNEY
527 MARQUETTE AVENUE
SUITE 1960, RAND TOWER
MINNEAPOLIS, MN 55402

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,148* .

PATENT UNDER REEXAMINATION *9975750* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Notice of Intent to Issue Ex Parte Reexamination Certificate	**Control No.** 90/014,148	**Patent Under Reexamination** 9975750	
	Examiner RUSSELL D STORMER	**Art Unit** 3993	**AIA Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ Prosecution on the merits is (or remains) closed in this *ex parte* reexamination proceeding. This proceeding is subject to reopening at the initiative of the Office or upon petition. *Cf.* 37 CFR 1.313(a). A Certificate will be issued in view of
   (a) ☑ Patent owner's communication(s) filed: 2/6/2019 and 10/25/2019.
   (b) ☐ Patent owner's failure to file an appropriate timely response to the Office action mailed: _____.
   (c) ☐ Patent owner's failure to timely file an Appeal Brief (37 CFR 41.31).
   (d) ☐ The decision on appeal by the ☐ Board of Patent Appeals and Interferences ☐ Court dated _____
   (e) ☐ Other: _____.
2. The Reexamination Certificate will indicate the following:
   (a) Change in the Specification: ☐ Yes ☑ No
   (b) Change in the Drawing(s): ☐ Yes ☑ No
   (c) Status of the Claim(s):
      (1) Patent claim(s) confirmed: 1-6,8-17,19-20 and 22-33.
      (2) Patent claim(s) amended (including dependent on amended claim(s)): 7,18 and 34
      (3) Patent claim(s) canceled: _____.
      (4) Newly presented claim(s) patentable: 35-36.
      (5) Newly presented canceled claims: _____.
      (6) Patent claim(s) ☐ previously ☐ currently disclaimed: _____
      (7) Patent claim(s) not subject to reexamination: 21.
3. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
4. ☑ Note the attached statement of reasons for patentability and/or confirmation. Any comments considered necessary by patent owner regarding reasons for patentability and/or confirmation must be submitted promptly to avoid processing delays. Such submission(s) should be labeled: "Comments On Statement of Reasons for Patentability and/or Confirmation."
5. ☐ Note attached NOTICE OF REFERENCES CITED (PTO-892).
6. ☐ Note attached LIST OF REFERENCES CITED (PTO/SB/08 or PTO/SB/08 substitute).
7. ☐ The drawing correction request filed on _____ is: ☐approved ☐disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐None of the certified copies have
   ☐been received.
   ☐not been received.
   ☐been filed in Application No. _____.
   ☐been filed in reexamination Control No. _____.
   ☐been received by the International Bureau in PCT Application No. _____.

   * Certified copies not received: _____.
9. ☐ Note attached Examiner's Amendment.
10. ☐ Note attached Interview Summary (PTO-474).
11. ☐ Other: _____.

All correspondence relating to this reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

/RUSSELL D STORMER/ Primary Examiner, Art Unit 3993	/Eileen Lillis/ /Sara Clarke/ SPRS, CRU-3993 Patent Reexamination Specialist

cc: Requester (if third party requester)

Notice of Intent to Issue Reexamination Certificate

Brief Summary of the Prosecution History

On June 6, 2018, reexamination was requested by a third party requester for claims 1-20 and 22-34 of United States Patent Number 9,975,750 to Thomas et al. ("the '750 patent") and assigned Control Number 90/014,148 ("the '148 proceeding").

On August 3, 2018 an Order was mailed granting reexamination of claims 1-20 and 22-34.

On December 6, 2018, a non-final Office action was mailed rejecting claims 1-20 and 22-34.

A Response was filed February 6, 2019 amending claims 7, 18, and 34, and adding new claims 35 and 36.

A Supplemental Response was filed October 25, 2019 (the "Supplemental Response") to submit documents related to the ongoing litigation between the Requester Toro and Patent Owner Vermeer.

Scope of Reexamination

With the amendment filed February 6, 2018, claims 1-20 and 22-36 are within the scope of this merged proceeding. Reexamination of claim 21 was neither requested nor ordered.

STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

The following is an Examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding.

It would not have been obvious to combine the teachings of Dingo® 322 Operator's Manual and Dingo® 322 Parts Catalog (referred to collectively as "Dingo"), and Japanese Patent Application JP 11-140900 to Komatsu Ltd. ("Komatsu") to arrive at the invention set forth in claims 1 and 18, and in particular:

Claim 1. A compact tool carrier configured for standing operator control and having a mass of less than about 1500 kg, comprising:

a loader having an arm adapted to carry a tool;

a mainframe for supporting the loader;

the loader arm being free from direct attachment to the mainframe;

a first linkage 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;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point; and

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point.

Claim 19. A compact tool carrier comprising:

a loader adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader at a second pivot point;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader at a fourth pivot point;

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader at a sixth pivot point; and

a drive mechanism having a drive sprocket defining a rotational axis R, the rotational axis R and the bottom of the compact tool carrier being separated by a vertical distance D1, the rotational axis R and a bottom of the first side of the mainframe being separated by a vertical distance D5, the rotational axis R and each of the first, third, and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point also being less than 1.5 times D1, the vertical distance between the rotational axis R and the fifth pivot point also being less than 1.5 times D1, the first side of the mainframe comprising a forward-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5.

Dingo teaches a compact tool carrier having many of the claimed features, but the loader arm is directly attached to the mainframe and the structure lacks a linkage.

Komatsu teaches an arrangement in which a loader arm is indirectly attached to a mainframe through a pair of linkages 11, 12. Komatsu shows various arrangements of the linkages and described advantages of using linkages as opposed to direct attachment. Komatsu applies these teachings to a skid-steer loader, a vehicle/machine somewhat larger than the claimed compact tool carrier and not designed for standing or walk-behind operation since the operator is seated within a cab.

The Request proposed a rejection of claims 1 and 19 as obvious in view of Dingo and Komatsu. See pages 57-58 and 68-69. The Request notes the many advantages of a vertical lift design and describes the linkages of Komatsu. The Request concedes differences between Dingo and Komatsu, but states: “All changes required to adapt

Komatsu's linkage to Dingo would be well-within the level of ordinary skill in the art." See page 51. The Request also asserts the advantages (of Komatsu's vertical lift arrangement) "unquestionably establish the motivation" for one of ordinary skill in the art to replace Dingo's radial lift arrangement with Komatsu's vertical lift linkage; and "[t]he obviousness of the substitution cannot be denied." See page 50.

As such, it would appear that one of ordinary skill in the art would have found it obvious that Komatsu's teachings of using linkages to indirectly attach the loader arms to the mainframe could be applied to a compact tool carrier ("CUL").[1]

The rejection proposed in the Request was set forth more or less unchanged in the non-final Office action mailed December 6, 2018.

The documents submitted with the Supplemental Response show that Toro itself (the Requester) did not find it obvious to replace the radial lift of a Dingo-type machine with a vertical lift such as that taught by Komatsu.

Both vertical lift and radial lift loader arm arrangements are old and well-known in the loader art, as are the advantages and disadvantages of each. Examples of vertical lift arms are shown in U.S. patents to Yamada et al. and Layko et al., both cited in the subject '750 patent. Examples of radial lift arrangements are found in U.S. patent to Bares et al cited in the subject '750 patent, and in Dingo. Komatsu provides multiple

[1] During this proceeding, the terms "mini skid-steer loader," "compact tool carrier," and "compact utility loader" have been used (by the Requester, the Patent Owner, the Examiner, and the prior art and non-patent literature) to refer to a standing or walk-behind machine such as that set forth in the claims. CUL is now used in place of the other terms.

examples of vertical lift arrangements in figures 1, 5-8, 11, and 12, and a radial lift in figure 13.

Vertical lift arrangements use linkages to attach the loader arms to the frame, while the arms in a radial lift are generally directly pivotally attached to the frame. The use of a pair of linkages to create a so-called four-bar linkage appears to be the most common arrangement for a vertical lift, although other arrangements are known. See the references cited in the '750 patent.

Ulinkski (U.S. Patent 3,074,572; cited in the subject '750 patent) is the only reference of record which uses linkages to indirectly attach loader arms to a standing or walk-behind machine to achieve a vertical lift. However, Ulinski uses a single linkage 27, a crank arm 24, and a bell crank 32 to raise the tool 16, 20 in a vertical lift path. Further, neither actuator 29, 36 is pivotally attached to the levers 17, 19 which are used in place of a loader arm. As such, claims 1 and 19 define over Ulinski.

A substantial number of the documents submitted in the Supplemental Response show that for years Toro worked to increase the pin height of the loader arms as one of a number of improvements on their Dingo and other machines. For example, see pages 26-29 (Toro-0000787-790) of the "W298: Next Gen TX" document included with the Supplemental Response. Many more documents are discussed on pages 3-26 of the Remarks submitted by Patent Owner. These documents show that for years Toro directed these efforts to the radial lift arms used on Dingo machines (as opposed to substituting a vertical lift arrangement for the radial lift).

Other documents filed with the Supplemental Response show that those involved at Toro knew of vertical lift arrangements as a possible solution to increasing pin height and/or lift capacity. For example, see the transcript of the video deposition of James A. Kuemper ("Kuemper;" Exhibit 1 at page 179):

> A. We want -- we wanted to be able to make higher lift capacity with more reach and a higher height than any other machine that we had before this.
>
> Q. You said anyone can put vertical lift on a machine. What is that opinion based on?
>
> A. Well, if you're talking about a simple four-bar linkage. I mean four-bar linkage has been around for ages. I mean I learned about four-bar linkage when I went to school out in Willmar drafting design technology.

The transcript of the video deposition of Neil B. Borenstein ("Borenstein;" Exhibit 2 at pp. 147-148) also discusses vertical lift:

> A. I think at this point was the point we -- where -- this document here is where we started talking about vertical lift.[2]
>
> Q. So before that document, you're not aware of any instance in which any Toro engineer thought of putting vertical lift on a compact utility loader, right?
>
> A. No, I can't -- I can't say that. Um, I think -- I think because the vertical lift concept is known on skid-steer loaders and compact track loaders and numerous models are marketed in both designs, we were all aware of that, and we all had thought that wouldn't it be -- you know, we'd like to -- someday that concept may be appropriate for a CUL.

As pointed out on pages 13-15 of the Supplemental Response to Office Action ("Response"), it was not until the development of the TX-1000 that Toro employed a

[2] Pages 144-146 were not included in Exhibit 2, and the document in question does not appear to be identified in the submitted pages of the video transcript.

vertical lift in a CUL. See, for example, Kuemper at page 88 where Mr. Kuemper states his belief that the concept of a vertical lift was not pursued by Toro until the TX-1000.

When Toro decided to develop a CUL with a vertical lift, they did not employ a four-bar linkage in the TX-1000. As asserted in the last paragraph of page 6 of Response, "Toro's engineers followed a completely different design path" than proposed as obvious in the Request, and that this resulted in the "design of an entirely new mainframe and vertical lift loader mechanism" as shown in U.S. Patent 9,970,176.

Similar assertions are made by Toro on pages 2-4 of Toro's Opening Claim Construction Brief submitted with the Supplemental Response.

Indeed, a review of Toro's 9,970,176 patent (the "176 patent) shows an upper loader arm 20 indirectly attached to the machine through a pair of lower arms 22, 24, which are pivotally attached at one end to the rear portion of arm 20 at pivot points 26, 28, respectively. While the arms 24 are pivotally connected to a support beam 34 at their second ends, the second ends of arms 22 are welded to a cross beam 46. The support beam 34 is part of a support assembly 33 which is mounted on the mainframe, and as such, the loader arms 22, 24 are not pivotally attached directly to the mainframe.

Even if the arms 22, 24 are considered to be analogous to linkages, the structural arrangement of the arms 20, 22, and 24 is very different than a four-bar linkage assembly such as taught by Komatsu.

Therefore, the documents submitted in the Supplemental Response provide *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. In addition, when those of ordinary skill in the art at Toro did design a vertical lift arrangement for a CUL, they did not find it obvious to look to larger machines for known vertical lifts (such as the four-bar linkage of Komatsu) and adapt those teachings to an existing CUL. Instead, the evidence shows that they chose to design an entirely new mainframe and vertical lift loader mechanism.

Additional evidence submitted by Patent Owner in the response filed February 6, 2019, has also been fully considered.

In particular, the Declaration of Lois Hartke is persuasive to show that designing a vertical lift having a four-bar linkage requires considerable experimentation and a combination such as of Dingo and Komatsu would not have been obvious at least because it would require undue experimentation. See pages 6-20.

Therefore, based on consideration of the entire record, by a preponderance of the evidence, the Examiner is persuaded that it would ***not*** have been obvious to those of ordinary skill in the art, at the time of the invention, to modify Dingo in view of the teachings of Komatsu to arrive at the invention as recited in independent claims 1 and 19.

Dependent claims 2-18, 20, and 22-36 are found allowable/patentable at least for their dependency to their respective independent claims.

Any comments considered necessary by PATENT OWNER regarding the above statement must be submitted promptly to avoid processing delays. Such submission by the patent owner should be labeled: "Comments on Statement of Reasons for Patentability and/or Confirmation" and will be placed in the reexamination file.

EXAMINER'S AMENDMENT

The amendments to claims 7, 18, and 34, filed February 6, 2019, do not comply with 37 C.F.R. 1.530. These claims are amended as shown below:

7. (Amended) The compact tool carrier as set forth in claim 1 wherein each of the first, second, third, fourth, fifth and sixth pivot points [are] is, individually, (1) disposed between the operator controls and a bottom of the mainframe or (2) disposed forward of the operator controls [control station] as the loader moves from a down position to a vertically raised position.

18. (Amended) The compact tool carrier as set forth in claim 14 wherein each cross-member is disposed fully forward of the second pivot point, [and] the fourth pivot point, and the sixth pivot point.

34. (Amended) The compact tool carrier as set forth in claim 30 wherein each cross-member is disposed fully forward of the second pivot point, [and] the fourth pivot point, and the sixth pivot point.

Correspondence

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/RUSSELL D STORMER/
Primary Examiner, Art Unit 3993

Russell D. Stormer
Patent Reexamination Specialist
Central Reexamination Unit
Art Unit 3993
(571) 272-6687

Conferee: /SC/

Conferee: /E.D.L/
SPRS, Art Unit 3993

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,148	9975750
	Certificate Date	Certificate Number
		C1

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
JAMES W. MILLER, ATTORNEY 527 MARQUETTE AVENUE SUITE 1960, RAND TOWER MINNEAPOLIS, MN 55402

LITIGATION REVIEW ☑	/rds/ (examiner initials)	08 November 2019 (date)
Case Name		Director Initials
Vermeer Manufacturing Company v. The Toro Company; 4:14cv76; U.S. District - Iowa Southern (Central) OPEN		SJS for JC

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
None	



United States Patent and Trademark Office

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Sale Accounting Date:10/29/2019

Sale Item Reference Number	Effective Date
90014148	10/25/2019

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20190SA07300242	1824	PETITION IN REEXAM PROCEEDING	$1,940.00	Deposit Account

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

October 25, 2019

LETTER TO PATENT OFFICE REGARDING LITIGATION MATERIALS

TO THE COMMISSIONER FOR PATENTS,

SIR:

Patent Owner has cited litigation documents that are part of the following proceedings to the Patent Office:

- *Vermeer Corporation v. The Toro Company*, Case No. 4:17-cv-00076-CRW-HCA (S.D. IA. filed February 28, 2017); and
- *Vermeer Manufacturing Company v. The Toro Company*, Case No. 4:19-cv-00050-CRW-HCA (S.D. IA. filed February 12, 2019).

If the Examiner would like to view any documents cited by Toro or by Vermeer that are purported to support one or more of the various litigation positions including any referenced exhibits, Patent Owner will provide such documents to the Office at the request of the Examiner.

Respectfully submitted,

/Michael J. Vander Molen/

Michael J. Vander Molen
Reg. No. 57,274
Armstrong Teasdale LLP
7700 Forsyth Blvd., Suite 1800
St. Louis, Missouri 63105
(314) 621-5070

CERTIFICATE OF SERVICE

I certify that October 25, 2019 the foregoing:

SUPPLEMENTAL REPSPONSE WITH EXHIBITS 1-7;

PETITION TO SUSPEND RULE 37 C.F.R. § 1.111 PURSUANT TO 37 C.F.R. § 1.183;

INFORMATION DISCLOSURE STATEMENT; and

LETTER TO PATENT OFFICE REGARDING LITIGATION MATERIALS

were served on the third party requester's counsel via first class mail at:

James W. Miller
Registration No. 27,661
120 South 6th St.
Suite 2310
Minneapolis, MN 55402

Respectfully submitted,

/Michael J. Vander Molen/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
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Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

October 25, 2019

PETITION TO SUSPEND RULE 37 C.F.R. § 1.111 PURSUANT TO 37 C.F.R. § 1.183

TO THE COMMISSIONER FOR PATENTS,

SIR:

Patent Owner respectfully petitions the Director under the provisions of 37 C.F.R. § 1.183 to suspend the requirements set forth in 37 C.F.R. § 1.111(a)(2) that a reply that is supplemental to a reply in compliance with 37 C.F.R. §111(b) will not normally be entered by the Office. Specifically, 37 C.F.R. § 1.111(a)(2)(i) provides that the Office *may* enter a supplemental reply if one of the conditions of 37 C.F.R. § 1.111(a)(2)(i)(A)-1.111(a)(2)(i)(F) are met. 37 C.F.R. § 1.111(a)(2)(ii) provides that a supplemental reply will only be entered *as a matter of right* if it is filed within the period during which action by the Office is suspended. However, 37 C.F.R. §1.183 provides that the requirements of 37 C.F.R. § 1.111(a)(2) may be suspended by the Director in extraordinary situations, when justice requires, on petition. For the reasons set forth below, Patent Owner submits that an extraordinary situation has arisen in the above-referenced Reexamination proceeding and requests that the Supplemental Reply filed concurrently with this petition be entered by the Office.

The patent subject to this reexamination proceeding, U.S. Patent No. 9,975,750, is involved in the following litigation proceeding between the Patent Owner and Toro, the Requestor of this Ex Parte Reexamination:

- *Vermeer Corporation v. The Toro Company*, Case No. 4:17-cv-00076-CRW-HCA (S.D. IA. filed February 28, 2017).

U.S. Patent No. 10,202,266, which is a continuation of U.S. Patent Nos. 9,975,750, is involved in the following proceeding:

- *Vermeer Manufacturing Company v. The Toro Company*, Case No. 4:19-cv-00050-CRW-HCA (S.D. IA. filed February 12, 2019)

During the course of discovery in the above-referenced litigation proceedings, Patent Owner obtained materials from Toro that **fundamentally contradict the obviousness positions** that Toro's attorneys manufactured for this proceeding. Moreover, the materials obtained from Toro during the related litigation support the patentability of the claims at issue in these *ex parte* reexamination proceedings. The obtained materials were originally designated as confidential material subject to the Court's Protective Order in the co-pending litigation. These materials, however, were de-designated on July 26, 2019 so that Patent Owner may submit this information to the Office.

The due date for Patent Owner's period for reply to the December 6, 2018 Office action was February 6, 2019. Because Patent Owner was **not authorized to provide these materials to the Office until July 26, 2019**, Patent Owner could not provide these materials in its Reply to the Office Action. Because these materials which contradict Toro's obviousness positons set forth in their Request for Reexamination were recently uncovered as part of the litigation and could not be shared with the Office until after the period for reply to the Office action expired, in the interest of justice, Patent Owner requests that the Office grant this Petition and enter the Supplemental Reply submitted herewith to allow these materials to be considered by the Office.

The Patent Owner authorizes the Commissioner to charge any fees which may be due in connection with this Petition to Deposit Account No. 012384 in the name of Armstrong Teasdale LLP.

Respectfully submitted,

/Michael J. Vander Molen/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
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Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

October 25, 2019

SUPPLEMENTAL RESPONSE TO OFFICE ACTION

TO THE COMMISSIONER FOR PATENTS,

SIR:

Please consider the following remarks in the above-identified *ex parte* reexamination of U.S. Patent No. 9,975,750.

I. REMARKS **3**

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I. REMARKS

As noted in the accompanying Petition to Suspend Rule 37 C.F.R. §1.111 Pursuant to 37 C.F.R. §1.183, the materials discussed herein and the accompanying exhibits were obtained in discovery as part of litigation with Toro, the Requestor of this Ex Parte Reexamination. Because a Protective Order prevented Patent Owner from sharing these materials with the Patent Office until July 26, 2019 these materials could not have been submitted in Patent Owner's Amendment and Response to Office Action dated February 6, 2019 and are now be presented in this Supplemental Response to Office Action. Accordingly, the Office should enter and consider this Supplemental Response.

Materials that Patent Owner obtained in discovery regarding Toro's history of compact tool carrier development fundamentally contradict the obviousness positions that Toro's attorneys manufactured for this proceeding. For over a decade, Toro recognized that it desperately needed to improve the lift capacity of its products. Yet, Toro's engineers never pursued vertical lift as a solution, despite the existence of references like Komatsu. Toro would not have struggled with the lift capacity of its own machines—including the continued release of machines with anemic performance and resultant loss of market share—if vertical lift was an "immediately obvious" solution to the problem of lift capacity as Toro now contends. And, if Toro's litigation position that combining a skid-steer vertical lift mechanism with an existing compact utility loader chassis was truly a "natural fit," Toro would have developed that machine instead of investing years of engineering effort and millions of dollars into the risky development of an entirely new vertical lift mechanism and chassis design. When viewed through the lens of Toro's actual development history, the arguments Toro's attorneys advance in their series of reexamination filings defy credulity and should be rejected.

These revelations regarding Toro's actual design history directly corroborate Toro's admission that combining the vertical lift mechanism from a skid steer machine with a compact utility loader chassis was "difficult" or "impossible" to achieve. *See* U.S. Patent No. 9,970,176 at col. 2, lines 21-26. Toro made this explicit admission in its own

patent application before the need to downplay vertical lift as an invention became necessary due to Patent Owner's lawsuit.

A. THE OBVIOUSNESS POSITION PRESENTED BY REQUESTER TORO AND ADOPTED BY THE OFFICE CONTRADICTS THE ACTUAL EXPERIENCES OF THOSE WORKING IN THE FIELD TO DEVELOP COMPACT UTILITY LOADERS—INCLUDING BOTH PATENT OWNER AND TORO.

1. Background

Competitors in the market for compact utility loaders are under constant pressure to maximize the amount of weight that their machines can lift without adversely affecting the stability of the machine. The industry commonly refers to this lifting capability as "operating capacity" or "lift capacity."

Since their first introduction to the United States in 1998, equipment manufacturers have devoted significant resources to maximizing the lift capacity of their compact utility loader machines ("CULs"). Tackling these challenges is necessary to meaningfully compete because customers are motivated to buy machines that deliver the highest lift capacity for their size, weight, and footprint. These improvements were difficult to achieve because customers also place significant emphasis on competing machine characteristics including small size, light weight, and high maneuverability. Traditionally, increasing lift capacity required compromising one or more of these other qualities of the machine.

For years, companies relied on traditional methods for improving the lift capacity of their machines. These methods involved increasing the overall weight of the machine, increasing its length, decreasing the reach of the machine's arms, or moving the center of mass as far back as possible by shifting heavier elements to the rear of the machine. Manufacturers also resorted to selling "weight packages" consisting of chunks of metal that could be hung or welded to the back or underside of a machine to change its balance characteristics. These efforts yielded only incremental improvements in lift capacity and came at the significant expense of undesirable added machine weight

and/or loss of ground clearance and maneuverability. Owing to the significant engineering challenges presented by improving lift capacity without compromising these other important machine characteristics, lift capacity for machines of a given weight and size changed very little prior to the invention disclosed in the patent now at issue.

The obviousness arguments that Requester Toro has presented in its numerous requests for reexamination[1] disregard all this history. Instead, Toro crafts a fictional narrative in which the problem of lift capacity only recently surfaced and could be immediately addressed by browsing a menu of existing full-size skid steer machines, plucking the vertical lift mechanism from that machine, scaling it down, and bolting it to an existing compact utility loader chassis. Patent Owner has already presented evidence that undermines these litigation-motivated arguments. The history of the industry's evolution and the timeline and manner of Patent Owner's development efforts demonstrate that Toro's obviousness story is fictional. For these reasons alone, Toro's invalidity arguments should be rejected.

Recently, however, Patent Owner acquired additional documents and deposition testimony from Toro that further demonstrate the fallacy of Toro's obviousness position. This new evidence sheds light on Toro's own decade-long pursuit of a solution to the problem of lift capacity—a history that directly contradicts the story Toro presented to the Patent Office. Based on this additional evidence, Patent Owner respectfully requests that the Examiner reject Toro's arguments and reaffirm the patentability of Patent Owner's claims.

2. Documents Obtained by Patent Owner in the Co-Pending Litigation Directly Contradict Toro's Obviousness Arguments.

In its reexamination papers, Toro asserts that developing a compact utility loader with a vertical lift armature would have been the "immediately obvious" solution to the problem of lift capacity. *See* Request for Ex Parte Reexamination of U.S. Patent No. 9,975,750 (Control No. 90/014,148) at 14. Toro's most recent iteration of this argument

[1] *See* 90/013,915; 90/014,109; 90/014,124 and 90/014,269.

posits that a skilled artisan knew a vertical lift mechanism like that taught in 1999 by Komatsu would be a "natural fit" for a compact utility loader chassis—thereby motivating a skilled artisan to immediately combine those two structures to enjoy the benefit of increased lift capacity.

Through discovery in its co-pending litigation against Toro, Patent Owner recently obtained a wealth of evidence that paints a vastly different picture than the one Toro's attorneys present in their requests for reexamination. Contrary to Toro's position that solving the problem of lift capacity was "immediately obvious," Toro's internal documents and witness testimony show that Toro's engineers tried for years—and repeatedly failed—to address that very problem. During this period, Toro only thought to increase lift capacity by developing new radial-arm prototypes, but it found those designs lacking and abandoned them. As a result, Toro was forced to rely on traditional methods of increasing lift capacity for years. By its own admission, this caused Toro to release products with inferior performance, to fall behind the competition, and to suffer significant lost market share.

New evidence also shows that once Toro finally conceived of a vertical lift machine that offered increased lift capacity, Toro's engineers followed a completely different design path than the one Toro's attorneys now propose as the "immediately obvious" solution. Instead of following the allegedly "natural" path of repurposing prior art components, Toro's engineers explicitly rejected that path and instead pursued a course that culminated in *the design of an entirely new mainframe and vertical lift loader mechanism* (see U.S. Patent No. 9,970,176). In recent depositions, Toro's witnesses admitted that—despite Toro's lengthy development history—they are unaware of a single document supporting Toro's argument in reexamination that skilled artisans would be motivated to combine the prior art in the manner it suggests. *See, e.g.*, Kuemper Dep. Tr. (Ex. 1) at 305:23-307:3 ("Q: So you've not heard of anyone basing the TX 1000 on any full-size skid-steer machines? A: No, I have not.").[2]

[2] The exhibits being submitted herewith include information that was originally designated as confidential material subject to the Court's Protective Order in the co-

These revelations regarding Toro's actual design history also directly corroborate Toro's admission that combining the vertical lift mechanism from a skid steer machine with a compact utility loader chassis was "difficult" or "impossible" to achieve. *See* U.S. Patent No. 9,970,176 at col. 2, lines 21-26. Toro made this explicit admission in its own patent application before the need to downplay vertical lift as an invention became necessary due to Vermeer's lawsuit. Toro's internal documents show that Toro's engineers appreciated the truth of that sentiment, which is why they never turned to the teachings of vertical lift skid steer machines to address their own struggles with lift capacity in compact utility loaders.

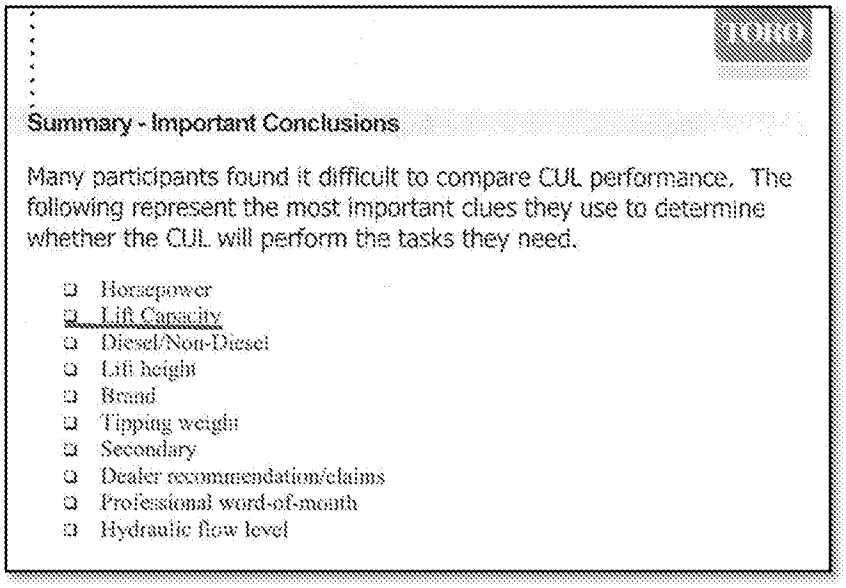
In summary, the materials that Vermeer obtained in discovery regarding Toro's history of compact tool carrier development fundamentally contradict the obviousness positions that Toro's attorneys manufactured for this reexamination. For over a decade, Toro recognized that it desperately needed to improve the lift capacity of its products. Yet, Toro's engineers never pursued vertical lift as a solution, despite the existence of references like Komatsu. Toro would not have struggled with the lift capacity of its own machines—including the continued release of machines with anemic performance and resultant loss of market share—if vertical lift was an "immediately obvious" solution to the problem of lift capacity as Toro now contends. And, if Toro's litigation position that combining a skid-steer vertical lift mechanism with an existing compact utility loader chassis was truly a "natural fit," Toro would have developed that machine instead of investing years of engineering effort and millions of dollars into the risky development of an entirely new vertical lift mechanism and chassis design. When viewed through the lens of Toro's actual development history, the arguments Toro's attorneys advance in their series of reexamination filings defy credulity and should be rejected.

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pending litigation. The material addressed herein has been de-designated so that Patent Owner may submit this information to the Office. But because some of the material remains protected by the Protective Order, some of the exhibits have been redacted to obscure the protected information. A more extensive submission of litigation materials that have been de-designated is being submitted in an Information Disclosure Statement.

a. Toro's Engineers Grappled with the Problem of Lift Capacity for Over a Decade Without Pursuing Vertical Lift.

Every company that designs and manufactures compact utility loaders knows that lift capacity drives sales. Neil Borenstein, Director of Marketing for Toro's Siteworks division[3], admitted in deposition that he has been aware of the importance of lift capacity throughout his fifteen-year tenure with the company. Borenstein Dep. Tr. (Ex. 2) at 32:23-33:13 (recognizing that "consumers always demand more capacity"). Toro's internal documents also reflect this fact. For example, Toro periodically conducted consumer surveys that routinely identified lift capacity as a key driver of demand:


Summary - Important Conclusions

Many participants found it difficult to compare CUL performance. The following represent the most important clues they use to determine whether the CUL will perform the tasks they need.

- Horsepower
- Lift Capacity
- Diesel/Non-Diesel
- Lift height
- Brand
- Tipping weight
- Secondary
- Dealer recommendation/claims
- Professional word-of-mouth
- Hydraulic flow level

TORO-0000196 (Ex. 3) (emphasis added). These same surveys also routinely identified lift capacity as a compact utility loader feature most in need of improvement. *See, e.g. id. at* TORO-0000190 (identifying "Lift Capacity" as the characteristic most recently "pushed" on a compact utility loader).

For as long as customers have sought increased lift capacity, Toro has worked to satisfy that demand. *See* Borenstein Dep. Tr. (Ex. 2) at 39:20-42:25 ("Q: …all else

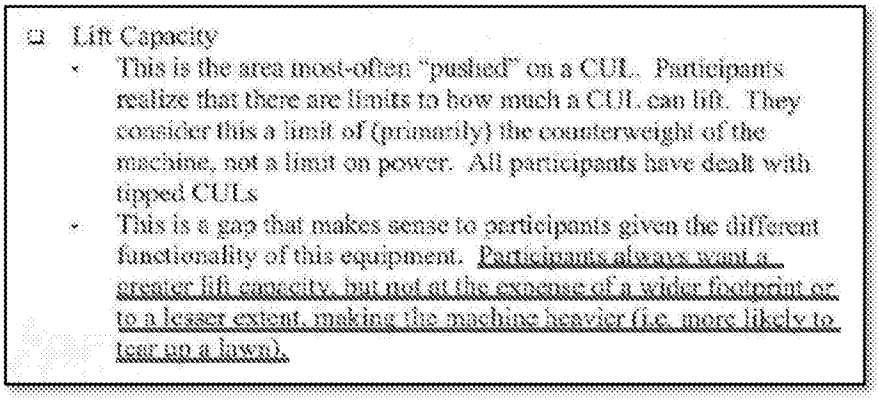
[3] Toro's Siteworks division is responsible for the design, manufacture and sale of Toro's compact utility loader machines. *See* Borenstein Dep. Tr. (Ex. 2) at 29:17-30:6.

equal, you want lift capacity to be as high as possible, right? A: If everything else is equal, you would – you would want any specification to exceed – to be as high as possible.”). Toro’s marketing materials tout the efforts Toro undertakes to improve its designs based on customer feedback. Those materials show that Toro’s engineers have been focused on the specific problem of lift capacity for years:

> *The rest of the history of the Toro Dingo focuses on continuous improvement by listening to the wants and needs of the end user. In 2000, Toro introduced the TX 420, the first tracked, walk-behind Dingo machine. Two years later in 2002, the Dingo TX 425 was introduced to the marketplace, and proved to be an incredibly popular machine. In 2006, Toro provided yet another tracked Dingo model, the Dingo TX 525, which featured a higher rated operating capacity and a number of operator-centric upgrades. Since 2006, many other upgrades have been incorporated into the entire Dingo product line, effectively demonstrating Toro’s commitment to innovation and continuous improvement.*

See Toro Press Release (Ex. 4) (emphasis added).

Increasing lift capacity posed a difficult problem because customers also wanted a machine that was small, lightweight, and maneuverable. Toro’s marketing surveys reflected this:



- Lift Capacity
  - This is the area most-often “pushed” on a CUL. Participants realize that there are limits to how much a CUL can lift. They consider this a limit of (primarily) the counterweight of the machine, not a limit on power. All participants have dealt with tipped CULs
  - This is a gap that makes sense to participants given the different functionality of this equipment. Participants always want a greater lift capacity, but not at the expense of a wider footprint or, to a lesser extent, making the machine heavier (i.e. more likely to tear up a lawn).

TORO-0000190 (Ex. 3) (emphasis added).

Machine characteristics such as size, weight, and maneuverability were in direct conflict with lift capacity because the traditional ways of enhancing lift capacity required compromising those other features of the machine. Toro's Marketing Director admitted that throughout its development history, Toro achieved increased lift capacity by making its machines bigger, making them heavier, and by decreasing "reach" through the use of shorter radial lift arms—things that the customer did not want:

> *Q: Other than simply adding weights to the back of the machine, are you aware of other designs proposed by Toro engineers specifically motivated by the interest of increasing lift capacity?*
>
> *A: Oh, yeah. We – we've increased lift capacity in different ways over the years.*
>
> *Q: What are those ways?*
>
> *A: We've made a bigger machine, We've made a heavier machine. Vertical lift is one of the ways.[4] Uh, we changed – you can change where – how far a reach it has.*

Borenstein Dep. Tr. (Ex. 2) at 233:23-234:15.

The engineering challenges presented by this lift capacity problem were so daunting that Toro's engineers worked for years without making any significant progress. For almost two decades, Toro's engineers repeatedly returned to traditional methods of enhancing lift capacity, including increasing the size and weight of their radial-armed machines.

Toro's development efforts in the early and mid-2000s typify its efforts to address the lift capacity problem. In 2000, Toro's most capable compact tool carrier was the TX-425. This machine incorporated a radial-lift arm, weighed 1,880 pounds, and advertised

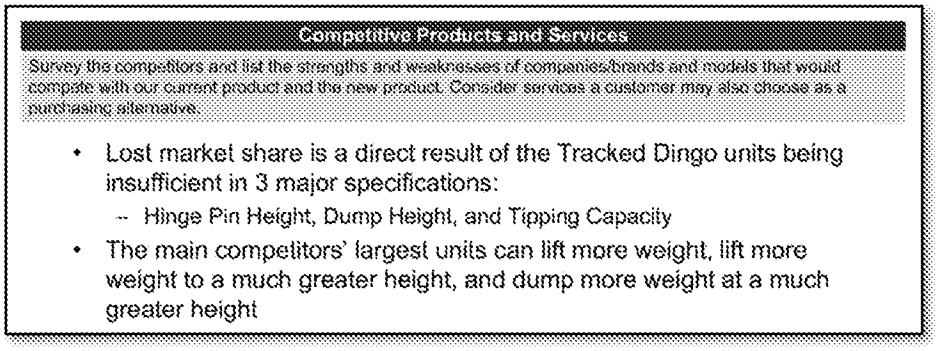
[4] Vertical lift was not pursued by Toro until 2013. *See, e.g.,* Kuemper Dep. Tr. (Ex. 1) at 29:25-30:6 ("Q: Okay. When was the first time you recall learning that there was an effort within Toro to develop a new compact utility loader that ultimately became the TX 1000? A: I believe that was in 2013.").

a lift capacity of 500 pounds. *See* TX-425 Operator's Manual at 15 (Ex. 5). Aware of its need to deliver a machine with improved lift capacity, Toro worked for the next *six years* to develop a new machine that could satisfy customer demand. *See* Borenstein Dep. Tr. (Ex. 2) at 58:5-59:11. The result of that effort was the TX-525 machine, which Toro released in 2006. This new machine still relied on a radial-lift armature, but now provided a lift capacity of 553 pounds at a total weight of 2,013 pounds. During the six year period between the release of these two machines, Toro had only been able to increase the lift capacity of its design by 53 pounds, and that improvement came at the cost of an additional 133 pounds in machine weight.[5]

Publicly, Toro presented the new TX-525 as a successful example of its ability to deliver increased lift capacity to its customers. *See, e.g.,* Ex. 4 ("*In 2006, Toro provided yet another tracked Dingo model, the Dingo TX 525, which featured a higher rated operating capacity and a number of operator-centric upgrades.*"). But internally, Toro recognized that its products were inadequate and failed to meet customer expectations. In fact, internal documents generated shortly after the release of the TX-525 reflect Toro's acknowledgement that its persistent difficulties in solving the lift capacity problem were directly responsible for Toro's significant decline in market share[6]:

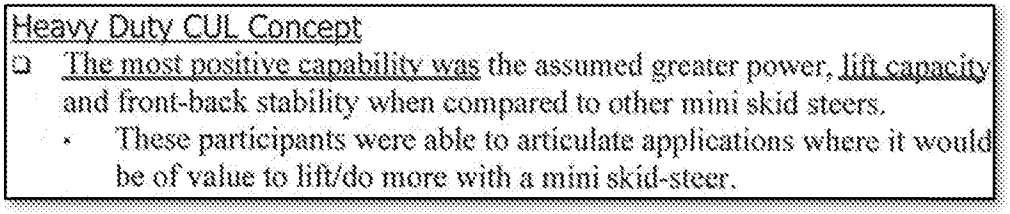
[5] Toro's TX-425 offered a lift capacity to weight ratio of 0.266. *See* Ex. 5. After six years of development work, Toro was only capable of increasing this ratio for the TX-525 to 0.275. *See* TX-525 Specifications (Ex. 6). This minimal improvement of 3.4%, despite six years of development work, pales in comparison to the 36.7% improvement offered by the later invention of a vertical lift compact utility loader. For example, Toro's TX-1000 boasts a lift capacity to weight ratio above 0.376. *See* TX-1000 Specifications (Ex. 7).

[6] The innovation of vertical lift on a compact utility loader, which is at issue in this reexamination, addresses all three of the features identified in Toro's design document: "Hinge Pin Height, Dump Height, and Tipping Capacity." *See, e.g.*, TORO-0000958 (Ex. 3).



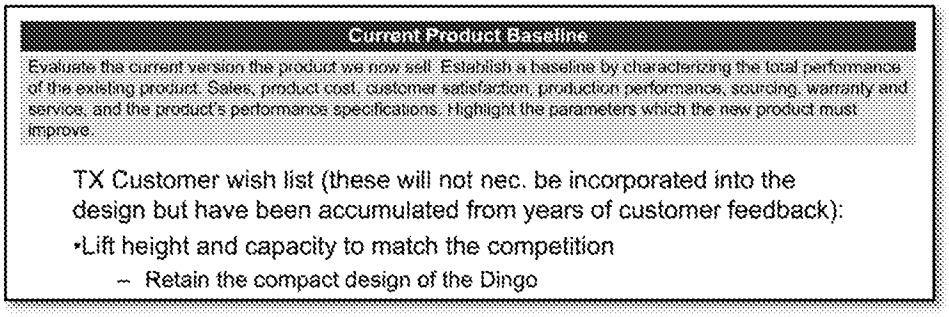
TORO-0000772 (Ex. 3).

In 2007, shortly after the release of its TX-525, Toro began work on its next generation compact tool carrier machine. During this process, Toro commissioned a round of customer marketing surveys aimed at identifying the features most in need of improvement on its machines. Unsurprisingly, customers again identified lift capacity as an important feature that required addressing:



TORO-0000175 (Ex. 3) (emphasis added).

With the results of these surveys in hand, Toro began generating design documents that would guide the development of its next generation machine. These documents reflected the difficulties Toro had experienced in meaningfully increasing lift capacity. For example, in a document Toro's engineers generated in April of 2013—five years after starting the next generation project and presumably thirteen years after beginning work on the earlier TX 525 machine—Toro's engineers ***still*** identified increased lift capacity as a top "wish list" item *and one they were not confident they could deliver in their next compact utility loader machine*:



TORO-0000781 (Ex. 3).

After Toro created this document in 2013, it went on to devote an additional two years of focused engineering work to this design project before finally developing the viable vertical lift compact utility loader it released as the TX-1000. *See* TX-1000 video, https://www.youtube.com/watch?v=7EV8_Gfs4Jw ("the all-new Dingo® TX 1000").

Considering Toro's history of trying and failing to deliver machines with enhanced lift capacity, Toro's hindsight-based assertion that vertical lift was the obvious solution to the lift capacity problem is simply not credible. Toro's development history directly contradicts its attorneys' assertion that "it would have been *a natural fit* and *immediately obvious* to one of ordinary skill in the art to simply adapt Komatsu's style of vertical lift linkage to Dingo..." *See* Request for Ex Parte Reexamination of U.S. Patent No. 9,975,750 (Control No. 90/014,148) at 14 (emphasis added). If this were true, Toro would have released a vertical lift compact utility loader years ago—certainly well before it suffered multiple years of lost market share as a direct result of its inability to deliver a machine with adequate lift capacity.

Notwithstanding the foregoing, in his deposition, Toro's Director of Marketing dutifully parroted the obviousness argument that Toro's attorneys developed for this reexamination. But he ultimately admitted that he could not corroborate Toro's manufactured obviousness story with a *single document* generated during Toro's decades of design work:

> *A: I think because vertical lift concept is known on skid-steer loaders and compact track loaders and numerous models are marketed in both designs,*

we were all aware of that, and we all had thought that wouldn't it be – you know, we'd like to – someday that concept may be appropriate for a CUL.

Q: *Is there a single document you can point to that corroborates what you just said?*

A: *I don't believe there is.*

Borenstein Dep. Tr. (Ex. 2) at 147:6-148:6 (emphasis added).

Mr. James Kuemper, the Principal Designer tasked with developing the vertical lift armature for Toro's TX-1000 machine, also tried to advance Toro's obviousness argument by suggesting that "anyone can put vertical lift on a compact utility loader." Kuemper Dep. Tr. (Ex. 1) at 178:18-179:1. He ultimately admitted that Toro's counsel fed him that argument:

Q: *The opinion you expressed that anyone can put vertical lift on a compact utility loader, is that an opinion that you had prior to meeting with attorneys to prepare for depositions in this case?*

A: *It's a thing that I never even thought about before. I usually don't worry about what the competition is doing. I wasn't getting paid to worry about that.*

Id. at 183:8-16.

Mr. Kuemper also later conceded that—despite years of trying to improve lift capacity—he was unaware of any Toro engineer ever proposing the use of vertical lift to solve that problem:

Q: *Are you aware of instances in the past where engineers were aware that vertical lift could be put on a compact utility loader, and they opted not to?*

A: *None that I know of.*

Q: *So you're not aware of instances, for example, with the – what was the other earlier TX, TX 525?*

A: 525…427

Q: So the 427 and 525, you're not aware of instances in which someone said: Maybe we should go vertical lift, or maybe we should go radial; no, let's go radial? That decision was never made, right?

A: Never even heard of it - - until the TX 1000.

* * *

Q: Going back to the conversation we were having a moment ago about the vertical lift systems, um, did you ever raise your hand in one of the engineering meetings and say: Hey, why aren't we putting vertical lift on our compact utility loaders?

A: No, I never did that.

Q: Why not?

A: Because you – normally, I was so busy with other projects, that why would I want any more work put on me than what I had already?

Q: Did – did anyone raise their hand and propose that solution that you're aware of?

A: Not that I'm aware of.

Id. at 88:7-25 and 89:20-90:9 (emphasis added).

In other words, for over a decade customers had been telling Toro that they wanted an improved compact tool carrier with greater lift capacity. Toro's marketing materials, internal engineering documents and witness testimony prove that Toro was acutely aware of this need and devoted significant resources to addressing that concern. Despite its express "*commitment to innovation and continuous improvement,*" Toro's engineers never pursued vertical lift as solution to that problem. As a result, Toro struggled for years to increase lift capacity without ever designing a single prototype or releasing a single machine that utilized vertical lift. Toro's sales faltered, its

market share fell, and it still failed for years to conceive of a way to *meaningfully* address the lift capacity problem.

During this entire period, a plethora of skid steer machines with vertical lift armatures were available on the market.[7] According to Toro's narrative, it would have been "a natural fit and immediately obvious" for one of its engineers to pluck the armature from one of those machines, scale it down, and bolt it to an existing compact utility loader chassis. *See* Request for Ex Parte Reexamination of U.S. Patent No. 9,975,750 (Control No. 90/014,148) at 14. And yet, Toro's engineers never did.

This stark contrast between Toro's obviousness argument and Toro's own development history is particularly incredible given Toro's recognition—once it began work on its vertical lift machine—that implementing vertical lift would also lower the overall cost of its machine. In its risk assessment plans, Toro's engineers specifically identified implementation of vertical lift as a *cost savings measure*:

Project Risks and Risk Management Plan

List the risks that may limit the project from achieving the goal. Consider all aspects including: marketing, competition, distribution, quality, performance, price, design, supply, etc. For each risk state the impact, the likelihood of occurring, the mitigation actions to prevent the occurrence and the contingency plan if it occurs.

Priority	Risk	Likely To Occur	Impact	Mitigation Actions	Contingency Actions
Rank	What is the issue that may impact the project?	High Medium Low	If it occurs how will it effect the project?	What are the actions being taken to prevent the occurrence or minimize the impact?	If the Risk does occur what actions will the team take?
1	Missing target costs due to expense of desired product features	High	Results in uncompetitive pricing or a product that does not meet customer requirements	Utilizing innovation like vertical lift to keep machine weight and corresponding costs down. Initiate DFMA activities as early in the design process as possible.	Compromise on product features to keep cost in balance

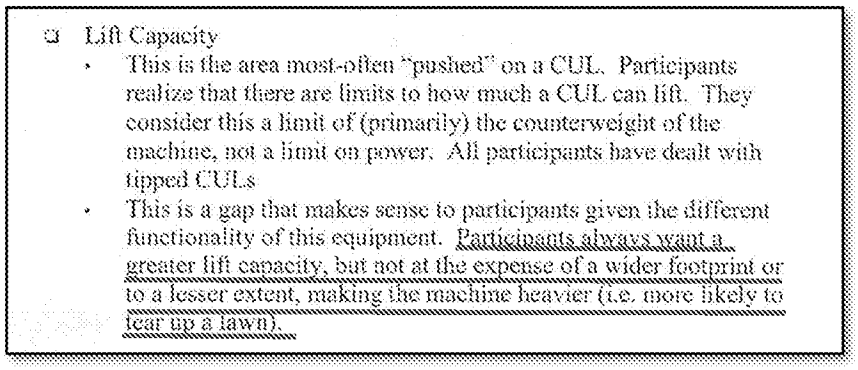
TORO-0000811 (Ex. 3) (emphasis added).

[7] *See, e.g.,* Komatsu, Mustang, Moffitt, Ulinski (Toro advances all of these references in its reexamination requests).

In other words, not only would adopting vertical lift have allowed Toro to offer machines with significantly greater lift capacity, better machine weight, size, reach, ground clearance and maneuverability, but it would also allow Toro to provide those advanced features *at a lower cost*. Considering all of this, the only explanation for Toro's failure to develop and release such a machine for well over a decade is simple—Toro's engineers had not yet conceived of a vertical lift compact tool carrier. That machine *required invention* and was not obvious.

b. Toro's Attempts to Solve the Problem of Lift Capacity Resulted in Failed Prototypes.

In 2008 and 2009, years before it would finally design and release its vertical lift TX-1000 machine, Toro conducted a round of marketing surveys that it hoped would help guide the development of its next generation machine. *See* TORO-0000170-210 (Ex. 3). These surveys reemphasized the need for enhanced lift capacity, but also made clear that customers did not want that capacity to come at the cost of machine size and weight:



- Lift Capacity
  - This is the area most-often "pushed" on a CUL. Participants realize that there are limits to how much a CUL can lift. They consider this a limit of (primarily) the counterweight of the machine, not a limit on power. All participants have dealt with tipped CULs
  - This is a gap that makes sense to participants given the different functionality of this equipment. Participants always want a greater lift capacity, but not at the expense of a wider footprint or to a lesser extent, making the machine heavier (i.e. more likely to tear up a lawn).

Id. at TORO-0000190 (emphasis added).

With the results of these surveys in hand, Toro began developing a new machine it code-named "Atlas." Despite having just received indications that customers did not want a larger or heavier machine, Atlas was conceived as a larger and heavier machine that incorporated a radial-lift armature. Toro had no choice but to follow this traditional

design path, because it had not yet conceived of enhancing lift capacity by developing a vertical lift machine.

As Toro's Director of Marketing admitted in deposition, "[w]hen we did this research, *the initial thought was to go for a bigger machine*...." Borenstein Dep. Tr. (Ex. 2) at 80:3-5 (emphasis added). Toro's Principle Designer corroborated this testimony:

> *Q: Was the Atlas program – if you know, was the Atlas program an effort to create a higher lift capacity compact utility loader?*
>
> *A: I would say, yes, because it was much larger.*

Kuemper Dep. Tr. (Ex. 1) at 138:24-139:4 (emphasis added).

For at least three years, from 2010 until 2013, Toro's engineers trudged down the well-worn path of developing a larger radial lift machine to address marketplace demand for a machine with increased lift capacity. This effort involved not just detailed design work, but also the expense associated with manufacturing a physical test machine:

> *Q: And your understanding is that there was an actual physical prototype of the Atlas machine made?*
>
> *A: I believe there was an Atlas built. I don't know how – exactly how far along they came with it.*

Id. at 139:11-18.

As soon as Toro's engineers conceived of addressing the problem of lift capacity through the development of a new vertical lift compact utility loader in 2013, Toro mothballed the Atlas project and diverted its resources to the design and development of what is now the TX-1000 machine. *See* TORO-0000803 (Ex. 3) ("refocuses spending from Atlas and the Trencher project into project W298[8]"). This shift in focus

[8] W298 was the internal Toro identifier for the TX-1000. *See* Kuemper Dep. Tr. (Ex. 1) at 28:25-29:4 ("Q: ... was there a project name or a program name that you're aware of that Toro used to refer to the TX 1000 project internally? A: I believe the project number on that we had was like a W298.").

would not have occurred if a vertical lift compact utility loader were truly obvious. If that were true, Toro would have simply focused on that design in the first place.

Patent Owner has also discovered that Toro investigated another compact utility loader design that it hoped would address the need for increased lift capacity. This other design relied on a unique weight shifting mechanism that would shift forward and backward to decrease the risk of tipping, thereby enhancing lift capacity. Although Toro has yet to produce any detailed information about this machine, Toro's marketing director confirmed that this other machine did not incorporate a vertical lift armature:

> *Q: Are you aware of Toro engineers proposing a mechanism other than a radial or vertical lift mechanism for a compact utility loader?*
>
> *A: I think at one time we had a design thought where we could move weight back and forth to increase or decrease the weight capacity.*
>
> *Q: So in other words, when the machine was lifting the load, some weight would come out the back of the machine?*
>
> *A: Yes.*

See Borenstein Dep. Tr. (Ex. 2) at 235:11-22 (emphasis added).

Toro's argument that "it would have been a natural fit and immediately obvious to one of ordinary skill in the art to simply adapt Komatsu's style of vertical lift linkage to Dingo" is in direct conflict with Toro's own prototyping work, which reflects the fact that Toro's engineers pursued other solutions—but not vertical lift—as a way to address lift capacity. Request for Ex Parte Reexamination of U.S. Patent No. 9,975,750 (Control No. 90/014,148) at 14 (emphasis added).

c. Toro's History of TX-1000 Development Contradicts its Obviousness Arguments.

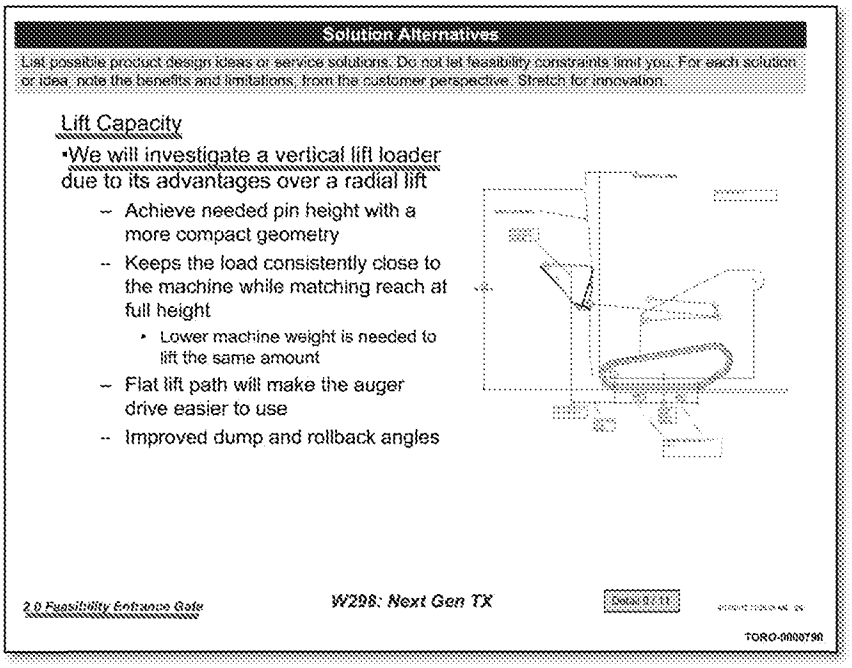
Toro's obviousness arguments should also be rejected because Toro's engineers specifically rejected—both during the development of their machine and recently in

deposition—the type of prior art combination that Toro now proposes in its reexamination papers. When developing the TX-1000, Toro's engineers did not follow the design path Toro now advances in its reexamination requests. Instead, they recognized the need to develop an entirely new vertical lift mechanism and chassis suited to the unique requirements of a vertical lift compact utility loader. Accomplishing that goal required years of engineering work and a large investment of financial resources.[9] Toro would have no reason to invest the significant resources required to design a machine from scratch if the "natural" and "immediately obvious" solution was to simply derive a machine from parts borrowed from known prior art machines.

Recently produced design documents relating to the TX-1000 reveal that as late as April 2013, Toro's engineers were just beginning to conduct feasibility studies[10] aimed at investigating the ***possibility*** of implementing vertical lift on its next generation compact utility loader:

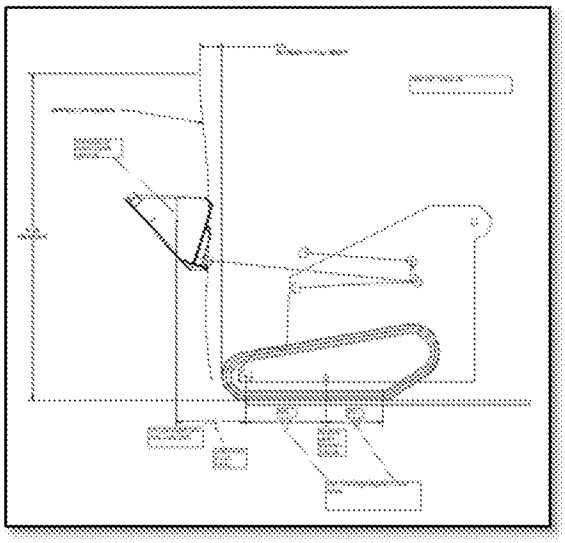
[9] Toro's design documents indicate and Toro representatives confirmed that Toro projected a total development cost of at least $2.3 million for the TX-1000. Kuemper Dep. Tr. (Ex. 1) at 189:20-190:9.

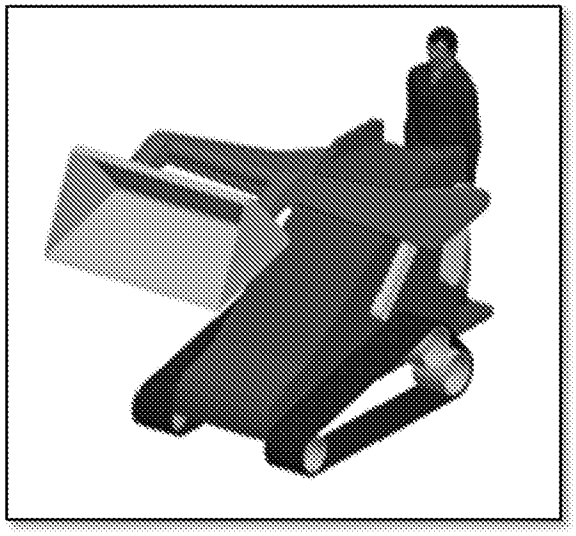
[10] As an initial matter, the need for this feasibility study makes no sense if the "natural" and "immediately obvious" avenue for increasing lift capacity was the combination of existing prior art components. The fact that Toro's engineers recognized the need to investigate this approach, treating it as a possibility rather than a foregone conclusion, undermines Toro's obviousness argument.



TORO-0000790 (Ex. 3) (emphasis added).

These feasibility studies included two-dimensional and three-dimensional depictions of a vertical lift system mated to a compact utility loader:





TORO-0000785-TORO-0000790 (Ex. 3).

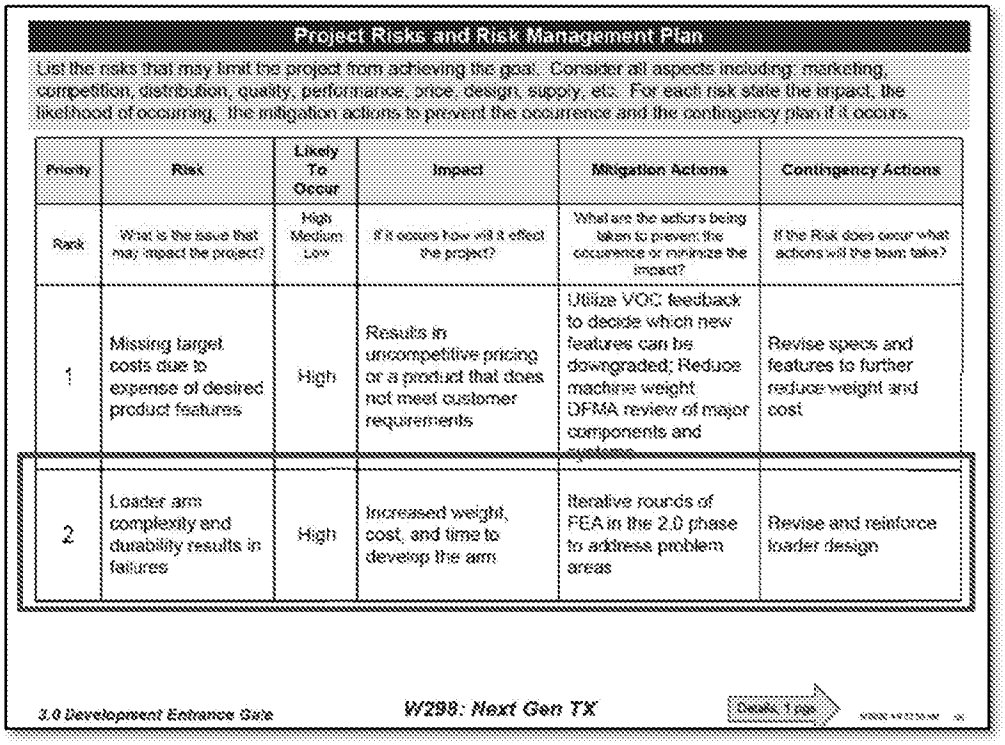
Toro's principal designer admitted in deposition that the machine depicted in this feasibility document was "pretty crude" and that the pin locations depicted in this study

were "not anywhere close to where the actual pins for the TX 1000 are…." Kuemper Dep. Tr. (Ex. 1) at 165:12-166:10. He went on to admit that it "doesn't look anything like the TX 1000" and "looks like someone just took a few blocks of this and that and threw it together to make it kind of look like a unit." *Id.* at 162:24-163:5.

These diagrams are significant because they approximate the "Frankenstein" machine that Toro's attorneys now argue a skilled artisan would produce as an obvious solution to the lift capacity problem. *See* Request for Ex Parte Reexamination of U.S. Patent No. 9,975,750 (Control No. 90/014,148) at 48-52. The fact that Toro's principal designer characterized this approach as "crude" and admitted that Toro's final machine reflects a vastly different design ethos demonstrates that Toro's litigation-motivated obviousness arguments are not realistic or consistent with the views of actual skilled artisans. As Toro's designer agreed during his deposition, "this is not an acceptable design." Kuemper Dep. Tr. (Ex. 1) at 181:7-9.

It would also make no sense for Toro to invest a significant amount of time and money into a completely new system, if the "natural fit" and "immediately obvious" solution were to deconstruct and recombine prior art components like LEGOs. Yet, Toro's internal documents show that the vertical lift mechanism of the TX-1000 was difficult to design, required serial redesign, and introduced significant risks to the project.[11] For example, the below excerpts from Toro's development documents in June of 2014, show that Toro considered development of a vertical lift mechanism to be a significant engineering challenge:

[11] Toro's Director of Marketing admitted in deposition that, to this day, its vertical lift TX-1000 machine suffers from so many quality issues that he considers the product to be a failure. *See, e.g.,* Borenstein Dep. Tr. (Ex. 2) at 141:23-143:17 (identifying the vertical lift system as one of the design elements responsible for the significant quality issues plaguing the TX-1000).



Project Risks and Risk Management Plan

List the risks that may limit the project from achieving the goal. Consider all aspects including: marketing, competition, distribution, quality, performance, price, design, supply, etc. For each risk state the impact, the likelihood of occurring, the mitigation actions to prevent the occurrence and the contingency plan if it occurs.

Priority	Risk	Likely To Occur	Impact	Mitigation Actions	Contingency Actions
Rank	What is the issue that may impact the project?	High Medium Low	If it occurs how will it effect the project?	What are the actions being taken to prevent the occurrence or minimize the impact?	If the Risk does occur what actions will the team take?
1	Missing target costs due to expense of desired product features	High	Results in uncompetitive pricing or a product that does not meet customer requirements	Utilize VOC feedback to decide which new features can be downgraded; Reduce machine weight DFMA review of major components and systems	Revise specs and features to further reduce weight and cost
2	Loader arm complexity and durability results in failures	High	Increased weight, cost, and time to develop the arm	Iterative rounds of FEA in the 2.0 phase to address problem areas	Revise and reinforce loader design

3.0 Development Entrance Gate — W298: Next Gen TX — Quick Time

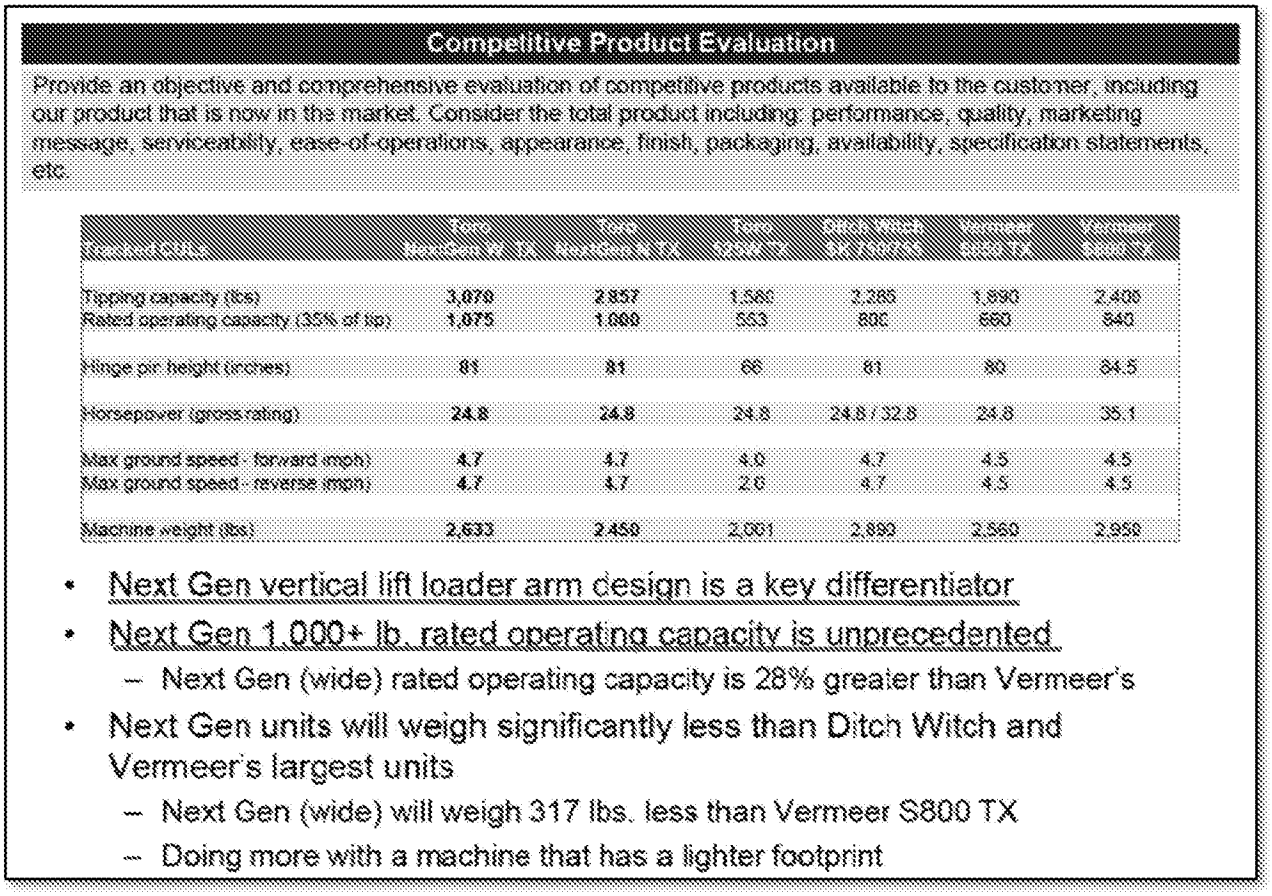
TORO-0000894 (Ex. 3) (emphasis added); *see also id.* at TORO-0000379, TORO-0000381-383, TORO-0000387, TORO-0000389, TORO-0000390, TORO-0000553-565, TORO-0000571, TORO-0001729, TORO-0001737, TORO-0001742-1743, TORO-0001748, TORO-0001750-1760, TORO-0001918, TORO-0003017, TORO-0003163-3175.

Toro's argument in reexamination that vertical lift would be an obvious solution, and simple to implement, flies directly in the face of its own decade-long search for a solution coupled with the struggles it endured when trying to develop a viable vertical lift machine.

d. Toro's Internal Documents Reflect Its Recognition that Developing a Compact Utility Loader with Vertical Lift was Innovative.

The documents Patent Owner recently obtained also shed light on Toro's internal recognition of the significance of implementing vertical lift on a compact utility loader. Although Toro's attorneys downplay this accomplishment in their reexamination filings, Toro's internal documents demonstrate that it considered the development of a vertical

lift compact utility loader a significant achievement. Toro's internal design documents recognize that offering vertical lift on a compact utility loader would be a "key differentiator" because it will offer an "unprecedented" lift capacity:



Competitive Product Evaluation

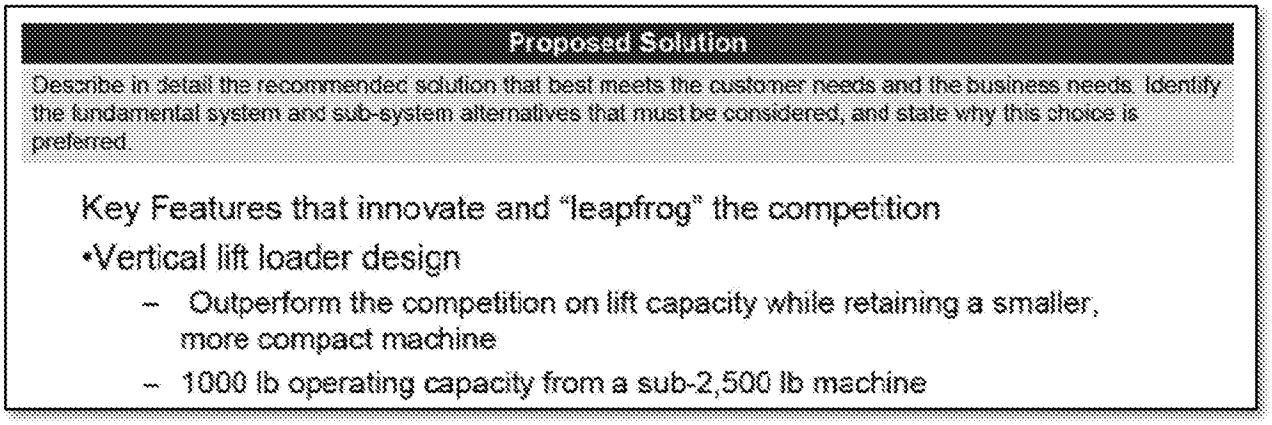
Provide an objective and comprehensive evaluation of competitive products available to the customer, including our product that is now in the market. Consider the total product including: performance, quality, marketing message, serviceability, ease-of-operations, appearance, finish, packaging, availability, specification statements, etc.

Vendor/Model	Toro Next Gen (wide)	Toro Next Gen (narrow)	Toro TX 427	Ditch Witch SK 675	Vermeer S740	Vermeer S800 TX
Tipping capacity (lbs)	3,078	2,857	1,586	2,385	1,890	2,408
Rated operating capacity (35% of tip)	1,075	1,000	553	800	660	840
Hinge pin height (inches)	81	81	66	81	80	84.5
Horsepower (gross rating)	24.8	24.8	24.8	24.8 / 32.8	24.8	35.1
Max ground speed - forward (mph)	4.7	4.7	4.0	4.7	4.5	4.5
Max ground speed - reverse (mph)	4.7	4.7	2.0	4.7	4.5	4.5
Machine weight (lbs)	2,633	2,459	2,001	2,899	2,560	2,950

- Next Gen vertical lift loader arm design is a key differentiator
- Next Gen 1,000+ lb. rated operating capacity is unprecedented
  - Next Gen (wide) rated operating capacity is 28% greater than Vermeer's
- Next Gen units will weigh significantly less than Ditch Witch and Vermeer's largest units
  - Next Gen (wide) will weigh 317 lbs. less than Vermeer S800 TX
  - Doing more with a machine that has a lighter footprint

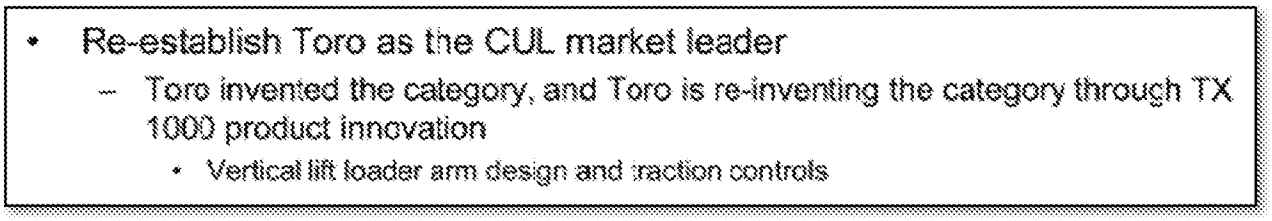
TORO-0000854 (Ex. 3) (emphasis added).

Toro's internal documents also show that Toro's engineers and marketing team considered vertical lift to be a key "innovative feature" that would allow Toro to "leapfrog the competition" by "outperforming the competition on lift capacity while retaining a smaller, more compact machine":



Id. at TORO-0000865.

Toro's documents also show that it considered itself to be "re-inventing the category" through its development of a vertical lift compact tool carrier, and that doing so would allow Toro to re-establish itself as a leader in the compact utility loader market:



TORO-0001170.4 (Ex. 3).

These sentiments are also consistent with Toro's early marketing materials, which touted vertical lift as a significant innovation:

> *"One of the greatest innovations on the all-new Dingo TX 1000 is its exclusive vertical lift loader arm design. This new design keeps loads closer to the machine, increasing the rated operating capacity to over 1,000 lbs. Unlike radial lift arms, a load on this Dingo follows a consistent vertical lift path up to full height. That makes gauging load tolerance safe and easy, so you can lift more - with more confidence. The 81" hinge pin height also delivers increased reach at full height. And this innovative*

> *design allows Toro to increase load capacity and reach without significantly increasing machine size or weight."*

See https://www.youtube.com/watch?v=-xiDQxdR4kU at Video Description (emphasis added).

These sentiments—expressed by Toro's engineers and marketing team *before Toro became aware of Vermeer's patent* and began downplaying the significance of the innovation—directly contradict the arguments Toro's attorneys now advance in reexamination. If solving the problem of lift capacity was "immediately obvious" and simple scaling and bolting parts from various prior art machines was a "natural fit", Toro should have implemented these changes in the routine course of its design work *years ago*. Instead, Toro tried and failed for years to solve the problem. Then, after conceiving of the idea and being forced to invest years of engineering work into a solution, Toro's engineers and business people hailed it as a game changing innovation that could "leap frog" the competition and re-establish Toro as the leader in the compact utility loader market. These are not the words of engineers and business people involved in mere routine and obvious development work, as Toro's attorneys would now have the Patent Office believe.

The entirety of Toro's development history plainly demonstrates the fallacy of its litigation obviousness arguments. For at least these reasons and the reasons set forth in Patent Owner's February 6, 2019 Amendment and Response, Toro's obviousness arguments should be rejected and the patentability of Patent Owner's invention should be confirmed.

II. CONCLUSION

The Patent Owner respectfully requests reconsideration and allowance of all pending claims. The undersigned request a telephone call from the Examiner if a call might expedite allowance.

The Patent Owner authorizes the Commissioner to charge any fees which may be due in connection with this Supplemental Reply to Deposit Account No. 012384 in the name of Armstrong Teasdale LLP.

Respectfully submitted,

/Michael J. Vander Molen/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

September 19, 2019

INTERVIEW SUMMARY

The August 21, 2019 interview was conducted for Reexamination Control No. 90/014,269. During the interview, Reexamination Control No. 90/014,148 was discussed to the extent described below. Patent Owner's Interview Summary for Reexamination Control No. 90/014,269 is copied below for submission in the Reexamination Control No. 90/014,148 in the interest of full disclosure.

* * * * *

The undersigned counsel for the Patent Owner thank the Examiner and Conferees for the telephone interview of August 21, 2019 in which this reexamination of U.S. Patent No. 10,202,266 ("the '266 Patent") was discussed. The rejection of claims 19-23, 25 and 27 under 35 U.S.C. §102 as anticipated by the Ramrod Brochure, which published after the earliest priority date of the '266 Patent, was discussed.

Counsel discussed support for claim 19 of the '266 Patent. In particular, Counsel discussed how the claim was supported in the Figures of the application. Counsel also discussed how material that was incorporated into the specification from SAE J2752 supported the claims. Counsel also discussed how SAE J2752 was properly incorporated by reference in the patent application that led to the '266 Patent and in the chain of patent applications that extend to the February 20, 2015 priority date.

The Examiner discussed his interpretation of the claimed subject matter and discussed support for the subject matter of claim 19. No agreement was reached and Patent Owner agreed to present further evidence and arguments in Patent Owner's response to the Office action.

Counsel also discussed objective evidence of non-obviousness received from the third-party Requestor of this reexamination proceeding, The Toro Company ("Toro"), and that such evidence had recently been cleared to be shared with the Patent Office. Counsel stated that such evidence relates to various material inconsistencies between the arguments Toro presents in its reexamination requests and Toro's actual history of attempting to solve the problem of increasing lift capacity in compact tool carriers. The Examiner noted that such evidence may be valuable in his patentability analysis. The Examiner and Conferees noted that the Patent Owner may consider filing a Request for Extension of Time for reply to the Office action if needed to review and consider such objective evidence received from Toro. The Examiner and Conferees stated that they would be open to a reasonable extension of time such as a one-month extension of time for the Patent Owner to review and consider such evidence.

Because Counsel stated that they may include such objective evidence on non-obviousness received from Toro in a Supplemental Reply in the merged Reexamination Proceeding Control Nos. 90/014,109 and 90/014,124 and in Reexamination Proceeding Control No. 90/014,148, Counsel agreed to enter this Interview Summary in these related proceedings.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that on September 19, 2019 the foregoing INTERVIEW SUMMARY was served on the third party requester's counsel via first class mail at:

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

March 26, 2019

SECOND NOTICE OF CONCURRENT PROCEEDINGS

Related U.S. Patent Application No. 15/704,685 issued as U.S. Patent No. 10,202,266 ("the '266 Patent") on February 12, 2019. The '266 Patent is involved in the following proceedings:

- *Vermeer Manufacturing Company v. The Toro Company*, Case No. 4:19-cv-00050-CRW-HCA (S.D. IA. filed February 12, 2019)

- A third party Request for *Ex Parte* Reexamination filed by The Toro Company on February 26, 2019 and assigned Control Number 90/014,269.

A continuation of U.S. Patent No. 9,975,750 was filed on February 7, 2019 and assigned Application No. 16/270,070.

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CERTIFICATE OF SERVICE

I certify that on March 26, 2019 the foregoing:

SECOND NOTICE OF CONCURRENT PROCEEDINGS; and

INFORMATION DISCLOSURE STATEMENT

were served on the third party requester's counsel via first class mail at:

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
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Confirmation No.: 1098
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Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

February 6, 2019

AMENDMENT AND RESPONSE TO OFFICE ACTION

TO THE COMMISSIONER FOR PATENTS,

SIR:

Please enter the following amendments and consider the following remarks in the above-identified *ex parte* reexamination of U.S. Patent No. 9,975,750.

I. AMENDMENTS TO THE CLAIMS 3

II. REMARKS 5

A. EXECUTIVE SUMMARY 5

B. AMENDMENT SUMMARY 6

C. REJECTIONS UNDER 35 U.S.C. §103 7

1. Claims 1-18 are Not Obvious 7

i. The Prior Art 10

ii. One of Ordinary Skill in the Art Would Not have Been Motivated to Modify the Dingo 322 Tool Carrier to Include the Vertical-Lift Loader Arm Configuration of Komatsu 13

a. The Office's proposed modification would have rendered the Dingo 322 unsatisfactory for its intended purpose. 13

b. One of ordinary skill in the art would not have had a reasonable expectation of success in making the modifications to the Dingo 322 proposed by the Office.24

iii. Objective Evidence of Non-Obviousness Indicate Patentability 34

a. Long Felt Need and Failures of Others 34

b. Customer and Industry Praise 38

c. Commercial Success 41

d. Skepticism of Experts and Unexpected Results 42

2. Claims 19-20 and 22-36 are Not Obvious 47

D. THE CITED REFERENCES DO NOT PRESENT A SUBSTANTIAL NEW QUESTION OF PATENTABILITY 59

III. CONCLUSION 70

I. AMENDMENTS TO THE CLAIMS

Please amend claim 7 as follows:

7. (Amended) The compact tool carrier as set forth in claim 1 wherein **each of** the first, second, third, fourth, fifth and sixth pivot points **[[are]] is, individually,** (1) disposed between the operator controls and a bottom of the mainframe or (2) disposed forward of the **operator controls [[control station]]** as the loader moves from a down position to a vertically raised position.

Please amend claim 18 as follows:

18. The compact tool carrier as set forth in claim 14 wherein each cross-member is disposed **fully** forward of the second pivot point, **[[and]]** the fourth pivot point**, and the sixth pivot point**.

Please amend claim 34 as follows:

34. The compact tool carrier as set forth in claim 30 wherein each cross-member is disposed **fully** forward of the second pivot point, **[[and]]** the fourth pivot point**, and the sixth pivot point**.

Please insert new claims 35-36:

35. The compact tool carrier as set forth in claim 19 wherein the first and fifth pivot points are above the rotational axis and the vertical distance between the rotational axis R and each of the first and fifth pivot points is less than twice D5.

36. The compact tool carrier as set forth in claim 19 wherein the drive mechanism comprises tracks or wheels and the first pivot point is above the tracks or

wheels and the vertical distance between the rotational axis R and the first pivot point is less than twice D5.

II. REMARKS

The Office action of December 6, 2018 has been carefully considered and the following remarks are made in response.

A. EXECUTIVE SUMMARY

Vermeer Manufacturing Company ("Vermeer") is the assignee of U.S. Patent No. 9,975,750 ("the '750 Patent") at issue in this reexamination. The '750 Patent describes and claims a compact tool carrier that has a vertical-lift loader arm configuration in which the loader is free of direct attachment to the mainframe of the machine. Achieving this vertical-lift configuration on the compact tool carrier frame had never before been achieved and was believed to be "difficult, if not impossible" in the industry—as stated by Requester Toro Corporation at the time of the invention.

Before Vermeer's invention, the industry had been chasing the goal of increasing lift capacity on compact tool carriers. The engineering solutions being pursued, however, yielded only minor, incremental gains in the lift capacity of these machines. By contrast, Vermeer's vertical-lift compact tool carrier, claimed in the '750 Patent, resulted in a substantial increase in the lift-capacity of these compact machines. Recognizing the significance of its inventors' discovery, Vermeer filed patent applications and has been granted two patents, U.S. Patent No. 9,321,386 and the '750 Patent.

The Office has rejected the claims of the '750 Patent as obvious over Dingo 322 Parts Catalog and Dingo 322 Operator's Manual in view of Komatsu (and, for some claims, further in view of the Vermeer Brochure). The Office's rejection should be withdrawn.

As shown by the factual record discussed below, one of ordinary skill in the art would not have been motivated to modify or replace the radial-lift loader arms of the Dingo 322 machine (described in the two Dingo references) with any of the vertical-lift loader arm configurations taught in Komatsu. And even if it had occurred to a person of ordinary skill in the art to do so, he or she would not have had a reasonable expectation of success. Indeed, the modifications proposed by the Office would have rendered the

Dingo 322 compact tool carrier unsatisfactory for its intended purpose. Secondary considerations of non-obviousness such as long felt need, failure of others, customer and industry praise, commercial success, skepticism of experts and unexpected results support the patentability of the claims. Finally, Toro's Request for *Ex Parte* Reexamination of the '750 Patent should not have been granted as the Request does not raise a substantial new question of patentability because the Dingo 322 Parts Catalog, the Dingo 322 Operator's Manual, and Komatsu were not considered for a "substantially different purpose" during examination of the '750 Patent application.

B. AMENDMENT SUMMARY

Claims 1-20 and 22-34 of the '750 Patent are subject to reexamination. The Patent Owner has amended claims 7, 18 and 34. Claims 35-36 have been added. Claims 1-36 are pending with claims 1-20 and 22-36 being subject to examination in this reexamination proceeding. Claim 21 is not subject to the reexamination proceeding.

No new matter has been added. In particular, none of the amendments or new claims broadens the claim scope beyond the claims of the original patent.

Support for the amendments and added claims can be found throughout the specification of the '750 Patent. In particular, support for the amendment to claim 7 may be found at column 4, lines 13-31 and Figures 1 and 3. Support for the amendment to claims 18 and 34 may be found at least at column 2, lines 54-55 and Figures 1-3 that show the location of the loader cross-member relative to the pivot points that are formed in the loader. Possession of an invention may be shown "by disclosure of drawings . . . that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole." MPEP §2163(II)(A)(3)(a). Further, the drawings alone may provide written description of the invention under 35 U.S.C. §112. See, e.g., MPEP §2163(II)(A)(3)(a) and *Vas-Cath, Inc. v. Mahurkar,* 935 F.2d 1555, 1560, 19 USPQ2d 1111, 1114 (Fed. Cir. 1991) ("drawings alone may provide a 'written description' of an invention as required by Sec. 112"); *In re Wolfensperger,* 302 F.2d 950, 133 USPQ 537 (CCPA 1962) (the drawings of applicant's specification provided sufficient written

descriptive support for the claim limitation at issue); *Autogiro Co. of Am. v. United States,* 384 F.2d 391, 398, 155 USPQ 697, 703 (Ct. Cl. 1967) ("In those instances where a visual representation can flesh out words, drawings may be used in the same manner and with the same limitations as the specification.").

Support for new claim 35 may be found at column 5, lines 20-23 and Figures 1-3 and 5 that show the pivot points being above the rotational axis. Support for new claim 36 is shown at least at Figures 1-3 and 5 that show the pivot point at which a linkage is attached to the first side of the mainframe being disposed above the drive mechanism.

C. REJECTIONS UNDER 35 U.S.C. §103

The Office has rejected claims 1-15 and 18 under 35 U.S.C. §103 as being obvious over the document entitled "Dingo 322, Dingo Compact Utility Loader, Operator's Manual" ("Dingo 322 Operator's Manual"), the document entitled "Dingo 322 Compact Utility Loader, Parts Catalog" ("Dingo 322 Parts Catalog" and collectively "Dingo 322") in view of JP 11-140900 to Komatsu ("Komatsu") (Ground 1). Claims 16 and 17 are rejected under 35 U.S.C. §103 as being obvious over the Dingo 322 Operator's Manual and Dingo 322 Parts Catalog in view of Komatsu and in further view of the brochure entitled "Vermeer S600/S600TX" ("the Vermeer Brochure") (Ground 2). Claims 19, 20 and 22-34 are rejected under 35 U.S.C. §103 as being obvious over the Dingo 322 Operator's Manual and Dingo 322 Parts Catalog in view of Komatsu and the Vermeer Brochure (Ground 3). The reexamined claims and new claims 35-36 are patentable over the cited references for the reasons set forth below.

1. Claims 1-18 are Not Obvious

Independent claim 1 is directed to a compact tool carrier for standing operator control. The compact tool carrier has a longitudinal axis and a mass of less than about 1500 kg and comprises:

> a loader having an arm, the loader being adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage 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;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point;

an actuator directly pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point, the fifth pivot point being distinct from the first pivot point and the third pivot point;

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;

an operator platform for standing operation of the operator controls of the control station; and

an engine disposed forward of the operator platform relative to the longitudinal axis.

The Office articulates its rationale for obviousness of claim 1 over Dingo Parts Manual and Dingo Operator's Manual in view of Komatsu as follows:

From the teachings of Komatsu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the tool carrier of Dingo/Dingo Parts Catalog such that the loader arm was not directly attached to the mainframe and instead included a first linkage 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, and further included a

> second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point in order to employ a vertical (sic) in the tool carrier. The fifth pivot point would be distinct from the first and third pivot points. This would yield the predictable result of increasing the stability of the tool carrier by reducing the front-to-back travel of the center of gravity of the tool or load as taught by Komatsu
>
> Page 5 of the Office action.

To reject a claim based on some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art references to arrive at the claimed invention, the Office must articulate the following:

> (1) a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
>
> (2) a finding that there was reasonable expectation of success; and
>
> (3) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

MPEP §2143(I)(G).

It would not have been obvious to one of ordinary skill in the art to make the modification proposed by the Office before the effective filing date of the claimed invention. The proposed modification of the Dingo 322 machine would have rendered it unsatisfactory for its intended purpose. Further, one of ordinary skill in the art would not have had a reasonable expectation of success in modifying Dingo 322 with the vertical-lift loader arm configuration of Komatsu.

The objective indicia of non-obviousness demonstrate that the claimed subject matter would not have been obvious. The evidence shows a long-felt need for

increased lift capacity. The industry failed to satisfy this long-felt need by developing a vertical-lift compact tool carrier (along with its substantial gains in lift capacity). Instead, the industry took incremental steps towards achieving minor improvements in lift-capacity. Further, the industry—including Toro and Vermeer—was skeptical as to whether a vertical-lift compact tool carrier could be successfully developed. The patented invention has also garnered industry praise and enjoyed significant commercial success. All of these facts further demonstrate that the claimed invention was not obvious to one of ordinary skill in the art as of the effective filing date of Vermeer's patent application.

i. The Prior Art

The Dingo Operator's Manual is a set of guidelines for operating a compact utility loader referred to as "Dingo 322". The compact utility loader shown in the Dingo 322 Operator's Manual includes a loader that is directly attached to the mainframe as shown in Figure 9 of the Dingo 322 Operator's Manual:

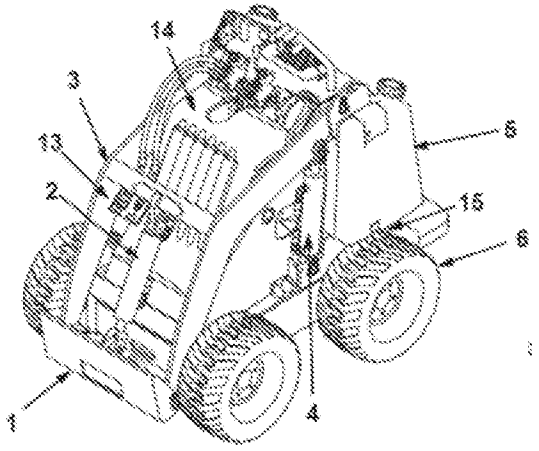
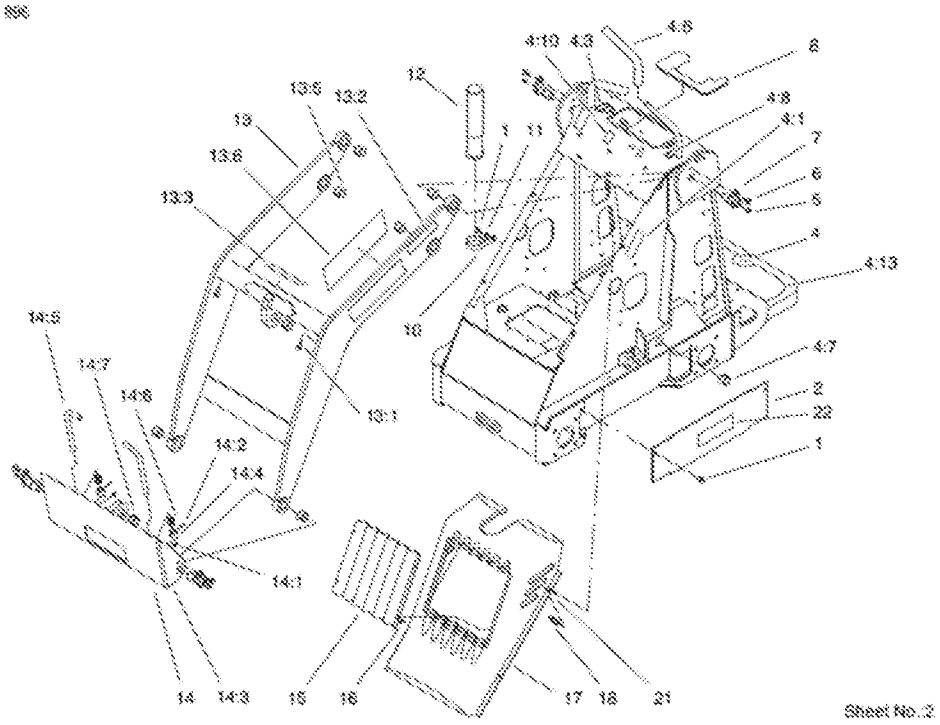


Fig. 9 of the Dingo Operator's Manual

The Dingo 322 Parts Catalog includes exploded part diagrams of various assemblies of a compact utility loader described as the "Dingo 322 Compact Utility Loader". The compact utility loader shown in the Dingo 322 Parts Catalog includes a

loader that is directly attached to the mainframe as shown on the "Frame and Loader Arm Assembly" set forth on page 1:



Page 1 of the Dingo Operator's Manual

Komatsu describes and schematically illustrates a full-sized skid steer loader (i.e., in which the operator is seated during operation). Komatsu discussed conventional skid steers having a vertical lift configuration (Figs. 11 and 12) and a radial-lift configuration (Fig. 13). The stated objective of Komatsu was to improve on these conventional designs (paras. [0006]-[0007]). The skid steer loader of Komatsu is configured such that "it is possible to get on and off when in a loaded state" (Abstract).

On page 5 of the Office action, the Office references the embodiments shown in Figures 1 and 7 of Komatsu. Figure 1 of Komatsu includes a loader that is free from direct attachment to the frame:

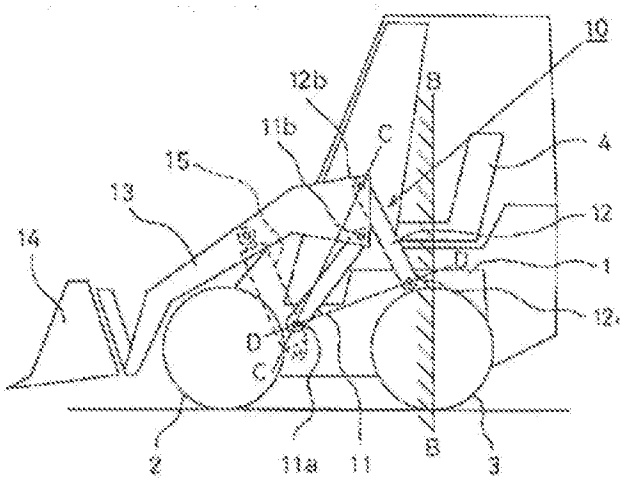


Figure 1 of Komatsu

First and second linkages are connected to the loader and the side of the frame and an actuator is connected to the loader and the front of the frame. Figure 7 of Komatsu includes a loader that is indirectly connected to the frame by first and second linkages connected to the side of the machine:

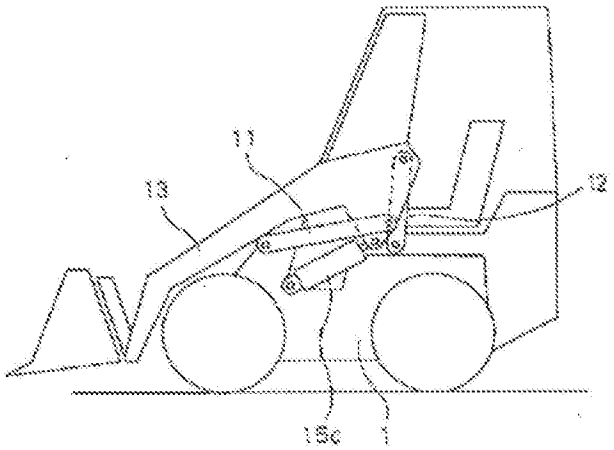


Figure 7 of Komatsu

ii. One of Ordinary Skill in the Art Would Not have Been Motivated to Modify the Dingo 322 Tool Carrier to Include the Vertical-Lift Loader Arm Configuration of Komatsu

a. The Office's proposed modification would have rendered the Dingo 322 unsatisfactory for its intended purpose.

"If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." MPEP 2143.01(V); *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Here the Office's proposed modification would render the Dingo 322 tool carrier unsatisfactory for its intended purpose because the resulting machine would not achieve the lift height and reach for which the Dingo 322 was designed to achieve.

The specifications of the Dingo 322 machine are set forth in the Dingo 322 Operator's Manual and in the Dingo 322 Service Manual[1]. As shown below, Dingo 322 was designed to achieve a lift height ("height to hinge pin") of 66.0 inches and a reach of 26.0 inches when fully raised.

Specifications

Overall width	40.5 in. (103 cm)
Overall length	60.0 in. (152 cm)
Overall height	49.0 in. (123 cm)
Weight	1567 lb. (711 kg)
Rated operating capacity (with 200 lb. operator and std. bucket)	515 lb. (234 kg)
Tipping capacity (with 200 lb. operator and st. bucket)	1030 lb. (467 kg)
Wheelbase	28 in. (71 cm)
Dump height (with std. bucket)	47 in. (120 cm)
Reach—fully raised (with std. bucket)	26.0 in. (66 cm)
Height to hinge pin (std bucket in highest position)	66.0 in. (168 cm)

Page 10 of the Dingo 322 Operator's Manual

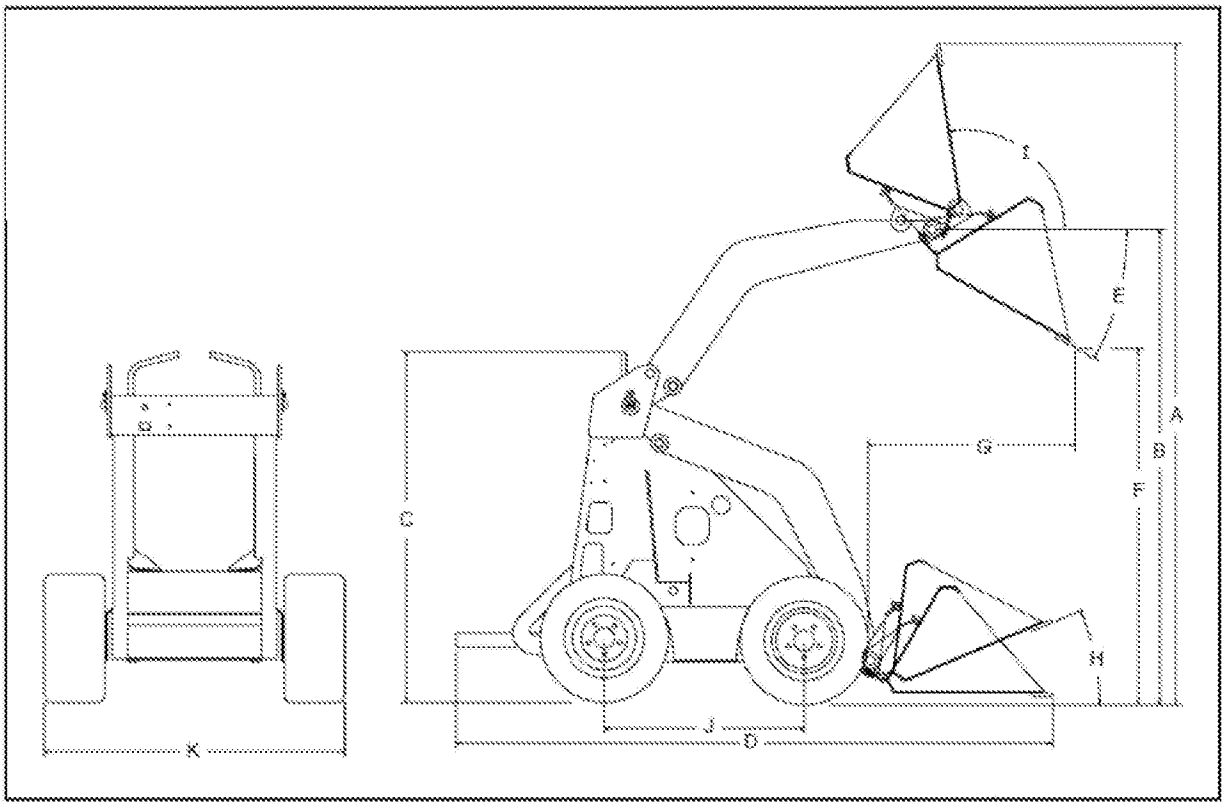
[1] The Dingo 322 Service Manual is being submitted herewith in an Information Disclosure Statement.

SPECIFICATIONS

Dimensions

A. Overall operating height, fully raised / 91.2" (2317mm)
B. Hinge pin height, fully raised / 66.0" (1676mm)
C. Overall height / 48.7" (1237mm)
D. Overall length / 82.2" (2088mm)
E. Dump angle / 34°
F. Dump height / 47.0" (1194mm)
G. Reach, fully raised / 28.0" (660mm)
H. Bucket rollback, ground position / 10°
I. Bucket rollback, fully raised / 97°
J. Wheelbase / 28.0" (711mm)
K. Overall width / 40.5" (1029mm)
X. Ground Clearance, front / 5.8" (147mm)
X. Ground Clearance, rear / 5.8" (147mm)
X. Reach, maximum / 28.0" (711mm)
X. Bucket rollback, carry position / 20°

X. = Dimension not shown



Page 2/1-2 of the Dingo 322 Service Manual

Komatsu discloses six embodiments of a vertical lift loader. In particular, Komatsu shows an embodiment of a vertical lift loader in a lowered and raised position in Figures 1 and 5 and shows additional embodiments in Figures 6-10. One of ordinary skill in the art would not have modified Dingo 322 by using any of the Komatsu vertical-

lift loader embodiments because the resulting machine would not achieve a lift height of 66.0 inches and a reach of 26.0 inches.

Figures A and B depict the Dingo 322 machine[2] as altered to include the loader of Figure 1 of Komatsu[3]. The depicted loader includes the bucket of Dingo 322[4].

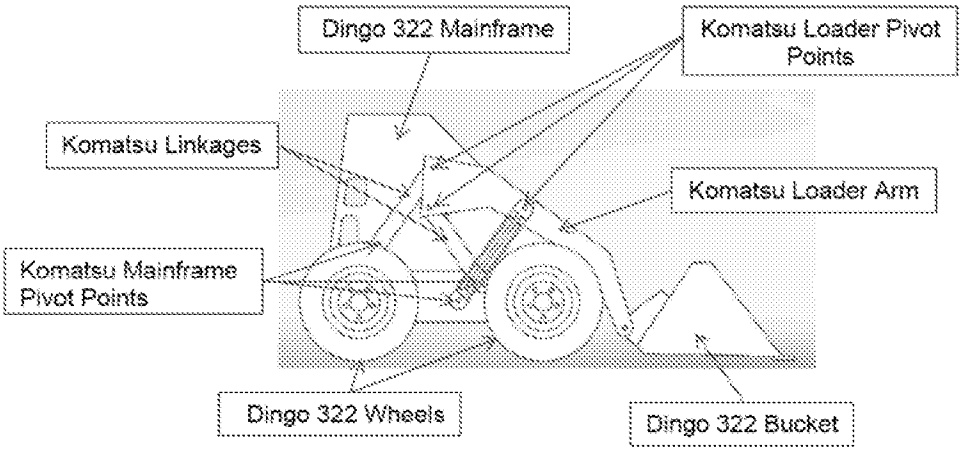


Figure A: Loader of Figure 1 of Komatsu on Dingo 322 in Lowered Position

[2] As explained in the Prost-Domasky Declaration, the Dingo 322 mainframe shape and size was disclosed in the Dingo 322 Service Manual.

[3] To simulate the loader of Figure 1 of Komatsu (and of the additional embodiments shown below), the loader was scaled to position the bucket flat on the ground ahead of the wheels with the pivot points being positioned within the mainframe of Dingo 322. The depicted loader includes the same loader arm as Komatsu and includes the same arrangement of the linkages and of the actuator including the respective pivot point locations in the mainframe and in the loader arm.

[4] Dingo 322 was modeled without the fuel tank limiting the available space for linkages and actuators. The Dingo 322 fuel tank would further constrain the location of the linkages and actuators.

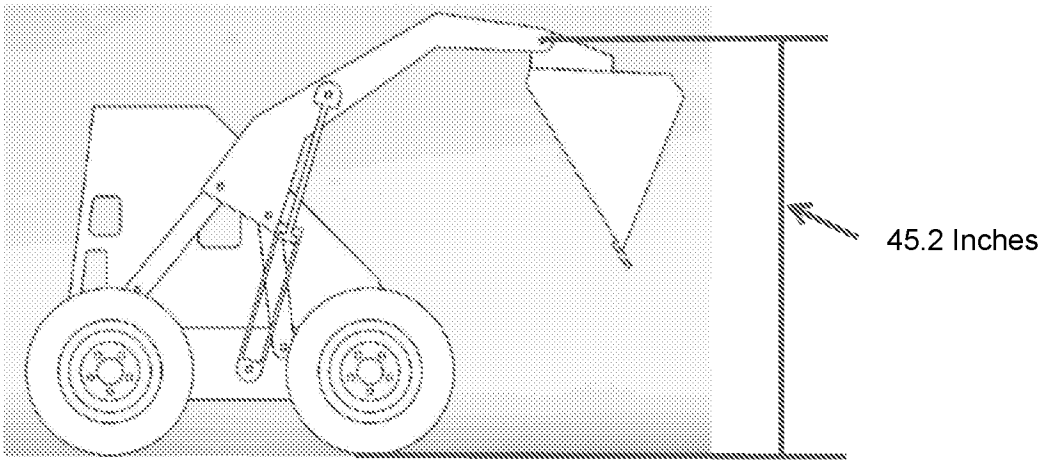


Figure B: Loader of Figure 1 of Komatsu on Dingo 322 in Raised Position

As explained in the Prost-Domasky Declaration, the height of loader in the raised position (i.e., the "hinge-pin" height, a common metric used in the industry) was measured using the known wheel-base measurement of Dingo 322 as a reference. When in the raised positon, the loader of Figure 1 of Komatsu would result in a hinge-pin height of 45.2 inches. This hinge pin height is significantly lower than the 66.0 inch hinge pin height of Dingo 322 and of other commercial loaders as discussed further below.

The embodiments of the loader of Figures 6 and 8-10 of Komatsu when used on the Dingo 322 machine are shown in Figures C-F below:

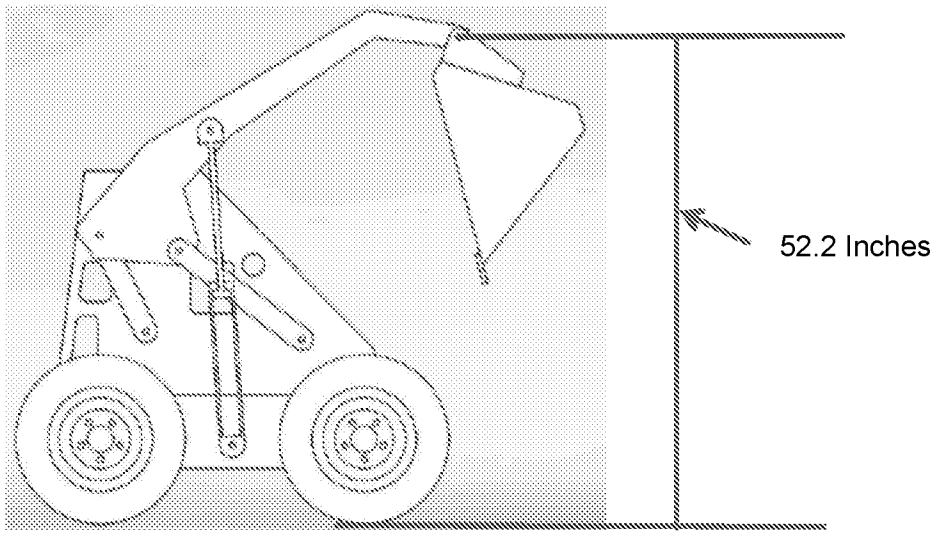


Figure C: Loader of Figure 6 of Komatsu on Dingo 322

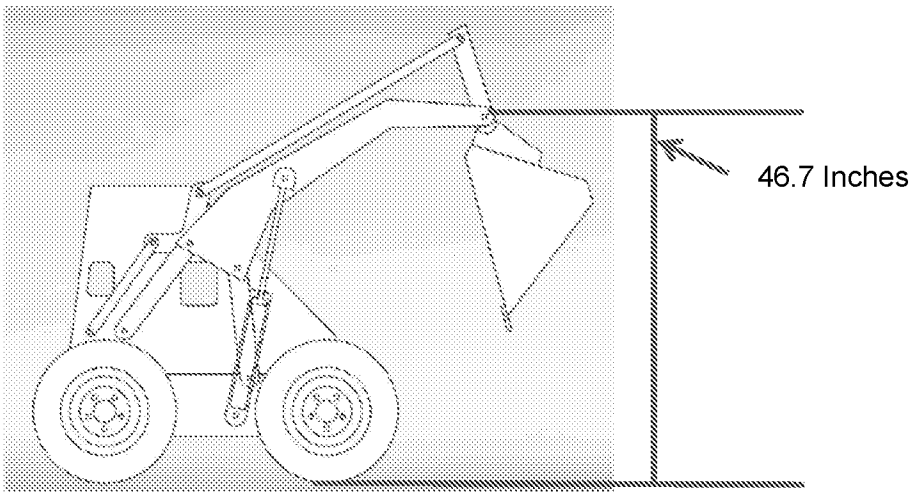


Figure D: Loader of Figure 8 of Komatsu on Dingo 322

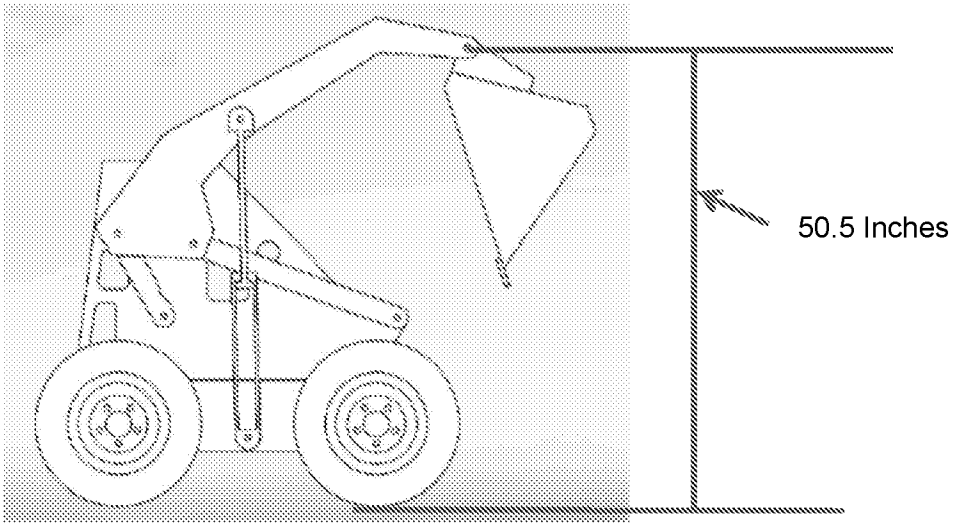


Figure E: Loader of Figure 9 of Komatsu on Dingo 322[5]

[5] As Figure 8 of Komatsu did not include a cylinder, a cylinder location was assumed to provide maximum lift height.

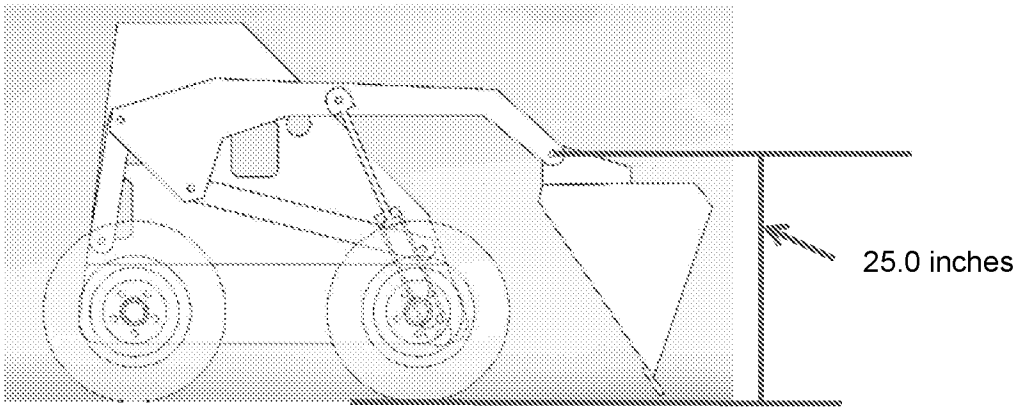
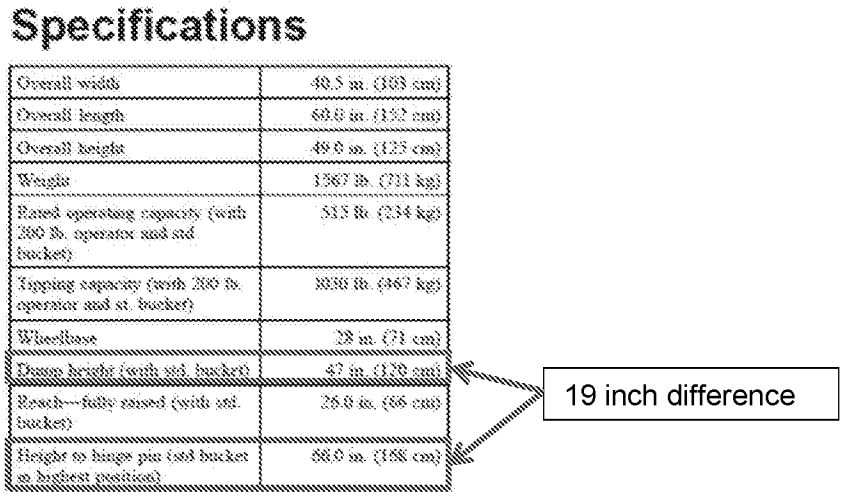


Figure F: Loader of Figure 10 of Komatsu on Dingo 322

The highest hinge-pin height of the embodiments of Figures 1, 6 and 8-10 of Komatsu on Dingo 322 would be the 52.2 inch hinge-pin height when the loader of Figure 6 is used (Figure C).

A hinge pin height of 52.2 inches and the resulting dump height of 33.2 inches[6] are significantly lower than the hinge pin height of 66 inches and a dump height of 47 inches of Dingo 322.



Page 10 of the Dingo Operator's Manual

[6] With the Dingo 322 bucket, the dump height is 19 inches less than hinge pin height which results in a dump height of 33.2 inches (52.2 inches minus 19 inches).

For at least this reason, modifying Dingo 322 by incorporating any of the embodiments of Figures 1, 6 and 8-10 of Komatsu would render Dingo 322 unsuitable for its intended purpose.

A hinge pin height of 52.2 inches and a dump height of 33.2 inches is also inadequate in the field of endeavor of Dingo 322. Of the various commercial compact utility loaders, the Patent Owner is not aware of any with a hinge-pin height of less than about 66 inches (see Table 1 below).

Model	Introduction Year	Hinge Pin Height (In.)
Bobcat MT52	2003	71.3
Bobcat MT55	2004	71.2
Bobcat MT85	2015	80.9
Boxer 427	2005	70
Boxer 532DX	2008	76
Boxer 950HD	2016	95
Ditch Witch SK500	2003	81
Ditch Witch SK650	2006	81
Ditch Witch SK850	2014	83
Ditch Witch SK1050	2016	83
Ditch Witch SK1550	2017	94.5
Toro Dingo 322	1999	66
Toro Dingo TX420	2000	90.1
Toro Dingo TX525	2006	65.8

Model	Introduction Year	Hinge Pin Height (In.)
Toro Dingo TX1000	2015	81
Vermeer S600TX	2005	80
Vermeer S400TX	2007	69
Vermeer S450TX	2012	72
Vermeer CTX 50	2015	72
Vermeer CTX100	2016	88

Table 1. Sampling of Hinge Pin Heights of Commercial Compact Utility Loaders

As stated in the Hartke Declaration, a hinge pin height of 52.2 inches and a dump height of 33.2 inches are inadequate for a compact utility loader to dump a load into standard receptacles in its field of endeavor (e.g., landscaping) such as dumpsters and pick-up trucks. A hinge-pin height of 52 inches is insufficient to unload a pallet from most trucks and is incompatible with other attachments (e.g., augers used for digging holes) that require relatively high ground clearance. For at least these reasons, modifying Dingo 322 by incorporating any of the embodiments of Figures 1, 6 and 8-10 of Komatsu would render Dingo 322 unsuitable for its intended purpose.

The embodiment of Figure 7 of Komatsu is also not suitable for use on Dingo 322. A principal consideration in the design of compact utility loaders is the reach of the loader at full height. Dingo 322 achieves a reach at full height of 26 inches when the bucket is rotated to 34° as shown in the Dingo Operator's Manual (see above) and the Dingo 322 Service Manual:

SPECIFICATIONS

Dimensions

A. Overall operating height, fully raised / 91.2" (2317mm)
B. Hinge pin height, fully raised / 66.0" (1676mm)
C. Overall height / 48.7" (1237mm)
D. Overall length / 82.2" (2088mm)
E. Dump angle / 34°
F. Dump height / 47.0" (1194mm)
G. Reach, fully raised / 26.0" (660mm)
H. Bucket rollback, ground position / 19°
I. Bucket rollback, fully raised / 97°
J. Wheelbase / 28.0" (711mm)
K. Overall width / 40.5" (1029mm)
X. Ground Clearance, front / 5.8" (147mm)
X. Ground Clearance, rear / 5.8" (147mm)
X. Reach, maximum / 28.0" (711mm)
X. Bucket rollback, carry position / 20°

X. = Dimension not shown

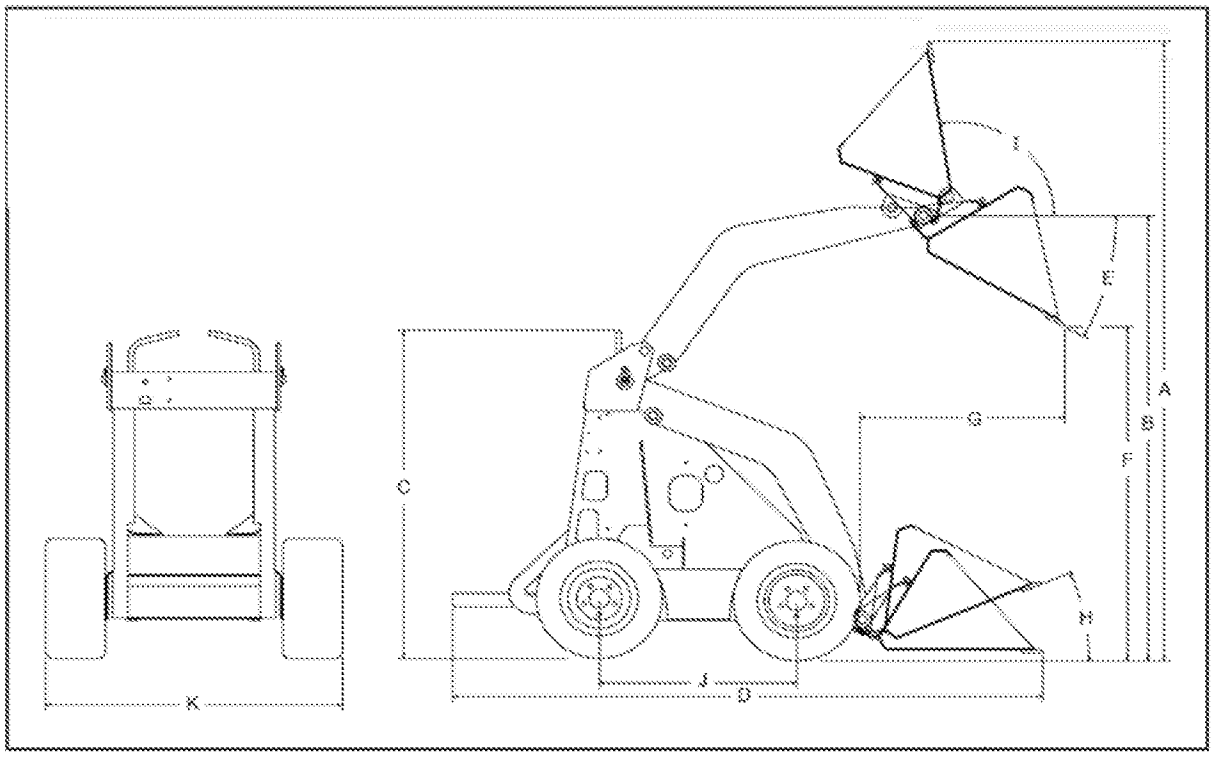


Fig A 99-8886

Page 2/1-2 of the Dingo 322 Service Manual

As shown in Figure G, use of the loader of Figure 7 of Komatsu on Dingo 322 results in a reach of only **9.6 inches** at full height with the bucket at a dump angle of 34°.

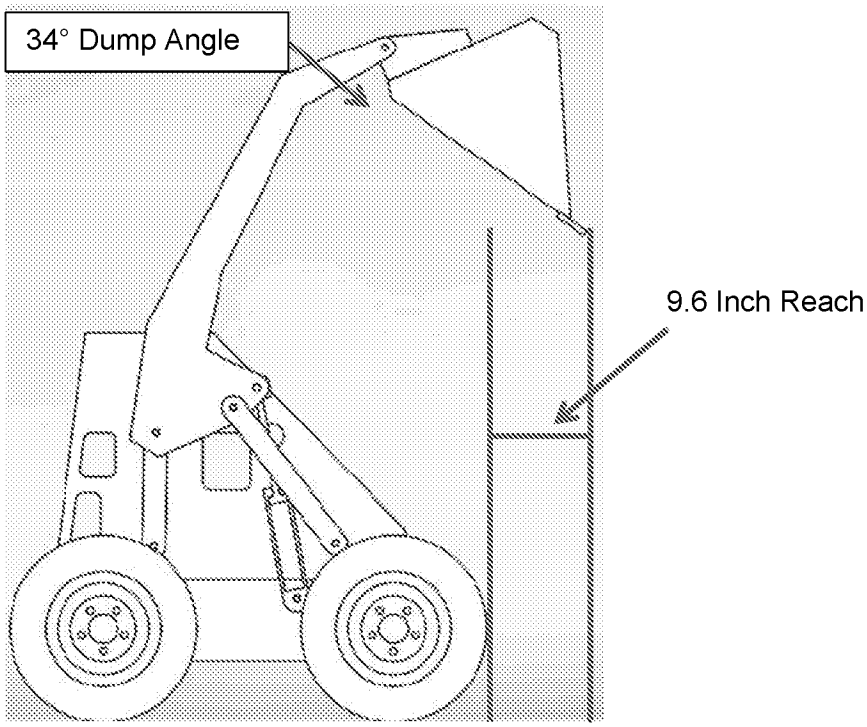


Figure G: Loader of Figure 7 of Komatsu on Dingo 322

Modifying Dingo 322 by incorporating the embodiment of Figure 7 of Komatsu would render Dingo 322 unsuitable for its intended purpose because the modification would result in a reach of only 9.6 inches which **is 63% less** than the reach of Dingo 322,

In addition to failing to achieve the reach of 26.0 inches of Dingo 322, the embodiment of Figure 7 of Komatsu is about half of the reach of commercial compact utility loaders as shown in Table 2:

Model	Introduction Year	Reach, Fully Raised (In.)
Bobcat MT52	2003	20.3
Bobcat MT55	2004	20.3
Bobcat MT85	2015	18.6
Toro Dingo 322	1999	26

Model	Introduction Year	Reach, Fully Raised (In.)
Toro Dingo TX420	2000	21.8
Toro Dingo TX525	2006	21.8
Toro Dingo TX1000	2015	24.5
Vermeer S600TX	2005	27.3
Vermeer S400TX	2007	21.8
Vermeer S450TX	2012	19.3
Vermeer CTX 50	2015	19.7
Vermeer CTX100	2016	22.6

Table 2. Sampling of Reach at Full Height of Commercial Compact Utility Loaders[7]

Because use of the loader of Figure 7 of Komatsu on Dingo 322 only achieves a reach of 9.6 inches when fully raised, the compact utility loader proposed by the Office would lack sufficient clearance between its front tires and the front of the bucket to discharge material into a pick-up truck or dumpster which is common in the field of endeavor of compact utility loaders (See Hartke Declaration).

The hinge pin heights that are achieved when the loaders of Figures 1, 6 and 8-10 of Komatsu are used on the Dingo 322 machine (45.2", 52.2", 46.7", 50.5" and 25.0", respectively) are significantly less than 66.0 inch hinge pin height of Dingo 322 and of other commercial compact utility loaders. The reach at full height of the loader of Figure 7 of Komatsu when used on the Dingo 322 machine (9.6") is also much less than the 26.0 inch reach at full height of Dingo 322 and of other commercial compact utility loaders. Therefore, "there is no suggestion or motivation to make the proposed modification." MPEP 2143.01(V); *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

[7] Table 2 includes models in which reach was published by the manufacturer or sourced internally by Vermeer.

b. One of ordinary skill in the art would not have had a reasonable expectation of success in making the modifications to the Dingo 322 proposed by the Office.

One of ordinary skill in the art would not have had a reasonable expectation of success in making the modifications to Dingo 322 proposed by the Office. Modifying the configuration of the loader arms and related linkages results in unpredictable results. This is especially true in light of the small size and light weight of compact tool carriers.

As shown below, small changes to pivot points, weight distribution, and the like in compact tool carriers cause significant changes in the lift profile and lift capacity of the machine. The inventors experienced this unpredictability firsthand, as evidenced by the failures that occurred while developing the compact tool carrier of the '750 Patent despite resort to state-of-the-art tools. Finally, others in the industry expressly noted that there was no reason to expect success in achieving a vertical-lift compact tool carrier. Indeed, Toro itself noted that this would have been "difficult if not impossible." Because there was no reasonable expectation of success in achieving the modification proposed by the Office, the rejection must be withdrawn.

The unpredictability of modifying the loader arm configurations was apparent during development of the compact utility loader claimed in the '750 Patent. As described in the Hartke Declaration, Vermeer attempted several vertical lift loader arrangements that were unsuccessful. The Vermeer inventors first attempted the linkage and actuator arrangement shown in Figure H-1.

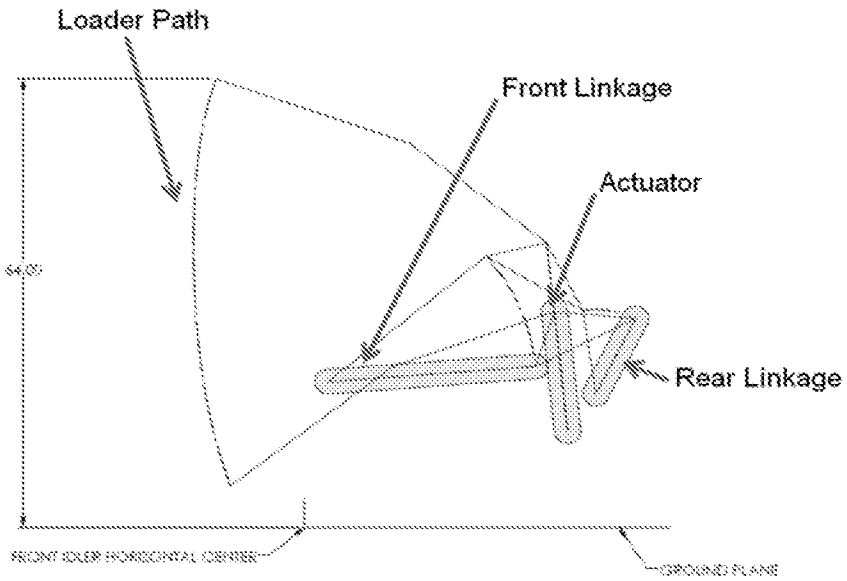


Figure H-1: Lift Path of the Initial Prototype

This resulted in the loading profile shown in Figure H-2[8]:

[8] In Figures H-2, I-2 and J-2, the lift capacity is the lower curve, the front linkage loading is the middle curve, and the rear linkage loading is the highest curve.

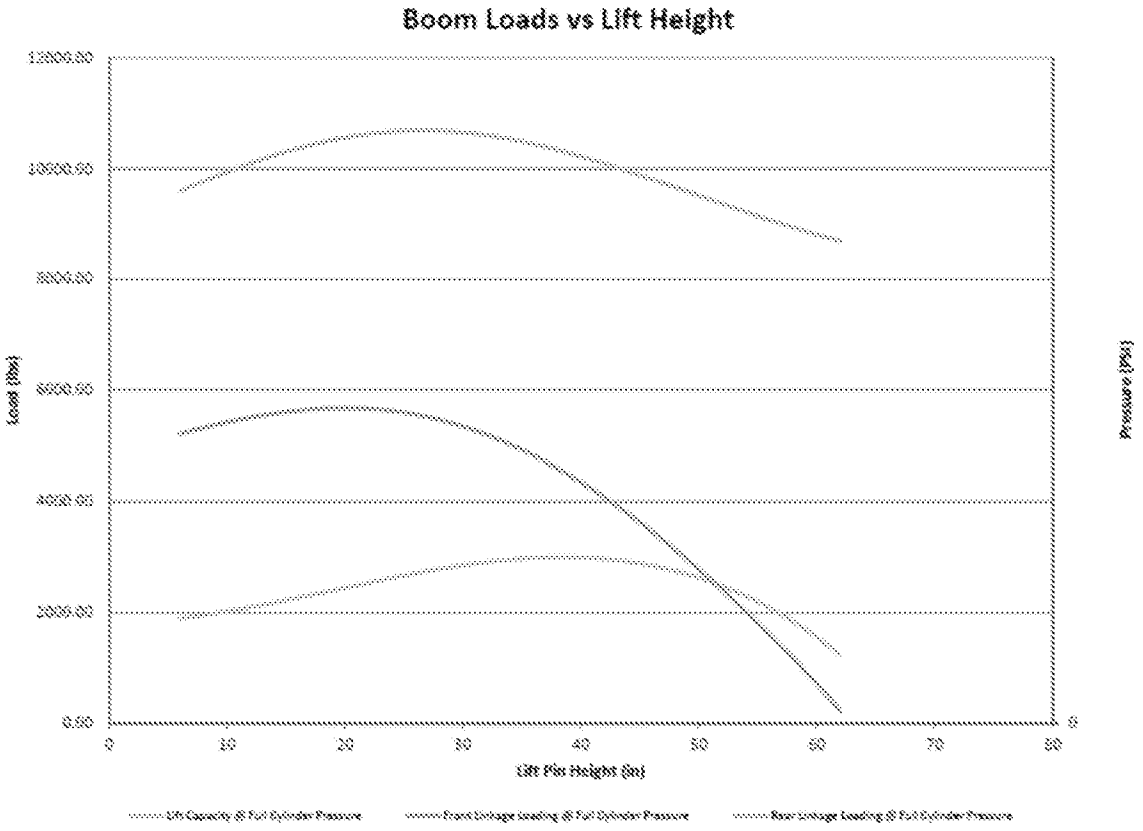


Figure H-2: Loading Profile of the Initial Prototype

To improve the stability of the initial prototype of the compact utility loader, the inventors attempted to lengthen the mainframe in a second modeled prototype[9] shown in Figure I-1.

[9] The second prototype was mathematically modeled in an attempt to scale up the first prototype and was not built due to the poor loading profile.

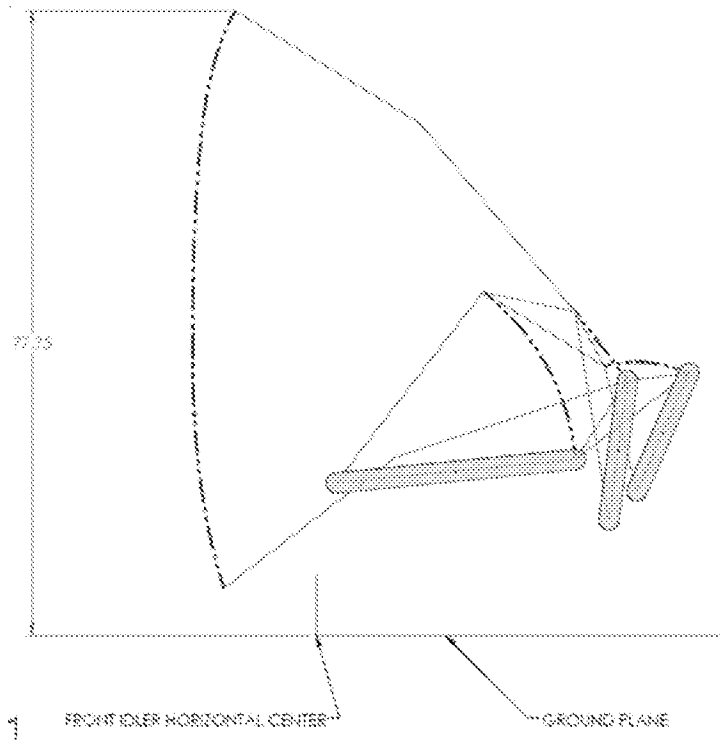


Figure I-1: Lift Profile of the Second Prototype

The inventors scaled up the linkages and actuators from the smaller initial prototype to the second prototype. Mere scaling, however, proved unsuccessful as shown in the lift profile of Figure I-2:



Figure I-2: Loading Profile of the Second Prototype

It was determined that the second prototype **would only be able to lift a load of 192 pounds** when the loader was lifted from the supporting surface, *which is nearly insufficient to even lift the weight of the bucket when empty*.

The inventors moved the pivot point in the actuator **slightly rearward** as shown in Figure J-1.

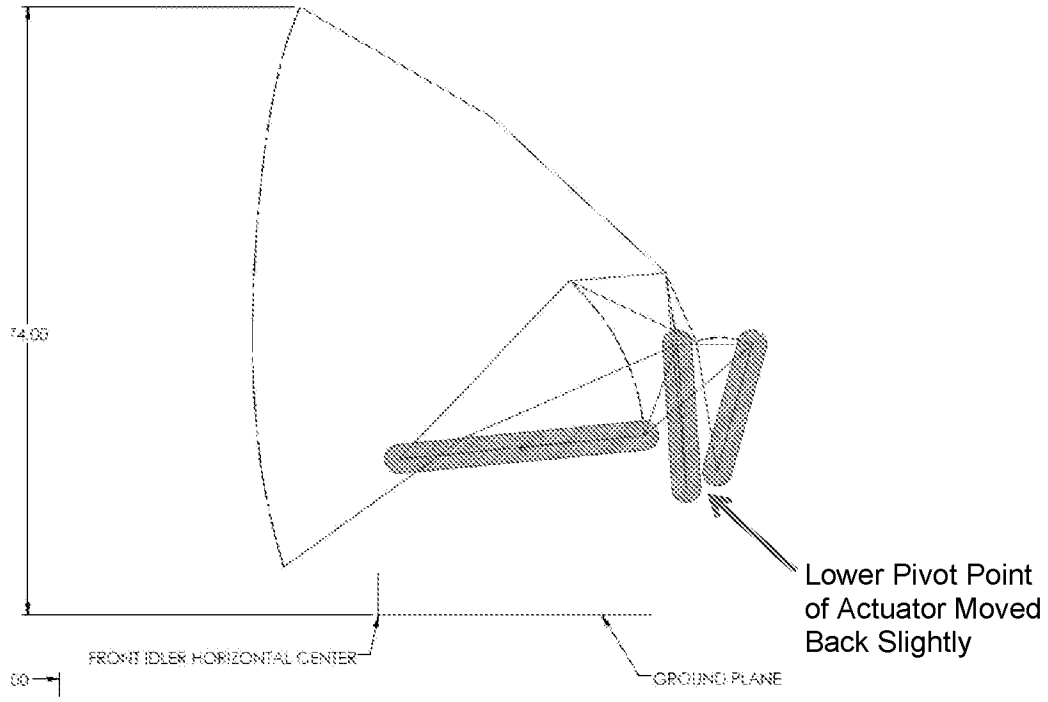


Figure J-1: Lift Profile of an Embodiment of the ‘750 Patent

This resulted in a much improved loading profile shown in Figure J-2:

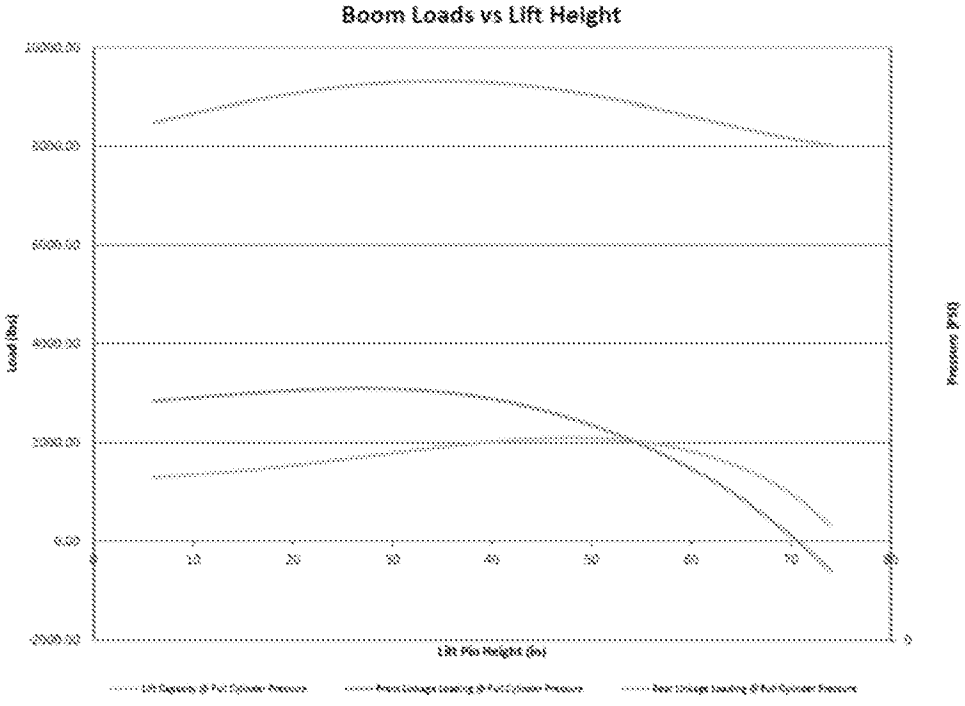


Figure J-2: Loading Profile of Third Prototype

The lift profile of Figure J-1 was incorporated into Vermeer's CTX50 commercial compact utility loader.

Because scaling up the linkages and actuators from the first prototype to the second prototype was not successful and because small changes in a single pivot point location caused significant changes in the lift profile, it is evident that development of a vertical-lift compact tool carrier is unpredictable.

The Vermeer inventors experienced many failures during development of the loader arrangement claimed in the '750 Patent. These failures are illustrated in the Figures below. These failures further evidence the unpredictability associated with modifying compact tool carrier loader arm configurations.

As explained in the Hartke Declaration, while developing a compact tool carrier that could support a vertical lift loader, the Vermeer Inventors experienced catastrophic fractures of the loader arms (Figure K).

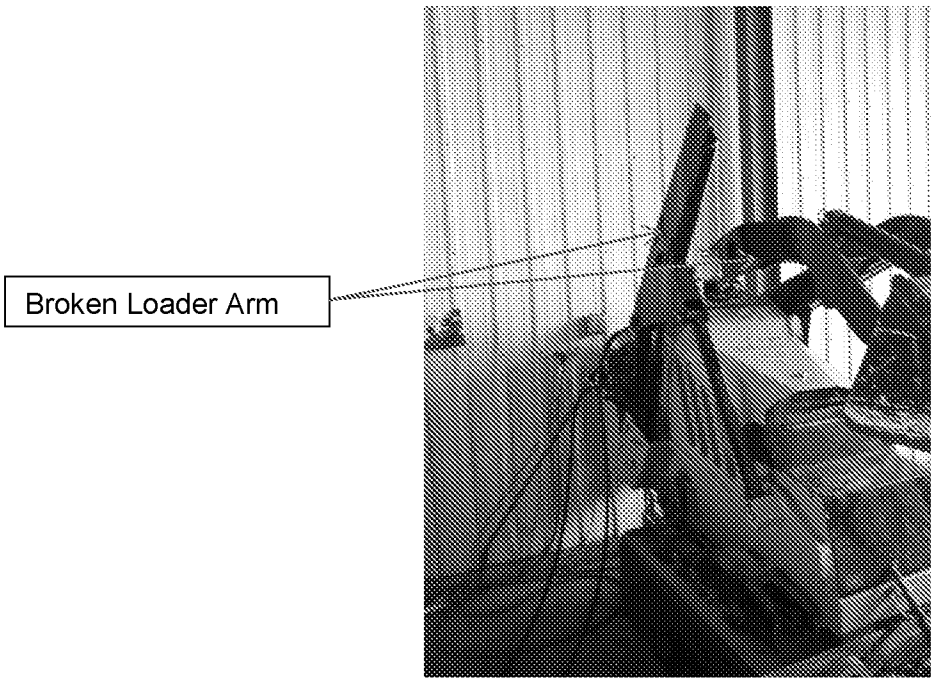


Figure K

The Inventors experienced breakage of pivot pin retainers (Figure L) and many retainers bent during testing (Figure M).

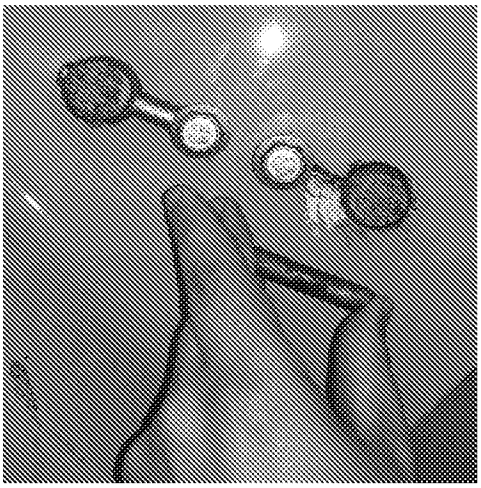


Figure L

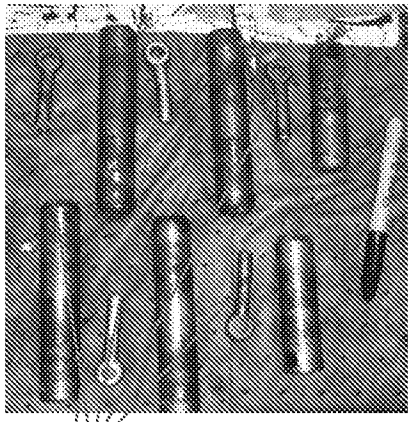


Figure M

These failures resulted from the loader arms being free from direct attachment to the mainframe of the loader as recited in claim 1 of the '750 Patent (see Hartke Declaration). These failures are strong evidence that the field of endeavor of the '750 Patent is unpredictable.

Toro, the Requester of this *ex parte* reexamination, recognized that there is no expectation of success in incorporating a **vertical lift loader arm** such as that of Komatsu onto a compact utility loader such as Dingo 322 because the compact utility loader lacks the space to accommodate the large loader arms of full sized skid steers. Toro, as Applicant of U.S. Patent Publication No. 2016/0244937, admits that:

> **[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.

Toro's admission in U.S. Patent Publication No 2016/0244937 that incorporation of a vertical lift loader arm such as that of Komatsu onto a compact utility loader such as Dingo 322 "*is difficult if not impossible*" is compelling evidence that there is no expectation of success in making the modification proposed by the Office[10]. The statement by Toro proves that others of ordinary skill in the art recognized that the inventive design was difficult or impossible. They also recognized that the loader arms of compact tool carriers needed to have a small profile so as to not reduce the field of vision of operators positioned toward the rear of the machine:

[10] US Patent Publication No. 2016/0244937 has a priority date of February 20, 2015, and is not prior art against the '750 Patent. Toro's admission in U.S. Patent Publication No. 2016/0244937 must be considered by the Office because references that provide factual evidence need not antedate the priority date of the '750 Patent. See MPEP §2124 which states that references that are cited to show certain facts need not antedate the filing date.

> The present invention relates to a small loader that is manually operated by a standing operator at the rear of the loader. The loader has a low lift arm profile, so that an operator standing at the rear of the loader can see the work area. The low profile lift arms aid side-to-side visibility.
>
> Various small self-propelled loaders have been advanced, where an operator will either stand or walk on the ground behind the loader or stand on a platform on the loader frame to manipulate the work element that is attached to the forward ends of pivoting lift arms.
>
> These loaders find utility in small load applications, where loads that are too heavy for a person to lift can be hoisted. The ability of the loaders to be operated in small areas is important. Ease of manipulation of the bucket or work tool, as well as the ability to see the work that is being carried out is also important.

U.S. Patent No. 6,695,568, col. 1, lines 6-21

One of ordinary skill in the art would not expect the relatively large loader arms of a vertical lift loader to operate on a substantially smaller compact utility loader with any expectation of success. "Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness." MPEP §2143.02(II). The lack of a reasonable expectation of success is a critical factor in the obviousness rationale:

> Many basic approaches that a practitioner may use to demonstrate nonobviousness also continue to apply in the post-KSR era. Since it is now clear that a strict teaching-suggestion-motivation approach is not the only way to establish a prima facie case of obviousness, it is true that practitioners have been required to shift the emphasis of their nonobviousness arguments to a certain degree. However, familiar lines of argument still apply, including teaching away from the claimed invention by the prior art, **lack of a reasonable expectation of success**, and unexpected results. Indeed, they **may have even taken on added importance** in view of the recognition in KSR of a variety of possible rationales.
>
> MPEP §2145; Emphasis added.

iii. Objective Evidence of Non-Obviousness Indicate Patentability

Secondary considerations of non-obviousness such as long felt need, failure of others, customer and industry praise, commercial success, skepticism of experts and unexpected results support the patentability of independent claim 1 over Dingo 322 in view of Komatsu. "Objective evidence relevant to the issue of obviousness must be evaluated by Office personnel. *Id*. at 17-18, 148 USPQ at 467. Such evidence, sometimes referred to as 'secondary considerations,' may include evidence of commercial success, long-felt but unsolved needs, failure of others, and unexpected results. The evidence may be included in the specification as filed, accompany the application on filing, or be provided in a timely manner at some other point during the prosecution." MPEP §2141(II). "Consideration of rebuttal evidence and arguments *requires* Office personnel to weigh the proffered evidence and arguments." MPEP §2145.

a. Long Felt Need and Failures of Others

Compact utility loaders have been under commercial development for over 30 years. Throughout this period, manufacturers continually have attempted to increase lift capacity of compact utility loaders without sacrificing machine weight and maneuverability. This is evident from Figure N which shows the ratio of the tipping capacity of compact utility loaders to the weight of the loaders as new models of compact utility loaders were introduced to the market.[11]

[11] The following models are depicted in Figure N: Bobcat MT52, MT55, MT85; Boxer 427, 532DX, 950HD; Ditch Witch SK500, SK650, SK850, SK1050, SK1550; Toro Dingo 322, Dingo TX420, Dingo TX525, Dingo TX1000; and Vermeer S400TX, S450TX, CTX50, CTX100.

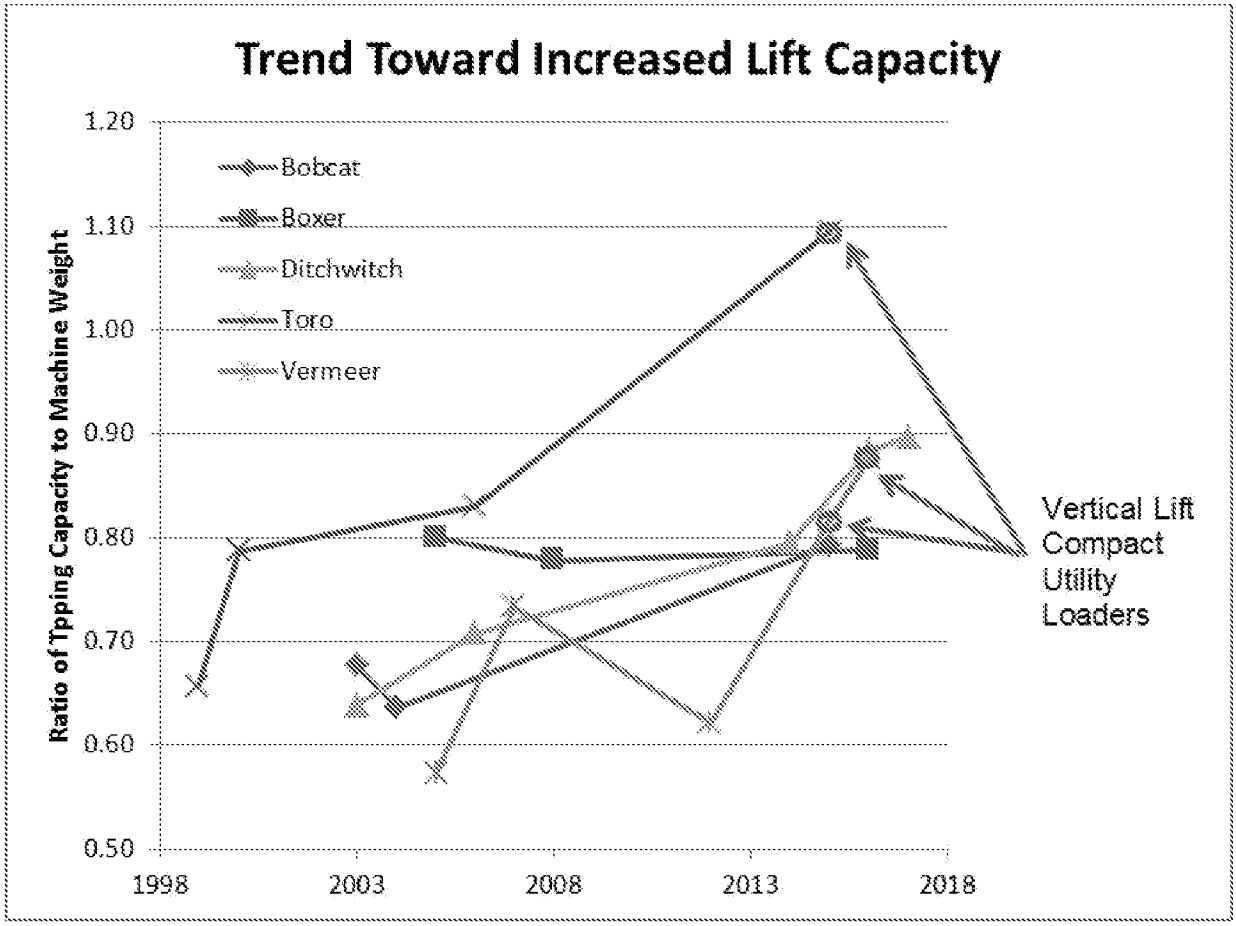
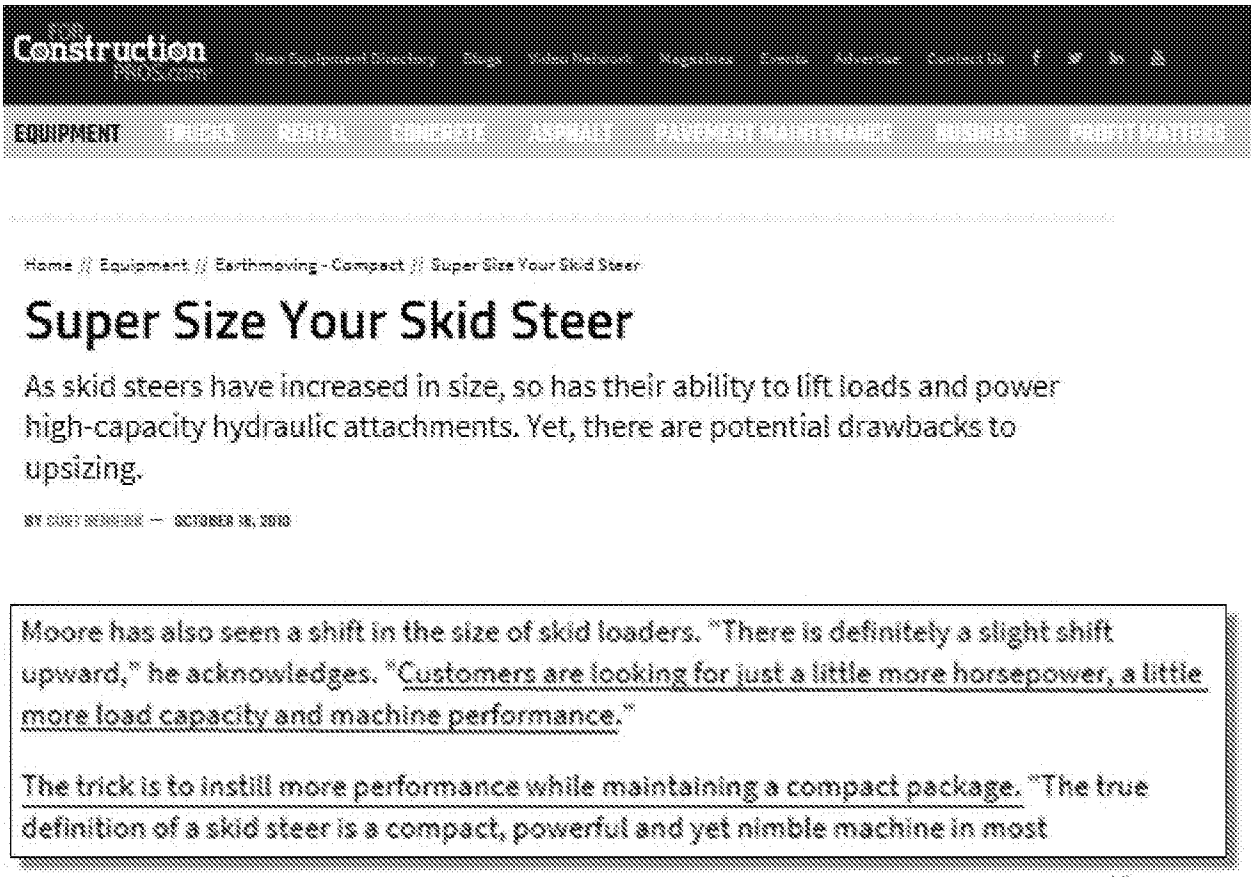


Figure N

The need for increased lift capacity without sacrificing machine weight is recognized by those of skill in the art (see also the Hartke Declaration):



Construction

EQUIPMENT

Home // Equipment // Earthmoving - Compact // Super Size Your Skid Steer

Super Size Your Skid Steer

As skid steers have increased in size, so has their ability to lift loads and power high-capacity hydraulic attachments. Yet, there are potential drawbacks to upsizing.

Moore has also seen a shift in the size of skid loaders. "There is definitely a slight shift upward," he acknowledges. "Customers are looking for just a little more horsepower, a little more load capacity and machine performance."

The trick is to instill more performance while maintaining a compact package. "The true definition of a skid steer is a compact, powerful and yet nimble machine in most

Figure O

Despite this need for increased lift, the industry turned to solutions other than vertical lift loaders. For example, manufacturers have shifted from "walk-behind" machines to predominantly "ride-on" machines. Manufacturers of ride-on machines are permitted to incorporate an average weight of an operator (165 lb standard) in the tip capacity testing which generally increases the rated lift capacity.

Other manufacturers have included "weight kits" that add weight to the back of the machine to increase lift capacity while sacrificing ground clearance and machine length (Figure P).



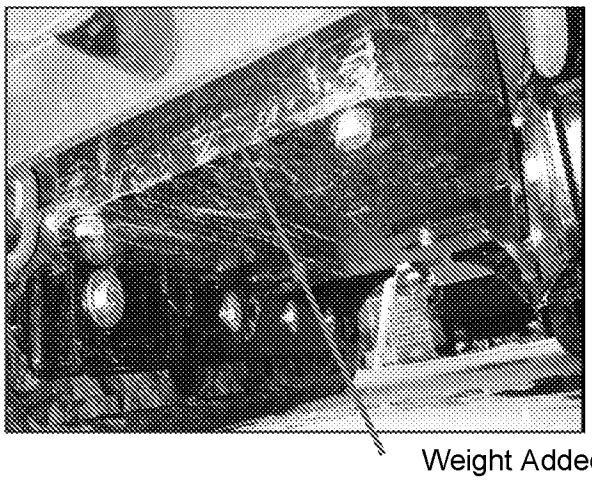


Figure P

Commercial users have even bolted their own counter-weights near the rear of the machine to increase lift capacity (Figure Q):



Figure Q

Prior art patents even have addressed the problem of increased lift capacity while maintaining the compact design of the machines. For example, U.S. Patent No. 6,695,568 discloses use of "far rear pivot points to increase the lift capacity:

> The far rear pivot of the lift arms permits using a longer arm on the same length machine. This increases the lift capacity for the same size actuator and there is a longer arc of movement. This means that the bucket or tool moves more vertically as it initially raises, rather that having a pronounced arcuate path that causes the bucket to move forward a significant amount as it starts to lift.

U.S. Patent No. 6,695,568; col. 1, lines 48-54.

U.S. Patent No. 7,494,314 discloses use of pivotal lift arms to allow the load carried by the compact tool carrier to be moved over the loader frame:

> A loader has lift arms that are used for mounting a number of different attachments. The attachments can be mounted to the rear of the forward end of the lift arms in order to move the center of gravity of the attachment more directly over the loader frame. Various types of attachments can be used, as shown, and can be controlled to be pivoted for dumping or loading, and can be raised and lowered on the lift arms.

U.S. Patent No. 7,494,314; abstract.

These attempts by others have resulted, at best, in marginal increases in the rated lift capacity of the compact tool carrier.

In comparison, by changing design from a radial lift compact utility loader to a vertical lift compact utility loader in which the loader is connected to the mainframe by a linkage and actuator as set forth in claim 1 of the '750 Patent, a ***32% increase*** in the rated operator capacity was achieved without significantly increasing the weight of the vehicle. The objective evidence establishes a long-felt need for increased lift capacity in compact utility loaders that was not satisfied by the attempts of others. This is clear objective evidence of the nonobviousness of claim 1 (See MPEP §2141(II)).

b. Customer and Industry Praise

Both Toro (the Requester) and other third parties have indicated that the compact tool carrier of independent claim 1 of the '750 Patent is a commercially

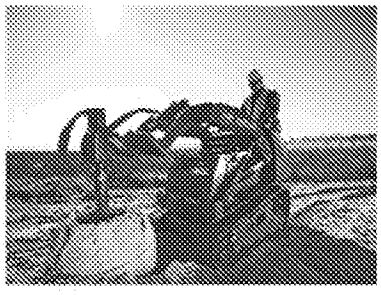
successful product with the success of the product being directly tied to the vertical-lift arrangement of the compact tool carrier. CompactEquip.com referred to the commercial product ("the CTX50") as a "game-changer" and directly linked the enhancements to the new vertical-lift arrangement of the loader:

> (http://compactequip.com/features/innovative-iron-awards-toro-vermeer-compact-tool-carriers/attachment/vermeer-compact-tool-carrier/)The Vermeer (http://vermeer.com) CTX50 boasts a 600-lb ISO-rated operating capacity and a tipping capacity of 1,715 lbs due to its vertical-lifting path. The vertical-lift path is designed to keep the load closer to the machine, allowing it to lift more than a similar-sized compact tool carrier with a radial-lift path. A vertical-lift path also provides a higher lift height. These enhancements along with the Vermeer exclusive single pilot-operated joystick and stand-on platform make the CTX50 a game-changer in the rental and landscape market.

Toro incorporated the vertical lift arrangement of claim 1 of the '750 Patent in its "Dingo TX 1000" compact tool carrier. Both the Vermeer CTX50 and Dingo TX 1000 received an "Innovative Iron Award" for the new lifting pattern and were said to "set the bar for innovation":

INNOVATIVE IRON AWARDS: TORO AND VERMEER COMPACT TOOL CARRIERS

Exploration is the engine that drives innovation, so let's go exploring. Let's search through a year's worth of creative ideas in the off-highway equipment industry and see if we can benchmark the innovative exploration of the American machine market. Over the last 12 months, global manufacturers from Caterpillar to Kubota have released compact machines that have set new standards for power, versatility, efficiency and design. Our editors have traveled across the globe to meet these manufacturers, operate their new products and give detailed reports and opinions both in print and on our website (compactequip.com). We sifted through the hundreds of models and brands released in 2015 and picked 19 units that set the bar for innovation. With this article, we salute those companies (from Komatsu to Case) that have changed the commercial equipment market over the last year with their unique, interesting and innovative machines, engines and technologies.



TORO AND VERMEER BRING A NEW LIFTING PATTERN TO CTCS

Toro also notes that the vertical lift design "allows it to lift more weight" and that Toro "doubled the capacity of our current loaders" (https://www.equipmentworld.com/toros-new-vertical-lift-dingo-tx-1000-lays-claim-to-strongest-compact-utility-loader-on-the-market-photos/). Toro has also stated (in a marketing video published on YouTube) that the "vertical lift loader arms are **really unique** . . ."



"vertical loader arms which are really unique. . ."

https://www.youtube.com/watch?v=ckMKUkIzcF8

Praise by Toro and other third parties of the vertical lift arrangement in which the loader is not directly attached to the mainframe as set forth in claim 1 of the '750 Patent that is incorporated in the CTX50 and Dingo TX1000 machines is further evidence of nonobviousness of independent claim 1. By attributing the increase in lift capacity to the vertical-lift design—as required by claim 1 of the '750 Patent (i.e., a machine in which the loader is connected to the mainframe by first and second linkages and an actuator and the loader being free of direct attachment to the mainframe)—"nexus" between the commercial success and the claimed invention has been established (See MPEP §2145).

c. Commercial Success

The compact utility loader of claim 1 of the '750 Patent has been a commercial success. Since their introduction into the market in 2015, vertical-lift compact utility loaders have taken market share from radial-lift vertical loaders. In 2015, vertical lift compact utility loaders made up 11% of all compact utility loader unit sales of the Patent Owner (see Figure R). Vertical lift has continued to take market share from radial lift. In 2018, vertical lift compact utility loaders made up *37%* of all compact utility loader unit sales of the Patent Owner.

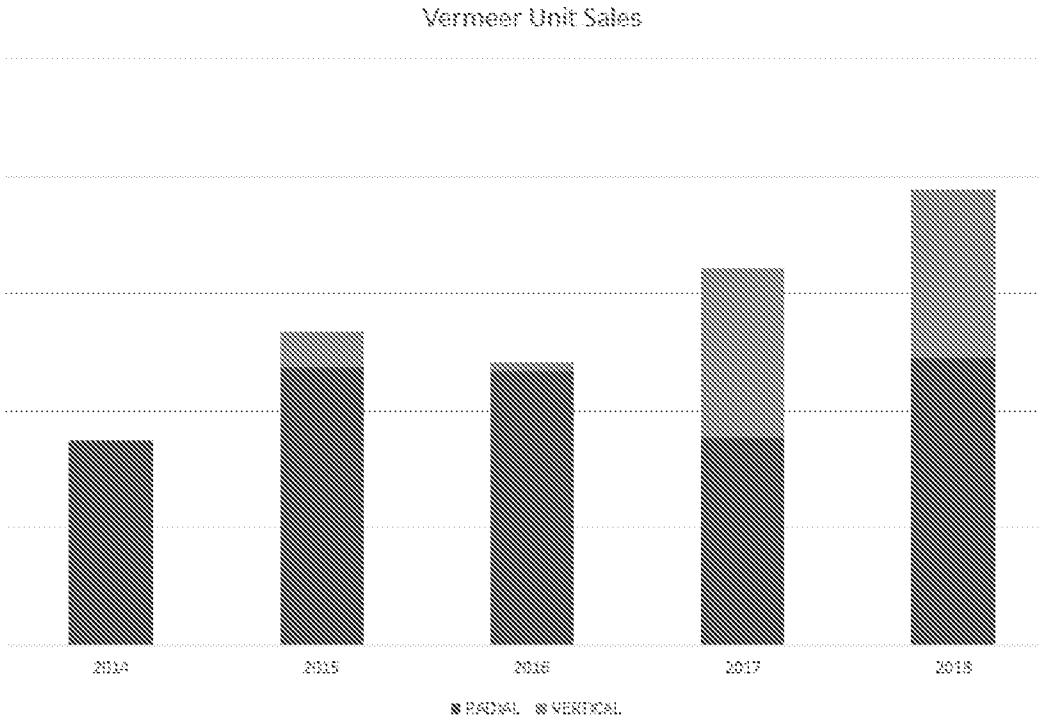


Figure R

As discussed in the Hutchinson Declaration, the trend toward vertical lift results from the benefits associated with vertical lift including increased lift capacity in a compact design and is not the result of price discounts, special offers, advertising or other factors not related to vertical lift.

Toro has also indicated commercial success of the compact tool carrier of claim 1. In Toro's 2015 annual financial statement, Toro stated that the TX1000 utility loader

which incorporates the vertical lift arrangement in which the loader is not directly attached to the mainframe fueled growth in the compact utility loader product line:

Toro's 2015 Annual Statement



The commercial success of compact utility loaders incorporating the vertical lift arrangement of claim 1 is further evidence of patentability of claim 1. See MPEP §2141.

d. Skepticism of Experts and Unexpected Results

Toro, the Requester of this *ex parte* reexamination, expressed skepticism that a compact utility loader with a vertical lift loader could be developed. In particular, Toro states that such a combination is "**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.

U.S. Patent Publication No. 2016/0244937.

This skepticism is shared by others in the field. As stated in the Hartke Declaration, inventor Louis Hartke was highly skeptical as to whether it would be possible to develop a compact utility loader having a loader that was free from direct attachment to the mainframe (i.e., a vertical lift compact utility loader) as set forth in claim 1 of the '750 Patent.

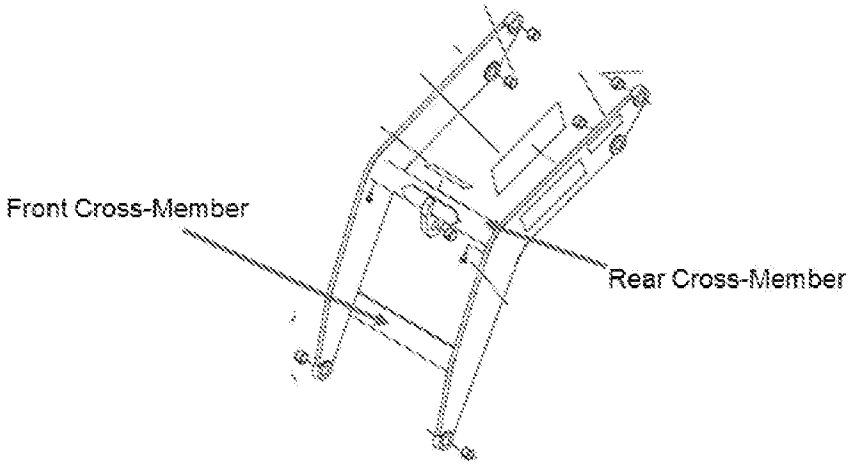
Toro's admission **that incorporation of a vertical lift loader arm onto a compact tool carrier "*is difficult if not impossible*" and Louis Hartke's belief that such a machine could not be developed is compelling evidence** that the conventional wisdom of those of skill in the art was that the inventive design was difficult or impossible. "Expressions of disbelief by experts constitute strong evidence of nonobviousness." MPEP §716.05 (citing Environmental Designs, Ltd. v. Union Oil Co. of Cal., 713 F.2d 693, 698, 218 USPQ 865, 869 (Fed. Cir. 1983) (citing United States v. Adams, 383 U.S. 39, 52, 148 USPQ 479, 483-484 (1966)). As stated in MPEP §2145, "unexpected results . . . may have even taken on **added importance** in view of the recognition in KSR of a variety of possible rationales" (Emphasis added).

In summary, the Office has not presented a prima facie case of obviousness of the subject matter of claim 1. One of ordinary skill in the art would not have made the modification suggested by the Office because (1) the proposed modification to Dingo 322 would have rendered it unsatisfactory for its intended purpose and (2) there was no reasonable expectation of success given the unpredictability of these types of modifications—as evidenced by the failures experienced firsthand by the inventors—and the statements by Toro that it would have been "difficult if not impossible" to achieve a vertical-lift compact tool carrier. Finally, objective evidence of non-obviousness indicate patentability of independent claim 1 over the Dingo 322 Parts Catalog, the Dingo 322 Operator's Manual and Komatsu.

Dependent claims 2-18 incorporate the recitations of independent claim 1 by way of their dependency therefrom and are patentable for at least the reasons set forth above relating to independent claim 1.

Dependent claim 7 also recites that each of the first, second, third, fourth, fifth and sixth pivot points is, individually, (1) disposed between the operator controls and a bottom of the mainframe or (2) disposed forward of the operator controls as the loader moves from a down position to a vertically raised position. In this claimed arrangement, the pivot points are positioned within the profile of the machine or forward of the operator controls which reduces pinch points for the operator. The Office states that in Figure 1 of Komatsu, "all of the pivot points are shown to be disposed between the operator controls and a bottom of the mainframe and/or disposed forward of the control station . . ." (page 7 of the Office action). However, unlike the '750 Patent, Komatsu does not even show or describe operator controls and the statement of the Office is not supported by Komatsu. Further, the Office has failed to consider Figure 5 of Komatsu in which the loader is shown in a vertically raised position. In Figure 5, the pivot point 12a at which the linkage 12 connects to the loader has *rotated back* relative to the lowered position shown in Figure 1. For at least these reasons claim 7 is patentable over the cited references.

In regard to the Vermeer Brochure which is cited to reject dependent claims 16 and 17, the Vermeer Brochure does not cure the deficiencies of the Dingo 322 Parts Catalog, the Dingo 322 Operator's Manual, and Komatsu noted above. Claim 17 is also patentable over Dingo 322 in view of Komatsu and in further view of the Vermeer Brochure because the combination of references does not lead one of ordinary skill in the art to arrive at a compact tool having a single cross-member. Dingo 322 does not include a *single* cross-member as recited in claim 17 and instead includes two cross members as shown below.



Sheet No. 2 of the Dingo 322 Parts Catalog

The Office relies on the Vermeer Brochure which shows a compact utility loader having a single cross-member. The Office's obviousness rationale is that:

> Vermeer Brochure teaches that a single cross member can be large and strong enough when placed at this location, namely at the same location as Dingo's top cross member. In light of this teaching, it would have been obvious to one of ordinary skill in the art to employ a single cross member with sufficient size and strength to stabilize the arms of Dingo, depending on the intended use and desired load capacities of the tool carrier and the loader.

Page 11 of the Office action.

The Office's rationale is flawed because the loss of strength in the loader caused by elimination of a cross-member between the loader arms cannot be mitigated by merely strengthening the remaining cross-member. As stated in the Hartke Declaration, use of two cross-members allows the loader to behave as a structural "box" in which forces may be distributed side-to-side across the loader. Loss of strength caused by eliminating a cross-member cannot be merely mitigated by increasing the size of the remaining cross-member because the loader is not able to distribute forces laterally

along the length of the loader in the same manner. For at least this reason, dependent claim 17 is patentable over the cited references.

Dependent claim 18 recites that each cross-member is fully disposed forward of the second pivot point, the fourth pivot point and the sixth pivot point (i.e., the pivot points at which the first linkage, second linkage and actuator connect to the loader arm). If Dingo 322 were modified to include any of the loaders arrangements of Komatsu, the cross-member would not be disposed fully forward of the second, fourth and sixth pivot points. The Office stated during the January 23, 2019 interview that the embodiments of Figures 1 and 6-11 of Komatsu would include a cross-member in the same position at which the cross-member is shown in Figures 2-4 of Komatsu (namely, at the rear bend of the loader arm). The reasoning of the Office does not hold as the cross-member is not capable of being at this positon in several embodiments of Komatsu because it *would pass through the operator's protective cage* as shown in Figure 7 of Komatsu below.

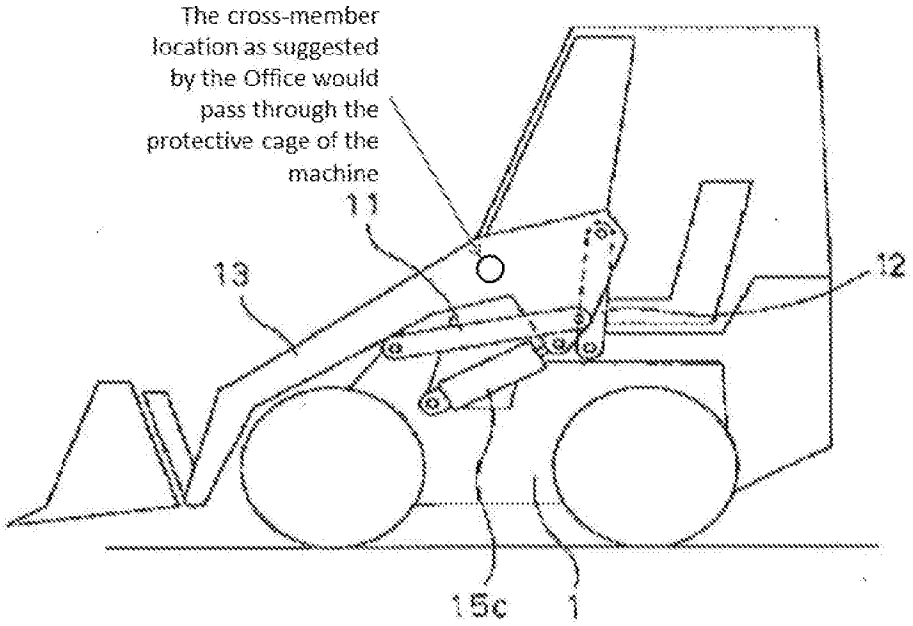


Figure 7 of Komatsu

Further, Komatsu does not even reference a cross-member, let alone disclose that the embodiments of Figures 1 and 6-11 include a cross-member. For at least these

reasons, the cross-member shown in Figures 2-4 of Komatsu should not be imputed onto the embodiments of Figures 1 and 6-11 of Komatsu.

In regard to Figures 2-4 in which a cross-member is shown, the actuator of Figures 2 and 4 is connected directly to the cross-member itself and not directly connected to the loader arm as recited in claim 1 from which claim 18 depends. In Figure 3 of Komatsu, the connection made by the piston arms 16a is not shown. Therefore, it is not evident whether the piston arms 16a connect to the loader arm 13 or to the cross-member. Even if, *arguendo*, the lifting cylinder was connected to the loader arm, **Figure 3 does not show or otherwise indicate that the cross-member is fully disposed forward of the connection between the actuator and the loader arm,** as recited in claim 18.

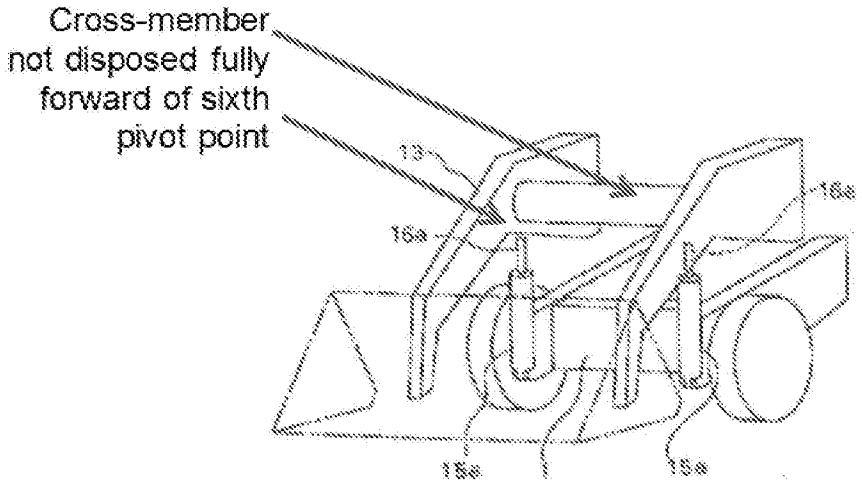


Figure 3 of Komatsu

At best, the cross-member would be aligned with the actuator pivot point. For at least these reasons, claim 18 is patentable over the cited references.

2. Claims 19-20 and 22-36 are Not Obvious

Independent claim 19 is directed to a compact tool carrier having a longitudinal axis and comprises:

a loader adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader at a second pivot point;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader at a fourth pivot point;

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader at a sixth pivot point;

a drive mechanism for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the compact tool carrier having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the compact tool carrier being separated by a vertical distance D1, the rotational axis R and a bottom of the first side of the mainframe being separated by a vertical distance D5, the rotational axis R and each of the first, third, and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point also being less than 1.5 times D1, the vertical distance between the rotational axis R and the fifth pivot point also being less than 1.5 times D1, the first side of the mainframe comprising a forward-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5;

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;

an operator platform for standing operation of the operator controls of the control station; and

an engine disposed forward of the operator platform relative to the longitudinal axis.

Independent claim 19 recites a compact tool carrier having first and second linkages pivotally attached to the first side of the mainframe and pivotally attached to the loader and that the loader is free from direct attachment to the mainframe. Therefore, claim 19 is patentable over Dingo 322 Parts Catalog and Dingo 322 Operator's Manual in view of Komatsu for the reasons set forth above relating to independent claim 1. The Vermeer Brochure additionally cited by the Office to reject independent claim 19 discloses a radial lift compact utility loader sold as Vermeer S600 and Vermeer S600TX. The Vermeer Brochure does not cure the deficiencies of Dingo 322 and Komatsu noted above.

Claim 19 is further patentable over Dingo 322 in view of Komatsu because Dingo 322 is incapable of supporting a loader in which the vertical distance between the rotational axis and the forward-most pivot point is **less than twice** the distance D5 between the rotational axis and the bottom of the first side of the mainframe.

With Reference to Figure S[12] below, Dingo 322 has a relatively small distance D5 between the bottom of the mainframe and the rotational axis of the wheels. Stated differently, Dingo 322 has a ***relatively high mainframe*** relative to the wheels to increase ground clearance.

[12] Figures S and T are taken from the Dingo 322 Service Manual.

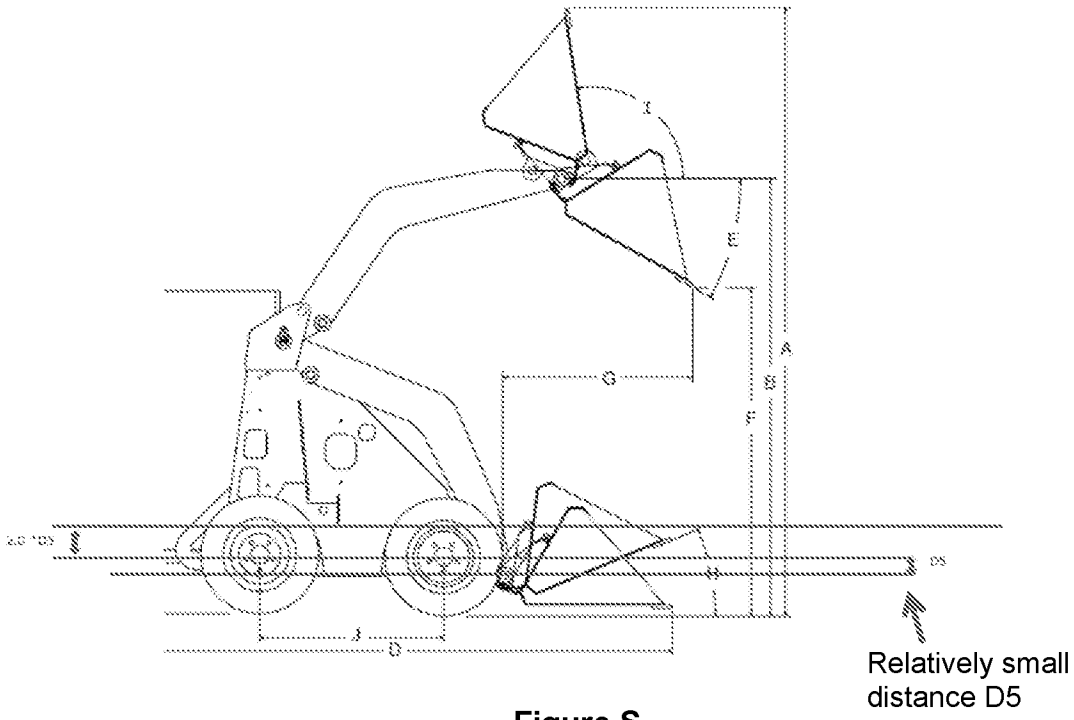


Figure S

The available space to position an actuator or linkage pivot point such that the distance between the pivot point and the rotational axis is less than 2.0 D5 is small as shown in Figure T:

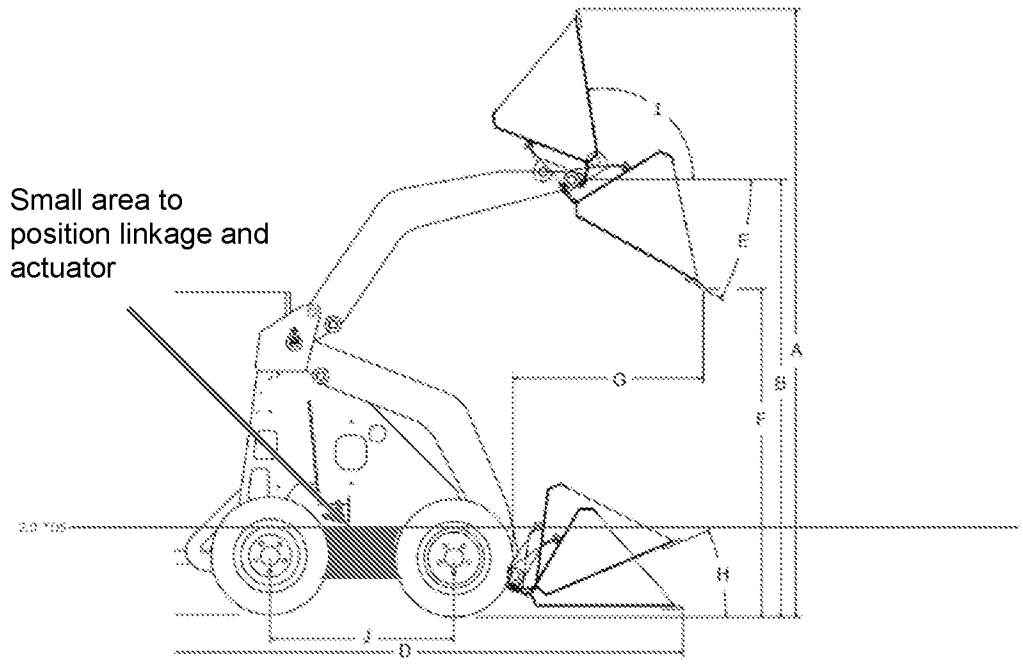


Figure T: The available space for the forward-most pivot point (2.0 * D5)

Dingo 322 cannot accommodate a forward-most pivot point that is less than 2.0 D5 as recited in claim 19 as this area is used to house the drive system of Dingo 322 as further explained below.

As disclosed in the Dingo 322 Service Manual, Dingo 322 was available in a "4-Paw" drive system in which each wheel was driven by a hydraulic motor.

Drive System

Model	220		222	220D, 320D	322	323	
	22311	22317	22300 22304	22302 22303	22305	22312	22318
Chain Drive	X	X	X				
4-Paw				X	X	X	X

Chain Drive Models:
All four wheels are powered. The two rear wheels are individually driven by hydraulic rotor vane motors. Each front wheel is chain driven from the rear wheels via #50H chain.

4-Paw Models:
All four wheels are powered. Each wheel is individually driven by a hydraulic roller vane motor.

Page 2/1-6 of the Dingo 322 Service Manual

A partial view of the 4-Paw Dingo 322 machine is shown in the Service Manual[13]. The distance between the bottom of the mainframe and the rotational axis (D5) and the area encompassed by twice this distance (2.0 D5) in which the forward-most pivot point at which a linkage or actuator are pivotally connected to the mainframe are shown in the annotated figure below:

[13] The Service Manual discloses diesel and gas versions of Dingo 322 that appear to include identical drive systems.

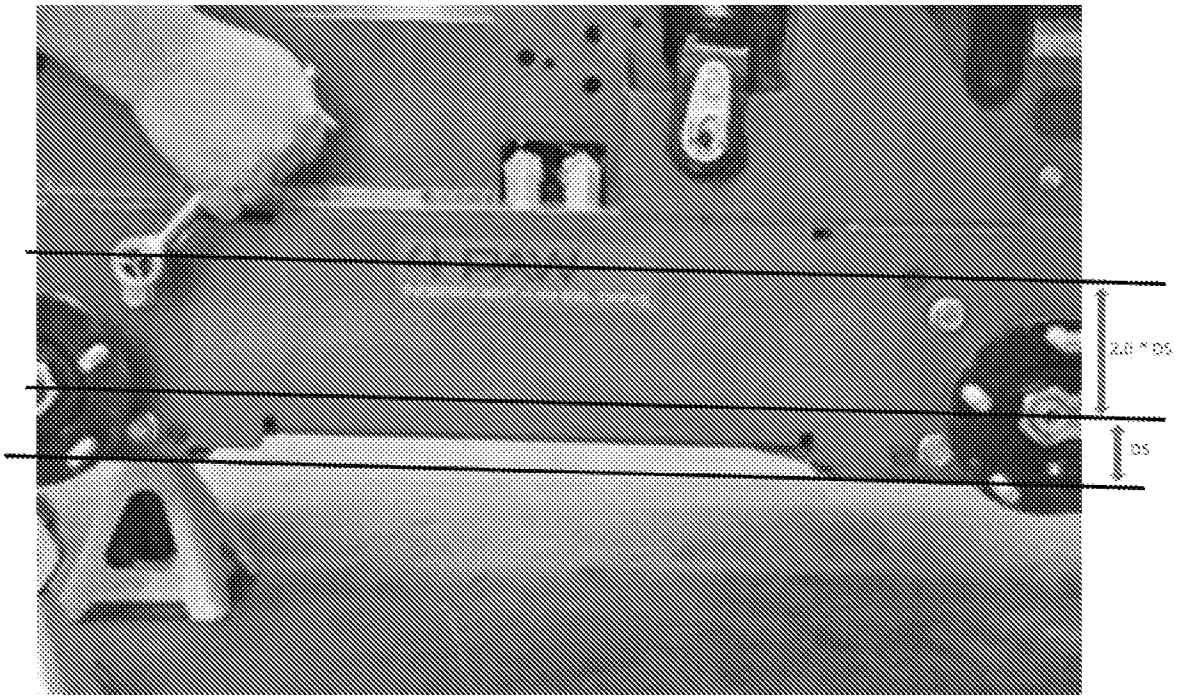


Fig. 1262 of the Dingo 322 Service Manual

As stated in the Hartke Declaration, the area available to position the pivot point is very limited and insufficient to allow a linkage or actuator to swing back and forth as in a vertical lift loader arrangement. Further, this area is **unavailable to position the pivot points** because this portion of Dingo 322 **houses the hydraulics that drive the motors** as show in Figure 0888 from the Service Manual:

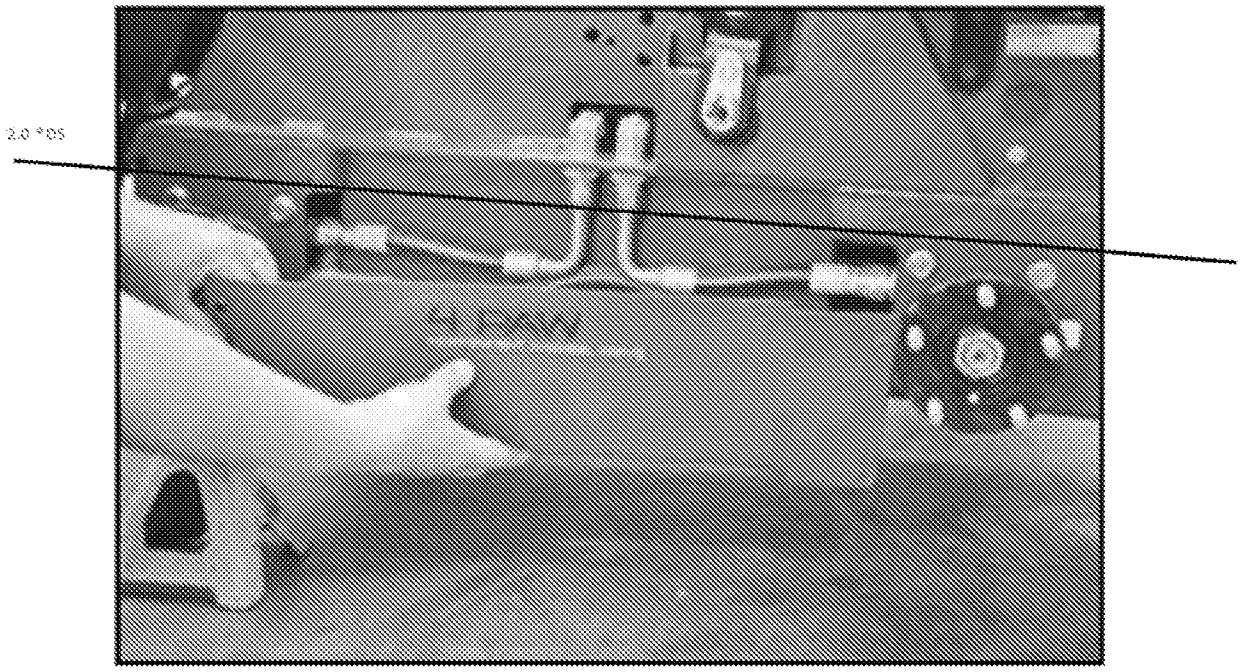


Fig. 0888 of the Dingo 322 Service Manual

One of ordinary skill in the art could not position a pivot point between the rotational axis and twice D5 because of the limited space to do so and because this area houses the hydraulic components beneath the cover plate as shown in Figure 0888. To eliminate the hydraulics that power the motors would render Dingo 322 incapable of its intended purpose as a compact utility loader or would drastically change the principle of operation of Dingo 322. "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." MPEP §2143.01(V).

As shown on page 2/1-6 of the Dingo Service Manual above, several Dingo models included a chain drive rather than a hydraulic drive. If Dingo 322 was modified to include a chain drive as shown on Page 2/1-6 of the Dingo Service Manual, one of ordinary skill in the art could not modify Dingo 322 as proposed by the Office because the chain is also positioned in the area between the rotational axis and twice D5:

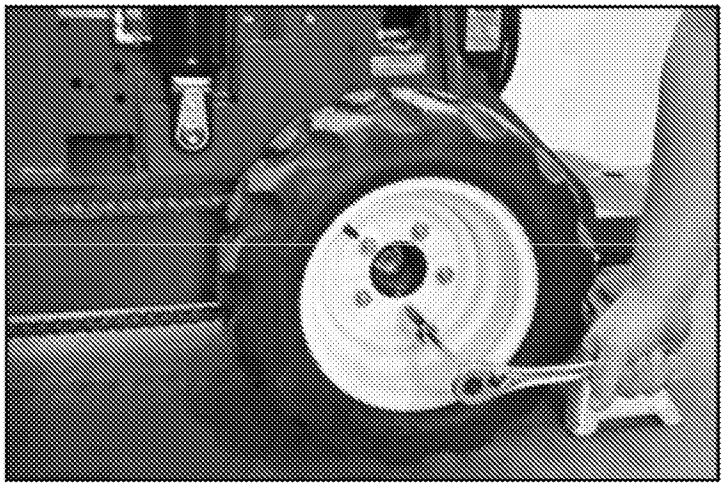


Fig. 0279 (page 4/1-2 of Service Manual).

Because the Dingo 322 Parts Catalog and Dingo 322 Operator's Manual, the primary references cited by the Office, are incapable of accommodating a pivot point in the mainframe that is between the rotational axis and less than twice D5, independent claim 19 is patentable over the cited references.

The modification proposed by the Office would also render the Dingo 322 unsuitable for its intended purpose to accommodate over-the-tire tracks available from Toro:

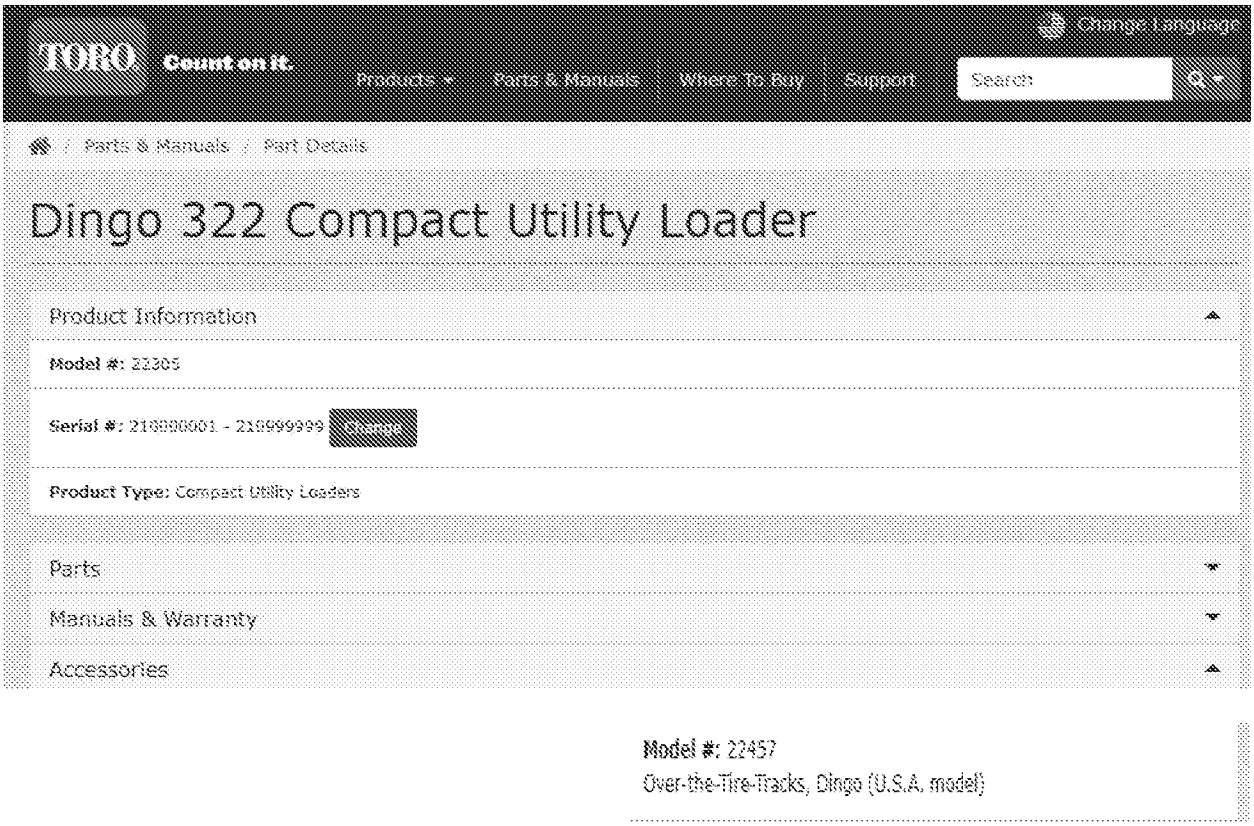


Figure U (https://www.toro.com/en/parts/partdetails/?id=23629)

The pivot point location of an actuator or linkage in the mainframe of Dingo 322 cannot be less than twice D5 because Dingo 322 cannot accommodate the over-the-tire tracks for which Dingo 322 was designed for use if an actuator or linkage were positioned in this area:

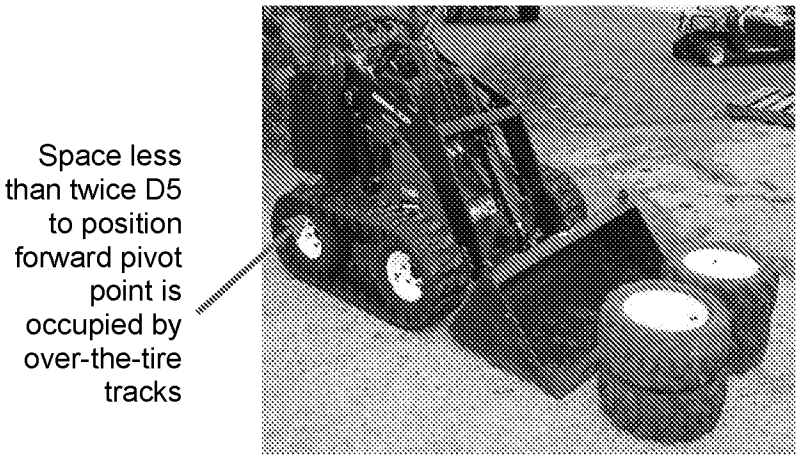


Figure V

"If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." MPEP §2143.01(V).

Because the space that is between the rotational axis and twice D5 (i.e., twice the distance between rotational axis and the bottom of the first side of the mainframe) in the Dingo 322 machine (1) is so small in size that it cannot accommodate movement of a linkage or actuator that has a pivot point in this space; (2) is occupied by the hydraulic or chain drive components; and (3) is adapted to accommodate over-the-tire tracks that are sold by Toro that inhibit placement of pivot points within the area, claim 19 and claims 20 and 22-36 depending therefrom are patentable over the cited references.

Claim 26 recites that the vertical distance between the rotational axis R and the forward-most pivot point is less than 1.75 D5 and claim 27 recites that this distance is less than 1.5 D5. As noted above, Dingo 322 cannot accommodate a pivot point location that is less than twice D5. For at least this reason, claims 26 and 27 are further patentable over the cited references.

Claim 33 recites that the compact tool carrier comprises a single cross-member. As noted above in regard to claim 17, one of skill in the art would not modify Dingo 322 by eliminating a cross-member because the loss of strength caused by eliminating a cross-member cannot be merely mitigated by increasing the size of the remaining cross-member because the loader is not able to distribute forces laterally along the length of the loader in the same manner. For at least this reason, dependent claim 33 is patentable over the cited references.

As amended, claim 34 recites that each cross-member is fully disposed forward of the second, fourth and sixth pivot points (i.e., the pivot points at which the first linkage, second linkage and actuator connect to the loader arm). As discussed above in regard to claim 18, cross-member shown in Figure 3 is not fully disposed forward of the purported connection between the actuator and the loader arm. For at least this reason claim 34 is patentable over the cited references.

New claim 35 recites the first and fifth pivot point (i.e., the pivot point at which the first linkage and actuator are pivotally attached to the first side of the mainframe) are less than twice D5 and are above the rotational axis. Figures 1 and 8 of Komatsu are the only embodiments in which the actuator pivot point and a linkage pivot point are less than twice D5. With reference to Figure 1 of Komatsu[14], the pivot point formed between the actuator and the mainframe is **below** the rotational axis.

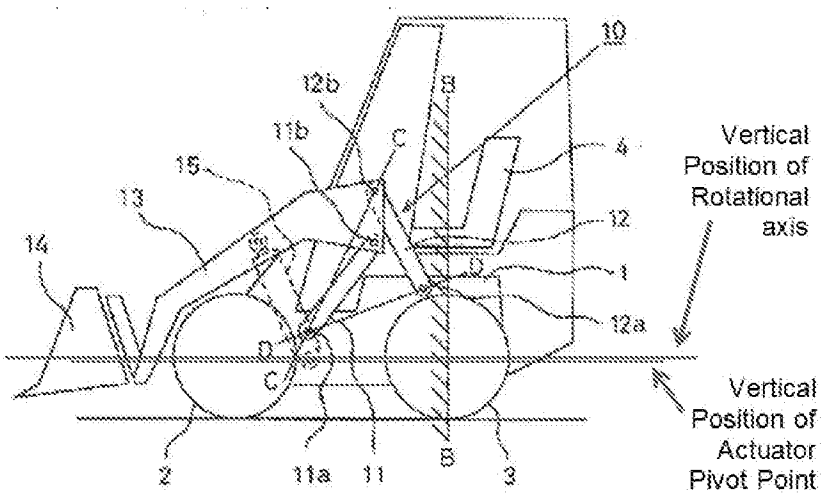


Figure 1 of Komatsu

For this reason, dependent claim 35 is further patentable over the cited references.

New claim 36 recites the first pivot point (i.e., the pivot point at which the first linkage is pivotally attached to the first side of the mainframe) is less than twice D5 and is above tracks or wheels of the drive mechanism. As shown in Figure W, the only linkage having a distance between the rotational axis and the pivot point connecting it to the mainframe of less than twice D5 is the forward linkage (D2/D5=1.0 while D3/D5=2.47).

[14] The embodiments of Figures 1 and 8 of Komatsu have the same actuator and linkage pivot points in the mainframe.

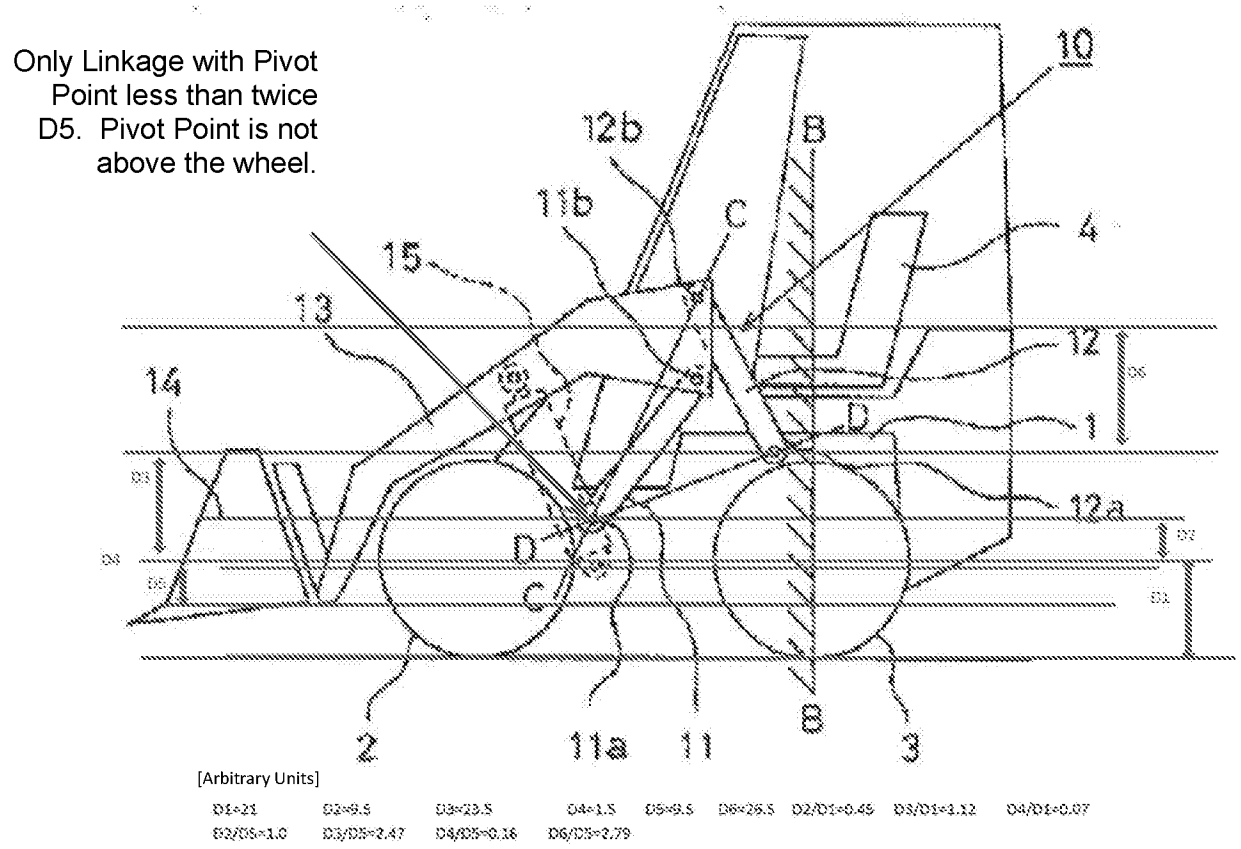


Figure W

The forward linkage pivot point is not above the wheel as recited in claim 36. Further, in the Dingo 322 machine, the entire area defined by twice D5 is below the wheels as shown in Figure X:

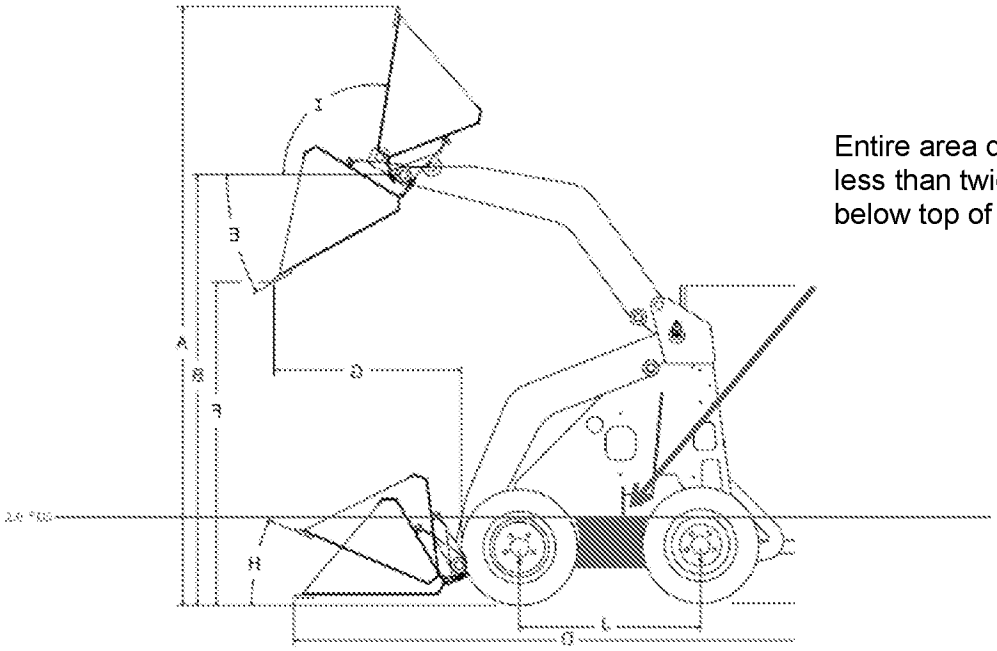


Figure X

Dingo 322 is not able to position a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than twice D5. For at least these reasons, dependent claim 36 is further patentable over the cited references.

D. THE CITED REFERENCES DO NOT PRESENT A SUBSTANTIAL NEW QUESTION OF PATENTABILITY

To institute an *ex parte* reexamination, the Director must find that the Request raises a "substantial new question of patentability." 35 U.S.C. §303(a). When the prior art that forms the basis of the Request was cited during examination of the patent for which reexamination was requested, which is the case in the instant proceeding, the prior art may present a substantial new question of patentability only if the reference is presented "in a new light or in a different way that escaped review during earlier examination". MPEP §2216. An argument that was already decided by the Office during the original examination cannot raise a new question of patentability." *In re Swanson*, 540 F.3d 1368, 1380, 88 U.S.P.Q.2d 1996 (Fed. Cir. 2008). To determine whether a reference previously considered by the Patent Office creates a substantial

new question of patentability, "the PTO should evaluate the context in which the reference was previously considered and the scope of the prior consideration and determine whether the reference is now being considered for a ***substantially different purpose***." *Id.* at 1380; Emphasis added. The Office should withdraw the determination of a substantial new question of patentability set forth in its August 3, 2018 Order Granting *Ex Parte* Reexamination. The patentability question presented in Toro's Request for *Ex Parte* Reexamination was previously decided by the Examiner during examination of the '750 Patent and **the Request did not consider the art for a substantially different purpose**.

1. Reexamination History

The '750 Patent is a continuation of U.S. Patent No. 9,321,386 ("the '386 Patent"). Toro filed three Requests for *Ex Parte* Reexamination of the '386 Patent:

- A First Request filed February 28, 2017 which was based on a Vermeer S450TX Brochure and a Brochure entitled "Mustang - Skid Steer Loaders, Radial and Vertical Lift" which was assigned Reexamination Control No. 90/013,915 ("First '386 Reexamination")

- A Second Request filed March 12, 2018 for reexamination of the original claims of the '386 Patent that was based on the Dingo Operator's Manual, the Dingo Parts Manual, and Komatsu which was assigned Reexamination Control No. 90/014,109 ("Second '386 Reexamination")

- A third Request filed April 13, 2018 for reexamination of the claims that issued from the reexamination of the '386 Patent that was based on the Dingo Operator's Manual, the Dingo Parts Manual, and Komatsu which was assigned Reexamination Control No. 90/014,124 ("Third '386 Reexamination")

On June 6, 2018, Toro filed a Request for *Ex Parte* Reexamination of the '750 Patent. The Office granted the request in an August 3, 2018 Order Granting Request for *Ex Parte* Reexamination.

2. Patent Owner Citation of the '386 Reexamination Proceedings and the Prior Art to the Office

Each of the reexamination proceedings of the '386 Patent was brought to the attention of the Examiner during examination of the application that granted as the '750 Patent ("'750 Patent Application"). The First '386 Reexamination was cited in a Notice of Concurrent Proceedings dated April 5, 2017. The Second '386 Reexamination was filed by the Toro after the Patent Owner received the March 2, 2018 Notice of Allowance in the '750 Patent Application. The Patent Owner filed a **petition to withdraw the '750 patent application from issuing to ensure that the Second '386 Request and art cited therein was considered by the Examiner**. The Patent Owner filed a Notice of Concurrent Proceedings concurrently with the petition to allow the Office to consider the Second '386 Reexamination:

SECOND NOTICE OF CONCURRENT PROCEEDINGS

A third party Request for Ex Parte Reexamination of the patent granted from the parent application, U.S. Patent No. 9,321,386, has been assigned the following serial number:

* Serial No. 90/014,109 (filed March 12, 2018).

March 19, 2018 Notice of Concurrent Proceedings.

The Patent Owner also filed an Information Disclosure Statement with the petition to allow the Office to consider the prior art references cited in the Second '386 Reexamination. On April 18, 2018, the Patent Owner filed a further Notice of Concurrent Proceedings to allow the Office to consider the Third '386 Reexamination:

THIRD NOTICE OF CONCURRENT PROCEEDINGS

A third party Request for Ex Parte Reexamination of the patent granted from the parent application, U.S. Patent No. 9,321,386, has been assigned the following serial number:

* Serial No. 90/014,124 (filed April 13, 2018).

April 18, 2018 Notice of Concurrent Proceedings.

The Patent Owner did not submit the reexamination requests themselves so as not to over-burden the Office with documents to which the Office already had access. Instead, the Patent Owner filed Notice of the Concurrent Reexamination Proceedings to allow the Office to review the submissions in the proceedings and determine applicability to the pending claims.

Disclosure of the *existence* of the reexaminations and not the reexamination requests themselves is consistent with Office policy. For example, Patent Owners are *prohibited* from submitting the documents themselves in a reexamination proceeding and are instructed to cite the *existence* of a copending reexamination:

> It is not required **nor is it permitted** that parties submit copies of copending reexamination proceedings and applications (which copies can be mistaken for a new request/filing); rather, submitters may provide a notice identifying the application/proceeding number and its status. Any submission that is not permitted entry will be returned, expunged, or discarded, at the sole discretion of the Office.

MPEP §2282.

It is evident from the prosecution history of the '750 Patent that the Patent Owner took the steps necessary for the Examiner to consider the submissions in the *ex parte*

reexaminations of the '386 Patent and to have the Office consider patentability of the claims over the art submitted therein.

3. The Examiner Considered the '386 Reexamination Proceedings and the Prior Art Cited Therein During Examination of the '750 Patent Application

The prosecution history indicates that the Examiner of the '750 Patent reviewed the arguments set forth by Toro in their Request for Reexamination of the '386 Patent. In the First '386 Reexamination, the Requestor argued that that the claims of the '386 Patent were obvious over a brochure entitled "S450TX Mini Skid Steer" in view of a brochure entitled "Mustang - Skid Steer Loaders, Radial and Vertical Lift." The Patent Owner filed a Notice of Concurrent Proceedings in the '750 Patent Application to notify the Office of the reexamination:

NOTICE OF CONCURRENT PROCEEDINGS

*****

A third party Request for Ex Parte Reexamination of U.S. Patent No. 9,321,386 has been assigned the following serial number:

- Serial No. 90/013,915 (filed February 28, 2017).

April 5, 2017 Notice of Concurrent Proceedings

In the final Office action dated August 30, 2017 in the '750 Patent Application, the **Examiner rejected the pending claims on the same basis as set forth in the Requestor's *Ex Parte* Reexamination Request** as shown below:

Mustang further describes the motivation for using such a vertical lift in place of a radial lift as follows with the yellow highlighting having been added thereto by Toro.

> **VERTICAL LIFT**
> Providing more reach at full lift height is optimal for applications that require loading and stacking at high heights. By keeping the load closer to the machine, lift capacities are increased over radial-lift models.

From this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the radial lift loader arm linkage of Vermeer with an appropriately sized vertical lift loader arm linkage as disclosed in Mustang to obtain the better reach and increased lift capacities that Mustang expressly teaches would result from such a replacement.

Page 26 of the Request in the First '386 Reexamination.

* * * * *

The Mustang document also states that "By keeping the load closer to the machine, lift capacities are increased over radial lift models.

Thus, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to pivotally attach the loader arm of Vermeer to its mainframe through two linkage member and an actuator in an arrangement similar to that shown on page 18 of the Mustang document in order to obtain better forward reach at full lift height and to increase the load that could be lifted as compared to a radial lift model.

Page 3 of the August 30, 2017 Final Office Action.

Because the claims were rejected on the same basis, **it is evident that the Examiner was reviewing submissions made in the *ex parte* reexaminations of the '386 Patent**.

4. The Examiner Concluded that the Claims were Patentable over the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu

Prior to consideration of the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu, the Examiner concluded that the claims of the '750 Patent Application were allowable on the basis that modifying a compact utility loader (S450TX Mini Skid Steer) to include the vertical lift of a full size skid steer (Mustang) was not obvious because vertical lift was not suitable for the intended design and purpose of the compact utility loader and in view of the objective indicia of non-obviousness presented by the Patent Owner:

> 6. The following is a statement of reasons for the indication of allowable subject matter: Based on applicant's arguments and demonstrations presented during the personal interview conducted October 10, 2017 and the written remarks included in the response of November 10, 2017, the proposed combination of the "S450TX Mini Skid Steer"" brochure published by Vermeer in view of the "Skid Steer Loaders, Radial & Vertical Lift" document published by Mustang (as set forth in section 2 of the Office action mailed 8/30/17) would not have been obvious to one of ordinary skill in the art because the changes suggested in the combination would not be suitable for the intended design and purpose of the S450TX Mini Skid Steer. Also, the unexpected results and long felt need and attempt by others, as pointed out in applicant's remarks, further demonstrate non-obviousness of the invention as set forth in above indicated allowable claims.

Pages 3-4 of the December 8, 2017 Office action.

After the Patent Owner provided Notice of the Second and Third '386 Reexaminations to the Office, the Examiner initiated an interview with the Patent Owner's representative. As memorialized in the Examiner's Interview Summary, the Examiner and the Patent Owner's representative discussed the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu and discussed whether the references render the pending claims invalid as being obvious under 35 U.S.C. §103:

Issues Discussed ☐ 101 ☐ 112 ☑ 102 ☑ 103 ☐ Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed all pending claims.

Identification of prior art discussed the references listed on the IDS submitted 3/19/18.

Examiner-Initiated Interview Summary in March 23, 2018 Corrected Notice of Allowance

The Examiner concluded that the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu did not alter his previous conclusion that the claims were allowable because vertical lift was not suitable for the intended design and purpose of the compact utility loader and in view of the objective indicia of non-obviousness presented by the Patent Owner:

Discussed the references listed on the IDS of 3/19/18. It was agreed that the pending claims define over these references whether taken individually or in combination with the teachings of the other prior art of record.

It is evident from the prosecution history that the Examiner considered the question of whether the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu rendered the claims of the '750 Patent invalid as being obvious under 35 U.S.C. §103.

5. The Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu are Not Being Considered Now for a Substantially Different Purpose

As noted above, references that were considered during examination of the patent for which reexamination was requested may present a substantial new question of patentability only if the reference is presented "in a new light or in a different way that escaped review during earlier examination". MPEP §2216. To determine whether a reference previously considered by the Patent Office creates a substantial new question of patentability, "the PTO should evaluate the context in which the reference was previously considered and the scope of the prior consideration and determine whether the reference is now being considered for a ***substantially different purpose***." *In re Swanson*, 540 F.3d 1368, 1380, 88 U.S.P.Q.2d 1996 (Fed. Cir. 2008).; Emphasis added.

There is no evidence on record that the Examiner of the '750 Patent Application considered the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu in a light different than that as set forth in the Request. As discussed below, the Request did not set forth an interpretation of the references that was not evident from a simple review of the references themselves.

In regard to Dingo 322, the Request did not set forth an interpretation of Dingo 322 that is not evident from the Dingo 322 Operator's Manual and the Dingo 322 Parts Catalog themselves. The Dingo 322 Operator's Manual and the Dingo 322 Parts Catalog set forth a detailed description of its operation and the interconnection of its components. The Request applied Dingo 322 in a manner that is merely evident from the various illustrations of the machine in the references.

In regard to the vertical lift of Komatsu, the linkages, actuators and pivot point locations are shown in the various figures thereof. Komatsu describes the relative positions of the linkages, actuator and pivot points throughout the reference. The "teaching, suggestion, or motivation" on which the obviousness rationale that is set forth in the Request is based is the proffered advantages of vertical lift set forth in Komatsu (pages 49-50 of the Request). The Requester asserted that "these advantages are **expressly disclosed** in Komatsu" (page 49 of the Request).

The technical teachings of the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu are plainly understood from their simple review which enabled the Examiner to consider the references in the same light as set forth in the Request. The Examiner concluded that the combination does not alter his previous patentability determination. **Disagreement with Toro's obviousness conclusion in the Request does not equate to a determination that the Examiner considered the art in a different light**.

It is evident that the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu are used in the Request in the same manner in which they were considered by the Examiner. The Examiner-Initiated Interview Summary states that obviousness of all of the claims over all of the submitted references was considered:

Issues Discussed ☐ 101 ☐ 112 ☑ 102 ☑ 103 ☐ Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: all pending claims.

Identification of prior art discussed: the references listed on the IDS submitted 3/19/18.

Further, the references listed in the IDS that were considered by the Examiner were the same prior art references which were submitted by Toro in their Request:

FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	11140900	JP		1999-05-25	Komatsu Ltd.		☒
If you wish to add additional Foreign Patent Document citation information please click the Add button							Add	
NON-PATENT LITERATURE DOCUMENTS							Remove	
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.						T[5]
	1	The Toro Company, "Dingo® 322 Operator's Manual", dated 2000.						☐
	2	The Toro Company, "Dingo® 322 Parts Catalog", dated 1999.						☐
	3	For Construction Pros.com, Curt Bennink, "Size-Up Skid-Steer Loaders" article, dated 03/15/2006.						☐
	4	Plowsite.com, "Bobcat Weight Kit" chat forum dialogue, 2001.						☐
	5	Construction Shows, "Case Upgrades its Skid Steer and Compact Tracked Loader Line Up" article, 05/15/2014.						☐

The Examiner's Interview Summary indicates that the Examiner performed an obviousness analysis of all claims over the same prior art references. It cannot be

denied that this is the ***same purpose*** for which the references were considered in the Request.

Because the Patent Owner withdrew the '750 Patent Application from issuing to ensure the Examiner considered the Second '386 Patent Reexamination and the references cited therein, because the Dingo 322 Operator's Manual, the Dingo 322 Parts Catalog and Komatsu were considered by the Office in the same light as the Request, and because the Request does not apply the references in a substantially different purpose, the Request does not set forth a Substantial New Question of Patentability.

III. CONCLUSION

The Patent Owner respectfully requests reconsideration and allowance of all pending claims. The undersigned request a telephone call from the Examiner if a call might expedite allowance.

The Patent Owner herewith submits Declarations from Louis Hartke, Matt Hutchinson and Scott Prost-Domasky (including the unexecuted copies for clarity), an Interview Summary and an Information Disclosure Statement.

The Patent Owner authorizes the Commissioner to charge any fees which may be due in connection with this Amendment to Deposit Account No. 012384 in the name of Armstrong Teasdale LLP.

Respectfully submitted,

/Michael J. Vander Molen/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

DECLARATION OF LOUIS HARTKE UNDER 37 C.F.R. 1.132

I, Louis Hartke, declare and state as follows:

1. I am an inventor of the subject matter recited in the claims of U.S. Patent No. 9,975,750 ("the '750 Patent") and the presently pending claims of Reexamination Control No. 90/014,148.

2. I received a Bachelor of Science degree in Agricultural and Biosystems Engineering from North Dakota State University in 1999.

3. I have 19 years of experience in the field of product development, design, manufacturing and engineering including 6 years as a Senior Project Engineer in the area of rental machines including compact utility loaders. I am currently employed by Vermeer Manufacturing Company as a Senior Project Engineer.

4. As an inventor of the '750 Patent, I have read and understand the '750 Patent and the claims thereof and the presently pending claims of Reexamination Control No. 90/014,148.

5. I have reviewed the document entitled "Dingo 322, Dingo Compact Utility Loader, Operator's Manual", the document entitled "Dingo 322 Compact Utility Loader, Parts Catalog" (collectively "Dingo 322"), JP 11-140900 to Komatsu ("Komatsu"), and the brochure entitled "Vermeer S600/S600TX" ("the S600 Brochure").

6. The mainframe of the Dingo 322 compact tool carrier was specifically designed to accommodate a radial lift loader and would not be able to support a vertical lift loader. Dingo 322 connects the loader arms to the mainframe high on the machine and lacks sufficient structure toward the lower portion of the mainframe to support a vertical lift loader. Thus, it would not have been obvious to those of us working on designing and developing equipment in this industry to modify the radial lift loader of Dingo 322 to include vertical lift like that of Komatsu before February 20, 2015, the date that we filed our first patent application describing our invention. In fact, I don't believe Dingo 322 can successfully be modified to have a vertical lift loader.

7. Use of any of the vertical lift loader arrangements of Komatsu on the Dingo 322 machine would render Dingo 322 unsuitable for its intended purpose. Lift height is an important feature for compact utility loaders. The Dingo 322 Operator's Manual (see also page 2/1-2 of the Dingo 322 Service Manual) states that the Dingo 322 is able to achieve a hinge pin height (i.e., vertical reach as measured to the hinge pin at which the bucket pivots) of 66.0 inches which results in a dump height of 47 inches:

Specifications

Overall width	40.3 in. (103 cm)
Overall length	60.0 in. (152 cm)
Overall height	49.0 in. (125 cm)
Weight	1567 lb. (711 kg)
Rated operating capacity (with 200 lb. operator and std. bucket)	515 lb. (234 kg)
Tipping capacity (with 200 lb. operator and st. bucket)	1030 lb. (467 kg)
Wheelbase	28 in. (71 cm)
Dump height (with std. bucket)	47 in. (120 cm)
Reach—fully raised (with std. bucket)	26.0 in. (66 cm)
Height to hinge pin (std bucket in highest position)	66.0 in. (168 cm)

Page 10 of the Dingo 322 Operator's Manual

The embodiments of Figures 1[1], 6 and 8-10 of Komatsu would only achieve a hinge pin height of about 52 inches and a dump height of 33 inches when used on Dingo 322. A hinge pin height of 52 inches and a dump height of 33 inches would render Dingo 322 unsuitable for its intended purpose, as the hinge pin height and dump height are significantly less than the advertised 66.0 inch hinge pin height and 47 inch dump height.

A hinge pin height of 52 inches and a dump height of 33 inches would also render Dingo 322 unsuitable for use in its field of endeavor. A dump height of 33 inches is inadequate to dump a load into standard receptacles in this field (e.g., landscaping use) such as dumpsters, pick-up trucks and the like. A hinge pin height of 52 inches is insufficient to unload a pallet from most trucks and is incompatible with other attachments (e.g., augers used for forming holes) that require relatively high ground clearance.

[1] Figures 1 and 5 of Komatsu show the same embodiment in lowered and raised positons, respectively.

Table 1 below shows the published hinge pin heights of various compact utility loaders. The hinge pin heights were taken from published brochures of the manufacturers or were listed on the manufacture's website.

Model	Introduction Year	Hinge Pin Height (In.)
Bobcat MT52	2003	71.3
Bobcat MT55	2004	71.2
Bobcat MT85	2015	80.9
Boxer 427	2005	70
Boxer 532DX	2008	76
Boxer 950HD	2016	95
Ditch Witch SK500	2003	81
Ditch Witch SK650	2006	81
Ditch Witch SK850	2014	83
Ditch Witch SK1050	2016	83
Ditch Witch SK1550	2017	94.5
Toro Dingo 322	1999	66
Toro Dingo TX420	2000	90.1
Toro Dingo TX525	2006	65.8
Toro Dingo TX1000	2015	81
Vermeer S600TX	2005	80
Vermeer S400TX	2007	69

Model	Introduction Year	Hinge Pin Height (In.)
Vermeer S450TX	2012	72
Vermeer CTX 50	2015	72
Vermeer CTX100	2016	88

Table 1. Sampling of Hinge Pin Heights of Commercial Compact Utility Loaders

The maximum hinge pin height of about 52 inches of the embodiments of Figures 1, 6 and 8-10 of Komatsu as used on Dingo 322 is at least 14 inches less than the lowest hinge pin height of the compact utility loaders of Table 1.

In addition to lift height, another important characteristic for a compact utility loader is its "reach"—how far in front of the machine the bucket can dump when fully raised. The Dingo 322 Operator's Manual (see also page 2/1-2 of the Dingo 322 Service Manual) states that Dingo 322 is able to achieve a reach at full height of 26.0 inches.

Specifications

Overall width	40.5 in. (103 cm)
Overall length	60.0 in. (152 cm)
Overall height	49.0 in. (125 cm)
Weight	1567 lb. (711 kg)
Rated operating capacity (with 200 lb. operator and std. bucket)	515 lb. (234 kg)
Tipping capacity (with 200 lb. operator and st. bucket)	1030 lb. (467 kg)
Wheelbase	28 in. (71 cm)
Dump height (with std. bucket)	47 in. (120 cm)
Reach—fully raised (with std. bucket)	26.0 in. (66 cm)
Height to hinge pin (std bucket in highest position)	66.0 in. (168 cm)

Page 10 of the Dingo 322 Operator's Manual

The embodiment of Figure 7 of Komatsu would only achieve a reach when the loader is fully raised of about 9.6 inches. Because the reach of the embodiment of Figure 7 is 16.4 inches less than the reach of Dingo 322 (i.e., 63% less), the embodiment of Figure 7 of Komatsu would render Dingo 322 unsuitable for its intended purpose.

A reach of about 9.6 inches is inadequate for use in the field of endeavor of Dingo 322. A reach of 9.6 inches is inadequate to dump a load into a dumpster or pick-up truck. The reduced reach does not allow a load to be placed at or near the middle of a truck bed to distribute the load and reduces the ability to reach loads (e.g., pallets) that are spaced from an edge (e.g., truck edge).

Table 2 below shows the published reach at full height of various compact utility loaders. These parameters were taken from published brochures of the manufacturers or were listed on the manufacture's website. The reach for the Vermeer machines was physically measured internally by Vermeer employees.

Model	Introduction Year	Reach, Fully Raised (In.)
Bobcat MT52	2003	20.3
Bobcat MT55	2004	20.3
Bobcat MT85	2015	18.6
Toro Dingo 322	1999	26
Toro Dingo TX420	2000	21.8
Toro Dingo TX525	2006	21.8
Toro Dingo TX1000	2015	24.5
Vermeer S600TX	2005	27.3

Model	Introduction Year	Reach, Fully Raised (In.)
Vermeer S400TX	2007	21.8
Vermeer S450TX	2012	19.3
Vermeer CTX 50	2015	19.7
Vermeer CTX100	2016	22.6

Table 2. Sampling of Reach at Full Height of Commercial Compact Utility Loaders

The reach of about 9.6 inches of the loader of Figure 7 of Komatsu as used on Dingo 322 is about 10 inches less than the lowest reach of the compact utility loaders of Table 2 (i.e., is about 50% of the reach of the compact utility loaders of Table 2).

None of the embodiments of Komatsu, if applied to the Dingo 322, would yield a compact utility loader that would work for its intended purpose.

8. Designing the compact utility loaders described in the ‘750 Patent was an unpredictable endeavor. Small changes to pivot points, weight distribution, and the like in vertical lift loaders cause significant changes in the lift profile and lift capacity of the machine. The unpredictable nature of these changes is exaggerated in compact utility loaders because of the relatively small mass of the machine and restrictions on where components may be placed.

9. When developing the compact utility loader claimed in the ‘750 Patent, I observed unpredictability in the behavior of compact utility loaders. During development of the compact utility loader claimed in the ‘750 Patent, several loader arrangements were attempted that were unsuccessful. The lift profile of the initial prototype of a compact utility loader having a loader that was free from direct attachment to the mainframe and instead attached by first and second linkages and an actuator arrangement is shown in Figure 1A.

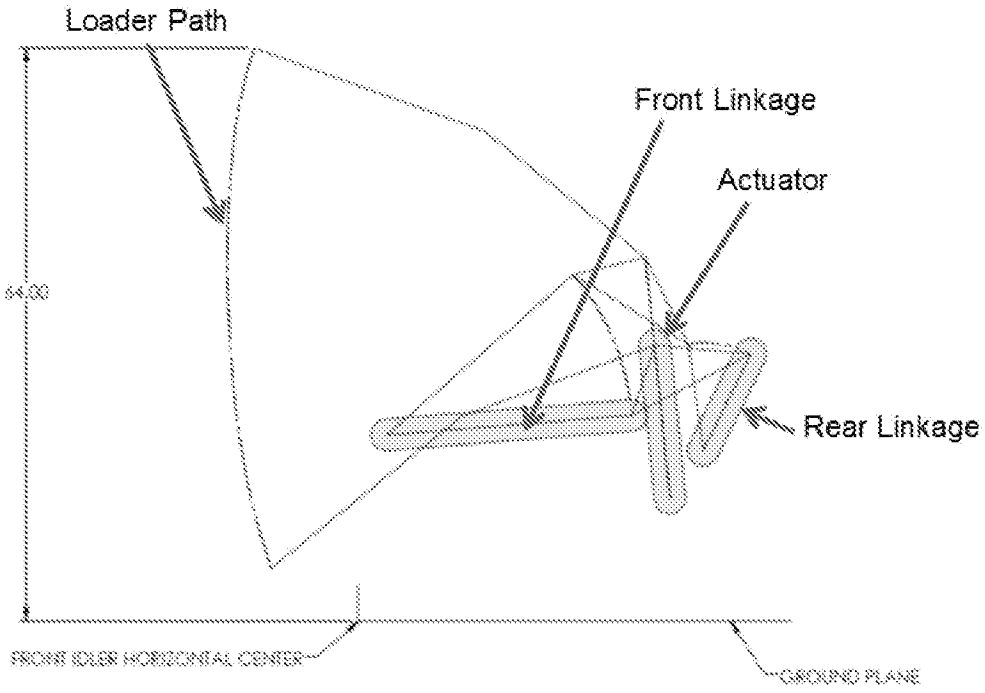


Figure 1A: Lift Path of the First Prototype

The loading profile of the first prototype is shown in Figure 1B[2]:

[2] In Figures 1B, 2B and 3B the lift capacity is the lower curve, the front linkage loading is the middle curve, and the rear linkage loading is the highest curve.

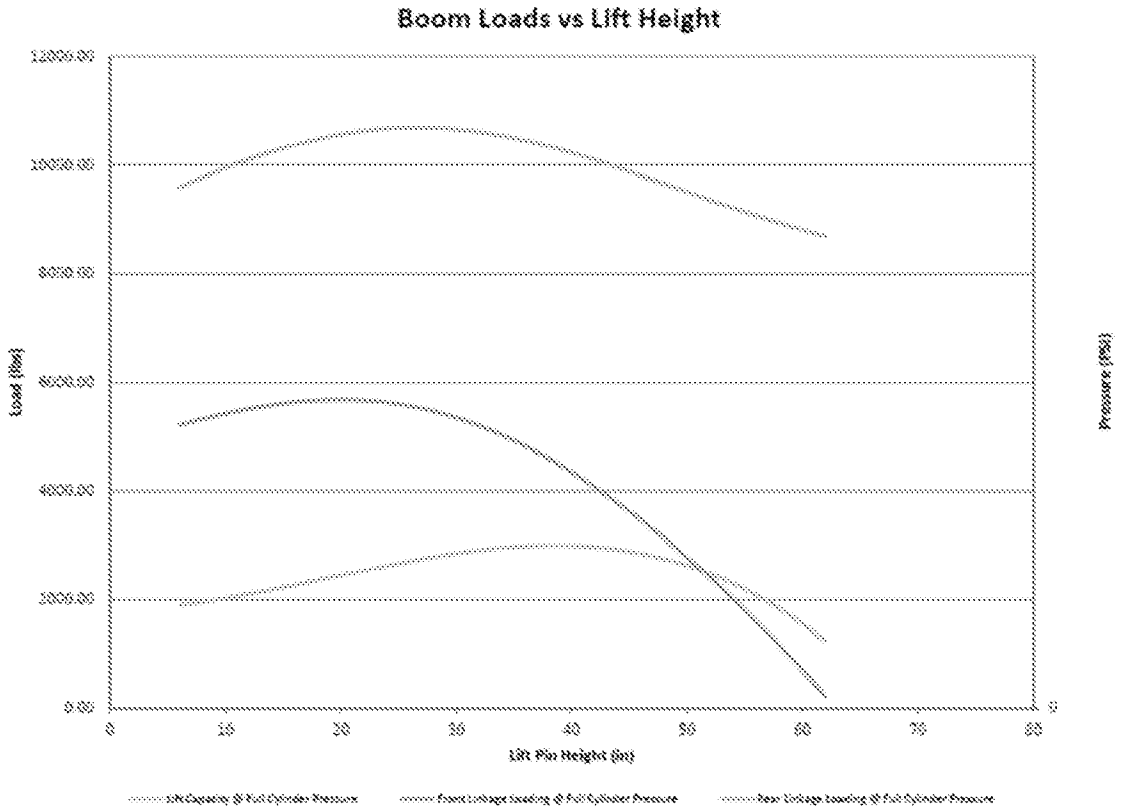


Figure 1B: Loading Profile of the First Prototype

To improve the stability of the first prototype of the compact utility loader, the mainframe was lengthened in a second prototype. The lift profile of this second prototype is shown in Figure 2A:

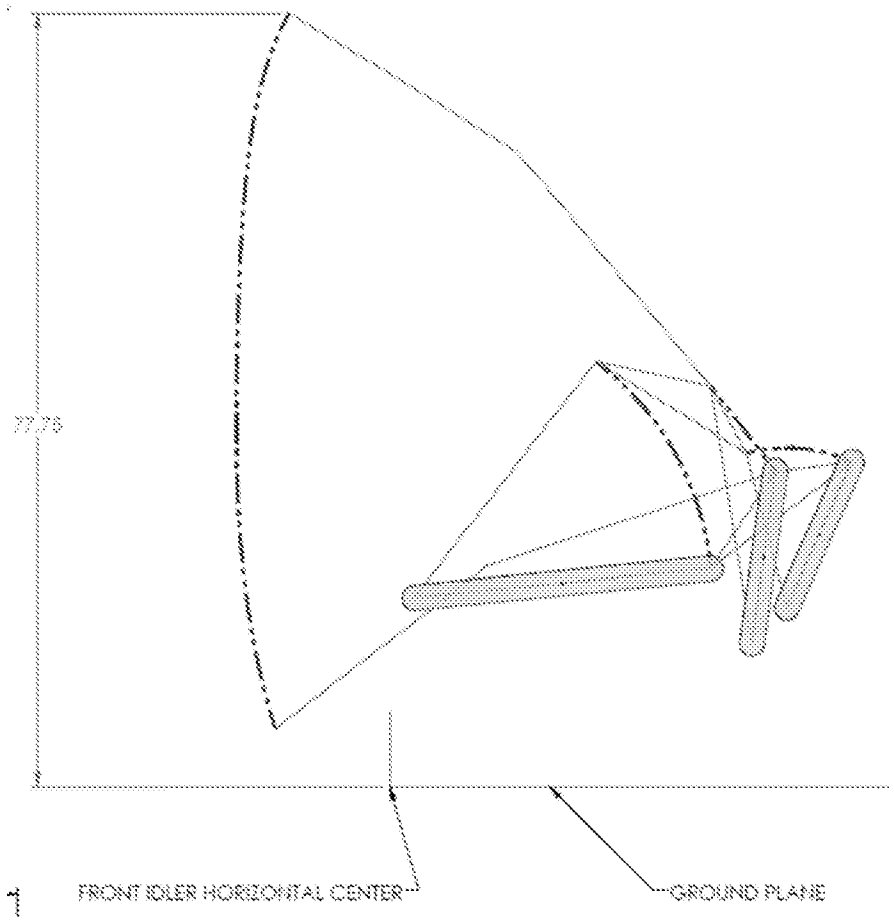


Figure 2A: Lift Profile of the Second Prototype

The linkages and actuators from the smaller initial prototype were scaled up for the second prototype. Scaling-up proved unsuccessful as shown in the lift profile of Figure 2B below.



Figure 2B: Loading Profile of the Second Prototype

As shown in Figure 2B, the second prototype would not be able to support a load during initial lifting and at its full extension as shown by the lift capacity curve (e.g., at less than about 5 inches of hinge pin height and beyond about 65 inches). Mathematical modeling and free-body diagram construction indicated that the second prototype would only be able to lift a load of 192 pounds when the loader was lifted from the supporting surface which is nearly insufficient to even lift the weight of the bucket when empty.

In a third prototype, the pivot point of the actuator in the mainframe was moved **slightly rearward** as shown in Figure 3A:

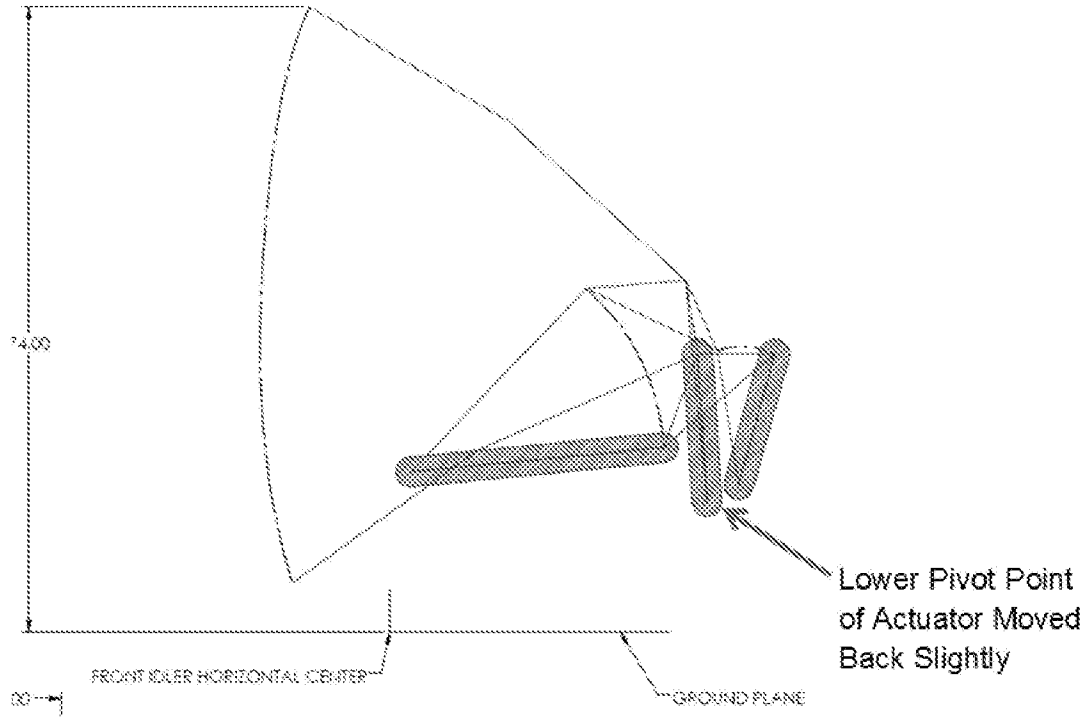


Figure 3A: Lift Profile of an Embodiment of the '750 Patent

This resulted in a much improved loading profile shown in Figure 3B:

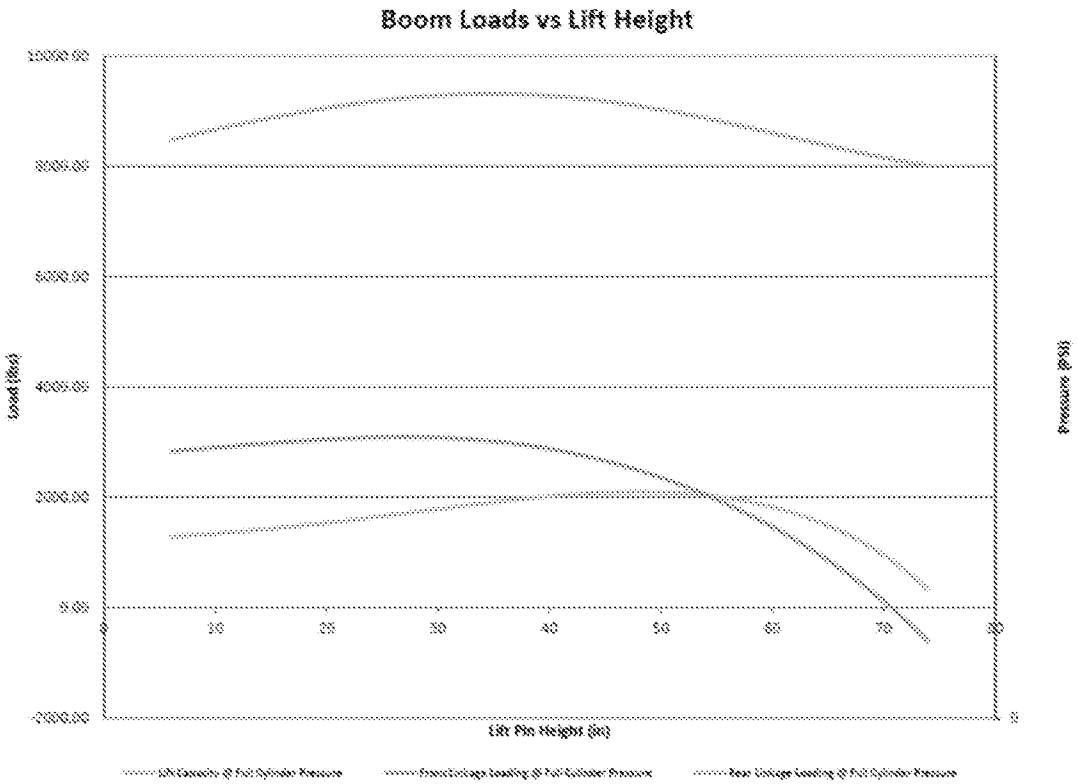


Figure 3B: Loading Profile of Third Prototype

The lift profile of Figure 3A was incorporated into Vermeer's CTX50 commercial compact utility loader.

In my experience, development of a compact tool carrier having first and second linkages\ pivotally attached to the first side of the mainframe and pivotally attached to the loader and in which the loader is free of direct attachment to the mainframe was unpredictable.

10. When developing the compact tool carrier that led to the '750 Patent, state of the art tools were used including solid modeling software from Solidworks, finite element analysis software from ANSYS, in-house programming for evaluation of loading and force analysis, stress coating, strain gauging and cycle test stands. Despite resorting to these state of the art tools, prototypes failed or were not capable of operation (e.g., were unable to lift a target load).

11. When developing the invention as set forth in claim 1 of the '750 Patent, I was highly skeptical as to whether it would be possible to develop a compact utility loader having a loader that was free from direct attachment to the mainframe (i.e., a vertical lift compact utility loader) as set forth in claim 1 of the '750 Patent. I did not believe the compact design of a compact utility loader could sufficiently support and absorb the stresses of a vertical lift loader.

12. Many failures were experienced during development of the loader arrangement of claim 1 of the '750 Patent. For example, catastrophic fracture of the loader arm occurred (Figure 4).

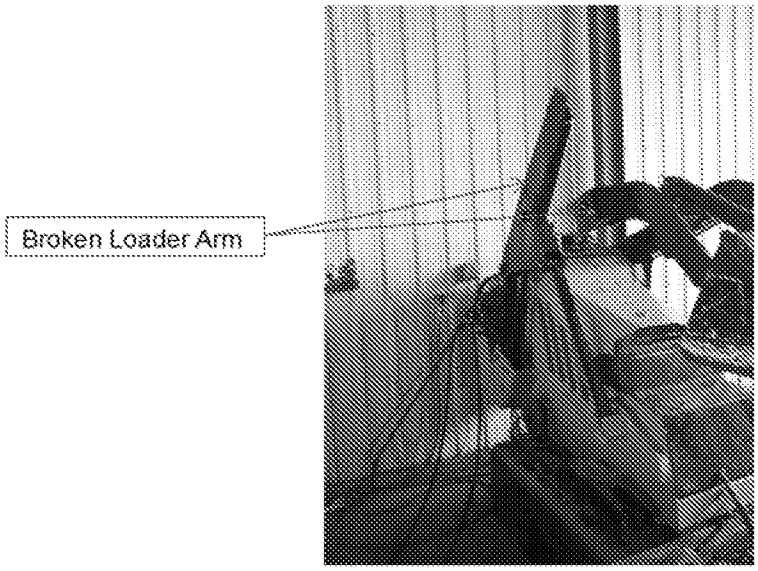


Figure 4

This failure occurred because of indirect attachment of the loader arm to the mainframe in this prototype. Changes in stiffness and in the load transfer characteristics of the vertical lift loader relative to a simpler radial boom configuration were not fully understood and appreciated during initial development.

During testing to develop the loader of claim 1 of the '750 Patent, breakage (Figure 5) and bending (Figure 6) of pivot pin retainers were experienced.

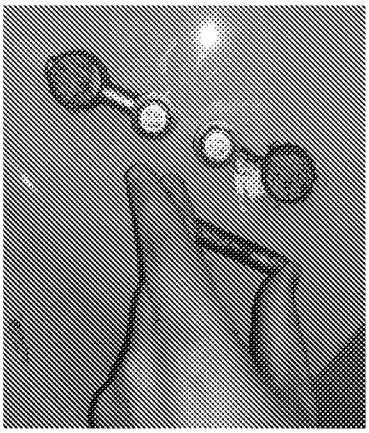


Figure 5

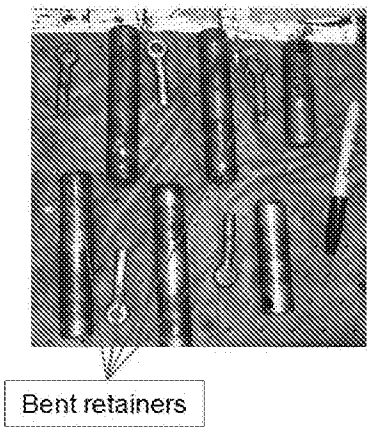


Figure 6

These failures were caused by differences in (1) the relative movement of the vertical lift components, (2) differences in the load transfer characteristics of the vertical lift components, and (3) the use of additional pinned joints which is a characteristic of a vertical lift loader as compared to a radial lift loader. These failures occurred in part because even small changes to pivot points, weight distribution, and the like in vertical lift machines cause significant and unpredictable changes in the lift profile of the machine.

13. A principal consideration in the development of compact utility loaders is to develop machines that are able to lift heavier loads without adding excessive weight to the machine and while maintaining a small footprint (i.e., length and width of the machine). The tip capacity of the loader is the industry standard to express the ability of the machine to lift a load. Tip capacity is measured by determining the highest load that may be applied to the bucket of the machine without tipping the machine forward. As shown in Figure 7[3] below, the industry has incrementally increased lift capacity over the last 20 years.

[3] Figure 7 was prepared by calculating the ratio of the published tipping capacity to the published machine weight for various compact utility loaders. The significant gap between the tip ratio shown for Toro's TX-1000 (the most recent machine shown for Toro and which is vertical lift) and those shown for Vermeer's CTX-100 and CTX-50 machines (also vertical

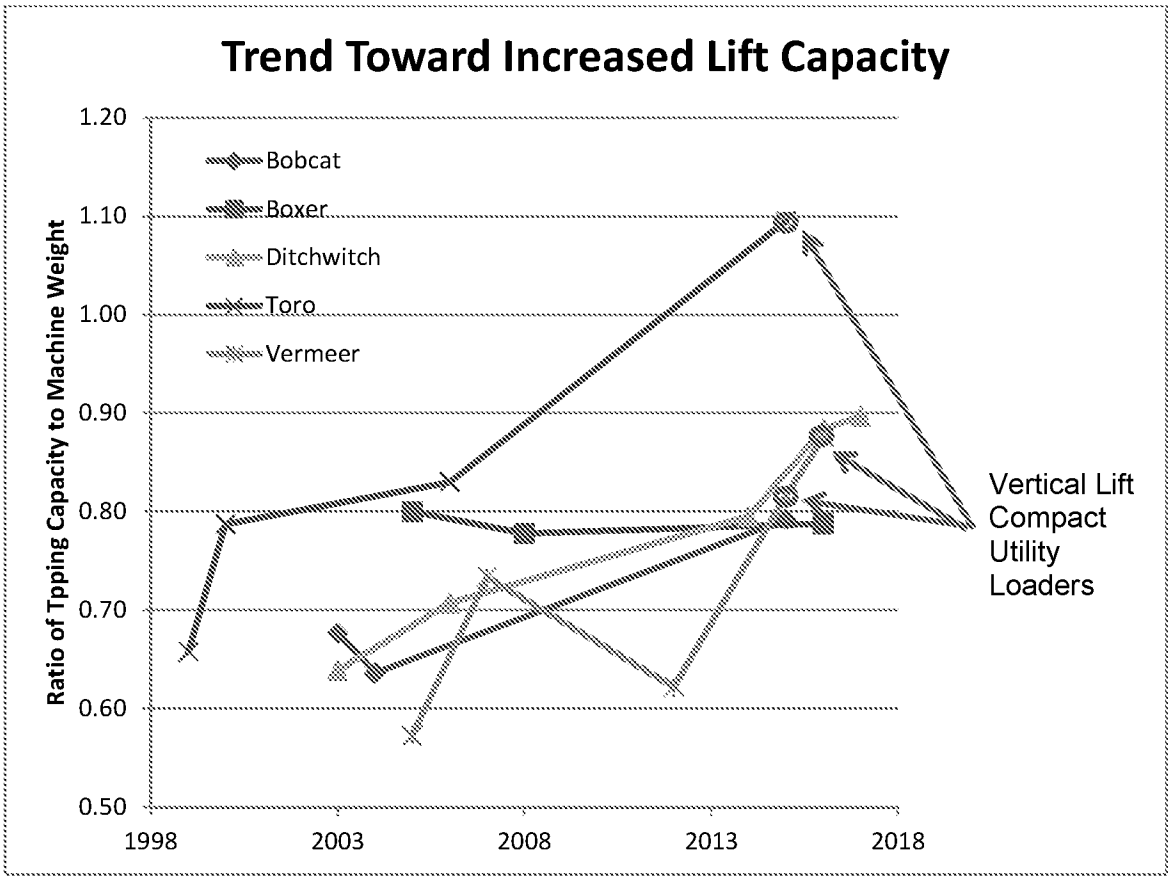


Figure 7

The industry did not turn to vertical lift loaders despite vertical lift loaders being able to increase lift capacity by 32% as noted below.

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lift) is the result of Vermeer's application of an additional safety factor in the machine specifications that it provides to the public. In addition to the ISO Standard 14397-1:2007 that Toro applies to derive the maximum lift capacity for its machine, Vermeer applies an additional test that results in a further decrease of its maximum lift capacity. If Toro and Vermeer's machines were compared in an "apples to apples" fashion using only the ISO Standard 14397-1:2007 test, Vermeer's maximum lift capacities—and therefore its tip ratios—would be higher. Figure 7 also includes two Bobcat models in which the weight as published included the weight of the bucket. A weight of a standard bucket (about 165 lb) was subtracted from the weight as published to maintain consistency in the data of Figure 7.

14. By using first and second linkages and an actuator to support the loader (i.e., a vertical lift loader) as set forth in claim 1 of the '750 Patent, the lift capacity of an embodiment of the invention was increased by 32% relative to the radial lift S450TX compact tool carrier without increasing the weight of the machine. The lift capacities were measured in accordance with ISO Standard 14397-1:2007 entitled "Earth-moving Machinery - Loaders and backhoe loaders – Part 1: Calculation of rated operating capacity and test method for verifying calculated tipping load."

15. Despite this need for increased lift, the industry did not develop vertical lift compact utility loaders. For example, manufacturers shifted from "walk-behind" machines to predominantly "ride-on" machines. Manufacturers of ride-on machines are permitted to incorporate an average weight of an operator (165 lb standard) in the tip capacity testing which generally increases the rated lift capacity. Other manufacturers have included "weight kits" that add weight to the back of the machine to increase lift capacity while sacrificing ground clearance (Figure 8).

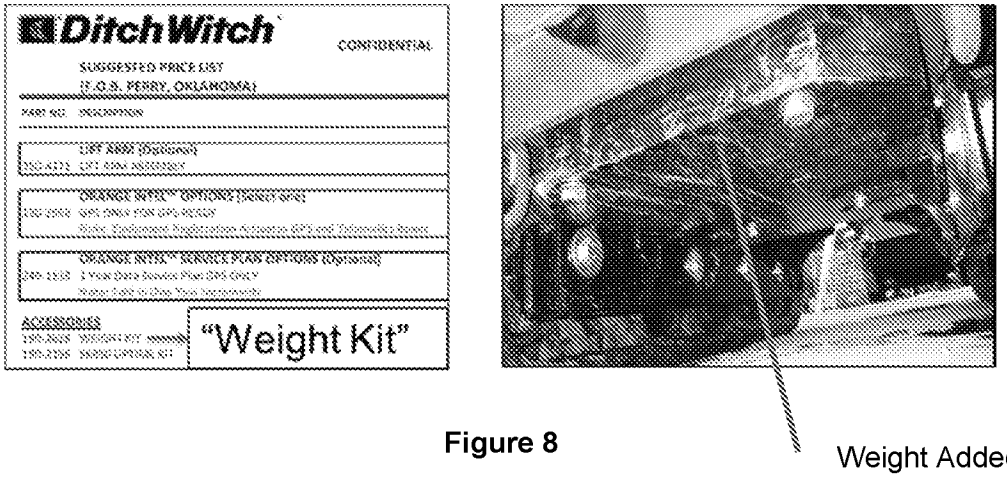


Figure 8

Commercial users have even bolted their own counter-weights near the rear of the machine to increase lift capacity (Figure 9):



Weight Added by Customers

Figure 9

These attempts by others have resulted, at best, in incremental increases in the rated lift capacity of the compact tool carrier.

16. The distances set forth in claim 19 in which the distance between the rotational axis and the pivot points of the first and second linkages and the actuator in the mainframe are less than 1.5 times the distance between the rotational axis and the bottom of the compact tool carrier (1.5 D1) and the distance between the forward-most pivot point is less than twice the distance between the rotational axis and the bottom of the first side of the mainframe (2.0 D5) are significant. These characteristics directly relate to the low profile character of the compact utility loader. A compact utility loader having these distances has relatively low pivot points and/or includes a rotational axis or mainframe that is relatively close to the ground. By lowering the pivot points, the stiffness of the mainframe increases which allows the weight of the mainframe to be reduced. Lowering the pivot points also lowers the center of gravity of the mainframe.

17. The Dingo 322 mainframe lacks sufficient area to position a pivot point of a linkage or actuator such that the distances between the pivot point and the rotational axis are less than twice the distance (2.0 D5) between the rotational axis and the bottom of the mainframe as recited in claim 19. Dingo 322 has a relatively small distance D5 between the bottom of the mainframe and the rotational axis of the wheels as

shown in Figure 10[4] below. Stated differently, Dingo 322 has a *relatively high mainframe* relative to the wheels to increase ground clearance.

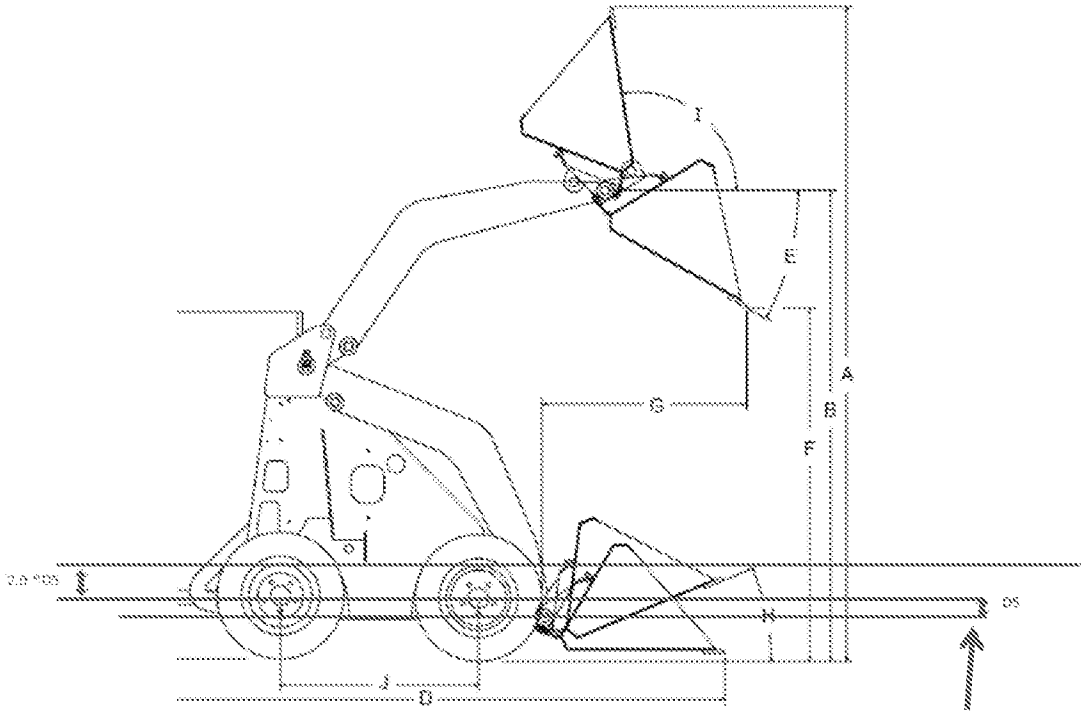


Figure 10

The available space to position a pivot point such that the distance between the pivot point and the rotational axis is less than 2.0 D5 is small, as shown in Figure 11[5]:

[4] The distances on Figure 10 were determined by measuring the distance D5 between the rotational axis of the wheels and the bottom of the mainframe in Dingo 322, as shown on page 2/1-2 of the Dingo 322 Service Manual. The distance from the rotational axis that is twice D5 is also indicated on Figure 10.

[5] Figure 11 was obtained by filling the available space in the mainframe in which the distance between the rotational axis of the wheels is less than 2.0 D5.

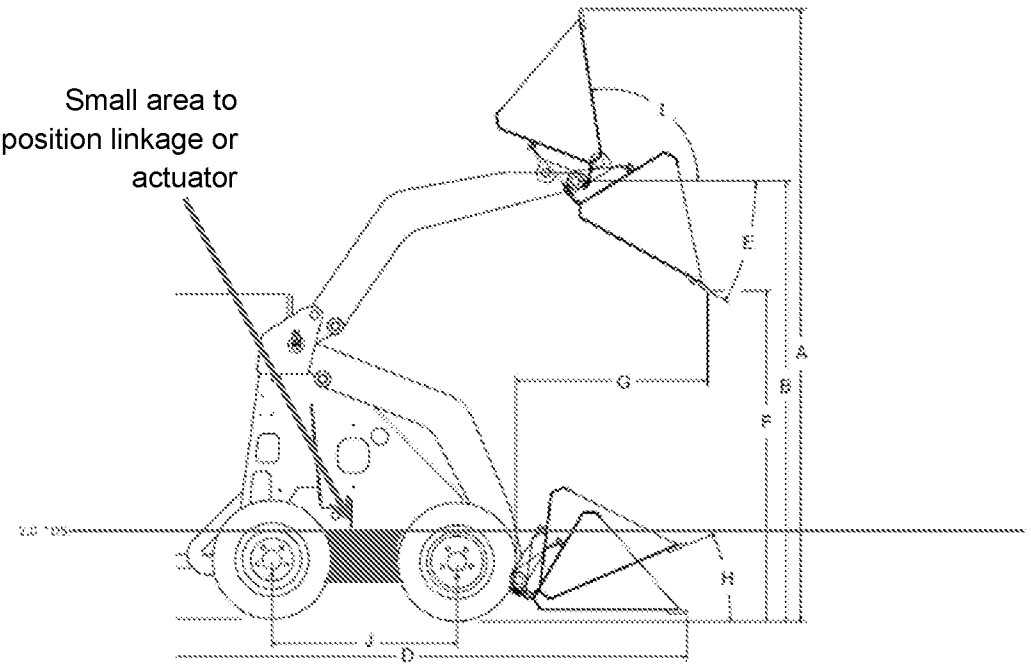


Figure 11: The available space for forward-most pivot point (2.0 D5)

If this was attempted on the Dingo 322 mainframe, the linkage or actuator would not be able to move back and forth as required in a vertical lift loader arrangement. Also, the pivot points cannot be positioned within this area in the Dingo 322 mainframe because the drive mechanism of the Dingo 322 machine is positioned throughout the space as further explained below.

18. As disclosed in the Dingo Service Manual, Dingo 322 was available in a "4-Paw" drive system in which each wheel was driven by a hydraulic motor. The Service Manual discloses diesel and gas versions of Dingo 322 that appear to have identical "4-Paw" hydraulic drive systems.

Drive System

Model	220		222	220D, 320D	322	323	
	22311	22317	22300 22304	22302 22303	22306	22312	22318
Chain Drive	X	X	X				
4-Paw				X	X	X	X

Chain Drive Models:
All four wheels are powered. The two rear wheels are individually driven by hydraulic rotor vane motors. Each front wheel is chain driven from the rear wheels via #50H chain.

4-Paw Models:
All four wheels are powered. Each wheel is individually driven by a hydraulic roller vane motor.

Page 2/1-6 of the Dingo Service Manual

A partial view of the 4-Paw Dingo 322 machine is shown on Figure 1262 of the Dingo 322 Service Manual. The distance between the bottom of the mainframe and the rotational axis (D5) and the area encompassed by twice this distance (2.0 D5) in which the pivot point at which a linkage or actuator is pivotally connected to the mainframe are shown in the annotated figure[6] below:

[6] Distances D5 and 2.0 D5 as shown on annotated Figure 1262 were determined by measuring the distance D5 between the bottom of the mainframe and the rotational axis of the wheels in Figure 1262. Twice D5 was then calculated. Both D5 and 2.0 D5, as determined, are shown on annotated Figure 1262.

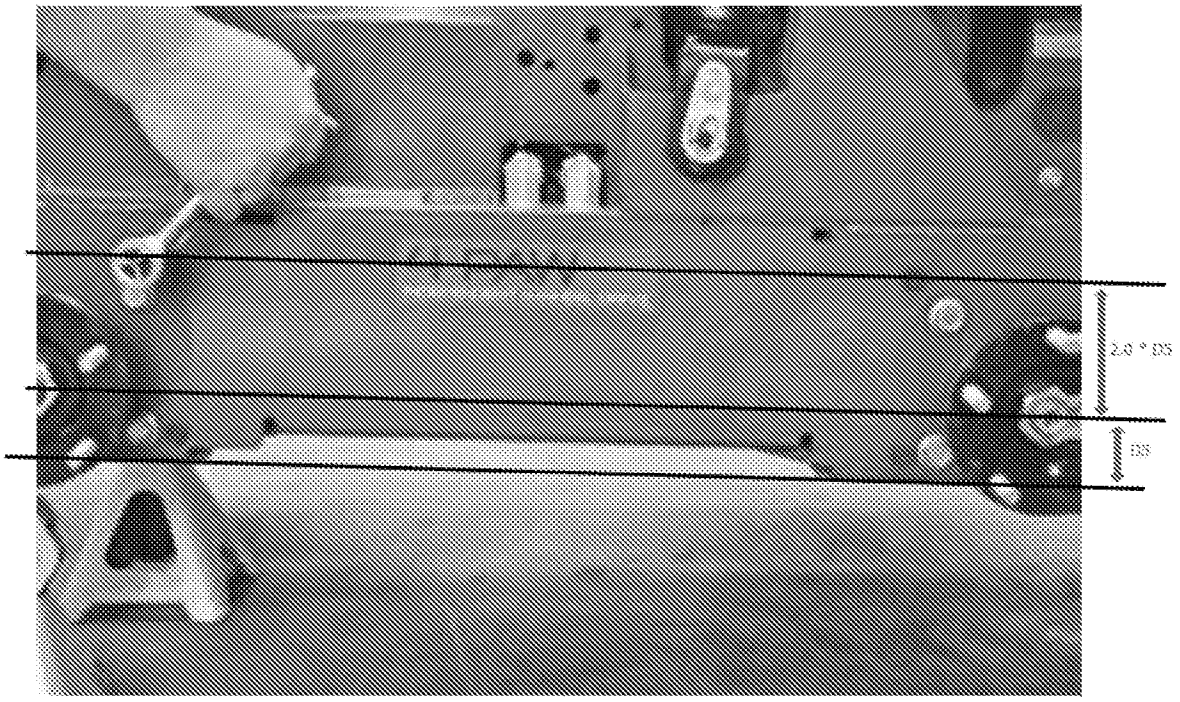


Figure 1262 of the Dingo 322 Service Manual

The area available to position the pivot points is very limited and insufficient to allow a linkage or actuator to swing back and forth as in a vertical lift loader arrangement. Further, this area is **unavailable to position the pivot points** because this portion of Dingo 322 **houses the hydraulics that drive the motors** as show in Figure 0888[7] from the Service Manual:

[7] Figure 0888 was annotated to show 2.0 D5 by positioning the line at the same location as in Figure 1262 above (i.e., as intersecting the top bolt holes at which the cover plate is fastened to the mainframe).

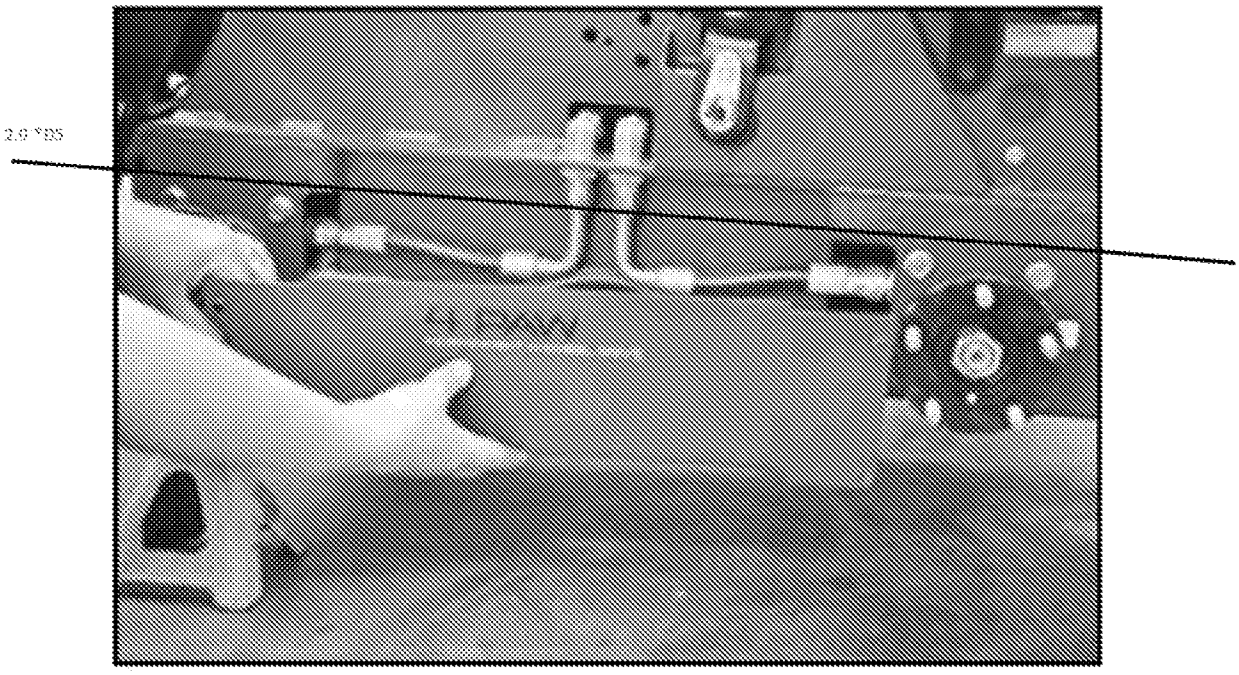


Figure 0888 of the Dingo 322 Service Manual

A pivot point could not be positioned between the rotational axis and twice D5 because of the limited space to do so and because this area houses the hydraulic components beneath the cover plate as shown in Figure 0888. To eliminate the hydraulics that power the motors would render Dingo 322 incapable of its intended purpose as a compact utility loader or would drastically change the principle of operation of Dingo 322.

As shown on page 2/1-6 of the Dingo 322 Service Manual above, several Dingo models included a chain drive rather than a hydraulic drive.

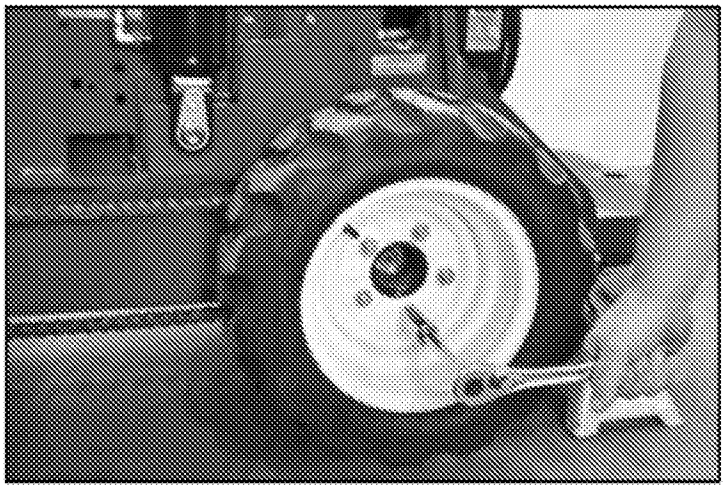


Fig. 0279 (page 4/1-2 of Service Manual).

If Dingo 322 was modified to include a chain drive as shown on Page 2/1-6 of the Dingo 322 Service Manual, a pivot point could not be positioned between the rotational axis and twice D5 because the chain is positioned in the area between the rotational axis and twice D5.

If Dingo 322 were modified to include a pivot point within twice D5, Dingo 322 would also be rendered unsuitable for its intended purpose to accommodate over-the-tire tracks available for purchase from Toro:

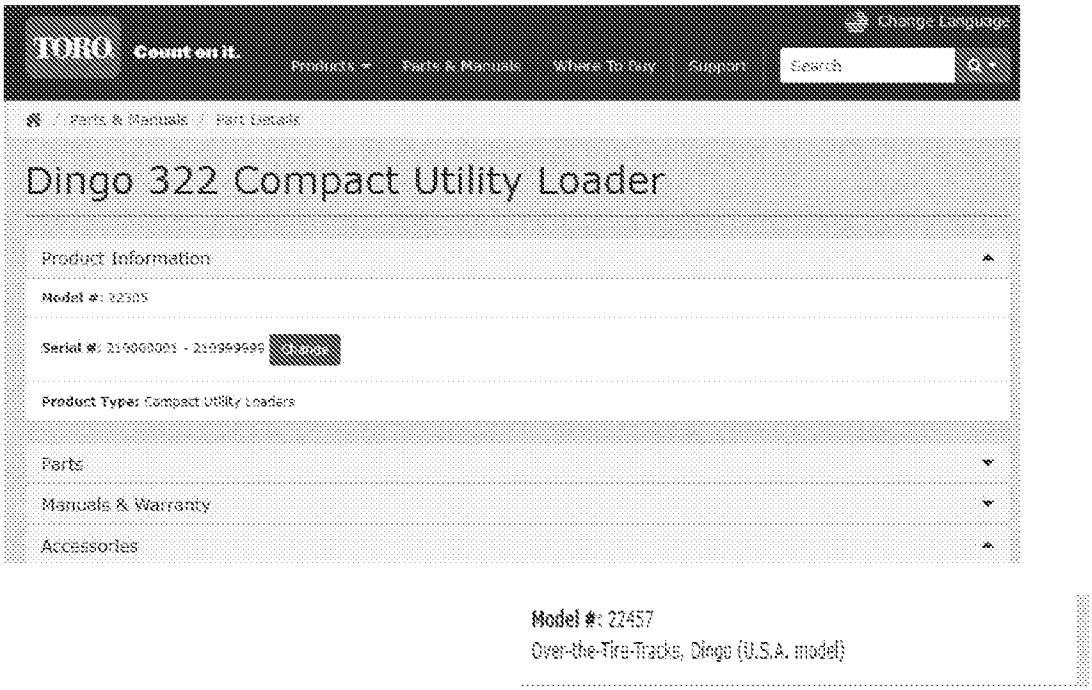


Figure 12 (https://www.toro.com/en/parts/partdetails/?id=23629)

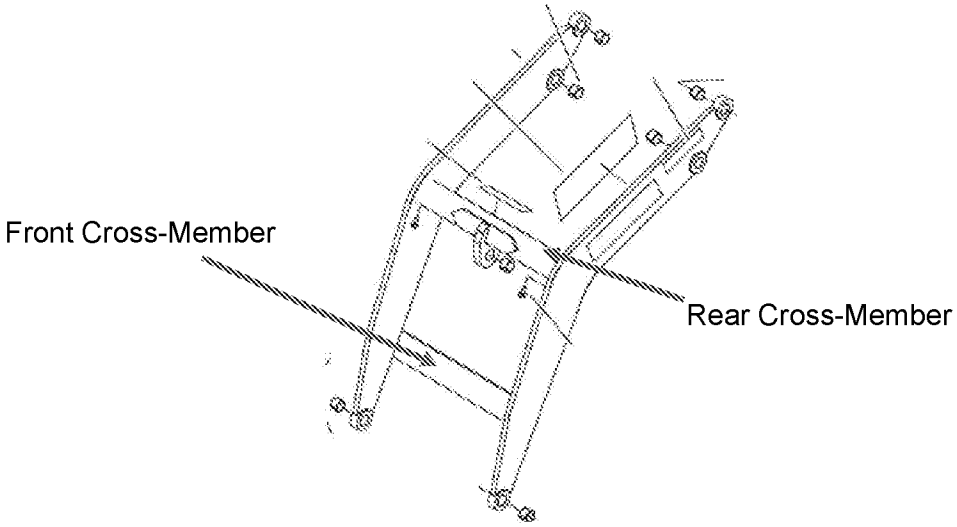
The pivot point location of the actuator or linkage in the mainframe of Dingo 322 cannot be less than twice D5 because Dingo 322 cannot accommodate the over-the-tire tracks for which Dingo 322 was designed for use if the actuator and linkage were positioned in this area:



Figure 13

For these reasons, people designing and developing equipment in this industry would not have modified Dingo 322 to include a pivot point in which a linkage or actuator is pivotally connected to the mainframe that is positioned less than twice the distance between the bottom of the mainframe and the rotational axis (2.0 D5) as recited in claim 19.

19. Those designing and developing equipment in this industry also would not have modified Dingo 322 to have a single cross member as recited in claims 17 and 33. With reference to Sheet No. 2 on page 1 of the Dingo Parts Catalog, the Dingo 322 loader includes two cross-members that extend between the two loader arms.



Sheet No. 2 of the Dingo 322 Parts Catalog

As shown in the sketch below, the front and rear cross-members of the Dingo 322 loader allow the loader to behave as a structural "box" in which forces may be distributed side-to-side across the loader.

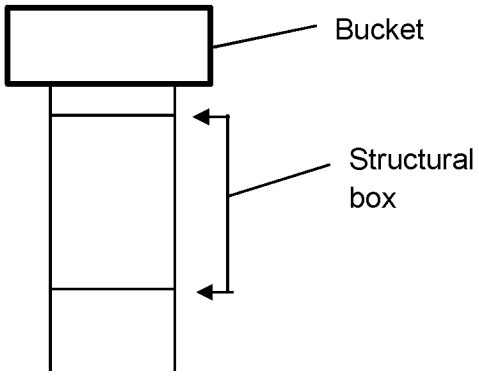


Figure 14

If a cross-member of Dingo 322 were eliminated, the behavior of the loader would change significantly because the loader is less able to laterally communicate or absorb the forces applied to the loader across the loader (i.e., from side-to-side). This loss of strength cannot be mitigated by strengthening the remaining cross-member as the loader would remain less laterally stable. The remaining cross-member of Dingo 322 would be prohibitively heavier with complex transitions which

would negatively affect machine weight, stability and operator visibility through the travel path.

20. With reference to Figure 1[8] of Komatsu, the pivot points formed between the fifth pivot point (i.e., pivot point of the actuator) is not less than the rotational axis as recited in claim 35.

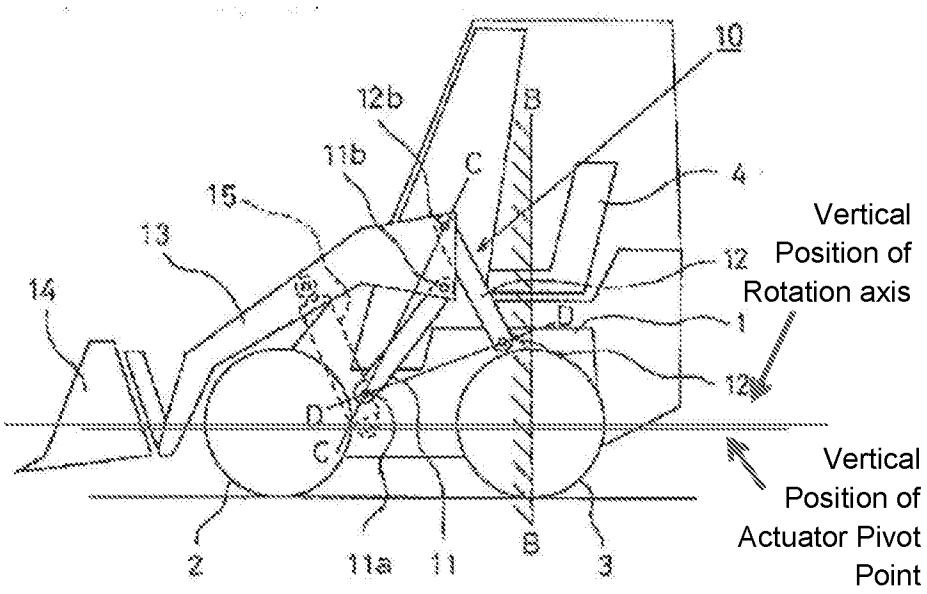


Figure 1 of Komatsu

21. Komatsu does not include a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than 2.0 D5 as recited in claim 36. As shown in Figure 15[9] below, the only linkage of Figure 1 of

[8] Figure 1 of Komatsu was annotated by determining the midpoint between the top and bottom of the wheels to find the rotational axis of the wheels. The height of the actuator pivot point is also shown in Figure 1 of Komatsu.

[9] The various ratios of Komatsu shown at the bottom portion of Figure 15 were determined by measuring the respective distances and calculating the ratio (e.g., by measuring the vertical distance D2 between the forward linkage pivot point and the rotational axis and measuring the distance D5 between the rotational axis and the bottom of the mainframe and calculating D2 divided by D5).

Komatsu having a distance between the rotational axis and the pivot point connecting it to the mainframe of less than twice D5 is the forward linkage (D2/D5=1.0 while D3/D5=2.47).

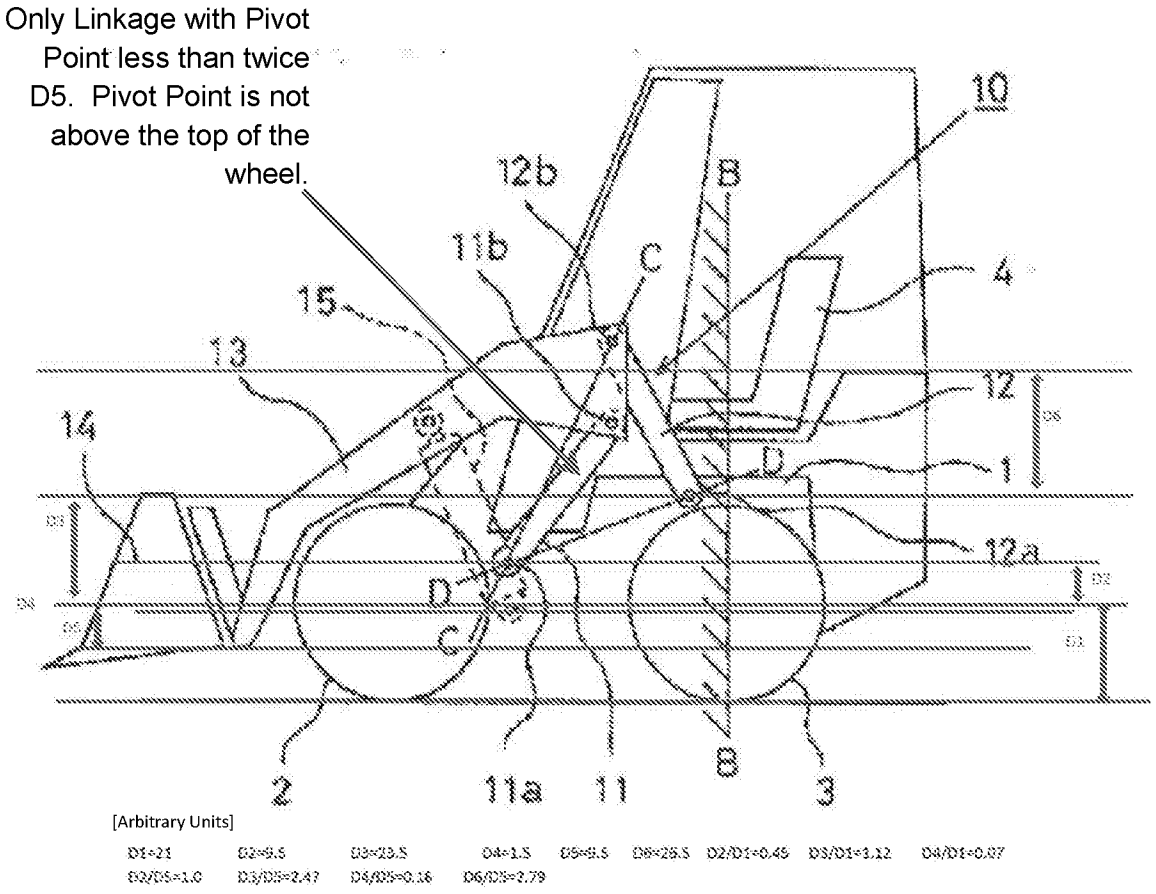


Figure 15

The pivot point between the forward linkage and mainframe is not above the wheel as recited in claim 36.

Further, Dingo 322 is not able to position a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than

2.0 D5. In the Dingo 322 machine, the entire area defined by 2.0 D5 is below the wheels as shown in Figure 16[10]:

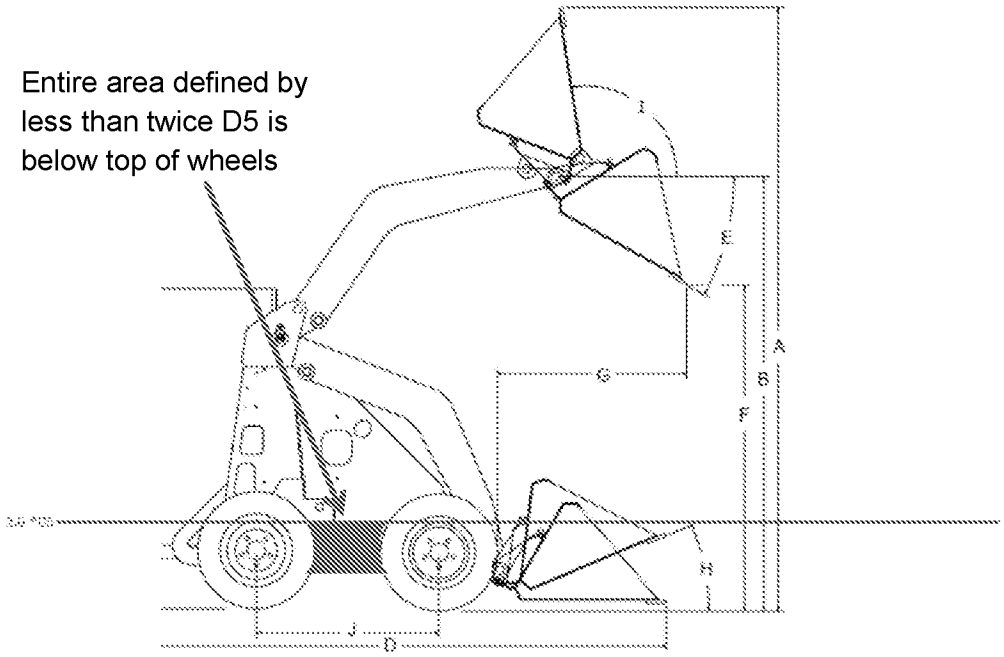


Figure 16

Dingo 322 is not able to position a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than 2.0 D5 as recited in claim 36.

22. Komatsu does not include a cross-member that is disposed fully forward of a connection between the actuator and the loader arm as recited in claims 18 and 34. Because the connection made by the piston arms 16a of Figure 3 of Komatsu is not shown, it is not evident whether the piston arms 16a connect to the loader arm 13 or to the cross-member:

[10] Figure 16 corresponds to Figure 11 above.

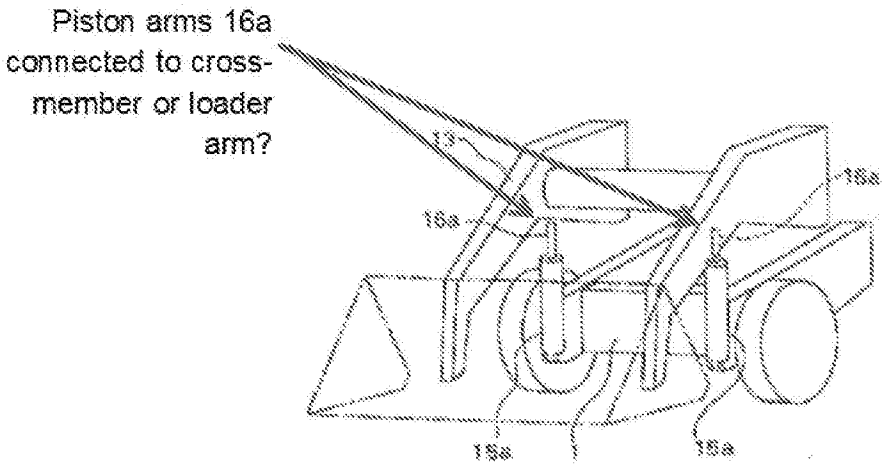


Figure 3 of Komatsu

Even if the piston arms 16a were connected to the loader arm, Figure 3 does not show or otherwise indicate that the cross-member is disposed *fully forward* of a connection between the actuator and the loader arm as recited in claims 18 and 34.

23. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.

Louis Hartke _____ Date _____

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al.
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

Art Unit: 3993

DECLARATION OF LOUIS HARTKE UNDER 37 C.F.R. 1.132

I, Louis Hartke, declare and state as follows:

1. I am an inventor of the subject matter recited in the claims of U.S. Patent No. 9,975,750 ("the '750 Patent") and the presently pending claims of Reexamination Control No. 90/014,148.

2. I received a Bachelor of Science degree in Agricultural and Biosystems Engineering from North Dakota State University in 1999.

3. I have 19 years of experience in the field of product development, design, manufacturing and engineering including 6 years as a Senior Project Engineer in the area of rental machines including compact utility loaders. I am currently employed by Vermeer Manufacturing Company as a Senior Project Engineer.

4. As an inventor of the '750 Patent, I have read and understand the '750 Patent and the claims thereof and the presently pending claims of Reexamination Control No. 90/014,148.

5. I have reviewed the document entitled "Dingo 322, Dingo Compact Utility Loader, Operator's Manual", the document entitled "Dingo 322 Compact Utility Loader, Parts Catalog" (collectively "Dingo 322"), JP 11-140900 to Komatsu ("Komatsu"), and the brochure entitled "Vermeer S600/S600TX" ("the S600 Brochure").

6. The mainframe of the Dingo 322 compact tool carrier was specifically designed to accommodate a radial lift loader and would not be able to support a vertical lift loader. Dingo 322 connects the loader arms to the mainframe high on the machine and lacks sufficient structure toward the lower portion of the mainframe to support a vertical lift loader. Thus, it would not have been obvious to those of us working on designing and developing equipment in this industry to modify the radial lift loader of Dingo 322 to include vertical lift like that of Komatsu before February 20, 2015, the date that we filed our first patent application describing our invention. In fact, I don't believe Dingo 322 can successfully be modified to have a vertical lift loader.

7. Use of any of the vertical lift loader arrangements of Komatsu on the Dingo 322 machine would render Dingo 322 unsuitable for its intended purpose. Lift height is an important feature for compact utility loaders. The Dingo 322 Operator's Manual (see also page 2/1-2 of the Dingo 322 Service Manual) states that the Dingo 322 is able to achieve a hinge pin height (i.e., vertical reach as measured to the hinge pin at which the bucket pivots) of 66.0 inches which results in a dump height of 47 inches:

Specifications

Overall width	40.5 in. (103 cm)
Overall length	60.0 in. (152 cm)
Overall height	49.0 in. (125 cm)
Weight	1567 lb. (711 kg)
Rated operating capacity (with 200 lb. operator and std. bucket)	515 lb. (234 kg)
Tipping capacity (with 200 lb. operator and st. bucket)	1030 lb. (467 kg)
Wheelbase	28 in. (71 cm)
Dump height (with std. bucket)	47 in. (120 cm)
Reach—fully raised (with std. bucket)	26.0 in. (66 cm)
Height to hinge pin (std bucket in highest position)	66.0 in. (168 cm)

Page 10 of the Dingo 322 Operator's Manual

The embodiments of Figures 1[1], 6 and 8-10 of Komatsu would only achieve a hinge pin height of about 52 inches and a dump height of 33 inches when used on Dingo 322. A hinge pin height of 52 inches and a dump height of 33 inches would render Dingo 322 unsuitable for its intended purpose, as the hinge pin height and dump height are significantly less than the advertised 66.0 inch hinge pin height and 47 inch dump height.

A hinge pin height of 52 inches and a dump height of 33 inches would also render Dingo 322 unsuitable for use in its field of endeavor. A dump height of 33 inches is inadequate to dump a load into standard receptacles in this field (e.g., landscaping use) such as dumpsters, pick-up trucks and the like. A hinge pin height of 52 inches is insufficient to unload a pallet from most trucks and is incompatible with other attachments (e.g., augers used for forming holes) that require relatively high ground clearance.

[1] Figures 1 and 5 of Komatsu show the same embodiment in lowered and raised positons, respectively.

Table 1 below shows the published hinge pin heights of various compact utility loaders. The hinge pin heights were taken from published brochures of the manufacturers or were listed on the manufacture's website.

Model	Introduction Year	Hinge Pin Height (In.)
Bobcat MT52	2003	71.3
Bobcat MT55	2004	71.2
Bobcat MT85	2015	80.9
Boxer 427	2005	70
Boxer 532DX	2008	76
Boxer 950HD	2016	95
Ditch Witch SK500	2003	81
Ditch Witch SK650	2006	81
Ditch Witch SK850	2014	83
Ditch Witch SK1050	2016	83
Ditch Witch SK1550	2017	94.5
Toro Dingo 322	1999	66
Toro Dingo TX420	2000	90.1
Toro Dingo TX525	2006	65.8
Toro Dingo TX1000	2015	81
Vermeer S600TX	2005	80
Vermeer S400TX	2007	69

Model	Introduction Year	Hinge Pin Height (In.)
Vermeer S450TX	2012	72
Vermeer CTX 50	2015	72
Vermeer CTX100	2016	88

Table 1. Sampling of Hinge Pin Heights of Commercial Compact Utility Loaders

The maximum hinge pin height of about 52 inches of the embodiments of Figures 1, 6 and 8-10 of Komatsu as used on Dingo 322 is at least 14 inches less than the lowest hinge pin height of the compact utility loaders of Table 1.

In addition to lift height, another important characteristic for a compact utility loader is its "reach"—how far in front of the machine the bucket can dump when fully raised. The Dingo 322 Operator's Manual (see also page 2/1-2 of the Dingo 322 Service Manual) states that Dingo 322 is able to achieve a reach at full height of 26.0 inches.

Specifications

Overall width	40.5 in. (103 cm)
Overall length	60.0 in. (152 cm)
Overall height	49.0 in. (125 cm)
Weight	1567 lb. (711 kg)
Rated operating capacity (with 200 lb. operator and std. bucket)	515 lb. (234 kg)
Tipping capacity (with 200 lb. operator and st. bucket)	1030 lb. (467 kg)
Wheelbase	28 in. (71 cm)
Dump height (with std. bucket)	47 in. (120 cm)
Reach—fully raised (with std. bucket)	26.0 in. (66 cm)
Height to hinge pin (std bucket in highest position)	66.0 in. (168 cm)

Page 10 of the Dingo 322 Operator's Manual

The embodiment of Figure 7 of Komatsu would only achieve a reach when the loader is fully raised of about 9.6 inches. Because the reach of the embodiment of Figure 7 is 16.4 inches less than the reach of Dingo 322 (i.e., 63% less), the embodiment of Figure 7 of Komatsu would render Dingo 322 unsuitable for its intended purpose.

A reach of about 9.6 inches is inadequate for use in the field of endeavor of Dingo 322. A reach of 9.6 inches is inadequate to dump a load into a dumpster or pick-up truck. The reduced reach does not allow a load to be placed at or near the middle of a truck bed to distribute the load and reduces the ability to reach loads (e.g., pallets) that are spaced from an edge (e.g., truck edge).

Table 2 below shows the published reach at full height of various compact utility loaders. These parameters were taken from published brochures of the manufacturers or were listed on the manufacture's website. The reach for the Vermeer machines was physically measured internally by Vermeer employees.

Model	Introduction Year	Reach, Fully Raised (In.)
Bobcat MT52	2003	20.3
Bobcat MT55	2004	20.3
Bobcat MT85	2015	18.6
Toro Dingo 322	1999	26
Toro Dingo TX420	2000	21.8
Toro Dingo TX525	2006	21.8
Toro Dingo TX1000	2015	24.5
Vermeer S600TX	2005	27.3

Model	Introduction Year	Reach, Fully Raised (In.)
Vermeer S400TX	2007	21.8
Vermeer S450TX	2012	19.3
Vermeer CTX 50	2015	19.7
Vermeer CTX100	2016	22.6

Table 2. Sampling of Reach at Full Height of Commercial Compact Utility Loaders

The reach of about 9.6 inches of the loader of Figure 7 of Komatsu as used on Dingo 322 is about 10 inches less than the lowest reach of the compact utility loaders of Table 2 (i.e., is about 50% of the reach of the compact utility loaders of Table 2).

None of the embodiments of Komatsu, if applied to the Dingo 322, would yield a compact utility loader that would work for its intended purpose.

8. Designing the compact utility loaders described in the '750 Patent was an unpredictable endeavor. Small changes to pivot points, weight distribution, and the like in vertical lift loaders cause significant changes in the lift profile and lift capacity of the machine. The unpredictable nature of these changes is exaggerated in compact utility loaders because of the relatively small mass of the machine and restrictions on where components may be placed.

9. When developing the compact utility loader claimed in the '750 Patent, I observed unpredictability in the behavior of compact utility loaders. During development of the compact utility loader claimed in the '750 Patent, several loader arrangements were attempted that were unsuccessful. The lift profile of the initial prototype of a compact utility loader having a loader that was free from direct attachment to the mainframe and instead attached by first and second linkages and an actuator arrangement is shown in Figure 1A.

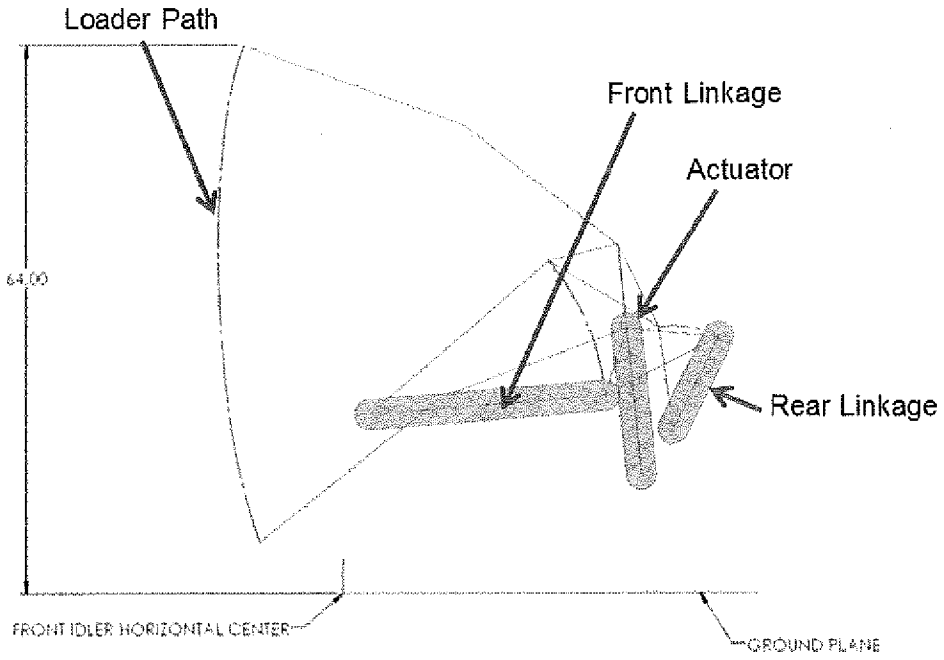


Figure 1A: Lift Path of the First Prototype

The loading profile of the first prototype is shown in Figure 1B[2]:

[2] In Figures 1B, 2B and 3B the lift capacity is the lower curve, the front linkage loading is the middle curve, and the rear linkage loading is the highest curve.

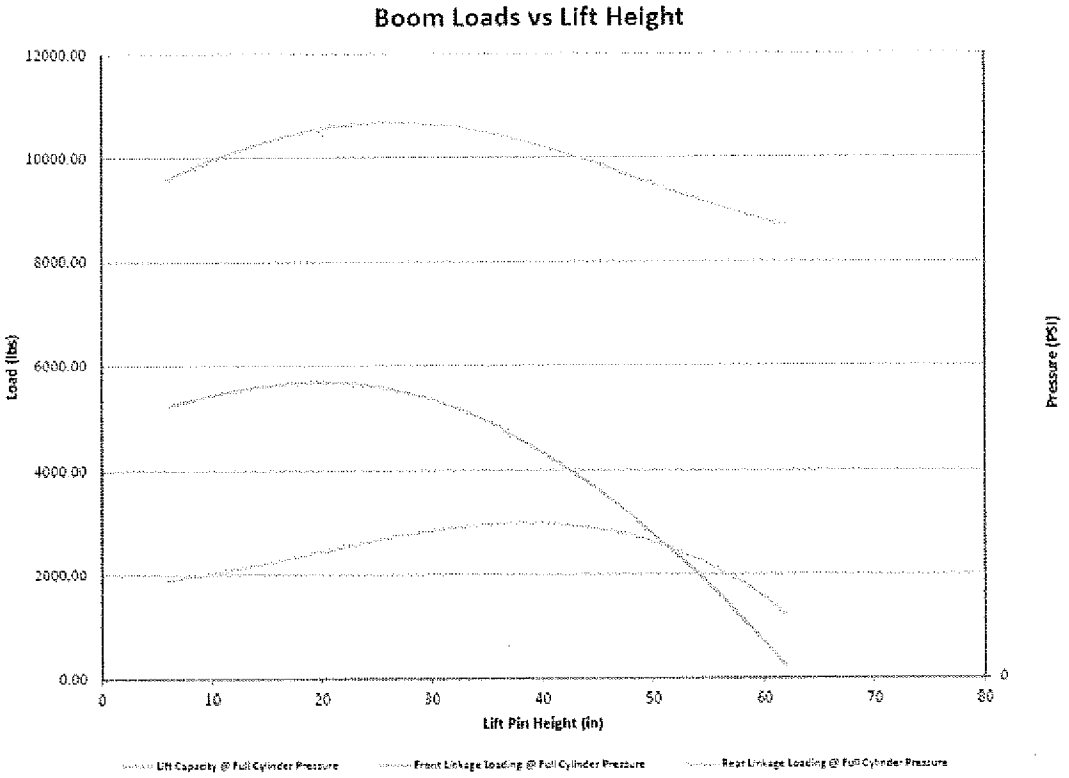


Figure 1B: Loading Profile of the First Prototype

To improve the stability of the first prototype of the compact utility loader, the mainframe was lengthened in a second prototype. The lift profile of this second prototype is shown in Figure 2A:

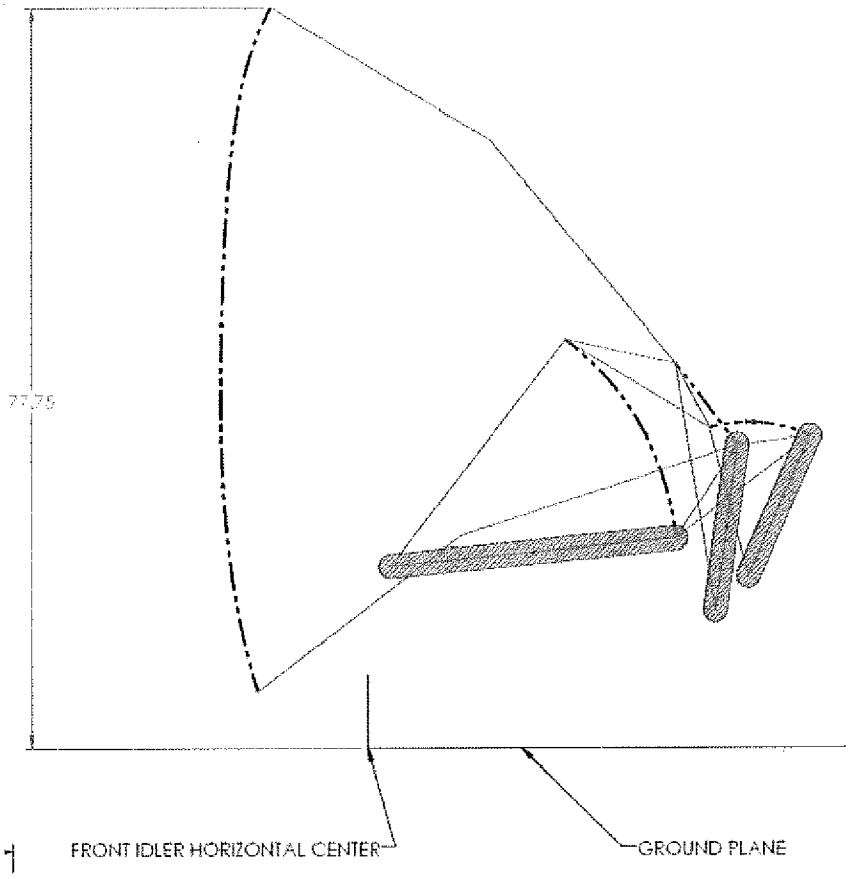


Figure 2A: Lift Profile of the Second Prototype

The linkages and actuators from the smaller initial prototype were scaled up for the second prototype. Scaling-up proved unsuccessful as shown in the lift profile of Figure 2B below.

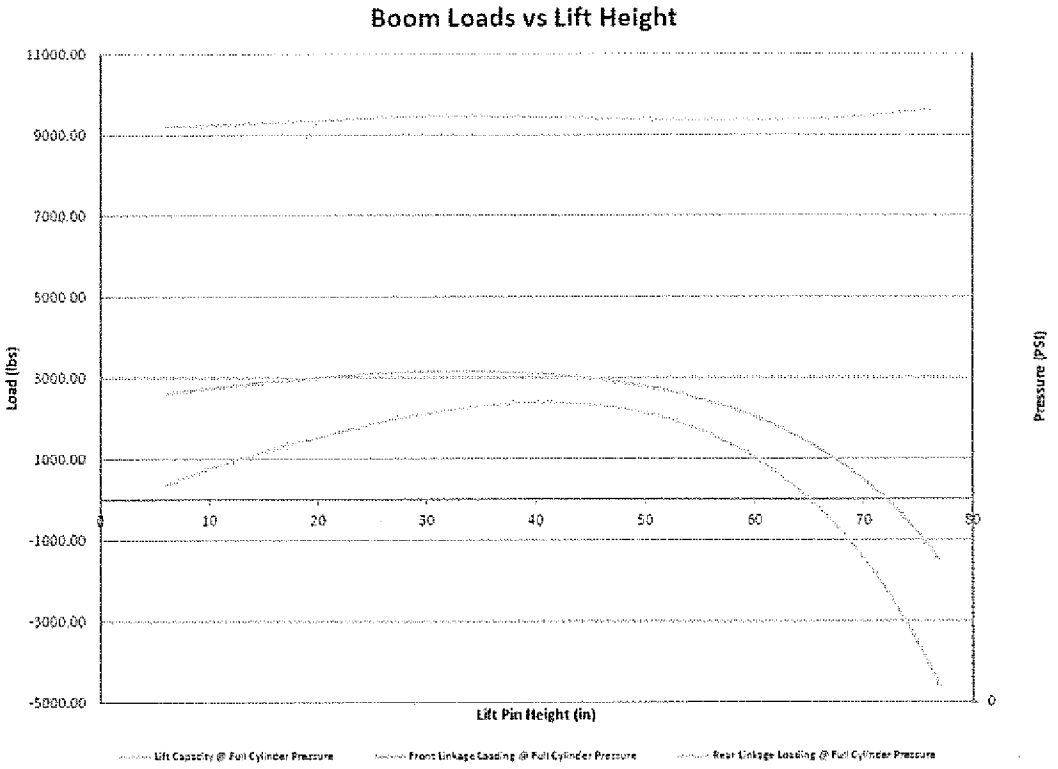


Figure 2B: Loading Profile of the Second Prototype

As shown in Figure 2B, the second prototype would not be able to support a load during initial lifting and at its full extension as shown by the lift capacity curve (e.g., at less than about 5 inches of hinge pin height and beyond about 65 inches). Mathematical modeling and free-body diagram construction indicated that the second prototype would only be able to lift a load of 192 pounds when the loader was lifted from the supporting surface which is nearly insufficient to even lift the weight of the bucket when empty.

In a third prototype, the pivot point of the actuator in the mainframe was moved **slightly rearward** as shown in Figure 3A:

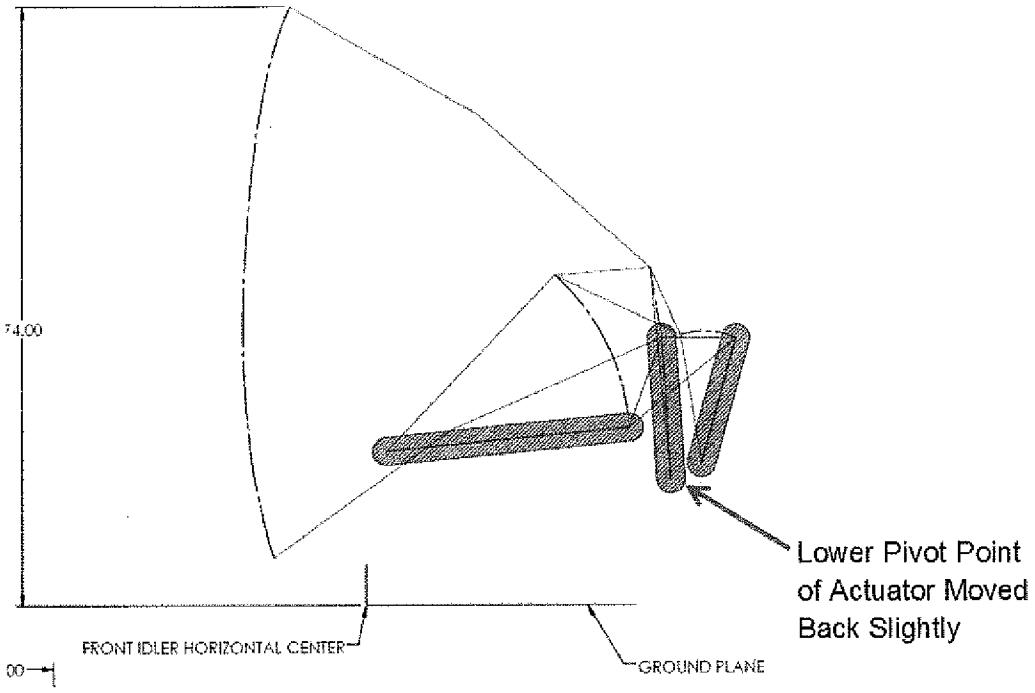


Figure 3A: Lift Profile of an Embodiment of the '750 Patent

This resulted in a much improved loading profile shown in Figure 3B:

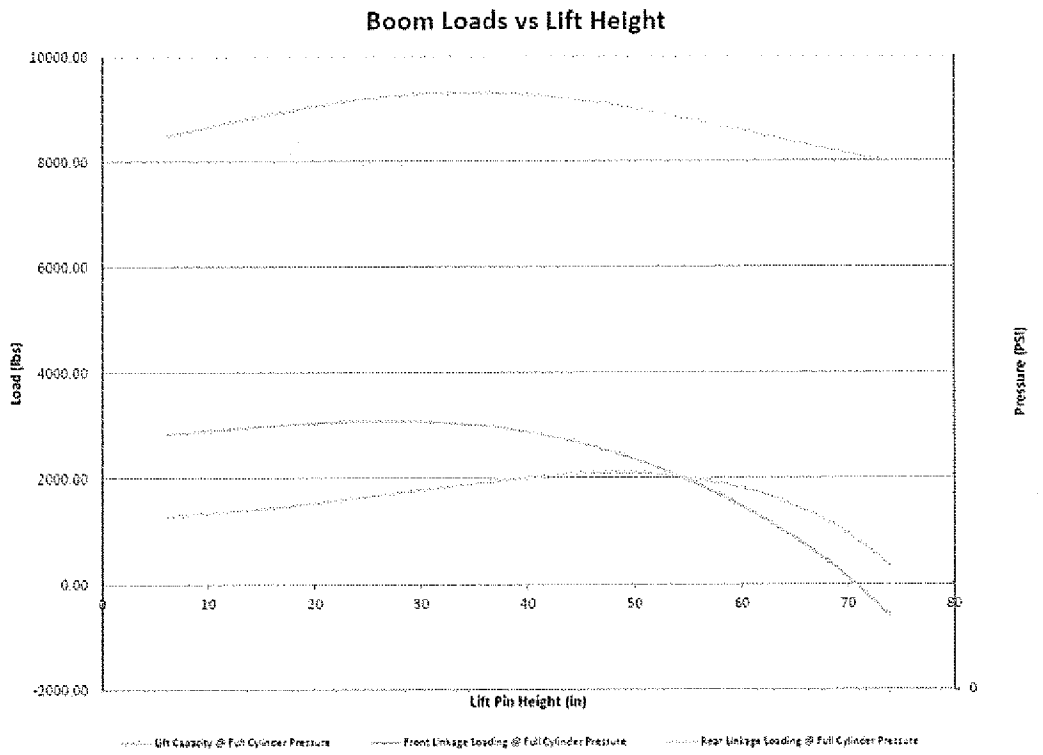


Figure 3B: Loading Profile of Third Prototype

The lift profile of Figure 3A was incorporated into Vermeer's CTX50 commercial compact utility loader.

In my experience, development of a compact tool carrier having first and second linkages\ pivotally attached to the first side of the mainframe and pivotally attached to the loader and in which the loader is free of direct attachment to the mainframe was unpredictable.

10. When developing the compact tool carrier that led to the '750 Patent, state of the art tools were used including solid modeling software from Solidworks, finite element analysis software from ANSYS, in-house programming for evaluation of loading and force analysis, stress coating, strain gauging and cycle test stands. Despite resorting to these state of the art tools, prototypes failed or were not capable of operation (e.g., were unable to lift a target load).

11. When developing the invention as set forth in claim 1 of the '750 Patent, I was highly skeptical as to whether it would be possible to develop a compact utility loader having a loader that was free from direct attachment to the mainframe (i.e., a vertical lift compact utility loader) as set forth in claim 1 of the '750 Patent. I did not believe the compact design of a compact utility loader could sufficiently support and absorb the stresses of a vertical lift loader.

12. Many failures were experienced during development of the loader arrangement of claim 1 of the '750 Patent. For example, catastrophic fracture of the loader arm occurred (Figure 4).

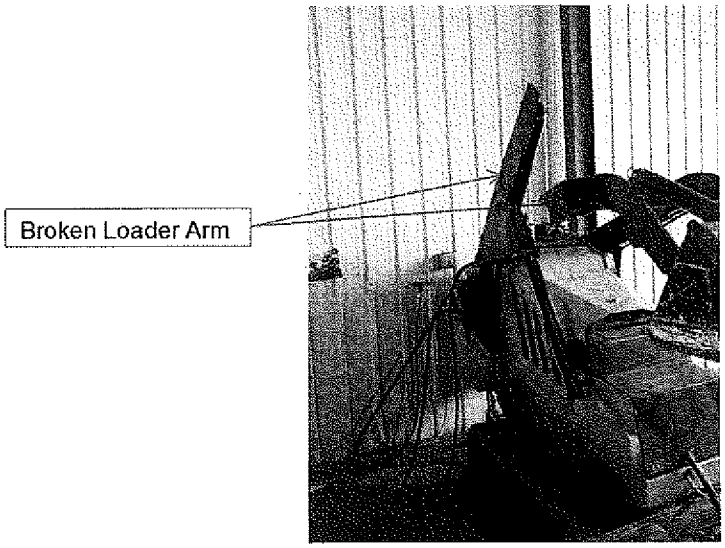


Figure 4

This failure occurred because of indirect attachment of the loader arm to the mainframe in this prototype. Changes in stiffness and in the load transfer characteristics of the vertical lift loader relative to a simpler radial boom configuration were not fully understood and appreciated during initial development.

During testing to develop the loader of claim 1 of the '750 Patent, breakage (Figure 5) and bending (Figure 6) of pivot pin retainers were experienced.

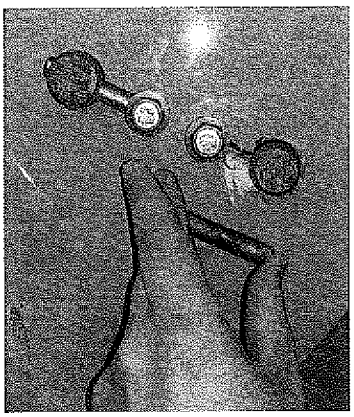


Figure 5

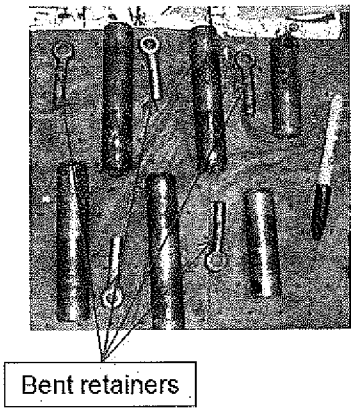


Figure 6

These failures were caused by differences in (1) the relative movement of the vertical lift components, (2) differences in the load transfer characteristics of the vertical lift components, and (3) the use of additional pinned joints which is a characteristic of a vertical lift loader as compared to a radial lift loader. These failures occurred in part because even small changes to pivot points, weight distribution, and the like in vertical lift machines cause significant and unpredictable changes in the lift profile of the machine.

13. A principal consideration in the development of compact utility loaders is to develop machines that are able to lift heavier loads without adding excessive weight to the machine and while maintaining a small footprint (i.e., length and width of the machine). The tip capacity of the loader is the industry standard to express the ability of the machine to lift a load. Tip capacity is measured by determining the highest load that may be applied to the bucket of the machine without tipping the machine forward. As shown in Figure 7[3] below, the industry has incrementally increased lift capacity over the last 20 years.

[3] Figure 7 was prepared by calculating the ratio of the published tipping capacity to the published machine weight for various compact utility loaders. The significant gap between the tip ratio shown for Toro's TX-1000 (the most recent machine shown for Toro and which is vertical lift) and those shown for Vermeer's CTX-100 and CTX-50 machines (also vertical

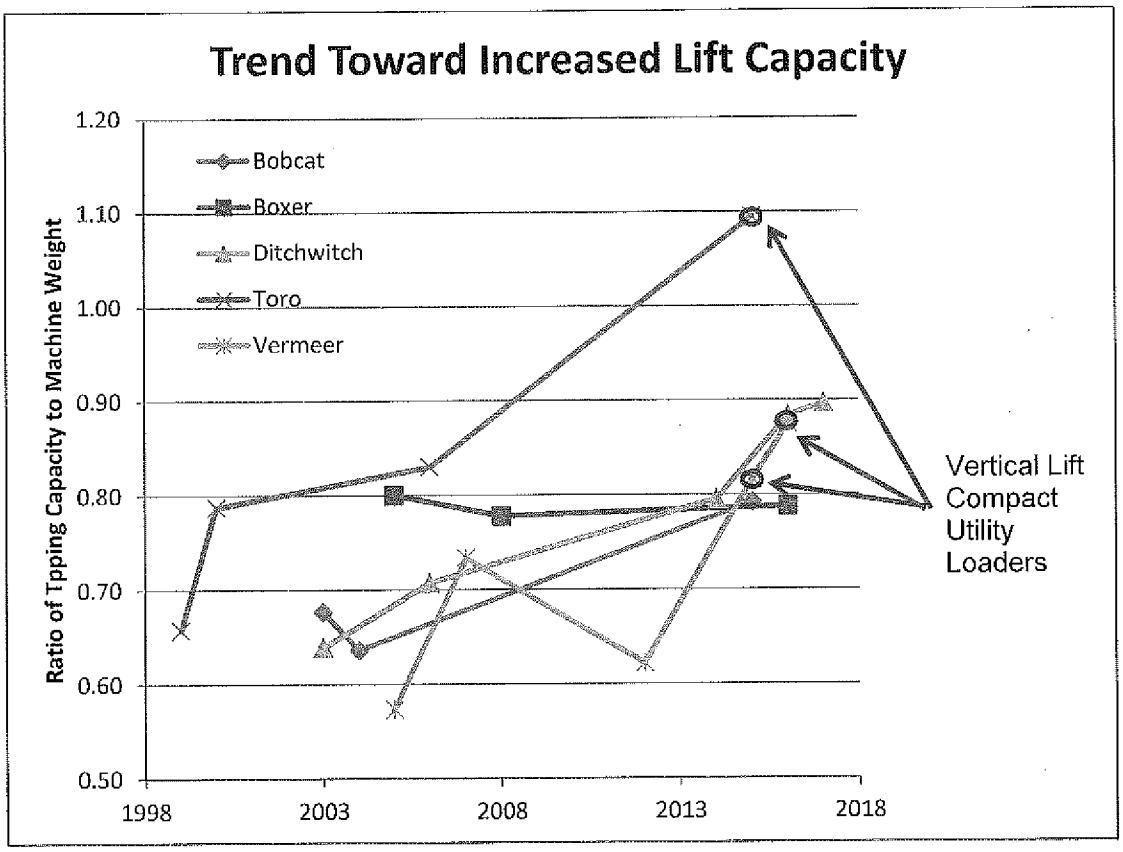


Figure 7

The industry did not turn to vertical lift loaders despite vertical lift loaders being able to increase lift capacity by 32% as noted below.

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lift) is the result of Vermeer's application of an additional safety factor in the machine specifications that it provides to the public. In addition to the ISO Standard 14397-1:2007 that Toro applies to derive the maximum lift capacity for its machine, Vermeer applies an additional test that results in a further decrease of its maximum lift capacity. If Toro and Vermeer's machines were compared in an "apples to apples" fashion using only the ISO Standard 14397-1:2007 test, Vermeer's maximum lift capacities—and therefore its tip ratios—would be higher. Figure 7 also includes two Bobcat models in which the weight as published included the weight of the bucket. A weight of a standard bucket (about 165 lb) was subtracted from the weight as published to maintain consistency in the data of Figure 7.

14. By using first and second linkages and an actuator to support the loader (i.e., a vertical lift loader) as set forth in claim 1 of the '750 Patent, the lift capacity of an embodiment of the invention was increased by 32% relative to the radial lift S450TX compact tool carrier without increasing the weight of the machine. The lift capacities were measured in accordance with ISO Standard 14397-1:2007 entitled "Earth-moving Machinery - Loaders and backhoe loaders – Part 1: Calculation of rated operating capacity and test method for verifying calculated tipping load."

15. Despite this need for increased lift, the industry did not develop vertical lift compact utility loaders. For example, manufacturers shifted from "walk-behind" machines to predominantly "ride-on" machines. Manufacturers of ride-on machines are permitted to incorporate an average weight of an operator (165 lb standard) in the tip capacity testing which generally increases the rated lift capacity. Other manufacturers have included "weight kits" that add weight to the back of the machine to increase lift capacity while sacrificing ground clearance (Figure 8).

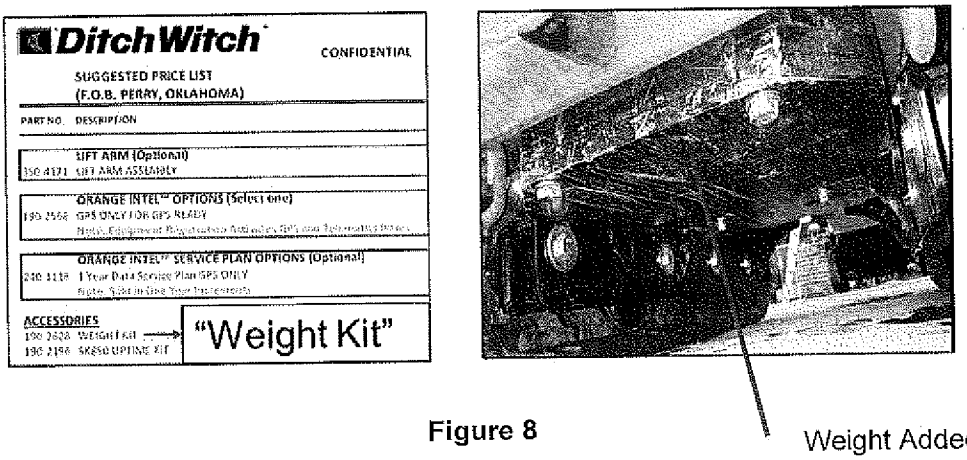


Figure 8

Commercial users have even bolted their own counter-weights near the rear of the machine to increase lift capacity (Figure 9):



Weight Added by Customers

Figure 9

These attempts by others have resulted, at best, in incremental increases in the rated lift capacity of the compact tool carrier.

16. The distances set forth in claim 19 in which the distance between the rotational axis and the pivot points of the first and second linkages and the actuator in the mainframe are less than 1.5 times the distance between the rotational axis and the bottom of the compact tool carrier (1.5 D1) and the distance between the forward-most pivot point is less than twice the distance between the rotational axis and the bottom of the first side of the mainframe (2.0 D5) are significant. These characteristics directly relate to the low profile character of the compact utility loader. A compact utility loader having these distances has relatively low pivot points and/or includes a rotational axis or mainframe that is relatively close to the ground. By lowering the pivot points, the stiffness of the mainframe increases which allows the weight of the mainframe to be reduced. Lowering the pivot points also lowers the center of gravity of the mainframe.

17. The Dingo 322 mainframe lacks sufficient area to position a pivot point of a linkage or actuator such that the distances between the pivot point and the rotational axis are less than twice the distance (2.0 D5) between the rotational axis and the bottom of the mainframe as recited in claim 19. Dingo 322 has a relatively small distance D5 between the bottom of the mainframe and the rotational axis of the wheels as

shown in Figure 10[4] below. Stated differently, Dingo 322 has a *relatively high mainframe* relative to the wheels to increase ground clearance.

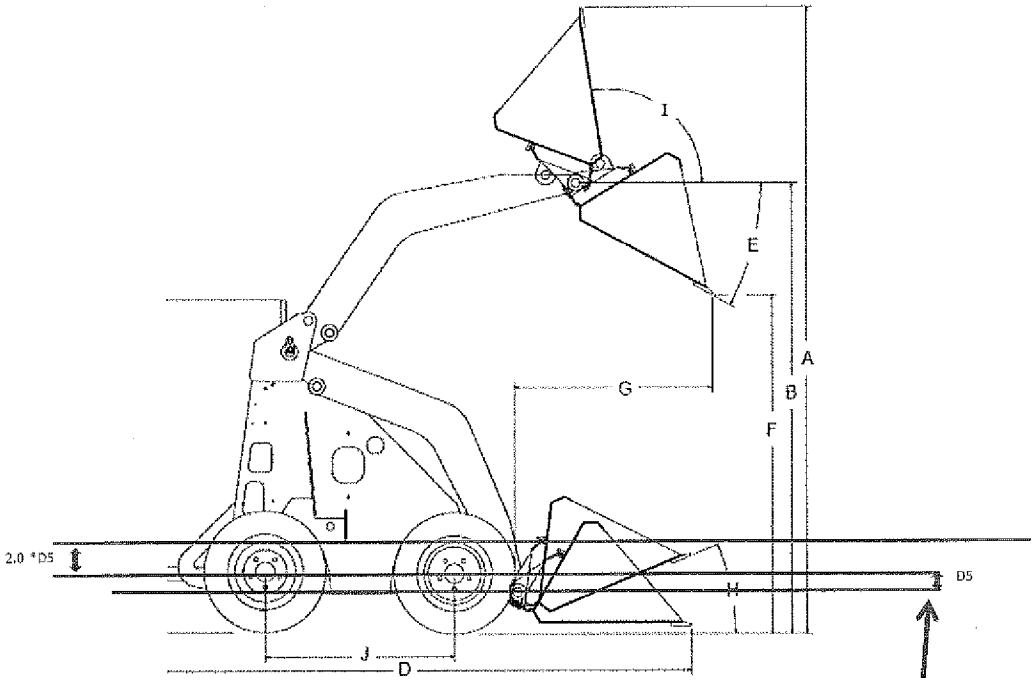


Figure 10

The available space to position a pivot point such that the distance between the pivot point and the rotational axis is less than 2.0 D5 is small, as shown in Figure 11[5]:

[4] The distances on Figure 10 were determined by measuring the distance D5 between the rotational axis of the wheels and the bottom of the mainframe in Dingo 322, as shown on page 2/1-2 of the Dingo 322 Service Manual. The distance from the rotational axis that is twice D5 is also indicated on Figure 10.

[5] Figure 11 was obtained by filling the available space in the mainframe in which the distance between the rotational axis of the wheels is less than 2.0 D5.

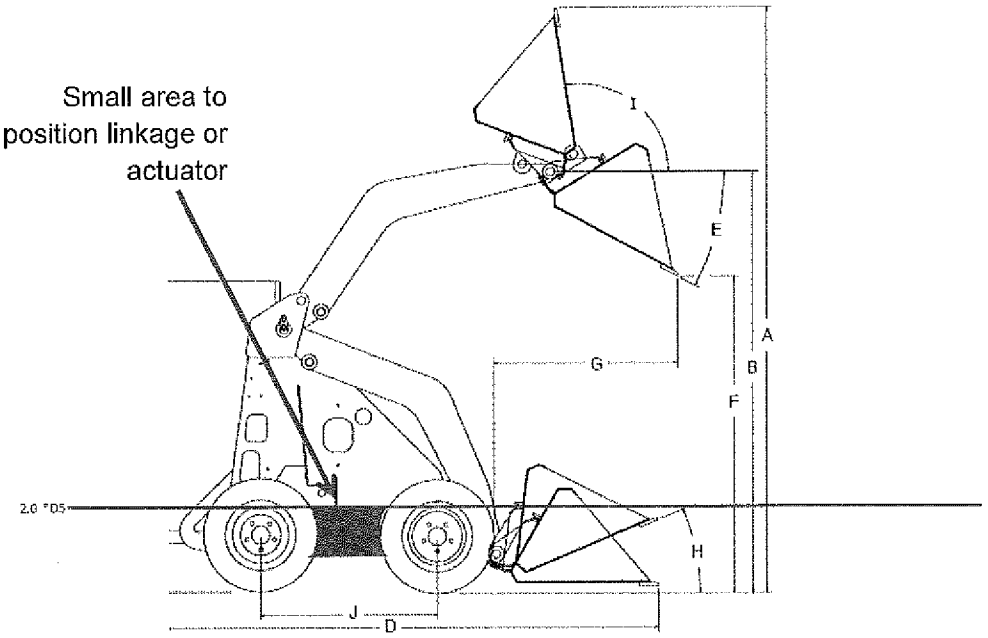


Figure 11: The available space for forward-most pivot point (2.0 D5)

If this was attempted on the Dingo 322 mainframe, the linkage or actuator would not be able to move back and forth as required in a vertical lift loader arrangement. Also, the pivot points cannot be positioned within this area in the Dingo 322 mainframe because the drive mechanism of the Dingo 322 machine is positioned throughout the space as further explained below.

18. As disclosed in the Dingo Service Manual, Dingo 322 was available in a "4-Paw" drive system in which each wheel was driven by a hydraulic motor. The Service Manual discloses diesel and gas versions of Dingo 322 that appear to have identical "4-Paw" hydraulic drive systems.

Drive System

Model	220		222	220D, 320D	322	323	
	22311	22317	22300 22304	22302 22303	22305	22312	22318
Chain Drive	X	X	X				
4-Paw				X	X	X	X

Chain Drive Models:
All four wheels are powered. The two rear wheels are individually driven by hydraulic rotor vane motors. Each front wheel is chain driven from the rear wheels via #60H chain.

4-Paw Models:
All four wheels are powered. Each wheel is individually driven by a hydraulic roller vane motor.

Page 2/1-6 of the Dingo Service Manual

A partial view of the 4-Paw Dingo 322 machine is shown on Figure 1262 of the Dingo 322 Service Manual. The distance between the bottom of the mainframe and the rotational axis (D5) and the area encompassed by twice this distance (2.0 D5) in which the pivot point at which a linkage or actuator is pivotally connected to the mainframe are shown in the annotated figure[6] below:

[6] Distances D5 and 2.0 D5 as shown on annotated Figure 1262 were determined by measuring the distance D5 between the bottom of the mainframe and the rotational axis of the wheels in Figure 1262. Twice D5 was then calculated. Both D5 and 2.0 D5, as determined, are shown on annotated Figure 1262.

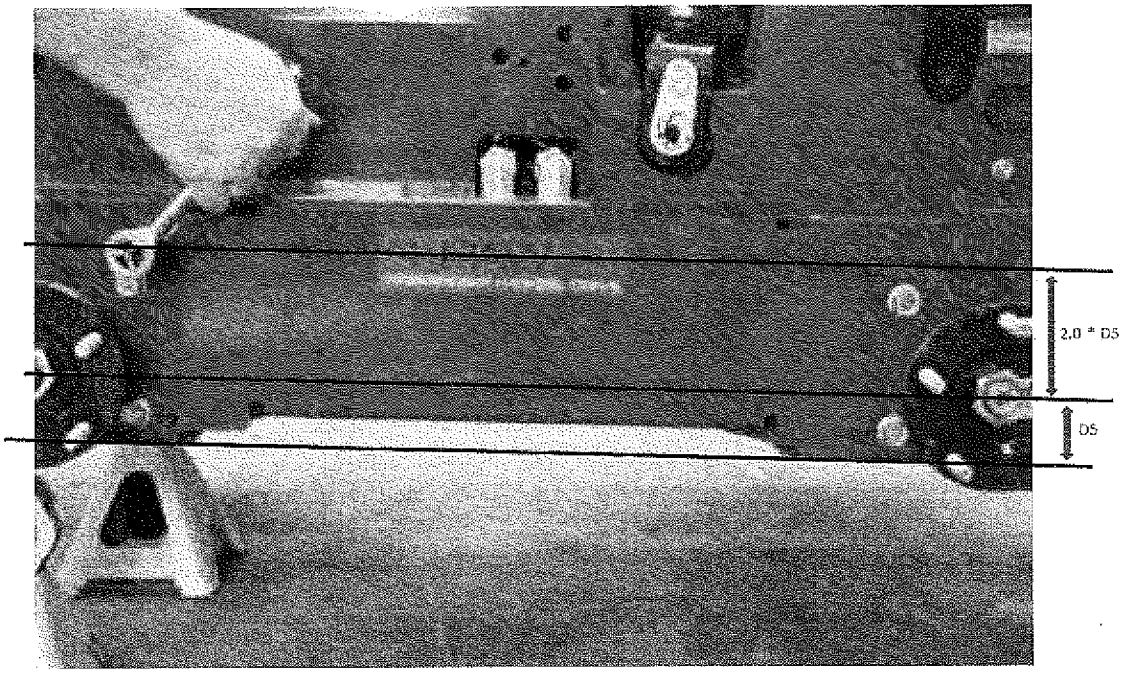


Figure 1262 of the Dingo 322 Service Manual

The area available to position the pivot points is very limited and insufficient to allow a linkage or actuator to swing back and forth as in a vertical lift loader arrangement. Further, this area is **unavailable to position the pivot points** because this portion of Dingo 322 **houses the hydraulics that drive the motors** as show in Figure 0888[7] from the Service Manual:

[7] Figure 0888 was annotated to show 2.0 D5 by positioning the line at the same location as in Figure 1262 above (i.e., as intersecting the top bolt holes at which the cover plate is fastened to the mainframe).

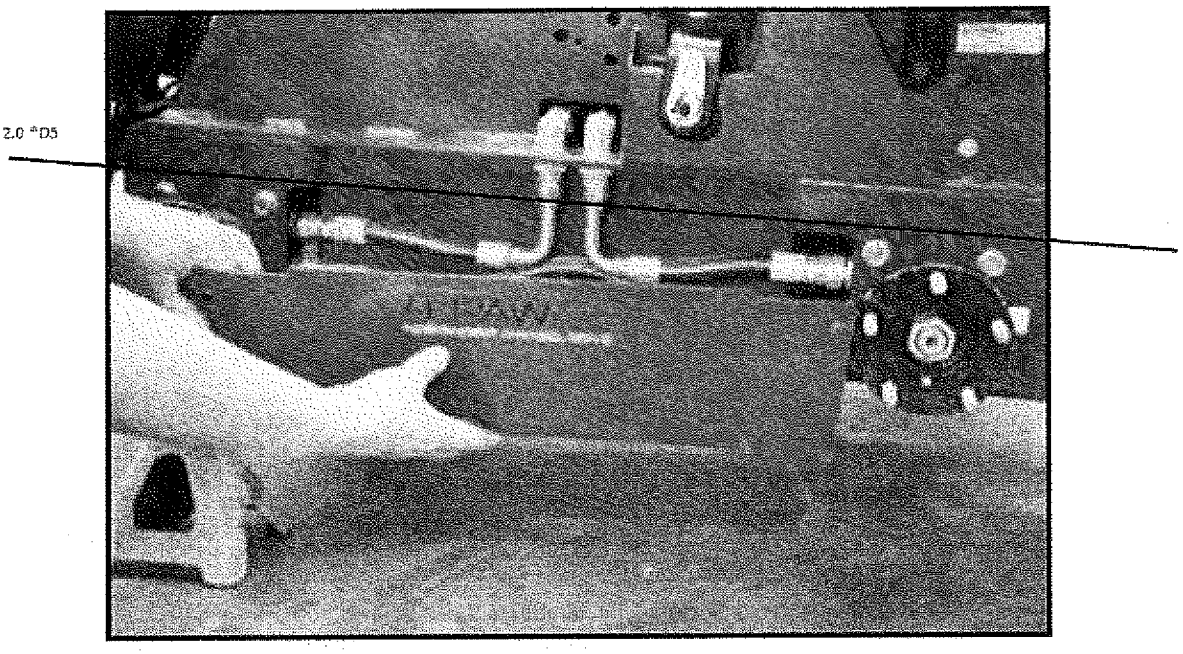


Figure 0888 of the Dingo 322 Service Manual

A pivot point could not be positioned between the rotational axis and twice D5 because of the limited space to do so and because this area houses the hydraulic components beneath the cover plate as shown in Figure 0888. To eliminate the hydraulics that power the motors would render Dingo 322 incapable of its intended purpose as a compact utility loader or would drastically change the principle of operation of Dingo 322.

As shown on page 2/1-6 of the Dingo 322 Service Manual above, several Dingo models included a chain drive rather than a hydraulic drive.

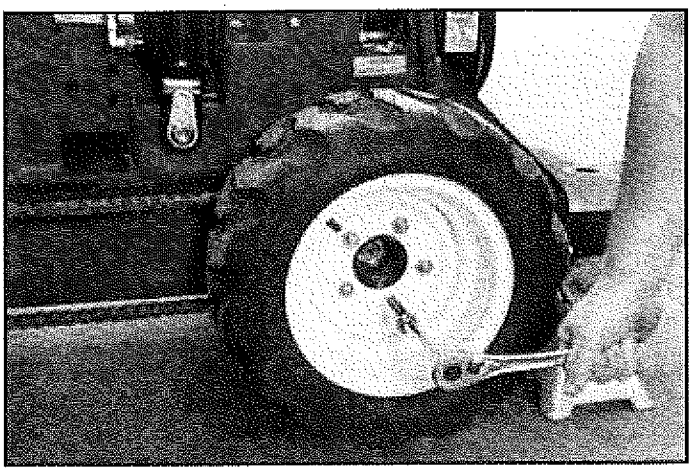


Fig. 0279 (page 4/1-2 of Service Manual).

If Dingo 322 was modified to include a chain drive as shown on Page 2/1-6 of the Dingo 322 Service Manual, a pivot point could not be positioned between the rotational axis and twice D5 because the chain is positioned in the area between the rotational axis and twice D5.

If Dingo 322 were modified to include a pivot point within twice D5, Dingo 322 would also be rendered unsuitable for its intended purpose to accommodate over-the-tire tracks available for purchase from Toro:

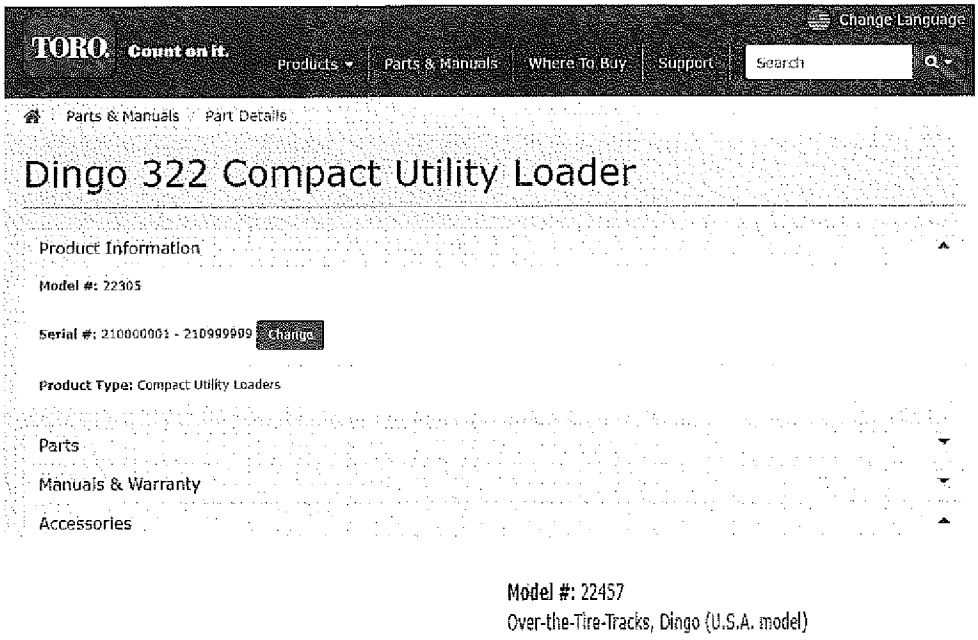


Figure 12 (https://www.toro.com/en/parts/partdetails/?id=23629)

The pivot point location of the actuator or linkage in the mainframe of Dingo 322 cannot be less than twice D5 because Dingo 322 cannot accommodate the over-the-tire tracks for which Dingo 322 was designed for use if the actuator and linkage were positioned in this area:

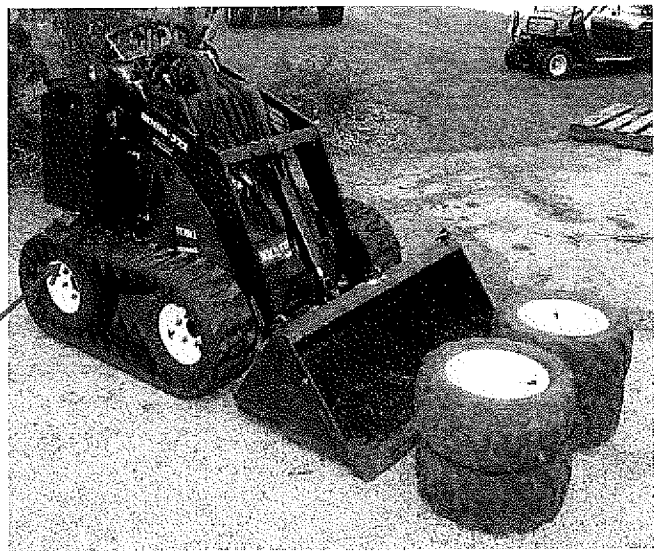
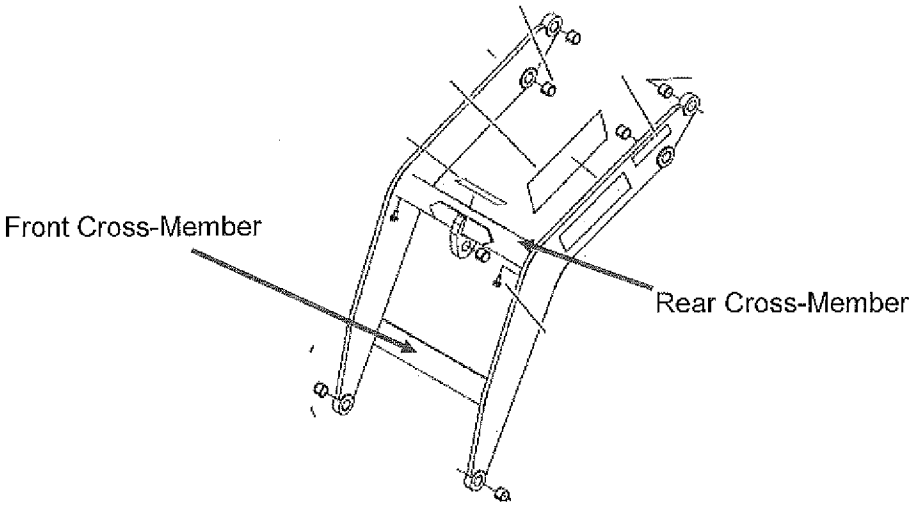


Figure 13

For these reasons, people designing and developing equipment in this industry would not have modified Dingo 322 to include a pivot point in which a linkage or actuator is pivotally connected to the mainframe that is positioned less than twice the distance between the bottom of the mainframe and the rotational axis (2.0 D5) as recited in claim 19.

19. Those designing and developing equipment in this industry also would not have modified Dingo 322 to have a single cross member as recited in claims 17 and 33. With reference to Sheet No. 2 on page 1 of the Dingo Parts Catalog, the Dingo 322 loader includes two cross-members that extend between the two loader arms.



Sheet No. 2 of the Dingo 322 Parts Catalog

As shown in the sketch below, the front and rear cross-members of the Dingo 322 loader allow the loader to behave as a structural "box" in which forces may be distributed side-to-side across the loader.

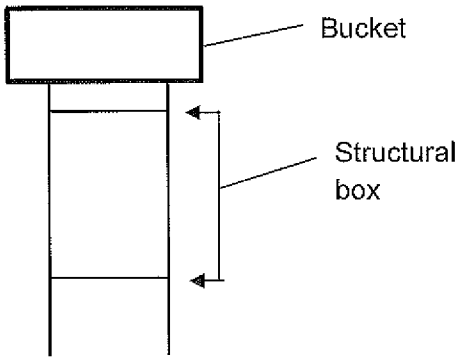


Figure 14

If a cross-member of Dingo 322 were eliminated, the behavior of the loader would change significantly because the loader is less able to laterally communicate or absorb the forces applied to the loader across the loader (i.e., from side-to-side). This loss of strength cannot be mitigated by strengthening the remaining cross-member as the loader would remain less laterally stable. The remaining cross-member of Dingo 322 would be prohibitively heavier with complex transitions which

would negatively affect machine weight, stability and operator visibility through the travel path.

20. With reference to Figure 1[8] of Komatsu, the pivot points formed between the fifth pivot point (i.e., pivot point of the actuator) is not less than the rotational axis as recited in claim 35.

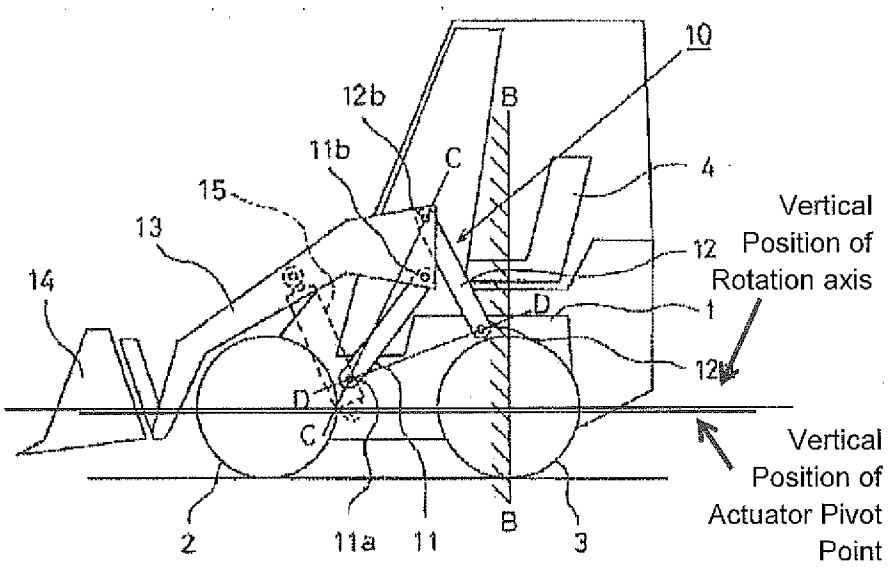


Figure 1 of Komatsu

21. Komatsu does not include a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than 2.0 D5 as recited in claim 36. As shown in Figure 15[9] below, the only linkage of Figure 1 of

[8] Figure 1 of Komatsu was annotated by determining the midpoint between the top and bottom of the wheels to find the rotational axis of the wheels. The height of the actuator pivot point is also shown in Figure 1 of Komatsu.

[9] The various ratios of Komatsu shown at the bottom portion of Figure 15 were determined by measuring the respective distances and calculating the ratio (e.g., by measuring the vertical distance D2 between the forward linkage pivot point and the rotational axis and measuring the distance D5 between the rotational axis and the bottom of the mainframe and calculating D2 divided by D5).

Komatsu having a distance between the rotational axis and the pivot point connecting it to the mainframe of less than twice D5 is the forward linkage (D2/D5=1.0 while D3/D5=2.47).

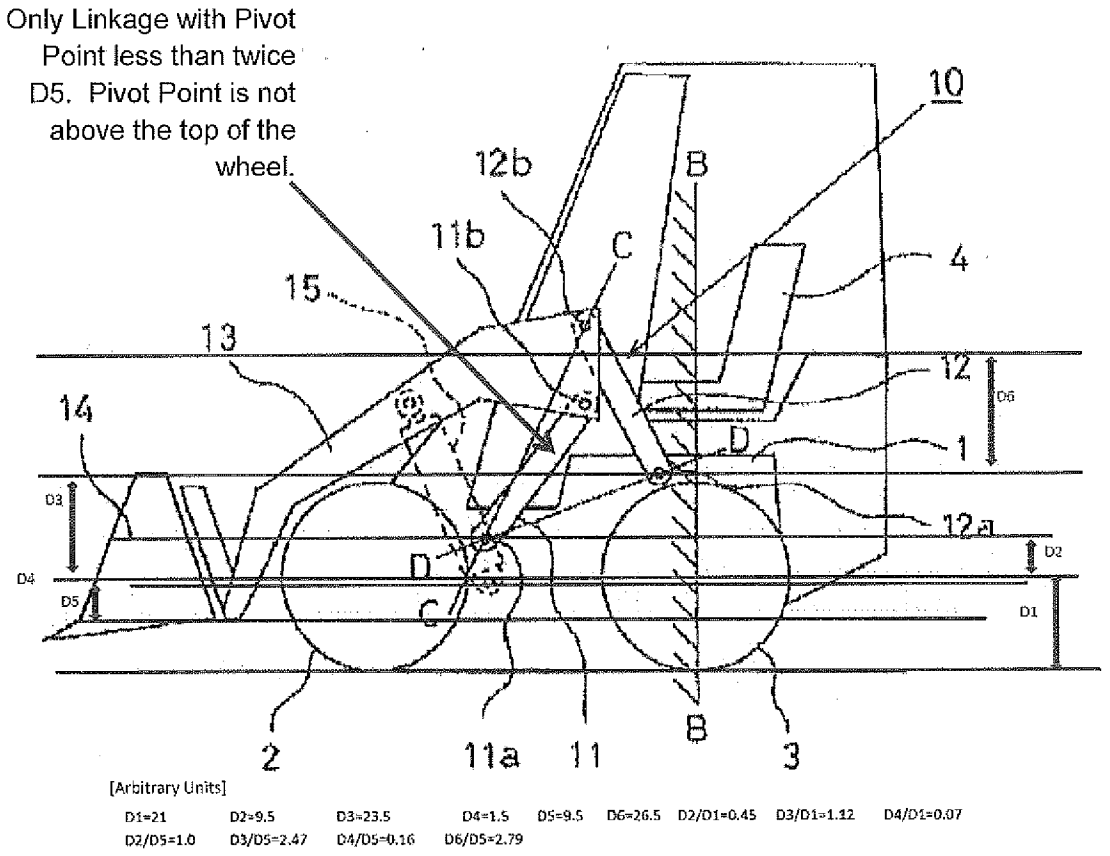


Figure 15

The pivot point between the forward linkage and mainframe is not above the wheel as recited in claim 36.

Further, Dingo 322 is not able to position a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than

2.0 D5. In the Dingo 322 machine, the entire area defined by 2.0 D5 is below the wheels as shown in Figure 16[10]:

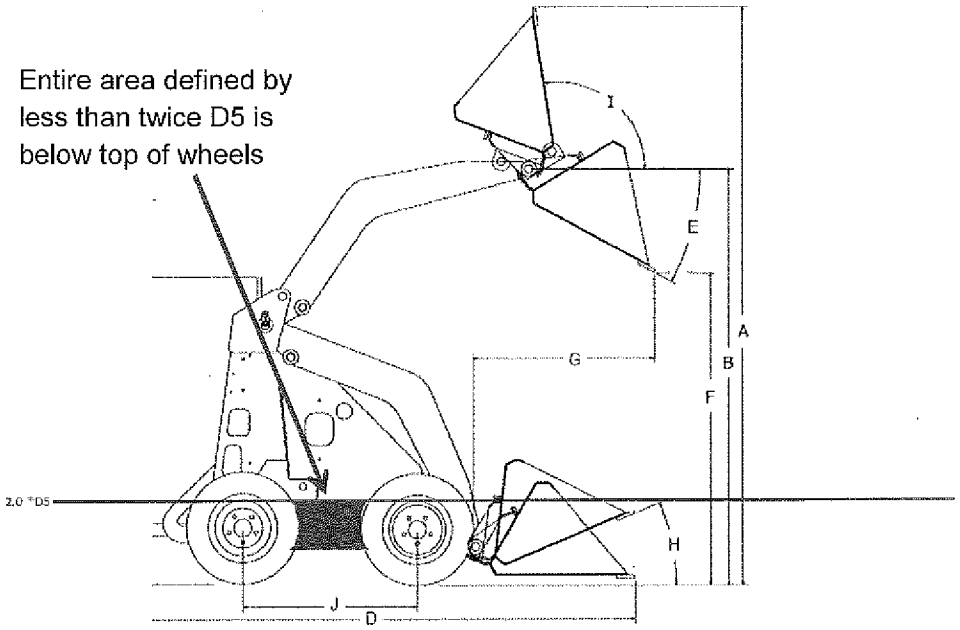


Figure 16

Dingo 322 is not able to position a linkage pivot point that is above the wheels and is spaced between the rotational axis and a distance that is less than 2.0 D5 as recited in claim 36.

22. Komatsu does not include a cross-member that is disposed fully forward of a connection between the actuator and the loader arm as recited in claims 18 and 34. Because the connection made by the piston arms 16a of Figure 3 of Komatsu is not shown, it is not evident whether the piston arms 16a connect to the loader arm 13 or to the cross-member:

[10] Figure 16 corresponds to Figure 11 above.

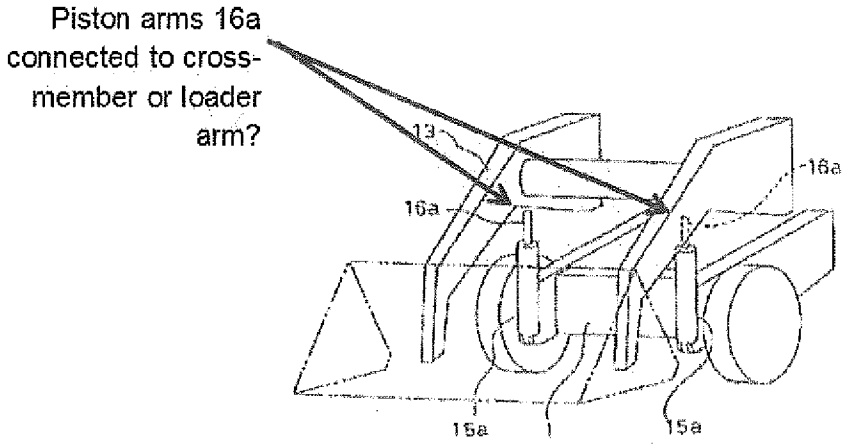


Figure 3 of Komatsu

Even if the piston arms 16a were connected to the loader arm, Figure 3 does not show or otherwise indicate that the cross-member is disposed *fully forward* of a connection between the actuator and the loader arm as recited in claims 18 and 34.

23. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.

Louis Hartke

Louis Hartke

2/4/19

Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

February 6, 2019

INTERVIEW SUMMARY

The undersigned counsel for the Patent Owner thanks the Examiner and Conferees for the telephone interview of January 23, 2019.

The Office states on page 2 of the Office's Interview Summary that the interview agenda was attached to the Interview Summary. The interview agenda does not appear to be attached or appear on the image file wrapper. The Patent Owner therefore attaches the interview agenda and also attaches a copy of the presentation emailed to the Examiner and discussed during the interview.

Counsel summarized the prior art of record (i.e., Komatsu, Dingo 322 and the Vermeer Brochure) and discussed patentability of claim 1 over the prior art of record. Counsel stated that full arguments in support of patentability of claim 1 would be presented in the response to the Office action.

Counsel discussed independent claim 19 and, in particular, reviewed why Dingo 322 cannot accommodate pivot points in which the vertical distance between the rotational axis of the compact tool carrier and the pivot point is less than twice the

distance (D5) between the rotational axis and the bottom of the first side of the mainframe.

Dependent claim 7 and the Examiner's interpretation thereof were discussed. Dependent claim 18 and the Examiner's understanding of cross-member locations in Komatsu were discussed. Potential amendments and new claims were also discussed, but no agreement was reached.

The Patent Owner agreed to present further arguments and evidence in favor of patentability in the Office action response.

Respectfully submitted,

/Michael J. Vander Molen/

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/Michael G. Munsell/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas, et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

INTERVIEW AGENDA

Time: 10:00 AM EST, January 23, 2019

Teleconference Info: Dial-in number: 1-866-740-1260 Passcode: 2594734

Attendees: Mike Vander Molen (Reg. No. 57,274) and Mike Munsell (Reg. No. 43,820)

I. Claim 1

A. Summary of Prior Art and discuss Patentability Arguments

II. Claim 19

A. Discuss why Dingo 322 is not Capable of Accommodating Pivot Points less than Twice D5

III. Dependent Claims and Potential New Claims

A. Claim 7

1. Discuss Office's Interpretation

2. Komatsu does not show control station or operator controls

B. Claim 18

1. Discuss how actuator pivot point is not disposed forward of cross-member in Komatsu

C. Discuss Potential New Claims

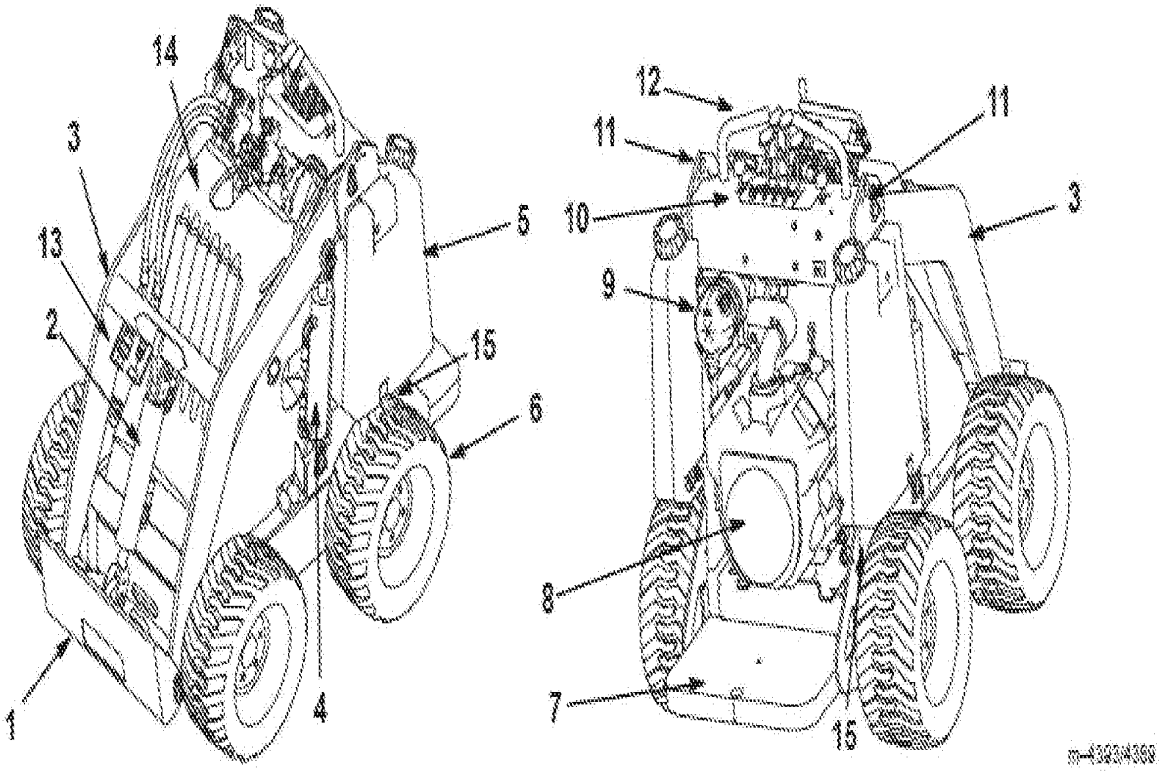
Examiner Interview - December 6, 2018 Office Action

Reexamination of U.S. Patent No. 9,975,750
Reexamination Control No. 90/014,148

January 23, 2019

Mike Vander Molen (Reg. No. 57,274) and Mike Munsell (Reg. No. 43,820)

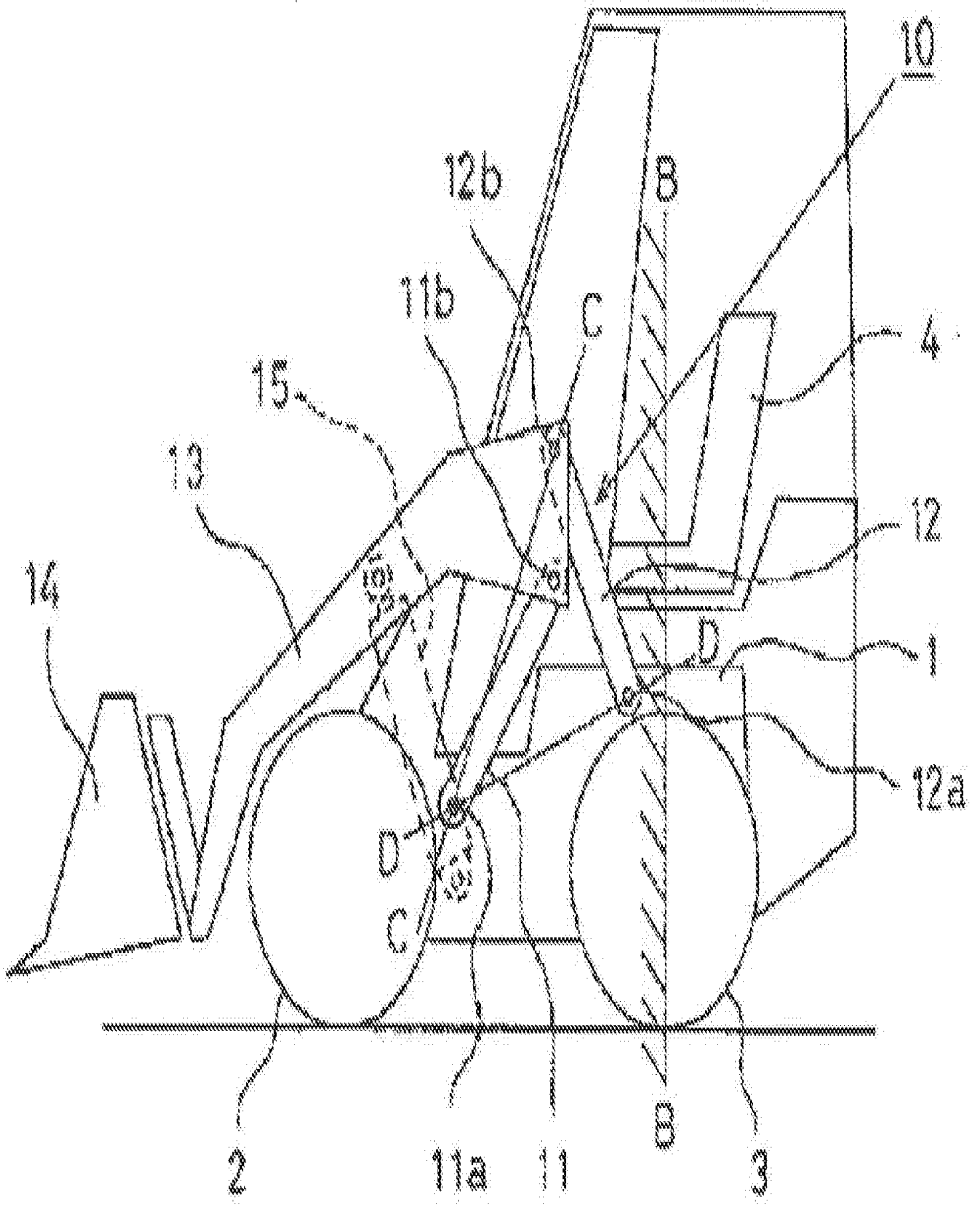
Basis of Obviousness Rejections



Base Reference - Toro Dingo 322

Vermeer

Basis of Obviousness Rejections



Secondary Reference - Komatsu

Vermeer

Claim 1

1. A compact tool carrier configured for standing operator control and having a longitudinal axis and a mass of less than about 1500 kg, the compact tool carrier comprising:

a loader having an arm, the loader being adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage 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;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point;

an actuator directly pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point, the fifth pivot point being distinct from the first pivot point and the third pivot point;

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;

an operator platform for standing operation of the operator controls of the control station; and

an engine disposed forward of the operator platform relative to the longitudinal axis.

Claim 1 is Patentable over Dingo in View of Komatsu

- One of Ordinary Skill in the Art Would Not have Been Motivated to Modify the Dingo 322 Tool Carrier to Include the Vertical-Lift Loader Arm Configuration of Komatsu
  - The Office's proposed modification would have rendered the Dingo 322 unsatisfactory for its intended purpose.
  - One of ordinary skill in the art would not have had a reasonable expectation of success in making the modifications to the Dingo 322 proposed by the Office.
- Objective Evidence of Non-Obviousness Indicate Patentability
  - Long Felt Need and Failures of Others
  - Customer and Industry Praise
  - Commercial Success
  - Skepticism of Experts and Unexpected Results

Vermeer

Claim 19

19. A compact tool carrier having a longitudinal axis and comprising:

a loader adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader at a second pivot point;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader at a fourth pivot point;

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader at a sixth pivot point;

a drive mechanism for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the compact tool carrier having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the compact tool carrier being separated by a vertical distance D1, the rotational axis R and a bottom of the first side of the mainframe being separated by a vertical distance D5, the rotational axis R and each of the first, third, and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point also being less than 1.5 times D1, the vertical distance between the rotational axis R and the fifth pivot point also being less than 1.5 times D1, the first side of the mainframe comprising a forward-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5;

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;

an operator platform for standing operation of the operator controls of the control station; and

an engine disposed forward of the operator platform relative to the longitudinal axis.

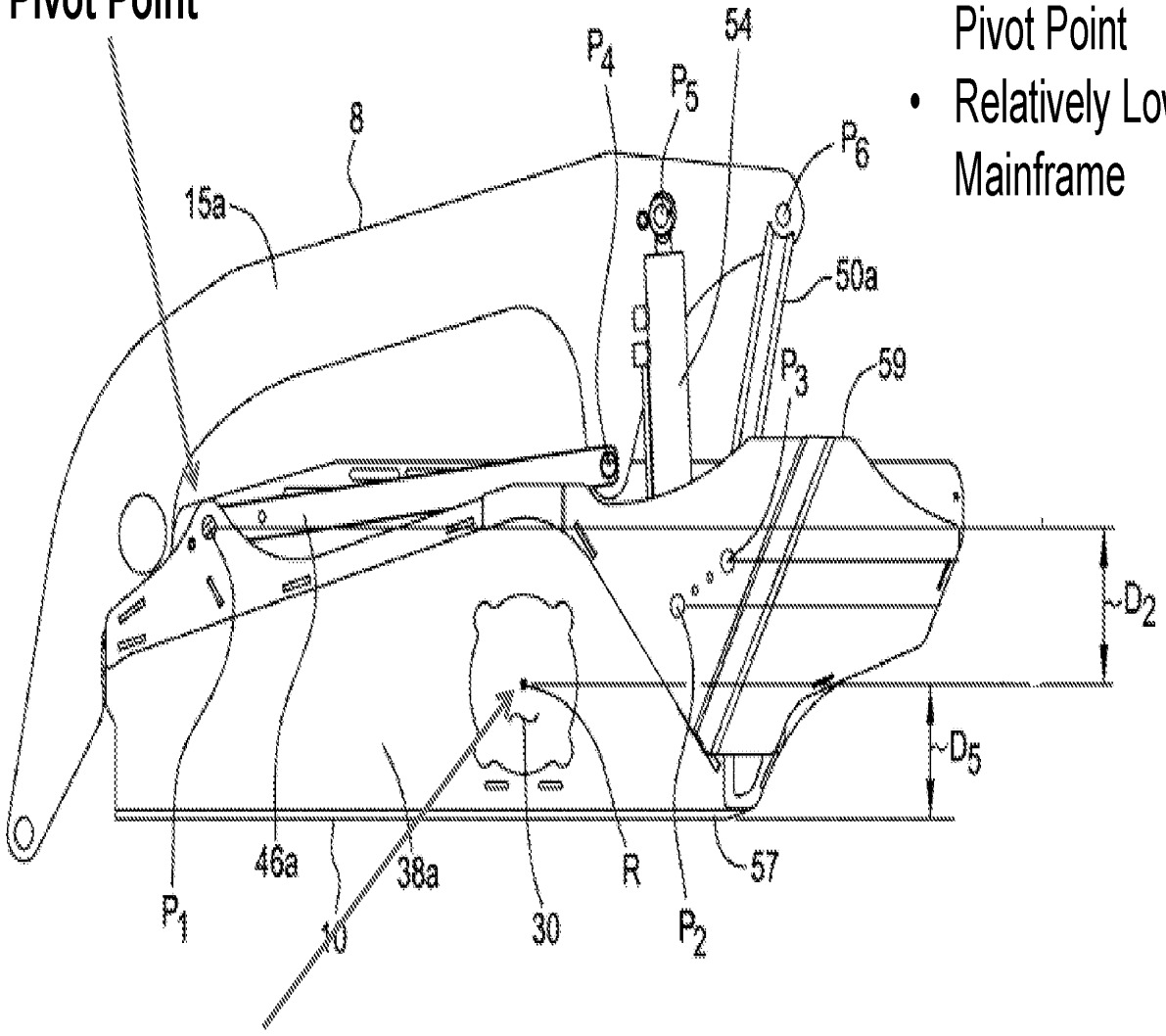
Vermeer

Claim 19

Front-most Pivot Point

D2/D5 < 2.0

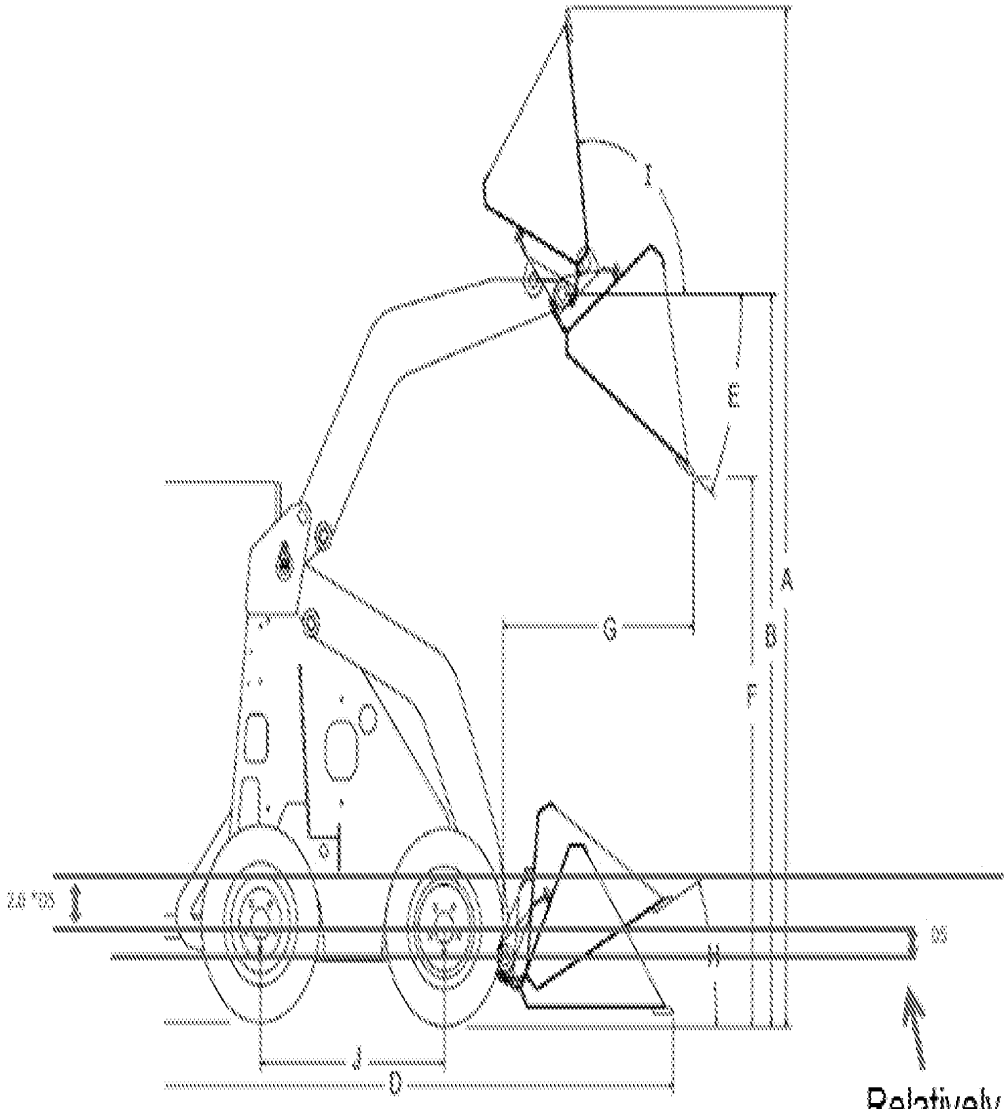
- Relatively Low Pivot Point
- Relatively Low Mainframe



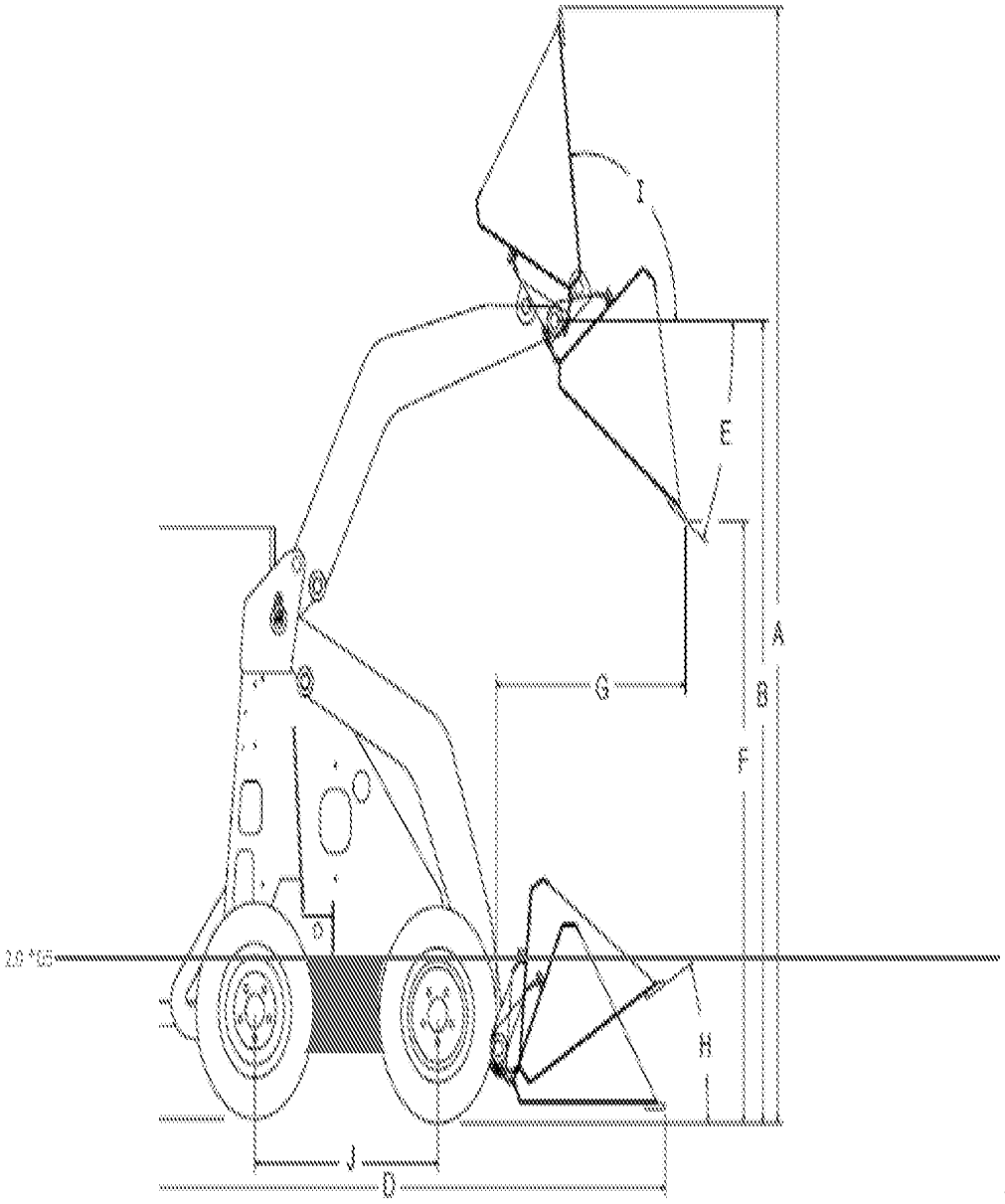
Rotational Axis

Vermeer

Dingo 322 is Not Capable of Accommodating Pivot Points less than Twice D5



Dingo 322 is Not Capable of Accommodating Pivot Points less than Twice D5



Dingo 322 is Not Capable of Accommodating Pivot Points less than Twice D5

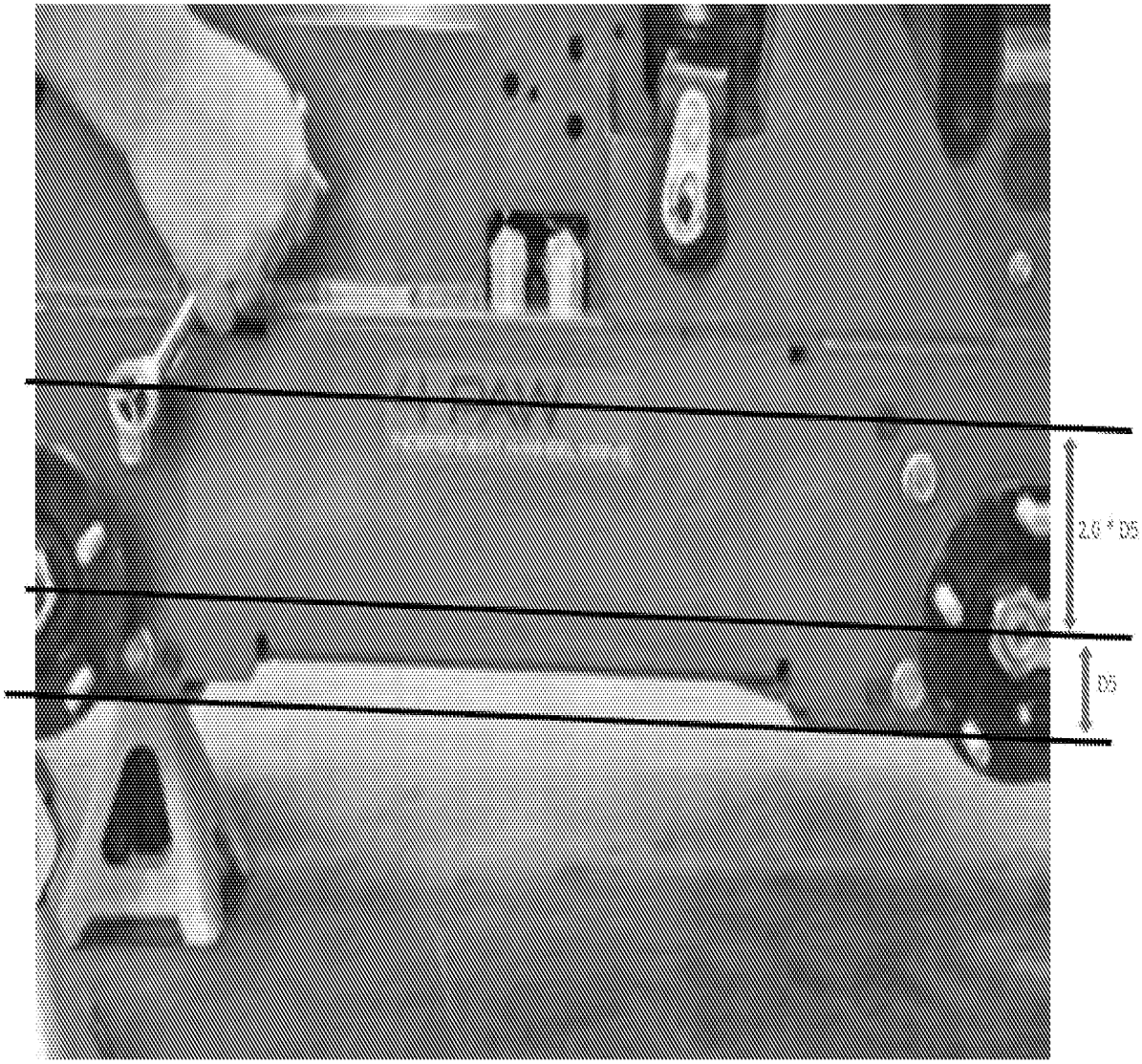


Fig. 1262 of the Dingo 322 Service Manual

Dingo 322 is Not Capable of Accommodating Pivot Points less than Twice D5

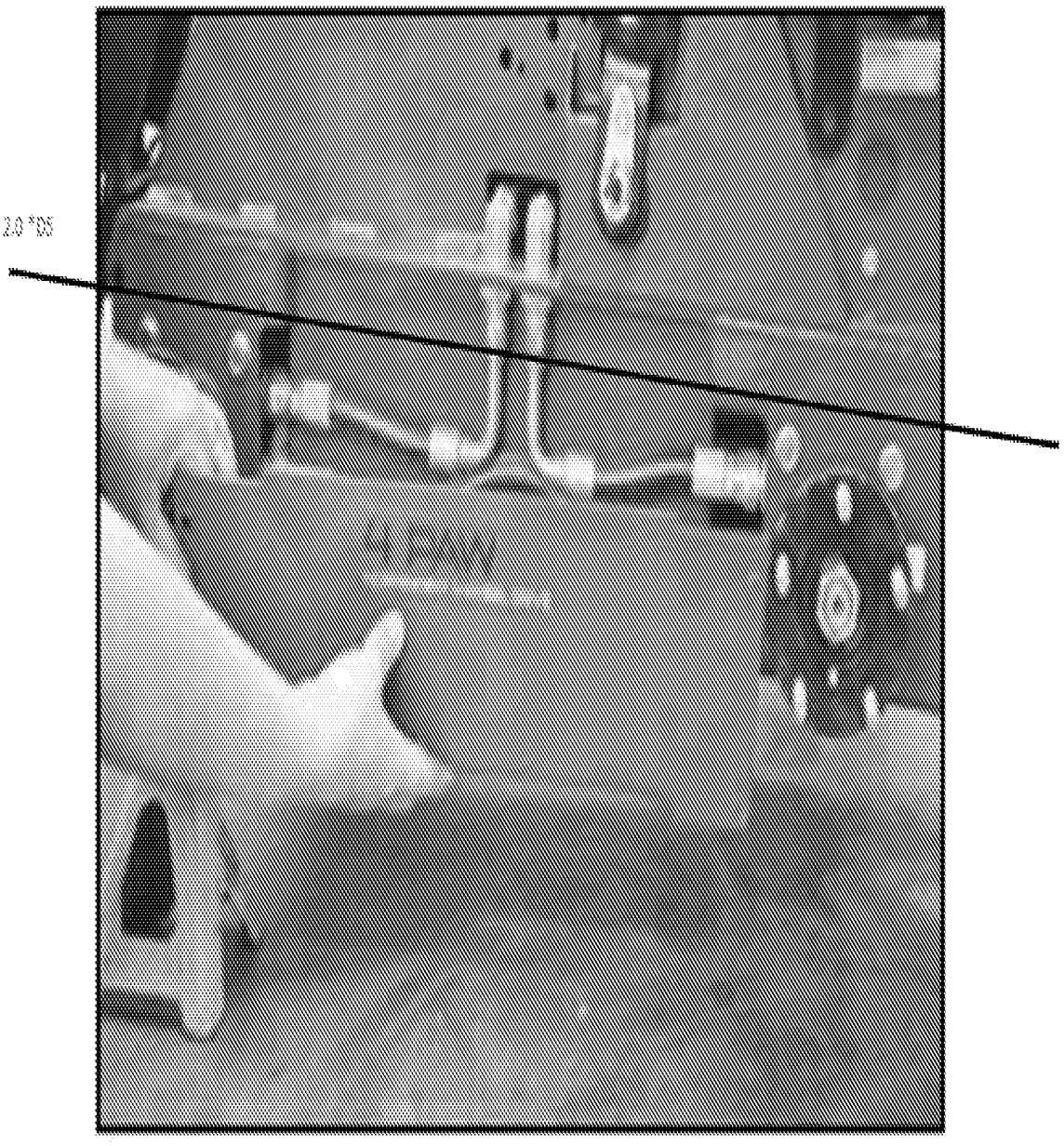


Fig. 0888 of the Dingo 322 Service Manual

Dingo 322 is Not Capable of Accommodating Pivot Points less than Twice D5

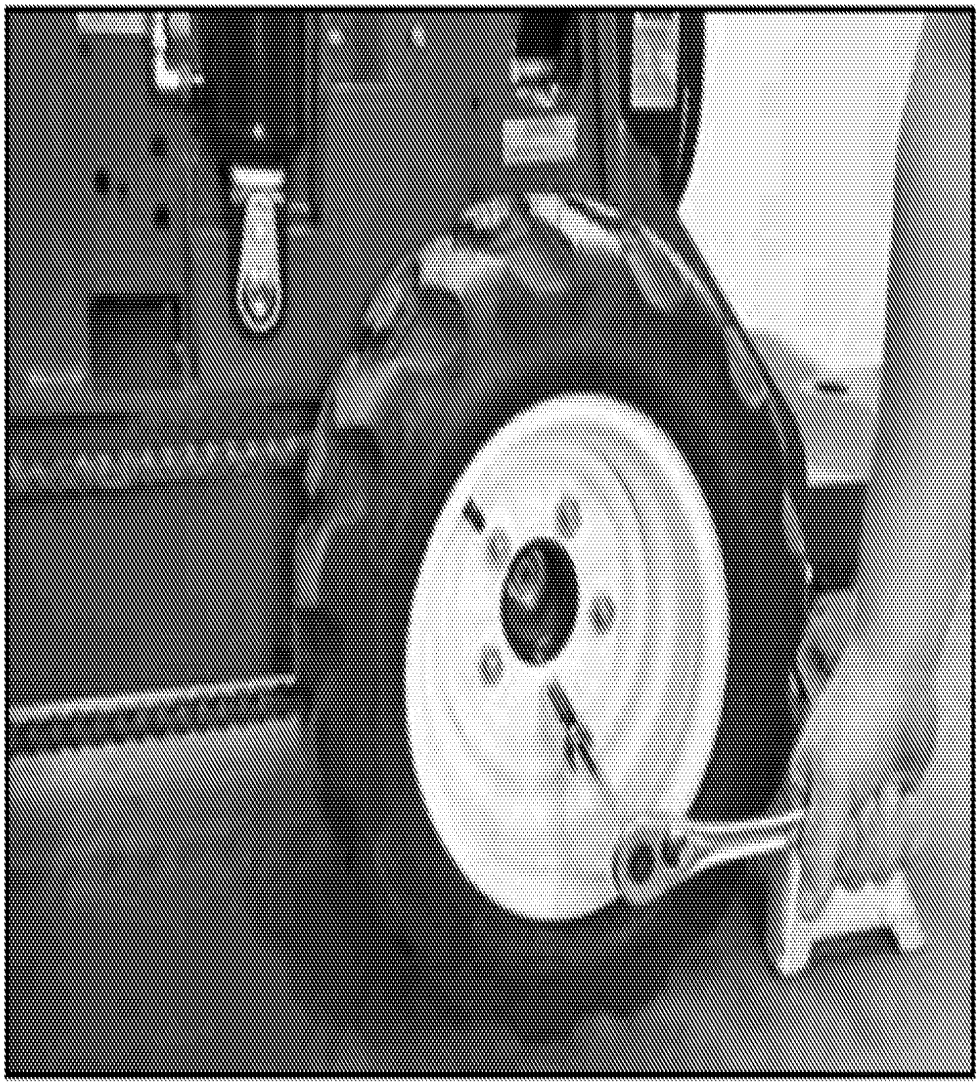


Fig. 0279 (page 4/1-2 of Service Manual)

Dingo 322 is Not Capable of Accommodating Pivot Points less than Twice D5

Space less than twice D5 to position forward pivot point is occupied by over-the-tire tracks

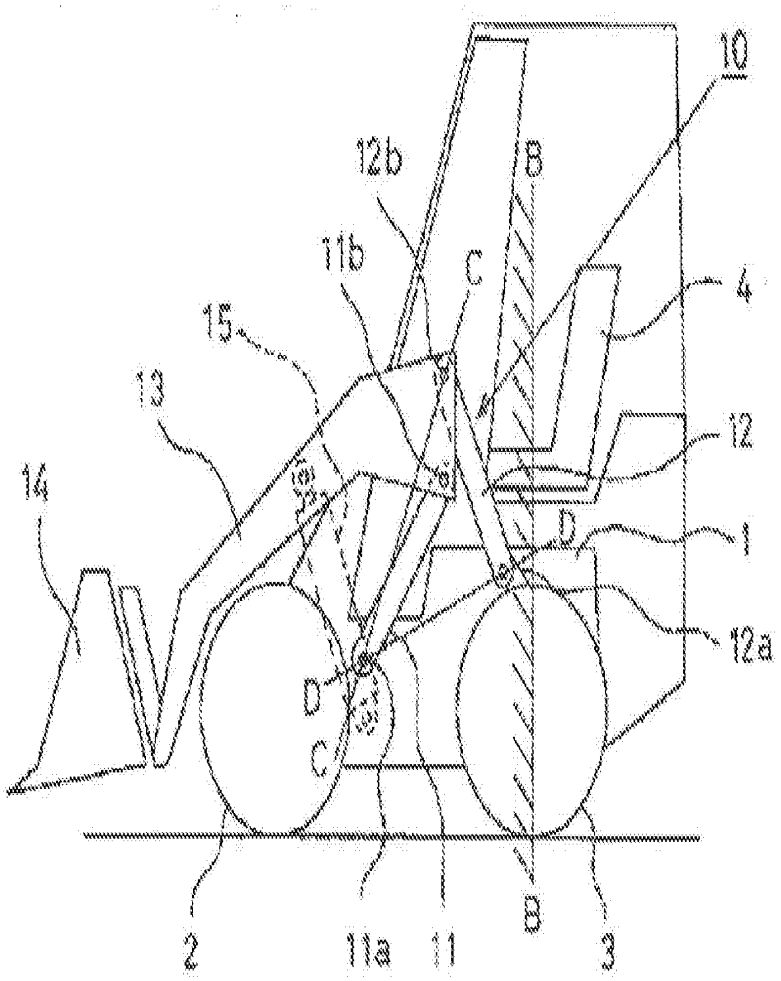


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Claim 7 and Office's Interpretation Thereof

7. The compact tool carrier as set forth in claim 1 wherein 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 as the loader moves from a down position to a vertically raised position.

Claim 7



"In the marked-up figure 1 of Komatsu . . . all of the pivot points are shown to be disposed between the operator controls and a bottom of the mainframe and/or . . . disposed forward of the control station, at least to the same extent that the six pivot points are shown and described in the '750 patent" – page 7 of the Office action

Claim 18

18. The compact tool carrier as set forth in claim 14 wherein each cross-member is disposed forward of the second pivot point and the fourth pivot point.

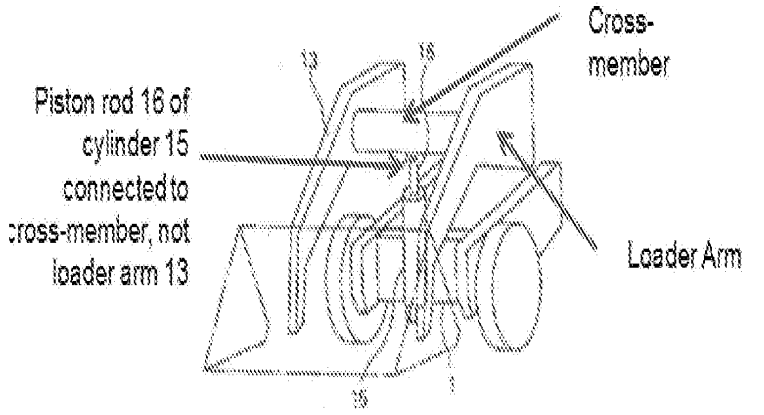


Figure 2 of Koma

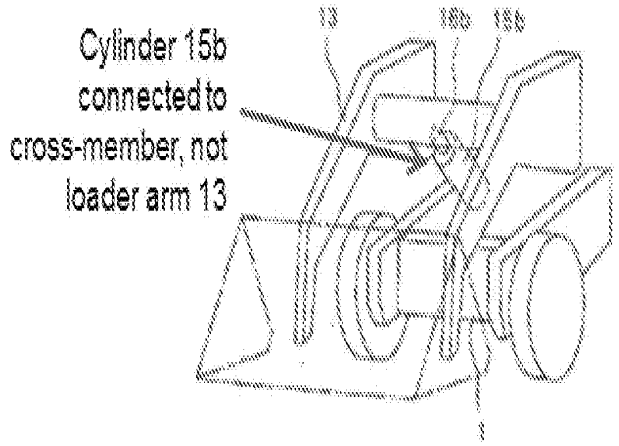


Figure 4 of Komatsu

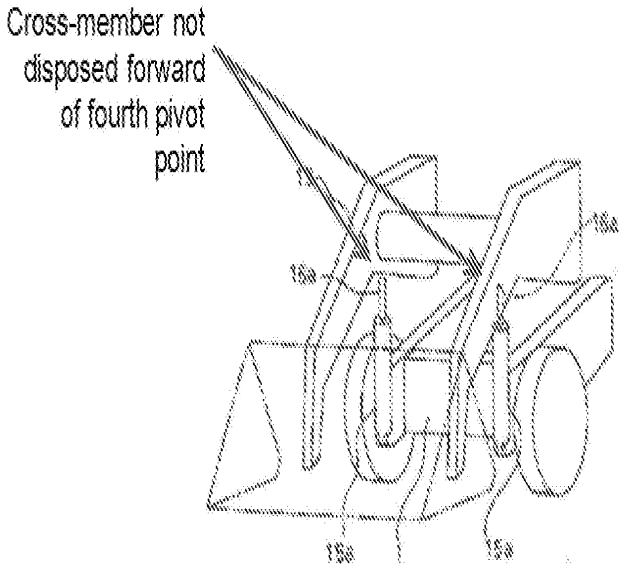
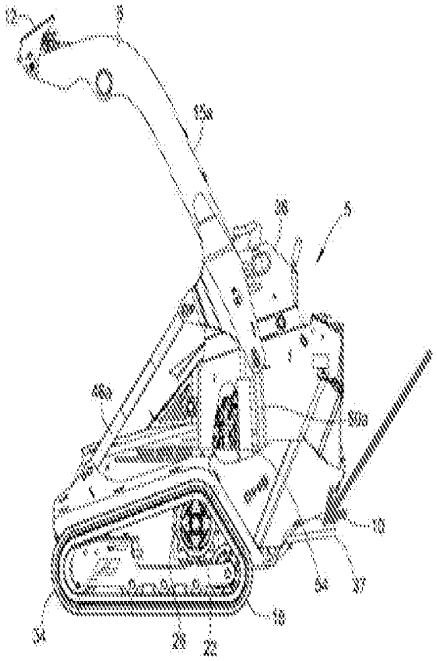


Figure 3 of Komatsu

Vermeer

Potential New Claims

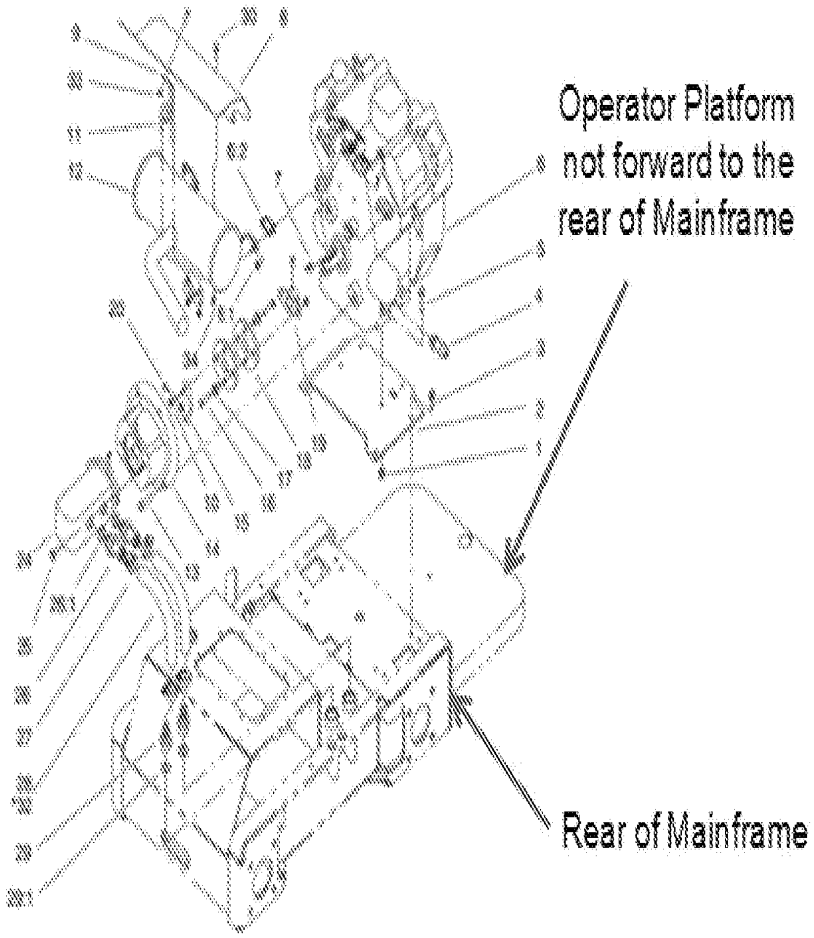
1-A. (New) The compact tool carrier as set forth in claim 1 wherein the operator platform extends from the mainframe and a portion of the operator platform is forward of a rear end of the mainframe.



Operator platform 37 set forward from rear of mainframe 10 to provide a protective pocket for operator

Potential New Claims

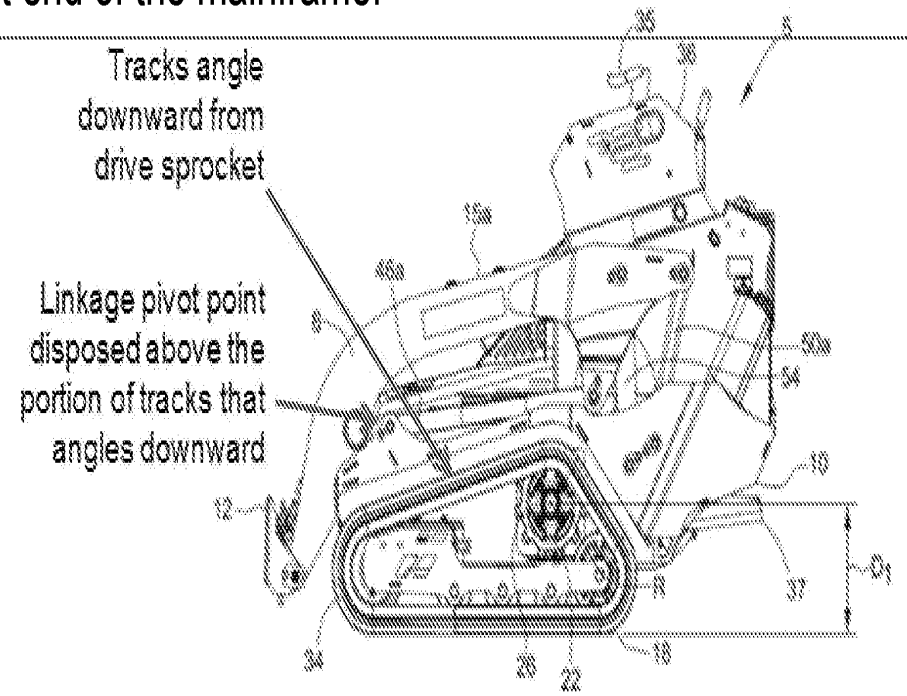
1-A. (New) The compact tool carrier as set forth in claim 1 wherein the operator platform extends from the mainframe and a portion of the operator platform is forward of a rear end of the mainframe.



Sheet No. 4 of Dingo Parts Catalog

Potential New Claims

1-B. (New) The compact tool carrier as set forth in claim 1 wherein the compact tool carrier comprises a drive mechanism comprising a drive sprocket and tracks for propelling the compact tool carrier over a supporting surface, at least a portion of the tracks angling downward from the drive sprocket toward the front end of the mainframe, at least one of the first pivot point and the third pivot point being disposed above the portion of the tracks that angles downward from the drive sprocket toward the front end of the mainframe.



Potential New Claims

1-B. (New) The compact tool carrier as set forth in claim 1 wherein the compact tool carrier comprises a drive mechanism comprising a drive sprocket and tracks for propelling the compact tool carrier over a supporting surface, at least a portion of the tracks angling downward from the drive sprocket toward the front end of the mainframe, at least one of the first pivot point and the third pivot point being disposed above the portion of the tracks that angles downward from the drive sprocket toward the front end of the mainframe.

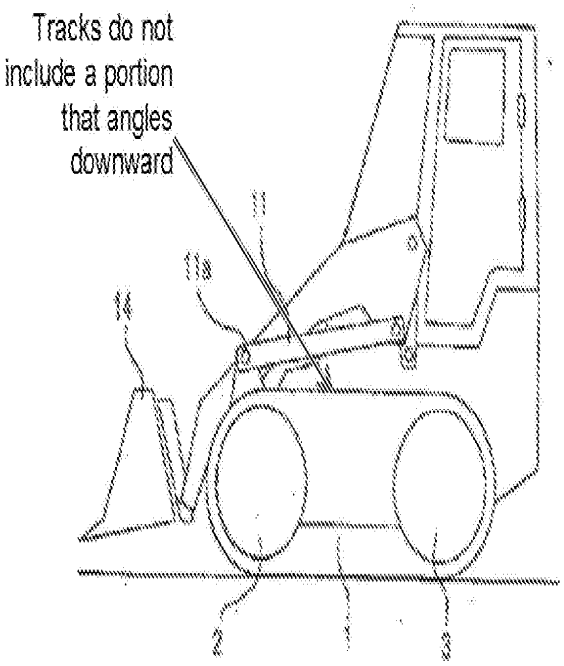
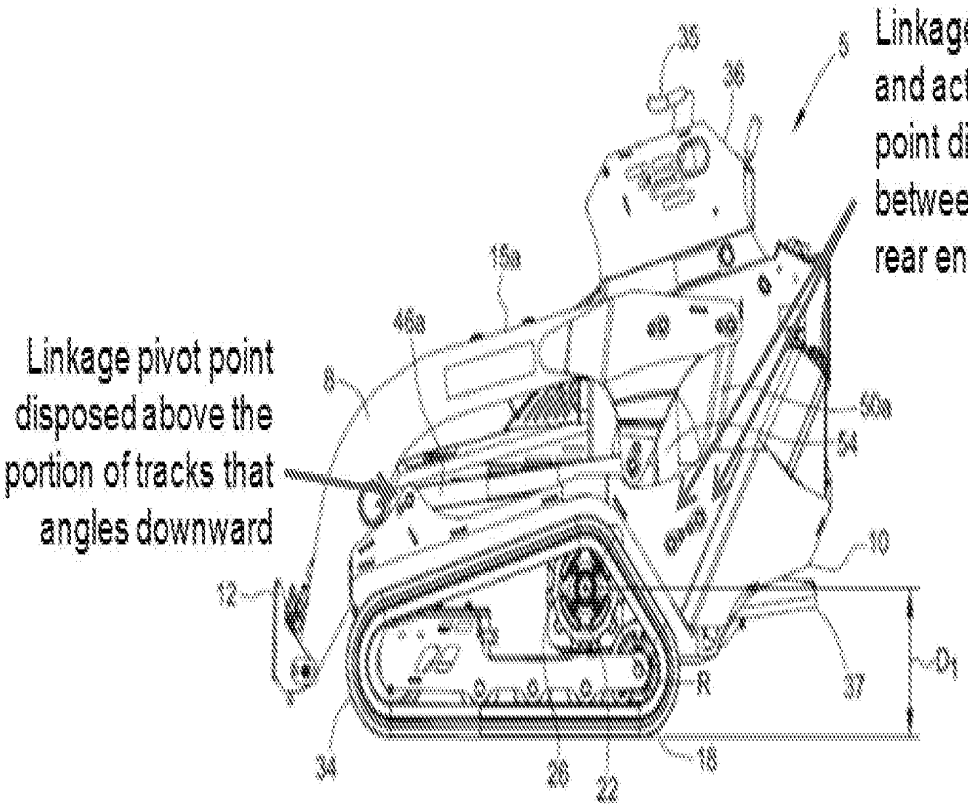


Fig. 9 of Komatsu

Potential New Claims

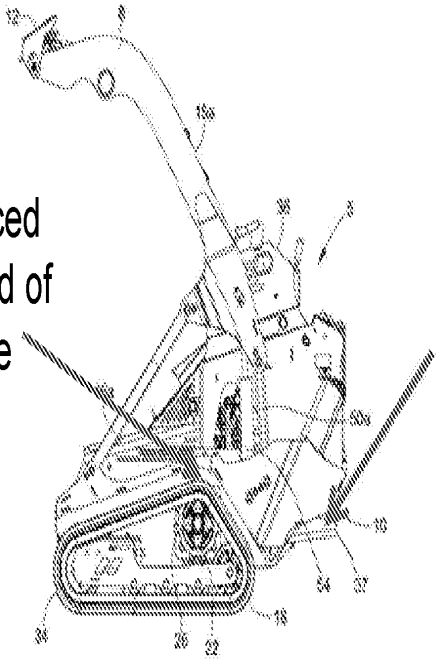
1-C. (New) The compact tool carrier as set forth in claim 1 wherein . . . the first pivot point, the third pivot point and the fifth pivot point are (1) disposed above at least part of the portion of the tracks that angles downward from the drive sprocket toward the front end of the mainframe or (2) disposed between the tracks and the rear end of the mainframe.



Vermeer

Potential New Claims

1-D. (New) The compact tool carrier as set forth in claim 1 wherein the operator platform extends from the mainframe and a portion of the operator platform is forward of a rear end of the mainframe, the compact tool carrier comprising a drive mechanism comprising tracks for propelling the compact tool carrier over a supporting surface, the tracks being spaced from the rear end of the mainframe.



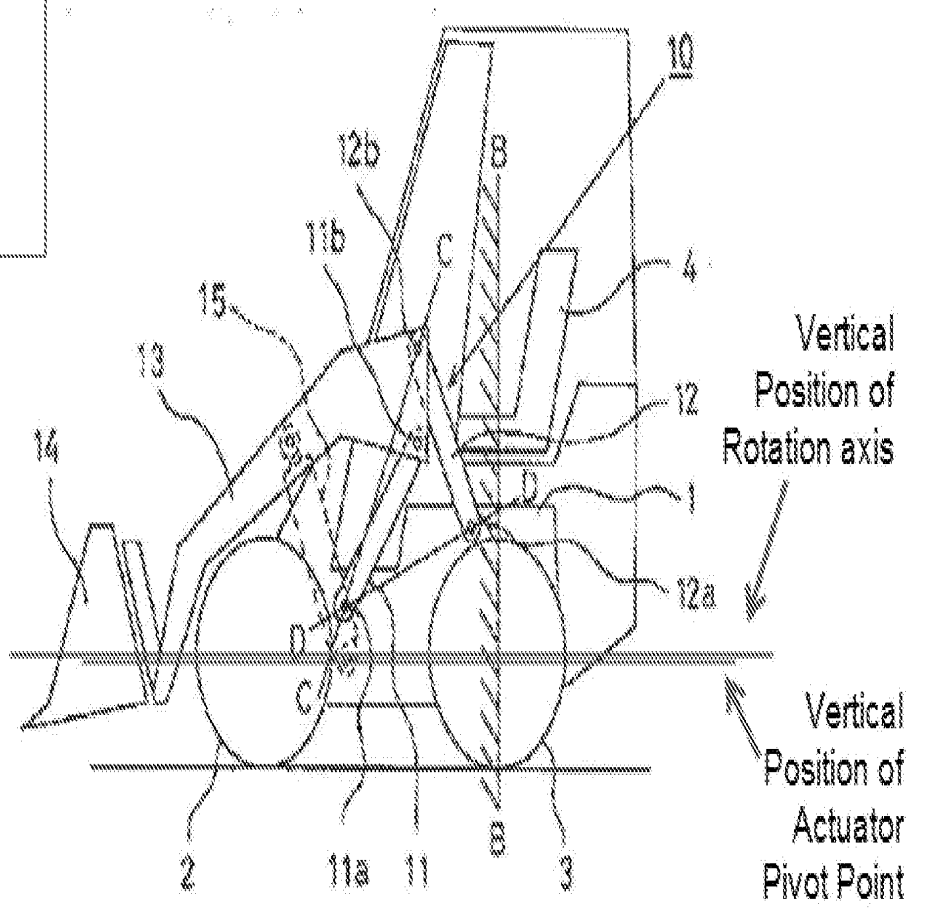
Tracks spaced from rear end of mainframe

Operator platform 37 set forward from rear of mainframe 10 to provide a protective pocket for operator

Vermeer

Potential New Claims

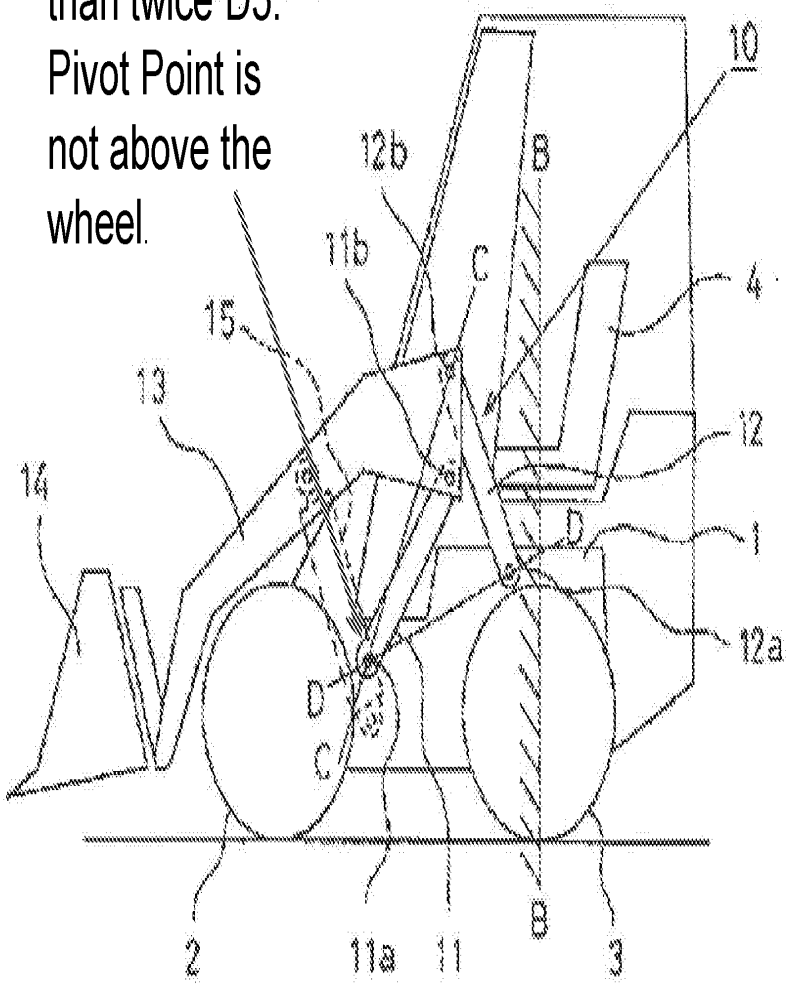
19-A. (New) The compact tool carrier as set forth in claim 19 wherein the fifth pivot point is above the rotational axis.



Potential New Claims

19-B. (New) The compact tool carrier as set forth in claim 19 wherein the third pivot point is less than twice D5 and is disposed above the tracks or wheels.

Only Linkage with Pivot Point less than twice D5. Pivot Point is not above the wheel.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

DECLARATION OF SCOTT PROST-DOMASKY UNDER 37 C.F.R. 1.132

I, Scott Prost-Domasky, declare and state as follows:

1. I am a structural analysis consultant with Analytical Processes/Engineered Solutions, Inc. in St. Louis, Missouri.

2. I received a Bachelor of Science degree in Aerospace Engineering from the University of Arizona in 1986. I received a Master's of Science Degree in Aerospace Engineering from the University of Southern California in 1988. I received a PhD in Mechanical Engineering from Washington University in 1995. I am a registered Professional Engineer in the State of Missouri.

3. I have 28 years of experience in advanced engineering concepts. I routinely develop and apply finite element methods (FEM/FEA) to structural analysis of linear and nonlinear mechanical systems and develop stress analysis modeling techniques.

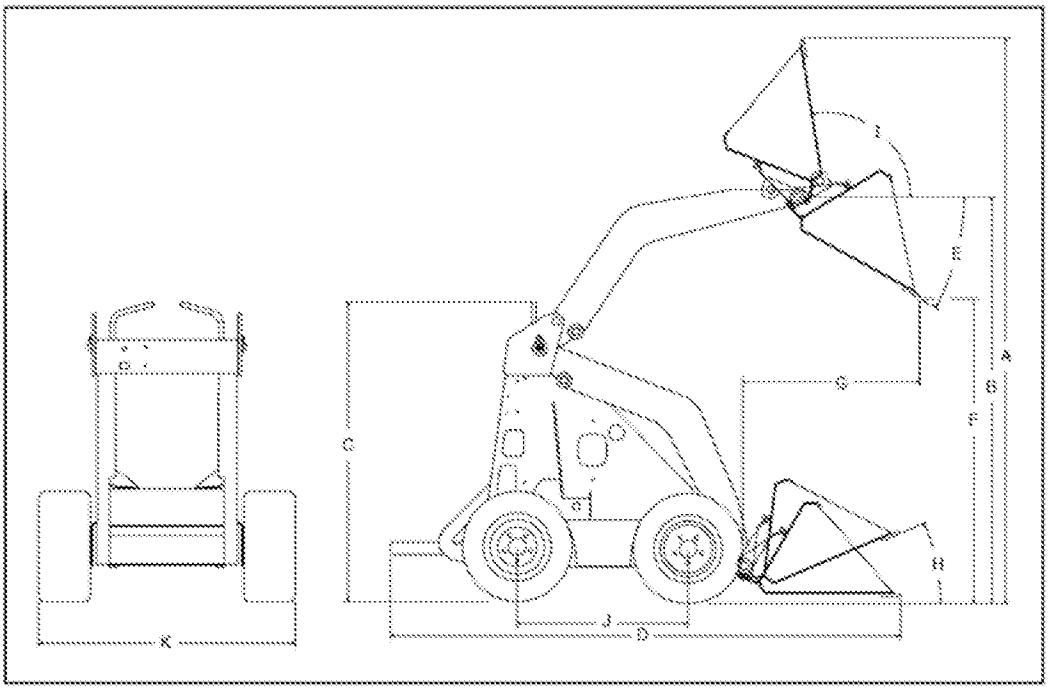
4. I have reviewed the "Toro Wheeled Compact Utility Loader Service Manual" ("Dingo 322 Service Manual") that describes and illustrates service for the Toro Dingo 322 Compact Utility Loader. The Dingo 322 Service Manual sets forth the specifications for Dingo 322 on page 2/1-2 shown below.

SPECIFICATIONS

Dimensions

A. Overall operating height, fully raised / 91.2" (2317mm)
B. Hinge pin height, fully raised / 66.0" (1676mm)
C. Overall height / 48.7" (1237mm)
D. Overall length / 82.2" (2088mm)
E. Dump angle / 34°
F. Dump height / 47.0" (1194mm)
G. Reach, fully raised / 26.0" (660mm)
H. Bucket rollback, ground position / 19°
I. Bucket rollback, fully raised / 97°
J. Wheelbase / 28.0" (711mm)
K. Overall width / 40.5" (1029mm)
X. Ground Clearance, front / 5.8" (147mm)
X. Ground Clearance, rear / 5.8" (147mm)
X. Reach, maximum / 28.0" (711mm)
X. Bucket rollback, carry position / 20°

X. = Dimension not shown



Page 2/1-2 of the Dingo 322 Service Manual

5. I have reviewed JP 11-140900 to Komatsu ("Komatsu") as translated in English. Komatsu describes and shows 6 embodiments of a loader arrangement of a skid steer. The first embodiment is shown in Figures 1 and 5 that show the loader in lowered and raised positions, respectively (collectively referred to as "Figure 1/5"). The remaining embodiments are shown in Figures 6-10 of Komatsu.

6. I modeled the loader arrangement of Figures 1/5 of Komatsu on Dingo 322. I also modeled the loader arrangement of Figures 6-10 of Komatsu on Dingo 322. The loader arrangements were modeled by scaling the loader to a size in which the

bucket of the loader was level with the supporting surface in the lowered positon of the loader. Each model included the same loader arm, linkages, and actuator (including the pivot points thereof) of the respective embodiment of Komatsu on the Dingo 322 mainframe. Each model included the bucket and attachment plate of the Dingo 322 machine attached to the respective loader of Komatsu. Because Figure 8 of Komatsu did not include a cylinder, a cylinder location was assumed to provide maximum lift height.

7. Each of the loader arrangements of Figures 1/5, 6 and 8-10 of Komatsu on Dingo 322 when at its fullest height are shown below. The fullest height of the loader arrangement occurs when the loader is unable to extend further vertically upon further extension of the actuator. To measure the height of the loader when fully extended, the distance from the bottom of the wheels to the hinge pin was measured. This measurement was scaled up by use of the 28.0" wheelbase dimension provided in the specifications of Dingo 322 set forth on Page 2/1-2 of the Dingo 322 Service Manual copied above. The heights from the ground to the hinge pin for each of Figures 1/5, 6 and 8-10 on Komatsu are shown below:

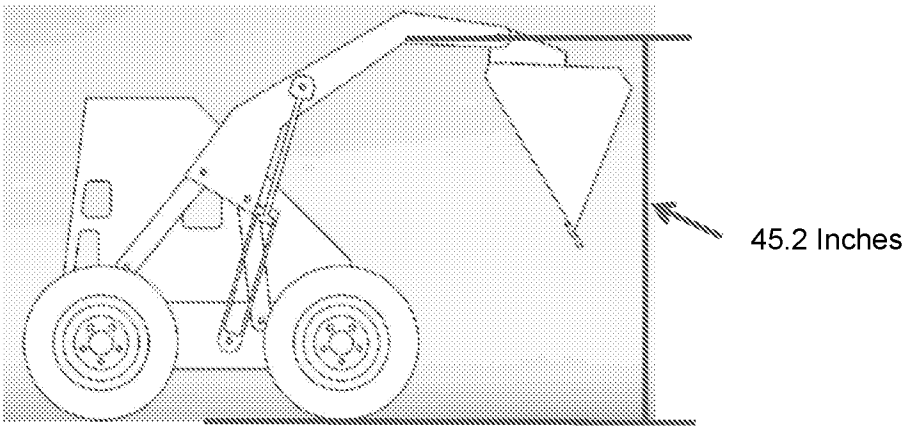


Figure 1: Loader of Figures 1/5 of Komatsu on Dingo 322 in Fully Extended Position

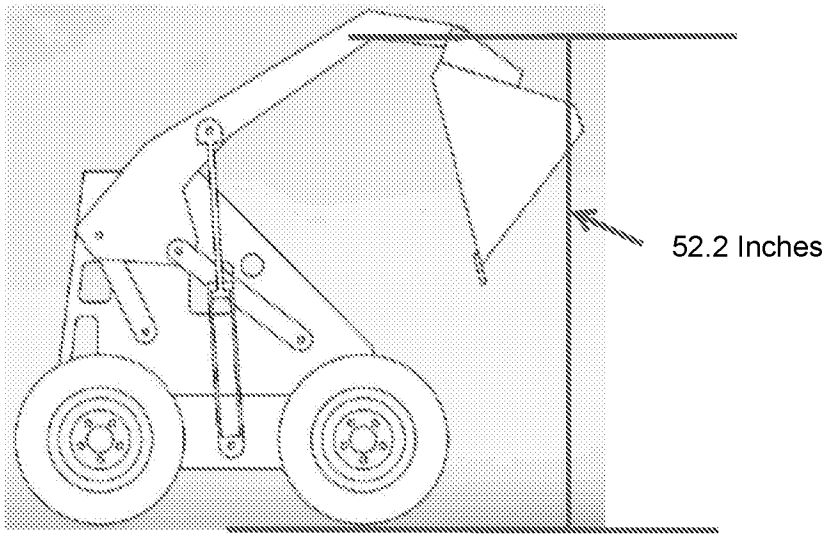


Figure 2: Loader of Figure 6 of Komatsu on Dingo 322 in Fully Extended Position

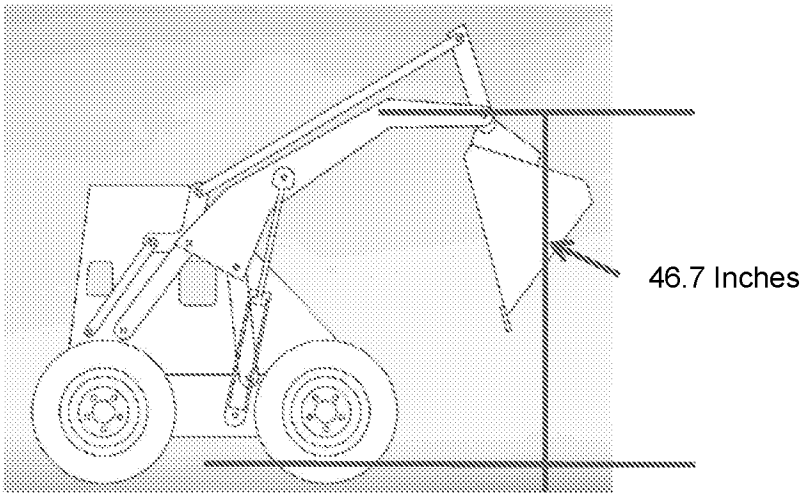


Figure 3: Loader of Figure 8 of Komatsu on Dingo 322 in Fully Extended Position

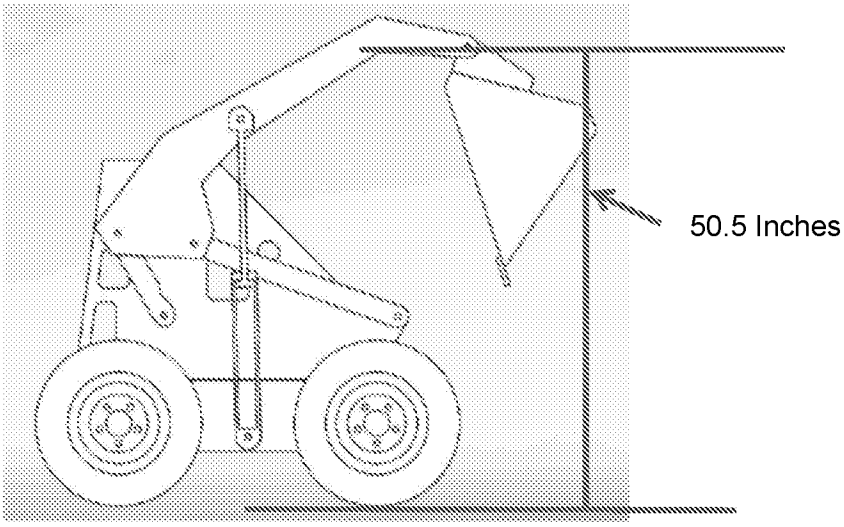


Figure 4: Loader of Figure 9 of Komatsu on Dingo 322 in Fully Extended Position

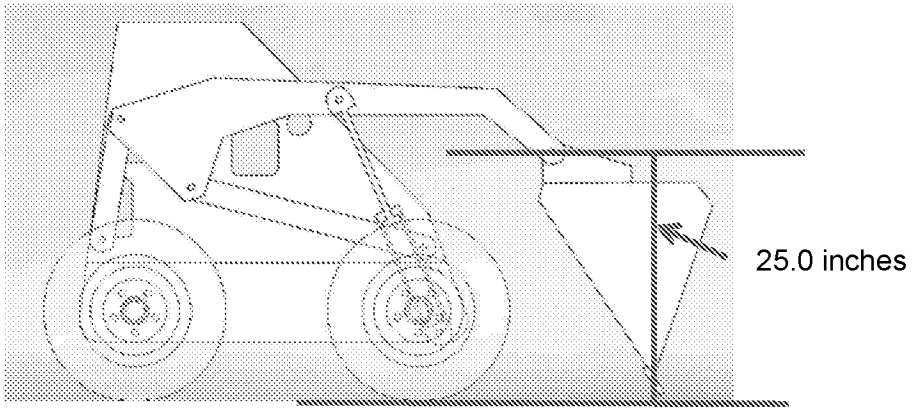


Figure 5: Loader of Figure 10 of Komatsu on Dingo 322 in Fully Extended Position

The highest hinge pin height of the embodiments of Figures 1/5, 6 and 8-10 of Komatsu on Dingo 322 would be the 52.2 inch hinge pin height when the loader of Figure 6 of Komatsu is used (Figure 2).

8. The loader arrangement of Figure 7 of Komatsu on Dingo 322 at its fullest height is shown below.

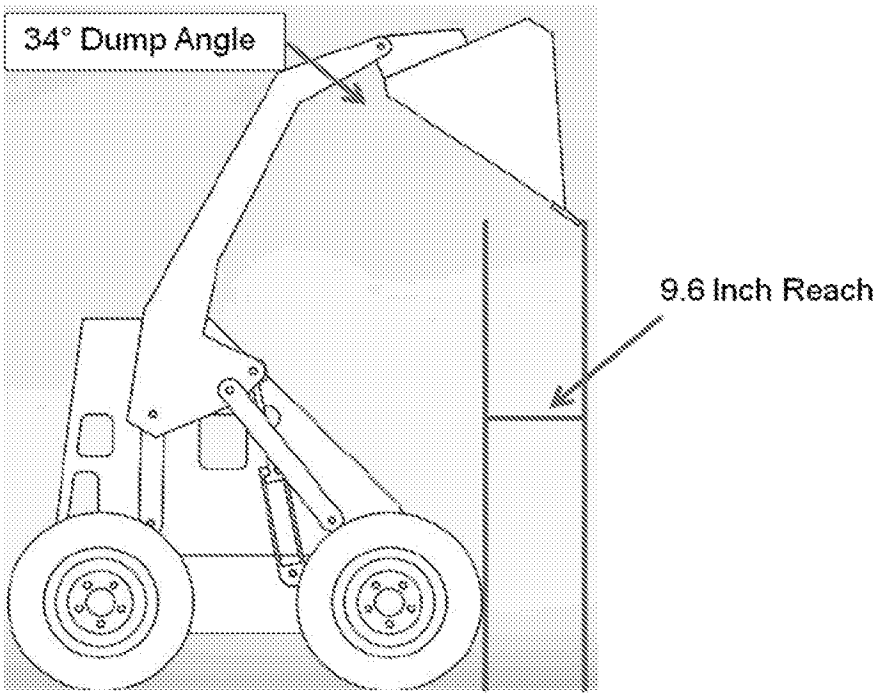


Figure 6: Loader of Figure 7 of Komatsu on Dingo 322 in Fully Extended Position

I measured the reach of the loader of Figure 7 of Komatsu on Dingo 322 at its fullest height. To measure the reach, the distance from the front of the wheels to the front end of the bucket was measured. The reach was measured when the bucket was angled down from the horizontal plane by 34° which was the same angle used in the "Specifications" set forth in Page 2/1-2 of the Dingo 322 Service Manual copied above. The reach of the loader of Figure 7 of Komatsu on Dingo 322 was 9.6 inches.

9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.

Scott Prost-Domasky _____ Date _____

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al.
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

Art Unit: 3993

DECLARATION OF SCOTT PROST-DOMASKY UNDER 37 C.F.R. 1.132

I, Scott Prost-Domasky, declare and state as follows:

1. I am a structural analysis consultant with Analytical Processes/Engineered Solutions, Inc. in St. Louis, Missouri.

2. I received a Bachelor of Science degree in Aerospace Engineering from the University of Arizona in 1986. I received a Master's of Science Degree in Aerospace Engineering from the University of Southern California in 1988. I received a PhD in Mechanical Engineering from Washington University in 1995. I am a registered Professional Engineer in the State of Missouri.

3. I have 28 years of experience in advanced engineering concepts. I routinely develop and apply finite element methods (FEM/FEA) to structural analysis of linear and nonlinear mechanical systems and develop stress analysis modeling techniques.

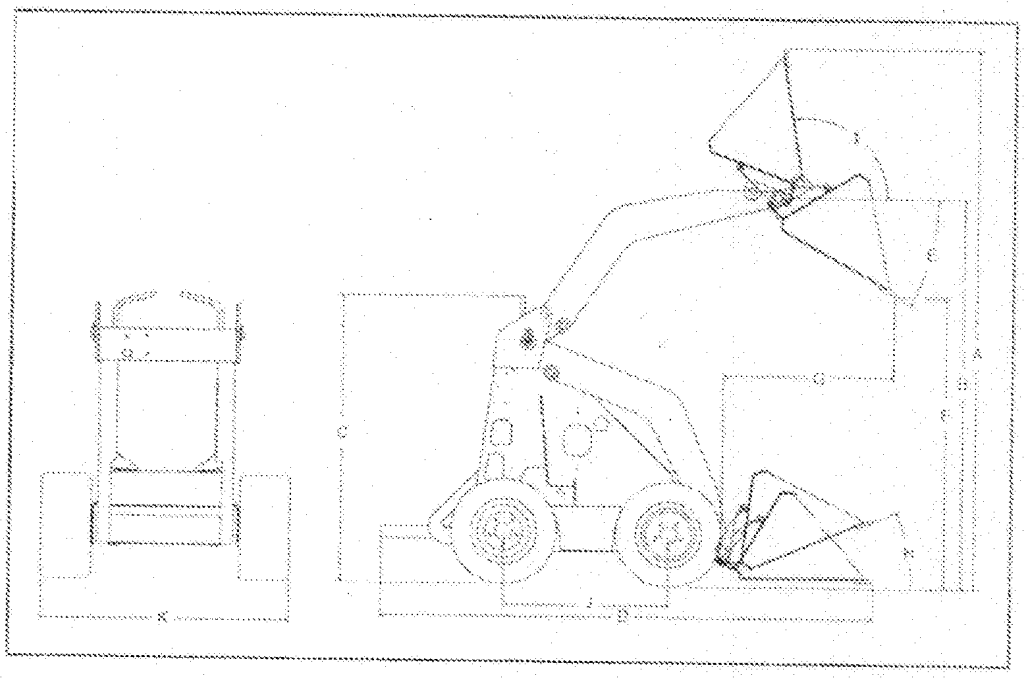
4. I have reviewed the "Toro Wheeled Compact Utility Loader Service Manual" ("Dingo 322 Service Manual") that describes and illustrates service for the Toro Dingo 322 Compact Utility Loader. The Dingo 322 Service Manual sets forth the specifications for Dingo 322 on page 2/1-2 shown below.

SPECIFICATIONS

Dimensions

A. Overall operating height, fully raised / 91.3" (2317mm)
B. Hinge pin height, fully raised / 66.0" (1676mm)
C. Overall height / 49.7" (1257mm)
D. Overall length / 82.3" (2089mm)
E. Dump angle / 34°
F. Dump height / 47.0" (1194mm)
G. Reach, fully raised / 25.0" (660mm)
H. Bucket rollback, ground position / 10°
I. Bucket rollback, fully raised / 97°
J. Wheelbase / 28.0" (711mm)
K. Overall width / 40.5" (1029mm)
X. Ground Clearance, front / 5.8" (147mm)
X. Ground Clearance, rear / 5.8" (147mm)
X. Reach, maximum / 28.0" (711mm)
X. Bucket rollback, carry position / 20°

X. = Dimension not shown



Page 2/1-2 of the Dingo 322 Service Manual

5. I have reviewed JP 11-140900 to Komatsu ("Komatsu") as translated in English. Komatsu describes and shows 6 embodiments of a loader arrangement of a skid steer. The first embodiment is shown in Figures 1 and 5 that show the loader in lowered and raised positions, respectively (collectively referred to as "Figure 1/5"). The remaining embodiments are shown in Figures 6-10 of Komatsu.

6. I modeled the loader arrangement of Figures 1/5 of Komatsu on Dingo 322. I also modeled the loader arrangement of Figures 6-10 of Komatsu on Dingo 322. The loader arrangements were modeled by scaling the loader to a size in which the

bucket of the loader was level with the supporting surface in the lowered positon of the loader. Each model included the same loader arm, linkages, and actuator (including the pivot points thereof) of the respective embodiment of Komatsu on the Dingo 322 mainframe. Each model included the bucket and attachment plate of the Dingo 322 machine attached to the respective loader of Komatsu. Because Figure 8 of Komatsu did not include a cylinder, a cylinder location was assumed to provide maximum lift height.

7. Each of the loader arrangements of Figures 1/5, 6 and 8-10 of Komatsu on Dingo 322 when at its fullest height are shown below. The fullest height of the loader arrangement occurs when the loader is unable to extend further vertically upon further extension of the actuator. To measure the height of the loader when fully extended, the distance from the bottom of the wheels to the hinge pin was measured. This measurement was scaled up by use of the 28.0" wheelbase dimension provided in the specifications of Dingo 322 set forth on Page 2/1-2 of the Dingo 322 Service Manual copied above. The heights from the ground to the hinge pin for each of Figures 1/5, 6 and 8-10 on Komatsu are shown below:

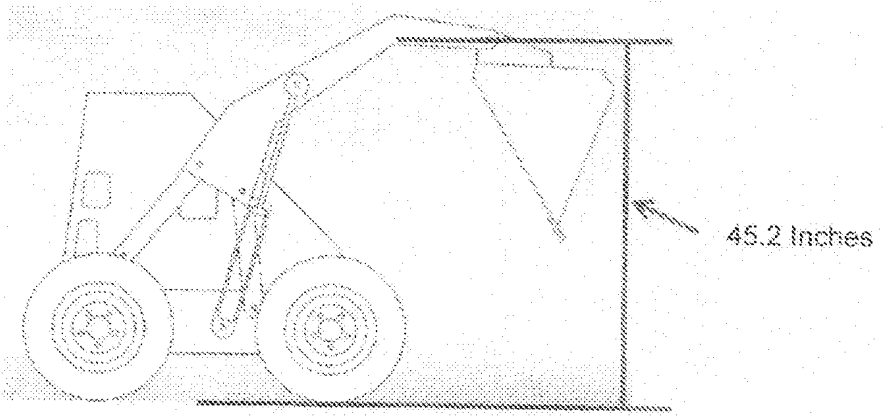


Figure 1: Loader of Figures 1/5 of Komatsu on Dingo 322 in Fully Extended Position

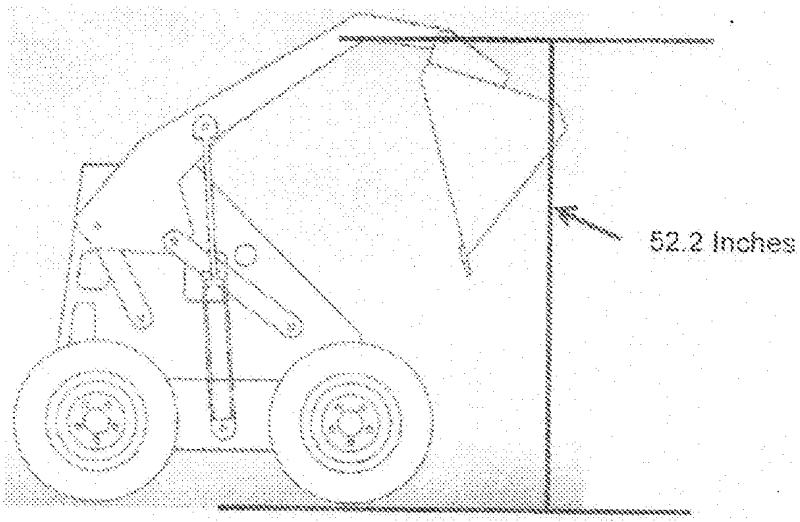


Figure 2: Loader of Figure 6 of Komatsu on Dingo 322 in Fully Extended Position

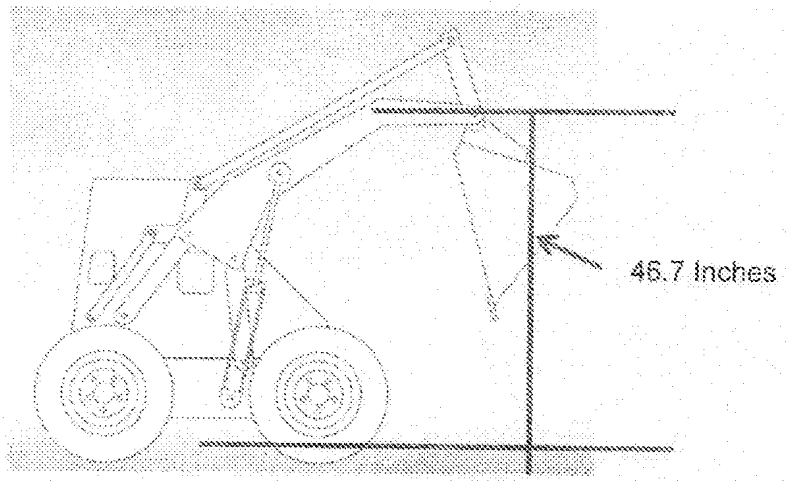


Figure 3: Loader of Figure 8 of Komatsu on Dingo 322 in Fully Extended Position

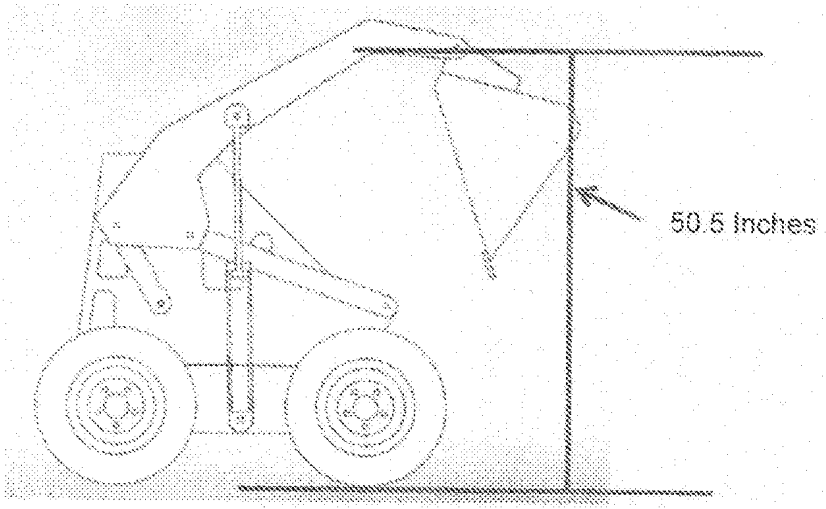


Figure 4: Loader of Figure 9 of Komatsu on Dingo 322 in Fully Extended Position

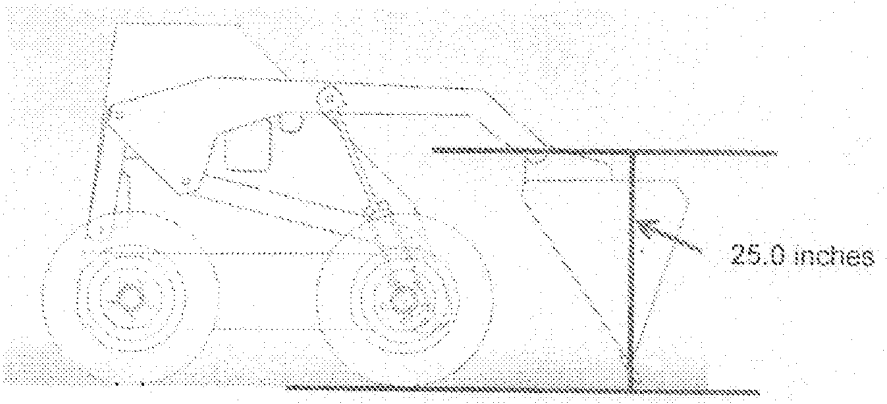


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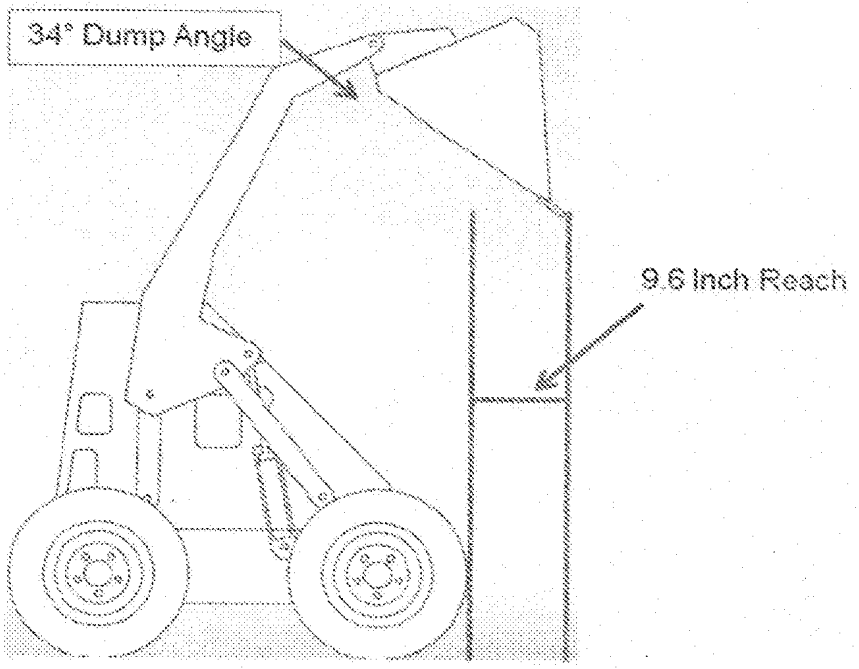


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9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.

Scott Prost-Domasky

2/5/19
Date

CERTIFICATE OF SERVICE

I certify that on February 6, 2019 the foregoing:

AMENDMENT AND RESPONSE TO OFFICE ACTION

INTERVIEW SUMMARY

DECLARATION OF LOUIS HARTKE UNDER 37 C.F.R. 1.132

DECLARATION OF MATTHEW HUTCHINSON UNDER 37 C.F.R. 1.132

DECLARATION OF SCOTT PROST-DOMASKY UNDER 37 C.F.R. 1.132;

and

INFORMATION DISCLOSURE STATEMENT

were served on the third party requester's counsel via first class mail at:

James W. Miller
Registration No. 27,661
120 South 6th St.
Suite 2310
Minneapolis, MN 55402

Respectfully submitted,

/Michael J. Vander Molen/

Michael J. Vander Molen
Reg. No. 57,274
ARMSTRONG TEASDALE LLP
7700 Forsyth Blvd.
Suite 1800
St. Louis, Missouri 63105
(314) 621-5070

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer
Conferees: Eileen Lillis and Sara Clarke

DECLARATION OF MATTHEW HUTCHINSON UNDER 37 C.F.R. 1.132

I, Matthew Hutchinson, declare and state as follows:

1. I am a Product Manager at Vermeer Manufacturing Company ("Vermeer"). I manage the Tree Care, Rental and Landscape product groups at Vermeer. Previously, I was a Project Engineer in the Rental Product Group at Vermeer.

2. As an inventor of U.S. Patent No. 9,975,750 ("the '750 Patent"), I have read and understand the '750 Patent and the claims thereof and the presently pending claims of Reexamination Control No. 90/014,148.

3. As Product Manager of the Rental Product Group at Vermeer, I oversee development and marketing of compact utility loaders, including vertical lift compact utility loaders in which the loader is free from direct attachment to the mainframe as recited in claim 1 of the '750 Patent and radial lift compact utility loaders in which the loader is directly attached to the mainframe.

4. The compact utility loader of claim 1 of the '750 Patent has been a commercial success. Since their introduction into the market in 2015, vertical lift compact utility loaders have taken market share from radial lift vertical loaders. In 2015, vertical lift compact utility loaders made up 11% of all compact utility loader unit sales of Vermeer (see Figure 1). Vertical lift has continued to take market share from radial

lift. In 2018, vertical lift compact utility loaders made up ***37%*** of all compact utility loader unit sales of Vermeer.

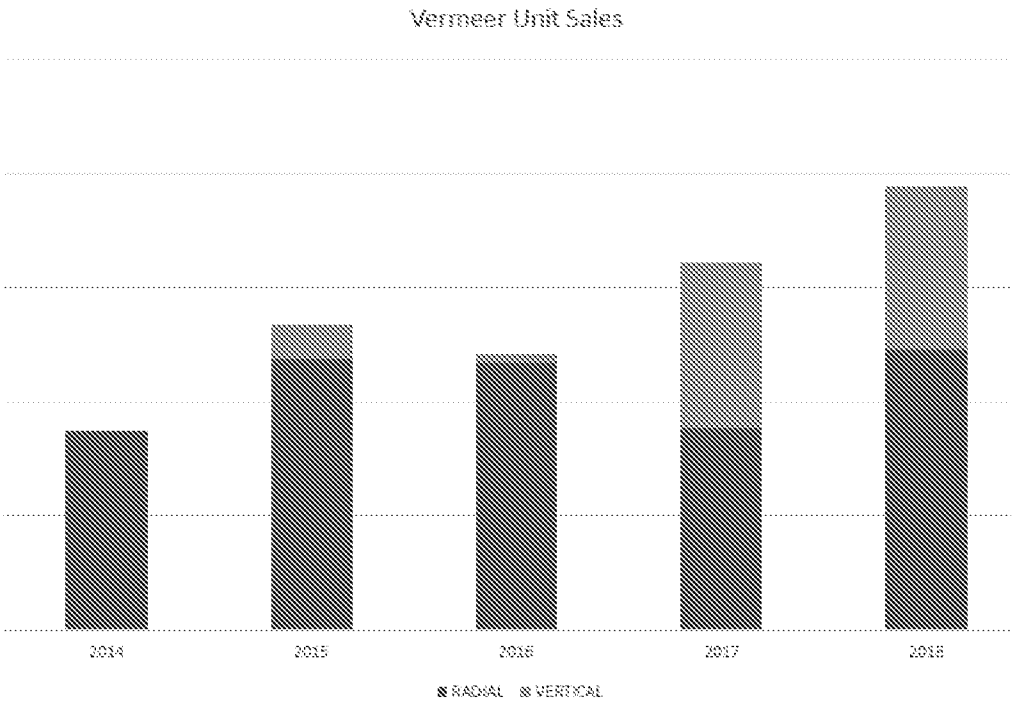


Figure 1

5. As Product Manager at Vermeer, it is my responsibility to closely monitor customer demand and to determine which features are driving sales. The benefits directly attributable to the vertical lift design of the compact utility loaders (sold as Vermeer models CTX50 and CTX100), including increased lift capacity in a compact design, have been very well received by customers and have driven the sales of these products. The trend toward vertical lift compact utility loaders shown above in Figure 1 results from the advantages of the vertical-lift design, rather than price discounts, special offers, advertising or other factors not related to vertical lift.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both,

under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.

Matthew Hutchinson	Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas et al.
Reexamination Control No.: 90/014,148
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Art Unit: 3993

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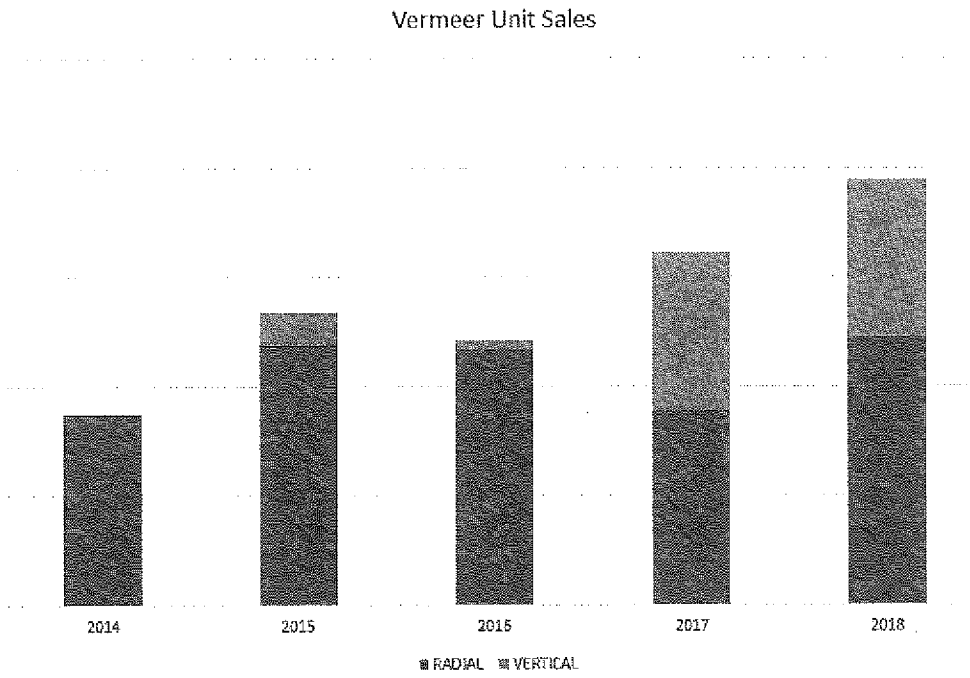


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Matthew Hutchinson

2/4/19
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Brad Thomas et al.	)	
	)	
Reexam Control No.: 90/014,148	)	
	)	Art Unit 3993
	)	
Patent No. 9,975,750	)	Examiner Russell D. Stormer

THIRD PARTY REQUESTER'S CHANGE OF CORRESPONDENCE ADDRESS

Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please change the Correspondence Address for the above-identified merged *ex parte* patent reexaminations to the following new business address for the registered practitioner who is responsible for handling such reexaminations on behalf of the Third Party Requester. The new Correspondence Address is:

James W. Miller, Attorney
120 S 6TH ST.
Suite 2310
Minneapolis, MN 55402-1829

February 4, 2019

Respectfully submitted,

/James W. Miller/

James W. Miller
Registration No. 27,661
120 S 6TH ST.
Suite 2310
Minneapolis, MN 55402-1829
Telephone (612) 338-5915

Certificate of Service

It is certified that a copy of this Third Party Requester's Change Of Correspondence Address has been served in its entirety on the Patent Owner as provided in 37 CFR 1.33(c). The name and address of the party served and the date of service are:

Armstrong Teasdale, LLP
770 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

Date of Service: February 4, 2019 By: /James W. Miller/

James W. Miller
Registration No. 27,661

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,148	06/06/2018	9975750	Veermer-750Reex	1098

76656 7590 01/24/2019

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

EXAMINER	
STORMER, RUSSELL D	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
01/24/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

JAMES W. MILLER, ATTORNEY
527 MARQUETTE AVENUE
SUITE 1960, RAND TOWER
MINNEAPOLIS, MN 55402

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,148* .

PATENT UNDER REEXAMINATION *9975750* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary	Control No.	Patent Under Reexamination	
	90/014,148	9975750	
	Examiner	Art Unit	AIA Status
	RUSSELL D STORMER	3993	Yes

All participants (USPTO personnel, patent owner, patent owner's representative):

(1) Russell D. Stormer	(3) Sara Clarke
(2) Eileen D. Lillis	(4) Mike Vander Mollen; Mike Munsell

Date of Interview: 23 January 2019

Type: a) ☑ Telephonic b) ☐ Video Conference
c) ☐ Personal (copy given to: 1) ☐ patent owner 2) ☐ patent owners representative)

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.
If Yes, brief description: See Continuation Sheet

Agreement with respect to the claims f) ☐ was reached. g) ☑ was not reached. h) ☐ N/A.
Any other agreement(s) are set forth below under "Description of the general nature of what was agreed to..."

Claim(s) discussed: 1, 7, and 19 specifically .

Identification of prior art discussed: Dingo, Komatsu, and Vermeer as used in the previous Office action .

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:
See Continuation Sheet .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims patentable, if available, must be attached. Also, where no copy of the amendments that would render the claims patentable is available, a summary thereof must be attached.)

A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION MUST INCLUDE PATENT OWNER'S STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. (See MPEP § 2281). IF A RESPONSE TO THE LAST OFFICE ACTION HAS ALREADY BEEN FILED, THEN PATENT OWNER IS GIVEN **ONE MONTH** FROM THIS INTERVIEW DATE TO PROVIDE THE MANDATORY STATEMENT OF THE SUBSTANCE OF THE INTERVIEW (37 CFR 1.560(b)). THE REQUIREMENT FOR PATENT OWNERS STATEMENT CAN NOT BE WAIVED. **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

/RUSSELL D STORMER/ Primary Examiner, Art Unit 3993	/SC/	/EDL/

cc: Requester (if third party requester)

Continuation of Description of Exhibit Shown or Demonstration Conducted: See the attached 24-page presentation which includes arguments, annotated figures and pictures, and proposed claim limitations.

Continuation of Description of the general nature of what was agreed to if an agreement was reached, or any other comments: The interview generally followed the attached agenda. Patent Owner, through representatives Vander Mollen and Munsell, summarized the Dingo and Komatsu references, then referred to pages 7-13 of the presentation and explained that Dingo is not capable of accommodating pivot points less than twice D5 (as set forth in claim 19) because the available space for this is filled by the hydraulic or chain drive on the Dingo machine. Regarding claim 7, Patent Owner considers this claim to recite that any of the first through sixth pivot points could be in condition (1) or (2) as recited. The Examiner disagreed and interprets the claim as reciting all of the pivot points are either in condition (1) or (2), and that the claim is ambiguous since it can reasonably be interpreted two ways. Patent Owner agreed to consider amendments to clarify claim 7. As to claim 18, Patent Owner referred to page 16 of the presentation and argued that Komatsu does not teach the limitation of the cross member being disposed forward of the second and fourth pivot points as shown in figures 2-4. The Examiner noted that figures 1 and 7 are discussed in the Office action, and asserted that the cross member, when shown, is always disposed at the bend in the arms 13 of Komatsu. Using this, and the fact that Komatsu describes the front portion of the vehicle body and the arm 13 as coupled to one another by a lifting cylinder 15 (Komatsu translation, page 17), the Examiner argued that the cylinder 15 in figure 1 is connected to the arm 13 and the cross member (though not shown) would be located at the upper bend in the arm 13 and not in the middle of arm where the cylinder 15 is attached. Potential new claims (pages 17-24 of the presentation) were discussed, but without agreement as to their patentability. Patent Owner was reminded of the requirement to file a detailed summary of the interview, which should be a separate paper if submitted with the response to the previous Office action.

UNITED STATES PATENT AND TRADEMARK OFFICE

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Patent Docket Department
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EXAMINER	
STORMER, RUSSELL D	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
12/06/2018	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,148* .

PATENT UNDER REEXAMINATION *9975750* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	**Control No.** 90/014,148	**Patent Under Reexamination** 9975750	
	Examiner RUSSELL D STORMER	**Art Unit** 3993	**AIA Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a. ☐ Responsive to the communication(s) filed on _____.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☐ This action is made FINAL.

c. ☑ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☑ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☑ Claims 1-20 and 22-34 are subject to reexamination.
1b. ☑ Claims 21 are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☑ Claims 1-20 and 22-34 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the certified copies have
   1 ☐ been received.
   2 ☐ not been received.
   3 ☐ been filed in Application No. _____.
   4 ☐ been filed in reexamination Control No. _____.
   5 ☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Brief Summary of the Prosecution History

On June 6, 2018, reexamination was requested by a third party requester for claims 1-20 and 22-34 of United States Patent Number 9,975,750 to Thomas et al. ("the '750 patent") and assigned Control Number 90/014,148.

On August 3, 2018 an Order was mailed granting reexamination of claims 1-20 and 22-34, and setting a time period of two months for the filing of a Patent Owner's Statement.

The two-month time period has expired without a Statement from the Patent Owner, and an Office action on the merits is proper at this time.

Scope of Reexamination

Claims 1-20 and 22-34 are within the scope of this proceeding.

Reexamination of claim 21 was neither requested nor ordered.

Prior Art Documents Relied Upon in this Action

Dingo® 322 Operator's Manual ("Dingo")

Dingo® 322 Parts Catalog ("Dingo Parts Catalog")

Japanese Patent Application JP 11-140900 to Komatsu Ltd. ("Komatsu")

Vermeer Manufacturing Company, "Vermeer Mini Skid Steers S600/S600TX" brochure ("Vermeer Brochure")

Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:[1]

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Ground 1

Claims 1-15 and 18 are rejected under 35 U.S.C. 103 as being unpatentable over Dingo and Dingo Parts Catalog in view of Komatsu.

Inasmuch as Dingo and Dingo Parts Catalog refer to the same Dingo 322 Utility Loader, these two references may be referred to individually or together throughout the rejections.

With respect to claim 1, Dingo discloses a compact tool carrier (loader) configured for standing or walk-behind operator control and having a longitudinal axis (Dingo, Fig 9, depicted Dingo 322 mini skid steer) and a mass of less than about 1500 kg (Dingo, p. 10, mass of 711 kg.), the compact tool carrier comprising:

[1] In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

a loader having an arm (Dingo, Fig. 9, the left arm 3), the loader being adapted to carry a tool (Dingo, p. 10, the referenced "std. bucket");

a mainframe for supporting the loader (Dingo, Fig. 9, the frame that carries, *inter alia*, wheels 6, operator platform 7 and engine 8), the mainframe having a first side and a second side, an actuator 4 directly pivotally attached to the first side of the mainframe and directly pivotally attached to the loader arm (Dingo, Fig. 9);

an actuator directly pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point;

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 (Dingo, Fig. 9, control panel 10);

an operator platform for standing operation of the operator controls of the control station (Dingo, Fig. 9, operator platform 7); and

an engine (Dingo, Fig. 9, engine 8) disposed forward of the operator platform 7 relative to the longitudinal axis.

The loader of Dingo is not free from direct attachment to the mainframe, and does not include first and second linkages pivotally attached to the first and second sides of the mainframe at what would be first and third pivot points.

Komatsu teaches a skid-steer loader comprising a mainframe 1, an engine, a control station having operator controls, and an actuator 15 (15a) directly pivotally attached to the first side of the mainframe and pivotally attached to a loader arm 13 (see the second attachment example shown in figure 3).

Rather than being directly attached to the mainframe, the arm is indirectly connected through a four-joint link mechanism comprising a first linkage 11 pivotally attached to the first side of the mainframe at a first pivot point and to the loader arm at a second pivot point, and a second linkage 12 pivotally attached to the first side of the mainframe at a third pivot point and to the loader arm at a fourth pivot point, as shown in figure 1, for example.

Komatsu further teaches this indirect attachment provides some advantages over a direct attachment: The use of the linkage raises the arm in a vertical lift, an example of which is shown in figure 7. A vertical lift is more compact and more stable than a radial lift (prior art figure 13), as described in paragraph 0007 and shown in prior art figures 11 and 12.

From the teachings of Komatsu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the tool carrier of Dingo/Dingo Parts Catalog such that the loader arm was not directly attached to the mainframe and instead included a first linkage 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, and further included a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point in order to employ a vertical in the tool carrier. The fifth pivot point would be distinct from the first and third pivot points. This would yield the predictable result of increasing the stability of the tool carrier by reducing the front-to-back travel of the center of gravity of the tool or load as taught by Komatsu.

Claim 2. The mainframe incorporates a single weldment as taught by Dingo Parts Catalog, p. 1, Frame & Decal ASM 4).

Claim 3. The loader arm is a first loader arm (Dingo, Fig. 9, the left arm 3) the loader comprising a second loader arm (Dingo, Fig. 9, the right loader arm 3). It would have been obvious to include a third linkage pivotally attached to the second side of the mainframe and pivotally attached to the second loader arm in the same manner as taught by Komatsu (front linkage 11 or rear linkage 12) on the first side as an obvious duplication of parts.

Claim 4. The actuator is a first actuator (Dingo, Fig. 9, the left cylinder 4), 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 (Dingo, Fig. 18, the right cylinder). Moreover, Komatsu teaches the use of a second actuator when the cylinders are attached to the arms and the sides of the mainframe as shown in the exemplary arrangement of figure 3, at least.

Claim 5. The compact tool carrier further includes a drive mechanism comprising tracks or wheels (Dingo, Fig. 9, wheels 6), the drive mechanism being attached to the mainframe (Dingo, Fig. 9, wheels 6 are carried by the same frame that carries, inter alia, operator platform 7 and engine 8).

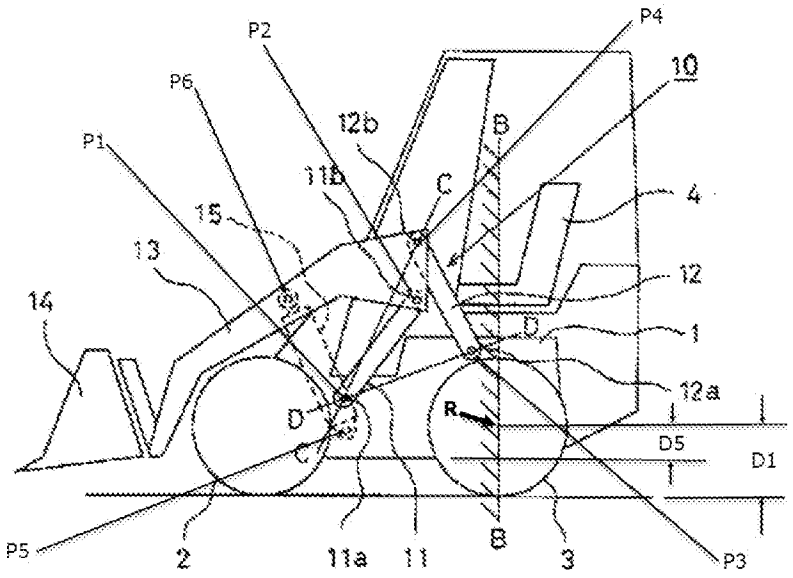
Claim 6. The drive mechanism (Dingo, Fig. 9, wheels 6) is propelled by the engine.

Claim 7. The third party Requester asserts the '750 patent lacks support for limitations set forth in claim 7, specifically, that there is no support for the recitation of the first through sixth pivot points being disposed forward of the control station as the loader moves from a down position to a vertically raised position. The Requester asserts that

figure 2 shows five of the six pivot points are ***not*** disposed forward of the control station 36. See pages 54-56 of the Request.

Looking at figure 2, the operator control 35 appears to be the forward-most control of the control station 36, and only P1 and P4 are clearly disposed forward of the control 35. The same is true in Figure 3. In each of figures 2 and 3, the control station 36 is not clearly shown, but in figure 1 it appears to be a control panel. The '750 patent appears to be silent as to the boundaries of the operator control and the control station.

As noted above with respect to claim 1, Dingo/Dingo Parts Catalog as modified by Komatsu includes first, second, third, fourth, fifth, and sixth pivot points. The equivalent of points P5 and P6 (as well as the lift points 11) in Dingo are shown in figure 9 to be forward of the operator control station, and/or between the operator controls and a bottom of the mainframe. In the marked-up figure 1 of Komatsu depicted below, all of the pivot points are shown to be disposed between the operator controls and a bottom of the mainframe and/or (2) disposed forward of the control station, at least to the same extent that the six pivot points are shown and described as such in the '750 patent.



Therefore, it would have been obvious, in the compact tool carrier of Dingo/Dingo Parts Catalog as modified in light of Komatsu, that as the loader travels from a down position to a vertically raised position, the first, second, third, fourth, fifth, and sixth pivot points would be (1) disposed between the operator controls and a bottom of the mainframe and/or (2) disposed forward of the control station, to keep the center of gravity low on the machine as taught by Komatsu, and/or to keep the pivot arms low on the machine so that they would not obstruct the view of the operator as taught by Komatsu.

Claim 8. The loader arm of Dingo incorporates a single weldment (Dingo Parts Catalog, p. 1, Loader & Decal ASM 13 with each loader arm further being a single weldment having three welded pivot bushings).

Claim 9. Both Dingo and Komatsu show tools attached to the loader.

Claim 10. The method for operating the compact tool carrier comprising standing on the operator platform and operating the control station to propel the compact tool carrier forward and/or raise or lower the loader is inherently true of Dingo when an operator stands on operator platform 7 and uses the controls on control panel 10.

Claim 11. In the compact tool carrier of Dingo as modified in light of Komatsu, no more than three linkages and actuators are attached to the first side of the mainframe.

Claim 12. Both Dingo and Komatsu (figure 3) attach a single actuator to the first side of the mainframe.

Claim 13. Figure 9 of Dingo shows the operator platform to have a rear and a front relative to the longitudinal axis, and the pivots for the arms and the actuator to be forward of the rear and the front of the operator platform. In fact, the portion of the mainframe where the pivots are located are all forward of the front of the operator platform, and it appears that no portion of the mainframe is rearward of the front of the platform. As such, it would have been obvious in the tool carrier of Dingo as modified by Komatsu that the second pivot point, fourth pivot point, and sixth pivot point would be disposed forward of the rear and front of the operator platform when the loader travels from the down position to the vertically raised position such that the loader arms and actuator(s) and linkages would not be adjacent the operator during their movement. This would yield the predictable result of a less dangerous tool carrier.

Claim 14. The loader arms of Dingo and Komatsu each include a second arm and a cross member which is disposed forward of the operator platform or operator cab when the arms are in the raised position. Those of ordinary skill in the art would have found it obvious to maintain the positioning of the cross member forward of the operator platform in

the tool carrier of Dingo as modified in view of Komatsu's teachings in order to prevent the cross member from hitting or interfering with an operator standing on the platform.

Claim 15. The attachment plate of Dingo (Dingo, Fig. 9, mount plate 1) is shown to be spaced from the cross member.

Claim 18. The upper cross member of Dingo is well-forward of the pivot points of the arms. Likewise, the cross member of Komatsu is shown to be forward of the second and fourth pivot points (where the linkages 11, 12, connect to the loader arms). See figures 1-4 and 7, for instance. Moreover, Komatsu teaches that it was known to locate the pivot connections between the linkages and the arms at or near the rearward portions of the arms as shown in figures 1 and 7, and even in prior art figures 11 and 12. From these teachings, it would have been obvious to those of ordinary skill in the art to dispose the cross member of Dingo forward of the second pivot point and the fourth pivot point when modified to include first and second linkages in view of Komatsu. This would yield the predictable result of spacing the cross member forward of the operator station.

Ground 2

Claims 16 and 17 are rejected under 35 U.S.C. 103 as being unpatentable over Dingo and Dingo Parts Catalog in view of Komatsu as applied in Ground 1 above, and further in view of Vermeer Brochure.

Claim 16. The compact tool carrier of Dingo further comprises a drive mechanism (rear wheel 6) for propelling the compact tool carrier over a supporting surface, and the cross member is shown to be positioned such that it will be forward of the drive

mechanism in the vertically raised position as well as the down position of the loader. The drive mechanism is not disclosed as having a sprocket.

However, Vermeer Brochure clearly teaches the interchangeability of a tracked drive system and a wheeled drive system. The specifications of the wheeled model S600 mini skid steer and the tracked model S600TX mini skid steer of Vermeer Brochure are virtually identical with the main difference being the substitution of tracks and drive sprockets for the wheel and tire arrangement. Further, the cross member is shown to be well-forward of the rear wheel and drive sprocket in the two models.

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute a drive mechanism having a sprocket for the rear wheel of Dingo to enable the use of endless tracks on the tool carrier and yield the predictable result of increased traction on soft surfaces.

Claim 17. Dingo/Dingo Parts Catalog shows two cross members between the loader arms 3: a top cross member located where the loader arms change orientation and a bottom cross member near the mounting plate 1.

Vermeer Brochure teaches that a single cross member can be large and strong enough when placed at this location, namely at the same location as Dingo's top cross member. In light of this teaching, it would have been obvious to one of ordinary skill in the art to employ a single cross member with sufficient size and strength to stabilize the arms in Dingo, depending on the intended use and desired load capacities of the tool carrier and the loader.

Ground 3

Claims 19, 20, and 22-34 are unpatentable under 35 U.S.C. 103(a) over Dingo/Dingo Parts Catalog in view of Komatsu and further in view of Vermeer Brochure.

Dingo and Dingo Parts Catalog refer to the same Dingo 322 Utility Loader; these two references may be referred to individually or together in the following rejections.

With respect to claim 19, Dingo discloses a compact tool carrier (loader) configured for standing or walk-behind operator control and having a longitudinal axis (Dingo, Fig 9, depicted Dingo 322 mini skid steer) and a mass of less than about 1500 kg (Dingo, p. 10, mass of 711 kg.), the compact tool carrier comprising:

a loader having an arm (Dingo, Fig. 9, the left arm 3), the loader being adapted to carry a tool (Dingo, p. 10, the referenced "std. bucket");

a mainframe for supporting the loader (Dingo, Fig. 9, the frame that carries, inter alia, wheels 6, operator platform 7 and engine 8), the mainframe having a first side and a second side, an actuator 4 directly pivotally attached to the first side of the mainframe and directly pivotally attached to the loader arm (Dingo, Fig. 9);

an actuator directly pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point, the fifth pivot point being distinct from the first pivot point and the third pivot point (Dingo, Fig. 9, left cylinder 4);

a drive mechanism comprising tracks or wheels and being attached to the mainframe and defining a rotational axis R (Dingo, Fig. 9, wheels 6 are carried by the same frame that carries, inter alia, operator platform 7 and engine 8);

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 (Dingo, Fig. 9, control panel 10);

an operator platform for standing operation of the operator controls of the control station (Dingo, Fig. 9, operator platform 7); and

an engine disposed forward of the operator platform relative to the longitudinal axis (Dingo, Fig. 9, engine 8 is forward of operator platform 7).

The loader of Dingo is not free from direct attachment to the mainframe, and does not include first and second linkages pivotally attached to the first and second sides of the mainframe, and therefore does not have first and third pivot points. Further, rotational axis R of the drive mechanism is separated from the bottom of the tool carrier by a vertical distance D1, and further separated from the bottom of the first side of the mainframe by a vertical distance D5. Dingo further does not have a drive sprocket.

Vermeer Brochure teaches the interchangeability of a tracked drive system and a wheeled drive system. The specifications of the wheeled model S600 mini skid steer and the tracked model S600TX mini skid steer of Vermeer Brochure are virtually identical with the main difference being the substitution of tracks and drive sprockets for the wheel and tire arrangement.

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute a drive mechanism having a sprocket for the rear wheel of Dingo to enable the use of endless tracks on the tool carrier and yield the predictable result of increased traction on soft surfaces.

Komatsu teaches a skid-steer loader comprising a mainframe 1, an engine, a control station having operator controls, and an actuator 15 (15a) directly pivotally attached to the first side of the mainframe and pivotally attached to a loader arm 13 (see the second attachment example shown in figure 3).

Rather than being directly attached to the mainframe, the arm is indirectly connected through a four-joint link mechanism comprising a first linkage 11 pivotally attached to the first side of the mainframe at a first pivot point and to the loader arm at a second pivot point, and a second linkage 12 pivotally attached to the first side of the mainframe at a third pivot point and to the loader arm at a fourth pivot point, as shown in figure 1, for example.

Komatsu further teaches this indirect attachment provides some advantages over a direct attachment: The use of the linkage raises the arm in a vertical lift, an example of which is shown in figure 7. A vertical lift is more compact and more stable than a radial lift (prior art figure 13), as described in paragraph 0007 and shown in prior art figures 11 and 12.

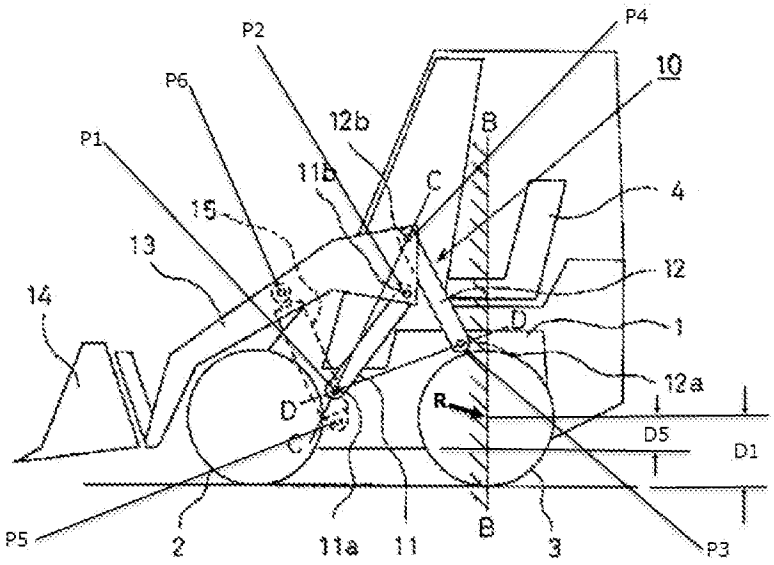
From the teachings of Komatsu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the tool carrier of Dingo/Dingo Parts Catalog such that the loader arm was not directly attached to the mainframe and instead included a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader arm at a second pivot point, and further included a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point in order to employ a vertical in the tool carrier. This would yield the predictable result of increasing the stability of the tool

carrier by reducing the front-to-back travel of the center of gravity of the tool or load as taught by Komatsu.

The loader of Komatsu includes a rotational axis of a drive wheel, a linkage 11 pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to the loader, and the actuator 15 is attached at a pivot point to a side of the mainframe. The loader has a bottom, the rotational axis and bottom of the loader being separated by a vertical distance D1, the rotational axis and the bottom of the first side of the mainframe being separated by a vertical distance D5, the rotational axis and the pivot point at which the linkage 11 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.

Figure 1 of Komatsu is reproduced below and includes markings by the Examiner which correspond to D1, D5, and the pivots points (P1-P6) as set forth in claim 19.[2]

[2] The first-sixth pivot points in claim 19 do NOT all correspond to the pivot points P1-P6 depicted in figures 1 and 5 of the '750 patent. For instance, the fifth and second pivot points of claim 19 appear to correspond to P2 and P4, respectively, in figure 1 and column 4 of the specification. This rejection addresses the pivot points *as claimed* and not as disclosed in the drawing figures.



As can be seen from this figure, the vertical distance between the first, third, and fifth pivot points (P1, P3, P5) and R is less than 1.5 times D1.

However, it is well-settled that the drawings cannot be considered as being to scale unless the reference specifically describes them as such. Komatsu appears to be silent as to the scale of the drawings and therefore does not necessarily teach the specific dimensional relationships.

Therefore, Komatsu is applied as follows.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the tool carrier of Dingo/Dingo Parts Catalog in light of the teachings of Komatsu such that the loader arm was not directly attached to the mainframe and instead included a linkage pivotally attached to the first side of the mainframe and pivotally attached to the loader arm in order to change the trajectory of the tool or bucket from a

radial lift to a vertical lift. This would yield the predictable result of increasing the stability of the loader by reducing the front-to-back travel of the center of gravity of the tool or load, as specifically discussed in Komatsu.

Since stability is an important characteristic in a compact utility loader/compact tool carrier such as disclosed by Dingo and Komatsu, it would have been desirable to keep the center of gravity of the machine low. Moreover, the compact size of such machines presents limited space for attaching the arms, actuators, and linkages. Finally, Komatsu teaches lowering the attachment points of the linkages and the arm of the actuator to increase visibility and stability as shown in inventive figures 1 and 7 as compared to prior art figures 11 and 12. See paragraphs 0003-0004 and 0006-0009.

In order to reduce the center of gravity of a load supported by the loader, it would have been obvious to one of ordinary skill in the art to arrange the first and third pivot points of the linkages and the fifth pivot point of the actuator such that the vertical distance between these points and the rotational axis R of the drive sprocket (when modified in view of Vermeer Brochure) were each less than 1.5 limes D1. Such an arrangement would lower the center of gravity of the tool or a load supported by the loader arms, and would predictably improve visibility for the operator, both of which are a concern in Komatsu.

Finally, it is noted that there appears to be little criticality in the subject '750 patent as to the claimed measurements. The positioning of the pivot points on the mainframe allows the height of the mainframe to be reduced, but the description is silent as to any benefits produced by the distances D2, D3, and D4 being less than about 1.5 times D1, See column 5, lines 14-52, for instance.

Claim 20. For the second side of the mainframe to comprise at least two pivot points, with each vertical distance between the rotational axis R and the respective pivot point being less than 1.5 times D1, would have been obvious in order to duplicate the vertical lift linkage on the other side of the tool carrier of Dingo.

Claim 22. The Dingo tool carrier includes a bucket.

Claim 23. The mainframe incorporates a single weldment as taught by Dingo Parts Catalog, p. 1, Frame & Decal ASM 4.

Claim 24. No more than three linkages and actuators are attached to the first side of the mainframe in the tool carrier of Dingo as modified by Komatsu and Vermeer Brochure.

Claim 25. The left cylinder 4 of Dingo is a single actuator.

Claims 26-29 recite a distance based on "the forward-most pivot point." Base claim 19 recites that any of the first, third, or fifth pivot points could be the forward-most pivot point.[3] Since these are the pivot points on the mainframe, any pivot point on the mainframe can meet this limitation.

As shown in the marked-up Komatsu figure 1 (see page 15 above), P5 appears or is considered to be the forward-most pivot point. As also seen in the figure, the vertical distance between the rotational axis R and the forward-most pivot point P5 is clearly less than 1.75 D5, less than 1.5 D5, less than D1, and less than 0.75 D1.

[3] There is no description in the specification of the '750 patent as to the forward-most pivot point, and therefore no description of embodiments in which the first, third, or fifth pivot points are forward-most. However, as shown in figures 1-3 and 5, only the pivot point P1 can ever be the forward-most.

Nevertheless, since the drawings of Komatsu do not appear to be described as being to scale, it would have been obvious to one of ordinary skill in the art to arrange the forward-most pivot point on the mainframe of the tool carrier of Dingo as modified in light of the teachings of Komatsu to be as low as practical, such as less than 1.5 D5 and less than 0.75 D1, in order to lower the center of gravity of the tool or a load supported by the loader arms, and/or to improve visibility for the operator, both of which are desirable as taught by Komatsu.

Claim 30. In the compact tool carrier disclosed in Dingo/Dingo Parts Catalog, the first and second arms of the loader are moveable between a down positon and a vertically raised position, and at least one cross-member extends from the first arm to the second arm (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached or bottom cross member Cb), wherein each cross-member is disposed forward of the operator platform relative to the longitudinal axis in the vertically raised position of the loader (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached and bottom cross member Cb inherently remain forward of operator platform 7 due to the length of loader arms 3, 3 and the 66 inch maximum hinge pin height in relation to the 60 inch length of the loader as set forth in the specifications on page 10 of Dingo).

Claim 31. The top cross member and the bottom cross members of Dingo are spaced from the attachment mount plate 1.

Claim 32. The cross-member of Dingo is disposed forward of the rear wheel, and would thus be disposed forward of the drive sprocket when modified to substitute a drive sprocket for the rear wheel in view of the teachings of Vermeer Brochure when such tracked drive system is used to replace Dingo's wheeled drive system.

Claim 33. Dingo/Dingo Parts Catalog shows two cross members between the loader arms 3, a top cross member located where the loader arms change orientation and a bottom cross member near the mounting plate 1.

Vermeer Brochure teaches that a single cross member can be large and strong enough when placed at this location, namely at the same location as Dingo's top cross member. In light of this teaching, it would have been obvious to one of ordinary skill in the art to employ a single cross member with sufficient size and strength to stabilize the arms in Dingo, depending on the intended use and desired load capacities of the tool carrier and the loader.

Claim 34. The upper cross member of Dingo is well-forward of the pivot points of the arms. Likewise, the cross member of Komatsu is shown to be forward of the second and fourth pivot points (where the linkages 11, 12, connect to the loader arms. See figures 1-4 and 7, for instance. Moreover, Komatsu teaches that it was known to locate the pivot connections between the linkages and the arms at or near the rearward portions of the arms as shown in figures 1 and 7, and even in prior art figures 11 and 12. From these teachings, it would have been obvious to those of ordinary skill in the art to dispose the cross member of Dingo forward of the second pivot point and the fourth pivot point when modified to include first and second linkages in view of Komatsu. This would yield the predictable result of spacing the cross member forward of the operator station so as to prevent the cross-member from interfering with the operator.

Extensions of Time

Extensions of time under 37 CFR 1.136(a) **will not be permitted** in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that ex parte reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Submissions

Patent Owner is reminded that 37 CFR 1.550(f) requires that "After filing of a request for *ex parte* reexamination by a third party requester, any document filed by either the patent owner or the third party requester **must** be served on the other party in the reexamination proceeding in the manner provided by § 1.248."

In order to ensure full consideration of any affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to this first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37C.F.R. 1.116, after final rejection and by 37 C.F.R. 41.33 after appeal, which will be strictly enforced.

Notice of Concurrent Proceedings or Litigation

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 9,975,750 throughout the course of this reexamination proceeding. The third party requestors are also reminded of the ability to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the subject patent. See MPEP §§ 2207, 2282 and 2286.

Correspondence

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate

of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

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Conferee: /SC/

Conferee: /E.D.L/ SPRS, Art Unit 3993

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/014,148	9975750
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
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LITIGATION REVIEW ☑	/rds/ (examiner initials)	2018-06-25T00:00:00 (date)
Case Name		Director Initials
None		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER

CERTIFICATE OF SERVICE

I certify that on October 3, 2018 the foregoing INFORMATION DISCLOSURE STATEMENT was served on the third party requester's counsel via first class mail at:

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⑲日本国特許庁（JP）　⑪特許出願公開

⑫公開特許公報（A）　昭63－265022

⑤1Int.Cl.⁴	識別記号	庁内整理番号	⑬公開　昭和63年(1988)11月1日
E 02 F 3/34		6828－2D	
E 01 H 5/06		7012－2D	

審査請求　未請求　発明の数 1　（全5頁）

⑤4発明の名称　土砂、雪等の処理車

⑳特　願　昭62－100914

㉒出　願　昭62(1987)4月23日

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明　細　書

1．発明の名称

土砂、雪等の処理車

2．特許請求の範囲

車体フレームに、リンク機構を介してバケットを昇降可能に取付けた土砂、雪等の処理車において、前記リンク機構は複数のアームが各々ピボット軸で回動可能に連設してなり、前記バケットの水平位置に最も近い前記ピボット軸のアームを順次回動させて、前記バケットを昇降させるように構成される土砂、雪等の処理車。

3．発明の詳細な説明

（産業上の利用分野）

この発明は、人が乗車しないで、土砂、雪等をすくい取って他の場所に移動させたり、トラック等に積込む土砂、雪等の処理車に関する。

（従来の技術）

例えば、路地裏、屋根下等に積った雪を除去するには、除雪車が通行できないため、人がスコップ等で雪をすくい取っている。

このような除雪作業を人力により行なうことは重労働であり、特に女性や老人によっては、スコップ等で雪をすくい取り、さらにこの雪を他の場所に移動するに体力と時間を要する。

（発明が解決しようとする問題点）

このため、人が乗車しないで自走する小型で簡単に操作できる車にリンク機構を介してバケットを取付け、このリンク機構の操作でバケットを昇降させ、このバケットの操作で雪をすくい取り、他の場所へ移動したり、トラック等に積込むことができれば、積雪を除去する作業が容易になる。

ところで、このような車に、リンク機構を介してバケットを取付ける場合には、車に人が乗車しないで操作するような小型なものであるため、例えば実開昭57－12419号公報や、特開昭56－22823号公報に開示されているようにバケットが前後に大きく移動するものは、車の重心移動が大きくなるため適用することができない。

この発明はこのような実状に鑑みてなされたも

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ので、バケットの昇降による重心移動を最小限に抑え、安定性の向上を図る土砂、雪等の処理車を提供することを目的としてる。

（問題点を解決するための手段）

この発明は前記問題点を解決するために、車体フレームに、リンク機構を介してバケットを昇降可能に取付けた土砂、雪等の処理車において、前記リンク機構は複数のアームが各々ピボット軸で回動可能に連設してなり、前記バケットの水平位置に最も近い前記ピボット軸のアームを順次回動させて、前記バケットを昇降させるように構成されることを特徴としている。

（作用）

この発明では、リンク機構を介して取付けられたバケットが、その昇降作動をバケットとの水平位置が最も近いピボット軸のアームから順次回動させて行なうので、昇降によるバケットの上下の移動量に対して前後の移動量を少なくできる。

このため、処理車の重心移動量を最小限に抑えることができ、特に小型の車の重心バランスが向上する。

（実施例）

次に、添付図面と共にこの発明の実施例を詳細に説明する。

図中符号１は土砂、雪等の処理車として小型のエンジンスノーダンプで、その車体フレーム２の前側にはクローラ装置３が設けられており、このクローラ装置３は前後に配置される従動スプロケット４ａと駆動スプロケット４ｂ及びトラック５で構成されている。この駆動スプロケット４ｂの上方位置の車体フレーム２にはエンジン６が搭載され、車体フレーム２の後端にはハンドル７が斜め後方に取付られ、その先端には操作レバー８が設けられている。

車体フレーム２にはリンク機構９を介してバケット１０が支持され、このリンク機構９はピラー部１１、アーム部１２、リフト機構１３及びダンプ機構１４とから構成される。

ピラー部１１の左右のアーム１５はエンジン７の側方位置で車体フレーム２に設けられたブラケット１６に、その基端部がピボット軸１７を介して回動可能に支持されている。ブラケット１６の前側にはアーム１５の回転を規制するストッパー１８が設けられている。

アーム１５の先端部に設けられたブラケット１９にはピボット軸２０が軸支されており、アーム部１２の左右のアーム２１はピボット軸２０に回動可能に支持され、アーム２１の先端は連結軸２２，２３により一体に連結されている。さらに、この連結軸２２，２３には左右のアーム２４の基部が接続され、このアーム２４の中央部は連結軸２５で連結され、アーム２４の先端にはピボット軸２６を介してバケット１０のブラケット２７が回動可能に支持されている。

前記リフト機構１３の油圧シリンダ２８は車体フレーム２のブラケット２９にピン３０を介して支持され、そのロッド３１はアーム部１２のアーム２１の基端部にピン３２を介して支持されている。

前記ダンプ機構１４の油圧シリンダ３３はピボット軸３４を介してピボット軸２０のブラケット３５に支持され、そのロッド３６は操作レバー３７の一端部にピン３８を介して連結されている。この操作レバー３７の中央部は連結軸２３のブラケット３９にピボット軸４０を介して回動可能に支持され、この操作レバー３７の他端にはロッド４１がピン４２を介して接続されている。このロッド４１の他端はピボット軸４２を介して操作レバー４３に接続され、この操作レバー４３は連結軸２５のブラケット４４にピン４５を介して回動可能に支持されている。操作レバー４３の先端部はロッド４６がピン４７を介して接続され、この他端はバケット１５のブラケット４８にピン４９で接続されている。

従って、第４図に示すように、エンジンスノーダンプ１は作業者５０が後からハンドル８の先端に手を添えて操作レバー９を操作し、まず第３図（イ）に示すようにバケット１０の底面を水平にしてバケット１０を地表面５１まで下げた状態から、クローラ装置３を作動させて前進させて地表

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面５１の雪をすくい取る。

次に、リフト機構１３の油圧シリンダ２８を作動してロッド３１を伸張させると、ビラー部１１のアーム１５がピボット軸１７を中心に後方に回動して（ロ）に示す位置まで移動する。そして、アーム１５の基部がストッパー１８に当接し、これによりアーム１５の回動が規制され、この後、更にロッド３１を伸張させると、アーム部１２のアーム２１がピボット軸２０を中心に上方に回動して（ハ）に示す位置に移動する。

次に、クローラ装置３でバケット１０をトラック５２の荷台５３の上方に移動するか、または荷台５３をバケット１０の下方に移動し、ダンプ機構１４の油圧シリンダ３３を作動して、ロッド３６を短縮すると（ニ）に示すようにバケット１０がピボット軸４９を中心に下方に回動して雪が荷台５３の上に落下する。

すなわち、リンク機構９はバケット１０の水平位置が最も近いピボット軸１７を中心にアーム１５が回動を始め、バケット１０がピボット軸１７から離れてピボット軸２０に接近したら、今度はピボット軸１７を中心とする回動を中止して、ピボット軸１８を中心としてアーム２１が回動を開始する。

このようにバケット１０との水平距離が最も近いピボット軸点のアームから順次回動させるので、昇降によるバケット１０の上下の移動量に対して前後の移動量を少なくすることができる。

また、バケット１０は車体フレーム２の前側で略垂直方向に昇降可能とし、これに対してエンジン７は車体フレーム２の後側に搭載されており、車体を大きくすることなく車体重心のバランスを向上させることができる。

また、リンク機構９は車体フレーム２の後部のエンジン７と同じ位置に支持されているので、リンク機構９を支持する新たな支持部材が不要で強度、バランスの点で優れている。さらに、リンク機構９のアーム１５，２１の作動は一個のリフト機構１３で作動することができるため、リンク機構１３の構成が簡単になる。

なお、この発明は雪を処理する処理車について説明したが、土砂等を処理する車にも同様に適用できる。

（発明の効果）

この発明は前記のように、リンク機構を複数のアームが各々ピボット軸で回動可能に連設してなり、バケットの水平位置に最も近いピボット軸のアームを順次回動させて、バケットを昇降させるように構成したから、昇降によるバケットの上下の移動量に対して前後の移動量が少なくなり、処理車の重心移動量を最小限に抑えることができるため、車が人が乗車しないで操作するような小型車において、安定性が向上する。

４．図面の簡単な説明

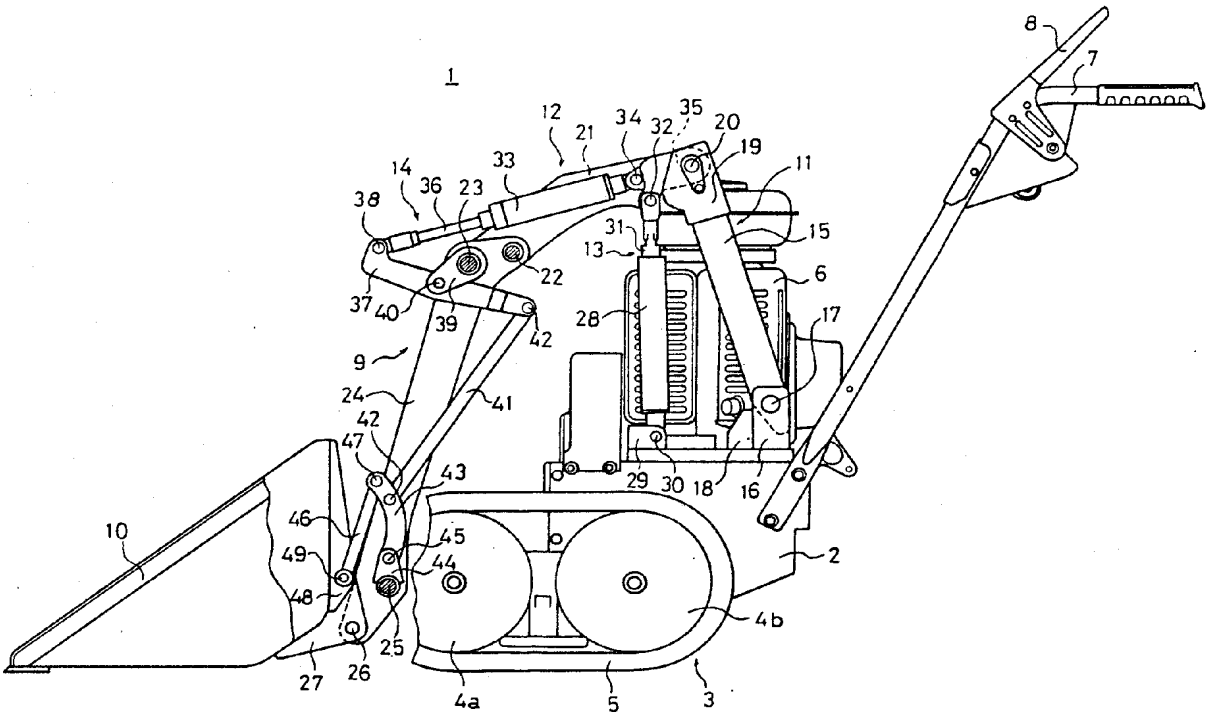
第１図はエンジンスノーダンプの一部破断側面図、第２図はリンク機構の平面図、第３図はリンク機構の作動を示す一部破断側面図、第４図はエンジンスノーダンプの使用状態を示す側面図である。

図中符号１はエンジンスノーダンプ、２は車体フレーム、３はクローラ装置、９はリンク機構、１０はバケット、１２はアーム部、１３はリフト機構、１４はダンプ機構である。

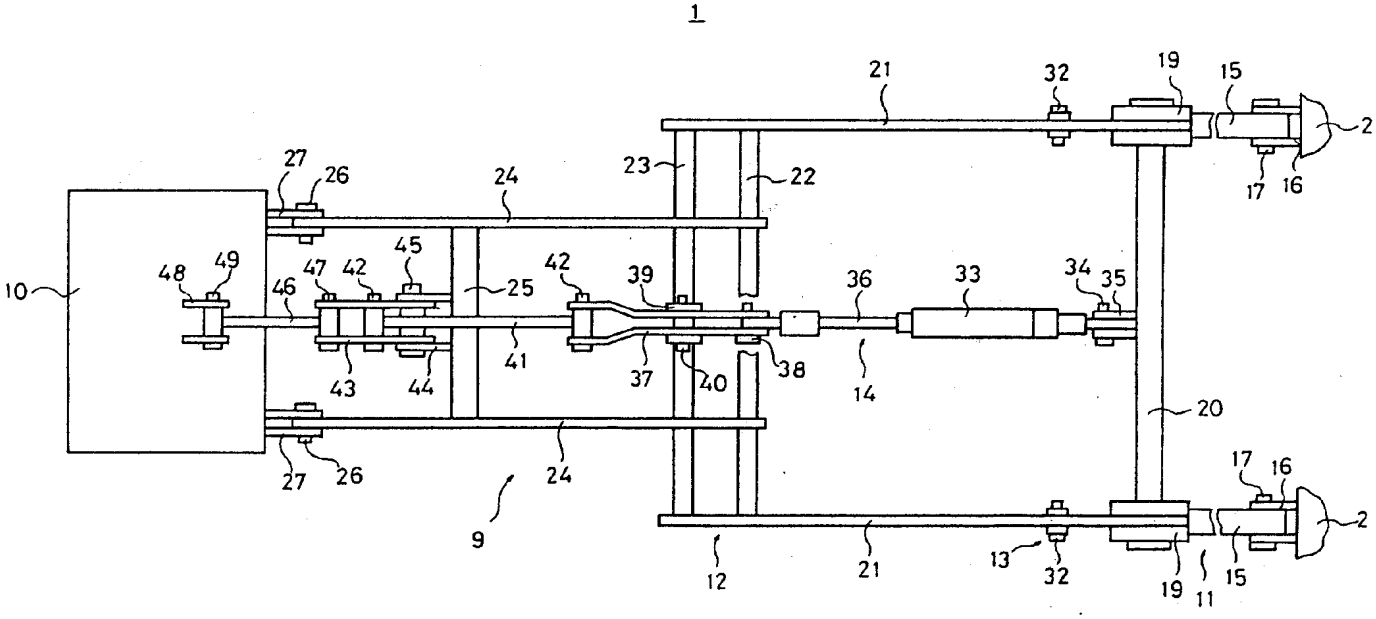
特許出願人　ヤマハ発動機株式会社

代理人弁理士　鶴若俊雄

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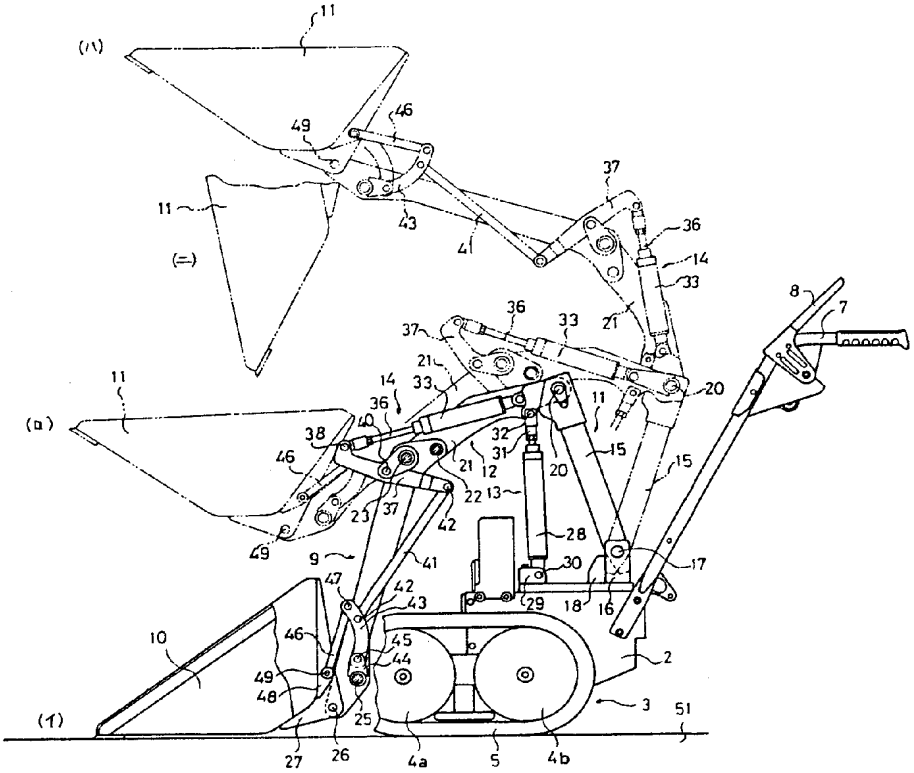


第 1 図

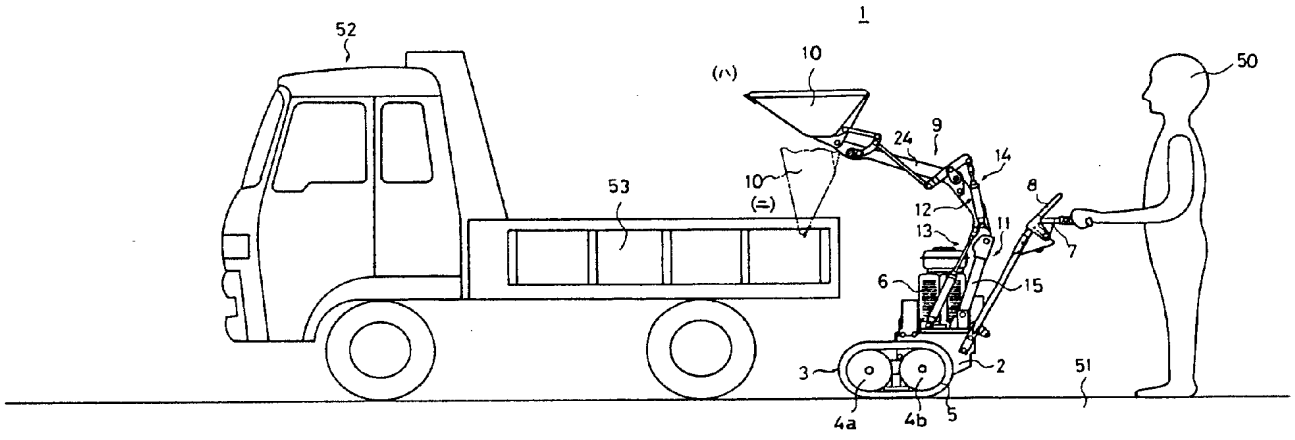


第 2 図

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第 3 図



第 4 図

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(19) JAPAN PATENT OFFICE (JP)

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Request for Substantive Examination: Not yet submitted

Number of Inventions: 1

(Total of 5 pages [in the Japanese text])

(54) Title of the Invention: Vehicle for handling earth and snow, etc.

(21) Patent Application No.: S62-100914

(22) Filing Date: April 23, 1987

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SPECIFICATION

1. Title of the Invention

Vehicle for handling earth and snow, etc.

2. Patent Claims

A vehicle for handling earth and snow, etc. in which a bucket is attached to a vehicle body frame via a linking mechanism in such a way that said bucket can be raised/lowered, wherein the linking mechanism is constructed in such a way that a plurality of arms are pivotably connected by way of respective pivot shafts, and the arms on the pivot shafts horizontally closest to the position of the bucket are pivoted in succession, whereby the bucket is raised and lowered.

3. Detailed Description of the Invention

(Field of Industrial Application)

The present invention relates to a vehicle for handling earth and snow, etc. on which a person does not ride, where earth and snow, etc. are scooped up and moved to a different location, or loaded on a truck or the like.

(Prior Art)

A snow plough cannot normally be taken to remove snow which has gathered off the street or under rooves etc., so this snow is scooped up by a person using a scoop or the like.

This kind of operation to remove snow is very labor-intensive when carried out by human power and it requires

physical strength and time to scoop up snow using a scoop or the like and also to move this snow to another location, especially for females and the elderly.

(Problem to be Solved by the Invention)

Operations to remove fallen snow are therefore simplified if it is possible to attach a bucket, via a linking mechanism, to a small and easily-operable vehicle which is self-propelled without a person riding thereon, and to raise/lower the bucket by operating the linking mechanism in order to scoop up snow by operation of the bucket, then to move the snow to another location for loading on a truck or the like.

When a bucket is attached via a linking mechanism to this kind of vehicle, the vehicle is of a small size such that it is operated by a person who does not ride thereon, and therefore it is not possible to move the bucket backward and forward by a large amount because there is a large amount of movement of the center of gravity of the vehicle, as described in JP 57-12419 U and JP 56-22823 A, for example.

The present invention has been devised in light of the situation outlined above, and the aim thereof lies in providing a vehicle for handling earth and snow, etc. in which movement of the center of gravity caused by raising/lowering of a bucket is minimized so as to improve stability.

(Means for Solving the Problem)

In order to solve the abovementioned problem, the present invention provides a vehicle for handling earth and snow, etc. in which a bucket is attached to a vehicle body frame via a linking mechanism in such a way that said bucket can be raised/lowered, wherein the linking mechanism is constructed in such a way that a plurality of arms are pivotably connected by way of respective pivot shafts, and the arms on the pivot shafts horizontally closest to the position of the bucket are pivoted in succession, whereby the bucket is raised and lowered.

(Action)

According to the present invention, the bucket attached via the linking mechanism is raised and lowered by pivoting in succession from the arm on the pivot shaft horizontally closest to the position of the bucket, and therefore it is possible to reduce the amount of backward and forward movement with respect to the amount of vertical movement of the bucket caused by raising/lowering.

It is therefore possible to minimize the amount of movement of the center of gravity of the handling vehicle, and it is possible to improve the center of gravity balance of a small vehicle in particular.

(Exemplary Embodiment)

An exemplary embodiment of the present invention will be described in detail next with reference to the appended drawings.

In the drawings, the reference symbol 1 denotes a small engine-driven snow shovel, in which a crawler device 3 is provided on a front side of a vehicle body frame 2, the crawler device 3 comprising a driven sprocket 4a and a drive sprocket 4b arranged at the front and rear, and a track 5. An engine 6 is mounted on the vehicle body frame 2 at a position above the drive sprocket 4b, a handle 7 is attached diagonally rearward at a rear end of the vehicle body frame 2, and an operating lever 8 is provided at a tip end thereof.

A bucket 10 is supported via a linking mechanism 9 on the vehicle body frame 2, said linking mechanism 9 comprising a pillar portion 11, an arm portion 12, a lifting mechanism 13, and a shovel mechanism 14.

Left/right arms 15 of the pillar portion 11 are supported by brackets 16 provided on the vehicle body frame 2 at positions to the side of the engine 7, in such a way that base end portions of said arms 15 are pivotable by way of a pivot shaft 17. A stopper 18 for restricting rotation of the arms 15 is provided in front of the brackets 16.

A pivot shaft 20 is pivotably supported on a bracket 19 provided at a tip end portion of the arms 15, and left/right arms 21 of the arm portion 12 are pivotably supported by the pivot shaft 20, tip ends of the arms 21 being linked as a single piece by means of linking shafts 22, 23. In addition, base portions of left/right arms 24 are connected to the linking shafts 22, 23, central portions of the arms 24 are

linked by a linking shaft 25, and a bracket 27 of the bucket 10 is pivotably supported at the tip ends of the arms 24 via a pivot shaft 26.

A hydraulic cylinder 28 of the lifting mechanism 13 is supported via a pin 30 on a bracket 29 of the vehicle body frame 2, and a rod 31 thereof is supported via a pin 32 at a base end portion of the arms 21 of the arm portion 12.

A hydraulic cylinder 33 of the shovel mechanism 14 is supported by a bracket 35 on the pivot shaft 20, via a pivot shaft 34, and a rod 36 thereof is linked via a pin 38 to one end portion of an operating lever 37. A central portion of the operating lever 37 is pivotably supported via a pivot shaft 40 on a bracket 39 on the linking shaft 23, and a rod 41 is connected via a pin 42 to the other end of the operating lever 37. The other end of the rod 41 is connected to an operating lever 43 via a pivot shaft 42, and the operating lever 43 is pivotably supported via a pin 45 on a bracket 44 on the linking shaft 25. A tip end portion of the operating lever 43 has a rod 46 connected thereto via a pin 47, and the other end of said rod 46 is connected by a pin 49 to a bracket 48 of the bucket 15.

Accordingly, as illustrated in fig. 4, the engine-driven snow shovel 1 is operated in the following manner, which is to say that an operator 50 operates the operating lever 9 from the rear by applying his or her hand to the tip end of the handle 8, and first of all, from a state as shown in fig.

3(a) in which a bottom surface of the bucket 10 is horizontal and the bucket 10 is lowered as far as a ground surface 51, the crawler device 3 is actuated so as to advance and scoop the snow on the ground surface 51.

Next, when the hydraulic cylinder 28 of the lifting mechanism 13 is operated to extend the rod 31, the arms 15 of the pillar portion 11 pivot to the rear about the pivot shaft 17 and move as far as the position shown in (b). The base portion of the arms 15 then abuts the stopper 18 which restricts pivoting of the arms 15, after which, when the rod 31 is further extended, the arms 21 of the arm portion 12 pivot upward about the pivot shaft 20 and move to the position shown in (c).

Next, when the bucket 10 is moved by the crawler device 3 above a loading bed 53 of a truck 52, or when the loading bed 53 is moved below the bucket 10, and the hydraulic cylinder 33 of the shovel mechanism 14 is operated to shorten the rod 36, the bucket 10 pivots downward about the pivot shaft 49, as shown in (d), and the snow is dropped onto the loading bed 53.

That is to say, the linking mechanism 9 operates in such a way that the arms 15 start to pivot about the pivot shaft 17 horizontally closest to the position of the bucket 10, and once the bucket 10 has moved away from the pivot shaft 17 and approaches the pivot shaft 20, pivoting about the current

pivot shaft 17 is stopped, and the arms 21 start to pivot about the pivot shaft 18.

Pivoting is thus produced from the arm at the pivot shaft point which is closest to the bucket 10 in terms of horizontal distance, and therefore it is possible to reduce the amount of backward and forward movement with respect to the amount of vertical movement of the bucket 10 caused by raising/lowering.

Furthermore, the bucket 10 can be raised and lowered in a substantially vertical direction in front of the vehicle body frame 2 while at the same time the engine 7 is mounted on the rear side of the vehicle body frame 2, so it is possible to improve the center of gravity balance without increasing the size of the vehicle body.

Furthermore, the linking mechanism 9 is supported at the same position as the engine 7 at the rear portion of the vehicle body frame 2, so there is no need for a new support member for supporting the linking mechanism 9, which provides better strength and balance. In addition, operation of the arms 15, 21 of the linking mechanism 9 can be produced by a single lifting mechanism 13, so the configuration of the linking mechanism 13 is simplified.

It should be noted that a handling vehicle for handling snow has been described in the present invention, but the present invention may likewise also be applied to a vehicle for handling earth, etc.

(Advantage of the Invention)

As described above, according to the present invention, a linking mechanism is constructed in such a way that a plurality of arms are pivotably connected by way of respective pivot shafts, and the arms on the pivot shafts horizontally closest to the position of a bucket are pivoted in succession, whereby the bucket is raised and lowered, so it is possible to reduce the amount of backward and forward movement with respect to the amount of vertical movement of the bucket caused by raising/lowering, and it is possible to minimize the amount of movement of the center of gravity of the handling vehicle, and therefore it is possible to improve stability in a small vehicle such as a vehicle which is operated without a person riding thereon.

4. Brief Description of the Drawings

Fig. 1 is a partial cutaway side view of an engine-driven snow shovel; fig. 2 is a plan view of the linking mechanism; fig. 3 is a partial cutaway side view illustrating operation of the linking mechanism; and fig. 4 is a side view showing the state of use of the engine-driven snow shovel.

In the drawings, 1 is an engine-driven snow shovel, 2 is a vehicle body frame, 3 is a crawler device, 9 is a linking mechanism, 10 is a bucket, 12 is an arm portion, 13 is a lifting mechanism, and 14 is a shovel mechanism.

Patent Applicant: Yamaha Motor Co., Ltd.

Representative: Toshio TSURUWAKA, Patent Attorney

[SEAL]

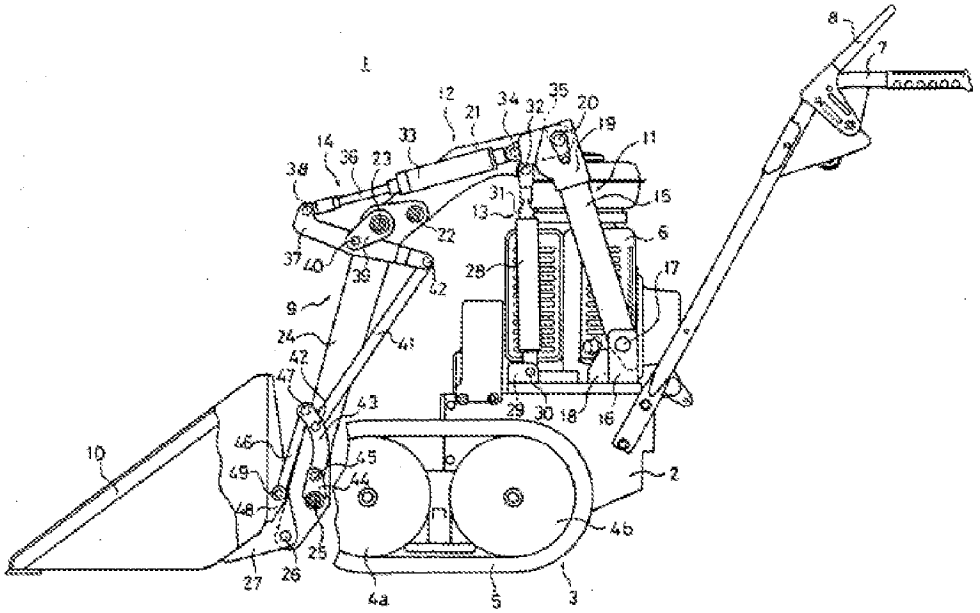


Fig. 1

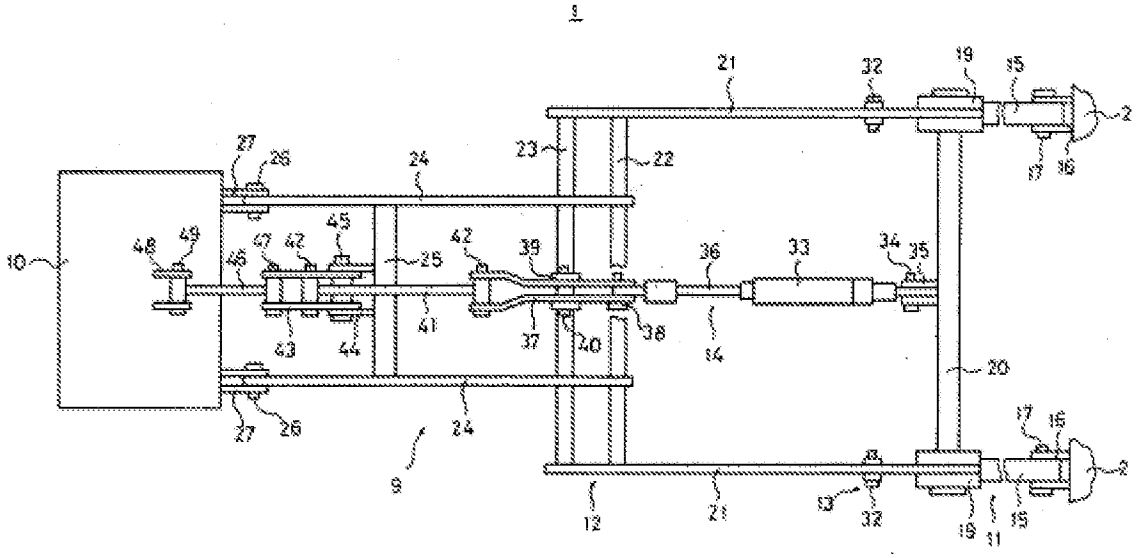


Fig. 2

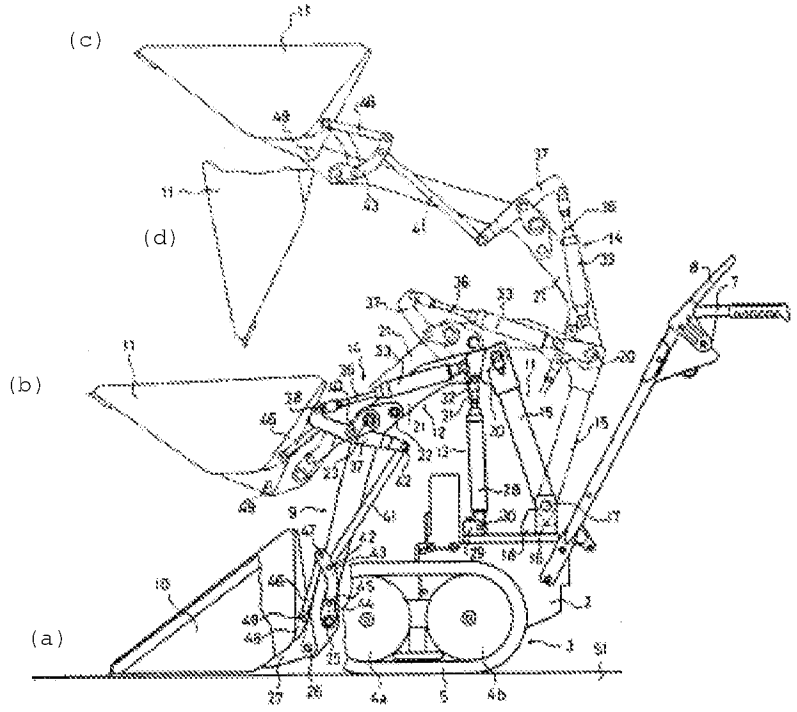


Fig. 3

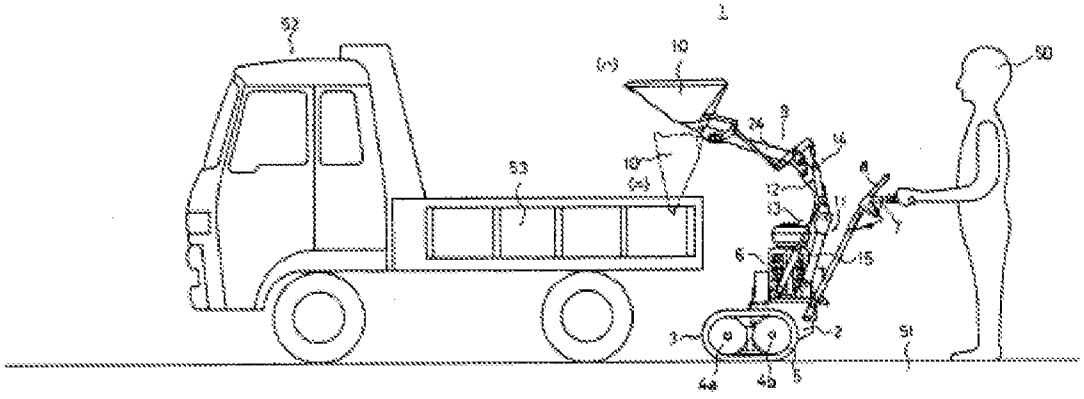


Fig. 4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No. 9,975,750
Inventors: Brad Thomas, et al. Art Unit: 3993
Reexamination Control No.: 90/014,148
Filed: June 6, 2018
Confirmation No.: 1098
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Russell D. Stormer

August 23, 2018

NOTICE OF CONCURRENT PROCEEDINGS

The patent which is the basis of this Reexamination, U.S. Patent No. 9,975,750 ("the '750 Patent"), is involved in the following litigation:

- *Vermeer Corporation v. The Toro Company*, Case No. 4:17-cv-00076-CRW-HCA (S.D. IA. filed February 28, 2017)

The '750 Patent is a continuation of U.S. Patent No. 9,321,386 ("the '386 Patent"). The '386 Patent is involved in the same litigation as the '750 Patent referenced above. The '386 Patent has been, or is involved, in the following reexamination proceedings:

- A third party Request for *Ex Parte* Reexamination was filed by Toro on February 28, 2017 and assigned Control Number 90/013,915. Following conclusion of this *ex parte* reexamination, the Office mailed an *Ex Parte* Reexamination Certificate on April 12, 2018 in which the patentability of claims 1, 3-13 and 20 was

confirmed, claims 15, 17 and 19 as amended were determined to be patentable, and added claims 21-63 were determined to be patentable.

- Another third party Request for *Ex Parte* Reexamination was filed by Toro on March 12, 2018 and assigned Control Number 90/014,109.
- Another third party Request for *Ex Parte* Reexamination was filed by Toro on April 13, 2018 and assigned Control Number 90/014,124.
- The Office issued a Decision Merging Reexamination Control Nos. 90/014,109 and 90/014,124 on July 30, 2018. These merged proceedings are awaiting a Notice of Intent to Issue a Reexamination Certificate or a first Office action.

Respectfully submitted,

/Michael J. Vander Molen/

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CERTIFICATE OF SERVICE

I certify that on August 23, 2018 the foregoing NOTICE OF CONCURRENT PROCEEDINGS, was served on the third party requester's counsel via first class mail at:

James W. Miller
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Suite 1960 Rand Tower
527 Marquette Avenue
Minneapolis, MN 55402

Respectfully submitted,

/Michael J. Vander Molen/

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Patent Docket Department
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7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,148* .

PATENT UNDER REEXAMINATION *9975750* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

JAMES W. MILLER, ATTORNEY
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SUITE 1960, RAND TOWER
MINNEAPOLIS, MN 55402

Date:

AUG 2 1 2018

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90014148
PATENT NO. : 9975750
ART UNIT : 3993

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	Control No. 90/014,148	Patent For Which Reexamination is Requested D807886
	Examiner Darlington Ly	Art Unit 3999

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) Patricia Martin, CRU (3)

(2) Raymond Chand, 37484 (4)

Date of Telephonic Interview: 7/9/2018.

The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings*, 75 *Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

☒ USPTO personnel were unable to reach the patent owner.

The patent owner may contact the USPTO personnel at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/Patricia Martin/
Paralegal Specialist,
Central Reexamination Unit 571-272-5004
Signature and telephone number of the USPTO official who contacted or attempted to contact the patent owner.

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,148	06/06/2018	9975750	Veermer-750Reex	1098

76656 7590 08/03/2018

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Armstrong Teasdale LLP
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UNITED STATES OF AMERICA

EXAMINER	
STORMER, RUSSELL D	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
08/03/2018	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

JAMES W. MILLER, ATTORNEY
527 MARQUETTE AVENUE
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MINNEAPOLIS, MN 55402

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/014,148*.

PATENT NO. *9975750* .

ART UNIT *3993*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Russell D. Stormer
Primary Examiner
Art Unit: 3993

Decision Granting Ex Parte Reexamination

A Substantial New Question of patentability ("SNQ") affecting claims 1-20 and 22-34 of United States Patent Number 9,975,750 to Thomas et al. (hereinafter "the '750 patent") is asserted in the Request for *ex parte* reexamination filed by a third party Requester on June 6, 2018.

Prior Art Documents Relied Upon in the Request

Dingo® 322 Operator's Manual ("Dingo")

Dingo® 322 Parts Catalog ("Dingo Parts Catalog")

Japanese Patent Application JP 11-140900 to Komatsu Ltd. ("Komatsu")

Vermeer Manufacturing Company, "Vermeer Mini Skid Steers S600/S600TX" brochure ("Vermeer Brochure")

Summary of the Prosecution History of the '750 Patent

The '750 patent issued with 34 claims on May 22, 2018. The application (15/062,801) was filed on March 7, 2016, is a Continuation of 14/691,649 (now Patent No. 9,321,386; hereinafter: the '386 patent), and claims priority to provisional application 62/118,860 filed February 20, 2015.[1]

In the first Office Action mailed April 15, 2016, originally-filed claims 1-20 were rejected on the ground of non-statutory double patenting over corresponding claims of the '386 patent. Also, claims 1-8, 10-13, and 15-20 were rejected as obvious over

[1] Patent No. 9,321,386 is the subject of three Reexamination proceedings: 90/013,915 (concluded); and 90/014,109 and 90/014,124, which are pending.

Yasuda et al. (8,821,104) and Bares et al. (6,695,568), and claims 9 and 14 were rejected over Yasuda et al., Bares et al., and Valere (2009/0116943).

In the Response filed October 14, 2016, Patent Owner ("PO") filed a Terminal Disclaimer and did not amend the independent claims, arguing that the machines or Bares and Yasuda are not "substantially similar" as asserted in the previous Office action, and further that the present invention relates to a "small loader" less than one-third the weight of a "compact machine."

The rejections set forth in the first action were repeated in the Final Rejection mailed November 4, 2016.

A telephone interview was held March 27, 2017. The Examiner's Interview Summary states:

> Discussed proposed changes to claim 1 adding an engine disposed forward relative to an operator platform. The examiner pointed out that the Valere publication (2009/0116943) shows a platform (4) at the very rear of its vehicle such that every other part of the vehicle (including the engine) must be located forward relative thereto. Also discussed a newly presented claim 42 (see attachment). The attorneys of record explained how the linkages and actuator are pivotally attached to the loader of the instant invention in a manner not fairly taught or suggested by the prior art.

An RCE was filed April 3, 2017, with claims 1-20 being cancelled and new claims 21-44 added. PO argued the relative sizes of the machines and the disposition of the engine in the references and as recited in the claims, asserting that the combination of references was not obvious.

In the next Office action, mailed April 26, 2017, claims 21-44 were rejected over Ulinski (3,074,572) in view of the Vermeer S450TX Mini Skid Steer documents submitted on the IDS received 4/5/17.[2]

In the ensuing Response filed July 26, 2017, PO amended independent claims 21 and 35 to recite a second linkage, and third, fourth, fifth, and sixth pivot points, among other things. Claim 35 was additionally amended to further define the vertical distance D1 limitation. New claims 45-51 were added and claims 30, 32, 33, and 36 were cancelled.

In the Final Rejection mailed August 30, 2017, claims 21-29, 31, 34, 35, and 37-51 were rejected as obvious over the Vermeer S450TX Mini Skid Steer document in view of the "Skid Steer Loaders, Radial & Vertical Lift" document ("Mustang").

The prior art and the rejections were discussed during the Interview of October 10, 2017, and commercial success and unexpected results of the invention were demonstrated.

As part of the RCE filed November 10, 2017, claim 21 was not amended, and claim 35 was amended to recite additional distance limitations.

In the Office action mailed December 8, 2017, claims 21-27, 29, 31, 34, 35, 37, 39-41, 45-49, and 56-69 were allowed; claims 50 and 51 were objected as containing allowable subject matter; and 42-44 and 52-55 were rejected over Ulinski in view of Bares et al. This Office action includes reasons for indicating the allowable subject matter:

---

[2] This IDS included a 2-page Brochure and a 180-page Parts Manual for the Vermeer S450TX Mini Skid Steer.

> Based on applicant's arguments and demonstrations presented during the personal interview conducted October 10, 2017 and the written remarks included in the response of November 10, 2017, the proposed combination of the "S450TX Mini Skid Steer"" brochure published by Vermeer in view of the "Skid Steer Loaders, Radial & Vertical Lift" document published by Mustang (as set forth in section 2 of the Office action mailed 8/30/17) would not have been obvious to one of ordinary skill in the art because the changes suggested in the combination would not be suitable for the intended design and purpose of the S450TX Mini Skid Steer. Also, the unexpected results and long felt need and attempt by others, as pointed out in applicant's remarks, further demonstrate non-obviousness of the invention as set forth in above indicated allowable claims.

In the Response filed December 12, 2017, PO cancelled claims 42-44 and 50-55.

A Notice of allowance was mailed March 2, 2018.

However, a Request for RCE was filed March 19, 2018 for the entry of a "Quick Path" IDS citing JP 11-140900 (“Komatsu”), Dingo 322 Operator’s Manual, and Dingo 322 Parts Catalog, as well as other non-patent literature documents.

An Interview was held April 18, 2018, the Substance of which is summarized by the Examiner of record: “Discussed the references listed on the IDS of 3/19/18. It was agreed that the pending claims define over these references whether taken individually or in combination with the teachings of the other prior art of record.” See the Interview Summary attached to the “Corrected” Notice of Allowability mailed April 23, 2018.

Claim 21 was renumbered as claim 1, and claim 35 was renumbered as claim 19.

Therefore, it appears that claim 1 of the ‘750 patent was allowed because of the limitations including the first and second linkages, the actuator, and the first through

sixth pivots points, and because it was found to be unobvious to combine references which appear to teach these limitations.

Claim 19 appears to have been allowed for linkage and pivot limitations similar to those of claim 1, for the limitations drawn to the distances, and also because it was found to be unobvious to combine references to meet the linkage/pivot and/or distance limitations.

Analysis of the Substantial New Questions of Patentability Raised by the Request

The Statement on page 6 of the Request does not point out an SNQ with respect to specific limitations in patent claims 1-20 and 22-34 that were found to be missing from the prior art during the original examination of the '750 patent in the manner prescribed in MPEP §§ 2214 and 2216.

However, the discussion on pages 13-15 sets forth teachings argued and found to be missing from the prior art considered during the original examination. Moreover, the proposed rejections by the Request set forth the manner in which the prior art is applied to the claims, and the salient limitations of claims 1-20 and 22-34 are addressed.

The rejections proposed in the Request address the claims as they appear in the Reexamination Certificate, and the requirements of 37 CFR 1.510(b)(2) have been met.

Old Art Analysis

As noted above, Komatsu, Dingo, and Dingo Parts Catalog where cited during the original examination of the '750 patent in an IDS filed March 19, 2018.

As such, these references are "old art."

As set forth in MPEP 2242:

> In a decision to order reexamination made on or after November 2, 2002, reliance on old art does not necessarily preclude the existence of a substantial new question of patentability that is based exclusively on that old art. See Public Law 107-273, 116 Stat. 1758, 1899-1906 (2002), which expanded the scope of what qualifies for a substantial new question of patentability upon which a reexamination may be based. Determinations on whether a substantial new question of patentability exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis. For example, a substantial new question of patentability may be based solely on old art where the old art is being presented/viewed in **a new light**, or in **a different way**, as compared with its use in the earlier examination, in view of **a material new argument** or interpretation presented in the request. Such material new argument or interpretation may be based solely on claim scope of the patent being reexamined. (emphasis added)

A discussion of the specifics of the instant proceeding now follows.

As noted in the summary of the earlier examination of the '750 patent, the Komatsu, Dingo, and Dingo Parts Catalog references where cited by PO after the initial Notice of Allowability had been mailed.

Also noted above is that these references were among those discussed during the April 18, 2018 Interview, which the Examiner summarized as:

"Discussed the references listed on the IDS of 3/19/18. It was agreed that the pending claims define over these references whether taken individually or in combination with the teachings of the other prior art of record."

The Examiner's Interview Summary provides no other details, such as specific limitations or claim language, specific figures or text from the newly-cited documents, or any reasons why the claims were allowable over these new references.

Moreover, PO did not include any discussion of the references with the Request for RCE and IDS filed March 19, 2018, and PO did not provide a separate record of the April 18, 2018 interview.

In other words, there is no record in the discussion of any analysis of these references, such as what the references teach or how the claims define over them. There is no discussion of the Komatsu, Dingo, and Dingo Parts Catalog references being used in combination with one another. For example, neither PO nor the Examiner addressed how any teachings of these references might be combined, or how specific claims or claim limitations may or may not define over these references.

Therefore, the Examiner's Interview Summary merely provides a generalized statement ("It was agreed that the pending claims define over these references…"), but there is no specific discussion of the new references anywhere in the record.

Substantial New Questions Raised

The instant Request asserts that an SNQ is raised as to claims 1-15 and 18 by **Komatsu**, **Dingo**, and **Dingo Parts Catalog** as to claims, and by **Komatsu**, **Dingo**, and **Dingo Parts Catalog** along with **Vermeer Brochure** as to claims 16, 17, 19, 20, and 22-34. Request, p. 6.

With respect to independent claims 1 and 19, the Request asserts **Komatsu** teaches a loader arm which is not directly attached to the mainframe of the machine, and first and second linkages pivotally attached to the sides of the mainframe and pivotally attached to the loader arm (the first, second, third, and fourth pivot points) (Request, pp. 57-58). Figures 1 and 5-8, at least, show a linkage (11 or 12) pivotally attached to the first side of the mainframe at a pivot point and pivotally attached to loader arm 13, and the loader arm is not directly attached to the mainframe.

Komatsu further teaches that is was known that the arms of a work machine or vehicle could be arranged for vertical or radial lifting (compare figures 11-12 with figure 13; and see pages 28-30 of the Request), and that a radial lifting arrangement provides better visibility but less stability than vertical lifting system, as noted on page 29, for example, of the Request. Further, Komatsu teaches that the arms and linkages of a vertical lifting arrangement can be modified and/or re-positioned farther forward on the work machine to provide better visibility and improve stability as shown by the inventive figures 1-10 when compared to figures 11-12. See also page 35 (at least) of the Request.

With respect to the "distance" limitations of claim 19, Komatsu further teaches the rotational axis and bottom of the machine being separated by a vertical distance D1, the rotational axis and the bottom of the first side of the mainframe being separated by a vertical distance D5, the rotational axis and [each] 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 D1 and each being less than twice D5. See Request, pages 40-42.

Also with respect to independent claims 1 and 19, the Request asserts **Dingo** and **Dingo Parts Catalog** teach a mini skid steer having a radial lift linkage.[3] The linkage includes loader arms, a hydraulic cylinder, and cross members in front but not at the rear of the loader arms. See Request, pp. 43-47.

The Request further asserts the compatibility of the teachings of Komatsu and Dingo on pages 48-52. For instance, the advantages of a vertical lift over a radial lift described in Komatsu are asserted to establish a motivation to replace Dingo's radial lift with a vertical lift arrangement.

With these explanations, and the rejections proposed on pages 57-58 and 68-69, the Request has presented Komatsu, Dingo, and Dingo Parts Catalog in a new light, or in a different way, than they were presented or considered during the original examination of the '750 patent, in view of a material new argument or interpretation presented in the request. Clearly, the record shows that this question of patentability has not already been decided as to the claims in a final holding of invalidity by a federal court or by the Office in an earlier concluded examination or review of the patent.

Therefore, Komatsu, Dingo, and Dingo Parts Catalog have been shown to have new, non-cumulative technical teachings relevant to the operator platform limitations argued or found to be missing from the prior art used during the original examination,

[3] Dingo and Dingo Parts Catalog are drawn to the same compact utility loader, and therefore will be analyzed together for determination of an SNQ.

and a reasonable Examiner would consider these references to be important in determining the patentability of claims 1 and 19 of the '750 patent.

Accordingly, it is **agreed** that Komatsu, Dingo, and Dingo Parts Catalog, taken together, (whether or not in combination with Vermeer Brochure) raise an SNQ as to claims 1 and 19 of the '750 patent.

Claims Not Requested

The Request does not request reexamination of patent claim 21.

While the decision to reexamine any claim for which reexamination has not been requested under 35 U.S.C. 302 lies within the sole discretion of the Office, the determination in both the order for reexamination and the examination stage will generally be limited solely to a review of the claims for which reexamination was requested. See MPEP 2240 and 2243, and *Sony Computer Entertainment America Inc. v. Dudas*, 85 USPQ2d 1594 (E.D. Va 2006).

Conclusion and Scope of Reexamination

The Requester has shown that Komatsu, Dingo, and Dingo Parts Catalog, taken together, raise a new SNQ as to claims 1 and 19 of the '750 patent, as these claims appear on the reexamination certificate. In addition, claims 2-18 and 22-34 depend from claims 1 or 19, and an SNQ is raised as to these claims by their dependency.

Reexamination of claim 21 was not requested.

Accordingly, claims 1-20 and 22-34 will be reexamined.

Waiver of Right to File Patent Owner Statement

Patent Owner has **not** agreed to waive its right to file a Patent Owner Statement under 37 C.F.R. 304. PTO personnel unable to reach Patent Owner by telephone.

Extensions of Time

Extensions of time under 37 CFR 1.136(a) **will not be permitted** in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that ex parte reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in ex parte reexamination proceedings are provided for in 37 CFR 1.550(c).

Notice of Concurrent Proceedings or Litigation

The patent owner is reminded of the **continuing responsibility** under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 9,975,750 throughout the course of this reexamination proceeding. The third party requestor is also reminded of the ability to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the subject patent. See MPEP §§ 2207, 2282 and 2286.

Submissions

In order to ensure full consideration of any affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37C.F.R. 1.116, after final rejection and by 37 C.F.R. 41.33 after appeal, which will be strictly enforced.

Correspondence

All correspondence relating to this *ex parte* reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered

By Mail to: Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/Russell D. Stormer/

Russell D. Stormer
Primary Examiner
Central Reexamination Unit
Art Unit 3993
(571) 272-6687

Conferee: /SC/

Conferee: /GAS/

Order Granting Request For Ex Parte Reexamination	**Control No.** 90/014,148	**Patent Under Reexamination** 9975750
	Examiner Russell D. Stormer	**Art Unit** 3993

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed *06 June 2018* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☐ PTO/SB/08, c)☐ Other: _____

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

cc:Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/014,148	06/06/2018	9975750	Veermer-750Reex	1098

76656 7590 06/19/2018

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

EXAMINER	
STORMER, RUSSELL D	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
06/19/2018	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patents and Trademark Office
P.O.Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

JAMES W. MILLER, ATTORNEY
527 MARQUETTE AVENUE
SUITE 1960, RAND TOWER
MINNEAPOLIS, MN 55402

Date:

JUN 19 2018

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90014148
PATENT NO. : 9975750
ART UNIT : 3993

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	**Control No.** 90/014,148	**Patent For Which Reexamination is Requested** 9,975,750
	Examiner Russell Stormer	**Art Unit** 3993

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) Patricia Martin, CRU (3)

(2) Michael Vander Molen, 57274 (4)

Date of Telephonic Interview: 6/12/18.

The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings*, 75 *Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

☒ USPTO personnel were unable to reach the patent owner.

The patent owner may contact the USPTO personnel at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/Patricia Martin/
Paralegal Specialist,
Central Reexamination Unit 571-272-5004
Signature and telephone number of the USPTO official who contacted or attempted to contact the patent owner.

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/014,148	06/06/2018	9975750

CONFIRMATION NO. 1098

REEXAM ASSIGNMENT NOTICE

76656
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

OC000000100229395

Date Mailed: 06/13/2018

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3993. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
JAMES W. MILLER, ATTORNEY
527 MARQUETTE AVENUE
SUITE 1960, RAND TOWER
MINNEAPOLIS, MN 55402

/rbell/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/014,148	06/06/2018	9975750

CONFIRMATION NO. 1098

JAMES W. MILLER, ATTORNEY
527 MARQUETTE AVENUE
SUITE 1960, RAND TOWER
MINNEAPOLIS, MN 55402

REEXAMINATION REQUEST NOTICE

OC000000100229393

Date Mailed: 06/13/2018

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 06/06/2018, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
76656
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

/rbell/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

PTO/SB/57 (09-16)
Approved for use through 09/30/2018. OMB 0651-0064
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

(Also referred to as FORM PTO-1465)

REQUEST FOR *EX PARTE* REEXAMINATION TRANSMITTAL FORM

Address to:
Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attorney Docket No.: Vermeer-750Reex

Date: 06/06/2018

1. ☑ This is a request for *ex parte* reexamination pursuant to 37 CFR 1.510 of patent number 9,975,750 issued 05/22/2018. The request is made by:
   ☐ patent owner. ☑ third party requester.
2. ☑ The name and address of the person requesting reexamination is:
   The Toro Company
   8111 Lyndale Avenue South
   Bloomington, MN 55420
3. Requester asserts ☐ small entity status (37 CFR 1.27) or ☐ certifies micro entity status (37 CFR 1.29). Only a patent owner requester can certify micro entity status. Form PTO/SB/15A or B must be attached to certify micro entity status.
4. ☐ a. A check in the amount of $_____ is enclosed to cover the reexamination fee, 37 CFR 1.20(c)(1);
   ☐ b. The Director is hereby authorized to charge the fee as set forth in 37 CFR 1.20(c)(1) to Deposit Account No. _____;
   ☐ c. Payment by credit card. Form PTO-2038 is attached; **or**
   ☑ d. Payment made via EFS-Web.
5. ☑ Any refund should be made by ☐ check or ☑ credit to Deposit Account No. 20-1315. 37 CFR 1.26(c). If payment is made by credit card, refund must be to credit card account.
6. ☑ A copy of the patent to be reexamined having a double column format on one side of a separate paper is enclosed. 37 CFR 1.510(b)(4).
7. ☐ CD-ROM or CD-R in duplicate, Computer Program (Appendix) or large table
   ☐ Landscape Table on CD
8. ☐ Nucleotide and/or Amino Acid Sequence Submission
   If applicable, items a. – c. are required.
   a. ☐ Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. ☐ CD-ROM (2 copies) or CD-R (2 copies); **or**
      ii. ☐ paper
   c. ☐ Statements verifying identity of above copies
9. ☐ A copy of any disclaimer, certificate of correction or reexamination certificate issued in the patent is included.
10. ☑ Reexamination of claim(s) 1-20 and 22-34 is requested.
11. ☑ A copy of every patent or printed publication relied upon is submitted herewith including a listing thereof on Form PTO/SB/08, PTO-1449, or equivalent.
12. ☑ An English language translation of all necessary and pertinent non-English language patents and/or printed publications is included.

This collection of information is required by 37 CFR 1.510. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) a request for reexamination. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop *Ex Parte* Reexam, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

13. ☑ The attached detailed request includes at least the following items:

a. A statement identifying each substantial new question of patentability based on prior patents and printed publications. 37 CFR 1.510(b)(1).

b. An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which reexamination is requested. 37 CFR 1.510(b)(2).

14. ☐ A proposed amendment is included (only where the patent owner is the requester). 37 CFR 1.510(e).

15. ☑ It is certified that the statutory estoppel provisions of 35 U.S.C. 315(e)(1) or 35 U.S.C. 325(e)(1) do not prohibit requester from filing this *ex parte* reexamination request. 37 CFR 1.510(b)(6).

16. ☑ a. It is certified that a copy of this request (if filed by other than the patent owner) has been served in its entirety on the patent owner as provided in 37 CFR 1.33(c).

The name and address of the party served and the date of service are:

Armstrong Teasdale LLP

7700 Forsyth Boulevard, Suite 1800, St. Louis MO 63105

Date of Service: 06/06/2018; **or**

☐ b. A duplicate copy is enclosed since service on patent owner was not possible. An explanation of the efforts made to serve patent owner **is attached**. See MPEP 2220.

17. Correspondence Address: Direct all communication about the reexamination to:

☑ The address associated with Customer Number: 61145

OR

☐ Firm or Individual Name

Address

City	State	Zip
Country		
Telephone	Email	

18. ☑ The patent is currently the subject of the following concurrent proceeding(s):

☐ a. Copending reissue Application No.

☐ b. Copending reexamination Control No.

☐ c. Copending Interference No.

☐ d. Copending litigation styled:

Vermeer Corporation v. The Toro Company, Case No. 4:17-cv-00076-CRW-HCA,

United States District Court for the Southern District of Iowa

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/James W. Miller/ — Authorized Signature

06/06/2018 — Date

James W. Miller — Typed/Printed Name

27661 — Registration No.

☐ For Patent Owner Requester

☑ For Third Party Requester

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No: Vermeer-750Reex

In re Patent of:	)
	)
Brad Thomas et al.	)
	)
Patent No. 9,975,750	)
	)
Issued May 22, 2018	)
	)
For LOW PROFILE COMPACT TOOL CARRIERS	)

DETAILED REQUEST FOR *EX PARTE* PATENT REEXAMINATION

Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 CFR §1.510, The Toro Company, the real party in interest and a third party requester, respectfully requests *ex parte* reexamination of claims 1-20 and 22-34 of U.S. Patent 9,975,750, referred to hereafter as "the '750 patent." A Request for *Ex Parte* Reexamination Transmittal Form (PTO/SB/57) is attached hereto.

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I. Notice of Prior or Concurrent Proceedings and Decisions Thereon

A. Regarding the '750 Patent

Pursuant to MPEP §2282, the Patent Owner has recently moved the Court to include the '750 patent in patent litigation entitled Vermeer Corporation v. The Toro Company, Case No. 4:17-cv-00076-CRW-HCA, United States District Court for the Southern District of Iowa regarding a related U.S. Patent 9,321,386, referred to hereafter as the '386 patent

B. Regarding the Related '386 Patent

The '750 patent issued from a continuation application (Serial No. 15/062,801) which claims priority to a parent application from which the '386 patent issued.

The '386 patent is the subject of patent litigation entitled Vermeer Corporation v. The Toro Company, Case No. 4:17-cv-00076-CRW-HCA, United States District Court for the Southern District of Iowa. The litigation was stayed at an early stage during the pendency of a recently concluded *ex parte* reexamination relating to the '386 patent. The Court recently lifted that stay. Toro, the defendant in the above entitled litigation, has recently filed a Motion to Renew the Stay.

Toro had initiated a first *ex parte* reexamination relating to the '386 patent (Reexam Control No. 90/013,915) which ultimately concluded in the issuance of a Reexamination Certificate dated April 12, 2018. The Reexamination Certificate confirmed the patentability of various original claims of the '386 patent, indicated that other claims were patentable as amended, and that various new claims added during the reexamination were additionally patentable.

On March 12, 2018 and after prosecution had closed in Reexam Control No. 90/013,915 but before the Reexamination Certificate issued, Toro filed a second Request for *Ex Parte* Reexamination (Reexam Control No. 90/014,109) directed to various of the original claims of the '386 patent. On April 13, 2018 and following the issuance of the Reexamination Certificate on April 12, 2018, Toro filed a third Request for *Ex Parte* Reexamination (Reexam Control No. 90/014,124) directed to the amended and new claims of the '386 patent as contained in the Reexamination Certificate.

Both the second and third Requests are based on substantially the same new prior art references[1] that raise Substantial New Questions (SNQ's) of patentability compared to the questions considered in the first reexamination. Toro has requested that the PTO merge the second and third reexaminations that would result from granting the second and third Requests. This would expedite the consideration of the new prior art references against the relevant claims of the '386 patent whether such claims comprise original claims of the '386 patent, amended claims of the '386 patent, or new claims added to the '386 patent.

The current Request for *Ex Parte* Reexamination of the '750 patent is based on substantially the same new prior art references as contained in Toro's second Request for *Ex Parte* Reexamination (Reexam Control No. 90/014,109) directed to the '386 patent and in Toro's third Request for *Ex Parte* Reexamination (Reexam Control No. 90/014,124) directed to the '386 patent.

As of the filing date of this Request for *Ex Parte* Reexamination of the '750 patent, the PTO issued an Order dated May 18, 2018 granting Toro's second Request for *Ex Parte* Reexamination (Reexam Control No. 90/014,109) directed to the '386 patent. This Order granting reexamination in Reexam Control No. 90/014,109 is the basis for Toro's recently filed Motion to Renew the Stay in the concurrent litigation relating to the '386 patent.

As of the filing date of this Request for *Ex Parte* Reexamination of the '750 patent, the PTO issued an Order dated May 30, 2018 granting Toro's third Request for *Ex Parte* Reexamination (Reexam Control No. 90/014,124) directed to the '386 patent.

[1] The third Request includes one additional prior art reference that is needed to address limitations added in the new claims appearing in the Reexamination Certificate that were not present in the original claims of the '386 patent.

II. Statement Pointing Out Each SNQ

The prior art patents and printed publications relied upon by Toro in this Request raise the following substantial new questions (SNQ's) of patentability and proposed grounds of rejection:

Ground 1. Claims 1-15 and 18 of the '750 patent are unpatentable under 35 U.S.C. 103(a) over a printed publication entitled Dingo® 322 Operator's Manual, referred to hereafter as "Dingo," in view of Japanese Patent Application JPH11140900 to Komatsu, hereafter referred to as "Komatsu".[2]

Ground 2. Claims 16, 17, 19, 20 and 22-34 of the '750 patent are unpatentable under 35 U.S.C. 103(a) over Dingo in view of Komatsu as applied in Ground 1, and further in view of a printed publication entitled Vermeer Mini Skid Steers S600/S600TX Brochure, referred to hereafter as "Vermeer Brochure".[3]

[2] As to claims 2 and 8, Toro will additionally rely on a printed publication entitled Dingo® 322 Parts Catalog, referred to hereafter as "Dingo Parts Catalog," in a proposed rejection that is alternative to a rejection based on the application of choice of mechanical design to Dingo alone.

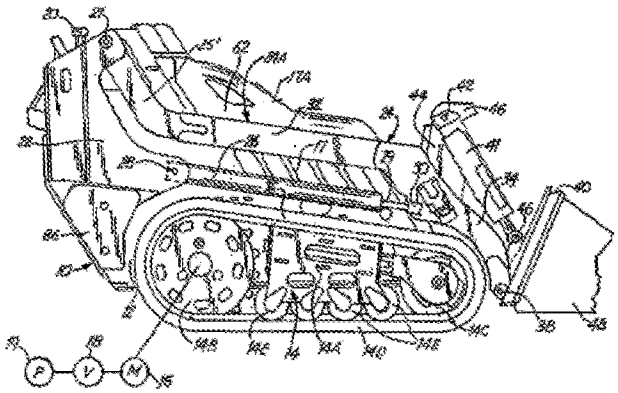
[3] As to claim 23, Toro will additionally rely on Dingo Parts Catalog in a proposed rejection that is alternative to a rejection based on the application of choice of mechanical design to Dingo alone.

III. Why the SNQs Are New Questions

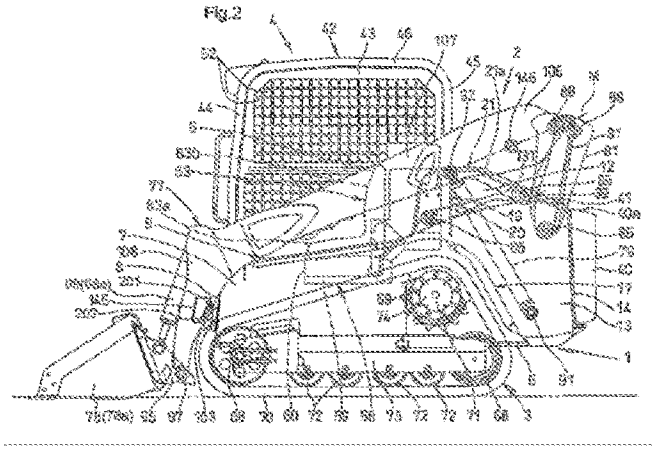
A. The Original Prosecution Up to the First RCE

U.S. Patent Application 15/062,80l, referred to hereafter as the '801 application, was filed on March 7, 2016 with 20 claims comprising three independent claims 1, 13 and 15 each having various dependent claims. This claim set was similar to claims 1-20 which issued in the related '386 patent.

In a first Office Action dated April 15, 2016 and again in a Final Rejection dated November 4, 2016, the Examiner rejected independent claims 1, 13 and 15, inter alia, under 35 U.S.C. §103 as being unpatentable over Yasuda et al. (8,821,104) in view of Bares et al. (6,695,568). The Bares and Yasuda references are depicted below. Bares is a mini skid steer loader having a radial lift linkage that is operated by an operator who stands or walks on the ground behind the loader. Yasuda is a larger skid steer loader that utilizes a vertical lift linkage. Yasuda has a forwardly located operator who sits in a seat located in a cab 4.



Bares



Yasuda

The vertical lift linkage of Yasuda extends from the front to the back of the loader with the vertical lift linkage components being duplicated on each of the left and right sides of the loader. The loader arms extend fore-and-aft past the left and right sides of the operator's cab. The loader arms are joined together at their front ends by a laterally extending cross member 145 positioned ahead of the cab and at their rear ends by a laterally extending cross member 146 behind the cab. The Examiner's rejections based on these two patents were that it would have been obvious to modify Bares to use the vertical lift linkage of Yasuda in place of the radial lift linkage of Bares or alternatively to locate the operational controls in Yasuda at the rear of Yasuda's loader as taught by Bares to allow Yasuda to be operated by a walking operator.

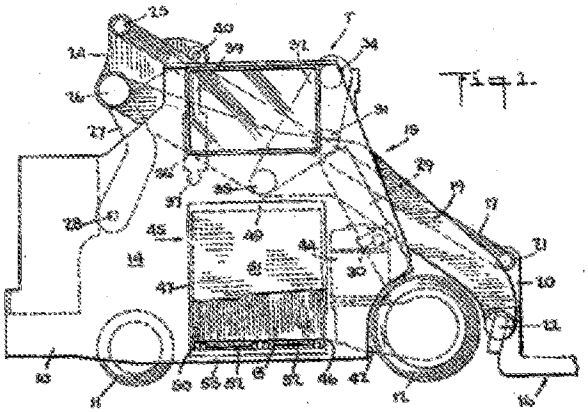
In response thereto, the Patent Owner essentially traversed both of the alternative combinations based on Bares and Yasuda. The Examiner was unpersuaded by the traversal. That led to the aforementioned Final Rejection dated November 4, 2016 in which the Examiner maintained both of the alternative combinations based on Bares and Yasuda.

B. The Original Prosecution from the First RCE to the Second RCE

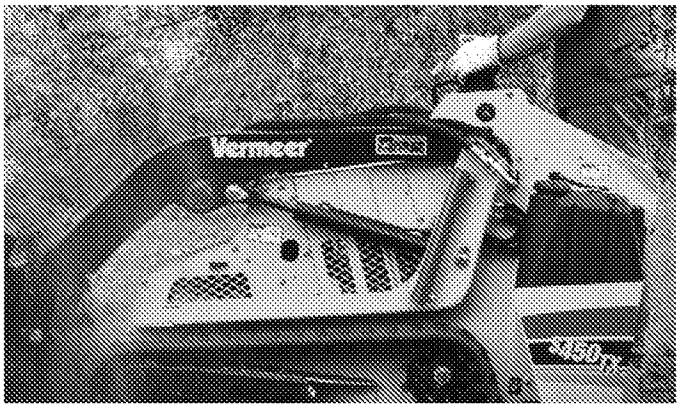
In response to the Final Rejection of November 4, 2016, the Patent Owner submitted a first Request for Continued Examination (RCE) on April 3, 2017. An Amendment canceling original claims 1-20 and submitting new claims 21-44 was filed with the first RCE. Among other things, the newly submitted independent claims 21, 35, and 42 in the Amendment now contained a limitation requiring "an operator platform for standing operation of the operator controls of the control station". In addition, independent claims 21 and 35 also required that the engine be located forward of the operator platform while independent claim 42 required that various pivots of the components of the vertical lift linkage be located forward of the operator platform. In response thereto, the Examiner withdrew without comment both of the alternative combinations based on Bares and Yasuda.

However, the Examiner did not allow the '801 application. Two days after the filing of the first RCE and the accompanying Amendment, the Patent Owner filed an Information Disclosure Statement (IDS) on April 5, 2017 to make of record additional prior art references that included the prior art that Toro had relied upon in Toro's first Request for *Ex Parte* Reexamination (Reexam Control No. 90/013,915) directed to the '386 patent. The Examiner

then used two references cited on the IDS of April 5, 2017 to make a further rejection. The first reference to Ulinski (3,074,572) taught a fork lift having an operator platform at the rear with the power source and the pivots of a vertical lift linkage placed forward of the operator platform. The second reference to Vermeer (Vermeer S450TX Mini Skid Steer documents) taught a small mini skid steer loader of the Patent Owner that was also equipped with an operator platform. The pivot points of the radial lift linkage in Vermeer were also placed forward of the operator platform. Both Ulinski and Vermeer are reproduced below.



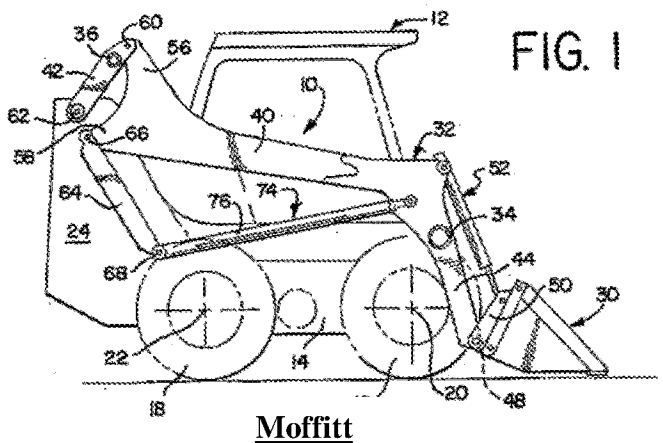
Ulinski



Vermeer

In a further Non-Final Office Action dated April 26, 2017, the Examiner then rejected all of the pending claims in the '801 application under 35 U.S.C. §103 as being unpatentable over Ulinski in view of Vermeer. In this combination, Ulinski was the primary reference and Vermeer the secondary reference. The Examiner relied upon Vermeer to teach a mini skid steer loader having a weight of 1043 kilograms (kg) as well as a mini skid steer loader propelled by tracks rather than wheels. The Examiner's rejections posited, inter alia, that Ulinski could be made in a lightweight version as taught by Vermeer.

In the same Office Action of April 26, 2017, the Examiner also used an alternative combination of references for additional rejections of some of the pending claims in the '801 application. In this alternative combination of references, Vermeer became the primary reference. The Examiner then relied upon another reference disclosing a larger skid steer loader having a seated operator, namely on Moffitt et al. (5,609,464) as depicted to the right hereof, that also taught a vertical lift linkage. In the Examiner's view, it would have been obvious to convert Vermeer's radial lift linkage to a vertical lift linkage as taught by Moffitt.



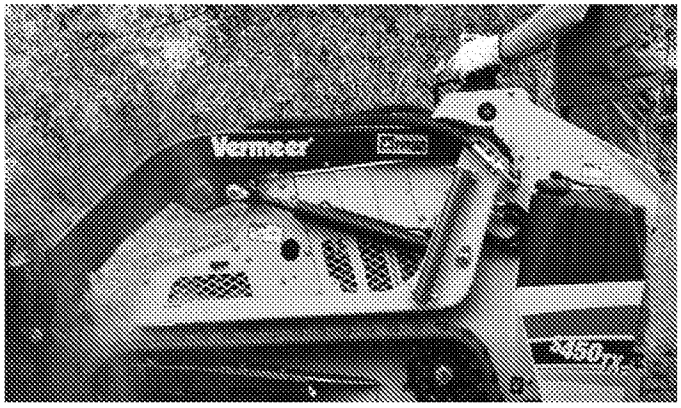
Moffitt

Following this set of rejections, the Patent Owner filed an Amendment dated July 26, 2017 contesting both combinations of references. The amendments made to the claims were generally along the following lines: a more complete description of the components of the vertical lift linkage on each side of the loader and the fact that they each have their own separate pivot points and do not share pivot points, descriptions of the locations of the pivot points on the loader relative to other components, and an additional description of a low placement of some of the pivot points on the mainframe of the loader.

These claim amendments were accompanied by arguments generally attempting to limit each prior art reference to its particular structure. For example, when arguing against the application of Moffitt as shown above, the Patent Owner pointed out that actuator 74 and control arm 64 in Moffitt share a common pivot 68 rather than having separate pivots. As another example, when arguing against the application of Ulinski as depicted on the preceding page hereof, the Patent Owner argued that Ulinski's pivots between the mainframe and the vertical lift linkage components were not positioned low enough on the mainframe to meet the low pivot recitations set forth in claim 35.

At the time the Patent Owner filed its Amendment of July 26, 2017, the first reexamination proceeding (Reexam Control No. 90/013,915) of the related parent '386 patent had been pending for approximately 5 months. The Examiner handling the reexamination issued an Office Action in Reexam Control No. 90/013,915 on August 25, 2017 rejecting the

claims of the '386 patent for which reexamination had been requested. The basis for that rejection was the same reference to Vermeer as shown earlier herein along with another vertical lift linkage system in a larger skid steer loader having a seated operator known as Mustang. Vermeer is reproduced again below along with Mustang.



Vermeer



Mustang

A few days after the Vermeer in view of Mustang rejection in Reexam Control No. 90/013,915 and as the Examiner considered the Patent Owner's claim amendments and arguments concerning the Ulinski in view of Vermeer combination and the Vermeer in view of Moffitt combination, the Examiner decided to set aside the previous rejections based on these art combinations. The Examiner then shifted to the same Vermeer in view of Mustang rejection that had appeared in Reexam Control No. 90/013,915 as to all the claims pending in the '801 application. The Vermeer in view of Mustang rejection appears in the Final Rejection of August 30, 2017 in the '801 application. The gist of that Final Rejection was that it would have been obvious to one of ordinary skill in the art to have adapted the vertical lift linkage system as taught in Mustang to the mini skid steer loader of Vermeer in replacement of Vermeer's radial lift linkage.

In response to the same Vermeer in view of Mustang rejections made in both the '801 application and in Control No. 90/013,915, the Patent Owner then conducted interviews in both matters contesting the prima facie combination of Vermeer and Mustang on the basis that it would have been too difficult to make the adaptation and there was no reasonable expectation of success. In advancing this argument, the Patent Owner argued that the operator in Vermeer was

at the rear of the mini skid steer as opposed to the more forward placement of the operator in Mustang with the vertical lift linkage components in Mustang extending well to the rear of the operator. According to the Patent Owner, such a rearward placement of the vertical lift linkage components, including a rear cross member connecting the loader arms at a location near the rear of the machine behind the operator cab, would interfere with the rearwardly located operator in Vermeer. In addition, the Patent Owner provided evidence that it alleged established objective evidence of non-obviousness that was sufficient to overcome the prima facie case of obviousness based on the references alone. In response there, the Examiner withdrew the rejection based on the Vermeer and Mustang combination in the '801 application.

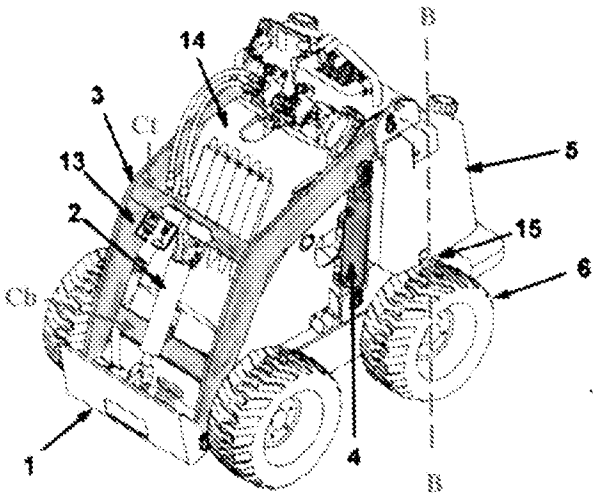
In withdrawing the rejection based on the Vermeer and Mustang combination in the '801 application that led to the '750 patent at issue herein, the Examiner provided Reasons for Allowance. These reasons read as follows:

> "6. The following is a statement of reasons for the indication of allowable subject matter: Based on applicant's arguments and demonstrations presented during the personal interview conducted October 10, 2017 and the written remarks included in the response of November 10, 2017, the proposed combination of the "S450TX Mini Skid Steer"" brochure published by Vermeer in view of the "Skid Steer Loaders, Radial & Vertical Lift" document published by Mustang (as set forth in section 2 of the Office action mailed 8/30/17) would not have been obvious to one of ordinary skill in the art because the changes suggested in the combination would not be suitable for the intended design and purpose of the S450TX Mini Skid Steer. Also, the unexpected results and long felt need and attempt by others, as pointed out in applicant's remarks, further demonstrate non-obviousness of the invention as set forth in above indicated allowable claims."
> (Yellow Highlighting Added) ('801 application, Office Action 12/08/17, ¶6).

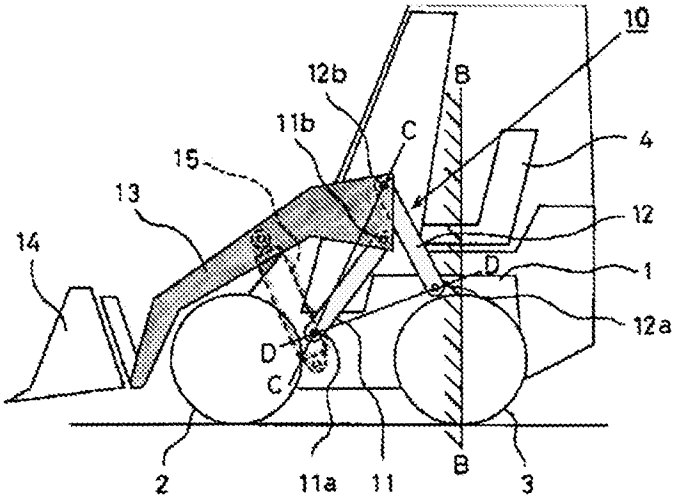
These Reasons for Allowance appeared in a Non-Final Rejection dated December 8, 2017 in which the Examiner returned to his original Ulinski in view of Bares combination to reject a few of the pending claims while indicating the allowability of most of the claims. These rejected claims were subsequently canceled by the Patent Owner in an Amendment dated December 12, 2017. In response thereto, the Examiner issued a first Notice of Allowance in the '801 application on March 2, 2018.

C. The Dingo and Komatsu Art Relied Upon in this Request

As will be described more fully in the following sections of this Request for *Ex Parte* Reexamination, this Request is based on a different mini skid steer loader, namely Dingo, as the primary reference and a different riding skid steer loader, namely Komatsu, as the secondary teaching reference. Dingo and Komatsu are depicted below.



Dingo



Komatsu

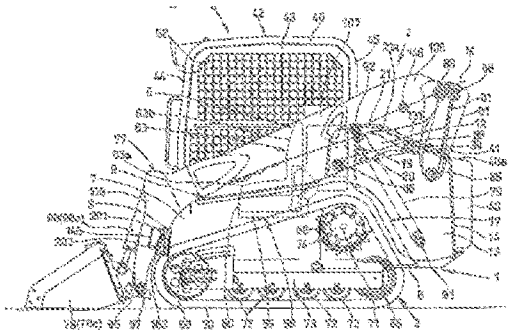
These two references provide an entirely different combination that avoids the difficulties the Examiner had with the Vermeer in view of Mustang combination. The difference arises because Komatsu expressly recognizes that the loader arms in a typical vertical lift linkage in a riding skid steer loader such as Mustang extend directly past the operator's seat and to the rear of the operator, thus obstructing the operator's view to the sides and to the rear among other things. Thus, Komatsu discloses a redesigned loader in which the vertical lift linkage components, colored green, yellow and blue in Komatsu above, are moved forward of a line B-B through the center of the rear wheel while the operator's seat is moved rearwardly to a position above the rear wheel. In fact, Komatsu actually teaches that the operator's seat can even be moved further rearwardly to a position behind the rear wheel.

Accordingly, Komatsu teaches a radically reconfigured skid steer loader as compared to that previously before the Examiner in Mustang. Komatsu expressly teaches positioning all the components of the vertical lift linkage forward of an operator who is now moved to a position

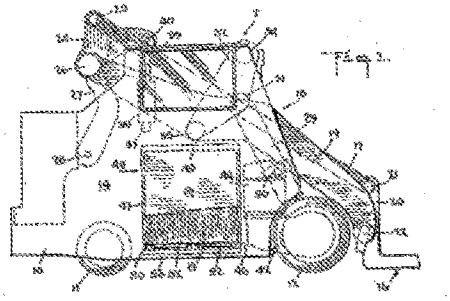
over the rear wheel or even behind the rear wheel. This is precisely where the radial lift linkage in Dingo is already located, namely forward of a rearwardly located operator standing atop the operator platform at the rear of Dingo. Thus, it would have been a natural fit and immediately obvious to one of ordinary skill in the art to simply adapt Komatsu's style of vertical lift linkage to Dingo in view of the careful description by Komatsu of where it should be located, i.e. ahead of the operator and ahead of the vertical line B-B through the center of the rear wheel. The motivation for doing this would be to obtain the advantages that a vertical lift linkage provides compared to a radial lift linkage as were well known in the art.

Moreover, Komatsu additionally teaches a low placement of the pivots of the vertical lift linkage components relative to the mainframe of the loader. These frame pivots in Komatsu are the three lowermost pivots shown in the illustration of Komatsu on the preceding page. These frame pivots are low enough to meet the dimensional limitations set forth in all of the claims of the '750 patent.

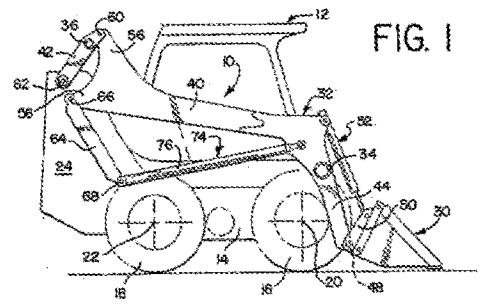
Finally, it is perhaps easiest to appreciate how much better Komatsu is than the vertical lift loader art the Examiner had before him during the prosecution of the '801 patent up until the filing of the second RCE to again reproduce the vertical lift loader art the Examiner used in the various rejections above to visually compare Komatsu against such art.



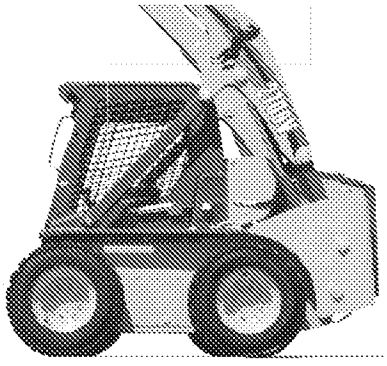
Yasuda



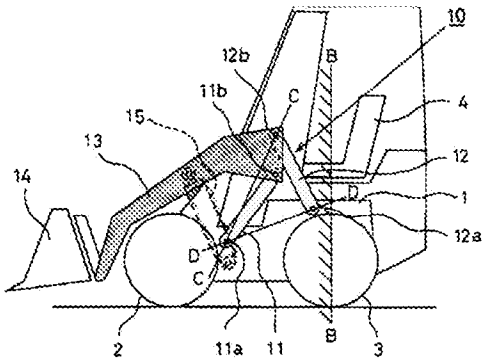
Ulinski



Moffitt



Mustang



Komatsu

The differences between Komatsu and the four prior art vertical lift linkage references previously used by the Examiner as shown on the preceding page are striking. As will be detailed at length later herein, it was a specific goal of Komatsu to avoid the traditional wrap around vertical lift linkage structure shown in the larger riding skid steer loaders to Yasuda, Moffitt and Mustang in favor of a vertical lift linkage structure set forwardly of an operator who is now much further to the rear. This expressly avoids having the vertical lift linkage extending past the sides of the operator or behind the operator so as to improve the operator's visibility. This discloses a structure ideally suited for use on a mini skid steer loader such as Dingo. In addition, it was a further goal of Komatsu to lower the vertical linkage on the mainframe by placing the various pivots to the mainframe very low in relationship to the ground and the bottom of the mainframe. This teaches the obverse of the high pivot placement shown in Ulinski. In fact, Komatsu teaches a pivot placement that is so low that it meets the terms of any of the claims of the '750 patent that recite to the Patent Owner's own pivot placements.

Accordingly, there can be little question that the Dingo in view of Komatsu combination raises an SNQ as compared to any of the prior art combinations that the Examiner had before him during the prosecution of the '801 patent application up through the time when he issued the first Notice of Allowance on March 2, 2018.

D. The Prosecution After the Second RCE

Normally, the SNQ analysis would have ended here with a determination that the Dingo in view of Komatsu combination raises different SNQ's than those previously considered by the Examiner in the prosecution of the '801 application. However, after the Examiner allowed the '801 patent application in the Notice of Allowance dated March 2, 2018 and after the Patent Owner paid the Issue Fee in the '801 patent application on the same day, the Patent Owner subsequently became aware of the new Dingo in view of Komatsu prior art relied upon by Toro in Reexam Control No. 90/014,109 following the filing of the second Request for *Ex Parte* Reexamination on March 12, 2018. The Patent Owner then subsequently withdrew the '801 patent application from issue for the purpose of filing a second RCE and an IDS, both of which are dated March 19, 2018, to have the new art in Reexam Control No. 90/014,109 considered in the '801 patent application. This was an apparent attempt to convert the Dingo and Komatsu art into old art should Toro seek to file another Request for *Ex Parte* Reexamination against whatever patent were to issue from the '801 application, in this case the '750 patent at issue herein. However, despite this attempt to convert the Dingo and Komatsu art into old art that had been considered, this does not prevent such "old art" from raising SNQ's in the current Request for *Ex Parte* Reexamination for the following reasons.

First, not all of the references which form the basis for the current Request for Reexamination were listed on the IDS of March 19, 2018 as filed in the '801 patent application. At the time the IDS of March 19, 2018 was filed, the Patent Owner had before it the IDS dated March 12, 2018 that Toro had filed with its second Request for Ex Parte Reexamination (Reexam Control No. 90/014,109). The Non-Patent Literature (NPL) portion of Toro's IDS of March 12, 2018 in Reexam Control No. 90/014,109 is reproduced below. Three of the NPL submissions as highlighted in yellow, namely items 3-5 on the IDS in Reexam Control No. 90/014,109, were **excluded** by the Patent Owner from the IDS of March 19, 2018 as filed in the '801 patent application.

1	The Toro Company, "Dingo® 322 Operator's Manual", dated 2000.
2	The Toro Company, "Dingo® 322 Parts Catalog", dated 1999.
3	Vermeer Manufacturing Company, "Vermeer Has Launched the Newest Mini Skid Steer, the CTX100", dated 2018.
4	Mustang Manufacturing Company, "Mustang Skid Steer Loaders- Radial & Vertical Lift" brochure, dated 2014.
5	The Toro Company, "Toro Rental Bulletin re Toro Dingo® TX 1000 Introduction", dated 2015.
6	For Construction Pros.com, Curt Bennink, "Size-Up Skid Steer Loaders" article , dated 03/15/2006.
7	Plowsite.com, "Bobcat Weight Kit" chat forum dialogue, 2001.
8	Construction Shows, "Case Upgrades its Skid Steer and Compact Tracked Loader Line Up" article, 05/16/2014.

Item 4 in the list above, namely the Mustang brochure, had been earlier made of record in the prosecution of the '801 application. Items 3 and 5 in the list above, namely the Vermeer press release and the Toro bulletin, are not dated early enough to be prior art to the '801 application. However, **all three items** had been submitted in the Toro IDS of March 12, 2018 in Control No. 90/014,109 to establish **facts** rebutting the showing of objective evidence of non-obviousness that the Examiner had in part relied upon to allow the '801 application before it was withdrawn from issue. By not relisting item 4 in its IDS of March 19, 2018 to alert the Examiner to the fact that the earlier cited Mustang brochure was now being used in an entirely different manner than in the original prosecution and by not listing and providing copies of items 3 and 5 in its IDS of March 19, 2018, the Patent Owner obviously made an incomplete

submission of the information contained in the Toro IDS of March 12, 2018, choosing to cite some pieces of the information but not others.

Second, in addition to making a decision to selectively list and submit only some of the items of information underlying Toro's case for unpatentability based on the Dingo in view of Komatsu combination, **the Patent Owner did not submit any portion of Toro's second Request for *Ex Parte* Reexamination of the '386 patent**. If the Patent Owner believed that the information that was the basis for the second Request as listed on the Toro IDS of March 12, 2018 in Reexam Control No. 90/014,109 was important enough to withdraw the '801 application from issue even after the Patent Owner had paid the Issue Fee, then logically it should have also supplied to the Examiner a copy of Toro's second Request. Simply put, Toro's second Request explains at length the structure of the Dingo and Komatsu references, the motivation for adapting the Komatsu vertical lift linkage to Dingo given the very different type of vertical lift linkage Komatsu had developed and its placement forward of the operator, and why the previously supplied showing of alleged objective evidence of non-obviousness made by the Patent Owner in the '801 application was factually unsound. Significantly, the Patent Owner chose not to provide the Examiner with Toro's second Request, the very document that would have explained the relevance of the information and how it all fit together. Nor did the Patent Owner use any of the space provided on its IDS of March 19, 2018 or take any other opportunity to point out to the Examiner the relevant portions of the listed references.

The Patent Owner did submit a Notice of Concurrent Proceedings with its IDS of March 19, 2018 which stated that a third party Request for *Ex Parte* Reexamination of the parent '386 patent had been filed on March 12, 2018 and had been assigned Reexam Control No. 90/014,109. However, this bare Notice failed to mention that the 90/014,109 Request was based, in part, on the same prior art listed on its IDS of March 19, 2018 or that such Request explained the application of the prior art and additionally contained a rebuttal of the Patent Owner's previously submitted showing of alleged objective evidence of non-obviousness. Moreover, there is no absolutely no indication in the record that the Examiner ever looked at the file of Reexam Control No. 90/014,109 or read any portion of Toro's second Request contained therein.

The decision by the Patent Owner not to submit **any** explanation of the relevance of the references and how they could be combined together, either the detailed application provided in

Toro's second Request in Reexam Control No. 90/014,109 or an explanation that the Patent Owner could have written and submitted in lieu of Toro's second Request, is not being raised in the context of inequitable conduct as the PTO does not decide inequitable conduct issues. It is being raised herein only in the context of whether the prior art on which this Request is based raises SNQ's relative to the way such prior art was actually considered during the original prosecution of the '750 patent.

In the latter SNQ context, the decision by the Patent Owner not to submit Toro's second Request or to provide any explanation of its own in lieu thereof is highly relevant. That decision deprived the Examiner of fully and fairly considering the prior art during the original prosecution as it placed the burden on the Examiner to ferret out for himself the significant portions of the references. For example, some significant portions of Komatsu, e.g. the few words noting that the operator could be moved even further to the rear to a position "to the rear of the rear wheel", are buried in the translation of Komatsu and could be easily missed in a reading of Komatsu. Moreover, the detailed scaling of the locations of certain pivot points in Komatsu, as presented by Toro in its second Request in Reexam Control No. 90/014,109 and as repeated herein in this Request at Section IV(B)(V) hereof, relative to the dimensional limitations for such pivot points in some of the claims of the '750 patent is not present in Komatsu. It is not surprising then that the Examiner never substantively commented on Komatsu or any of the other cited references as Toro will now show.

Third, the Examiner again allowed the '801 application on April 23, 2018. In doing so, the Examiner initialed the Patent Owner's IDS of March 19, 2018 to indicate that the references cited thereon had been "considered". Obviously, as set forth earlier herein, such consideration could not extend to the references the Patent Owner chose to exclude from the IDS form. The accompanying Notice of Allowance simply contained a list of the allowed claims by number. Significantly, there was no Statement of Reasons for Allowance in the Notice of Allowance.

The lack of a Statement of Reasons for Allowance is significant in view of MPEP §1302.14 (II)(E)(1) which reads as follows:

> "Examples of When It Is Likely that a Statement (of Reasons for Allowance) Should Be Added to the Record…
>
> (E) Allowance coincident with the citation of newly found references that are very close to the claims, but the claims are considered patentable thereover:
>
> (1) When reference is found and cited (but not argued) by applicant."

This is the exactly the situation that occurred in the '801 application after its withdrawal from issue by the Patent Owner for the purpose of filing the second RCE simply to cite the references listed on the IDS of March 19, 2018. The citation was made by the Patent Owner without any argument whatsoever. In fact, the argument that Toro had provided at length in its Request in Reexam Control No. 90/014,109 was **not** listed on the IDS of March 19, 2018 or provided to the Examiner. Thus, it is precisely the situation where the Examiner should have provided a Statement of Reasons for Allowance as set forth in MPEP §1302.14 (II)(E)(1). However, the Examiner did not do so.

It should be noted that the Examiner did initiate a telephone interview on April 18, 2018 with counsel for the Patent Owner apparently for the purpose of discussing the prior art listed on the Patent Owner's IDS of March 19, 2018 with Patent Owner's counsel. This interview is memorialized in an Examiner Initiated Interview Summary form (PTOL-413B) dated April 23, 2018. The entire substance of the interview is stated in the Summary as follows:

> "Discussed the references listed on the IDS of 3/19/18. It was agreed that the pending claims define over these references whether taken individually or in combination with the teachings of the other prior art of record."

It is difficult to detect any substance in this statement of substance. One already knows that the Examiner says he considered the art by his initials on the IDS form. One already knows that the pending claims were allowed in the Notice of Allowance. Other than for the Examiner and counsel for the Patent Owner having had a conversation, the actual substance of their conversation is not reported.

To recap, after the '801 application was withdrawn from issue for the consideration of the prior art listed on the IDS form of March 19, 2018, the Patent Owner never made any substantive comments in the record about the prior art listed on the IDS form, the Examiner never made any substantive comments in the record about the prior art or any rejections based on that prior art, the Examiner provided no Reasons for Allowance, and there is no substantive description in the record of what the Examiner and counsel for the Patent Owner talked about in the telephone conversation of April 18, 2018 that sheds any light on why the Dingo and Komatsu references allegedly failed to meet the limitations of the claims.

E. The "Old Art" is Presented in a New Light that Raises SNQ's

"Old art" previously considered during the original examination of a patent does not preclude a finding that the old art raises a SNQ that justifies the grant of a Request for Ex Parte Reexamination based on such old art. The term "old art" refers, inter alia, to prior art which was previously cited/considered in an earlier concluded examination of the patent. In this case, the old art comprises the information cited on the Patent Owner's IDS of March 19, 2018 in the '801 patent application. As set forth in MPEP §2242(II)(A):

> "In a decision to order reexamination made on or after November 2, 2002, reliance on old art does not necessarily preclude the existence of a substantial new question of patentability that is based exclusively on that old art. See Public Law 107-273, 116 Stat. 1758, 1899-1906 (2002), which expanded the scope of what qualifies for a substantial new question of patentability upon which a reexamination may be based. Determinations on whether a substantial new question of patentability exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis. For example, a substantial new question of patentability may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier examination(s), in view of a material new argument or interpretation presented in the request. Such material new argument or interpretation may be based solely on claim scope of the patent being reexamined."
> (Yellow Highlighting Added)

In addition, the MPEP also provides guidance on exactly what effect the Examiner's initials on an IDS form has when it comes to determining the degree to which the art was considered. In the context of reexamination, MPEP §2256 reads in pertinent part as follows:

> "Where patents, publications, and other such documents are submitted by a party (patent owner or requester) in compliance with the requirements of the rules, the requisite degree of consideration to be given to such information will be normally limited by the degree to which the party filing the information citation has explained the content and relevance of the document. The initials of the examiner placed adjacent to the citations on the form PTO/SB/08A and 08B or its equivalent, without an indication to the contrary in the record, do not signify that the document has been considered by the examiner any further than to the extent noted above."
> (Yellow Highlighting Added)

Applying the above here, it is clear that the "old art" comprising Dingo and Komatsu is being viewed in a new light as to its use in the earlier examination. It is also clear that the

Examiner's initials on the Patent Owner's IDS of March 19, 2018 do not connote a substantive consideration of any of the prior art listed thereon, including Dingo and Komatsu first and foremost, as neither the Patent Owner nor the Examiner provided any explanation of the content and relevance of any of the cited references. In this Request for *Ex Parte* Reexamination, a detailed analysis of the Dingo and Komatsu references and why it would have been obvious to combine them to meet the terms of the claims of the '750 patent is provided. This same analysis was **NOT provided** to the Examiner at the end of the '750 patent's prosecution when the Patent Owner cited some, but not all, of the "old art" to the Examiner on its IDS of March 19, 2018. This same analysis was **NOT provided** to the Examiner at the end of the '750 patent's prosecution when the Patent Owner chose not to provide the Examiner with either Toro's second Request for *Ex Parte* Reexamination of the related '386 patent in Reexam Control No. 90/014,109 or with Toro's subsequent third Request of *Ex Parte* Reexamination of the related '386 patent in Reexam Control No. 90/014,124 or with any explanation of the prior art of its own.

Accordingly, on the prosecution record of the '750 patent, one can only conclude that the old art is being presented in a "new light" as there is no way to tell what light the Examiner actually viewed the old art in when he allowed the application a second time after it had been withdrawn from issue. Anything that sheds any light on how either the Patent Owner or the Examiner thought of or viewed the patentability issues raised by Dingo and Komatsu along with the other references listed on the Patent Owner's IDS of March 19, 2018 is completely absent from the prosecution history of the '750 patent.

In addition, a number of recent PTAB decisions provide guidance on the effect of simply having an initialed IDS form without any substantive discussion in the context of whether the IDS form alone would prevent an IPR from being instituted.

In *Plastic Dev. Grp., LLC, v Maxchief Investments Limited*, the PTAB rejected a patentee's contention that "substantially the same arguments" were presented during prosecution of a patent, even though the *inter partes* review petitioner made arguments relating to a piece of prior art known as Stanford that was initialed in the patentee's IDS during prosecution. IPR2017-00846, 2017 WL 4349384, at *3 (Patent Tr. & App. Bd. Sept. 5, 2017). Despite the examiner's initialing, the PTAB considered the piece of prior art in the later *inter*

partes review because there was no evidence that the prior art was actually considered during prosecution. The PTAB wrote as follows:

> "Patent Owner's evidence that Stanford was considered during prosecution is merely the initialed line in the Applicant's IDS submitted during prosecution. . . . Because neither Stanford nor any arguments relating to Stanford were substantively addressed by Applicant or the Examiner during the underlying prosecution of the '644 patent, we are unpersuaded that 'substantially the same arguments' have been presented here by Petitioner as were previously presented to the Office during prosecution." *Id.*

In *HID Global Corp. v Morphotrust USA LLC*, the PTAB determined that a petitioner showed a reasonable likelihood that it would prevail in establishing the unpatentability of the challenged claims. IPR2017-01939, 2018 WL 1313425, at *1 (Patent Tr. & App. Bd. Mar. 12, 2018). There, the patentee claimed that the petitioner was trying to reargue issues that the examiner previously considered and rejected in the patentee's favor. During the patent's prosecution, the patentee submitted a four-page IDS that listed a specific prior art reference among more than a hundred other references. In the final Notice of Allowability, the examiner "attached an initialed copy of the IDS," but the "prosecution history record reveals no discussion of [the important prior art reference], and the final Notice of Allowability does not provide reasons for allowance." *Id.* at *12-13. More important, the PTAB found that the prosecution history did not indicate that the examiner considered the teachings of the prior art reference "*in the manner advanced by Petitioner*." *Id.* at *13. The PTAB thus found that "the Examiner did not consider materially similar prior art, evidence, and arguments to that within the challenges Petitioner advances here." *Id.*

This reasoning applies equally to the facts here. Given the utter lack of any substantive discussion of the "old art" initialed by the Examiner on the Patent Owner's IDS of March 19, 2018, or the lack of any reasons for why the claims of the '750 patent were allowed over such "old art, the "old art" relied upon here provides various SNQ's that were not previously considered or decided by the PTO during the prosecution of the '750 patent.

IV. Detailed Explanation of the Pertinency and Manner of Applying the Patents and Printed Publications to Every Claim for Which Reexamination Is Requested

A. Review of the '750 Patent at Issue Herein

The basic difference between a radial lift loader arm linkage and a vertical lift loader arm linkage is the removal of the fixed pivot connection of the loader arm to the mainframe of the skid steer. With that removal, the loader arm is no longer constrained to pivot about a circular arc. Instead, the loader arm is now free to move longitudinally back and forth in a fore-and-aft direction to lift the load in a vertical path that remains closer to the vehicle. This enhances stability of the loader and permits a vertical lift loader to lift more weight than a comparable radial lift loader. It also permits greater forward reach at full height. However, the loader arm must still be supported even as it makes such fore-and-aft movements.

The vertical lift linkage of the '750 patent comprises a loader arm 15a (colored green in Fig. 2 of the '750 patent below) that is, in the words of claims 1 and 15 of the '750 patent, "not…directly attached to the mainframe". Instead, loader arm 15a is supported on mainframe 10 by a front linkage 46a (colored yellow below) and by a rear linkage 50a (also colored yellow below). A hydraulic cylinder actuator 54 (colored blue below) is used to lift and lower the loader arm 15a through a substantially vertical lift path instead of the radial lift path provided by radial arm loaders. The vertical lift linkage is duplicated on both the left and right sides of the skid steer loader.

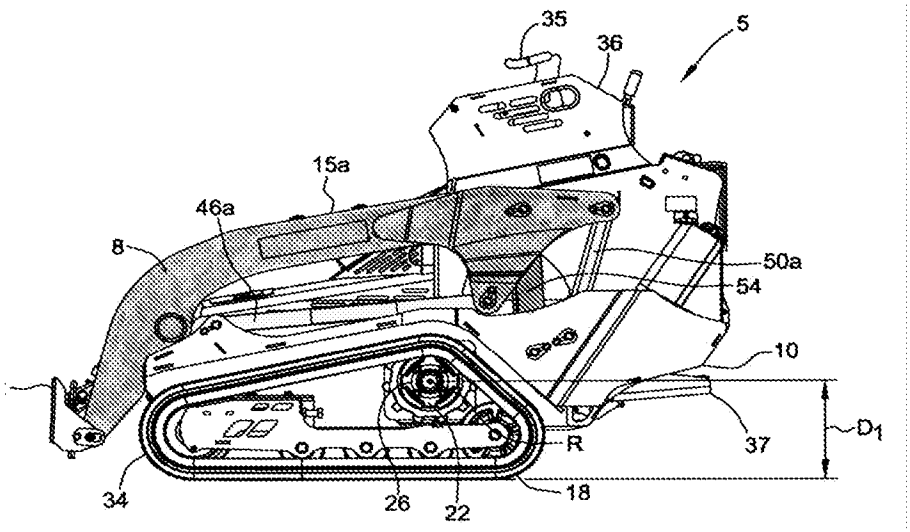


FIG. 2

Fig. 2 above from the '750 patent shows the vertical lift loader arm linkage in its lowermost position. Fig. 3 of the '750 patent, reproduced below and color coded similarly to Fig. 2, shows the vertical lift linkage in its uppermost position. Note how the rear end of loader arm 15a has swung forwardly in Fig. 3 relative to mainframe 10 from the position shown in Fig. 2 above with the tool attachment 12 in Fig. 3 having moved vertically upwardly from its lowermost position in Fig. 2. This is the vertical lift linkage in action.

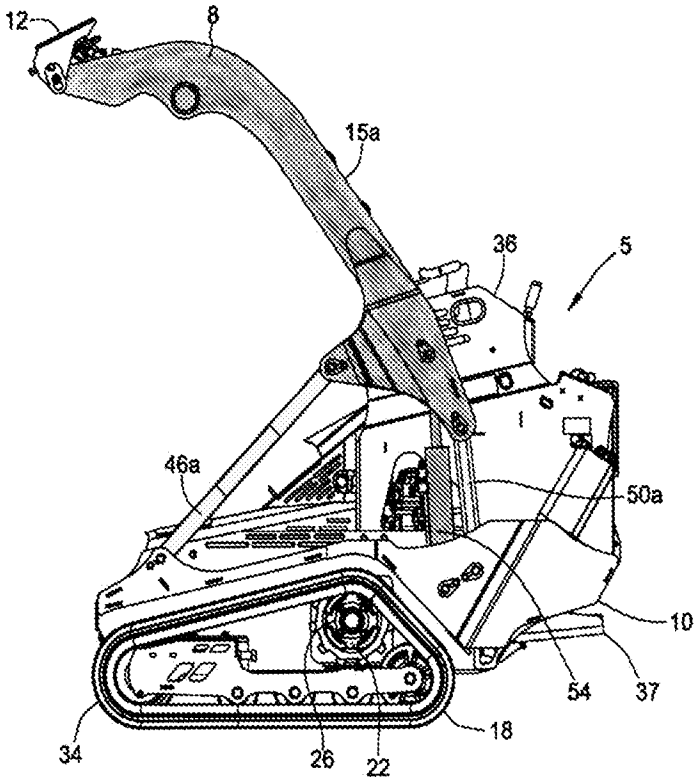


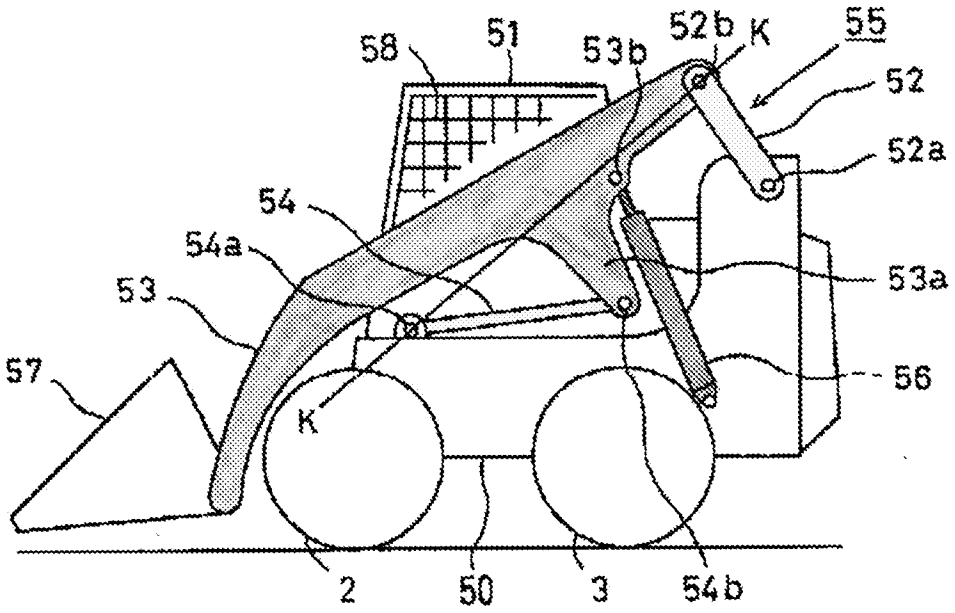
FIG. 3

B. Review of JPH11140900 to Komatsu

A patent application published in Japan in 1999, namely JPH11140900, which is being referred to herein as Komatsu, sheds an entirely new light on what those of ordinary skill in the skid steer loader art knew some fifteen years before the purported invention of the '750 patent. That knowledge included an awareness of certain disadvantages of previously existing vertical and radial lift linkages used in sit down, ride on skid steer loaders. That awareness led to the development and disclosure in Komatsu of various improvements to vertical lift linkages. These improvements are ideal candidates for use on a mini skid steer. In order to fully appreciate the significance of Komatsu's improvements, Toro will first turn to Komatsu's discussion of the disadvantages of known vertical and radial lift linkages.

1. The Prior Art Vertical Lift Linkage Described in Komatsu

Komatsu depicts in Figs. 11 and 12 a prior art vertical lift linkage. Komatsu describes Fig. 11 as being a "side elevation of loading machine provided with a first example of a **conventional** four-joint link." (Emphasis Added). (Komatsu, p. 25, ll. 18-19; caption above Fig. 11)[4]. Fig. 11 of Komatsu is reproduced below and has been color coded similarly to that used with respect to the '750 patent, namely green for the loader arms, yellow for the front and rear linkages, and blue for the actuators. The conventional vertical lift linkage shown below comprises a green loader arm 53, a rear linkage 52 and a front linkage 54 for movably supporting loader arm 53 relative to the frame 50[5], and a cylinder 56 for lifting and lowering loader arm 54. The linkage shown below is duplicated on the other side of the skid steer vehicle.



In describing this conventional vertical lift linkage, Komatsu made the following additional observations.

[4] All citations for quotations from Komatsu will be to the English translation thereof.

[5] The reference in the quote from Komatsu to a "four-joint link" should not be construed as being to a four bar linkage. Instead, Komatsu is referring to the four pivots 52a, 52b and 54a, 54b that the rear linkage 52 and front linkage 54 have with respect to the frame 50 and loader arm 53, respectively. (Komatsu, ¶ [0002] at p. 8, ll. 4-10).

"Meanwhile, the side of the vehicle body 50 is dangerous because the arm 53 and the like move up and down, and as illustrated in Figure 11, a wire mesh 58 for protection is attached to the side surface of the driver's cab 51, and the operator gets on an off from the front of the vehicle body 50."
(Komatsu, ¶ [0004], p. 9).

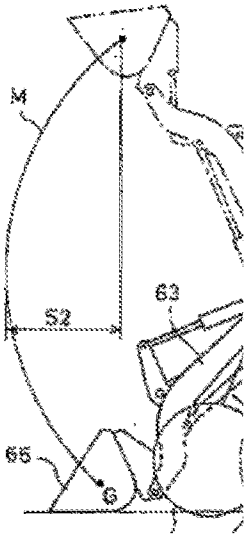
Komatsu found that these characteristics gave rise to the following disadvantages.

"[Problems to be resolved by the invention] However, the conventional configuration described hereinabove has the following problems.

(1) In the first example, since one gets on and off the vehicle body from the front of the vehicle, **it is not possible to get on or off the vehicle body when in a loaded state**. Further, the arm and the like are present in the lateral direction, and a frame and the like are present laterally at the rear, and therefore **visibility in the lateral direction and the rearward lateral direction is poor**."
(Emphasis Added) (Komatsu, ¶ [0006], bottom of p. 10).

Since access to cab 51 is blocked from the sides and the rear of frame 50, the only way for an operator to enter cab 51 is to step up onto bucket 57 and enter cab 51 through the open front side of cab 51. If bucket 57 is heavily loaded, this access is cut off. Thus, an operator who has bucket 57 loaded with dirt cannot stop and dismount without first dumping the load. Komatsu is right to highlight this disadvantage. More significantly, during operation of the skid steer loader, the operator's view directly to the left or right or rearwardly over the operator's left or right shoulders is substantially cut off by the loader arms and the vertical lift linkages therefor. As Komatsu correctly notes, "visibility in the lateral direction and the rearward lateral direction is poor".

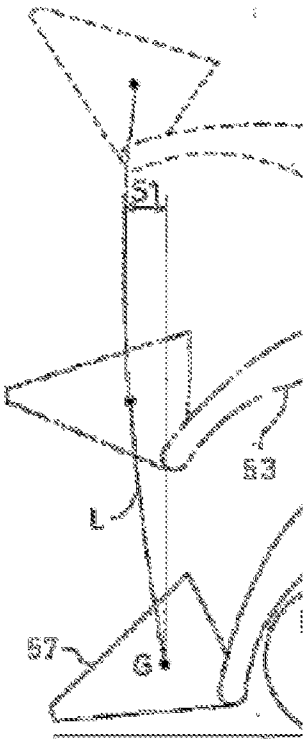
2. The Prior Art Radial Lift Linkage Described in Komatsu



Before turning to Komatsu's solution to overcoming the disadvantages of the known vertical lift linkage described above, Komatsu also describes a conventional prior art radial lift linkage on a skid steer loader. In the portion of Fig. 13 reproduced to the right hereof, Komatsu recognizes a fundamental characteristic of a radial lift linkage. Bucket 65 moves forwardly through a large distance S2 when loader arm 63 moves from a lowered to a substantially horizontal position.

Komatsu then notes that the forward distance S2 provided by the

operation of the prior art radial lift linkage is much larger than the distance S1 provided by the operation of the prior art vertical lift linkage shown in Fig. 11 of Komatsu. In the relevant portion of Fig. 12 reproduced to the right hereof, Komatsu illustrates the smaller forward distance S1 provided by a vertical lift linkage. Komatsu describes this fundamental difference between a radial lift linkage and a vertical lift linkage as follows:



> "The movement trajectory of the center of gravity G of the bucket 65 at this time is as indicated by the curve M, and an amount of movement S2 in the front-back direction is greater than the amount of movement S1 in the first example since the position of the rear end pivot portion 63a of the arm is fixed."
> (Komatsu, ¶ [0005] at p. 10, ll. 10-15).

Komatsu then goes on to restate, as if any restatement is needed, the reason why such a large forward projection of the bucket in a radial lift linkage is disadvantageous.

> "In the second example, since the amount of movement of the position of the center of gravity of the bucket in the front-back direction during raising and lowering of the bucket is large, **there is a large variation in the position of the center of gravity, and therefore stability of the vehicle in the front-back direction when loaded is poor**."
> (Emphasis Added) (Komatsu, ¶ [0006], top of p. 11).

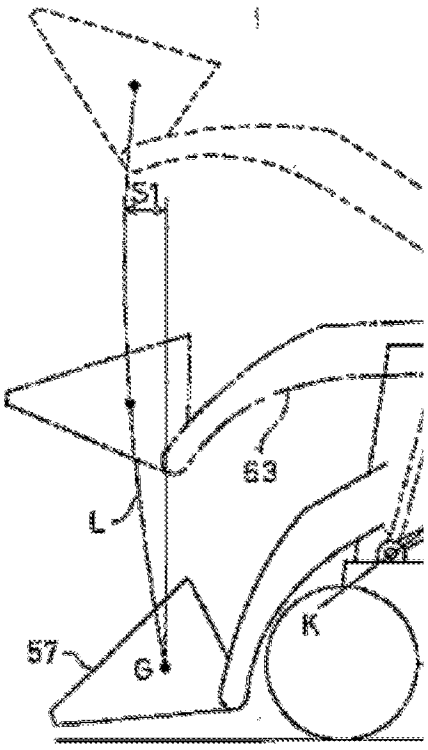
3. Komatsu's Design Objective

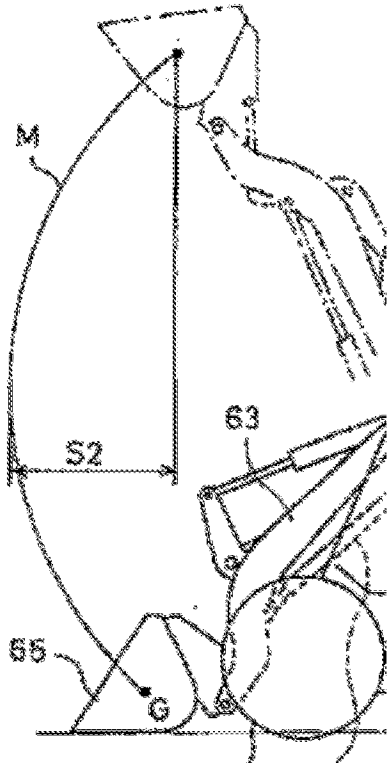
After setting forth its review of the disadvantages it perceived in prior art vertical lift and radial lift linkages in skid steer loaders, Komatsu clearly sets forth its design objectives as follows:

> "The present invention takes account of the abovementioned problems, and **the objective thereof is to provide a** four-joint link mechanism of **a work vehicle with which it is possible to get on and off the driver's seat even in a loaded state, which has good visibility, and which also has good stability."**
> (Emphasis Added) (Komatsu, ¶ [0007]).

Notably, Komatsu rules out using a radial lift linkage by restricting the various disclosed embodiments of the invention to skid steer loaders having only vertical lift linkages. Komatsu thus acknowledges the first motivation, which is so well known in the loader art that the PTO may take Official Notice of it, for replacing a radial lift linkage with a vertical lift linkage. A vertical lift linkage keeps the load closer to the vehicle as it is lifted (the distance S1 versus S2) to improve fore-and-aft vehicle stability, thereby permitting an increase in lift capacity.

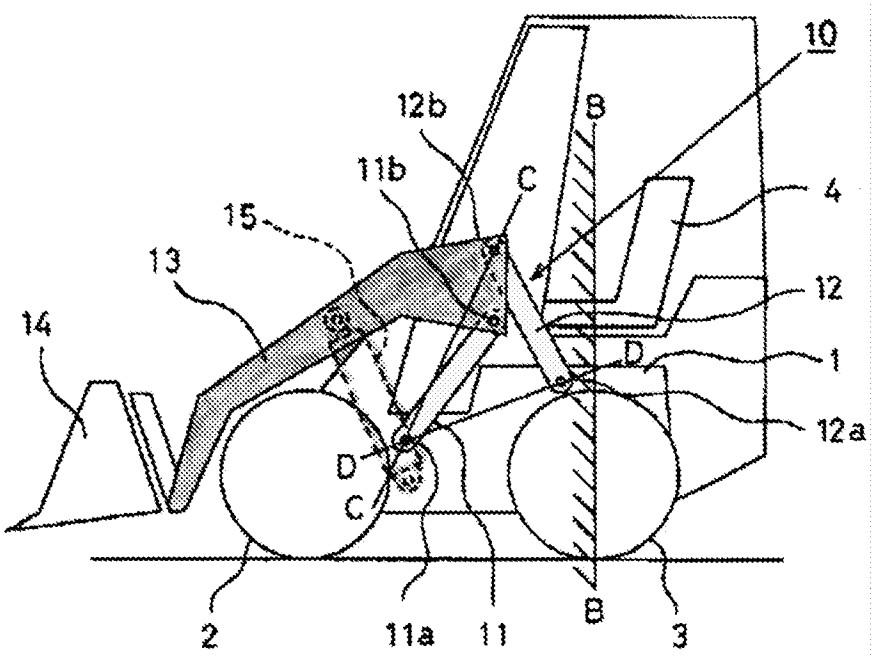
Moreover, while Komatsu does not expressly discuss the second motivation for replacing a radial lift linkage with a vertical lift linkage, Komatsu illustrates the second motivation when one compares the lift patterns illustrated in Figs. 12 and 13 of Komatsu, as reproduced below. That second motivation is the increased forward reach of the lift bucket at full height produced by a prior art vertical lift linkage (Fig. 12 of Komatsu at the left below) as compared to that produced by a prior art radial lift linkage (Fig. 13 of Komatsu at the right below). This increased forward reach makes a vertical lift linkage better able to dump loads into the boxes of dump trucks than a radial lift linkage. No wonder then that all the inventive improvements in Komatsu relate to vertical lift linkages and none relate to radial lift linkages.



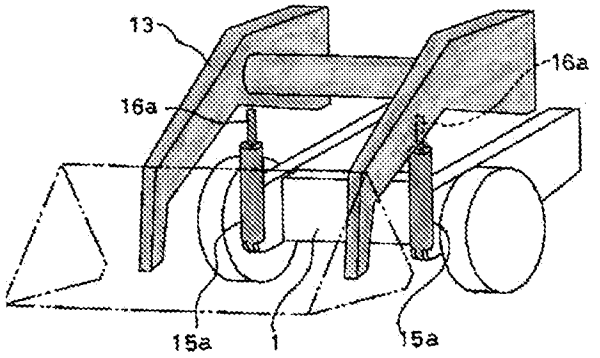


4. Komatsu's Solution

Fig. 1 of Komatsu shows a first embodiment of a vertical lift linkage which solves the problems set forth above. Fig. 1 of Komatsu is reproduced below and has been color coded similarly to that used with respect to the '750 patent, namely green for the loader arms, yellow for the front and rear linkages, and blue for the actuators. Komatsu's vertical lift linkage shown below comprises a green colored loader arm 13, a yellow colored rear linkage 12 and a yellow colored front linkage 11 for movably supporting loader arm 13 relative to the frame 1, and a blue colored cylinder 15 for lifting and lowering loader arm 13.

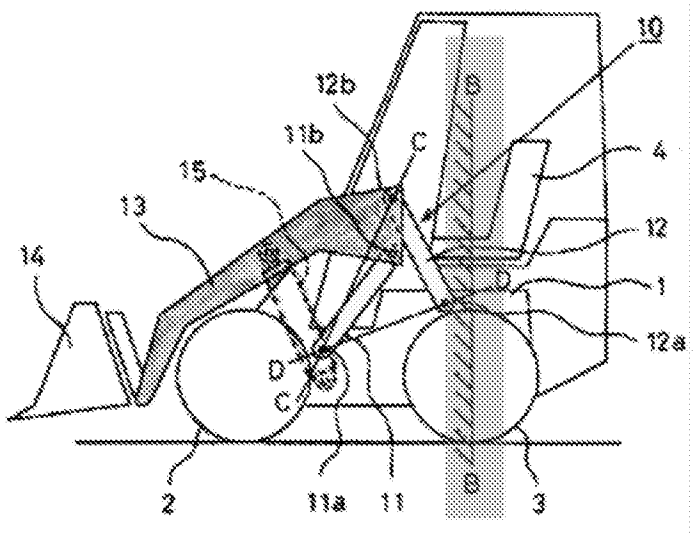


Figs. 2-4 of Komatsu are perspective views that diagrammatically illustrate various arrangements of cylinders 15 for lifting and lowering loader arms 13. In Fig. 3 of Komatsu as reproduced and color coded to the left hereof, Komatsu shows two cylinders 15 pivotally attached to the left and right sides of the vehicle frame with their piston rods extending to the laterally spaced left and right loader arms 13. Thus, it is clear from Fig. 3 of Komatsu, even though Komatsu has not



shown the yellow connecting linkages 11 and 12 in Fig. 3 for the sake of simplicity, that the vertical lift linkage as shown in Fig. 1 of Komatsu is duplicated on both sides of the skid steer vehicle.

As Fig. 3 of Komatsu further shows, loader arms 13 are connected together by a cross member placed forwardly of the rear ends of loader arms 13. In fact, Komatsu's loader arms 13, 13 could **NOT** have a **rear** cross member between them as such loader arms 13, 13 have to nest around the opposite sides of the operator's cab. Similarly, there could be **NO** cross members extending between the left and right front linkages 11, 11 and the left and right rear linkages 12, 12. Such cross members cannot be present because they would have to pass laterally through the operator's cab or through portions of frame 1. This would be a physical impossibility. Accordingly, one of ordinary skill in the art would understand that the cross member disclosed in Figs. 2-4 of Komatsu must inherently be positioned to be forward of the operator's cab and above the frame 1 so as not to interfere with the cab or the frame during motion of the vertical lift linkage through its entire range of motion.



Referring again to Fig. 1 of Komatsu as reproduced to the left hereof, the reference line B-B as highlighted in tan is an important marker in Komatsu's inventive design. Line B-B is a vertical line passing through the center of the rear wheel 3. For one thing, Line B-B passes through the middle of the operator's seat and indicates that the operator's cab and the operator's seat 4 have been moved rearwardly on the frame compared to their more centered locations in the conventional skid steer loader shown in Fig. 11 of Komatsu. Komatsu expressly describes (¶ [0019] at p. 16, ll. 19-21) the substantially rearward location of seat 4 as follows:

> "A vehicle body 1 is provided with a front wheel 2 and a rear wheel 3, and **a driver's seat 4 is provided substantially directly above the rear wheel 3. It should be noted that the driver's seat 4 may be provided** to the front or **to the rear of the rear wheel 3** as necessary." (Emphasis Added)

If the operator's seat 4 is placed even further rearwardly than what is shown above, namely to a position "to the rear of rear wheel 3" as Komatsu expressly suggests be done, one arrives at a skid steer loader very much like the mini skid steer of the '750 patent at issue herein where the operator is at the very rear of the vehicle. Even if the operator's seat 4 remains substantially over rear wheel 3 without being moved further to the rear, the substantial shift of the operator to the rear over the operator's more centered position in a prior art skid steer loader is undeniable. Thus, Komatsu would be understood by one of ordinary skill in the art as being far more applicable to a mini skid steer given the rearward location in which Komatsu now locates the operator.

Equally significantly, Komatsu additionally teaches that the entire vertical lift linkage as depicted above, namely the loader arm 13, front and rear linkages 11 and 12, and cylinder 15 as duplicated on both sides of the vehicle, should be located forwardly of line B-B. By moving the operator rearwardly and the vertical lift linkage forwardly to be ahead of the operator, Komatsu arrives at a design in which the vertical lift linkage is ahead of the operator and no longer interferes with the operator. This gives the operator the ability to mount or dismount the skid steer loader through the side of the cab. Komatsu is clear about this placement in describing it as follows:

> "Further, **since the coupling points between the forward and rear links and the vehicle body and the arm are positioned to the front of a vertical line that passes through the center of the rear wheel, the operator can get on and off from the side surface of the vehicle body, behind the rear link**. It is therefore possible for the operator to get on and off the vehicle even in a loaded state."
> (Emphasis Added) (Komatsu, ¶ [0009] at p. 12, ll. 13-18).

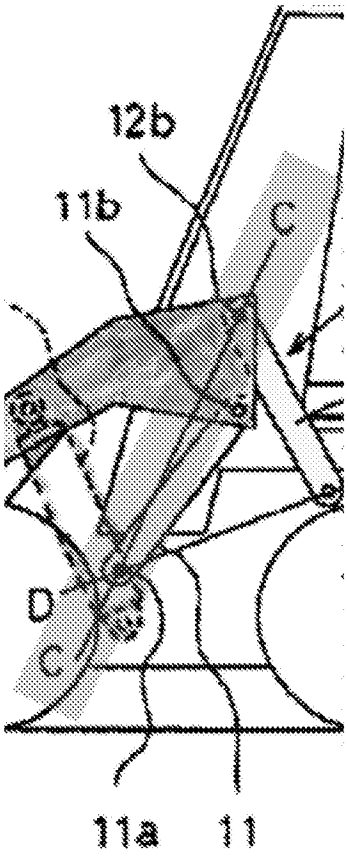
> "The lower end pivot portion 11a and the upper end pivot portion 11b of **the forward link 11, and the** lower end pivot portion 12a and the upper end pivot portion 12b of the **rear link 12 are all positioned to the front (the hatched side) of a vertical line B-B passing through the center of the rear wheel 3**."
> (Emphasis Added) (Komatsu, ¶ [0019] at p. 17, ll. 10-15).

These are not incidental disclosures to Komatsu but go to an important feature of his invention. To reiterate, this feature comprises moving the operator's seat rearwardly on the frame, including specifically as far as a position "to the rear of the rear wheel", and then

locating the vertical lift linkage more forwardly on the frame to be forward of the rear wheel and the now rearwardly located operator. In fact, this feature was so important to Komatsu that it forms the heart of independent claim 1 of Komatsu as reproduced below.

> "[Claim 1] A four-joint link mechanism of a work vehicle provided with a vehicle body (1), an arm (13) having at a distal end thereof a work member (14), a forward link (11) coupling a front portion of the vehicle body (1) and a rear portion of the arm (13), and a rear link (12) coupling a rear portion of the vehicle body (1) and a site in the vicinity of a rear portion of the arm (13), **wherein, when the four-joint link (10) is in a stowed attitude with the work member (14) held in the vicinity of the ground, a lower end pivot portion (11a) of the forward link (11) and a lower end pivot portion (12a) of the rear link (12) which are coupled to the vehicle body (1), and an upper end pivot portion (l1b) of the forward link (11) and an upper end pivot portion (12b) of the rear link (12) which are coupled to the arm (13) are positioned to the front of a vertical line which passes through the center of the rear wheel (3) and is perpendicular to the ground surface, when the vehicle body (1) is seen from the side.**"
> (Emphasis Added) (Komatsu, p. 5, ll. 2-18).

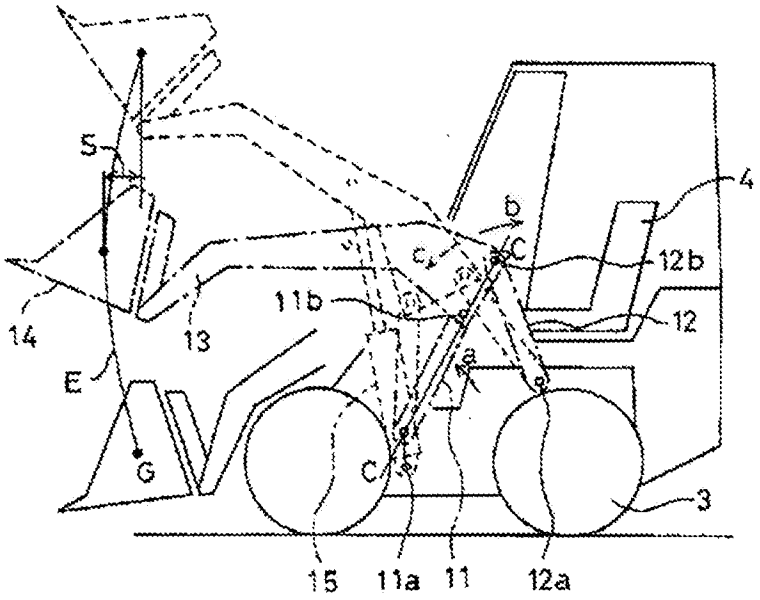
There is another marker line, namely line C-C, that Komatsu points out as part of Komatsu's express description of how the front and rear linkages 11, 12 should be arranged in order to provide a vertical lift of the bucket. Line C-C is highlighted in tan to the right hereof similarly to the highlighting used above for Line B-B.



Komatsu describes the geometry of the linkages relative to line C-C as follows:

> "Further, the upper end pivot portion 11b of the forward link 11 is positioned on the rear link 12 side of a straight line C-C joining the lower end pivot portion 11a of the forward link 11 and the upper end pivot portion 12b of the rear link 12."
> (Komatsu, ¶ [0019] at p. 17, ll. 15-19).

Put somewhat differently, it is easy to see that the front linkage 11 is cocked or tilted so that the point at which the front



linkage 11 connects to the loader arm, namely at pivot 11b, is slightly behind the line C-C that joins the point at which the rear linkage 12 connects to the loader arm, namely at pivot 12b, and the frame pivot 11a of front linkage 11.

Komatsu further expressly explains that this geometry relationship is important for providing a vertical lift that enhances vehicle stability. Komatsu does so in conjunction with Fig. 5 which is labeled "Explanatory view of operation of first exemplary embodiment". Toro is reproducing Fig. 5 of Komatsu to the left hereof and has highlighted the reverse and forward arrows b and c in Fig. 5 in yellow. Arrows b and c factor significantly in Komatsu's description.

Komatsu begins its description of what happens as follows:

> "The operation will now be described. As illustrated in Figure 5, **extending the lifting cylinder 15 causes the arm 13 and the bucket 14** (illustrated with a solid line) held in the vicinity of the ground in a stowed attitude, **to rise and be elevated**, as illustrated by the alternate long and short dashed line. At this time, the forward link 11 rotates about the lower end pivot portion 11a in the direction of the arrow a, and the upper end pivot portion 11b approaches the straight line C-C joining the lower end pivot portion 11a and the upper end pivot portion 12b of the rear link 12. **The rear link 12 therefore rotates about the lower end pivot portion 12a in the direction of the arrow b, and is moved backward from the position thereof when the arm 13 and the bucket 14 are in the stowed attitude**."
> (Emphasis Added) (Komatsu, ¶ [0023] at p. 18, l. 15 - p. 19, l. 2)

In other words, as the cylinder begins the initial portion of the lift, the motion of the front linkage 12 actually rotates the rear linkage 12 rearwardly in the direction of the reverse arrow b to pull back on the loader arm 13 and the bucket 14 carried thereon. This initial retrograde motion of the loader arm 13 causes the bucket 14 to remain closer to the front of the loader, essentially to rise in a path that is closer to a vertical line, than the greater forward

projection the bucket would experience from a radial lift linkage. This pull back on the bucket occurs in the first half of the lift shown above, namely from the solid line ground level position to the intermediate height position shown in the alternate long and short dashed lines. When the bucket reaches this position, the upper pivot 11b of the front linkage 11 approaches and then crosses over the line C-C. Komatsu finishes the description of happens after that as follows:

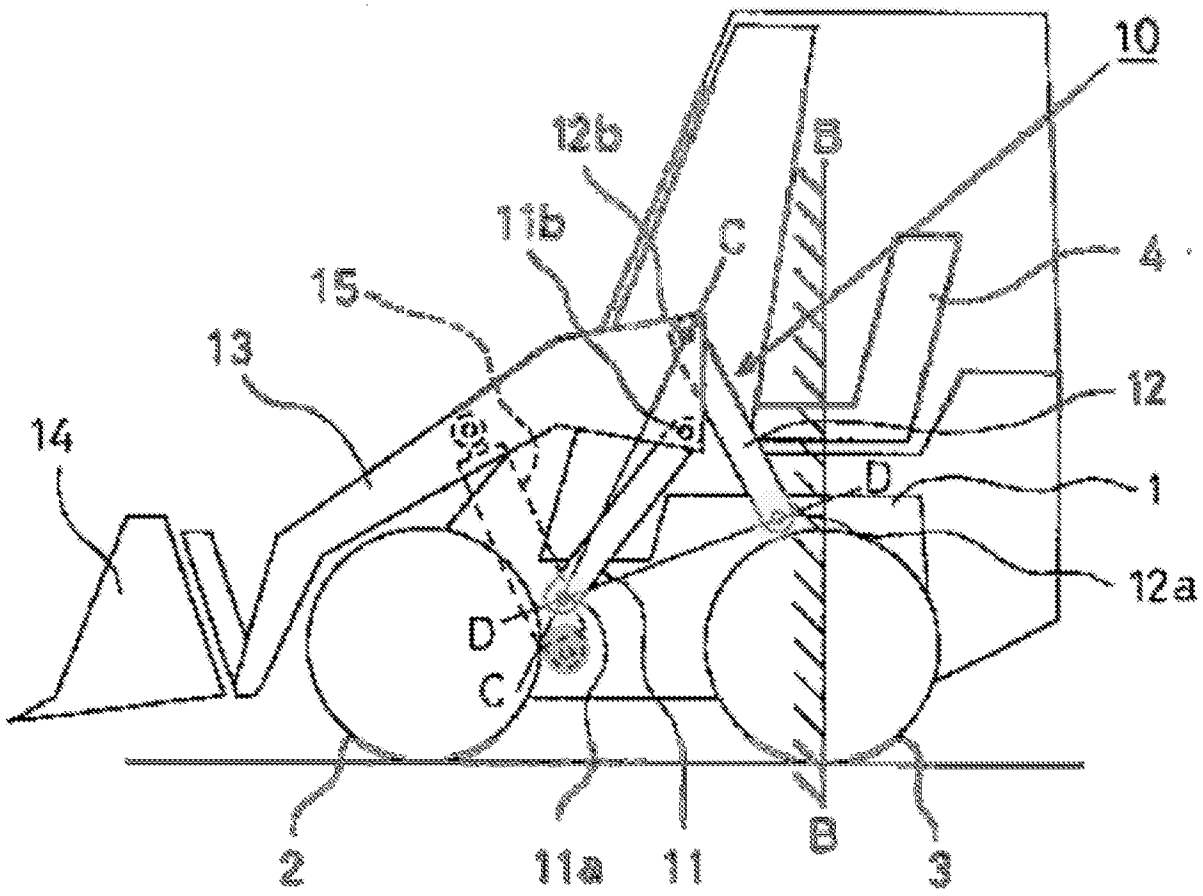
> "Next, **if the lifting cylinder 15 is extended further**, the arm 13 and the bucket 14 rise and are elevated further, as illustrated by the dashed line. At this time, **the forward link 11 rotates further in the direction of the arrow a, and the upper end pivot portion 11b crosses the straight line C-C and then moves away from the straight line C-C. At the same time, the rear link 12 rotates in the direction of the dashed line arrow c, moving the arm 13 and the bucket 14 forwards.** Thus the movement trajectory of the center of gravity G of the bucket 14 when being elevated is as indicated by the curve E, and **an amount of movement S in the front-back direction is less than the amount of movement S2 in the second example of a conventional loading machine. The stability of the vehicle in the front-back direction therefore improves**."
> (Emphasis Added) (Komatsu, ¶ [0023] at p. 19, ll. 2-16)

In other words, the motion of the front linkage 12 after its connection to the loader arm 13 passes forwardly of line C-C then rotates the rear linkage 12 forwardly in the direction of the forward arrow c to now push forwardly on the loader arm 13 and the bucket 14 carried thereon to reverse the prior rearward motion. The distance the loader arm 13 and the bucket 14 had moved rearwardly in its retrograde motion is first recovered during such forward motion and then the loader arm and bucket move even further forwardly over the top half of the lift path. This motion counteracts the rearward motion in the top half of the lift path that a radial lift linkage would provide. The result in the top half of the lift path is again to keep the bucket traveling upwardly in a path that is far more vertical than what a radial lift linkage provides. This is illustrated by Komatsu through the small amount of distance S shown in the illustration on the preceding page hereof between the intermediate height lift position and the uppermost lift position as illustrated in dashed lines.

Again, the detailed description of the geometry and operation of the front and rear linkages 11 and 12 resulting from their orientation relative to line C-C when the bucket is lowered was not unimportant to Komatsu or an incidental part of the disclosure. It was important enough for Komatsu to claim it in dependent claim 2 as follows:

"[Claim 2] The four-joint link mechanism of a work vehicle as claimed in claim 1, wherein, when the four-joint link (10) is in a stowed attitude, the upper end pivot portion (11b) of the forward link (11) is positioned on the rear link (12) side of a straight line joining the lower end pivot portion (11a) of the forward link (11) and the upper end pivot portion (12b) of the rear link (12)."
(Komatsu, p. 5, ll. 19-25).

After having solved the problem of providing the operator with an easy way to mount the vehicle without having to enter and exit over the front mounted bucket, part of Komatsu's solution to how to ensure adequate vehicle stability was to employ a vertical lift linkage of the type so carefully described above. However, Komatsu did not stop there. Komatsu also took care to show and describe a low placement of the vertical lift linkage on the frame of the vehicle as an additional way of increasing stability. Komatsu's disclosure on this point will be discussed in conjunction with a portion of Fig. 1 of Komatsu as again reproduced below.



The three pivots that connect the front linkage 11 (pivot 11a), the rear linkage 12 (pivot 12a), and the cylinder 15 (unnumbered pivot) to the frame 1 have been highlighted within

colored yellow circles for the linkage pivots and a blue circle for the cylinder pivot. Note how low the pivots are on the frame with all the pivots being substantially below the operator's seat. Komatsu expressly discloses the locations for the yellow colored pivots 11a and 12a as follows:

> "**A lower end pivot portion 11a of a forward link 11 is** pivotally attached to a side surface of the vehicle body 1 **behind the front wheel 2**, and **a lower end pivot portion 12a of a rear link 12 is** pivotally attached to the side surface of the vehicle body 1 **above the rear wheel 3**."
>
> (Emphasis Added) (Komatsu, ¶ [0019] at p. 16, l. 23 – p. 17, l. 2).

While Komatsu does not expressly describe the pivot location for cylinder 15, it is shown in Fig. 1 above and is even lower than the linkage pivots 11a and 12a. The pivot location for cylinder 15 is disclosed as being substantially immediately beneath the pivot 11a for front linkage 11.

This very low placement of the frame pivots for the components of the vertical lift linkage allows the loader arms 13, 13 to also lie somewhat lower on frame 1. This low placement improves visibility and enables Komatsu to also increase vehicle stability. Komatsu describes this as follows:

> "**Further, the position at which the arm is attached to the vehicle body can be made lower, improving visibility** and making it possible to simplify the frame construction of the vehicle body, **and the center of gravity is lowered, yielding a work vehicle having good stability**."
>
> (Emphasis Added) (Komatsu, ¶ [0009] at p. 12, ll. 21-25)

Again, as was the case earlier with the placement of the vertical lift linkage forward of the rearwardly repositioned operator and the express disclosure of the geometry and operation of the vertical lift linkage, the low placement of the pivots relative to the frame was considered by Komatsu to be important enough to recite in another claim. Claim 4 is directed to the low pivot placement as follows:

> "[Claim 4] A four-joint link mechanism of a work vehicle provided with a vehicle body (1), an arm (13) having at a distal end thereof a work member (14), a forward link (11) coupling a front portion of the vehicle body (1) and a rear portion of the arm (13), and a rear link (12) coupling a rear portion of the vehicle body (1) and a site in the vicinity of a rear portion of the arm (13), **wherein a lower end pivot portion (11a) of the forward link (11) and a lower**

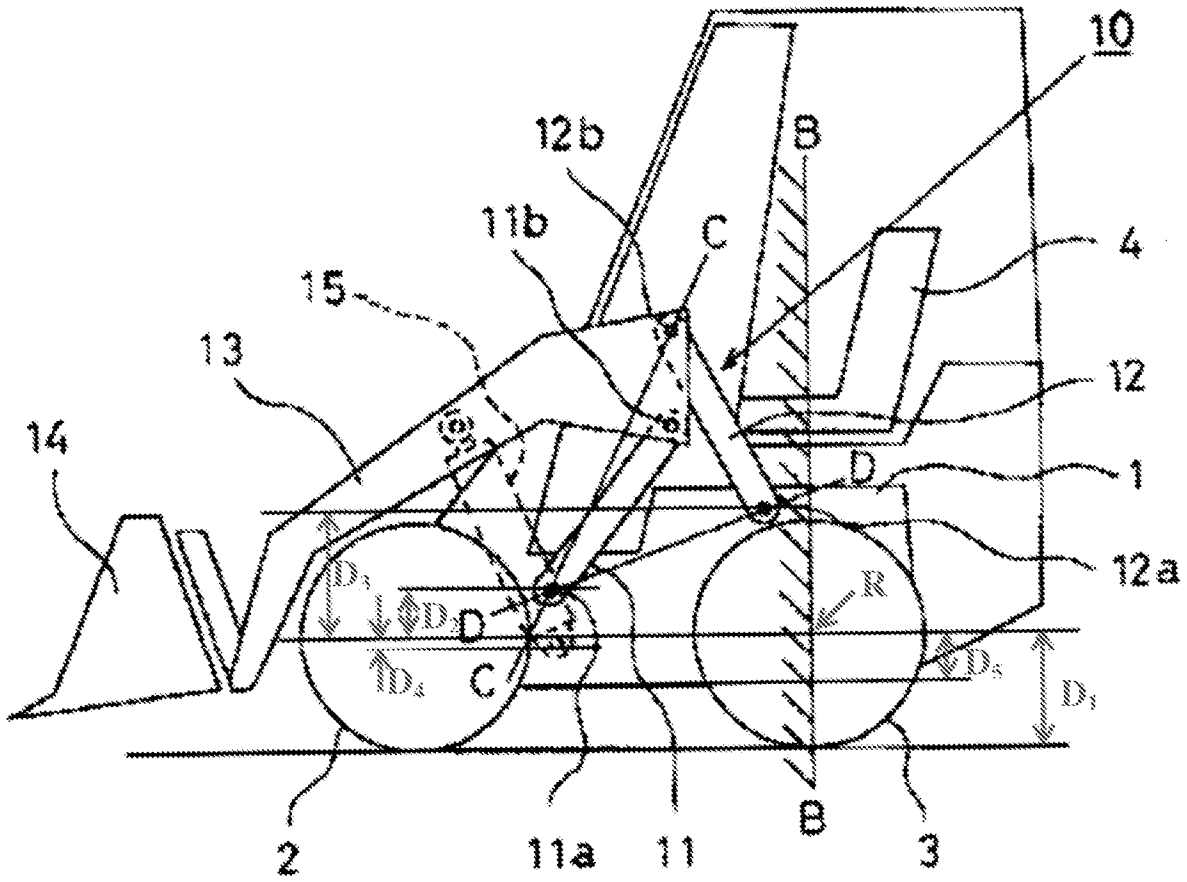
end pivot portion (12a) of the rear link (12) are positioned lower than a driver's seat (4)."

(Emphasis Added) (Komatsu, p. 6, ll. 9-18).

5. Komatsu Teaches the Low Pivot Placements Claimed in the '750 patent

The '750 patent at issue herein uses the rotational axis R of the traction drive mechanism as the reference point for certain distances. A first reference distance D_1 (shown in Fig. 2 of the '750 patent) and a second reference distance D_5 (shown in Fig. 5 of the '750 patent) are the distances between the axis R and the ground and the bottom of the mainframe of the skid steer loader. The three remaining distances D_2, D_3, and D_4 (shown in Fig. 5 of the '750 patent) are the distances between the axis R and the frame pivots for the front linkage, the rear linkage, and the cylinder, respectively of the vertical lift linkage of the '750 patent.

These distances have been indicated in red in Fig. 1 of Komatsu below. The rotational axis R is shown as comprising the axis at the center of rear wheels 3 as at least one pair of wheels, e.g. the rear wheels 3, must be driven by a traction drive mechanism in order for the skid steer loader to be self-propelled.



When this page of this Request containing the annotated Fig. 1 of Komatsu is printed at 100%, the various relevant dimensions can be measured and compared to one another as follows:

Dimension	**Annotated Fig. 3 Measurement**	**% of D_1**	**% of D_5**
D_1	0.625 inches		
D_5	0.250 inches		
D_2	0.250 inches	0.40**D_1**	1.00**D_5**
D_3	0.6875 inches	1.10**D_1**	2.75**D_5**
D_4	0.0625 inches	0.10**D_1**	0.25**D_5**

The specification of the '750 patent sets forth the following ranges for D_2, D_3, and D_4 relative to D_1:

> "Each of D2, D3 and D4 is less than about 1.5 times D1 (1.5xD1). In some embodiments, each of D2, D3 and D4 is less than D1 or even less than about 0.75 times D1 (0.75xD1)." ('750 patent, Col. 5, ll. 17-19)

Taking the lowest limit of $0.75D_1$, it is clear that D_2 ($0.40D_1$) and D_4 ($0.10D_1$) are both well below even the lowest end of $0.75D_1$ of the disclosed range set forth in the '750 patent.

Similarly, the specification of the '750 patent sets forth the following ranges for D_2, D_3, and D_4 relative to D_5:

> "Each of D2, D3 and D4 is less than about twice D5 (2xD5). In some embodiments, each of D2, D3 and D4 is less than about 1.75 times D5 (1.75xD5) or less than about 1.5 times D5 (1.5xD5). P2 and P3 may be relatively lower than P1 and their distances D3, D4 from the rotational axis R may be even less than about 1.25 times D5 (1.25xD5)." ('750 patent, Col. 5, ll. 17-19)

Taking the lowest limit of $1.25D_5$, it clear that D_2 ($1.00D_5$) and D_4 ($0.25D_5$) are both well below even the lowest end of $1.25D_5$ of the disclosed range set forth in the '750 patent.

The same statement is not true of D_3. While D_3 is lower than 1.5 D_1, it is not lower than last two values of D_1 in the disclosed range. Moreover, D_3 is not lower than any of the values of D_5 in the disclosed range.

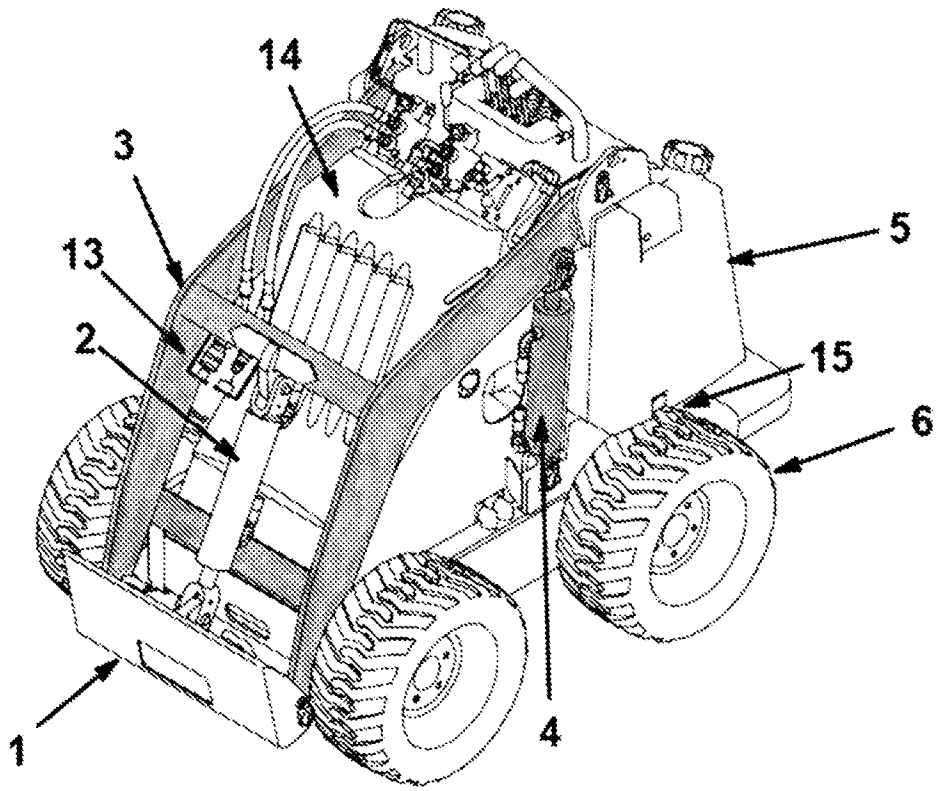
Nonetheless, as Toro will show in its application of the art to the claims of the '750 patent for which reexamination is requested herein, the D_2, D_3 and D_4 dimensions as disclosed in Komatsu are sufficient to meet the dimensional limitations recited in all of these claims.

In the annotated Fig. 1 of Komatsu above that shows the distances $D_1 - D_5$, the frame pivot point for cylinder 15 is so close to the rotational axis R that Toro has drawn the line indicating the axis of D_4 lower than it actually is, and thus farther away from rotational axis R, simply to be able to show the distance D_4. Thus, the D_4 percentage values of D_1 and D_5 in the table above are higher than they would have been, and thus to Toro's detriment, had Toro been able to locate the D_4 reference line in a centered position on the axis of the frame pivot point for cylinder 15. In actuality, this has no effect on the application of Komatsu to the claims of the '750 patent as the D_4 percentage values of D_1 and D_5 in the table above are so low that such values easily meet all of the "less than" limitations in the '750 patent which recite the D_4 percentage values.

C. **Review of the Dingo 322 Printed Publications**

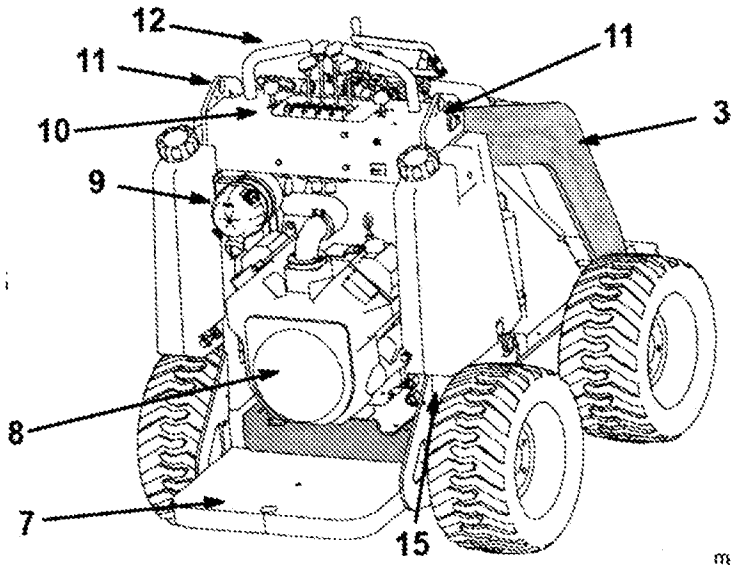
Toro began selling a mini skid steer loader known as the Dingo 322 in the late 1990's. Toro continues to sell essentially the same mini skid steer loader today which is now referred to as the Dingo 323.

Toro is submitting herewith a Dingo® 322 Operator's Manual dated 2001, which is being referred to herein as "Dingo". The mini skid steer loader disclosed in Dingo is illustrated in a front perspective view and in a side-by-side rear perspective view on page 14 of Dingo. These two views are collectively labeled as Fig. 9 in Dingo. The front perspective view in Dingo has been separated from the rear perspective view so that they can be enlarged and viewed individually. Toro will begin with the front perspective view of Fig. 9 of Dingo as reproduced below.



The front perspective view of Dingo has been color coded similarly to that used previously herein, namely green for the loader arm 3, yellow for the loader arm linkages, and blue for the cylinder 4. However there are no yellow linkages shown since Dingo is a mini skid

steer having a radial lift linkage. In Dingo's radial lift linkage, the loader arm 3 is pivotally attached to the frame at a fixed pivot. The use of a fixed pivot obviates the need for any movable front and rear linkages to support the loader arm 3 as would be necessary in a vertical lift linkage. As shown above, Dingo's radial lift linkage is duplicated on both sides of the mini skid steer as there clearly are both left and right loader arms 3.



The rear perspective view in Fig. 9 of Dingo, as shown to the left hereof, discloses that an engine 8 is mounted atop an engine bracket which has been colored orange for easy identification. Engine 8 is forward of an operator platform 7. A standing operator stands on platform 7 to use the controls on control panel 10 to operate the loader.

The rear perspective view of the right side of the Dingo loader as shown immediately above does not clearly illustrate the right hydraulic cylinder 4 attached to the right loader arm 3 as the right hydraulic cylinder is hidden in this view by the right rear gas tank. However, Fig. 18 of Dingo, as reproduced to the right hereof, has a front view of the right side of the Dingo loader. The right hydraulic cylinder 4, though it is unnumbered in this view, is clearly visible and has been colored blue for ease of identification in Fig. 18 similarly to the color coding applied to the left hydraulic cylinder 4 in Fig 9 of Dingo.

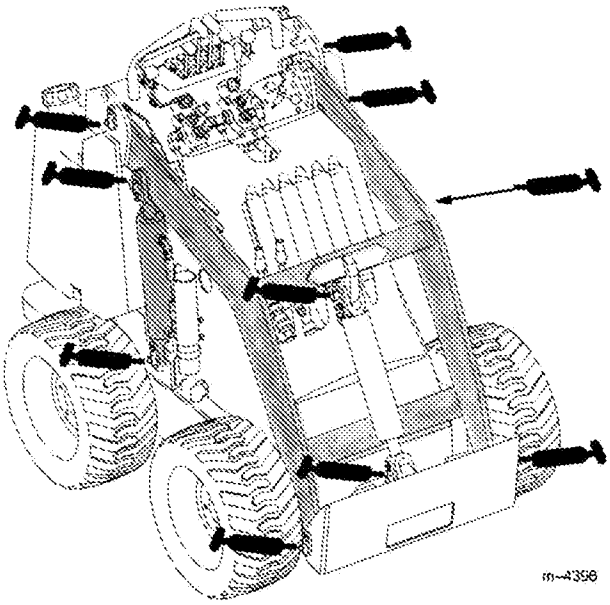
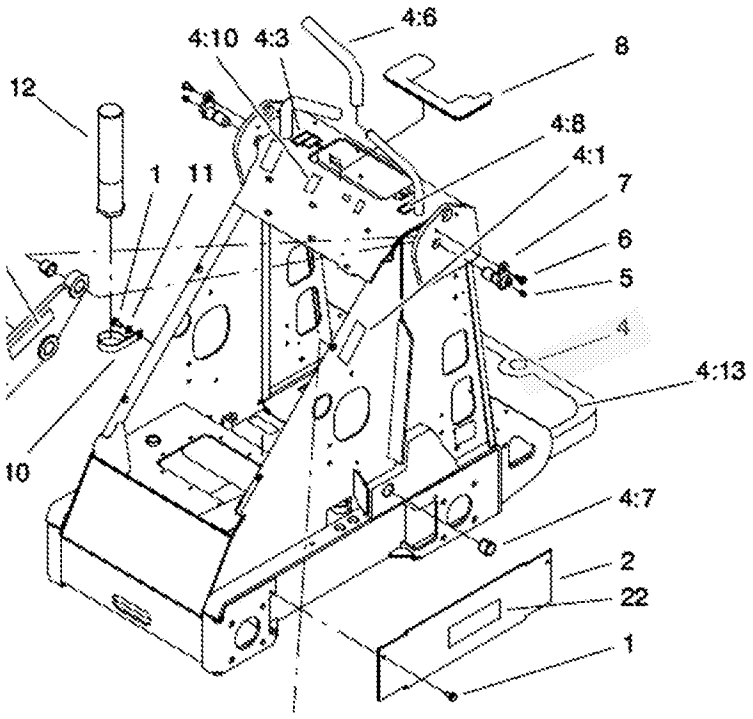
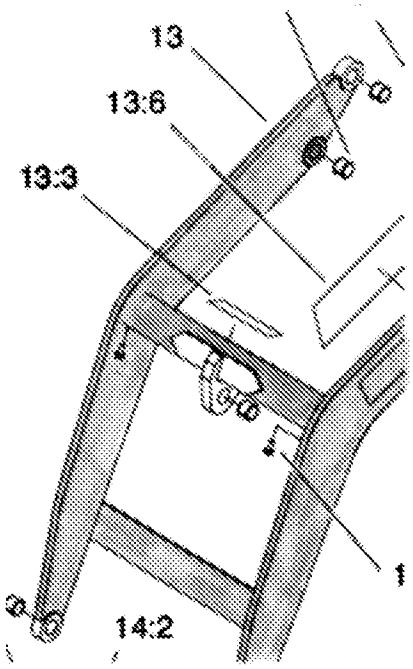


Figure 18

Toro is further submitting herewith a Dingo® 322 Parts Catalog dated 1999, which is being referred to herein as "Dingo Parts Catalog". A portion of an illustration on page 1 of Dingo Parts Catalog is reproduced to the right hereof. This illustration shows the mainframe of Dingo.



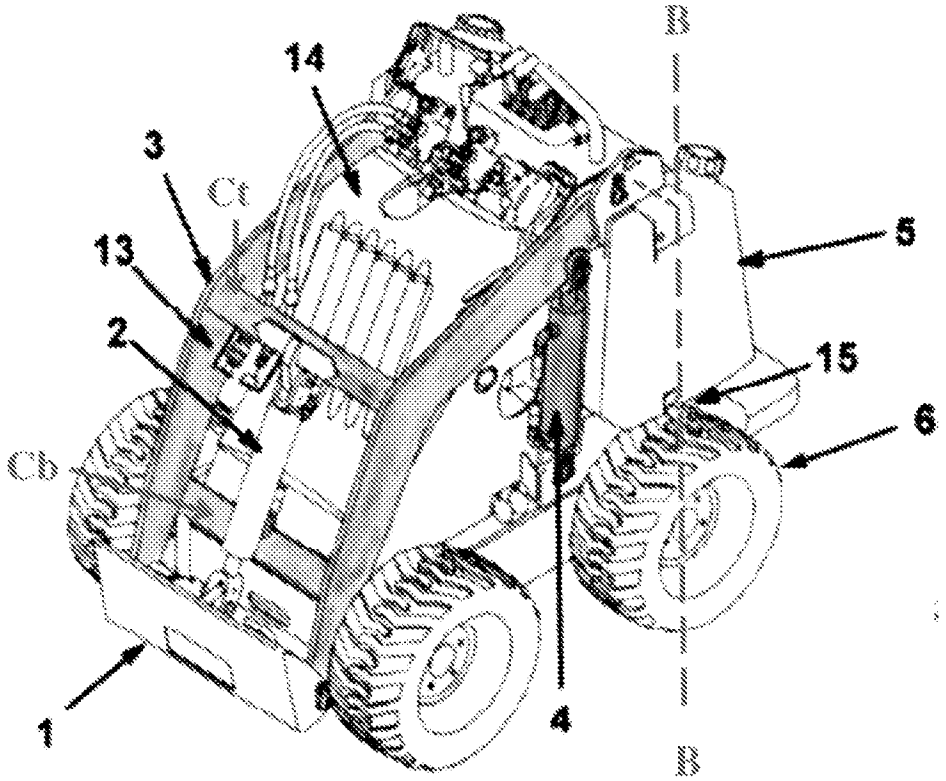
As can be clearly seen in the illustration to the right, reference numeral 4 (highlighted in yellow above) has a lead line that extends to the rear end of the operator platform. The corresponding parts list on page 1 of Dingo Parts Catalog assigns a **single** part number to item 4 (Part No. 99-3145) and further describes the entire item 4, including the operator platform at the back, as the "Frame & Decal ASM". If one were to order Part No. 99-3145, what would be shipped is the entire frame assembly shown above including the operator platform as an integral part thereof.



The illustration to the left hereof is also from page 1 of Dingo Parts Catalog and shows a single weldment 13 that is described in the parts list as the "Loader & Decal ASM". In addition to this assembly of components comprising a single weldment, the individual left and right loader arms within the assembly also comprise single weldments. For example, looking at the left loader arm, one can see three pivot bushings on the arm. The pivot bushings comprise an upper bushing colored yellow for receiving a fixed pivot pin on the frame in a manner typical of a radial lift linkage, a slightly lower bushing colored blue for receiving a pivot pin that attaches the upper end of the hydraulic cylinder to the loader arm, and a lowermost bushing that is not colored but

is located at the forward end of the loader arm for receiving a pivot pin that attaches a mounting plate (not shown) for coupling a tool to the loader arms. Each of these pivot bushings are themselves welded to the left loader arm such that the left loader arm in the assembly also comprises a single weldment. The right loader arm has the same three pivot bushings (not shown above) welded thereto as well.

Returning to Dingo's front perspective view as used earlier, Toro has added a dashed line B-B thereto extending vertically through the center of rear wheel 6. When line B-B is projected inwardly according to the angle of the perspective, one sees that Dingo's radial lift linkage is positioned forwardly of line B-B. Thus, Dingo is structurally and conceptually a close counterpart to Komatsu and is an ideal candidate for using Komatsu's vertical lift linkage, also forward of counterpart line B-B in Komatsu, in replacement of Dingo's radial lift linkage.



Loader arms 3 have a pair of cross members extending between them, namely a top cross member labeled by Toro as Ct in the preceding illustration and a bottom cross member labeled by Toro as Cb in the preceding illustration. Neither cross member is at the rear end of the loader arms 3. The rear ends of the loader arms 3 must be open and unconnected to each other to permit the loader arms 3 to nest around the frame of the skid steer loader. This is yet

another connection between Dingo and Komatsu, the lack of a rear cross member between the loader arms with only forwardly located cross members allowed. Dingo simply employs this structure in a radial lift linkage while Komatsu does the same in a vertical lift linkage.

An attachment mounting plate 1 is pivotally connected to the front ends of loader arms 3. A tilt cylinder 2 is pivotally coupled at its upper end to the top cross member Ct and the mounting plate. Tilt cylinder 2 can be actuated during operation of the loader to change the angle of the attachment carried on the mounting plate relative to the loader arms, such as when dumping a load carried in a bucket.

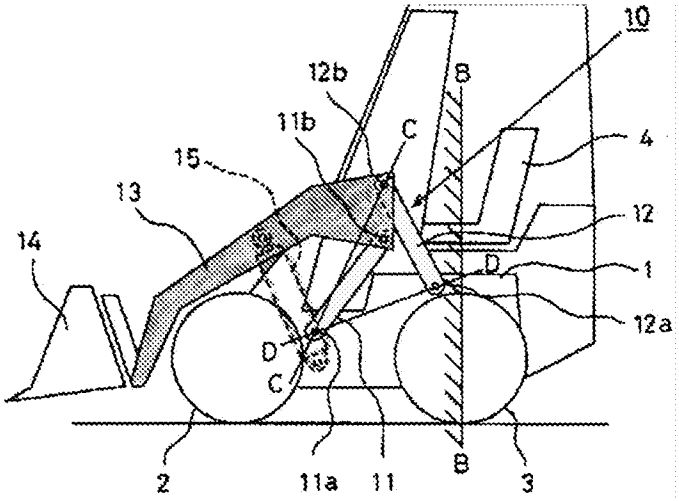
Moreover, while it should be apparent, Dingo discloses a mini skid steer loader that weighs less than 1500 kg. The specifications of the mini skid steer of Dingo found on page 10 of Dingo are reproduced to the left hereof. Note that the weight is listed as 711 kg. without the weight of the operator or the weight of any attachment carried on the loader arms. The specifications further frequently refer to a standard bucket (**"std. bucket"** in the list). This confirms that a bucket is a common attachment used with the Dingo loader.

Specifications

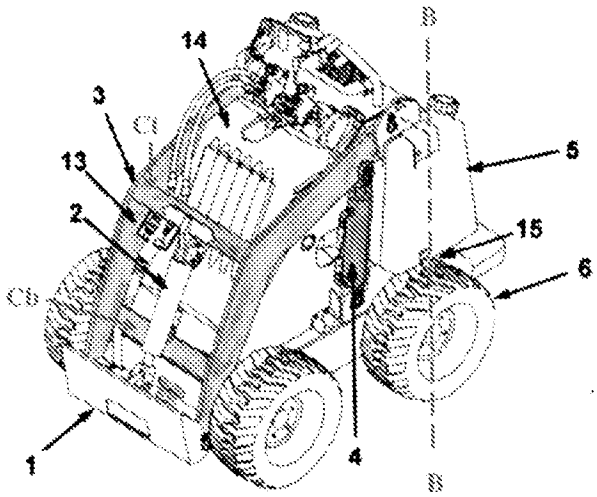
Overall width	40.5 in. (103 cm)
Overall length	60.0 in. (152 cm)
Overall height	49.0 in. (125 cm)
Weight	1567 lb. (711 kg)
Rated operating capacity (with 200 lb. operator and std. bucket)	515 lb. (234 kg)
Tipping capacity (with 200 lb. operator and st. bucket)	1030 lb. (467 kg)
Wheelbase	28 in. (71 cm)
Dump height (with std. bucket)	47 in. (120 cm)
Reach—fully raised (with std. bucket)	26.0 in. (66 cm)
Height to hinge pin (std bucket in highest position)	66.0 in. (168 cm)

D. The Dingo in view of Komatsu Combination

There is undeniable correspondence between the skid steer loader of Komatsu and the mini skid steer loader of Dingo. This correspondence is best shown in the side by side comparison of Komatsu (on the left below) and Dingo (on the right below).



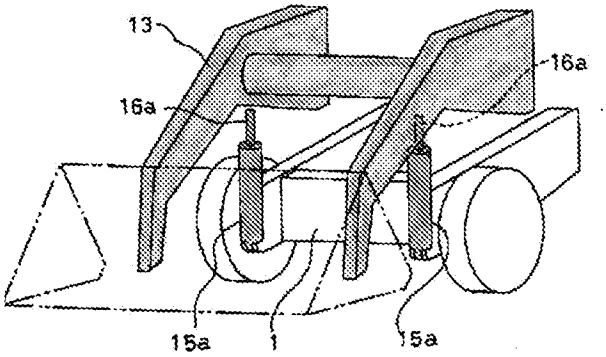
Komatsu



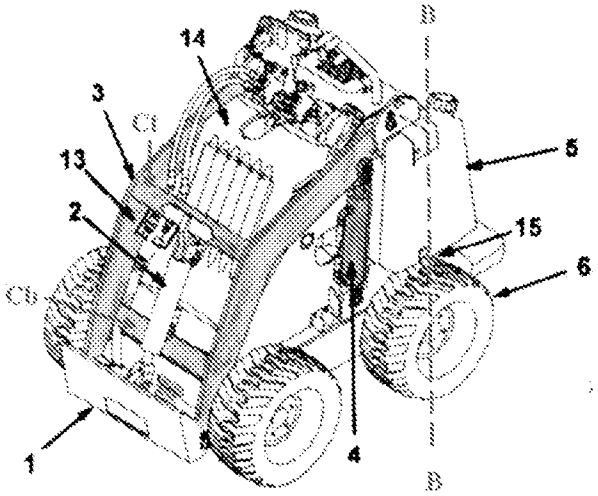
Dingo

Both Komatsu and Dingo locate their loader arm linkages, whether the vertical lift linkage in Komatsu or the radial lift linkage in Dingo, forward of a vertical line B-B extending upwardly through the center of the rear wheel. Komatsu additionally shifts the operator seat 4 further rearwardly than its usual more centered position in a skid steer loader. Note that the junction between the backrest and the seat portion of the operator's seat is located rearwardly of the line B-B. The Examiner is reminded that Komatsu expressly teaches that the seat 4 could be even further rearwardly, namely to the "rear of the rear wheel". (Komatsu, ¶ [0019] at p. 16, ll. 19-21). Thus, the seated operator in Komatsu is positioned relative to Komatsu's vertical lift linkage at substantially the **same** position as the standing operator in Dingo is positioned relative to Dingo's radial lift linkage.

The correspondence between Komatsu and Dingo does not end there. Both Komatsu and Dingo additionally disclose a laterally spaced pair of loader arms that have no rear cross member that is behind the operator as in the Mustang reference in the first reexamination. As shown below in the further comparison between Komatsu (on the left) and Dingo (on the right), the cross members that are used between the loader arms are positioned forward of the rear ends of the loader arms and are located so as not to interfere with the cab and frame in Komatsu and the frame in Dingo. This leaves the space between the rear ends of the loader arms free of any obstructions to allow the rear ends of the loader arms to nest around the cab and frame in Komatsu and the frame in Dingo.



Komatsu



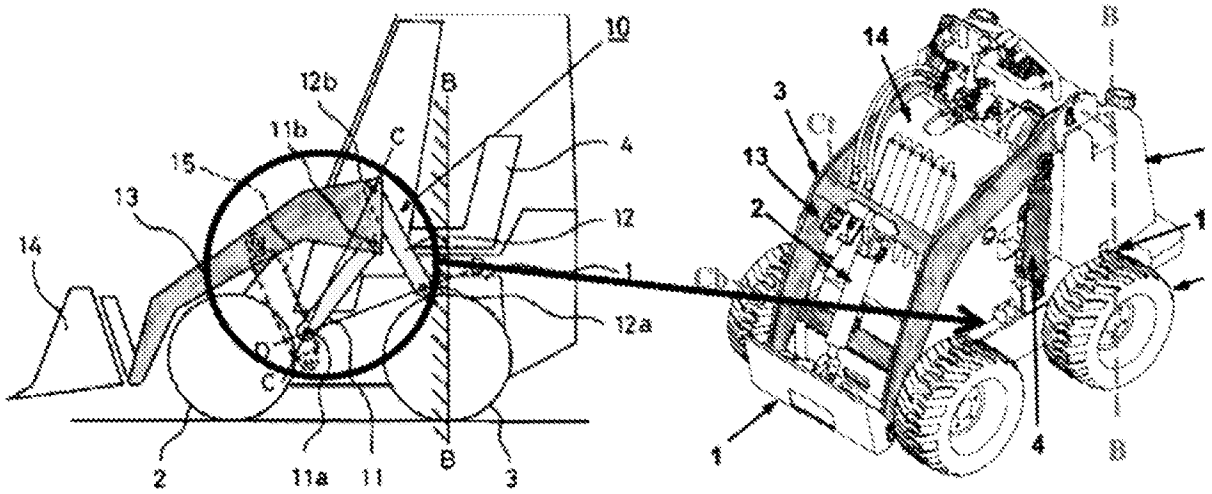
Dingo

Finally, the advantages of a vertical lift linkage over a radial lift linkage in lifting and then dumping heavy loads are so well known that the PTO would be entitled to take Official Notice thereof. To reiterate, these advantages comprise 1.) keeping the load carrying bucket closer to the frame to improve vehicle stability and thereby increase lift capacity, and 2.) providing greater forward reach at maximum lift height for improved dumping ability into truck boxes and the like.

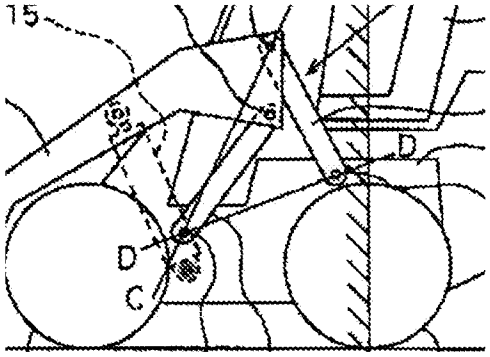
Moreover, both of these advantages are expressly disclosed in Komatsu. The Examiner is reminded of Komatsu's comparison of the large distance S2 that a bucket moves forward in a radial lift linkage to the small distance S1 that occurs in a vertical lift linkage as being the reason for an increase in vehicle stability. The Examiner is further reminded of the depiction of

the additional forward reach at maximum lift height as shown in Fig. 12 of Komatsu for a vertical lift linkage as compared to the lesser reach at maximum lift height produced by a radial lift linkage as shown in Fig. 13 of Komatsu. These advantages unquestionably establish the motivation one of ordinary skill in the art would have had at the time of the purported invention of the '750 patent for replacing Dingo's radial lift linkage with Komatsu's vertical lift linkage.

In view of this motivation and as depicted in the comparison below, it would have been obvious to one of ordinary skill in the art at the time of the invention to have freed the loader arm 3 of Dingo from its fixed pivot connection to the mainframe, to use front and rear connecting linkages 11 and 12 as taught by Komatsu to support the now freed Dingo loader arm 3 on the mainframe, and to adjust the position of Dingo's existing cylinder 4 relative to the newly added linkages 11 and 12. When Komatsu's vertical lift linkage is so adapted to Dingo, it will be located on Dingo precisely where Komatsu directs that it be located, namely forward of a vertical line B-B extending upwardly through the center of the rear wheel. This is the same placement that Dingo uses for its own radial lift linkage. The obviousness of the substitution cannot be denied.

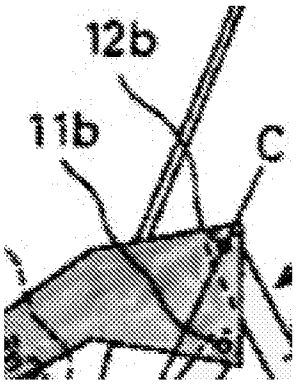


Komatsu **Dingo**



In addition, both Komatsu and Dingo are loaders having four wheels, namely a pair of front wheels and a pair of spaced rear wheels. There is space between the front and rear wheels in Dingo as shown above to accept the low mainframe pivot distances as shown in Komatsu in yellow and blue to the left hereof. Thus, Dingo is ideally suited to employing the type Komatsu's vertical lift linkage.

That is not to say that no changes whatsoever will be required in Dingo. For example, the rear end of each of Dingo's loader arm 3 will need to be reshaped to allow the upper pivot points 11a and 11b of Komatsu's front and rear linkages 11 and 12 to connect thereto in the vertically displaced manner taught by Komatsu. See Komatsu's teaching in this regard as depicted to the right hereof. Moreover, other changes in various components including the frame may need to be made to permit added components to properly fit. All changes required to adapt Komatsu's linkage to Dingo would be well within the level of skill of one of ordinary skill in the art.



The Examiner must also keep in mind when considering the obviousness of the above noted combination that physical combinability, i.e. being able to use something from the prior art in another prior art reference with no changes being required, is NOT a requirement of obviousness. The Patent Owner may attempt to argue against Dingo/Komatsu combination by reducing the analysis to just such an argument, that there is not enough space in Dingo to use the Komatsu linkage, or that the Komatsu linkage might be too heavy even though it will obviously be downsized to lift the far lighter loads which mini skid steers are intended to lift, or that the pivots might have to be heavier, or that the gas tank might have to be moved, or that the stroke of the piston in the cylinder may need to be different, etc. However, this focus on granular detail is inappropriate in an obviousness analysis. It is the concepts in the prior art which form the basis for the obviousness analysis and not the size of the parts or whether things have to be relocated to make them fit.

The PTO specifically recognizes this fact in MPEP §2145 (III) which states as follows:

> "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.").
>
> However, the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose." (Emphasis in the Original)

In addition, in the recent decision of *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373 (Fed. Cir. 2016) involving demolition equipment, the invention related to a quick change structure for mounting and dismounting tools which the PTAB had concluded could obviously be modified to additionally provide that both jaws of the tool, rather than one jaw, could be pivotal as taught in a secondary reference. The plaintiff had argued that making such a change " 'involves massive, nonobvious reconstruction of the device that not only changes its principle of operation, but renders the device inoperable as a result.' " (F.3d at 1380).

However, in affirming the PTAB's finding of obviousness, the Court reemphasized the long standing doctrine that physical combinability is simply not the standard for obviousness, writing as follows:

> "Contrary to Allied's position, "it is not necessary that [Caterpillar and Ogawa] be **physically combinable** to render **obvious** the ['489 patent]." *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983); *see also In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) ("Etter's assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be **physically combined** but whether the claimed inventions are rendered **obvious** by the teachings of the prior art as a whole."). "The test for **obviousness** is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference," *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). *See also In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *In re Keller*, 642 F.2d at 425), but rather whether "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention," *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)." (Emphasis in the Original) (F.3d at 1381)

E. Ground 1 – Detailed Prior Art Application to Claims 1-15 and 18

1. Preliminary Comments Regarding Claims 2 and 8

Claims 2 and 8 of the '750 patent both depend from independent claim 1 of the '750 patent. Claims 2 and 8 both recite that various components, namely "the mainframe" in claim 2 and the "loader arm" in claim 8, incorporate "a single weldment". This manufacturing technique would be an obvious choice of mechanical design to one of ordinary skill in the art as welded assemblies are common in skid steer loader and other mechanical structures. By way of example, the mini skid steer loader of Dingo actually has a mainframe assembly that includes a single weldment, a loader arm assembly that includes a single weldment, and even individual loader arms within the loader arm assembly that comprise single weldments. However, this level of detail is not expressed in Dingo.

That is why Toro submitted the additional Dingo publication, namely the Dingo Parts Catalog", since it expressly teaches and illustrates the single weldment nature of the mainframe, the loader arm assembly, and the individual loader arms. Thus, in the case of claims 2 and 8 of the '750 patent, Toro will alternatively rely upon the Dingo Parts Catalog in addition to Dingo so that the express teachings in Dingo Parts Catalog of single weldments may be alternatively used in place of an obvious choice of design in rejecting claims 2 and 8 should the Examiner feel that an express teaching is required.[6]

[6] The same will hold true of the application of art to a similar single weldment claim, namely claim 23, that depends from claim 19, the other independent claim of the '750 patent.

2. Preliminary Comments Regarding Claims 7 and 13

There are three components of the vertical lift linkage disclosed in the '750 patent, the two front and rear linkages colored yellow below and the hydraulic cylinder colored blue below. Each component has two pivots. The first pivot attaches the component to the loader arm colored green below. The second pivot attaches the component to the mainframe. Thus, there are six pivots in all. The three mainframe frame pivots have been enclosed in colored triangles corresponding to the color used for the component, two yellow triangles for the linkage to mainframe pivots and one blue triangle for the cylinder to mainframe pivot. The three loader arm pivots have been enclosed in similarly color coded boxes.

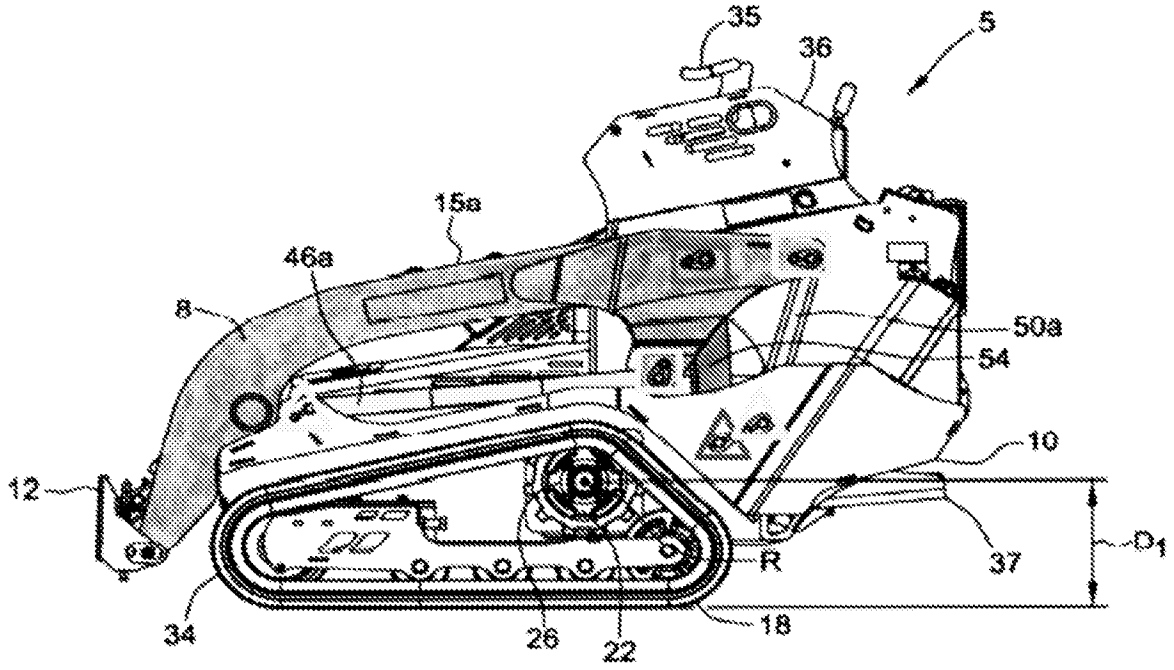
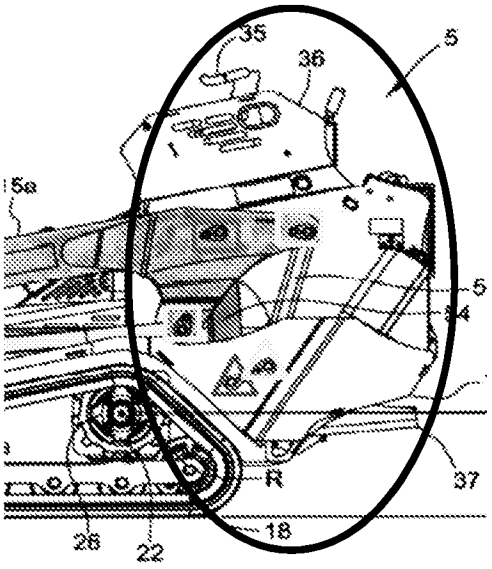


FIG. 2

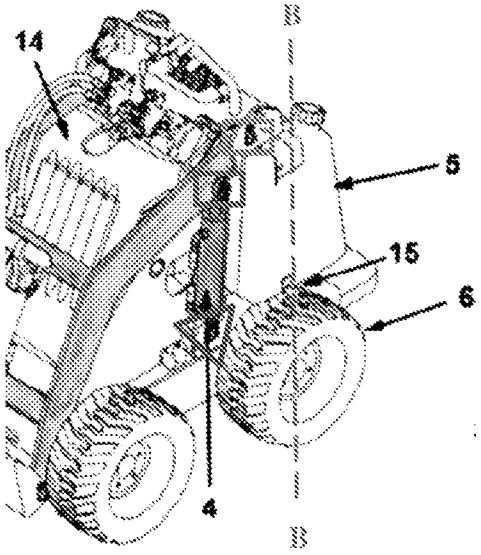
Claim 7 purports to recite the vertical and fore-and-aft locations of these six pivots relative to certain landmarks on the mainframe. Claim 7 is reproduced below.

7. The compact tool carrier as set forth in claim 1 wherein 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 as the loader moves from a down position to a vertically raised position**. (Emphasis Added)

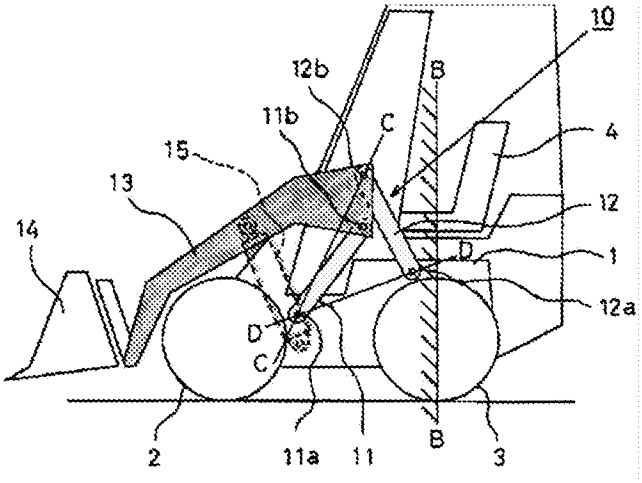
However, the '750 patent has no support for the second condition above, namely that the six pivots be "disposed forward of the control station". As is clear from the portion of Fig. 2 as reproduced to the right hereof, FIVE of the six pivots as enclosed in the circle are NOT forward of the control station 36 which includes the operator controls 35 that are shown within the control station 36.



If the claimed condition of the location of the pivots being "disposed forward of the control station" are deemed to be supported by the '750 patent's depiction of having five of the pivots along the side of the control station, then the Dingo in view of Komatsu combination of references will similarly meet this recitation. For example, Dingo discloses that the mainframe pivot and the loader arm pivot of its hydraulic cylinder 4, enclosed in a blue triangle and a blue box respectively in the Dingo illustration reproduced to the left hereof, are positioned forward of the operator station. The fixed pivot between the loader arm and the mainframe in Dingo, enclosed in a green box to the right hereof, is positioned along the side of the control station in the same manner as the five pivots in the '750 patent depicted above.

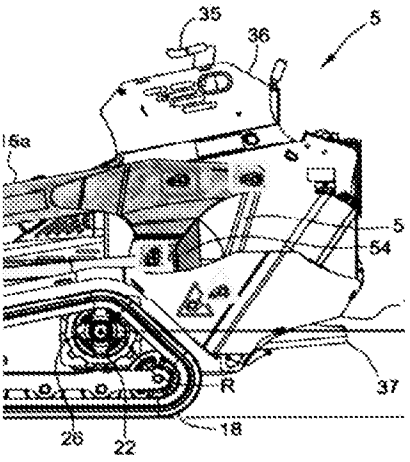


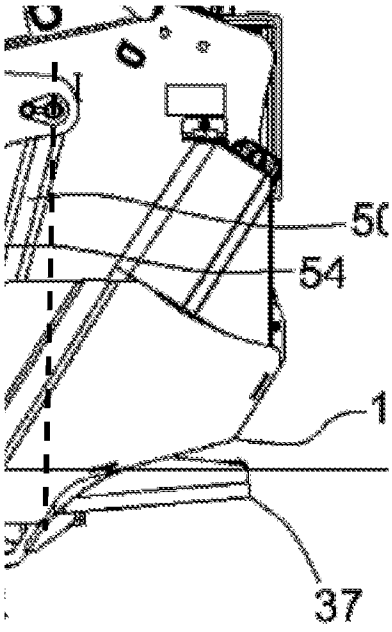
Nothing would change when the vertical lift linkage of Komatsu is adapted to Dingo as all of Komatsu's pivots are specifically placed forwardly of the line B-B in Komatsu as shown again to the right hereof. Line B-B passes through the front of the operator's seat and Komatsu discloses that the operator's seat could be positioned even further rearwardly "to the rear of the rear



wheel". Komatsu's forward shift of the vertical lift linkage relative to the rearwardly located operator would be maintained in Dingo when Komatsu's vertical lift linkage is adapted to Dingo in front of the same line B-B in Dingo passing through the center of Dingo's rear wheel. Accordingly, if having five pivots along the side of the control station as in the '750 patent is sufficient to support claim language that recites the pivots are "disposed forward of the control station", the same will be true of Dingo as modified by Komatsu.

A similar lack of support appears to exist with respect to claim 13 which effectively recites that the three pivots of the vertical lift linkage components on the loader arm are "**disposed forward of the rear and front of the operator platform** when the loader travels from the down position to the vertically raised position". The three pivots at issue here are the three upper pivots shown in the illustration to the left that are enclosed in the boxes. The pivot shown in the highest yellow box for the rear yellow linkage is furthest to the rear.





The figure above shows the down position of the loader. When the portion of the figure above is enlarged to show just the rearmost of the three pivots in relation to the operator platform as shown to the right hereof and when the axis of the pivot is projected downwardly as indicated by the dashed line added thereto, it is obvious that one cannot tell if the pivot is forward of the "front" of the operator platform 37 as required in claim 13 since the front of the operator platform 37 is hidden. One simply cannot tell from this drawing or any other drawing in the '750 patent where the front of the operator platform attaches to the mainframe, As there is no description in the specification whatsoever of the location of any of the pivots relative to the front of the operator platform, there is no support for claim 13.

3. As to Claims 1-15 and 18

Claims 1-15 and 18 of the '750 patent at issue herein are unpatentable under 35 U.S.C. 103(a) as such claims would have been obvious to one of ordinary skill in the art at the time of the invention over Dingo and in view of Komatsu.

The analysis for why this combination of references would have been obvious to one of ordinary skill in the art has been set forth above. Accordingly, in the following application of the prior art to the claims, the references will be applied to the claim limitations assuming the combination of references set forth in Section IV(D) hereof has been made. In other words, the application of the prior art will assume that the teachings of Komatsu have been imported into Dingo by freeing the left and right loader arms 3, 3 of Dingo from their fixed pivots, using Komatsu's front and rear linkages 11 and 12 in place of Dingo's fixed pivots to movably support the loader arms 3, 3, and adjusting the position of Dingo's existing cylinders 4 as need be.

Limitations in the combination that appear in Dingo or in Dingo Parts Catalog will be highlighted in yellow. Limitations in the combination that appear in Komatsu will be highlighted in tan.

1. A compact tool carrier configured for standing operator control and having a longitudinal axis (Dingo, Fig. 9, depicted Dingo 322 mini skid steer) and a mass of less than about 1500 kg (Dingo, p. 10, mass of 711 kg.), the compact tool carrier comprising:

a loader having an arm (Dingo, Fig. 9, the left arm 3), the loader being adapted to carry a tool (Dingo, p. 10, the referenced "std. bucket");

a mainframe for supporting the loader (Dingo, Fig. 9, the frame that carries, inter alia, wheels 6, operator platform 7 and engine 8), the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe (Komatsu, the teaching of a loader arm 13 having no fixed pivot);

a first linkage 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 (Komatsu, front linkage 11 applied to Dingo's left arm 3);

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point (Komatsu, rear linkage 12 applied to Dingo's left arm 3);

an actuator directly pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point, the fifth pivot point being distinct from the first pivot point and the third pivot point (Dingo, Fig. 9, left cylinder 4);

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 (Dingo, Fig. 9, control panel 10);

an operator platform for standing operation of the operator controls of the control station (Dingo, Fig. 9, operator platform 7); and

an engine (Dingo, Fig. 9, engine 8) disposed forward of the operator platform relative to the longitudinal axis (Dingo, Fig. 9, engine 8 is forward of operator platform 7).

2. The compact tool carrier as set forth in claim 1 wherein the mainframe incorporates a single weldment (An obvious choice of mechanical design in Dingo or alternatively as additionally taught by Dingo Parts Catalog, p. 1, Frame & Decal ASM 4).

3. The compact tool carrier as set forth in claim 1 wherein the loader arm is a first loader arm (Dingo, Fig. 9, the left arm 3) the loader comprising a second loader arm (Dingo, Fig. 9, the right loader arm 3) and the compact tool carrier comprising a third linkage (Komatsu, either front linkage 11 or rear linkage 12 applied to Dingo's right loader arm 3) pivotally attached to the second side of the mainframe and pivotally attached to the second loader arm.

4. The compact tool carrier as set forth in claim 3 wherein the actuator is a first actuator (Dingo, Fig. 9, the left cylinder 4), 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 (Dingo, Fig. 18, the right cylinder).

5. The compact tool carrier as set forth in claim 1 comprising a drive mechanism comprising tracks or wheels (Dingo, Fig. 9, wheels 6), the drive mechanism being attached to the mainframe (Dingo, Fig. 9, wheels 6 are carried by the same frame that carries, inter alia, operator platform 7 and engine 8).

6. The compact tool carrier as set forth in claim 1 comprising a drive mechanism (Dingo, Fig. 9, wheels 6) propelled by the engine.

7. The compact tool carrier as set forth in claim 1 wherein 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 as the loader moves from a down position to a vertically raised position (Dingo, Fig. 9, front perspective view, shows Dingo's mainframe loader arm and actuator pivots to be forward of the control station if such forward positioning is found to be supported in the '750 patent and such forward positioning will be retained when Komatsu's front and rear linkages 11 and 12 are adapted to Dingo).

8. The compact tool carrier as set forth in claim 1 wherein the loader arm incorporates a single weldment (An obvious choice of mechanical design in Dingo or alternatively as additionally taught by Dingo Parts Catalog, p. 1, Loader & Decal ASM 13 with each loader arm further being a single weldment having three welded pivot bushings).

9. 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 (Dingo, p. 10, the referenced "std. bucket").

10. A method for operating the compact tool carrier as set forth in claim 1, the method comprising standing on the operator platform and operating the control station to propel the compact tool carrier forward and/or raise or lower the loader (Dingo, p. 9, inherently true of Dingo when an operator stands on operator platform 7 and uses the controls on control panel 10).

11. The compact tool carrier as set forth in claim 1 wherein no more than three linkages and actuators are attached to the first side of the mainframe (Komatsu's front and rear linkages 11 and 12 applied to Dingo's left arm 3 and Dingo's left cylinder 4 as applied to claim 1 comprise no more than the recited three linkages and actuators).

12. The compact tool carrier as set forth in claim 1 wherein a single actuator is attached to the first side of the mainframe (Dingo's left cylinder 4 as applied to claim 1 is a single actuator).

13. The compact tool carrier as set forth in claim 1 wherein the loader is moveable between a down position and a vertically raised position, the operator platform having a rear and a front relative to the longitudinal axis, the second pivot point, fourth pivot point, and sixth pivot point being disposed forward of the rear and front of the operator platform when the loader travels from the down position to the vertically raised position (Dingo, Fig. 9, front perspective view, shows Dingo's pivot of the actuator to the loader arm to be forward of the rear and front of the operator platform and such forward positioning will be retained when Komatsu's front and rear linkages 11 and 12 are adapted to Dingo).

14. The compact tool carrier as set forth in claim 1 wherein the loader is moveable between a down positon and a vertically raised position, the arm of the loader being a first arm (Dingo, Fig. 9, the left arm 3) and the loader comprising a second arm (Dingo, Fig. 9, the right arm 3) and at least one cross-member (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached or bottom cross member Cb) that extends from the first loader arm to the second loader arm, wherein each cross-member is disposed forward of the operator platform relative to the longitudinal axis in the vertically raised position of the loader (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached and bottom cross member Cb inherently remain forward of operator platform 7 due to the length of loader arms 3, 3 and the 66 inch maximum hinge pin height in relation to the 60 inch length of the loader as set forth in the specifications on pg. 10 of Dingo and this will be even truer when Komatsu's vertical lift linkage is adapted to Dingo with the loader arms 3, 3 moving forwardly in the upper half of the lift pattern to provide a vertical lift path for the tool).

15. The compact tool carrier as set forth in claim 14 further comprising an attachment plate (Dingo, Fig. 9, mount plate 1) for removably attaching a tool to the compact tool carrier, the cross-member being spaced from the attachment plate (Dingo, Fig. 9, front perspective view, both top cross member Ct and bottom cross member Cb are spaced behind mount plate 1).

18. The compact tool carrier as set forth in claim 14 wherein each cross-member is disposed forward of the second pivot point and the fourth pivot point (Dingo's forwardly placed cross members Ct and Cb will be forward of the recited pivot points when Komatsu's front and rear linkages 11 and 12 are connected to Dingo's left loader arm 3 at the rear thereof in the manner taught by Komatsu).

F. Ground 2 – Detailed Prior Art Application to Claims 16, 17, 19, 20 and 22-34

Claims 16, 17, 19, 20 and 22-34 of the '750 patent at issue herein are unpatentable under 35 U.S.C. 103(a) as such claims would have been obvious to one of ordinary skill in the art at the time of the invention over Dingo in view of Komatsu as applied in Ground 1 above, and further in view of Vermeer Brochure.

As is apparent from the statement of the proposed ground of rejection above, the additional reference to Vermeer Brochure is being relied upon in Ground 2 to teach additional features set forth in claims 16, 17, 19, 20 and 22-34. Thus, Toro will first review below the relevant teachings of Vermeer Brochure before proceeding with the application of the prior art for Ground 2.

1. Review of Vermeer Mini Skid Steers S600/S600TX Brochure

Toro is submitting herewith a brochure published by the Patent Owner disclosing various models of a mini skid steer loader that Patent Owner previously sold and manufactured. This brochure is entitled Vermeer Mini Skid Steers S600/S600TX Brochure and is being referred to herein as Vermeer Brochure.

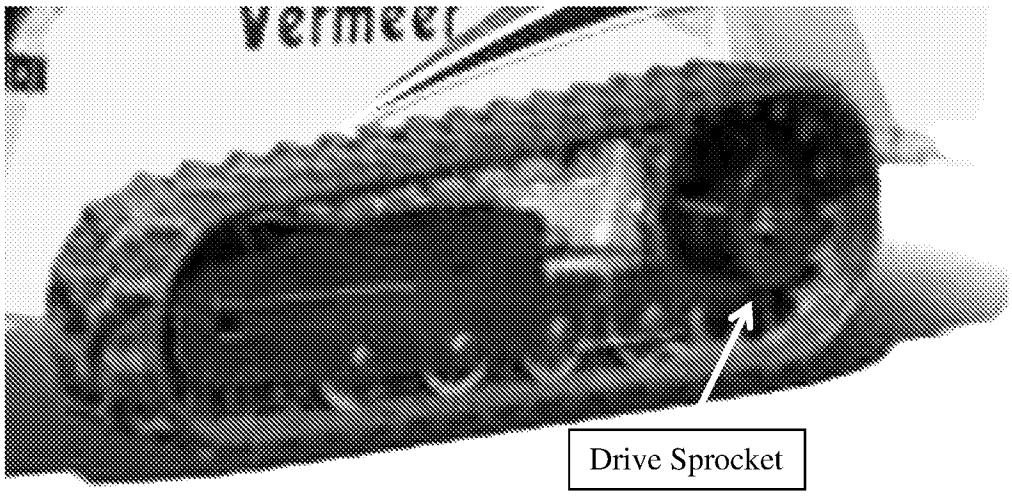


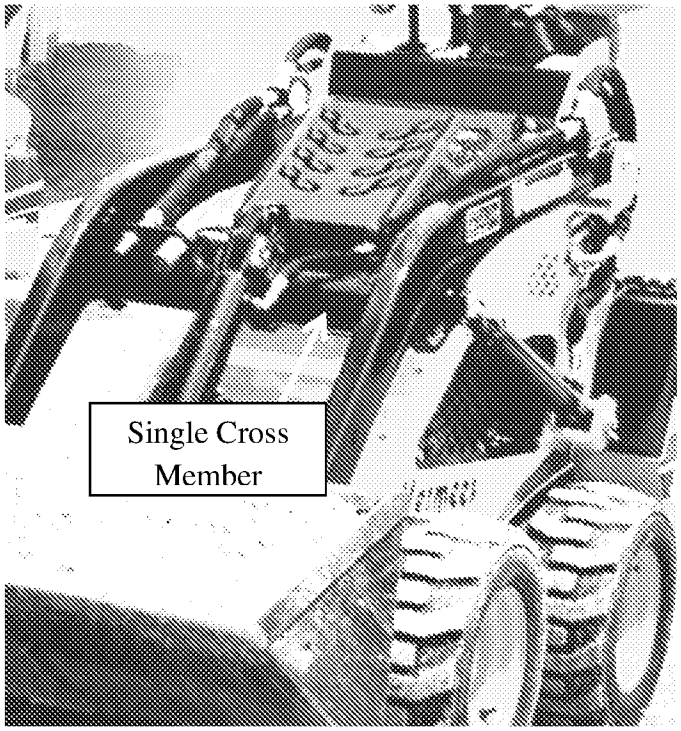
As shown in the photograph to the left hereof which was taken from the cover page of Vermeer Brochure, the Patent Owner offered the **same** mini skid steer in two different versions. The first version shown in the foreground of the photograph was a wheeled model known as the S600 supported for movement over the ground by pairs of front and rear wheels. The second version shown in the background of the photograph was

a tracked model known as the S600TX supported for movement over the ground by left and right endless ground engaging tracks.

Vermeer Brochure clearly establishes that a wheeled drive system and a tracked drive system were known to be interchangeable alternatives to one another for the purpose of propelling a mini skid steer over the ground. The Patent Owner's prior practice of offering **both** alternatives on the same mini skid steer platform, i.e. the S600 wheeled model as well as the S600TX tracked model with the TX obviously standing for "tracked', is evidence of such interchangeability. This enables a mini skid steer manufacturer to provide choice to a potential customer to enable the customer to purchase the model having the traction system best suited to his or her uses and the type of terrain over which the product will normally be used. The interchangeability of the two traction systems could hardly be clearer from the photograph on the prior page where the wheeled and tracked models are depicted together. The two mini skid steers are substantially identical to one another except that one was built with a wheeled drive system and one was built with a tracked drive system.

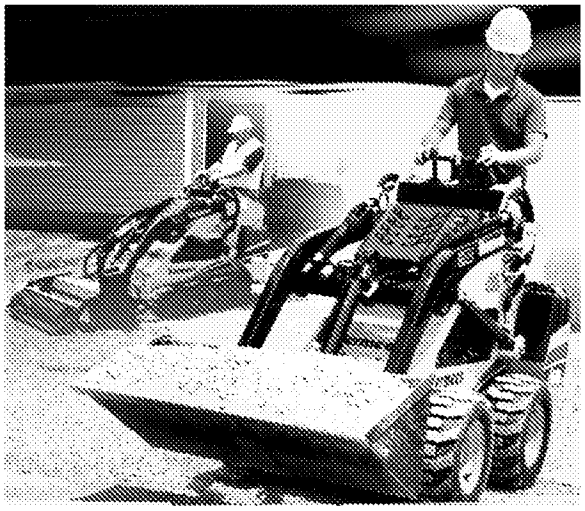
Referring to a detail of the tracked model, the portion of the photograph reproduced below is taken from the photograph of the S600TX shown on the third page of Vermeer Brochure with the tracked drive system having been enlarged. Each track of the S600TX is driven by a large drive sprocket which Toro has labeled below. The use of such a drive sprocket in a tracked drive system is widespread throughout the Patent Owner's mini skid steer line. As discussed above, Vermeer Brochure is being used first and foremost to establish the interchangeability of a tracked drive system having a drive sprocket, the S600TX below, with the wheeled drive system offered by the Patent Owner as an alternative on the S600.





The last item of Vermeer Brochure on which Toro will rely is present in both the S600 and S600TX. As shown in the S600 depicted in the photograph on the cover page of Vermeer Brochure, which is reproduced in relevant part to the left hereof, the S600 utilized a **single** cross member extending between the loader arms. This single cross member is labeled as such by Toro to the left hereof. This cross member was utilized to mount the upper end of the tilt cylinder that controls the angular orientation of the tool, in this case a bucket, relative to the loader arms.

2. <u>As to Claim 16</u>



Claim 16 is directed to details of the tracked drive system of the '750 patent which are absent from the wheeled drive system found in Dingo. However, as shown earlier in Section IV(F)(1) hereof, Vermeer Brochure clearly establishes the interchangeability of a tracked drive system and a wheeled drive system. The **same** skid steer can be made in a wheeled drive model, as in the S600 mini skid steer of Vermeer Brochure, or in a tracked drive model, as in the S600TX mini skid steer of Vermeer Brochure. All one of ordinary skill in the art need do in order to understand this is to refer to the illustration on the cover page of Vermeer Brochure, shown again to the right hereof, showing both models of mini skid steers together as alternatives to one another.

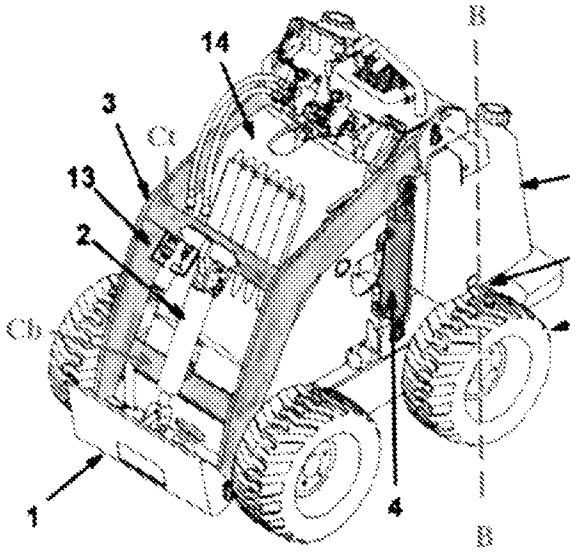
Accordingly, it would have been further obvious under 35 U.S.C. 103(a) to one of ordinary skill in the art at the time of the invention to have provided Dingo in a tracked drive model in addition to a wheeled drive model as expressly taught by Vermeer Brochure. One of ordinary skill in the art would have been motivated to do so to offer a broader product line to allow a customer to pick the type of drive system best suited to the operator's needs. When so modified, claim 16 is further met by the application of prior art as shown below.

With respect to the application of art to claim 16 which depends from parent claims 1 and 14, the application of prior art to the parent claims 1 and 14 as set forth earlier herein in Section IV(E)(3) hereof is incorporated by reference to avoid unnecessary repetition. With the application of prior art to claims 1 and 14 as stated in Section IV(E)(3) hereof, claim 16 is further met as follows. Limitations in the combination that appear in Vermeer Brochure will be additionally highlighted in pink.

16. The compact tool carrier as set forth in claim 14 further comprising a drive mechanism for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket (Vermeer Brochure, pg. 3, the rear drive sprocket of the tracked drive system), the cross-member being disposed forward of the drive sprocket in the vertically raised position and the down position of the loader (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached will inherently remain forward of the rear drive sprocket added to Dingo due to the length of loader arms 3, 3 and the 66 inch maximum hinge pin height in relation to the 60 inch length of the loader as set forth in the specifications on pg. 10 of Dingo and this will be even truer when Komatsu's vertical lift linkage is adapted to Dingo with the loader arms 3, 3 moving forwardly in the upper half of the lift pattern to provide a vertical lift path for the tool).

3. As to Claim 17

The basic Dingo/Dingo Parts Catalog in view of Komatsu combination that forms the basis for the rejection of the claims set forth in Ground 1 could be applied to claim 17 except for one difference. In Dingo as shown to the right hereof, there are two cross members between the loader arms 3, a top cross member Ct located where the loader arms change orientation between their front and rear portions and a bottom cross member Cb at the bottom of the loader arms near the mounting plate 1. Claim 17 requires that there be only a **single** cross member.



Accordingly, as to the requirement of a single cross member, Toro will additionally rely on Vermeer Brochure and its teaching of a single cross member at the same location as Toro's top cross member Ct, namely where the loader arms change orientation between their front and rear portions. Vermeer Brochure teaches that a single cross member can be large and strong enough when placed at this location, namely at the location where Dingo's top cross member Ct already is, such that a second cross member is not required at the bottom of the loader arms. Consequently, in the combination of references that make up Ground 1, it would have been further obvious under 35 U.S.C. 103(a) to one of ordinary skill in the art at the time of the invention to provide the top cross member Ct in Dingo with sufficient size and strength to permit the top cross member Ct in Dingo to be the only cross member between Dingo's loader arms as taught by Vermeer Brochure.

With respect to the application of art to claim 17 which depends from parent claims 1 and 14, the application of prior art to the parent claims 1 and 14 as set forth earlier herein in Section IV(E)(3) hereof is incorporated by reference to avoid unnecessary repetition. With the application of prior art to claims 1 and 14 as stated in Section IV(E)(3) hereof, claim 17 is further met as follows. Limitations in the combination that appear in Vermeer Brochure will be highlighted in pink.

17. The compact tool carrier as set forth in claim 14 wherein the compact tool carrier comprises a single cross-member (Vermeer Brochure, cover page, single cross member shown in the S600).

4. As to Claims 19, 20 and 22-34

Claims 19, 20 and 22-34 of the '750 patent at issue herein are unpatentable under 35 U.S.C. 103(a) as such claims would have been obvious to one of ordinary skill in the art at the time of the invention over Dingo in view of Komatsu and further in view of Vermeer Brochure.

In the following application of the prior art to the claims, the references will be applied to the claim limitations assuming the combination of references set forth in Section IV(D) hereof has been made. In other words, the application of the prior art will assume that the teachings of Komatsu have been imported into Dingo by freeing the left and right loader arms 3, 3 of Dingo from their fixed pivots, using Komatsu's front and rear linkages 11 and 12 in place of Dingo's fixed pivots to movably support the loader arms 3, 3, and adjusting the position of Dingo's existing cylinders 4 as need be according to the rationale for doing so as discussed in detail Section IV(D) hereof. Furthermore, to the extent the application of the prior art additionally depends upon Vermeer Brochure, the rationales for the further modification based on Vermeer Brochure was set forth above in the preceding subsections 2 and 3 hereof with respect to claims 16 and 17. This analysis and accompanying rationales will not be repeated herein for the sake of brevity, but are incorporated by reference.

Accordingly, the prior art will be applied to the claim limitations to show where the various limitations are met and by which reference. Limitations in the combination that appear in Dingo or Dingo Parts Catalog will be highlighted in yellow. Limitations in the combination that appear in Komatsu will be highlighted in tan. Limitations in the combination that appear in Vermeer Brochure will be highlighted in pink.

19. A compact tool carrier having a longitudinal axis and comprising:

a loader (Dingo, Fig. 9, the left arm 3) adapted to carry a tool;

a mainframe for supporting the loader (Dingo, Fig. 9, the frame that carries, inter alia, wheels 6, operator platform 7 and engine 8), the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe (Komatsu, the teaching of a loader arm 13 having no fixed pivot);

a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader at a second pivot point (Komatsu, front linkage 11 applied to Dingo's left arm 3);

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader at a fourth pivot point (Komatsu, rear linkage 12 applied to Dingo's left arm 3);

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader at a sixth pivot point (Dingo, Fig. 9, left cylinder 4);

a drive mechanism (Dingo, Fig. 9, wheels 6) for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket (Vermeer Brochure, pg. 3, the rear drive sprocket of the tracked drive system when used to replace Dingo's wheeled drive system) defining a rotational axis R, the compact tool carrier having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the compact tool carrier being separated by a vertical distance D1 (Komatsu, Fig. 1, D1=0.625 inches), the rotational axis R and a bottom of the first side of the mainframe being separated by a vertical distance D5 (Komatsu, Fig. 1, D5=0.250 inches), the rotational axis R and each of the first, third, and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1 (Komatsu, Fig. 1, D2=0.250 inches for the front linkage 11 pivot point which is less than 1.5 x D1 of 0.625 inches which equals 0.9375 inches), the vertical distance between the rotational axis R and the third pivot point also being less than 1.5 times D1 (Komatsu, Fig. 1, D3=0.6875 inches for the rear linkage 12 pivot point which is less than 1.5 x D1 of 0.625 inches which equals 0.9375 inches), the vertical distance between the rotational axis R and the fifth pivot point also being less than 1.5 times D1 (Komatsu, Fig. 1, D4=0.0625 inches for the actuator 15 pivot point which is less than 1.5 x D1 of 0.625 inches which equals 0.9375 inches), the first side of the mainframe

comprising a forward-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the forward-most pivot point[7], the vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5 (Komatsu, Fig. 1, the D2 value of 0.250 inches of the forward-most pivot 11a is less than 0.500 inches which is the result of twice the D5 value of 0.250 inches);

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 (Dingo, Fig. 9, control panel 10);

an operator platform for standing operation of the operator controls of the control station (Dingo, Fig. 9, operator platform 7); and

an engine (Dingo, Fig. 9, engine 8) disposed forward of the operator platform relative to the longitudinal axis (Dingo, Fig. 9, engine 8 is forward of operator platform 7).

20. The compact tool carrier as set forth in claim 19 wherein the second side of the mainframe comprises at least two pivot points, each vertical distance between the rotational axis R and the respective pivot point being less than 1.5 times D1. (See claim 19, will be true for the duplicated vertical lift linkage on the other side of Dingo.)

22. The compact tool carrier as set forth in claim 19 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 (Dingo, p. 10, the references "std. bucket").

23. The compact tool carrier as set forth in claim 19 wherein the mainframe incorporates a single weldment (An obvious choice of mechanical design in Dingo or alternatively as taught by Dingo Parts Catalog, p. 1, Frame & Decal ASM 4).

[7] It is very close as to whether the pivot 11a of Komatsu's front linkage 11 or the lower pivot of Komatsu's cylinder 15 is the forwardmost pivot. Since the distance D2 of Komatsu's pivot 11a relative to rotational axis R is greater than the distance D4 of the pivot of the cylinder relative to rotational axis 2, Toro will assume that pivot 11a of Komatsu's front linkage 11 is the forwardmost pivot. This is the least favorable interpretation of Komatsu for Toro and the most favorable interpretation for the Patent Owner. This assumption also applies to claims 26-29.

24. The compact tool carrier as set forth in claim 19 wherein no more than three linkages and actuators are attached to the first side of the mainframe (Komatsu's front and rear linkages 11 and 12 applied to Dingo's left arm 3 and Dingo's left cylinder 4 as applied to claim 1 comprise no more than the recited three linkages and actuators).

25. The compact tool carrier as set forth in claim 19 wherein a single actuator is attached to the first side of the mainframe (Dingo's left cylinder 4 as applied to claim 1 is a single actuator).

26. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than 1.75 D5 (Komatsu, Fig. 1, D2 of 0.250 inches is less than 0.4375 inches which is the result of 1.75 times the D5 value of 0.250 inches).

27. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than 1.5 D5 (Komatsu, Fig. 1, D2 of 0.250 inches is less than 0.375 inches which is the result of 1.5 times the D5 value of 0.250 inches).

28. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than D1 (Komatsu, Fig. 1, D2 of 0.250 inches is less than the D1 value of 0.6250 inches).

29. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than 0.75 D1 (Komatsu, Fig. 1, D2 of 0.250 inches is less than 0.46875 inches which is the result of 0.75 times the D1 value of 0.625 inches).

30. The compact tool carrier as set forth in claim 19 wherein the loader is moveable between a down positon and a vertically raised position, the loader comprising:

a first arm (Dingo, Fig. 9, the left arm 3);

a second arm (Dingo, Fig. 9, the right arm 3); and

at least one cross-member that extends from the first loader arm to the second loader arm (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached or bottom cross member Cb), wherein each cross-member is disposed forward of the operator platform relative to the longitudinal axis in the vertically raised position of the loader (Dingo, Fig. 9, top cross member Ct to which the upper end of tilt cylinder 2 is attached and bottom cross member Cb inherently remain forward of operator platform 7 due to the length of loader arms 3, 3 and the 66 inch maximum hinge pin height in relation to the 60 inch length of the loader as set forth in the specifications on pg. 10 of Dingo and this will be even truer when Komatsu's vertical lift linkage is adapted to Dingo with the loader arms 3, 3 moving forwardly in the upper half of the lift pattern to provide a vertical lift path for the tool).

31. The compact tool carrier as set forth in claim 30 further comprising an attachment plate for removably attaching a tool to the compact tool carrier (Dingo, Fig. 9, mount plate 1), the cross-member being spaced from the attachment plate (Dingo, Fig. 9, front perspective view, both top cross member Ct and bottom cross member Cb are spaced behind mount plate 1).

32. The compact tool carrier as set forth in claim 30 wherein the cross-member is disposed forward of the drive sprocket in the vertically raised position and the down position of the loader (Dingo, Fig. 9, front perspective view, both top cross member Ct and bottom cross member Cb are spaced well forwardly of rear wheel 6 and will remain forwardly of the rear drive sprocket of the tracked drive system of Vermeer Brochure when such tracked drive system is used to replace Dingo's wheeled drive system).

33. The compact tool carrier as set forth in claim 30 wherein the compact tool carrier comprises a single cross-member (Vermeer Brochure, cover page, single cross member shown in the S600).

34. The compact tool carrier as set forth in claim 30 wherein each cross-member is disposed forward of the second pivot point and the fourth pivot point (Dingo's forwardly placed cross members Ct and Cb will be forward of the recited pivot points when Komatsu's front and rear linkages 11 and 12 are connected to Dingo's left loader arm 3 at the rear thereof in the manner taught by Komatsu).

G. Analysis of Objective Evidence Presented in Amendment D of 11/10/2017

1. Patent Owner's Showing of Alleged Unexpected Results

Patent Owner's counsel stated during prosecution of the '801 patent application that the claimed subject matter produced unexpected results. For example, Patent Owner's counsel stated as follows:

> "10. By using a linkage and actuator to support the loader, an embodiment of the invention of a compact tool carrier increased the lift capacity of the machine ***by 32%*** relative to the radial lift S450TX compact tool carrier. This increase is attributable to the inventive change in the loader design because the increase occurred without a significant increase in the weight of the compact tool carrier.
> (Yellow Highlighting Added, Bold Italics and Underlining in the Original) (Amendment D of 11/10/2017, p. 27)

This bare statement is insufficient to support a finding of unexpected results for the following reasons.

a. What Was Tested?

Other than for referring to "an embodiment of the invention", the Patent Owner did not describe what was tested that produced a 32% increase. Was it the Patent Owner's CTX50 mini skid steer that corresponds directly to what is disclosed in the '750 patent? Was it a CTX50 whose weight was adjusted in some way and, if so, where was the weight placed during the test? Was it some other structure that, while technically falling within the limitations of claim 1, was custom made for the test? There is absolutely no way of knowing. Given the lack of detail about what was tested, there is no factual support to accept the wholly unsupported claim of a 32% increase in lift capacity.

b. The Variance With the Patent Owner's Published Statements

What we do know about the increase in lift capacity for the Patent Owner's CTX50 mini skid steer is what the Patent Owner has been willing to repeatedly publicly disclose - that it is 20% and not 32%. For example, the spec sheet provided during the prosecution of the '750 patent for the radial lift S450TX weighing 2100 pounds lists a rated operating capacity of 500

pounds. However, the spec sheet for the equivalently powered vertical lift CTX50 shown in the '750 patent weighing 2135 pounds lists this capacity at 600 pounds. A 100 pound increase in lift capacity on a 500 pound base is a 20% increase in lift capacity. The Examiner would have been able to compute this 20% increase by comparing the lift capacities on the two spec sheets, but the Patent Owner never supplied to the Examiner the CTX50 spec sheet.[8]

In addition, the Patent Owner **repeated** this 20% lift increase claim in a press release entitled "Vermeer Has Launched the Newest Mini Skid Steer, the CTX100." A complete copy of this press release is being submitted herewith. A portion of the press release is reproduced below and highlights the claim of a 20% increase in yellow.

Vermeer has launched the newest mini skid steer, the CTX100

PELLA, Iowa — Vermeer has extended its CTX mini skid steer product line with the addition of the CTX100 compact utility loader. The CTX100 features vertical lift boom arms, which offer a higher lift capacity than a similarly sized radial lift arm machine. In addition, Vermeer has increased the hinge pin height to help landscape contractors load and transport materials more efficiently.

"The CTX100 uses the same vertical lift geometry as the Vermeer CTX50 compact utility loader," said Matt Hutchinson, product manager — Tree Care, Rental & Landscape at Vermeer. "Because the CTX line uses vertical lift boom arms, which are designed to keep the load closer to the machine the compact utility loaders have almost 20 percent more lift capacity than a radial lift machine with the same footprint."

The new CTX100 has a tipping capacity of 2,958 pounds (1,341.7 kg) and a rated operating capacity of 1,035 pounds (469.5 kg).



[8] Toro is submitting a copy of the CTX50 spec sheet listing the operating capacity at 600 pounds, i.e. a 20% increase over the 500 pounds of the Patent Owner's prior art S450TX.

Thus, time and time again, the Patent Owner confirms that its vertical lift mini skid steers provide a 20% increase in lift capacity. The stated increase of 32% put before the Examiner during the prosecution of the '750 patent is some 60% higher than the Patent Owner's published statements, such as the 20% contained in the press release above. Significantly, neither this press release nor the CTX50 spec sheet which was needed for comparison against the S450TX spec sheet was disclosed by the Patent Owner to the Examiner at the time he was asked to accept the Patent Owner's bare statement of a 32% increase.

c. What Were the Expectations of Those of Ordinary Skill in the Art?

For results to be "unexpected", they must be measured against the expectations of a person of ordinary skill in the art. A number of courts have held that in order for a result to be sufficiently "surprising" for purposes of a non-obviousness analysis, it must be surprising to one skilled in the art. *E.g.*, *In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995) ("One way for a patent applicant to rebut a *prima facie* case of obviousness is to make a showing of 'unexpected results,' *i.e.*, to show that the claimed invention exhibits some superior property or advantage *that a person of ordinary skill in the relevant art would have found surprising or unexpected.*") (emphasis added); *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (same); *Eli Lilly & Co. v. Zenith Goldline Pharm., Inc.*, 364 F. Supp. 2d 820, 907–08 (S.D. Ind. 2005), *aff'd*, 471 F.3d 1369 (Fed. Cir. 2006) ("In order for a showing of unexpected results to be probative of non-obviousness, such evidence must at least establish that (1) . . . , and (2) the difference actually obtained would not have been expected by one skilled in the art at the time of the invention.").

The skid steer loader art had long known that a vertical lift loader by keeping the load closer to the front of the machine would permit an increase in lift capacity over a comparable radial lift loader. What percentage increase was expected by those of ordinary skill in the art? Tellingly, there is absolutely no evidence from anyone of ordinary skill in the art of what the expectations were. Accordingly, there is no basis to conclude that the Patent Owner's 32% figure, even inflated as it is from the Patent Owner's published figures of 20%, was unexpected to anyone of ordinary skill in the art. Attorney argument cannot rectify this deficiency.

d. The Flawed Base of Comparison Does Not Support Unexpected Results

In an attempt to provide a base of comparison by which the vertical lift increase achieved by the Patent Owner could be measured, whether it was the 20% figure the Patent Owner had long published to the world or the 32% figure the Patent Owner claimed during the prosecution of the '750 patent, the Patent Owner created one using a sample size of one. In its Amendment and Response dated November 10, 2017, the Patent Owner compared the vertical lift loader of Mustang, known as the 2700V, to the radial lift loader of Mustang, known as the 2600R, which was closest in weight to the 2700V in the following chart which has been reproduced below. (Amendment D of 11/10/2017, pg. 28). In doing so, it found that the lift increase of the 2700V was only 3.8% higher than that of the 2600R. This then became the base against which the Patent Owner's attorneys argued that the 32% increase produced unexpected results.

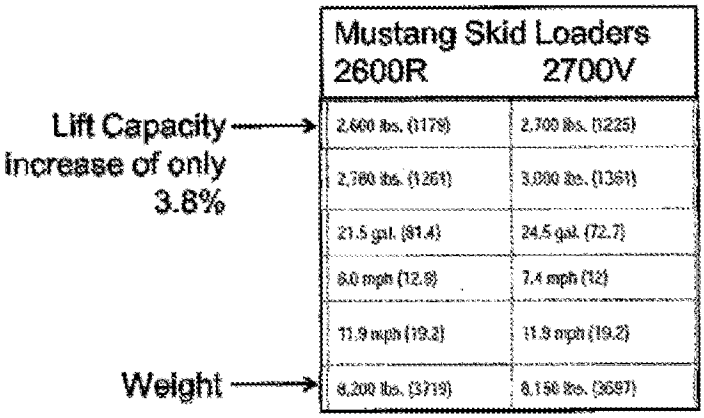


Table 1

The flaw in this methodology is apparent. It is no more valid to take this one example and then generalize it to the entire art of skid steer loaders than it would be to take a political poll of one person and then generalize his or her answer to all people. It does not mean that the 3.8% increase from this single example is what those of ordinary skill in the art would have expected for all vertical lift loaders versus radial lift loaders. If you are going to use statistics, you need at the very least an average value for how much lift capacity radial lift loaders would provide per pound of machine weight versus how much lift capacity vertical lift loaders provide per pound of machine weight. In fact, when you take the Mustang brochure[9] on which the Patent Owner based the above comparison and average the

[9] This is the brochure entitled "Mustang Skid Steer Loaders – Radial & Vertical Lift" dated 2014 that was a secondary teaching reference in the prosecution of the '750 patent. Toro has resubmitted the Mustang brochure herein to support the data analysis Toro will show below. The data in the table on the following page appears in the model by model Specifications contained on pgs. 22 and 23 of the Mustang brochure. This is an entirely different portion of the Mustang brochure than that relied upon by the Examiner in the prosecution of the '750 patent.

data across the entire line of Mustang radial lift loaders and Mustang vertical lift loaders, you get a very different base of comparison, as shown by Toro below.

The table below shows the data for all the radial and vertical lift loaders contained in the Mustang brochure from which the Patent Owner took the isolated example above in which it concluded that those of ordinary skill in the art would expect a 3.8% increase in lift capacity.

	Operating Weight	Rated Operating Capacity (ROC) without counterweight	ROC/Weight
Radial Lift Model			
2012	2980	850	0.2852
2026	4000	1050	0.2625
1350R	5078	1350	0.2659
1500R	5887	1500	0.2548
1650R	6122	1650	0.2695
1900R	6880	1900	0.2762
2200R	7980	2200	0.2757
2600R	8200	2600	0.3171
		Mustang Radial Lift Ratio Average	**0.2759**
Vertical Lift Model			
2700V NXT2	8150	2700	0.3313
3300V NXT2	9090	3300	0.3630
4000V	11100	4000	0.3604
		Mustang Vertical Lift Ratio Average	**0.3516**
		Gain in Vertical Lift Ratio Average compared to Radial Lift Ratio Average	**27%**

However, when the data is averaged as shown above across all the units in brochure, one sees that the average increase in the amount of weight per pound that Mustang's vertical lift loaders could lift is 27% more than what could be lifted by Mustang's radial lift loaders. A 20% increase in lift as set forth by the Patent Owner in its published documents for the mini skid steers corresponding to the '750 patent, or even the 32% inflated figure claimed by the Patent Owner, is hardly an unexpected result compared to the 27% one of ordinary skill in the art would have expected from the above. Put quite simply, the incomplete and inconsistent

facts and the flawed methodology used by the Patent Owner during the prosecution of the '750 patent does not establish unexpected results.

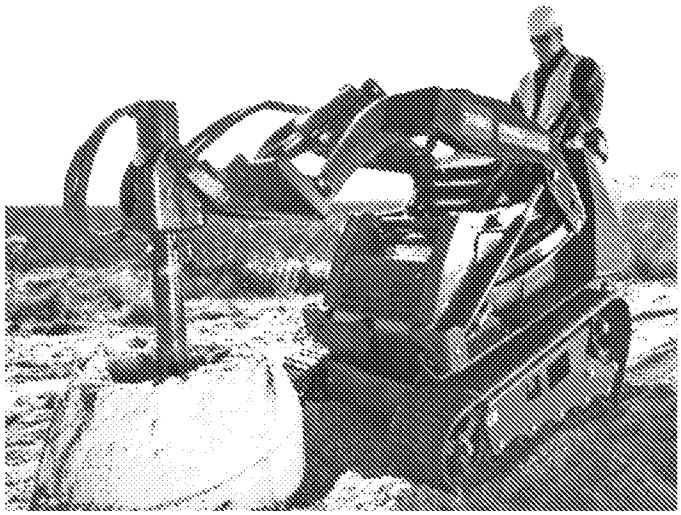
2. Patent Owner's Showing of Alleged Skepticism by Toro

In the prosecution of the '750 patent, the Patent Owner offered a statement from a patent application that Toro had written relating to its Dingo TX 1000 loader as proof of skepticism by Toro which the Patent Owner argued should overcome the prior art rejection then before the Examiner in the prosecution of the '750 patent, namely Vermeer in view of Mustang. That statement reads as follows:

> "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."
> (Amendment D of 11/10/2017, pp. 22-23)

That sentence first appeared in provisional application Serial No. 62/115,854 filed on February 20, 2015. That sentence was relied upon by the Patent Owner in the prosecution of the '750 patent, along with the showing of unexpected results that Toro has demonstrated above is flawed, to argue for withdrawing the rejection based on Vermeer in view of Mustang. Toro respectfully submits that critical context for this sentence was missing in the prosecution of the '750 patent. Toro will provide that additional context now.

Toro is submitting herewith a Toro Rental Bulletin dated February 10, 2015 introducing the Dingo TX 1000 loader to the rental market in advance of an upcoming show at which the product was further shown. As shown in the picture of the TX 1000 on the front page of the brochure which is reproduced to the right hereof, the Dingo TX 1000 had been reduced to a fully commercialized form that was ready to be



shown to potential customers. This picture and the Toro Rental Bulletin in which it appears proves that the design, development, and product refinement work on the TX 1000 had all been done **before** the alleged expression of skepticism by Toro which appeared in the later filed provisional application.

If Toro had truly been skeptical about whether or not a vertical lift loader system could be used on a mini skid steer, such skepticism would have kept Toro from ever starting the project that led to the TX 1000. However, the statement of alleged skepticism came after all the work was done and the TX 1000 was ready to go to market and then appeared only in a patent application seeking to patent that product. In view of this timing, the statement does not justify the weight accorded to it in the prosecution of the '750 patent.

In addition, the statement must also be read in the context of the objective of the design project which led to the TX 1000. The target at which the TX 1000 was aimed was to provide a loader with substantially higher lift capacity than any loader then in Toro's product line. At the time Toro was developing the TX 1000, its radial lift Dingo loader line had rated operating capacities as high as the mid 500 pound range. By contrast, the TX 1000 achieved a doubling of that to a rated operating capacity of 1000 pounds or more. The Toro Rental Bulletin highlights that design objective in the context of maintaining the small size of a mini skid steer loader.

"Dingo TX 1000 features and benefits
Rated Operating Capacity

- Maximum jobsite efficiency requires that CULs lift and transport extremely heavy loads, and the Dingo TX 1000 goes a long way in helping operators achieve their goal of wanting to lift as much weight as possible. In fact, the TX 1000 name refers to its rated operating capacity. The Dingo TX 1000 features an industry leading rated operating capacity of 1000 lbs on the Narrow Track unit and 1075 lbs on the Wide Track unit."
  (Emphasis in Original) (Toro Rental Bulletin, bottom pg. 1 – top pg. 2)

"*Smaller footprint*

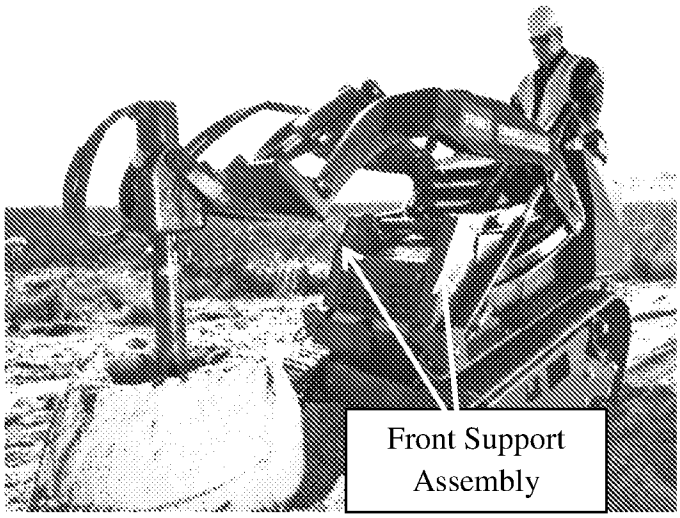
- Although its (sic) Toro's biggest Dingo yet, the TX 1000 stays true to the original intention of CULs - being able to do more with a smaller footprint. No other CUL can lift as much as the TX 1000 while maintaining the relatively shorter length and height dimensions and relatively lower weight of this product."
  (Emphasis in Original) (Toro Rental Bulletin, bottom pg. 3)

Toro had no doubt that one could adapt vertical lift linkages to a mini skid steer, but Toro's objective was not mere adaptation. The statement that allegedly expresses Toro's skepticism must be read while keeping what Toro was trying to accomplish in mind - not mere adaptation but a leap forward. The statement itself alludes to that at the very end when it states that the difficulty arises from "size and durability constraints". The design objective of the TX 1000 was making a loader having the small **size** of a mini skid steer loader but that would be **durable** when lifting substantially more weight than any of Toro's previous loaders.

When reading Toro's statement in this context, which context cannot be gleaned from the patent application in which it appears, it is clear that the statement is NOT a reflection on the obviousness or practicality of adapting a vertical lift loader to a mini skid steer while being satisfied with a small increase in lift capacity. Instead, the statement is a simple acknowledgment that adapting a vertical lift loader to a mini skid steer with a substantial increase in lift capacity in mind is not the same as attempting a much smaller increase.

It is misleading at the very least for the Patent Owner to use Toro's statement in an abstract fashion divorced from a disclosure and consideration of the very different design objectives the Patent Owner and Toro each had. Toro's TX 1000 achieved an approximate doubling in operating capacity over the operating capacity of its **largest** radial lift loader. By contrast, the Patent Owner's CTX50 mini skid steer corresponding to what is shown in the '750 patent achieved a 20% increase, according to the Patent Owner's public statements on the matter, over the operating capacity of its **smallest** radial lift loader, i.e., the S450TX. Toro's statement of alleged skepticism simply cannot be read as skepticism to the use of a vertical lift loader on a mini skid steer when one fully considers the real world backdrop existing at the time Toro made that statement, namely the very different design objectives of Toro and the Patent Owner.

Finally, when one puts the statement that the Patent Owner alleges proves skepticism into the context of the entire Toro application, one will see that the Toro patent application later makes very clear that strength and stability of a novel "front support assembly" in combination with strength in the components of the vertical lift linkage are key factors in achieving an optimized vertical lift mini skid steer. In the Toro loader in question, all the components of each vertical lift linkage on each side of the loader, namely the first and second linkages and the actuator on each side of the loader, have their front ends pivotally connected to an upwardly extending front support assembly that spans the width of the loader. The front support assembly is labeled in the photograph above with the arrows pointing to the U-shaped support beams that form either side of the front support assembly.



The Toro patent application emphasizes the front support assembly, inter alia, as follows:

> "[034] Together, the configuration of support assembly 33, the configuration of the pairs of lower loader arms 22, 24 and how they are pivotally journalled at their front ends inside the U-shaped support beams 34 of support assembly 33 and at their rear ends inside the U-shaped upper loader arms 20, and the box shaped beam configuration used to form upper loader arms 20 along with box beam 58 that unites such loader arms 20, provide a loader arm assembly 14 having sufficient strength and durability to withstand the loads and stresses involved in high lift operations of heavy loads. This is all accomplished in a loader arm assembly 14 that neatly and compactly nests around prime mover 8 in its lowermost, fully retracted position shown in Fig. 2. In this regard, hydraulic cylinders 30 extend straight rearwardly as they connect between the side pockets 38 of support assembly 33 and the undersides of upper loader arms 20. To avoid hitting or interfering with such hydraulic cylinders 30, the lower of the two pairs of lower loader arms, namely loader arms 24 that pivot about the axis x_2, are curved to the side to miss hydraulic cylinders 30 as best shown in Fig. 5. Thus, loader arm assembly 14 is well adapted to the loads it must carry during high lift operations while being tailored to the small form of a compact utility loader 2. In addition, high lift loader arm assembly 14 maintains the forward reach of the loader arms 20 and dump bucket 16 carried thereon far better than radial loader arms which move somewhat rearwardly as they rise."
> (Yellow Highlighting Added)

3. Patent Owner's Showing of Alleged Failure by Others/Long Felt Need

In the Patent Owner's argument entitled "Long Felt Need and Attempts by Others"[10], the Patent Owner points to the use of counterweights on radial lift mini skid steers as comprising failed attempts by others to produce a mini skid steer with a vertical lift linkage. The Patent Owner would have the Examiner infer that the addition of counterweights was essentially the only path that one of ordinary skill in the art would have taken to provide additional lift capacity on mini skid steers. However, as Toro will show below, such an inference is clearly improper as it completely ignores the actual reasons that counterweights are used on skid steer loaders, whether large or small.

Counterweights have long been used on skid steer loaders as a simple way to increase the upper end of the lift capacity of a given loader. This is discussed in an article entitled "Size-Up Skid-Steer Loaders"[11] as follows:

> "The rated operating capacity can often be slightly increased by using an optional factory counterweight package. 'For customers at the upper end of the rated operating capacity, one model counterweight can add an additional 150 lbs. of capacity,' says Moore, discussing Gehl's skid-steer models. 'In addition, it serves as a bumper and hitch. The counterweight on our two larger E Series loaders increases the rated operating capacities by 300 lbs.'
>
> Similarly, Bobcat offers factory-approved counterweight packages through its dealers. 'Loader owners can add counterweights — available from their dealership — to the machine for an increase in the loader's rated operating capacity,' says Fitzgerald."
>
> (Yellow Highlighting Added) (Pg. 3/5).

The rationale inherent in this use of counterweights is one of common sense practicality and simple cost effectiveness. A particular skid steer model may work splendidly in most applications but may become unstable when that model is asked to lift loads at or slightly above the very top end of its rated lifting capacity. In this situation, an owner or potential owner of such a model has two choices: buy the next bigger skid steer model in the OEM manufacturer's line or add a counterweight to the smaller model skid steer to bump up the top end of the lift capacity to something sufficient to lift the heaviest loads it will occasionally be asked to do. In

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[10] Amendment D of 11/10/2017, pp. 28-31.

[11] Available online at the following link https://www.forconstructionpros.com/equipment/earthmoving-compact/skid-steers/article/10304897/sizeup-skidsteer-loaders . A copy of this article is also being submitted herewith.

many cases, the owner will make the obvious and cost effective choice, namely use a counterweight to get a marginally higher lift capacity rather than buy a larger machine that would be overkill for most of its tasks.

This common sense, cost effectiveness rationale for counterweight use on a skid steer loader is expressed by a skid steer owner in the following post from an online skid steer chat forum[12]:

> "I have a 763 bobcat and in the winter all I use it for is for loading trucks with pallets of salt/calcium. My problem is I can't lift a full pallet with riding a wheelie on my front tires. A pallet of rock salt is 2400 lbs. if I install a weight kit on it will help/solve my problem. I really don't want to buy a larger skid steer because it is the perfect size for me in non-snowing months. Thanks!
> alfman, Oct. 7, 2001"
> (Yellow Highlighting Added)

Moreover, the use of counterweights on skid steer loaders as a simple way to increase the upper end of the lift capacity of a given loader has been applied to **both radial lift loaders AND vertical lift loaders**. This is discussed in a press release from CNH Industrial entitled "Case Upgrades Its Skid Steer And Compact Tracked Loader Line-Up", a copy of which is being submitted herewith, which states as follows:

> "**Broader Range**
>
> The extended Case line-up now includes five radial lift skid steers (SR), two radial lift tracked loaders (TR), two vertical lift skid steers (SV) and one vertical lift path tracked machine (TV). With operating weights of 2,300 kg to 3,765 kg for the skid steers and 3,720 kg to 4,625 kg for the tracked loaders, there is a machine to suit every application. The compact machines deliver rated operating capacities (50%) of 590kg through to 1,723 kg and tipping loads of 1,179 kg to 3,447 kg. ***Operating capacities on every model can be further increased by mounting additional counterweights on the rear part of the machine***."
> (Yellow Highlighting and Bold Italics Added).

The Patent Owner's argument entitled "Long Felt Need and Attempts by Others" in the pending prosecution of the '750 patent is not supported by sufficient evidence. Other than asserting that there was a long felt need, the Patent Owner provides no evidence that such a need was both long felt in the art and unmet. There is no evidence that anyone ever attempted to convert a typical mini skid steer from its usual radial lift configuration to a vertical lift and

[12] https://www.plowsite.com/threads/bobcat-weight-kit.3745/ . A copy of this chat forum dialogue is also being submitted herewith.

was unsuccessful in doing so. As Toro will show in a moment, the only evidence actually of record is the fact that both the Patent Owner and Toro working independently of one another began engineering projects at the conclusion of the Great Recession and both the Patent Owner and Toro were successful at adapting vertical lift linkage technology to mini skid steers. Such simultaneous invention is proof of non-obviousness but is entirely ignored by the Patent Owner.

Returning to the use of counterweights, the use of such counterweights on radial lift mini skid steers is simply the same common sense, cost effective choice long known with respect to larger skid steers. Why buy a bigger radial lift skid steer when adding a counterweight to a smaller model would extend the lift capacity of the smaller and more cost effective model enough to handle the heaviest loads the owner anticipates lifting? In addition, since larger skid steers actually apply counterweights to **both radial as well as vertical lift models**, their application to radial lift skid steers cannot logically be turned on its head to suggest that this is a failed attempt by others to produce a vertical lift loader. It simply means that there are good practical and economic reasons for using counterweights on any loader, whether a mini skid steer loader or a full size loader, that have nothing to do with believing that they could not be converted to vertical lift loaders. Those reasons are simply to extend the lift capacity of a loader that is otherwise the perfect size for a particular use to more comfortably handle lift applications at the high end of the operating capacity range.

Accordingly, the Patent Owner has established neither long felt need nor failed attempts by others to produce a mini skid steer with a vertical lift linkage.

4. Patent Owner's Showing of Alleged Commercial Success

Courts often note that commercial success is "usually" proven by evidence of "significant sales in relevant market." *J.T. Eaton & Co. v. Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997). Courts routinely find that commercial success is relevant to an obviousness inquiry "only if there is proof that [product] sales were a direct result of the unique characteristics of the claimed invention—as opposed to other economic and commercial factors unrelated to the quality of the patented subject matter." *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996); *see also Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 740 (Fed. Cir. 2013) (same); *In re Metz*, 173 F.3d 433, 1998 WL 670185, at *6 (Fed. Cir. 1998) (affirming PTAB's

finding of obviousness even where party raised, as evidence of non-obviousness, secondary considerations of commercial success indicated in sales figures because those figures were "essentially meaningless" since they demonstrated only that the party "sold products and that the volume of those sales increased with time" and did not "indicate the size of the market or the market share achieved"). As courts hold, there must be a "nexus" between sales and the merits of the claimed invention. *In re Huang*, 100 F.3d at 140.

In that section of the Patent Owner's Amendment dealing with commercial success[13], there is not a sales number to be found. There is NO evidence by the Patent Owner of its own sales for its vertical lift loaders or whether its sales met expectations, are growing, shrinking or comprise any relevant percentage of any market. Certainly, if the Patent Owner had sales that were probative of non-obviousness, it would have introduced them as evidence. Simply put, there is NO evidence of commercial success.

Instead, the Patent Owner refers to various press coverage that occurred when the various vertical lift mini skid steers of the Patent Owner (the CTX50) and of Toro (the TX1000) were simultaneously introduced in February 2015 or shortly thereafter. It is not uncommon for new product introductions to get some buzz when they occur. In this case, the product introductions were even more likely to attract some attention because they represented the first time vertical lift loader technology had been adapted to a mini skid steer platform. However, this new product type press coverage is not a strong indicator of non-obviousness since it happens routinely each year as manufacturers update their product lines and add new models. It happens even when there is nothing patentably different between the new product introduction and the prior art. That is why a showing of commercial success must be founded on sales volume information placed into the context of a relevant market.

The Patent Owner has not attempted to properly prove commercial success, but rather simply attempts to bootstrap new product press coverage into such a showing. This is not a proper showing of commercial success and is not probative of non-obviousness.

[13] Amendment D of 11/10/2017, pp. 31-32.

5. Toro's Undisputed Showing of Simultaneous Invention

Toro's U.S. patent application relating to its TX 1000 mini skid steer loader was published by the PTO as US-2016-0244937-A1[14]. Both the Toro application and the application that led to the '750 patent at issue herein claim priority to provisional applications that were filed by Toro and the Patent Owner on the same day, namely on February 20, 2015. Toro's provisional application was filed four minutes earlier that the Patent Owner's provisional application. The filing date of February 20, 2015 was a few days prior to the beginning of the 2015 Rental Show of the American Rental Association at which both the Patent Owner and Toro showed their respective versions of a mini skid steer equipped with a vertical lift linkage to the public.

The Court of Appeals for the Federal Circuit discussed the probative value of simultaneous invention in *Ecolochem, Inc. v. Southern California Edison Co.*, 227 F.3d 1361 (Fed. Cir. 2000). In upholding the District Court's finding that simultaneous invention by different parties favored a finding of obviousness, the CAFC noted the following:

> "The fact of near-simultaneous invention, though not determinative of statutory obviousness, is strong evidence of what constitutes the level of ordinary skill in the art." *The Int'l Glass Co. v. United States,* 187 Ct.Cl.376, 408 F.2d 395, 405 (1969). "[T]he possibility of near simultaneous invention by two or more equally talented inventors working independently, ... may or may not be an indication of obviousness when considered in light of all the circumstances." *Lindemann,* 730 F.2d at 1460, 221 USPQ at 487." 227 F.3d at 1379.

A number of cases after *Ecolochem* have held that simultaneous invention is an indicium of obviousness. *E.g., Geo. M. Martin Co. v. All. Mach. Sys. Int'l LLC*, 618 F.3d 1294, 1306 (Fed. Cir. 2010) ("The district court was therefore correct to conclude that the invention of the Tecasa machine, occurring only a year later than the earliest possible reduction-to-practice date of the claimed invention, qualified as a simultaneous invention. As such, 'though not determinative of statutory obviousness, [it is] strong evidence of what constitutes the level of ordinary skill in the art.'") (quoting *Ecolochem*, 227 F.3d at 1379); *Warner Chilcott Co., LLC v.*

[14] A first U.S. Patent 9,970,176 issued on May 15, 2018 to aspects of the TX-1000 unrelated to the vertical lift linkage.

Teva Pharm. USA, Inc., 89 F. Supp. 3d 641, 671 (D.N.J. 2015), *aff'd*, 642 F. App'x 996 (Fed. Cir. 2016).

The fact that Toro and the Patent Owner, working independently of one another and without knowledge of the other's work, simultaneously invented a mini skid steer loader with a vertical lift linkage provides strong evidence of the obviousness of the invention at issue in the '750 patent to one of ordinary skill in the art at the time of the invention. Both Toro and the Patent Owner had to have embarked substantially simultaneously on engineering projects to design, prototype, test, and refine the mini skid steers that became Toro's TX 1000 and the Patent Owner's CTX50, respectively. Incredibly, both Toro and the Patent Owner filed provisional applications on the same day **only four minutes apart** to protect their work and showed their respective products at the same trade show a week or two later. A more simultaneous case of simultaneous invention cannot be found. This is strong objective evidence of the obviousness of the invention disclosed and claimed in the '750 patent.

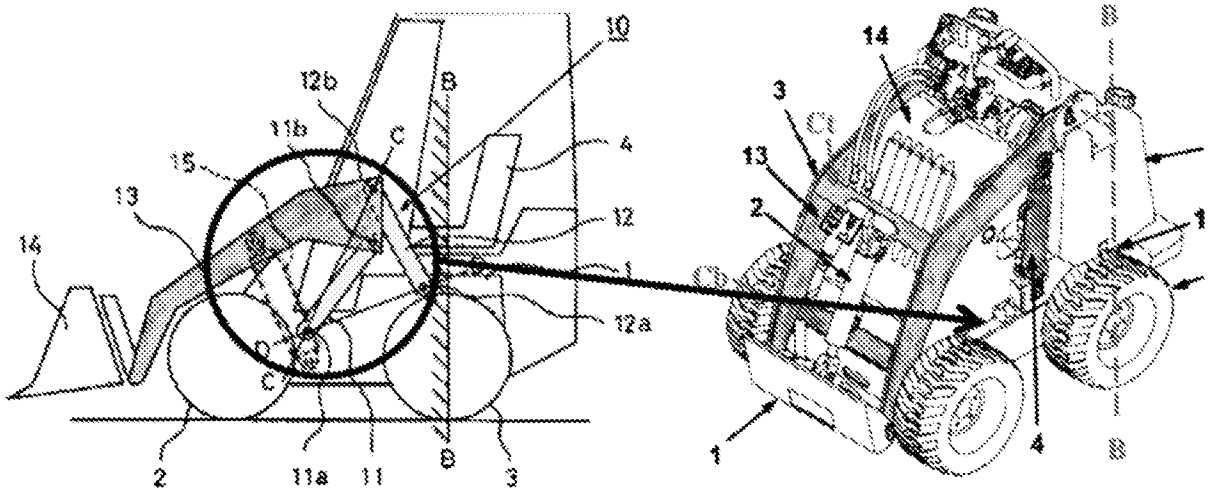
H. Strong Prima Facie Obviousness Not Outweighed by Objective Evidence

In reaching a conclusion on the ultimate question of the obviousness of the invention recited in claims 1-20 and 22-34 of the '750 patent, the prima facie case of obviousness must be weighed against the objective evidence relating to non-obviousness.

However, when weighing the two against one another, many courts have found that when a party presents a strong *prima facie* case of obviousness, even a strong showing of secondary considerations or objective evidence of non-obviousness is insufficient to overcome the prima facie case. *E.g.*, *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) ("[S]econdary considerations of nonobviousness—considered here by the district court—simply cannot overcome a strong prima facie case of obviousness."); *Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (agreeing with the district court that patentee "had provided substantial evidence of commercial success, praise, and long-felt need, but that, given the strength of the prima facie obviousness showing, the evidence on secondary considerations was inadequate to overcome a final conclusion that claim 25 would have been obvious"); *In re Inland Steel Co.*, 265 F.3d 1354, 1366 (Fed. Cir. 2001) (agreeing with the PTAB that patentee's "proffered commercial success, even when combined with other objective

indicia of non-obviousness [including unexpected results], is insufficient to overcome the strong prima facie obviousness case" and citing *Ryko Mfg. Co. v. Nu–Star, Inc.*, 950 F.2d 714, 719 (Fed. Cir. 1991)).

In this particular case, the prima facie case of obviousness is very strong. As shown below, it involves adapting a vertical lift linkage as taught by Komatsu to replace a radial lift linkage as taught in Dingo to achieve the advantages that Komatsu expressly taught, namely to increase vehicle stability and to provide further forward reach at maximum lift height. The combination simply involves adapting the vertical lift linkage of Komatsu to Dingo in the same location where Komatsu teaches that it be placed, namely forwardly of a line B-B through the center of the rear wheel. The combination is again depicted below to show how the two references literally invite the modification since Dingo had already located its radial lift linkage ahead of a corresponding line B-B through the center of Dingo's rear wheel. This is undoubtedly a very strong prima facie case of obviousness.



Komatsu **Dingo**

Against this very strong prima facie case of obviousness, one must weigh all objective evidence both pro and con that relates to the ultimate determination of obviousness. "..(H)e complied with the basic requirement that *all* evidence touching the obvious-nonobvious issue be fully considered before a conclusion is reached on that issue." *Kansas Jack, Inc. v. Kuhn*, 719 F.2d 1144, 1150 (Fed. Cir. 1983) (emphasis in original).

While the Examiner in the prosecution of the '750 patent relied on two secondary considerations (unexpected results and long felt need/attempts by others) in withdrawing the prima facie case of obviousness based on Vermeer in view of Mustang in the prosecution of the '750 patent, the Dingo in view of Komatsu combination is a far stronger one than the Vermeer in view of Mustang combination. Specifically, Komatsu shows that a vertical lift linkage could be downsized into a smaller form without a rear cross member. Komatsu further teaches placing that linkage forwardly of an operator who is more rearwardly located, including to a position "to the rear of the rear wheel". A position that is "to the rear of the rear wheel" is precisely where the operator is located in Dingo. The obviousness of the Dingo and Komatsu combination is simply apparent on its face as shown above. Accordingly, even if one accepts the Patent Owner's showing of objective evidence of non-obviousness at face value, it would not outweigh the far stronger prima facie case of obviousness that Dingo in view of Komatsu present.

However, as Toro has shown above in its rebuttal, one cannot take the Patent Owner's showing of unexpected results and alleged skepticism by Toro at face value. The showing of unexpected results is insufficient for various reasons among which is a cherry picked base of comparison for the results, i.e. assuming that a vertical lift linkage produces only 3.8% more lift capacity than a radial lift linkage because that is what one sample indicated. When the same document is used to arrive at average values across an entire line of radial lift loaders and vertical lift loaders, one sees that a 27% increase is a more appropriate base. When measured against that more appropriate base, the showing of unexpected results vanishes.

Similarly, Toro's statement of alleged skepticism cannot be accorded significant weight since it fails to take into account that Toro had already been successful in implementing a vertical lift linkage on a mini skid steer platform when that statement was made. The statement was also previously read by the Patent Owner out of context. The statement is far more innocuous when read in context.

Finally, even if one gives the Patent Owner the benefit of the doubt and accords the objective evidence of non-obviousness some evidentiary basis, one must remember the guidance of the courts that "*all*" evidence bearing on the ultimate conclusion of obviousness must be considered. This would include the undisputed evidence of simultaneous invention in which the parties filed their patent applications four minutes apart on the same day and showed

their products together at the same trade show days later. Such evidence of simultaneous invention offsets the evidence of secondary considerations presented by the Patent Owner in the prosecution of the '750 patent. Accordingly, the strong prima facie case of obviousness presented by Dingo in view of Komatsu is simply not outweighed by the objective evidence of non-obviousness when such evidence is offset by the undisputed fact of simultaneous invention.

V. No Admissions

The fact that this Request for Reexamination addresses only claims 1-20 and 22-34 of the '750 patent is not an admission by Toro that the other untreated claim of the '750 patent is valid or would be patentable over the prior art relied upon in this Request or other prior art. In addition, the manner in which the prior art relied upon in this Request as applied to claims 1-20 and 22-34 of the '750 patent herein is not an admission by Toro that this is the only way such references could have been applied. Moreover, the selection and use of the particular references relied upon in this Request is not an admission by Toro that the prior art relied upon in this Request is the only prior art that could be applied to the claims of the '750 patent.

VI. Conclusions

Clearly, the prior art relied upon in this Request raises substantial new questions of patentability as to claims 1-20 and 22-34 of the '750 patent. Just as clearly, the prior art relied upon in this Request presents extremely strong and well supported prima facie proposed obviousness rejections of claims 1-20 and 22-34 of the '750 patent as set forth above in Grounds 1 and 2. To the extent objective evidence relating to obviousness exists, such evidence is weak at best and is further offset by the fact of simultaneous invention as Toro has shown above in Sections IV(G) and 1V(H) hereof. Accordingly, the prima face case of obviousness under 35 U.S.C. §103(a) must stand.

All the requirements for *ex parte* reexamination have been met. It is respectfully requested that the PTO order such reexamination and find that claims 1-20 and 22-34 of the '750 patent are unpatentable.

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US009975750B2

(12) **United States Patent**
Thomas et al.

(10) **Patent No.: US 9,975,750 B2**
(45) **Date of Patent: *May 22, 2018**

(54) **LOW PROFILE COMPACT TOOL CARRIERS**

(71) Applicant: **Vermeer Manufacturing Company**, Pella, IA (US)

(72) Inventors: **Brad Thomas**, Pleasant Hill, IA (US); **Louis Hartke**, Pella, IA (US); **Greg Langenfeld**, Bettendorf, IA (US); **Matt Hutchinson**, Pella, IA (US)

(73) Assignee: **Vermeer Manufacturing Company**, Pella, IA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/062,801**

(22) Filed: **Mar. 7, 2016**

(65) **Prior Publication Data**

US 2016/0244308 A1 Aug. 25, 2016

Related U.S. Application Data

(63) Continuation of application No. 14/691,649, filed on Apr. 21, 2015, now Pat. No. 9,321,386.
(Continued)

(51) **Int. Cl.**
B60P 1/50 (2006.01)
B66F 9/075 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***B66F 9/065*** (2013.01); ***B60P 1/483*** (2013.01); ***B66F 9/06*** (2013.01); ***B66F 9/0759*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B60P 1/50; B60P 1/483; B66F 9/06; B66F 9/07572; B66F 9/22; B66F 9/065;
(Continued)

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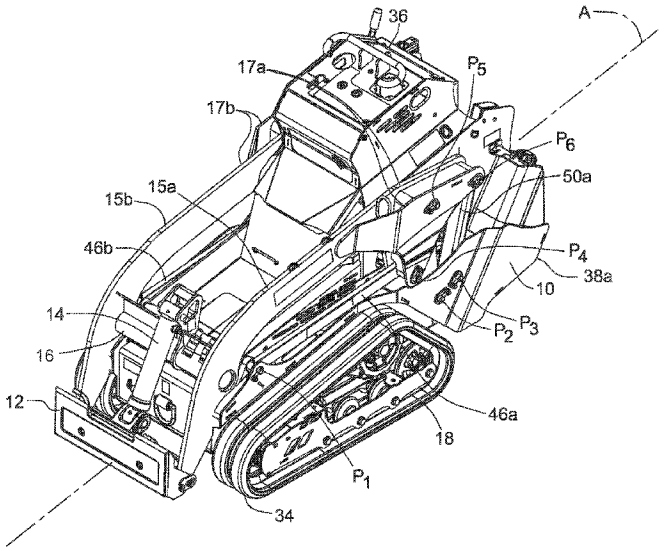
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Primary Examiner — Dean J Kramer
(74) *Attorney, Agent, or Firm* — Armstrong Teasdale LLP

(57) **ABSTRACT**

Compact tool carriers having a loader mounted to a low-profile mainframe are disclosed. In some embodiments, the pivot points of the mainframe about which the loader is pivoted are low relative to the mainframe to reduce the mainframe size and to lower the center of gravity to improve the stability of the compact tool carrier during use.

34 Claims, 7 Drawing Sheets



Related U.S. Application Data

(60) Provisional application No. 62/118,860, filed on Feb. 20, 2015.

(51) **Int. Cl.**

B66F 9/22	(2006.01)
B66F 9/06	(2006.01)
B66F 9/065	(2006.01)
E02F 3/34	(2006.01)
E02F 3/96	(2006.01)
E02F 9/08	(2006.01)
E02F 9/20	(2006.01)
B60P 1/48	(2006.01)

(52) **U.S. Cl.**

CPC ***B66F 9/07572*** (2013.01); ***B66F 9/07577*** (2013.01); ***B66F 9/22*** (2013.01); ***E02F 3/3405*** (2013.01); ***E02F 3/3414*** (2013.01); ***E02F 3/96*** (2013.01); ***E02F 9/08*** (2013.01); ***E02F 9/205*** (2013.01)

(58) **Field of Classification Search**

CPC B66F 9/07577; B66F 9/0759; E02F 3/34; E02F 3/3405; E02F 3/3414; E02F 3/96; E02F 9/08; E02F 9/205

USPC 414/685, 686, 722, 909; 180/89.1, 311

See application file for complete search history.

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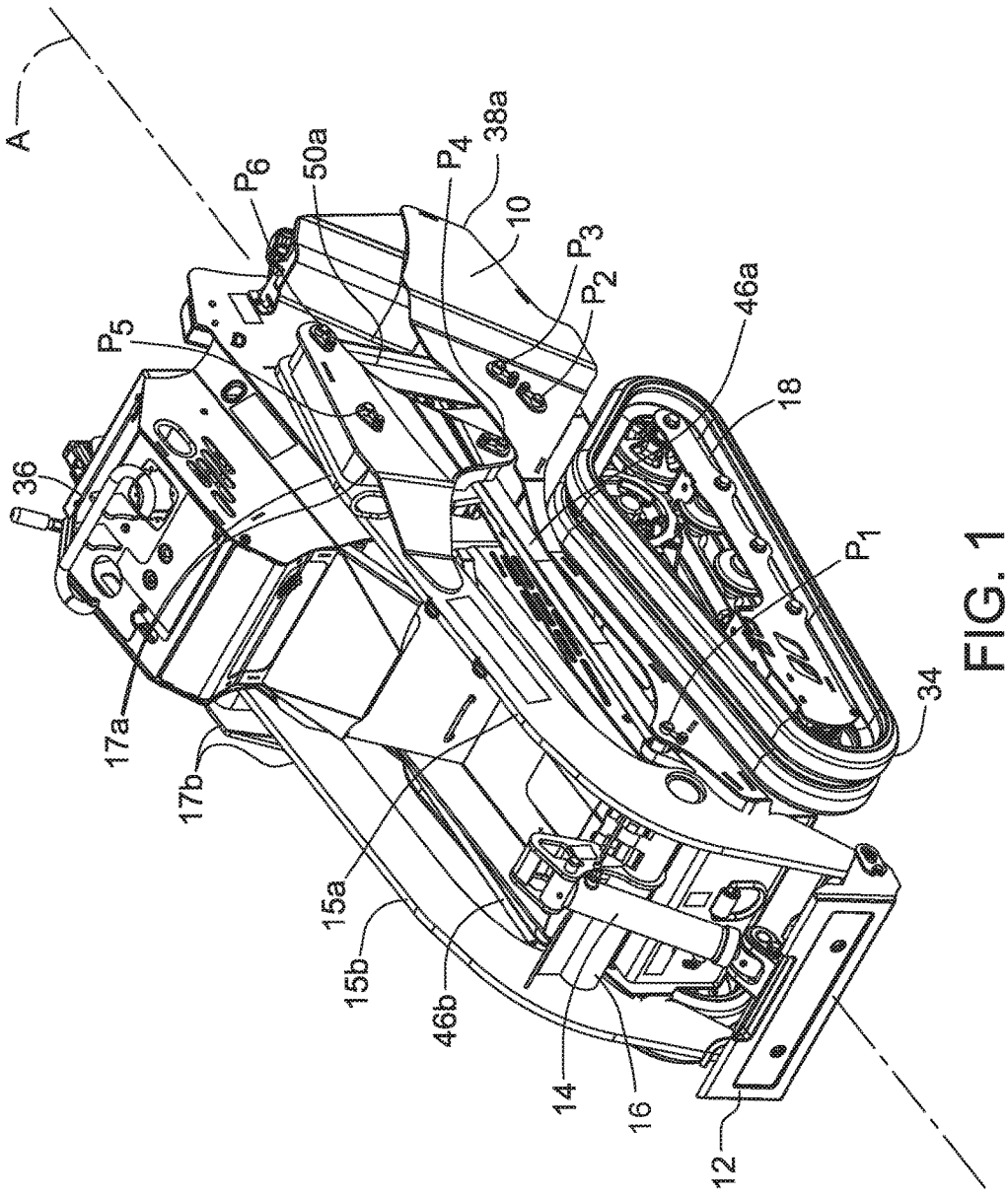

A
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FIG. 1

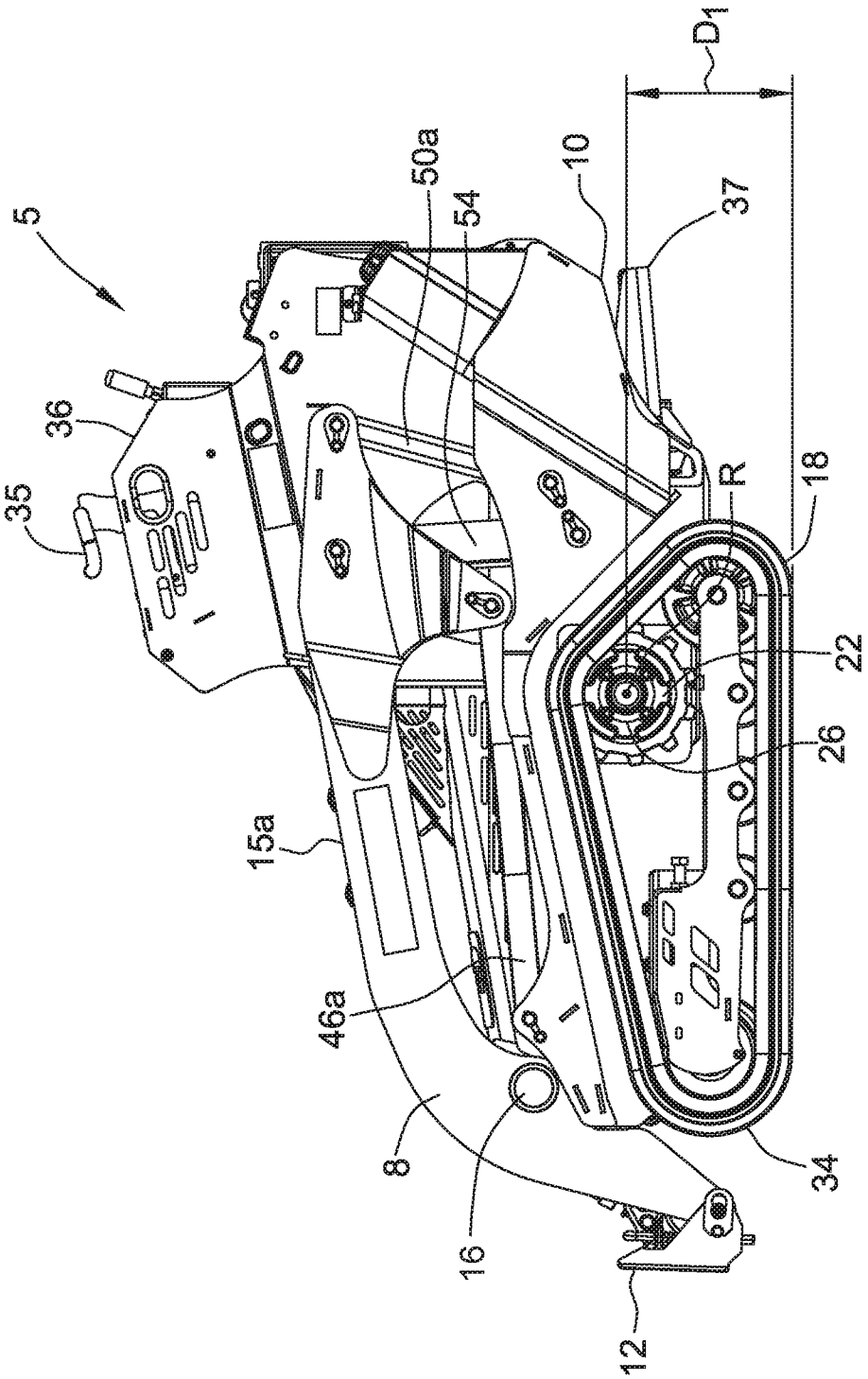


FIG. 2

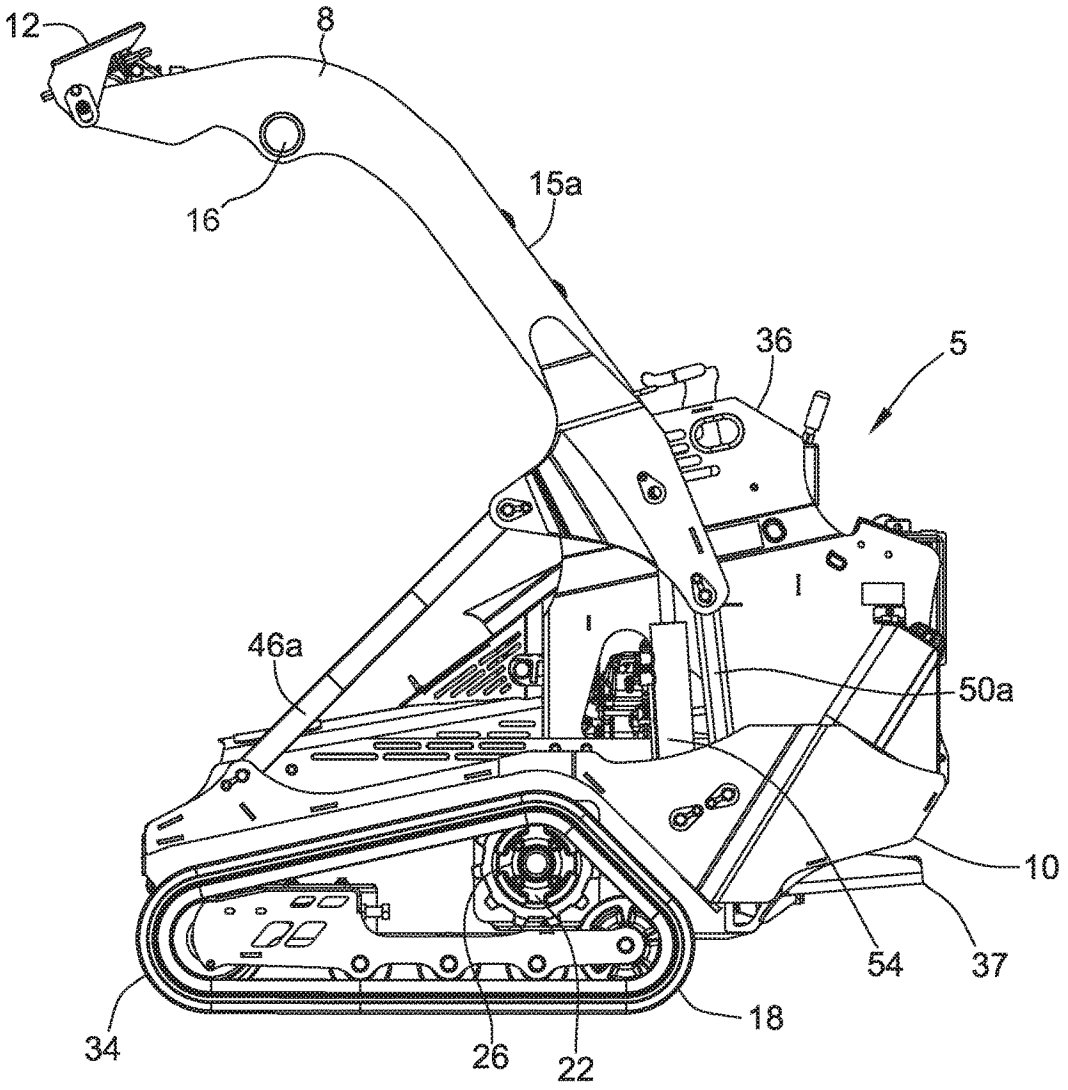


FIG. 3

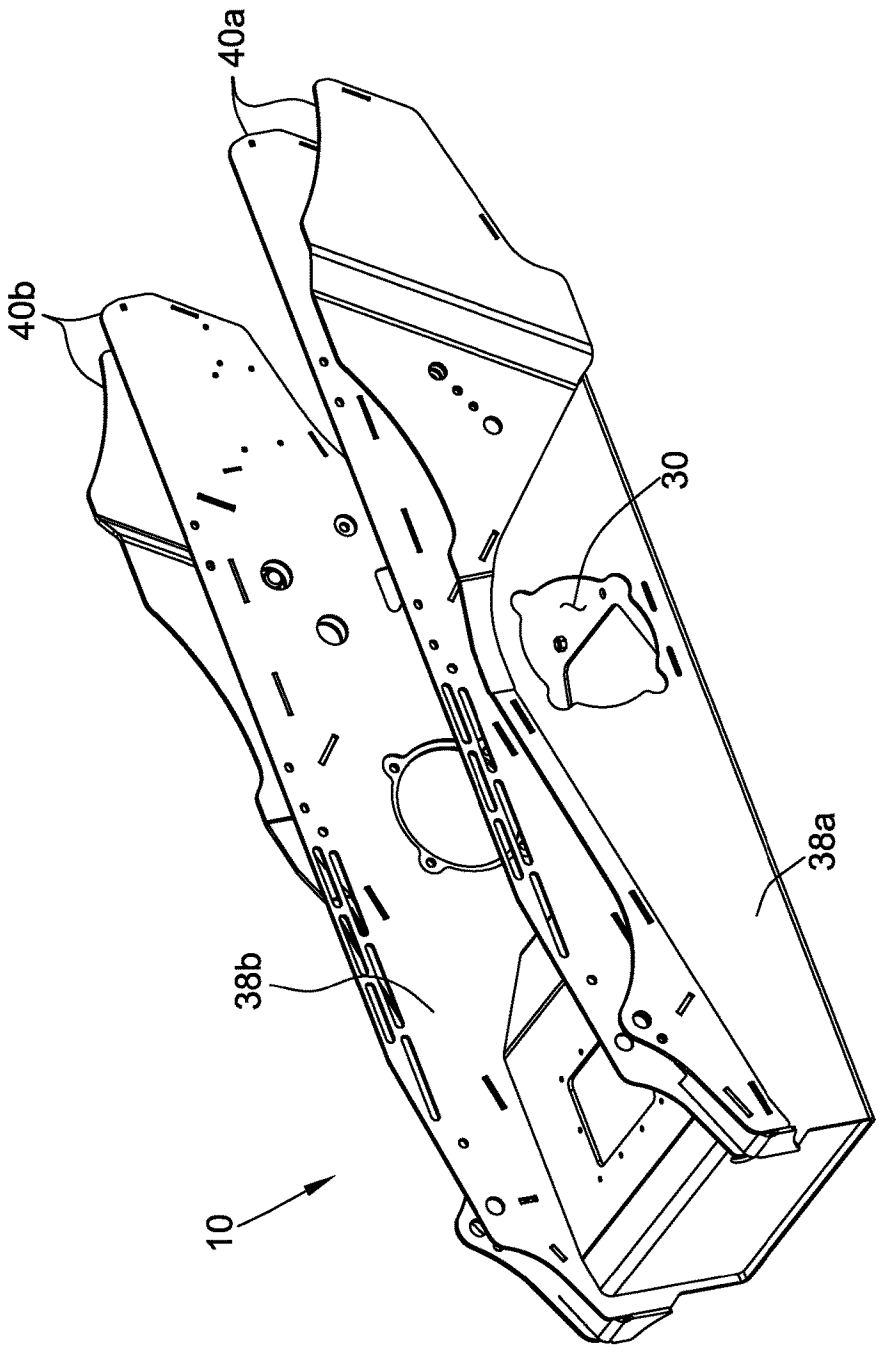


FIG. 4

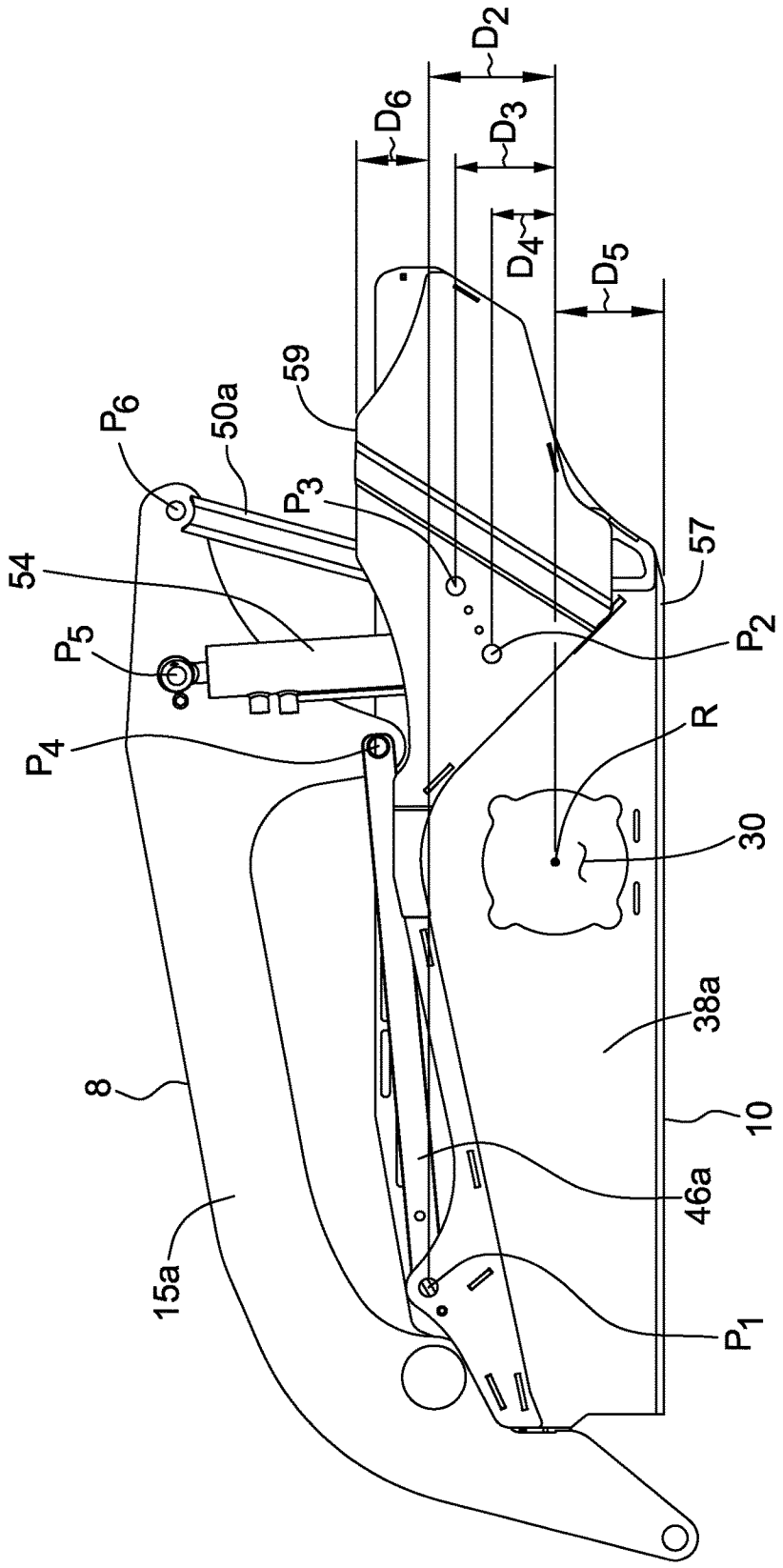


FIG. 5

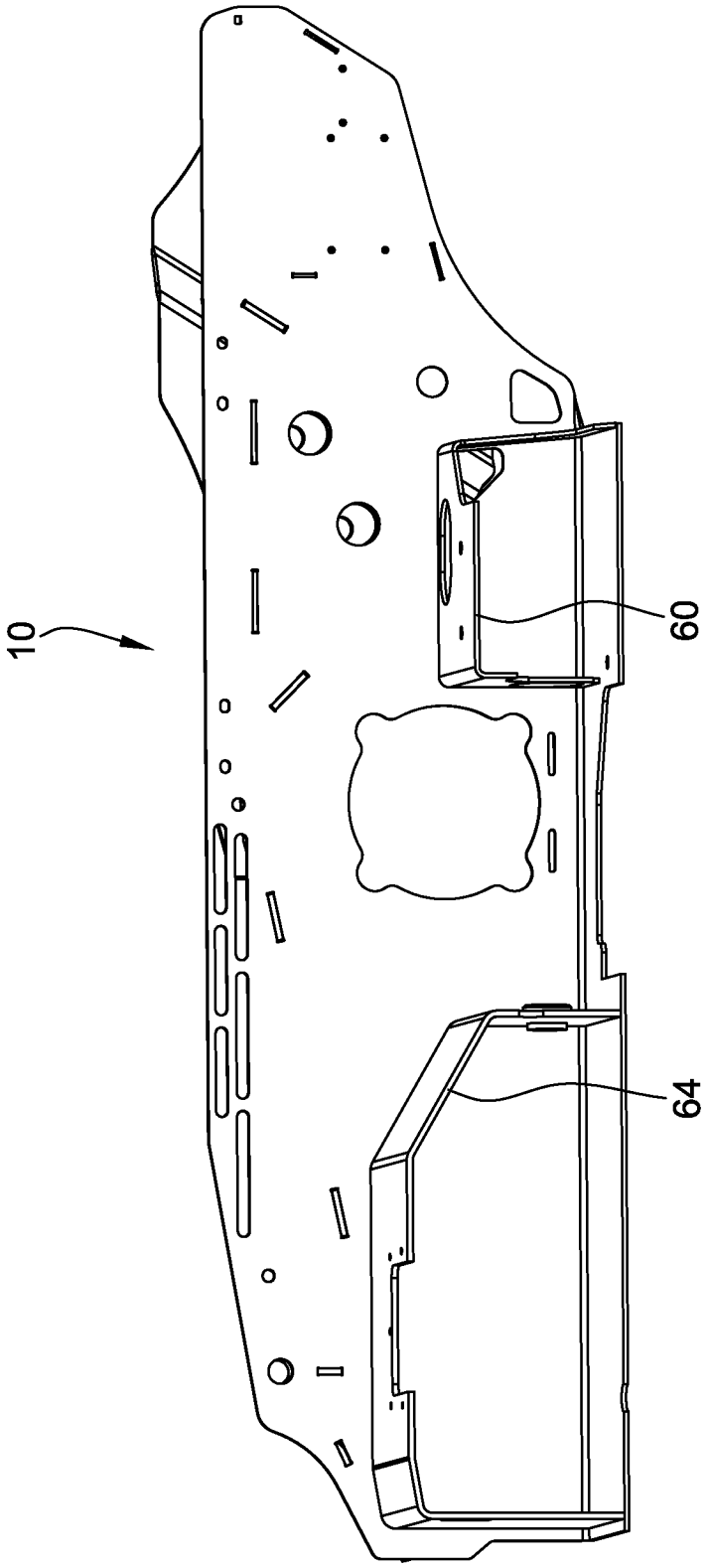


FIG. 6

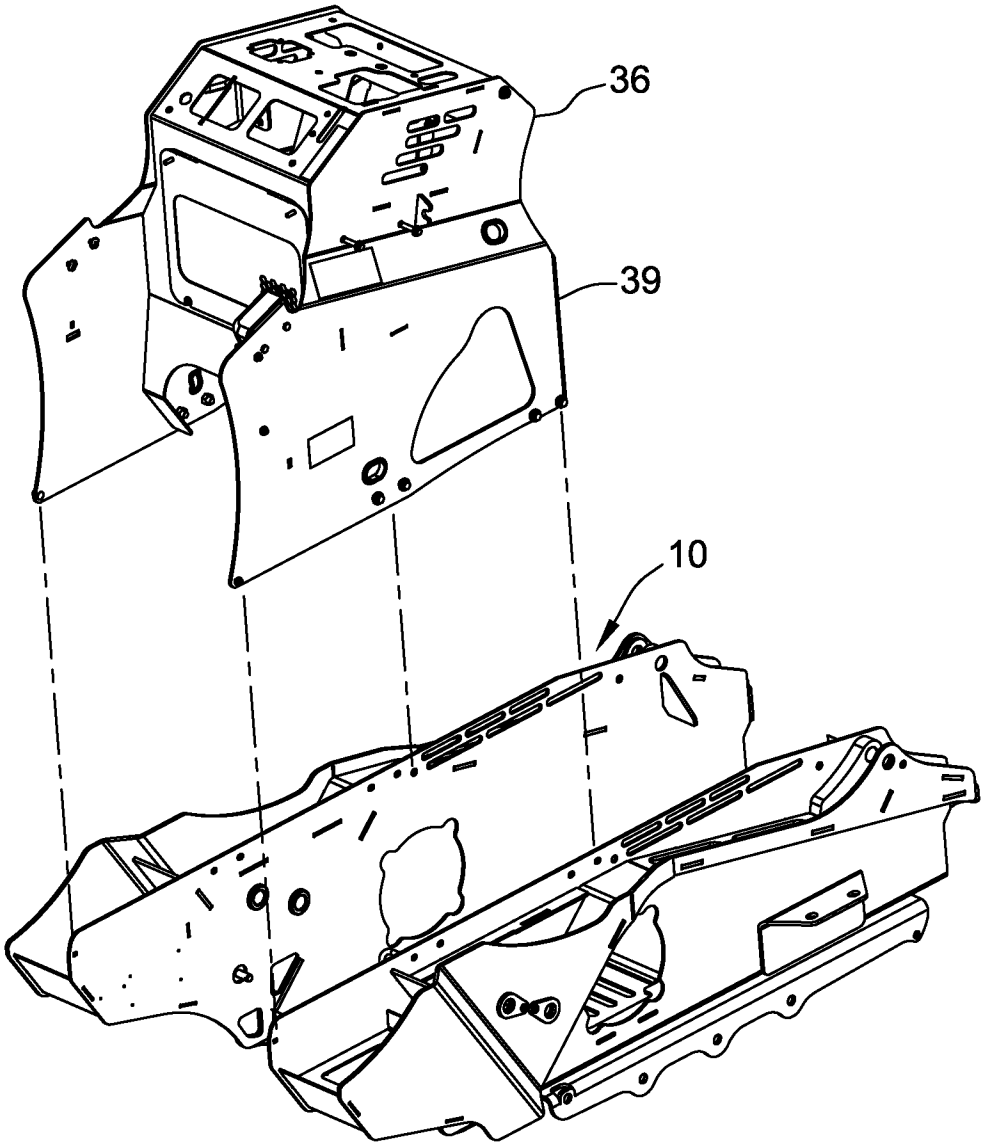


FIG. 7

LOW PROFILE COMPACT TOOL CARRIERS

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 14/691,649, filed Apr. 21, 2015, which claims the benefit of U.S. Provisional Patent Application No. 62/118,860, filed Feb. 20, 2015, both of which are incorporated herein by reference in their entirety.

FIELD OF THE DISCLOSURE

The field of the disclosure relates to compact tool carriers having a loader mounted to a low-profile mainframe.

BACKGROUND

Compact tool carriers are tool-mounted machines that are capable of working in tight spaces for utility or do-it-yourself home projects. Compact tool carriers are walk-behind units or include a platform on which the operator may stand during use. Compact tool carriers are generally defined (e.g., ISO 6165 (2012) and SAE J2752) as "a self-propelled crawler or wheeled machine having an operating mass of less than 1500 kg with a rigid frame, having either a pedestrian operating position or a standing operator platform at the rear of the machine and either front-mounted interchangeable equipment or lift arms with an attachment bracket capable of coupling to interchangeable, front-mounted attachments." The tool carriers may be attached to a variety of interchangeable tools such as buckets, augers, forks, stump grinders, tillers, rollers and the like.

Compact tool carriers may be distinguished from much larger conventional skid steers in which an operator is seated in the operating position. Compact tool carriers pose difficulty in design relative to full-size skid steers due to variation in weight, complexity and size.

A continuing need exists for compact tool carriers with a relatively low-profile, compact design and/or that are characterized by a more effective loader lifting profile.

This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the disclosure, which are described and/or claimed below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present disclosure. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

SUMMARY

One aspect of the present disclosure is directed to a compact tool carrier configured for standing or walk-behind operator control. The carrier has a mass of less than about 1500 kg and includes a loader having an arm and a linkage pivotally attached to the loader arm. An actuator is pivotally attached to the loader arm. The carrier includes a control station having operator controls for propelling the compact tool carrier forward and for raising and lowering the loader. The control station is configured for remote operation or is mounted toward the rear of the compact tool carrier and is adapted to allow for standing or walk-behind operation.

Another aspect of the present disclosure is directed to a compact tool carrier. The carrier comprises a loader and a mainframe for supporting the loader. The mainframe has a first side and a second side with each side having a top and a bottom. The first side of the mainframe has at least two pivot points relative to the loader. The carrier includes a drive mechanism comprising tracks or wheels for propelling the apparatus over a supporting surface. The drive mechanism is attached to the mainframe about a rotational axis. The compact tool carrier has a bottom at which the drive mechanism contacts the supporting surface. The rotational axis and bottom of the compact tool carrier are separated by a vertical distance D1. The rotational axis and each pivot point are separated by a vertical distance. Each vertical distance between the rotational axis and a pivot point is less than 1.5 times D1.

Various refinements exist of the features noted in relation to the above-mentioned aspects of the present disclosure. Further features may also be incorporated in the above-mentioned aspects of the present disclosure as well. These refinements and additional features may exist individually or in any combination. For instance, various features discussed below in relation to any of the illustrated embodiments of the present disclosure may be incorporated into any of the above-described aspects of the present disclosure, alone or in any combination.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a compact tool carrier with the loader in a down position;

FIG. **2** is a side view of the compact tool carrier with the loader in a down position;

FIG. **3** is a side view of the compact tool carrier with the loader in a raised position;

FIG. **4** is a perspective view of a mainframe of the compact tool carrier;

FIG. **5** is a side view of the mainframe and loader of the compact tool carrier;

FIG. **6** is a cross-section side view of the mainframe; and

FIG. **7** is an exploded perspective view of the mainframe and an upper frame of the compact tool carrier.

Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION

An embodiment of a compact tool carrier is generally referred as "**5**" in FIG. **1**. The compact tool carrier **5** includes a loader **8** supported by a mainframe **10**. The loader **8** includes an attachment plate **12** for interchangeably attaching any one of a number of tools (not shown). In this regard, such interchangeable tools do not form part of the compact tool carrier **5** unless stated otherwise. The attachment plate **12** is connected to an actuator **14** for tilting of tools connected to the attachment plate **12**. The loader **8** has a first arm **15***a* and a second arm **15***b* generally opposite the first arm **15***a*. A cross-member **16** extends from the first arm **15***a* to the second arm **15***b*. The actuator **14** is connected to the cross-member **16**. Each arm **15***a*, **15***b* may be a single weldment or may include various components attached by fasteners (e.g., nuts and bolts). The first and second arms **15***a*, **15***b* each include a bracket portion **17***a*, **17***b* (FIG. **1**) for fastening various linkages.

As used herein, "compact tool carrier" refers to machines that are self-propelled and are capable of carrying interchangeable equipment and that generally have a mass (not including the interchangeable tool) of less than about 1500 kg (about 3307 lb). Use of the term "compact tool carrier" herein is intended to exclude full size skid steers (e.g., seat-operated units) due to a large variation in weight,

complexity and size. In some embodiments, the compact tool carrier **5** meets the definition of a compact tool carrier provided in ISO 6165 (2012) and SAE J2752 set forth above, both standards being incorporated herein by reference for all relevant and consistent purposes.

The compact tool carrier **5** includes a longitudinal axis A that is parallel to the direction of travel of the carrier (i.e., parallel to its length). The compact tool carrier **5** is generally longitudinally symmetrical (i.e., relative to the longitudinal axis A) in that several components have a corresponding component with the same function opposite the component (i.e., across the axis A). Corresponding components of the pair may be indicated herein by use of a reference number followed by "A" and "B" and may be referred to as a "first" component and a "second" component, respectively. While the compact tool carrier **5** may be described herein with reference to the components of one side of the compact tool carrier **5**, any component designated by "A" or "B" herein or shown in FIGS. **1-7** includes a corresponding component with the same function opposite the component.

The compact tool carrier **5** includes a drive mechanism **18** attached to the mainframe **10**. In the illustrated embodiment, the drive mechanism **18** is directly mounted (i.e., connected without intermediary parts) to the mainframe **10** by way of drive sprocket **22** connected to a hub **26** (FIG. **2**). The hub **26** is attached to a shaft (not shown) that extends through a drive opening **30** (FIG. **4**) of the mainframe **10**. The sprocket **22**, hub **26** and shaft (not shown) rotate about a rotational axis R (FIG. **5**). As shown, the drive mechanism **18** includes tracks **34**. In other embodiments, the drive mechanism **18** includes wheels.

The compact tool carrier **5** includes a control station **36** (FIG. **1**) which may include controls (not all controls being shown) for propelling the compact tool carrier **5** forward and/or for raising and lowering the loader **8**. The control station **36** may be mounted toward the rear of the compact tool carrier **5** (i.e., opposite the attachment plate **12**) and is generally adapted to allow for standing or walk-behind operation. As used herein, "standing operation" generally refers to operation in which the operator stands on a platform attached to the compact tool carrier while "walk-behind operation" generally refers to operation in which the operator stands on the surface supporting the compact tool carrier **5**. In the illustrated embodiment, the compact tool carrier **5** includes an operator platform **37** (FIG. **2**).

In embodiments in which the compact tool carrier **5** includes an operator platform **37** for standing operation, the difference between the height of the control station **36** (e.g., as measured from the highest control for operating the loader or propelling the apparatus forward) and the platform **37** may be at least about 90 cm (e.g., from about 90 cm to about 130 cm). In embodiments in which the operator walks behind the compact tool carrier **5**, the control station **36** may be at least about 90 cm (e.g., from about 90 cm to about 130 cm) from the surface supporting the compact tool carrier. Such a range generally complies with the zones of comfort and reach for controls in earth-moving equipment set forth in ISO 6682 (2008) as determined from the physical dimensions of operators and minimum operator space envelope as set forth in ISO 3411 (2007), both of which are incorporated herein by reference for all relevant and consistent purposes.

In the illustrated embodiment, the control station **36** is attached to an upper frame **39** (FIG. **7**) that is attached and supported by the mainframe **10**. In other embodiments, rather than being integrated as one unit in the compact tool carrier **5**, the control station **36** is separate from the body (e.g., mainframe) of the carrier and is operated remotely. In such embodiments, the control station **36** may be wired or may operate wirelessly to propel the carrier **5** and/or raise and lower the loader **8**.

The mainframe **10** includes a first side **38***a* and a second side **38***b* generally opposite the first side **38***a*. As used herein, the term "mainframe" generally refers to a single weldment to which the loader **8** is attached, optionally through one or more pivotal linkages. The mainframe **10** includes bracket portions **40***a*, **40***b* (FIG. **4**) through which various pivot linkages are attached. In the illustrated embodiment, the engine (not shown) and the drive mechanism **18** comprising tracks or wheels are directly connected to the mainframe **10**.

The first loader arm **15***a* is pivotally connected to the first side **38***a* of the mainframe **10**, and the second loader arm **15***b* is pivotally connected to the second side **38***b* of the mainframe **10**. The loader arms **15***a*, **15***b* and sides **38***a*, **38***b* of the mainframe **10** each include three pivot points for pivoting the loader **8** relative to the mainframe **10**. The first side **38***a* of the mainframe **10** includes a forward pivot point P_1 (FIG. **5**) a rear pivot point P_3 and a central pivot point P_2 between the forward pivot point P_1 and the rear pivot point P_3. Similarly, the first arm **15***a* includes a forward pivot point P_4, a rear pivot point P_6 and a central pivot point P_5 between the forward pivot point P_4 and the rear pivot point P_6. The compact tool carrier **5** includes a first forward linkage **46***a* attached to the first side **38***a* of the mainframe **10** at its forward pivot point P_1 and attached to the first arm **15***a* at its forward pivot point P_4. A first rear linkage **50***a* is attached to the first side **38***a* of the mainframe **10** at its rear pivot point P_3 and is attached to the first arm **15***a* of the loader **8** at its rear pivot point P_6. While the carrier **5** is shown with two loader linkages **46***a*, **50***a* on each side of the carrier **5**, in other embodiments the carrier **5** includes a single linkage.

An actuator **54**, shown as a hydraulic cylinder, is attached to the first side **38***a* of the mainframe **10** at its center pivot point P_2 and is attached to the loader arm **15***a* at its center pivot point P**5** to raise the loader **8**. The compact tool carrier **5** may include a single actuator **54**, or, as in other embodiments, a second actuator (not shown) is connected to the second side **38***b* (FIG. **4**) of the mainframe **10** and the second arm **15***b* (FIG. **1**). The actuator **54** is powered to raise the loader **8** and, in some embodiments, is also powered to lower the loader **8** (as opposed to a one-way actuator lowered by gravity alone).

The second side **38***b* (FIG. **4**) of the mainframe **10** may include a forward pivot point and a rear pivot point to which a second forward linkage **46***b* (FIG. **1**) and second rear linkage (not shown) are respectively attached. The second arm **15***b* may also include a forward pivot point and rear pivot point to which the second forward linkage **46***b* and second rear linkage are attached. In embodiments in which the compact tool carrier **5** includes a second actuator (not shown), the second side **38***b* of the mainframe **10** includes a central pivot point between its forward pivot point and its rear pivot point, and the second arm **15***b* also includes a central pivot point between its forward pivot point and its rear pivot point. The second cylinder may be attached to the central pivot point of the second side **38***b* of the mainframe **10** and the central pivot point of the second arm **15***b*.

In some embodiments, the first and second ends **38***a*, **38***b* of the mainframe **10** and the first and second loader arms **15***a*, **15***b* do not include more than three pivot points at which the mainframe **10** and loader **8** pivot relative to each other. While the actuator **54** is shown as being attached between the other two linkages **46***a*, **50***a*, in other embodiments the actuator **54** is forward to both linkages **46***a*, **50***a* or rearward to both linkages **46***a*, **50***a*. Further, each side of

the carrier **5** having an actuator **54** may include a single linkage rather than two linkages.

In some embodiments, the mainframe **10** is characterized by a relatively low profile (i.e., the pivot points are positioned relatively low on the mainframe allowing its height to be reduced). The rotational axis R (FIG. **5**) and the bottom of the compact tool carrier **5** (FIG. **2**) are separated by a distance D**1**. Generally, the bottom of the compact tool carrier **5** corresponds to the point at which the drive mechanism **18** contacts the surface supporting the compact tool carrier **5**. The rotational axis R and the forward pivot point P_1 of the first side **38***a* of the mainframe **10** are separated by a vertical distance D**2**. The rotational axis R and the rear pivot point P_3 are separated by a vertical distance D**3**. The rotational axis R and the central pivot point P_2 are separated by a vertical distance D**4**. Each of D**2**, D**3** and D**4** is less than about 1.5 times D**1** (1.5×D**1**). In some embodiments, each of D**2**, D**3** and D**4** is less than D**1** or even less than about 0.75 times D**1** (0.75×D**1**).

The mainframe **10** profile may also be expressed relative to the distance D**5** between the rotational axis R (FIG. **5**) and the bottom **57** of the mainframe **10**. Each of D**2**, D**3** and D**4** is less than about twice D**5** (2×D**5**). In some embodiments, each of D**2**, D**3** and D**4** is less than about 1.75 times D**5** (1.75×D**5**) or less than about 1.5 times D**5** (1.5×D**5**). P**2** and P**3** may be relatively lower than P**1** and their distances D**3**, D**4** from the rotational axis R may be even less than about 1.25 times D**5** (1.25×D**5**). The distance D**6** between the top **59** of the first side **38***a* of the mainframe **10** and the highest pivot point (P_1 in the illustrated embodiment), is less than about 1.5 times D**5**, less than about D**5** or less than about 0.75 times D**5**.

The second side **38***b* (FIG. **1**) of the mainframe **10** may have a similar pivot point arrangement. The rotational axis R and the forward pivot point of the second side **38***b* are separated by a vertical distance D**2'** (not shown). The rotational axis R and the rear pivot point of the second side are separated by a vertical distance D**3'** (not shown). The rotational axis R and the central pivot point (if any) of the second side **38***b* of mainframe **10** are separated by a vertical distance D**4'** (not shown). Each of D**2'**, D**3'** and D**4'** is less than about 1.5 times D**1** (1.5×D**1**) or less than D**1** or even less than about 0.75 times D**1** (0.75×D**1**). The rotational axis R and the bottom of the second side **38***b* of the mainframe **10** are separated by a vertical distance D**5'** (not shown). Each of D**2'**, D**3'** and D**4'** is less than twice D**5'** (2×D**5'**) or less than about 1.75 times D**5'** (1.75×D**5'**) or less than about 1.5 times D**5'** (1.5×D**5'**). D**3'** and D**4'** may be even less than about 1.25 times D**5'** (1.25×D**5'**). The distance D**6'** between the top of the second side **38***b* of the mainframe **10** and the highest pivot point is less than about 1.5 times D**5'**, less than about D**5'** or less than about 0.75 times D**5'**.

The compact tool carrier **5** includes an engine (not shown) for propelling the drive mechanism **18**. As shown in FIG. **6**, the engine may be mounted to an engine bracket **60** that forms part of the mainframe **10**. The engine may drive a hydraulic pump that powers hydraulic motors (not shown) which drive the drive mechanism **18** (FIG. **1**) and which provide hydraulic power to actuator **54**. The mainframe **10** includes a reservoir **64** for storing and cycling of hydraulic fluid.

Compared to conventional compact tool carriers, embodiments of the compact tool carrier **5** described above have several advantages. By positioning the pivot points relatively low on the mainframe **10**, the mass of the mainframe **10** and the resulting cost of the carrier **5** may be reduced. Further, such a low-profile mainframe **10** improves visibility for the operator and allows the center of gravity of the carrier **5** to be lowered which improves its stability. In embodiments in which the carrier **5** includes an actuator **54** (FIG. **5**) for lifting the loader **8** that is disposed between forward linkage **46***a* and a rear linkage **50***a* on at least one side **38***a*, **38***b* of the mainframe **10**, the loader **8** is characterized by an travel path in which the loader travels vertically rather than over a radial path. 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.

As used herein, the terms "about," "substantially," "essentially" and "approximately" when used in conjunction with ranges of dimensions, concentrations, temperatures or other physical or chemical properties or characteristics is meant to cover variations that may exist in the upper and/or lower limits of the ranges of the properties or characteristics, including, for example, variations resulting from rounding, measurement methodology or other statistical variation.

When introducing elements of the present disclosure or the embodiment(s) thereof, the articles "a", "an", "the" and "said" are intended to mean that there are one or more of the elements. The terms "comprising," "including," "containing" and "having" are intended to be inclusive and mean that there may be additional elements other than the listed elements. The use of terms indicating a particular orientation (e.g., "top", "bottom", "side", etc.) is for convenience of description and does not require any particular orientation of the item described.

As various changes could be made in the above constructions and methods without departing from the scope of the disclosure, it is intended that all matter contained in the above description and shown in the accompanying drawing[s] shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A compact tool carrier configured for standing operator control and having a longitudinal axis and a mass of less than about 1500 kg, the compact tool carrier comprising:

a loader having an arm, the loader being adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage 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;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader arm at a fourth pivot point;

an actuator directly pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader arm at a sixth pivot point, the fifth pivot point being distinct from the first pivot point and the third pivot point;

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;

an operator platform for standing operation of the operator controls of the control station; and

an engine disposed forward of the operator platform relative to the longitudinal axis.

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 the loader comprising a

second loader arm and the compact tool carrier comprising a third linkage pivotally attached to the second side of the mainframe and pivotally attached to the second loader arm.

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 a drive mechanism propelled by the engine.

7. The compact tool carrier as set forth in claim **1** wherein 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 as the loader moves from a down position to a vertically raised position.

8. The compact tool carrier as set forth in claim **1** wherein the loader arm incorporates a single weldment.

9. 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.

10. A method for operating the compact tool carrier as set forth in claim **1**, the method comprising standing on the operator platform and operating the control station to propel the compact tool carrier forward and/or raise or lower the loader.

11. The compact tool carrier as set forth in claim **1** wherein no more than three linkages and actuators are attached to the first side of the mainframe.

12. The compact tool carrier as set forth in claim **1** wherein a single actuator is attached to the first side of the mainframe.

13. The compact tool carrier as set forth in claim **1** wherein the loader is moveable between a down position and a vertically raised position, the operator platform having a rear and a front relative to the longitudinal axis, the second pivot point, fourth pivot point, and sixth pivot point being disposed forward of the rear and front of the operator platform when the loader travels from the down position to the vertically raised position.

14. The compact tool carrier as set forth in claim **1** wherein the loader is moveable between a down position and a vertically raised position, the arm of the loader being a first arm and the loader comprising a second arm and at least one cross-member that extends from the first loader arm to the second loader arm, wherein each cross-member is disposed forward of the operator platform relative to the longitudinal axis in the vertically raised position of the loader.

15. The compact tool carrier as set forth in claim **14** further comprising an attachment plate for removably attaching a tool to the compact tool carrier, the cross-member being spaced from the attachment plate.

16. The compact tool carrier as set forth in claim **14** further comprising a drive mechanism for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket, the cross-member being disposed forward of the drive sprocket in the vertically raised position and the down position of the loader.

17. The compact tool carrier as set forth in claim **14** wherein the compact tool carrier comprises a single cross-member.

18. The compact tool carrier as set forth in claim **14** wherein each cross-member is disposed forward of the second pivot point and the fourth pivot point.

19. A compact tool carrier having a longitudinal axis and comprising:

a loader adapted to carry a tool;

a mainframe for supporting the loader, the mainframe having a first side and a second side, the loader being free from direct attachment to the mainframe;

a first linkage pivotally attached to the first side of the mainframe at a first pivot point and pivotally attached to the loader at a second pivot point;

a second linkage pivotally attached to the first side of the mainframe at a third pivot point and pivotally attached to the loader at a fourth pivot point;

an actuator pivotally attached to the first side of the mainframe at a fifth pivot point and directly pivotally attached to the loader at a sixth pivot point;

a drive mechanism for propelling the compact tool carrier over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the compact tool carrier having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the compact tool carrier being separated by a vertical distance D**1**, the rotational axis R and a bottom of the first side of the mainframe being separated by a vertical distance D**5**, the rotational axis R and each of the first, third, and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D**1**, the vertical distance between the rotational axis R and the third pivot point also being less than 1.5 times D**1**, the vertical distance between the rotational axis R and the fifth pivot point also being less than 1.5 times D**1**, the first side of the mainframe comprising a forward-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than twice D**5**;

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;

an operator platform for standing operation of the operator controls of the control station; and

an engine disposed forward of the operator platform relative to the longitudinal axis.

20. The compact tool carrier as set forth in claim **19** wherein the second side of the mainframe comprises at least two pivot points, each vertical distance between the rotational axis R and the respective pivot point being less than 1.5 times D**1**.

21. The compact tool carrier as set forth in claim **19** wherein the first side of the mainframe comprises a top-most pivot point, the first pivot point, the third pivot point, or the fifth pivot point being the top-most pivot point, the top most pivot point and a top of the first side of the mainframe being separated by a vertical distance D**6**, D**6** being less than about 1.5 times D**5**.

22. The compact tool carrier as set forth in claim **19** 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.

23. The compact tool carrier as set forth in claim **19** wherein the mainframe incorporates a single weldment.

24. The compact tool carrier as set forth in claim 19 wherein no more than three linkages and actuators are attached to the first side of the mainframe.

25. The compact tool carrier as set forth in claim 19 wherein a single actuator is attached to the first side of the mainframe.

26. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than 1.75 D5.

27. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than 1.5 D5.

28. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than D1.

29. The compact tool carrier as set forth in claim 19 wherein the vertical distance between the rotational axis R and the forward-most pivot point is less than 0.75 D1.

30. The compact tool carrier as set forth in claim 19 wherein the loader is moveable between a down position and a vertically raised position, the loader comprising:

a first arm;

a second arm; and

at least one cross-member that extends from the first loader arm to the second loader arm, wherein each cross-member is disposed forward of the operator platform relative to the longitudinal axis in the vertically raised position of the loader.

31. The compact tool carrier as set forth in claim 30 further comprising an attachment plate for removably attaching a tool to the compact tool carrier, the cross-member being spaced from the attachment plate.

32. The compact tool carrier as set forth in claim 30 wherein the cross-member is disposed forward of the drive sprocket in the vertically raised position and the down position of the loader.

33. The compact tool carrier as set forth in claim 30 wherein the compact tool carrier comprises a single cross-member.

34. The compact tool carrier as set forth in claim 30 wherein each cross-member is disposed forward of the second pivot point and the fourth pivot point.

* * * * *

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