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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	02/12/2019	10202266	31681-162	4984

76656 7590 01/23/2019
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Vermeer Manufacturing Company, Pella, IA;
Brad Thomas, Pleasant Hill, IA;
Louis Hartke, Pella, IA;
Greg Langenfeld, Bettendorf, IA;
Matt Hutchinson, Pella, IA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

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Commissioner for Patents
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76656 7590 12/26/2018
Patent Docket Department
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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	09/14/2017	Brad Thomas	31681-162	4984

TITLE OF INVENTION: LOW PROFILE COMPACT TOOL CARRIERS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	03/26/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
KRAMER, DEAN J	3652	414-722000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Armstrong Teasdale LLP

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Vermeer Manufacturing Company

Pella, IA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

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☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 012384

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Michael J. Vander Molen/

Date 12/26/2018

Typed or printed name Michael J. Vander Molen

Registration No. 57,274



UNITED STATES PATENT AND TRADEMARK OFFICE

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NOTICE OF ALLOWANCE AND FEE(S) DUE

76656 7590 12/26/2018
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

EXAMINER	
KRAMER, DEAN J	
ART UNIT	PAPER NUMBER

3652

DATE MAILED: 12/26/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	09/14/2017	Brad Thomas	31681-162	4984

TITLE OF INVENTION: LOW PROFILE COMPACT TOOL CARRIERS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	03/26/2019

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	09/14/2017	Brad Thomas	31681-162	4984

TITLE OF INVENTION: LOW PROFILE COMPACT TOOL CARRIERS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	03/26/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
KRAMER, DEAN J	3652	414-722000

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☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

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(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

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(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

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NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	09/14/2017	Brad Thomas	31681-162	4984
76656	7590	12/26/2018	EXAMINER	
Patent Docket Department Armstrong Teasdale LLP 7700 Forsyth Boulevard Suite 1800 St. Louis, MO 63105			KRAMER, DEAN J	
			ART UNIT	PAPER NUMBER
			3652	
DATE MAILED: 12/26/2018				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No. 15/704,685	Applicant(s) Thomas et al.	
	Examiner DEAN J KRAMER	Art Unit 3652	AIA Status Yes

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 12/10/18.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are See Continuation Sheet. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file areply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____.	6. ☐ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material ____.	7. ☐ Other ____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____.	

/DEAN J KRAMER/ Primary Examiner, Art Unit 3652	
--	--

Continuation of 3. The allowed claim(s) is/are: 1-13,18-24,26-28 and 34-37

Bibliographic Data

Application No: 15/704,685

Foreign Priority claimed: ☐ Yes ☒ No

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

Verified and Acknowledged: /DEAN J KRAMER/

Examiner's Signature

Initials

Title: LOW PROFILE COMPACT TOOL CARRIERS

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/14/2017	414	3652	31681-162
RULE			

APPLICANTS

Vermeer Manufacturing Company, Pella, IA,

INVENTORS

Brad Thomas Pleasant Hill, IA, UNITED STATES

Louis Hartke Pella, IA, UNITED STATES

Greg Langenfeld Bettendorf, IA, UNITED STATES

Matt Hutchinson Pella, IA, UNITED STATES

CONTINUING DATA

This application is a CON 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**

09/25/2017

STATE OR COUNTRY

UNITED STATES

ADDRESS

Patent Docket Department

Armstrong Teasdale LLP

7700 Forsyth Boulevard

Suite 1800

St. Louis, MO 63105

UNITED STATES

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Brad Thomas Art Unit: 3652
Serial No.: 15/704,685
Filed On: September 14, 2017
Confirmation No.: 4984
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Dean J. Kramer

December 10, 2018

AMENDMENT D

TO THE COMMISSIONER FOR PATENTS,
SIR:

Please enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the Listing of Claims which begins on page 2; and

Remarks begin on page 11.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Brad Thomas Art Unit: 3652
Serial No.: 15/704,685
Filed On: September 14, 2017
Confirmation No.: 4984
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Dean J. Kramer

December 10, 2018

AMENDMENT D

TO THE COMMISSIONER FOR PATENTS,
SIR:

Please enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the Listing of Claims which begins on page 2; and

Remarks begin on page 11.

REMARKS

The Office action of December 3, 2018 has been carefully reviewed and the following remarks are made in response.

Status of the Claims

Applicant has cancelled claims 29-33. Claims 1-13, 18-24, 26-28 and 34-37 are pending.

Objection to the Drawings

Applicant has cancelled claim 29 which recites a "control station being separate from the loader support for operating the loader apparatus remotely", thereby obviating the objection to the drawings set forth on page 4 Of the Office action.

Rejections under 35 U.S.C. §102 and §103

Because claims 29-33 are cancelled from the application to expedite prosecution, it is unnecessary for Applicant to comment on the rejection of claims 29-33 under 35 U.S.C. §102 and the rejection of claims 29 and 31-33 35 U.S.C. §103. Applicant does not concede the propriety of the rejections under 35 U.S.C §102 and 35 U.S.C. §103 and reserves the right to contest the rejections in one or more continuing applications.

Allowable Subject Matter

The Office states on page 3 of the Office action that claims 1-13, 18-24, 26-28 and 34-37 are allowed. Claims 1-13, 18-24,

26-28 and 34-37 are pending and the application is in condition for allowance.

Conclusion

Applicant respectfully requests allowance of all pending claims. The undersigned requests a phone call from the Examiner if this might expedite prosecution.

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

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

MJV/adm

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Original) A loader apparatus configured for standing operator control and comprising:

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

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point;

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

an operator platform for standing operation of the operator controls of the control station, the operator platform being located toward a rear of the loader apparatus such that the

first linkage pivot point, second linkage pivot point, and the actuator pivot point are disposed forward of the operator platform, the first linkage pivot point, second linkage pivot point, and the actuator pivot point being disposed below the operator controls of the control station.

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

3. (Original) The loader apparatus as set forth in claim 1 wherein the loader support incorporates a single weldment.

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

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

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

7. (Original) A loader apparatus for standing or walk-behind operator control and comprising:

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

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

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

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

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

a second linkage pivotally attached to the first side of the rigid frame at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, wherein, as the loader travels from the down position to the vertically raised position, the first, second, third, fourth, fifth and sixth pivot points are (1) disposed between the operator controls and the bottom of the rigid frame and/or (2) disposed forward of the control station.

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

9. (Original) The loader apparatus as set forth in claim 8 further comprising an operator platform at least partially within the pocket.

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

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

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

13. (Original) The loader apparatus as set forth in claim 7 wherein the rigid frame incorporates a single weldment.

14-17. (Cancelled)

18. (Previously presented) A loader apparatus for standing or walk-behind operator control and comprising:

a loader adapted to carry a tool;

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

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

an actuator pivotally attached to the first side of the loader support at a third pivot point and pivotally attached to the loader at a fourth pivot point; and

a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than 0.75 D5.

19. (Original) The loader apparatus as set forth in claim 18 wherein the loader support comprises a lower frame and an upper frame, the loader apparatus further comprising a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader, the control station being attached to the upper frame.

20. (Original) The loader apparatus as set forth in claim 18 wherein the loader support incorporates a single weldment.

21. (Original) The loader apparatus as set forth in claim 18 wherein the linkage is a first linkage, the loader apparatus comprising a second linkage pivotally attached to the first side

of the loader support at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times D1, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times D1.

22. (Original) The loader apparatus as set forth in claim 18 wherein the loader apparatus has a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first and third pivot points being separated by a vertical distance, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than 1.5 times D1.

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

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

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

an actuator pivotally attached to the mainframe;

a front linkage pivotally attached to the mainframe;

a rear linkage pivotally attached to the mainframe; and

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

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

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

24. (Previously presented) The loader apparatus as set forth in claim 23 wherein, in the down position, the rear linkage pivot point is disposed within the barrier guard.

25. (Cancelled)

26. (Previously presented) The loader apparatus as set forth in claim 23 wherein the actuator is pivotally attached to the loader at an actuator pivot point, wherein, in the down position, the actuator pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

27. (Original) The loader apparatus as set forth in claim 26 wherein the mainframe has a first side and a second side, the rear linkage, actuator and front linkage each being pivotally attached to the first side of the mainframe.

28. (Original) The loader apparatus as set forth in claim 23 wherein the loader is free from direct attachment to the mainframe.

29-33. (Cancelled)

34. (Previously presented) A loader apparatus for standing or walk-behind operator control and comprising:

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

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

an actuator pivotally attached to the mainframe;

a linkage pivotally attached to the mainframe; and

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

linkage being pivotally attached to the loader at a linkage pivot point, wherein:

in the down position, the linkage pivot point is disposed within the barrier guard; and

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

35. (Previously presented) The loader apparatus as set forth in claim 34 wherein the mainframe incorporates a single weldment.

36. (Previously presented) The loader apparatus as set forth in claim 34 wherein the loader is free from direct attachment to the mainframe.

37. (Previously presented) The loader apparatus as set forth in claim 23 wherein the mainframe incorporates a single weldment.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	09/14/2017	Brad Thomas	31681-162	4984

76656 7590 12/03/2018
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

EXAMINER

KRAMER, DEAN J

ART UNIT	PAPER NUMBER
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3652

NOTIFICATION DATE	DELIVERY MODE
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12/03/2018

ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USpatents@armstrongteasdale.com

DETAILED ACTION

The amendment filed October 23, 2018 and the remarks presented therewith have been carefully considered. However, they are not deemed to be fully persuasive. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

2. Claim(s) 29-32 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Green (7,695,236).

Green shows an embodiment in Figure 8 comprising a loader assembly (192,188) capable or “adapted to” carry a tool comprising a loader support including a lower frame (22) and an upper frame (32), a drive sprocket (42), a first linkage (182), an actuator (184), a second linkage (72), and a control station (56) separate from the load support (see Fig. 4) for operating the loader assembly remotely.

Claim Rejections - 35 USC § 103

3. 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:

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.

4. Claims 29 and 31-33 is/are rejected under 35 U.S.C. 103 as being unpatentable over Yamada et al. (2007/0128012) in view of Edwards et al. (2010/0106344).

The publication to Yamada et al. shows a loader apparatus comprising a loader (11), a loader support (2,5), a first linkage (22), a second linkage (21), and an actuator (23). The Yamada et al. apparatus does not show a remotely operable control station separate from its loader support as is now called for in claim 29.

However, the Edwards et al. publication shows it old and well known to provide an independent control station (30) for remotely operating an unmanned vehicle (see Fig. 4).

Accordingly, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to provide a separate control station for the Yamada et al. loader that could operate the loader remotely, as taught by Edwards et al., so that a user could remain at a safe remote location while operating the loader in a harsh or dangerous environment.

Regarding claim 33, it would have been an obvious choice of mechanical design to construct the upper (5) and lower (2) frame as a single weldment to facilitate the manufacturing thereof. *In re Larson*, 340 F.2d 965, 968, 144 USPO 347, 349 (CCPA 1965) (A claim to a fluid transporting vehicle was rejected as obvious over a prior art reference which differed from the prior art in claiming a brake drum integral with a clamping means, whereas the brake disc and clamp of the prior art comprise several parts rigidly secured together as a single unit. The court affirmed the rejection holding, among other reasons, "that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.").

Allowable Subject Matter

5. Claims 1-13, 18-24, 26-28, and 34-37 are allowed.

Drawings

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the control station being separate from the loader support for operating the loader apparatus remotely, as now set forth in claim 29, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN J KRAMER whose telephone number is (571)272-6926. The examiner can normally be reached on Monday-Friday 7:30-4:00.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saul Rodriguez can be reached on 571-272-7097. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer

Art Unit: 3652

Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DEAN J KRAMER/
Primary Examiner, Art Unit 3652

DEAN J. KRAMER
Primary Examiner
Art Unit 3652

Djk

11/28/18

**TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)

31681-162

In re Application of: Brad Thomas, et al.

Application No.: 15/704685

Filed: September 14, 2017

For: Low Profile Compact Tool Carriers

The applicant, Vermeer Manufacturing Company, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. US 9,975,750 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;

is held unenforceable;

is found invalid by a court of competent jurisdiction;

is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;

has all claims canceled by a reexamination certificate;

is reissued; or

is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 57,274

/Michael J. Vander Molen/

Signature

10/23/2018

Date

Michael J. Vander Molen

Typed or printed name

Attorney for Applicant

Title

314-621-5070

Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 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: 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.

REMARKS

The Office action of April 23, 2018 has been carefully reviewed and the following remarks are made in response.

Status of the Claims

Applicant has amended claims 23-24, 26 and 29 and added claims 34-37. Claims 14-17 and 25 are cancelled. Claims 1-13, 18-24 and 26-37 are pending.

Objection to the Drawings

Applicant has cancelled claims 14-15 which recite a "cross-member," thereby obviating the objection to the drawings set forth on page 7 Of the Office action.

Obviousness-type Double Patenting

Claims 7, 13-15, 17-18 and 20-22 are provisionally rejected under the doctrine of obviousness-type double patenting over the claims of previously co-pending U.S. Patent Application No. 15/062,801, now U.S. Patent No. 9,975,750. Claims 8-9, 12 and 19 are provisionally rejected under the doctrine of obviousness-type double patenting over the claims of previously co-pending U.S. Patent Application No. 15/062,801, now U.S. Patent No. 9,975,750, in view of U.S. Patent No. 3,074,572 to Ulinski. Applicant herewith submits a terminal disclaimer over U.S. Patent No. 9,975,750 to obviate the obviousness-type double patenting rejections. Applicant does not concede the propriety of the rejections.

Rejections under 35 U.S.C. §112(b)

The Office has rejected claims 29-33 under 35 U.S.C. §112(b) as being indefinite on the basis that claim 29 recites that the control station is free from attachment to the loader support while Figure 7 shows the control station "directly attached to the upper frame (39) and at least indirectly attached to the mainframe (10) . . ." (Page 2 of the Office action). Applicant has amended claim 29 to recite that the control station is separate from the loader support with the control station operating the loader apparatus remotely. Applicant submits that claim 29 as amended is definite in view of the disclosure at paragraph [0024] of the application:

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.

Emphasis added.

Applicant submits that claim 29 is clear to those of skill in the art in view of the amendment to claim 29 and the disclosure at paragraph [0024].

Rejections under 35 U.S.C. §103

Because claims 14-17 are cancelled from the application to expedite prosecution, it is unnecessary for Applicant to comment on the rejections of claims 14-17 under 35 U.S.C. §103. Applicant does not concede the propriety of the rejections under 35 U.S.C. §103 and reserves the right to contest the rejections in one or more continuing applications.

Allowable Subject Matter

The Office states on pages 6-7 of the Office action that claims 1-6 are allowed, claims 10-11 and 24-27 are allowable if written in independent claim format including the limitations of any base claim and intervening claim, and that claims 29-33 are allowable if the rejection under 35 U.S.C. §112(b) were overcome by Applicant. Further, the only outstanding rejections of claims 7-9, 12-13 and 18-22 are the rejections under the doctrine of obviousness-type double patenting.

Applicant has amended independent claim 23 by incorporating the recitations of allowable claim 25. New independent claim 34 corresponds to independent claim 23 with the recitations of allowable claim 24 incorporated therein. Independent claims 1, 23 and 34 and claims 2-6, 24, 26-27 and 35-37 depending therefrom are in condition for allowance in view of the indication of allowable subject matter on pages 6-7 of the Office action. Independent claims 7 and 18 and claims 8-13 and 19-22 depending therefrom are in condition for allowance in view of the terminal disclaimer submitted herewith that obviates the

obviousness-type double patenting rejection and in view that there are no outstanding rejections of these claims.

Independent claims 29 and claims 30-33 depending therefrom are in condition for allowance in view that claim 29 as amended is definite under 35 U.S.C. §112(b) and in view of the indication of allowable subject matter on pages 6-7 of the Office action.

In view that independent claim 23 has been amended to incorporate allowable subject matter, it is unnecessary to comment on the rejection of claim 23 and claim 28 depending therefrom under 35 U.S.C. §102. Applicant does not concede the propriety of the rejections under 35 U.S.C. §102 and reserves the right to contest the rejections in one or more continuing applications.

Conclusion

Applicant respectfully requests allowance of all pending claims. The undersigned requests a phone call from the Examiner if this might expedite prosecution.

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

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

MJV/adm

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Original) A loader apparatus configured for standing operator control and comprising:

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

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point;

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

an operator platform for standing operation of the operator controls of the control station, the operator platform being located toward a rear of the loader apparatus such that the

first linkage pivot point, second linkage pivot point, and the actuator pivot point are disposed forward of the operator platform, the first linkage pivot point, second linkage pivot point, and the actuator pivot point being disposed below the operator controls of the control station.

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

3. (Original) The loader apparatus as set forth in claim 1 wherein the loader support incorporates a single weldment.

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

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

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

7. (Original) A loader apparatus for standing or walk-behind operator control and comprising:

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

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

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

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

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

a second linkage pivotally attached to the first side of the rigid frame at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, wherein, as the loader travels from the down position to the vertically raised position, the first, second, third, fourth, fifth and sixth pivot points are (1) disposed between the operator controls and the bottom of the rigid frame and/or (2) disposed forward of the control station.

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

9. (Original) The loader apparatus as set forth in claim 8 further comprising an operator platform at least partially within the pocket.

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

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

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

13. (Original) The loader apparatus as set forth in claim 7 wherein the rigid frame incorporates a single weldment.

14-17. (Cancelled)

18. (Previously presented) A loader apparatus for standing or walk-behind operator control and comprising:

a loader adapted to carry a tool;

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

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

an actuator pivotally attached to the first side of the loader support at a third pivot point and pivotally attached to the loader at a fourth pivot point; and

a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than $0.75 D5$.

19. (Original) The loader apparatus as set forth in claim 18 wherein the loader support comprises a lower frame and an upper frame, the loader apparatus further comprising a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader, the control station being attached to the upper frame.

20. (Original) The loader apparatus as set forth in claim 18 wherein the loader support incorporates a single weldment.

21. (Original) The loader apparatus as set forth in claim 18 wherein the linkage is a first linkage, the loader apparatus comprising a second linkage pivotally attached to the first side

of the loader support at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times D1, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times D1.

22. (Original) The loader apparatus as set forth in claim 18 wherein the loader apparatus has a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first and third pivot points being separated by a vertical distance, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than 1.5 times D1.

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

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

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

an actuator pivotally attached to the mainframe;

a front linkage pivotally attached to the mainframe;

a rear linkage pivotally attached to the mainframe; and

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

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

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

24. (Currently amended) The loader apparatus as set forth in claim 23 wherein, in the down position, the rear linkage pivot point is disposed within the barrier guard.

25. (Cancelled)

26. (Currently amended) The loader apparatus as set forth in claim 23 ~~[[25]]~~ wherein the actuator is pivotally attached to the loader at an actuator pivot point, wherein, in the down position, the actuator pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

27. (Original) The loader apparatus as set forth in claim 26 wherein the mainframe has a first side and a second side, the rear linkage, actuator and front linkage each being pivotally attached to the first side of the mainframe.

28. (Original) The loader apparatus as set forth in claim 23 wherein the loader is free from direct attachment to the mainframe.

29. (Currently amended) A loader apparatus comprising:

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point; and

a control station separate from ~~free from attachment to~~ the loader support, the control station operating the loader apparatus remotely.

30. (Previously presented) The loader apparatus as set forth in claim 29 further comprising a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with linkage pivot point or actuator pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5.

31. (Original) The loader apparatus as set forth in claim 29 wherein the linkage is a first linkage and the linkage pivot point is a first linkage pivot point, the loader apparatus further comprising a second linkage pivotally attached to the loader support at a second linkage pivot point.

32. (Original) The loader apparatus as set forth in claim 29 wherein the loader support comprises a lower frame and an upper frame.

33. (Original) The loader apparatus as set forth in claim 29 wherein the loader support incorporates a single weldment.

34. (New) A loader apparatus for standing or walk-behind operator control and comprising:

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

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

an actuator pivotally attached to the mainframe;

a linkage pivotally attached to the mainframe; and

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

in the down position, the linkage pivot point is disposed within the barrier guard; and

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

35. (New) The loader apparatus as set forth in claim 34 wherein the mainframe incorporates a single weldment.

36. (New) The loader apparatus as set forth in claim 34 wherein the loader is free from direct attachment to the mainframe.

37. (New) The loader apparatus as set forth in claim 23 wherein the mainframe incorporates a single weldment.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Brad Thomas Art Unit: 3652
Serial No.: 15/704,685
Filed On: September 14, 2017
Confirmation No.: 4984
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Dean J. Kramer

October 23, 2018

AMENDMENT C

TO THE COMMISSIONER FOR PATENTS,
COMMISSIONER:

Please enter the following amendments and consider the following remarks:

Amendments to the Claims are reflected in the Listing of Claims which begins on page 2; and

Remarks begin on page 12.



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/704,685	09/14/2017	Brad Thomas	31681-162	4984
76656	7590	04/23/2018	EXAMINER	
Patent Docket Department			KRAMER, DEAN J	
Armstrong Teasdale LLP			ART UNIT	
7700 Forsyth Boulevard			PAPER NUMBER	
Suite 1800			3652	
St. Louis, MISSOURI 63105			NOTIFICATION DATE	
UNITED STATES OF AMERICA			DELIVERY MODE	
			04/23/2018	
			ELECTRONIC	

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USpatents@armstrongteasdale.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 112

2. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 29-33 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

The last paragraph of independent claim 29 is deemed to be confusing and misleading. More specifically, while the control station is recited as being “free from attachment” to the loader support, the control station (36) is shown directly attached to the upper frame (39) and at least indirectly attached to the mainframe (10) as best shown in Figure 7. And, as claims 32 (which depends from claim 29) recites, the “loader support” includes an upper and lower frame which presumably are shown in Figure 7 as members (39) and (10). Thus, it is unclear how the control station (36) is free from attachment to such a loader support?

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise

extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-l.jsp.

5. Claims 7, 13, 14, 15, 17, 18, 21, 22, and 20 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 27, 29, 65, 66, 41, 64, and 41, respectively, of copending Application No. 15/062,801 (reference application). Although the claims at issue are not identical, they are not patentably distinct from each other because claims 7, 13, 14, 15, 17, 18, 21, 22, and 20 of the instant application are generic to all that is recited in claims 27, 29, 65, 66, 41, 64, and 41, respectively, of copending Application No. 15/062,801. In other words, claims 27, 29, 65, 66, 41, 64, and 41 of the ('801) application fully encompass the subject matter of claims 7, 13, 14, 15, 17, 18, 21, 22, and 20, respectively, of the instant application.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

6. Claims 8, 9, 12, and 19 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claim 27 of copending Application No. 15/062,801 in view of Ulinski (3,074,572). Claim 27 of the ('801) application discloses a loader apparatus comprising a first linkage, a second linkage, and an actuator pivotally connecting a loader to a mainframe or "loader support" wherein all of the pivot points of the above connection are disposed between the operator controls and the bottom of the mainframe or disposed forward of the control station. Claim 27 does not recite a "pocket" above a platform at least partially surrounding an operator (as called for in claims 8 and 9 of the instant application) or the loader support formed from an upper and lower frame (as called for in claims 12 and 19). However, Ulinski shows an operator platform flanked by sidewalls thereby creating a pocket in which an operator can stand (see Figs. 1 and 2). The manual controls could obviously be located at the upper portion of this station to be near the operator's hand. It would have been obvious to a person of ordinary skill in the art to modify claim 27 of the ('801) application to include an operator's platform within a surrounding pocket, as taught by Ulinski, in order to create a

Art Unit: 3652

protective space for a user operating the loader. It also would have been obvious to attach or mount the steering or controls at a position near a user's hands which would obviously be adjacent an upper portion of the mainframe.

This is a provisional nonstatutory double patenting rejection.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

8. Claim(s) 23 and 28 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Ulinski (3,074,572).

Ulinski shows a loader apparatus for standing or walk-behind operator control comprising a control station (54) formed as a platform with sidewall barrier guards (see Figs. 1 and 2), a mainframe (10) having an upper half and a lower half, an actuator (36), a linkage (32), and a loader assembly (19,24) wherein the point at which linkage (32) is pivoted to the loader assembly is always located forward of the barrier guard of the control station.

Claim Rejections - 35 USC § 103

9. 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:

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.

10. Claims 14-17 is/are rejected under 35 U.S.C. 103 as being unpatentable over Ulinski (3,074,572) in view of Bares et al. (6,695,568).

Ulinski shows a compact tool carrier comprising a loader assembly made up of opposing arm assemblies (17,19,24) one on each side of the carrier, a loader support (10), a linkage (32) pivoted at a first linkage point (35) on one side of the loader, an actuator (36) pivotally attached to a portion (24) of the loader, and an operator control station with platform (54). Ulinski fails to show at least one cross member between its loader arms.

However, the Bares et al. patent shows it old and well known to provide a cross member (70) that extends between its two loader arms (24A,24B) for maintaining the arms in a stable position during raising and lowering operations. The cross member (70) is spaced apart from attachment plate (40).

It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to mount at least one cross member between the forward end of Ulinski's loader arm assemblies, as taught by Bares et al., in order to create a more stable and durable structure when handling heavy loads.

Regarding claim 16, the manual controls of the resulting control station could obviously be mounted or attached to an upper portion of the frame so as to be conveniently located near the operator's hands.

In regard to claim 17, it would have been a matter of obvious engineering design choice to form the loader support as a one-piece construction. See *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965).

Allowable Subject Matter

11. Claims 1-6 are allowed.

12. Claims 10, 11, and 24-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claim 29 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), 2nd paragraph, set forth in this Office action.

14. Claims 30-33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Drawings

15. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "cross-member", as set forth in claims 14 and 15, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN J KRAMER whose telephone number is (571)272-6926. The examiner can normally be reached on Monday-Friday 7:30-4:00.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saul Rodriguez can be reached on 571-272-7097. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DEAN J KRAMER/
Primary Examiner, Art Unit 3652

DEAN J. KRAMER
Primary Examiner
Art Unit 3652

Djk

4/18/18

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Brad Thomas Art Unit: 3652
Application No.: 15/704,685
Filed On: September 14, 2017
Confirmation No.: 4984
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Dean J. Kramer

March 30, 2018

SECOND NOTICE OF CONCURRENT PROCEEDINGS

A third party Request for Ex Parte Reexamination of the patent granted from the parent application (Application No. 14/691,649), U.S. Patent No. 9,321,386, has been assigned the following serial number:

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

Respectfully submitted,

/Michael J. Vander Molen/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/704,685	09/14/2017	Brad Thomas	31681-162

CONFIRMATION NO. 4984

PUBLICATION NOTICE



OC00000096620635

76656
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

Title:LOW PROFILE COMPACT TOOL CARRIERS

Publication No.US-2018-0009642-A1

Publication Date:01/11/2018

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Brad Thomas et al. Art Unit: 3652
Serial No.: 15/704,685
Filed: September 14, 2017
Confirmation No.: 4984
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: TBD

NOVEMBER 29, 2017

PRELIMINARY AMENDMENT B

TO THE COMMISSIONER FOR PATENTS,

SIR:

Please enter the following amendments and consider the following remarks prior to examination of the above-referenced patent application:

Amendments to the Claims are reflected in the Listings of Claims which begins on page 2; and

Remarks begin on page 13.

REMARKS

Applicant requests entry of the previous amendments prior to examination of the present application. Allowance of all pending claims is respectfully requested.

While no fees are believed to be due, Applicant authorizes the Commissioner to charge any fees due in connection with this Preliminary Amendment B to Deposit Account Number 01-2384.

Respectfully submitted,

/Michael J. Vander Molen/

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MJV/asb

AMENDMENTS TO THE CLAIMS

This claim listing will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Original) A loader apparatus configured for standing operator control and comprising:

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

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point;

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

an operator platform for standing operation of the operator controls of the control station, the operator platform being located toward a rear of the loader apparatus such that the first linkage pivot point, second

linkage pivot point, and the actuator pivot point are disposed forward of the operator platform, the first linkage pivot point, second linkage pivot point, and the actuator pivot point being disposed below the operator controls of the control station.

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

3. (Original) The loader apparatus as set forth in claim 1 wherein the loader support incorporates a single weldment.

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

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

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

7. (Original) A loader apparatus for standing or walk-behind operator control and comprising:

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

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

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

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

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

a second linkage pivotally attached to the first side of the rigid frame at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, wherein, as the loader travels from the down position to the vertically raised position, the first, second, third, fourth, fifth and sixth pivot points are (1) disposed between the operator controls and the bottom of the rigid frame and/or (2) disposed forward of the control station.

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

9. (Original) The loader apparatus as set forth in claim 8 further comprising an operator platform at least partially within the pocket.

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

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

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

13. (Original) The loader apparatus as set forth in claim 7 wherein the rigid frame incorporates a single weldment.

14. (Original) A loader apparatus for standing or walk-behind operator control and comprising:

a loader adapted to carry a tool, the loader being 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 arm to the second arm;

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

a linkage pivotally attached to the first side of the loader support and pivotally attached to the loader;

an actuator pivotally attached to the first side of the loader support and pivotally attached to the loader;
and

a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader, the control station being mounted toward a rear of the loader apparatus, each cross-member being disposed forward of the control station in the vertically raised position.

15. (Original) The loader apparatus as set forth in claim 14 further comprising an attachment plate for removably attaching a tool to the loader apparatus, the cross member being spaced from the attachment plate.

16. (Original) The loader apparatus as set forth in claim 14 wherein the loader support comprises a lower frame and an upper frame, the control station being attached to the upper frame.

17. (Original) The loader apparatus as set forth in claim 14 wherein the loader support incorporates a single weldment.

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

a loader adapted to carry a tool;

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

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

an actuator pivotally attached to the first side of the loader support at a third pivot point and pivotally attached to the loader at a fourth pivot point; and

a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket ~~[[shaft]]~~ defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than 0.75 D5.

19. (Original) The loader apparatus as set forth in claim 18 wherein the loader support comprises a lower frame

and an upper frame, the loader apparatus further comprising a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader, the control station being attached to the upper frame.

20. (Original) The loader apparatus as set forth in claim 18 wherein the loader support incorporates a single weldment.

21. (Original) The loader apparatus as set forth in claim 18 wherein the linkage is a first linkage, the loader apparatus comprising a second linkage pivotally attached to the first side of the loader support at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times D1, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times D1.

22. (Original) The loader apparatus a set forth in claim 18 wherein the loader apparatus has a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus

being separated by a vertical distance D1, the rotational axis R and each of the first and third pivot points being separated by a vertical distance, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than 1.5 times D1.

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

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

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

an actuator pivotally attached to the mainframe;

a linkage pivotally attached to the mainframe; and

a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position, the linkage being pivotally attached to the loader at a linkage pivot point, wherein, as the loader travels from the down position to the vertically raised position, the linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

24. (Original) The loader apparatus as set forth in claim 23 wherein, in the down position, the linkage pivot point is disposed within the barrier guard.

25. (Original) The loader apparatus as set forth in claim 23 wherein the linkage is a rear linkage and the linkage pivot point is a rear linkage pivot point, the loader apparatus further comprising a front linkage, the front linkage being pivotally attached to the loader at a front linkage pivot point, wherein, in the down position, the front linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

26. (Original) The loader apparatus as set forth in claim 25 wherein the actuator is pivotally attached to the loader at an actuator pivot point, wherein, in the down position, the actuator pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

27. (Original) The loader apparatus as set forth in claim 26 wherein the mainframe has a first side and a second side, the rear linkage, actuator and front linkage each being pivotally attached to the first side of the mainframe.

28. (Original) The loader apparatus as set forth in claim 23 wherein the loader is free from direct attachment to the mainframe.

29. (Original) A loader apparatus comprising:

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point; and

a control station free from attachment to the loader support.

30. (Currently amended) The loader apparatus as set forth in claim 29 further comprising a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive sprocket **[[shaft]]** defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with linkage pivot point or actuator pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5.

31. (Original) The loader apparatus as set forth in claim 29 wherein the linkage is a first linkage and the linkage pivot point is a first linkage pivot point, the loader apparatus further comprising a second linkage

pivotally attached to the loader support at a second linkage pivot point.

32. (Original) The loader apparatus as set forth in claim 29 wherein the loader support comprises a lower frame and an upper frame.

33. (Original) The loader apparatus as set forth in claim 29 wherein the loader support incorporates a single weldment.



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/704,685	09/14/2017	3652	3900	31681-162	33	6

CONFIRMATION NO. 4984

UPDATED FILING RECEIPT



76656
Patent Docket Department
Armstrong Teasdale LLP
7700 Forsyth Boulevard
Suite 1800
St. Louis, MO 63105

Date Mailed: 10/06/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

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Domestic Priority data as claimed by applicant

This application is a CON of 15/062,801 03/07/2016
which is a CON of 14/691,649 04/21/2015 PAT 9321386
which claims benefit of 62/118,860 02/20/2015

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 09/25/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/704,685**

Projected Publication Date: 01/11/2018

Non-Publication Request: No

Early Publication Request: No

Title

LOW PROFILE COMPACT TOOL CARRIERS

Preliminary Class

414

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Brad Thomas et al. Art Unit: 3652
Serial No.: 15/704,685
Filed: September 14, 2017
Confirmation No.: 4984
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: Not Yet Assigned

October 4, 2017

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS:
PRELIMINARY AMENDMENT B

TO THE COMMISSIONER FOR PATENTS,
SIR:

In response to the Notice to File Corrected Application Papers dated September 27, 2017, please enter the following amendments and consider the following remarks:

Amendments to the Specification begin on page 2; and

Remarks begin on page 3.

AMENDMENTS TO THE SPECIFICATION

Please replace the specification with the substitute specification submitted concurrently herewith.

REMARKS

In response to the Notice to File Corrected Application Papers dated September 27, 2017, please find enclosed a substitute specification, excluding claims, in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125. The substitute specification is submitted with markings and accompanied by a clean version in compliance with 37 CFR 1.125(c). The enclosed substitute specification contains no new matter.

Applicant authorizes the Commissioner to charge any fees due in connection with this Amendment B to Deposit Account Number 01-2384.

Respectfully submitted,

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LOW PROFILE COMPACT TOOL CARRIERS

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 15/062,801, filed March 7, 2016, which is a continuation of No. 14/691,649, filed April 21, 2015, which issued April 26, 2016 as U.S. Patent No. 9,321,386, which claims the benefit of U.S. Provisional Patent Application No. 62/118,860, filed February 20, 2015, each of which being incorporated herein by reference in its entirety.

FIELD OF THE DISCLOSURE

[0002] The field of the disclosure relates to compact tool carriers having a loader mounted to a low-profile mainframe.

BACKGROUND

[0003] 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.

[0004] 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.

[0005] 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.

[0006] 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

[0007] 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.

[0008] 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.

[0009] 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

[0010] Figure 1 is a perspective view of a compact tool carrier with the loader in a down position;

[0011] Figure 2 is a side view of the compact tool carrier with the loader in a down position;

[0012] Figure 3 is a side view of the compact tool carrier with the loader in a raised position;

[0013] Figure 4 is a perspective view of a mainframe of the compact tool carrier;

[0014] Figure 5 is a side view of the mainframe and loader of the compact tool carrier;

[0015] Figure 6 is a cross-section side view of the mainframe; and

[0016] Figure 7 is an exploded perspective view of the mainframe and an upper frame of the compact tool carrier.

[0017] Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION

[0018] An embodiment of a compact tool carrier is generally referred as "5" in Figure 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 15a and a second arm 15b generally opposite the first arm 15a. Each arm 15a, 15b may be a single weldment or may include various components attached by fasteners (e.g., nuts and bolts). The first and second arms 15a, 15b each include a bracket portion 17a, 17b (Fig. 1) for fastening various linkages.

[0019] 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.

[0020] 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 Figures 1-7 includes a corresponding component with the same function opposite the component.

[0021] 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 ~~[[10]]~~ includes wheels.

[0022] 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).

[0023] 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.

[0024] As stated in SAE J2752, incorporated herein by reference, the machine structure around the operator's area may be part of a barrier guard. 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. The upper frame 39 and mainframe 10 define the machine structure around the operator's area, wherein the perimeter of the machine structure, defined by the projection of the profile onto a vertical plane passing through the longitudinal axis, forms a barrier guard as shown in Figures 2 and 3. 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.

[0025] The mainframe 10 includes a first side 38a and a second side 38b generally opposite the first side 38a. 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 40a, 40b (Fig. 4) through which various pivot linkages are attached. In the illustrated embodiment, the engine (not shown) and the drive mechanism 18 ~~[[10]]~~ comprising tracks or wheels are directly connected to the mainframe 10.

[0026] The first loader arm 15a is pivotally connected to the first side 38a of the mainframe 10, and the second loader arm 15b is pivotally connected to the second side 38b of the mainframe 10. The loader arms 15a, 15b and sides 38a, 38b of the mainframe 10 each include three pivot points for pivoting the loader 8 relative to the mainframe 10. The first side 38a 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 15a includes a forward pivot point P_4 , a rear pivot point P_6 , positioned within the barrier guard of the perimeter of the machine structure as shown in Figures 2 and 3, 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 46a attached to the first side 38a of the mainframe 10 at its forward pivot point P_1 and attached to the first arm 15a at its forward pivot point P_4 . A first rear linkage 50a is attached to the first side 38a of the mainframe 10 at its rear pivot point P_3 and is attached to the first arm 15a of the loader 8 at its rear pivot point P_6 . While the carrier 5 is shown with two loader linkages 46a, 50a on each side of the carrier 5, in other embodiments the carrier 5 includes a single linkage.

[0027] An actuator 54, shown as a hydraulic cylinder, is attached to the first side 38a of the mainframe 10 at its center pivot point P_2 ~~[[P_4]]~~ and is attached to the loader arm 15a 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 38b (Fig. 4) of the mainframe 10 and the second arm 15b (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).

[0028] The second side 38b (Fig. 4) of the mainframe 10 may include a forward pivot point and a rear pivot point to which a second forward linkage 46b (Fig. 1) and second rear linkage (not shown) are respectively attached. The second arm 15b may also include a forward pivot point and rear pivot point to which the second forward linkage 46b and second rear linkage are attached. In embodiments in which the compact tool carrier 5

includes a second actuator (not shown), the second side 38b of the mainframe 10 includes a central pivot point between its forward pivot point and its rear pivot point, and the second arm 15b 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 38b of the mainframe 10 and the central pivot point of the second arm 15b.

[0029] In some embodiments, the first and second ends 38a, 38b of the mainframe 10 and the first and second loader arms 15a, 15b 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 46a, 50a, in other embodiments the actuator 54 is forward to both linkages 46a, 50a or rearward to both linkages 46a, 50a. Further, each side of the carrier 5 having an actuator 54 may include a single linkage rather than two linkages.

[0030] 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 D1. 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 P₁

of the first side 38a of the mainframe 10 are separated by a vertical distance D2. The rotational axis R and the rear pivot point P₃ are separated by a vertical distance D3. The rotational axis R and the central pivot point P₂ ~~[[P₄]]~~ are separated by a vertical distance D4. 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).

[0031] The mainframe 10 profile may also be expressed relative to the distance D5 between the rotational axis R (Fig. 5) and the bottom 57 of the mainframe 10. 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). The distance D6 between the top 59 of the first side 38a of the mainframe 10 and the highest pivot point (P₁ in the illustrated embodiment), is less than about 1.5 times D5, less than about D5 or less than about 0.75 times D5.

[0032] The second side 38b (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 38b are separated by a vertical distance D2' (not shown). The rotational axis R and the rear pivot point of the second side are separated by a vertical distance D3' (not shown). The rotational axis R and the central pivot point (if any) of the second side 38b of

mainframe 10 are separated by a vertical distance $D4'$ (not shown). Each of $D2'$, $D3'$ and $D4'$ is less than about 1.5 times $D1$ ($1.5 \times D1$) or less than $D1$ or even less than about 0.75 times $D1$ ($0.75 \times D1$). The rotational axis R and the bottom of the second side 38b of the mainframe 10 are separated by a vertical distance $D5'$ (not shown). Each of $D2'$, $D3'$ and $D4'$ is less than twice $D5'$ ($2 \times D5'$) or less than about 1.75 times $D5'$ ($1.75 \times D5'$) or less than about 1.5 times $D5'$ ($1.5 \times D5'$). $D3'$ and $D4'$ may be even less than about 1.25 times $D5'$ ($1.25 \times D5'$). The distance $D6'$ between the top of the second side 38b of the mainframe 10 and the highest pivot point is less than about 1.5 times $D5'$, less than about $D5'$ or less than about 0.75 times $D5'$.

[0033] The compact tool carrier 5 includes an engine (not shown) for propelling the drive mechanism 18. As shown in Figure 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.

[0034] 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 46a and a rear linkage 50a on at least one side 38a, 38b of the mainframe 10, the loader 8 is characterized by a 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.

[0035] 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.

[0036] 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.

[0037] 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.

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.

LOW PROFILE COMPACT TOOL CARRIERS

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 15/062,801, filed March 7, 2016, which is a continuation of No. 14/691,649, filed April 21, 2015, which issued April 26, 2016 as U.S. Patent No. 9,321,386, which claims the benefit of U.S. Provisional Patent Application No. 62/118,860, filed February 20, 2015, each of which being incorporated herein by reference in its entirety.

FIELD OF THE DISCLOSURE

[0002] The field of the disclosure relates to compact tool carriers having a loader mounted to a low-profile mainframe.

BACKGROUND

[0003] 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.

[0004] 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.

[0005] 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.

[0006] 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

[0007] 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.

[0008] 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.

[0009] 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

[0010] Figure 1 is a perspective view of a compact tool carrier with the loader in a down position;

[0011] Figure 2 is a side view of the compact tool carrier with the loader in a down position;

[0012] Figure 3 is a side view of the compact tool carrier with the loader in a raised position;

[0013] Figure 4 is a perspective view of a mainframe of the compact tool carrier;

[0014] Figure 5 is a side view of the mainframe and loader of the compact tool carrier;

[0015] Figure 6 is a cross-section side view of the mainframe; and

[0016] Figure 7 is an exploded perspective view of the mainframe and an upper frame of the compact tool carrier.

[0017] Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION

[0018] An embodiment of a compact tool carrier is generally referred as "5" in Figure 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 15a and a second arm 15b generally opposite the first arm 15a. Each arm 15a, 15b may be a single weldment or may include various components attached by fasteners (e.g., nuts and bolts). The first and second arms 15a, 15b each include a bracket portion 17a, 17b (Fig. 1) for fastening various linkages.

[0019] 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.

[0020] 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 Figures 1-7 includes a corresponding component with the same function opposite the component.

[0021] 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.

[0022] 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).

[0023] 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.

[0024] As stated in SAE J2752, incorporated herein by reference, the machine structure around the operator's area may be part of a barrier guard. 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. The upper frame 39 and mainframe 10 define the machine structure around the operator's area, wherein the perimeter of the machine structure, defined by the projection of the profile onto a vertical plane passing through the longitudinal axis, forms a barrier guard as shown in Figures 2 and 3. 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.

[0025] The mainframe 10 includes a first side 38a and a second side 38b generally opposite the first side 38a. 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 40a, 40b (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.

[0026] The first loader arm 15a is pivotally connected to the first side 38a of the mainframe 10, and the second loader arm 15b is pivotally connected to the second side 38b of the mainframe 10. The loader arms 15a, 15b and sides 38a, 38b of the mainframe 10 each include three pivot points for pivoting the loader 8 relative to the mainframe 10. The first side 38a 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 15a includes a forward pivot point P_4 , a rear pivot point P_6 , positioned within the barrier guard of the perimeter of the machine structure as shown in Figures 2 and 3, 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 46a attached to the first side 38a of the mainframe 10 at its forward pivot point P_1 and attached to the first arm 15a at its forward pivot point P_4 . A first rear linkage 50a is attached to the first side 38a of the mainframe 10 at its rear pivot point P_3 and is attached to the first arm 15a of the loader 8 at its rear pivot point P_6 . While the carrier 5 is shown with two loader linkages 46a, 50a on each side of the carrier 5, in other embodiments the carrier 5 includes a single linkage.

[0027] An actuator 54, shown as a hydraulic cylinder, is attached to the first side 38a of the mainframe 10 at its center pivot point P_2 and is attached to the loader arm 15a 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 38b (Fig. 4) of the mainframe 10 and the second arm 15b (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).

[0028] The second side 38b (Fig. 4) of the mainframe 10 may include a forward pivot point and a rear pivot point to which a second forward linkage 46b (Fig. 1) and second rear linkage (not shown) are respectively attached. The second arm 15b may also include a forward pivot point and rear pivot point to which the second forward linkage 46b and second rear linkage are attached. In embodiments in which the compact tool carrier 5 includes a second actuator (not shown), the second side

38b of the mainframe 10 includes a central pivot point between its forward pivot point and its rear pivot point, and the second arm 15b 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 38b of the mainframe 10 and the central pivot point of the second arm 15b.

[0029] In some embodiments, the first and second ends 38a, 38b of the mainframe 10 and the first and second loader arms 15a, 15b 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 46a, 50a, in other embodiments the actuator 54 is forward to both linkages 46a, 50a or rearward to both linkages 46a, 50a. Further, each side of the carrier 5 having an actuator 54 may include a single linkage rather than two linkages.

[0030] 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 D1. 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 P₁ of the first side 38a of the mainframe 10 are separated

by a vertical distance D2. The rotational axis R and the rear pivot point P₃ are separated by a vertical distance D3. The rotational axis R and the central pivot point P₂ are separated by a vertical distance D4. 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).

[0031] The mainframe 10 profile may also be expressed relative to the distance D5 between the rotational axis R (Fig. 5) and the bottom 57 of the mainframe 10. 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). The distance D6 between the top 59 of the first side 38a of the mainframe 10 and the highest pivot point (P₁ in the illustrated embodiment), is less than about 1.5 times D5, less than about D5 or less than about 0.75 times D5.

[0032] The second side 38b (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 38b are separated by a vertical distance D2' (not shown). The rotational axis R and the rear pivot point of the second side are separated by a vertical distance D3' (not shown). The rotational axis R and the central pivot point (if any) of the second side 38b of mainframe 10 are separated by a vertical distance D4'

(not shown). Each of $D2'$, $D3'$ and $D4'$ is less than about 1.5 times $D1$ ($1.5 \times D1$) or less than $D1$ or even less than about 0.75 times $D1$ ($0.75 \times D1$). The rotational axis R and the bottom of the second side 38b of the mainframe 10 are separated by a vertical distance $D5'$ (not shown). Each of $D2'$, $D3'$ and $D4'$ is less than twice $D5'$ ($2 \times D5'$) or less than about 1.75 times $D5'$ ($1.75 \times D5'$) or less than about 1.5 times $D5'$ ($1.5 \times D5'$). $D3'$ and $D4'$ may be even less than about 1.25 times $D5'$ ($1.25 \times D5'$). The distance $D6'$ between the top of the second side 38b of the mainframe 10 and the highest pivot point is less than about 1.5 times $D5'$, less than about $D5'$ or less than about 0.75 times $D5'$.

[0033] The compact tool carrier 5 includes an engine (not shown) for propelling the drive mechanism 18. As shown in Figure 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.

[0034] 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 46a and a rear linkage 50a on at least one side 38a, 38b 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.

[0035] 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.

[0036] 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.

[0037] 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.

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.



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/704,685	09/14/2017	Brad Thomas	31681-162

CONFIRMATION NO. 4984

FORMALITIES LETTER



OC00000094311592

76656
Patent Docket Department
Armstrong Teasdale LLP
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Date Mailed: 09/27/2017

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Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/704,685	09/14/2017	3652	3900	31681-162	33	6

CONFIRMATION NO. 4984

FILING RECEIPT



0000000094311591

76656
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Date Mailed: 09/27/2017

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Domestic Priority data as claimed by applicant

This application is a CON of 15/062,801 03/07/2016
which is a CON of 14/691,649 04/21/2015 PAT 9321386
which claims benefit of 62/118,860 02/20/2015

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/704,685**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

Title

LOW PROFILE COMPACT TOOL CARRIERS

Preliminary Class

414

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Application Number	15/704,685
Filing Date	2017-09-14
First Named Inventor	Brad Thomas
Title	LOW PROFILE COMPACT TOOL CARRIERS
Art Unit	3652
Examiner Name	TBD
Attorney Docket Number	31681-162

SIGNATURE of Applicant or Patent Practitioner

Signature	/Michael J. Vander Molen/	Date (Optional)	09/20/2017
Name	Michael J. Vander Molen	Registration Number	57,274
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)	Vermeer Manufacturing Company		

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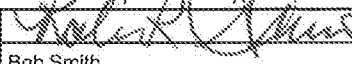
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

--

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	15 August 2013
Name	Bob Smith		
Title	General Counsel Vermeer Manufacturing Company		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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: 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.

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.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Vermeer Manufacturing CompanyApplication No./Patent No.: 15/704,685 Filed/Issue Date: 2017-09-14Titled: LOW PROFILE COMPACT TOOL CARRIERSVermeer Manufacturing Company, a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 043593, Frame 0011, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:
1. From: _____ To: _____
- The document was recorded in the United States Patent and Trademark Office at
- Reel _____, Frame _____, or for which a copy thereof is attached.
2. From: _____ To: _____
- The document was recorded in the United States Patent and Trademark Office at
- Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 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: 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.

EX1002 / Page 116 of 184

Kubota North America Corporation et al

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

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The document was recorded in the United States Patent and Trademark Office at
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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Michael J. Vander Molen/

09/20/2017

Signature

Date

Michael J. Vander Molen

57,274

Printed or Typed Name

Title or Registration Number

The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing

Information:

2	Assignee showing of ownership per 37 CFR 3.73	31681-162_Statement_Under_37_CFR_373c_20SEP2017-27194799.pdf	127730	no	3
			43a4ff1d2ea3b593185bfc94114417e7d0f7e8b		

Warnings:

Information:

Total Files Size (in bytes):			993628
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Brad Thomas et al. Art Unit: TBD
Serial No.: TBD
Filed: September 14, 2017
Confirmation No.: TBD
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: TBD

SEPTEMBER 14, 2017

PRELIMINARY AMENDMENT A

TO THE COMMISSIONER FOR PATENTS,

SIR:

Please enter the following amendments and consider the following remarks prior to examination of the above-referenced patent application:

Amendments to the Specification begin on page 2; and

Remarks begin on page 6.

AMENDMENTS TO THE SPECIFICATION

Please replace the abstract of the application with the following rewritten abstract:

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.

* * * * *

Please replace paragraph [0021] with the following rewritten paragraph:

[0021] 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 ~~[[10]]~~ includes wheels.

* * * * *

Please replace paragraphs [0024]-[0027] of the application with the following rewritten paragraphs:

[0024] As stated in SAE J2752, incorporated herein by reference, the machine structure around the operator's area may be part of a barrier guard. 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. The upper frame 39 and mainframe 10 define the machine structure around the operator's area, wherein the perimeter of the machine structure, defined by the projection of the profile onto a vertical plane passing through the longitudinal axis, forms a barrier guard as shown in Figures 2 and 3. 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.

[0025] The mainframe 10 includes a first side 38a and a second side 38b generally opposite the first side 38a. 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 40a, 40b (Fig. 4) through which various pivot linkages are attached. In the illustrated embodiment, the engine (not shown) and the drive mechanism 18 ~~[[10]]~~ comprising tracks or wheels are directly connected to the mainframe 10.

[0026] The first loader arm 15a is pivotally connected to the first side 38a of the mainframe 10, and the second loader arm 15b is pivotally connected to the second side 38b of the mainframe 10. The loader arms 15a, 15b and sides 38a, 38b of the mainframe 10 each include three pivot points for pivoting the loader 8 relative to the mainframe 10. The first side 38a 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 15a includes a forward pivot point P_4 , a rear pivot point P_6 , positioned within the barrier guard of the perimeter of the machine structure as shown in Figures 2 and 3, 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 46a attached to the first side 38a of the mainframe 10 at its forward pivot point P_1 and attached to the first arm 15a at its forward pivot point P_4 . A first rear linkage 50a is attached to the first side 38a of the mainframe 10 at its rear pivot point P_3 and is attached to the first arm 15a of the loader 8 at its rear pivot point P_6 . While the carrier 5 is shown with two loader linkages 46a, 50a on each side of the carrier 5, in other embodiments the carrier 5 includes a single linkage.

[0027] An actuator 54, shown as a hydraulic cylinder, is attached to the first side 38a of the mainframe 10 at its center pivot point P_2 [[P_4]] and is attached to the loader arm 15a 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 38b (Fig. 4) of the mainframe 10 and the second arm 15b (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).

* * * * *

Please replace paragraph [0030] of the application with the following rewritten paragraph:

[0030] 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 D1. 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 38a of the mainframe 10 are separated by a vertical distance D2. The rotational axis R and the rear pivot point P_3 are separated by a vertical distance D3. The rotational axis R and the central pivot point P_2 ~~[[P_4]]~~ are separated by a vertical distance D4. Each of D2, D3 and D4 is less than about 1.5 times D1 ($1.5 \times D1$). In some embodiments, each of D2, D3 and D4 is less than D1 or even less than about 0.75 times D1 ($0.75 \times D1$).

REMARKS

Applicant requests entry of the previous amendments prior to examination of the present application. Allowance of all pending claims is respectfully requested.

Support for the amendment to paragraphs [0024] and [0026] may be found in, for example, SAE J2752 which is incorporated by reference at paragraph [0019] of the application¹.

While no fees are believed to be due, Applicant authorizes the Commissioner to charge any fees due in connection with this Preliminary Amendment A to Deposit Account Number 01-2384.

Respectfully submitted,

/Michael J. Vander Molen/

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

MJV/asb

¹ See, e.g., Note 10.1.1.1 of SAE J2752, which Applicant will provide in an Information Disclosure Statement.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	31681-162
		Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Brad		Thomas		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Pleasant Hill	State/Province	IA	Country of Residence	US

Mailing Address of Inventor:

Address 1	465 Hillside Court				
Address 2					
City	Pleasant Hill	State/Province	IA		
Postal Code	50327	Country	US		

Inventor	2				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Louis		Hartke		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Pella	State/Province	IA	Country of Residence	US

Mailing Address of Inventor:

Address 1	2005 Highway 163				
Address 2					
City	Pella	State/Province	IA		
Postal Code	50219	Country	US		

Inventor	3				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Greg		Langenfeld		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	31681-162
		Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS		

City	Bettendorf	State/Province	IA	Country of Residence	US
------	------------	----------------	----	----------------------	----

Mailing Address of Inventor:

Address 1	2425 Baron Court				
Address 2					
City	Bettendorf	State/Province	IA		
Postal Code	52722	Country	US		
Inventor	4				Remove
Legal Name					

Prefix	Given Name	Middle Name	Family Name	Suffix	
	Matt		Hutchinson		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Pella	State/Province	IA	Country of Residence	US

Mailing Address of Inventor:

Address 1	410 Highway T14				
Address 2					
City	Pella	State/Province	IA		
Postal Code	50219	Country	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add					

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	76656		
Email Address	uspatents@armstrongteasdale.com	Add Email	Remove Email

Application Information:

Title of the Invention	LOW PROFILE COMPACT TOOL CARRIERS		
Attorney Docket Number	31681-162	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	1

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	31681-162
		Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	76656		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	15062801	2016-03-07

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		31681-162	
		Application Number			
Title of Invention		LOW PROFILE COMPACT TOOL CARRIERS			
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15062801	Continuation of	14691649	2015-04-21	9321386	2016-04-26
Prior Application Status		Expired		Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14691649	Claims benefit of provisional	62118860	2015-02-20		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

- ☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
- NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	31681-162
	Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	31681-162
		Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	Remove	
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear			
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor	
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor:			
If the Applicant is an Organization check here. ☒			
Organization Name	Vermeer Manufacturing Company		
Mailing Address Information For Applicant:			
Address 1	1210 Vermeer Road East		
Address 2			
City	Pella	State/Province	IA
Country	US	Postal Code	50219
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	31681-162
		Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS		

Assignee	1			
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
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NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Michael J. Vander Molen/		Date (YYYY-MM-DD)	2017-09-14
First Name	Michael J.	Last Name	Vander Molen	Registration Number
				57274
Additional Signature may be generated within this form by selecting the Add button. Add				

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	31681-162
		Application Number	
Title of Invention	LOW PROFILE COMPACT TOOL CARRIERS		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

First Named Inventor: Brad Thomas
 Application Number: 14/691,649
 Filing Date: April 21, 2015
 Art Unit: To Be Determined
 Confirmation No.: 7913

**DECLARATION AND ASSIGNMENT FOR
 UTILITY OR DESIGN APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and country of residence are as stated below next to my name.

I believe I am the original and sole inventor (if only one name is listed below) or an original and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LOW PROFILE COMPACT TOOL CARRIERS

the specification of which: (check one)

☐ is attached hereto

☒ was filed on April 21, 2015 as Application Serial No. 14/691,649.

We hereby authorize and request our attorneys and agents, and the assignee or its delegated attorneys or agents, to insert above the application number and filing date of the application when known.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims and any claims amended by any amendment made prior to the date of this Declaration.

I acknowledge my duty to disclose all information which is material to patentability of this application in accordance with 37 CFR §1.56.

The above-identified application was made or was authorized to be made by me.

ASSIGNMENT

WHEREAS, the undersigned have invented improvements described in the above-identified application.

AND, WHEREAS, Vermeer Manufacturing Company of 1210 Vermeer Road East, Pella, Iowa 50219, a corporation of the State of Iowa (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Commissioner of Patents of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I have not executed and will not execute any instrument in conflict herewith.

PRIORITY CLAIM

I hereby claim foreign priority benefits under 35 U.S.C. §119 (a)-(d) or (f) or 365(b) of any foreign application(s) for patent or inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below, and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed:

Priority Claimed

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY NOT CLAIMED	CERTIFIED COPY ATTACHED
				☐ Yes ☐ No
				☐ Yes ☐ No

CLAIM FOR BENEFIT OF PROVISIONAL APPLICATION(S)

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

APPLICATION NUMBER(S)	FILING DATE (day, month, year)
62/118,860	20 February 2015

**CLAIM FOR BENEFIT OF EARLIER U.S. APPLICATION(S)
UNDER 35 U.S.C. §120**

(complete this part only if this is a divisional, continuation or CIP application)

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or 365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 CFR §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

U.S. PARENT APPLICATION OR PCT PARENT NUMBER	PARENT FILING DATE (day, month, year)	STATUS (patent and number, pending, abandoned)

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 of not more than five (5) years, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor Brad Thomas
Inventor's signature Brad Thomas Date 5/8/15
Residence Pleasant Hill, Iowa Country of Residence US
Post Office address 465 Hillside Court
Pleasant Hill, Iowa 50327

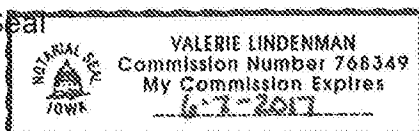
STATE OF Iowa

COUNTY OF Marion

ss.

This 8th day of May, 2015 before me personally came the above-named **Brad Thomas**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

Full name of second joint inventor Louis HartkeInventor's signature *Louis Hartke* Date 5/5/15Residence Pella, Iowa Country of Residence USPost Office address 2005 Highway 163Pella, Iowa 50219

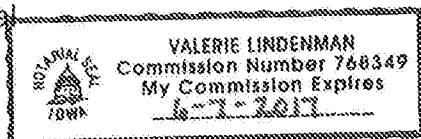
STATE OF

ss.

COUNTY OF

This 5th day of May, _____ before me personally came the above-named **Louis Hartke**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

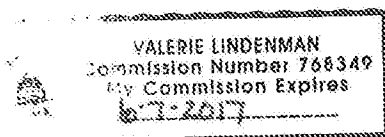
Full name of third joint inventor Greg LangenfeldInventor's signature *Greg Langenfeld* Date 5/18/2015Residence Bettendorf, Iowa Country of Residence USPost Office address 2425 Baron CourtBettendorf, Iowa 52722STATE OF Iowa

ss.

COUNTY OF Marion

This 18th day of May, 2015 before me personally came the above-named **Greg Langenfeld**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

Full name of fourth joint inventor Matt Hutchinson

Inventor's signature *Matt Hutchinson* Date 5/4/15

Residence Pella, Iowa Country of Residence US

Post Office address 410 Highway T14

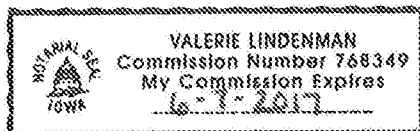
Pella, Iowa 50219

STATE OF Iowa ss.

COUNTY OF Marion

This 4th day of May, 2015 before me personally came the above-named **Matt Hutchinson**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

EXPLANATION OF ACKNOWLEDGEMENT

By signing the declaration, you acknowledge your duty to disclose to the U.S. Patent and Trademark Office information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56. Material information includes any information concerning whether:

The subject matter of this application was known or used by others in the United States before your invention thereof; or

The subject matter of this application was patented or described in any printed publication in any country before your invention thereof or more than one year prior to the date of this application; or

The subject matter of this application was in public use, offered for sale or on sale in the United States more than one year prior to the filing date of this application; or

The subject matter of this application was first patented or made the subject of an inventor's certificate issued in any country foreign to the United States as an application filed by you or your representatives or assigns more than twelve months prior to the date of this application; or

any application for patent or inventor's certificate on the subject matter of this application has been filed by your representatives or assigns in any foreign country.

In addition, you must advise us of the closest prior art (including your own patents and publications) of which you are aware so that we may bring it to the attention of the U.S. Patent and Trademark Office.

This duty to disclose material information continues after the application is filed. During the pendency of this patent application, each person substantially involved in the preparation or prosecution of this patent application, including each inventor, has a duty to disclose to the U.S. Patent and Trademark Office all known information which would be material to patentability. Failure to meet this duty can result in an unenforceable and/or invalid patent.

Any of the above information should be brought to the attention of the U.S. Patent and Trademark Office within three months of filing of this application, or within three months of acquiring such information, whichever is later. Accordingly, please promptly advise us of any of the above information, or any other information that may be material to patentability and is either presently known to you or later becomes known to you during the pendency of this application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Brad Thomas et al. Art Unit: TBD
Serial No.: TBD
Filed On: September 14, 2017
Confirmation No.: 8886
For: LOW PROFILE COMPACT TOOL CARRIERS
Examiner: TBD

September 14, 2017

NOTICE OF CONCURRENT PROCEEDINGS

The patent granted from the parent application, U.S. Patent No. 9,321,386, 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)

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).

Respectfully submitted,

/Michael J. Vander Molen/

Michael J. Vander Molen
Reg. No. 57,274
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LOW PROFILE COMPACT TOOL CARRIERS

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 15/062,801, filed March 7, 2016, which is a continuation of No. 14/691,649, filed April 21, 2015, which issued April 26, 2016 as U.S. Patent No. 9,321,386, which claims the benefit of U.S. Provisional Patent Application No. 62/118,860, filed February 20, 2015, each of which being incorporated herein by reference in its entirety.

FIELD OF THE DISCLOSURE

[0002] The field of the disclosure relates to compact tool carriers having a loader mounted to a low-profile mainframe.

BACKGROUND

[0003] 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.

[0004] 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.

[0005] 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.

[0006] 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

[0007] 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.

[0008] 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 D_1 . 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.

[0009] 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

[0010] Figure 1 is a perspective view of a compact tool carrier with the loader in a down position;

[0011] Figure 2 is a side view of the compact tool carrier with the loader in a down position;

[0012] Figure 3 is a side view of the compact tool carrier with the loader in a raised position;

[0013] Figure 4 is a perspective view of a mainframe of the compact tool carrier;

[0014] Figure 5 is a side view of the mainframe and loader of the compact tool carrier;

[0015] Figure 6 is a cross-section side view of the mainframe; and

[0016] Figure 7 is an exploded perspective view of the mainframe and an upper frame of the compact tool carrier.

[0017] Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION

[0018] An embodiment of a compact tool carrier is generally referred as "5" in Figure 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 15a and a second arm 15b generally opposite the first arm 15a. Each arm 15a, 15b may be a single weldment or may include various components attached by fasteners (e.g., nuts and bolts). The first and second arms 15a, 15b each include a bracket portion 17a, 17b (Fig. 1) for fastening various linkages.

[0019] 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.

[0020] 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 Figures 1-7 includes a corresponding component with the same function opposite the component.

[0021] 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 10 includes wheels.

[0022] 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).

[0023] 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.

[0024] 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.

[0025] The mainframe 10 includes a first side 38a and a second side 38b generally opposite the first side 38a. 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 40a, 40b (Fig. 4) through which various pivot linkages

are attached. In the illustrated embodiment, the engine (not shown) and the drive mechanism 10 comprising tracks or wheels are directly connected to the mainframe 10.

[0026] The first loader arm 15a is pivotally connected to the first side 38a of the mainframe 10, and the second loader arm 15b is pivotally connected to the second side 38b of the mainframe 10. The loader arms 15a, 15b and sides 38a, 38b of the mainframe 10 each include three pivot points for pivoting the loader 8 relative to the mainframe 10. The first side 38a 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 15a 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 46a attached to the first side 38a of the mainframe 10 at its forward pivot point P_1 and attached to the first arm 15a at its forward pivot point P_4 . A first rear linkage 50a is attached to the first side 38a of the mainframe 10 at its rear pivot point P_3 and is attached to the first arm 15a of the loader 8 at its rear pivot point P_6 . While the carrier 5 is shown with two loader linkages 46a, 50a on each side of the carrier 5, in other embodiments the carrier 5 includes a single linkage.

[0027] An actuator 54, shown as a hydraulic cylinder, is attached to the first side 38a of the mainframe 10 at its center pivot point P_2 and is attached to the loader arm 15a 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 38b (Fig. 4) of the mainframe 10 and the second arm 15b (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).

[0028] The second side 38b (Fig. 4) of the mainframe 10 may include a forward pivot point and a rear pivot point to which a second forward linkage 46b (Fig. 1) and second rear linkage (not shown) are respectively attached. The second arm 15b may also include a forward pivot point and rear pivot point to which the second forward linkage 46b and second rear linkage are attached. In embodiments in which the compact tool carrier 5 includes a second actuator (not shown), the second side 38b of the mainframe 10 includes a central pivot point between its forward pivot point and its rear pivot point, and the second arm 15b 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 38b of the mainframe 10 and the central pivot point of the second arm 15b.

[0029] In some embodiments, the first and second ends 38a, 38b of the mainframe 10 and the first and second loader arms 15a, 15b 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 46a, 50a, in other embodiments the actuator 54 is forward to both linkages 46a, 50a or rearward to both linkages 46a, 50a. Further, each side of the carrier 5 having an actuator 54 may include a single linkage rather than two linkages.

[0030] 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 D1. 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 P₁ of the first side 38a of the mainframe 10 are separated by a vertical distance D2. The rotational axis R and the rear pivot point P₃ are separated by a vertical distance D3. The rotational axis R and the central pivot point P₄ are separated by a vertical distance D4. 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).

[0031] The mainframe 10 profile may also be expressed relative to the distance D5 between the rotational axis R (Fig. 5) and the bottom 57 of the mainframe 10. 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 D_5 ($1.5 \times D_5$). 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 ($1.25 \times D_5$). The distance D_6 between the top 59 of the first side 38a 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 .

[0032] The second side 38b (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 38b 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 38b 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 ($1.5 \times D_1$) or less than D_1 or even less than about 0.75 times D_1 ($0.75 \times D_1$). The rotational axis R and the bottom of the second side 38b 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' ($2 \times D_5'$) or less than about 1.75 times D_5' ($1.75 \times D_5'$) or less than about 1.5 times D_5' ($1.5 \times D_5'$). D_3' and D_4' may be even less than about 1.25 times D_5' ($1.25 \times D_5'$). The distance D_6' between the top of the second side 38b 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' .

[0033] The compact tool carrier 5 includes an engine (not shown) for propelling the drive mechanism 18. As shown in Figure 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.

[0034] 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 46a and a rear linkage 50a on at least one side 38a, 38b of the mainframe 10, the loader 8 is characterized by a 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.

[0035] 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.

[0036] 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.

[0037] 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 loader apparatus configured for standing operator control and comprising:

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

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point;

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

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

linkage pivot point, second linkage pivot point, and the actuator pivot point being disposed below the operator controls of the control station.

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

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

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

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

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

7. A loader apparatus for standing or walk-behind operator control and comprising:

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

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

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

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

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

a second linkage pivotally attached to the first side of the rigid frame at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, wherein, as the loader travels from the down position to the vertically raised position, the first, second, third, fourth, fifth and sixth pivot points are (1) disposed between the operator controls and the bottom of the rigid frame and/or (2) disposed forward of the control station.

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

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

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

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

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

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

14. A loader apparatus for standing or walk-behind operator control and comprising:

a loader adapted to carry a tool, the loader being 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 arm to the second arm;

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

a linkage pivotally attached to the first side of the loader support and pivotally attached to the loader;

an actuator pivotally attached to the first side of the loader support and pivotally attached to the loader; and

a control station having operator controls for propelling the loader apparatus forward and for raising and lowering the loader, the control station being mounted toward a rear of the loader apparatus, each cross-member being disposed forward of the control station in the vertically raised position.

15. The loader apparatus as set forth in claim 14 further comprising an attachment plate for removably attaching a tool to the loader apparatus, the cross member being spaced from the attachment plate.

16. The loader apparatus as set forth in claim 14 wherein the loader support comprises a lower frame and an upper frame, the control station being attached to the upper frame.

17. The loader apparatus as set forth in claim 14 wherein the loader support incorporates a single weldment.

18. A loader apparatus for standing or walk-behind operator control and comprising:

a loader adapted to carry a tool;

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

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

an actuator pivotally attached to the first side of the loader support at a third pivot point and pivotally attached to the loader at a fourth pivot point; and

a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive shaft defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than 0.75 D5.

19. The loader apparatus as set forth in claim 18 wherein the loader support comprises a lower frame and an upper frame, the loader apparatus further comprising a control station having operator controls for propelling

the loader apparatus forward and for raising and lowering the loader, the control station being attached to the upper frame.

20. The loader apparatus as set forth in claim 18 wherein the loader support incorporates a single weldment.

21. The loader apparatus as set forth in claim 18 wherein the linkage is a first linkage, the loader apparatus comprising a second linkage pivotally attached to the first side of the loader support at a fifth pivot point and pivotally attached to the loader at a sixth pivot point, the loader apparatus having a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first, third and fifth pivot points being separated by a vertical distance, the vertical distance between the rotational axis R and the first pivot point being less than 1.5 times D1, the vertical distance between the rotational axis R and the third pivot point being less than 1.5 times D1, and the vertical distance between the rotational axis R and the fifth pivot point being less than 1.5 times D1.

22. The loader apparatus a set forth in claim 18 wherein the loader apparatus has a bottom at which the drive mechanism contacts the supporting surface, the rotational axis R and the bottom of the loader apparatus being separated by a vertical distance D1, the rotational axis R and each of the first and third pivot points being

separated by a vertical distance, the loader support comprising a forward-most pivot point with the first pivot point or the third pivot point being the forward-most pivot point, the vertical distance between the rotational axis R and the forward-most pivot point being less than 1.5 times D1.

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

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

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

an actuator pivotally attached to the mainframe;

a linkage pivotally attached to the mainframe;
and

a loader adapted to carry a tool, the loader being moveable between a down position and a vertically raised position, the linkage being pivotally attached to the loader at a linkage pivot point, wherein, as the loader travels from the down position to the vertically raised position, the linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

24. The loader apparatus as set forth in claim 23 wherein, in the down position, the linkage pivot point is disposed within the barrier guard.

25. The loader apparatus as set forth in claim 23 wherein the linkage is a rear linkage and the linkage pivot point is a rear linkage pivot point, the loader apparatus further comprising a front linkage, the front linkage being pivotally attached to the loader at a front linkage pivot point, wherein, in the down position, the front linkage pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

26. The loader apparatus as set forth in claim 25 wherein the actuator is pivotally attached to the loader at an actuator pivot point, wherein, in the down position, the actuator pivot point is (1) disposed within the barrier guard and/or (2) disposed forward of the barrier guard.

27. The loader apparatus as set forth in claim 26 wherein the mainframe has a first side and a second side, the rear linkage, actuator and front linkage each being pivotally attached to the first side of the mainframe.

28. The loader apparatus as set forth in claim 23 wherein the loader is free from direct attachment to the mainframe.

29. A loader apparatus comprising:

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

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

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

an actuator pivotally attached to the first side of the loader support at an actuator pivot point; and

a control station free from attachment to the loader support.

30. The loader apparatus as set forth in claim 29 further comprising a drive mechanism for propelling the loader apparatus over a supporting surface, the drive mechanism having a drive shaft defining a rotational axis R, the rotational axis R and a bottom of the first side of the loader support being separated by a vertical distance D5, the loader support comprising a forward-most pivot point with linkage pivot point or actuator pivot point being the forward-most pivot point, a vertical distance between the rotational axis R and the forward-most pivot point being less than twice D5.

31. The loader apparatus as set forth in claim 29 wherein the linkage is a first linkage and the linkage pivot point is a first linkage pivot point, the loader

apparatus further comprising a second linkage pivotally attached to the loader support at a second linkage pivot point.

32. The loader apparatus as set forth in claim 29 wherein the loader support comprises a lower frame and an upper frame.

33. The loader apparatus as set forth in claim 29 wherein the loader support incorporates a single weldment.

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.

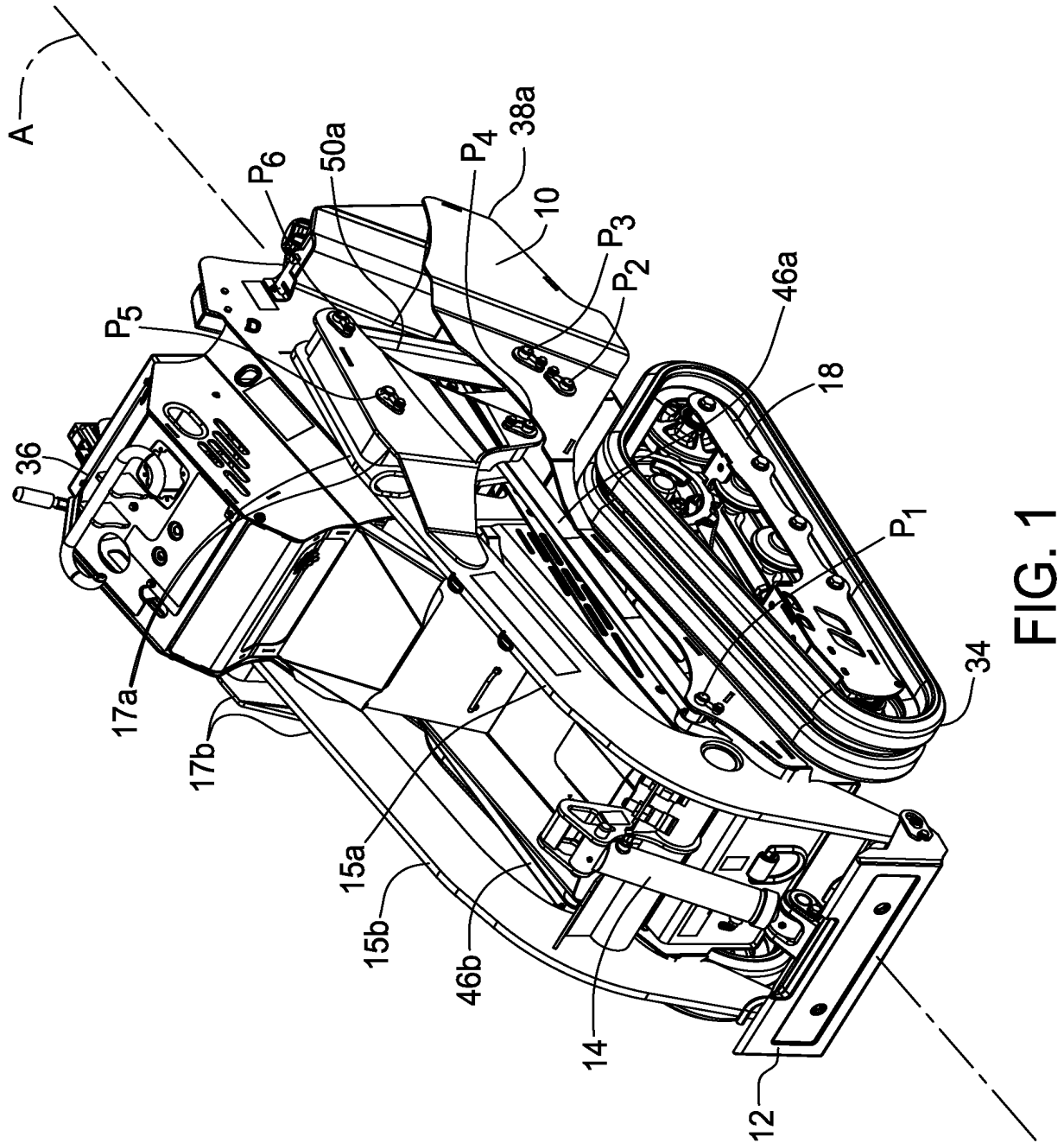


FIG. 1

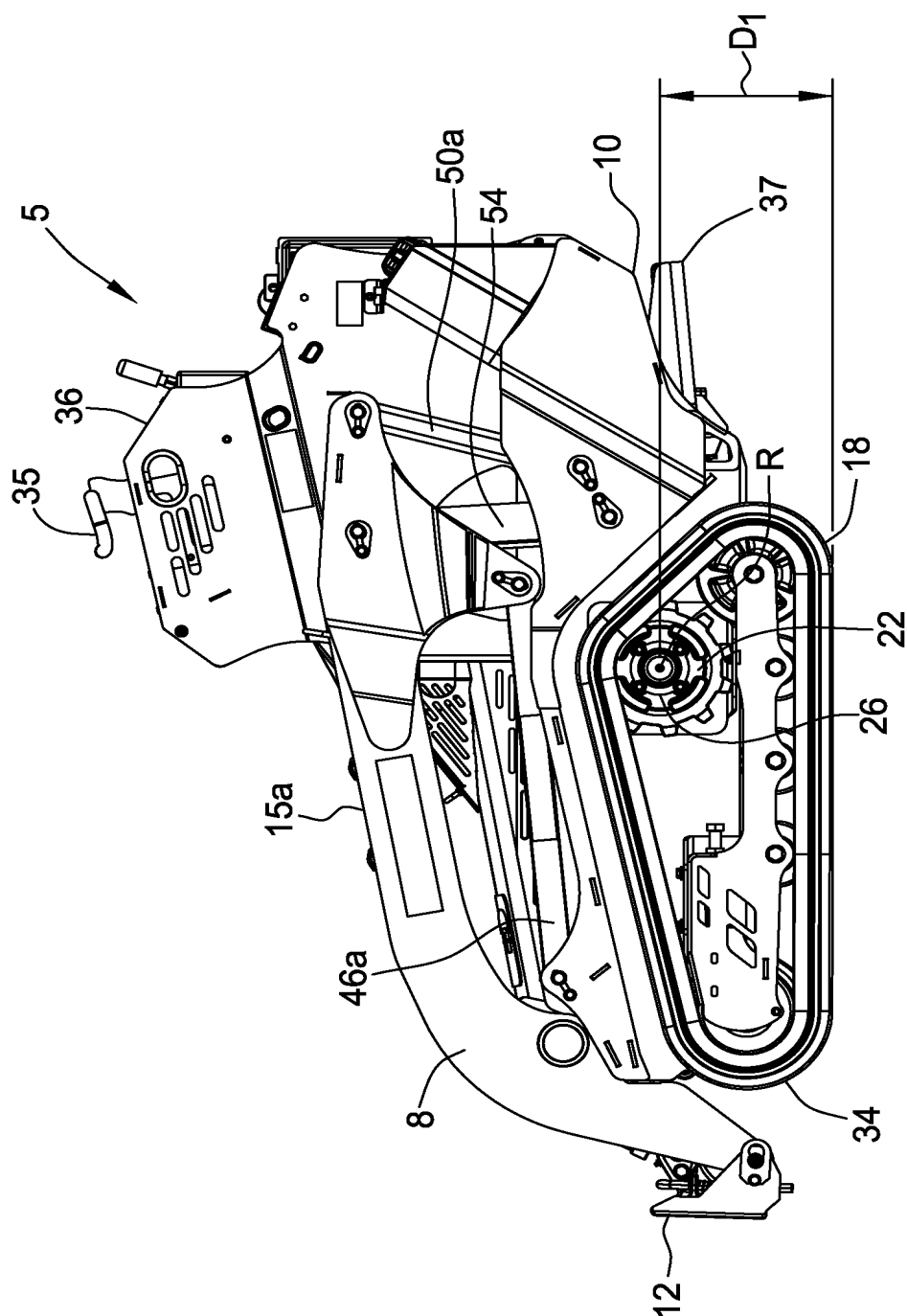


FIG. 2

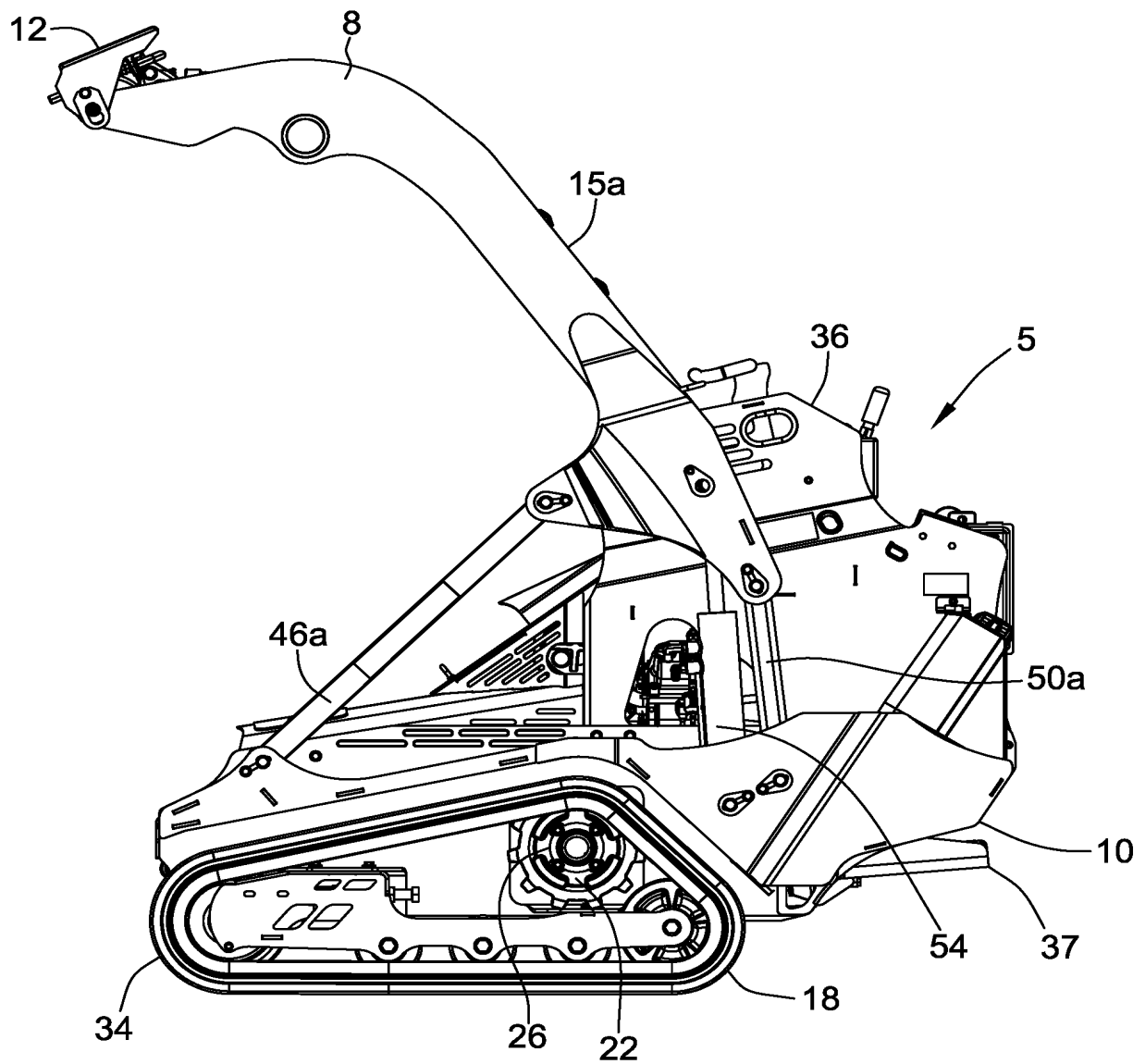


FIG. 3

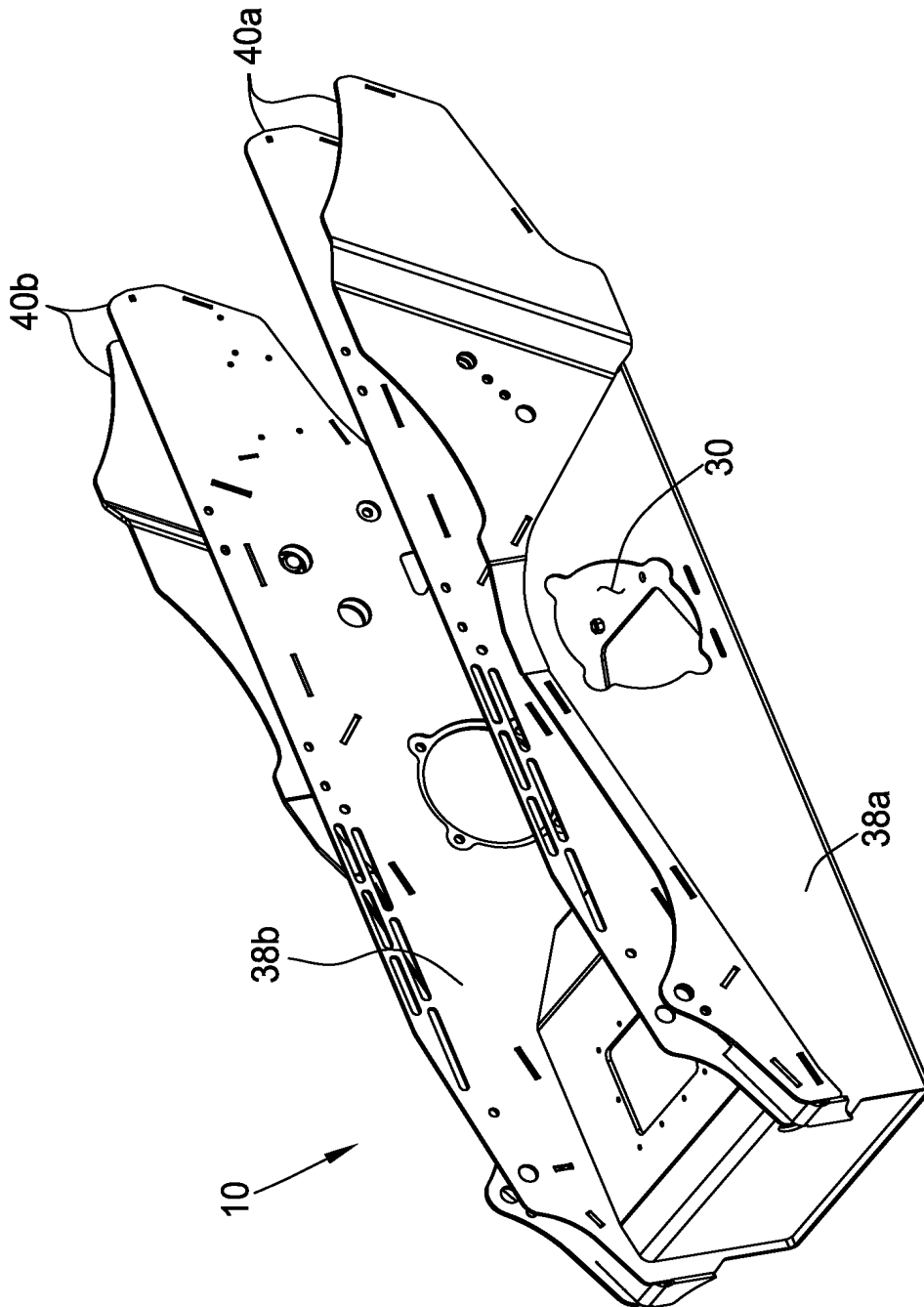


FIG. 4

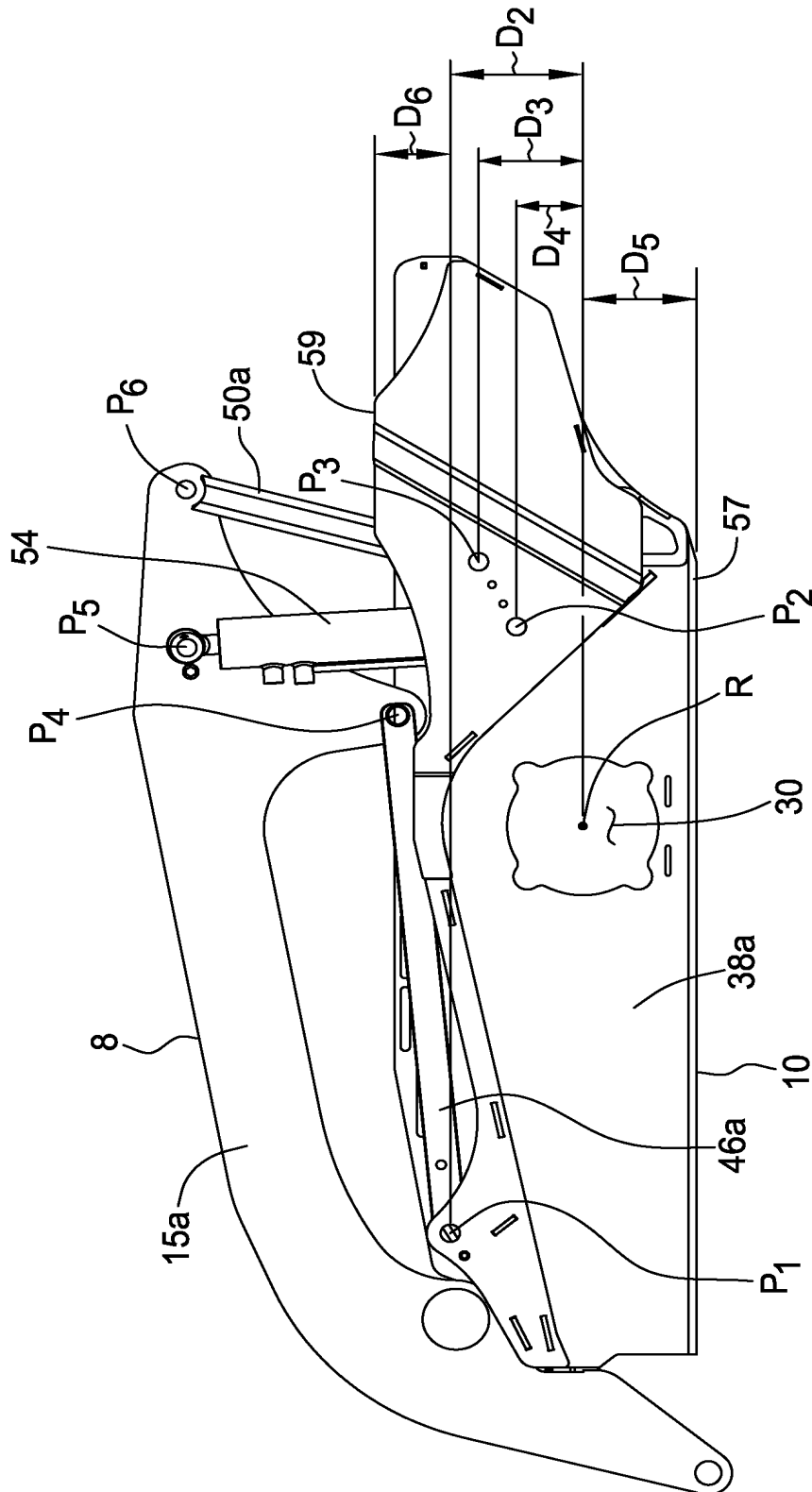


FIG. 5

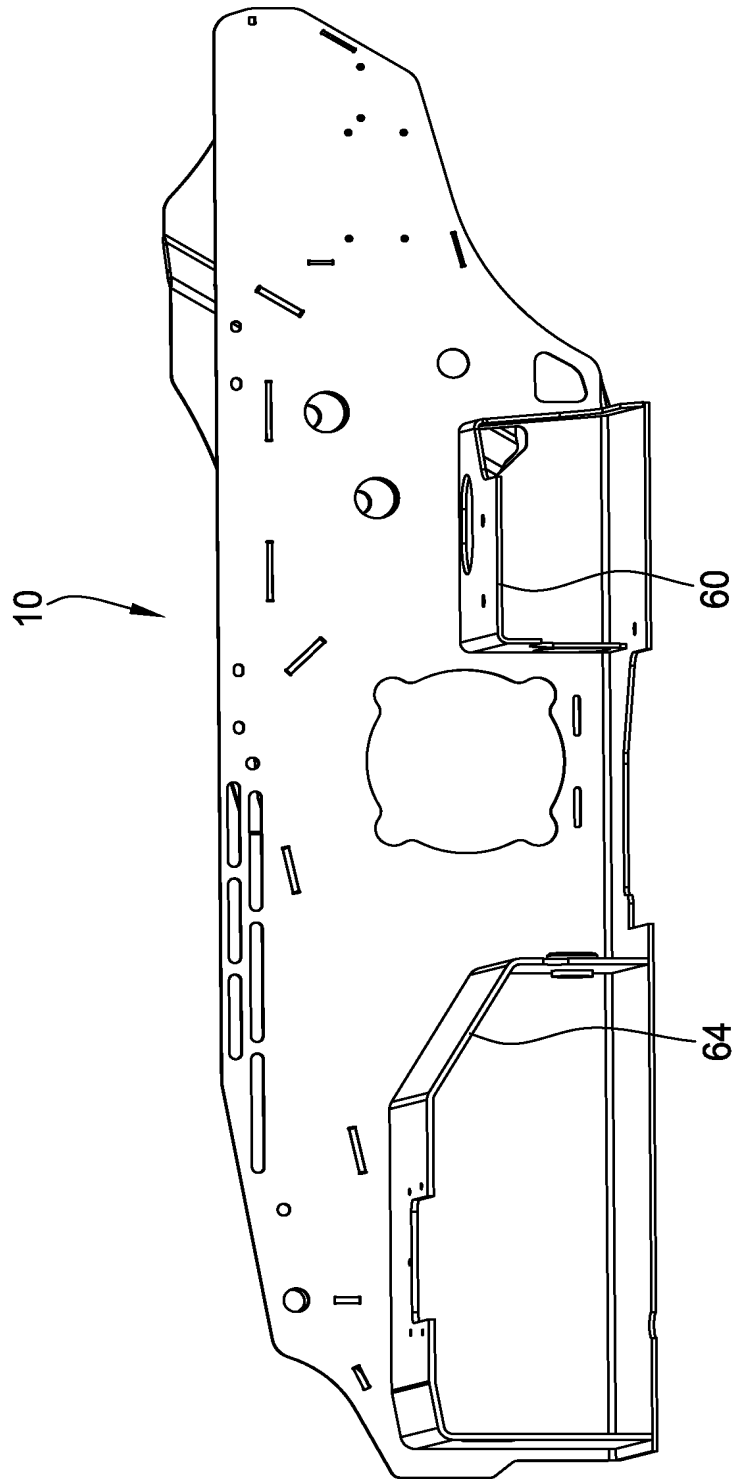
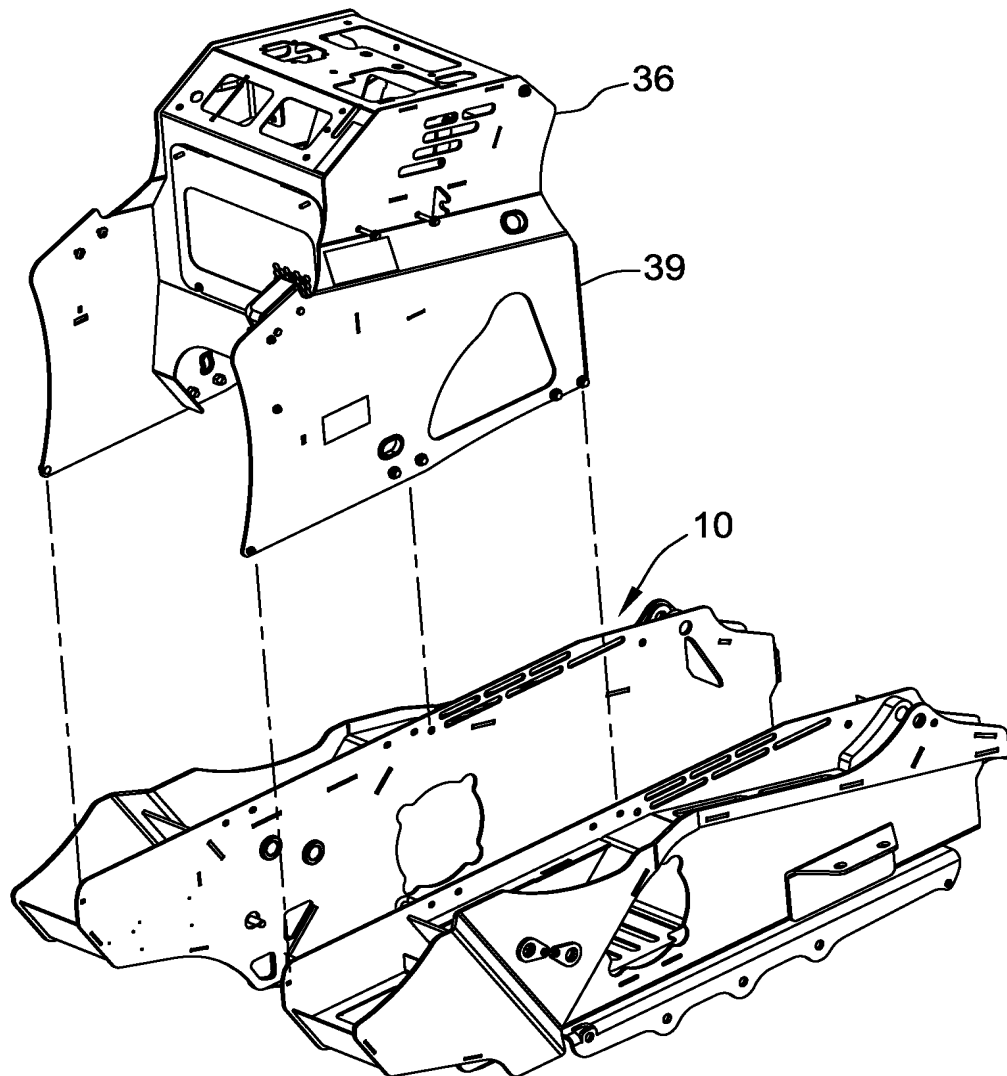


FIG. 6

**FIG. 7**

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4594812

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
BRAD THOMAS	05/08/2015
LOUIS HARTKE	05/05/2015
GREG LANGENFELD	05/18/2015
MATT HUTCHINSON	05/04/2015
RECEIVING PARTY DATA	
Name:	VERMEER MANUFACTURING COMPANY
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City:	PELLA
State/Country:	IOWA
Postal Code:	50219
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	15704685
CORRESPONDENCE DATA	
Fax Number:	(314)612-2307
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
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Address Line 2:	ARMSTRONG TEASDALE LLP, SUITE 1800
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ATTORNEY DOCKET NUMBER:	31681-162
NAME OF SUBMITTER:	MICHAEL J. VANDER MOLEN
SIGNATURE:	/Michael J. Vander Molen/
DATE SIGNED:	09/14/2017
This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 8	

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First Named Inventor: Brad Thomas
Application Number: 14/691,649
Filing Date: April 21, 2015
Art Unit: To Be Determined
Confirmation No.: 7913

**DECLARATION AND ASSIGNMENT FOR
UTILITY OR DESIGN APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and country of residence are as stated below next to my name.

I believe I am the original and sole inventor (if only one name is listed below) or an original and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LOW PROFILE COMPACT TOOL CARRIERS

the specification of which: (check one)

☐ is attached hereto

☒ was filed on April 21, 2015 as Application Serial No. 14/691,649.

We hereby authorize and request our attorneys and agents, and the assignee or its delegated attorneys or agents, to insert above the application number and filing date of the application when known.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims and any claims amended by any amendment made prior to the date of this Declaration.

I acknowledge my duty to disclose all information which is material to patentability of this application in accordance with 37 CFR §1.56.

The above-identified application was made or was authorized to be made by me.

ASSIGNMENT

WHEREAS, the undersigned have invented improvements described in the above-identified application.

AND, WHEREAS, Vermeer Manufacturing Company of 1210 Vermeer Road East, Pella, Iowa 50219, a corporation of the State of Iowa (hereinafter referred to as "ASSIGNEE") is desirous of acquiring certain rights thereunder;

NOW, THEREFORE, for one dollar and other good and valuable consideration, receipt of all of which is hereby acknowledged, I have agreed to and do hereby sell, assign and transfer unto said ASSIGNEE the entire right, title and interest in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto in and to said invention, said United States application, any other United States applications (including provisional, non-provisional, divisional, continuing, or reissue applications) based in whole or in part on said United States application or in whole or in part on said invention, any foreign applications based in whole or in part on any of the aforesaid United States applications or in whole or in part on said invention, and any and all patents (including extensions thereof) of any country which have been or may be granted on any of the aforesaid applications or on said invention or any part thereof;

TO BE HELD AND ENJOYED by said ASSIGNEE, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by me had no sale and assignment of said interest been made;

AND I hereby authorize and request the Commissioner of Patents of the United States of America to issue any and all United States patents which may be granted upon said United States applications or any of them, or upon said invention or any part thereof, to said ASSIGNEE;

AND I hereby agree for myself and for my heirs, executors and administrators, to execute without further consideration any further lawful documents and any further assurances, and any provisional, non-provisional, divisional, continuing, reissue, or other applications for patents of any country, that may be deemed necessary by said ASSIGNEE fully to secure to said ASSIGNEE its interest as aforesaid in and to said invention or any part thereof, and in and to said several patents or any of them;

AND I hereby covenant for myself and my legal representatives that I have granted no right or license to make, use or sell said invention, to anyone except said ASSIGNEE, that prior to the execution of this deed my right, title and interest in said invention had not been otherwise encumbered, and that I have not executed and will not execute any instrument in conflict herewith.

PRIORITY CLAIM

I hereby claim foreign priority benefits under 35 U.S.C. §119 (a)-(d) or (f) or 365(b) of any foreign application(s) for patent or inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below, and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed:

Priority Claimed

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY NOT CLAIMED	CERTIFIED COPY ATTACHED
				☐ Yes ☐ No
				☐ Yes ☐ No

CLAIM FOR BENEFIT OF PROVISIONAL APPLICATION(S)

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

APPLICATION NUMBER(S)	FILING DATE (day, month, year)
62/118,860	20 February 2015

**CLAIM FOR BENEFIT OF EARLIER U.S. APPLICATION(S)
UNDER 35 U.S.C. §120**

(complete this part only if this is a divisional, continuation or CIP application)

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or 365(c) of any PCT International application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 CFR §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

U.S. PARENT APPLICATION OR PCT PARENT NUMBER	PARENT FILING DATE (day, month, year)	STATUS (patent and number, pending, abandoned)

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 of not more than five (5) years, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor Brad Thomas
Inventor's signature *Brad Thomas* Date 5/8/15
Residence Pleasant Hill, Iowa Country of Residence US
Post Office address 465 Hillside Court
Pleasant Hill, Iowa 50327

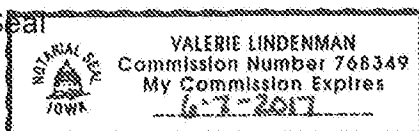
STATE OF Iowa

ss.

COUNTY OF Marion

This 8th day of May, 2015 before me personally came the above-named **Brad Thomas**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

Full name of second joint inventor Louis HartkeInventor's signature *Louis Hartke* Date 5/5/15Residence Pella, Iowa Country of Residence USPost Office address 2005 Highway 163Pella, Iowa 50219

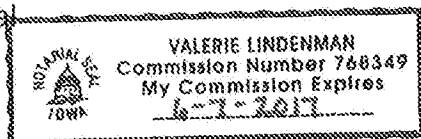
STATE OF

ss.

COUNTY OF

This 5th day of May, _____ before me personally came the above-named **Louis Hartke**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

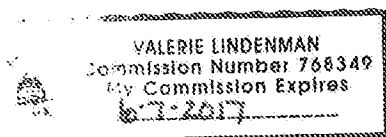
Full name of third joint inventor Greg LangenfeldInventor's signature *Greg Langenfeld* Date 5/18/2015Residence Bettendorf, Iowa Country of Residence USPost Office address 2425 Baron CourtBettendorf, Iowa 52722STATE OF Iowa

ss.

COUNTY OF Marion

This 18th day of May, 2015 before me personally came the above-named **Greg Langenfeld**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

Full name of fourth joint inventor Matt Hutchinson

Inventor's signature *Matt Hutchinson* Date 5/4/15

Residence Pella, Iowa Country of Residence US

Post Office address 410 Highway T14

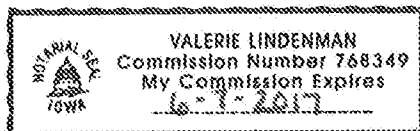
Pella, Iowa 50219

STATE OF Iowa ss.

COUNTY OF Marion

This 4th day of May, 2015 before me personally came the above-named **Matt Hutchinson**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal



Valerie Lindenman
(Notary Public)

EXPLANATION OF ACKNOWLEDGEMENT

By signing the declaration, you acknowledge your duty to disclose to the U.S. Patent and Trademark Office information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56. Material information includes any information concerning whether:

The subject matter of this application was known or used by others in the United States before your invention thereof; or

The subject matter of this application was patented or described in any printed publication in any country before your invention thereof or more than one year prior to the date of this application; or

The subject matter of this application was in public use, offered for sale or on sale in the United States more than one year prior to the filing date of this application; or

The subject matter of this application was first patented or made the subject of an inventor's certificate issued in any country foreign to the United States as an application filed by you or your representatives or assigns more than twelve months prior to the date of this application; or

any application for patent or inventor's certificate on the subject matter of this application has been filed by your representatives or assigns in any foreign country.

In addition, you must advise us of the closest prior art (including your own patents and publications) of which you are aware so that we may bring it to the attention of the U.S. Patent and Trademark Office.

This duty to disclose material information continues after the application is filed. During the pendency of this patent application, each person substantially involved in the preparation or prosecution of this patent application, including each inventor, has a duty to disclose to the U.S. Patent and Trademark Office all known information which would be material to patentability. Failure to meet this duty can result in an unenforceable and/or invalid patent.

Any of the above information should be brought to the attention of the U.S. Patent and Trademark Office within three months of filing of this application, or within three months of acquiring such information, whichever is later. Accordingly, please promptly advise us of any of the above information, or any other information that may be material to patentability and is either presently known to you or later becomes known to you during the pendency of this application.