United States Patent

Lamb

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[54] CONVERTER BRACKET FOR A LIFT BUCKET

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[52] **U.S. Cl.**.....**37/117.5,** 248/226 B, 248/228

[51] **Int. Cl.**.....**E02f 3/62**

[58] **Field of Search**.....37/117.5; 248/228, 226 B

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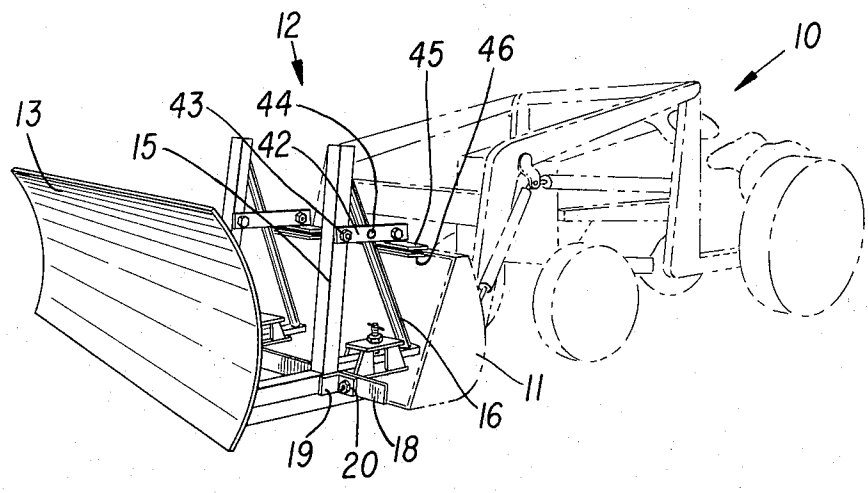
[57] **ABSTRACT**

A converter bracket for a lift bucket carried by a mobile unit such as a tractor and enabling the attachment thereto of a working tool such as a scraper blade, fork lift, bush rake, snow plow, or the like, comprises a frame provided with a clamp means whereby said frame is removably affixed to the lower portion of the lift bucket. The frame is adapted to receive thereon the desired working tool.

8 Claims, 10 Drawing Figures



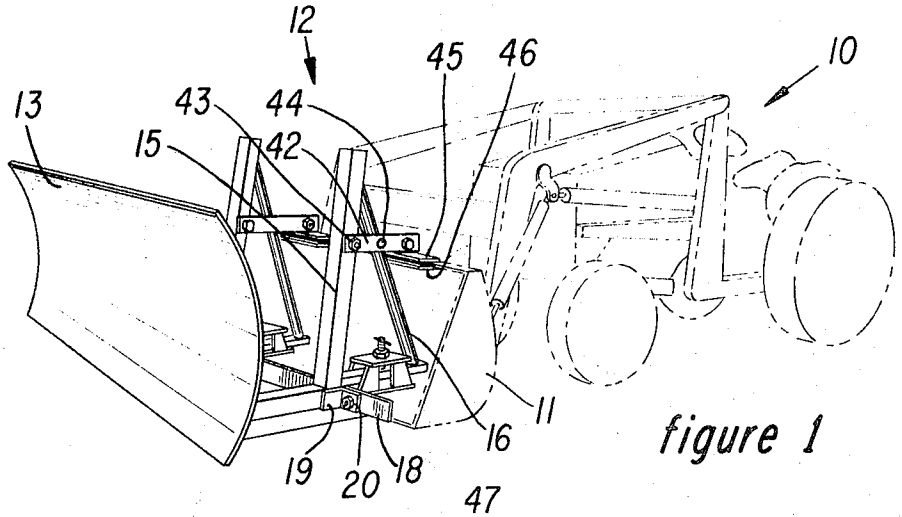


figure 1

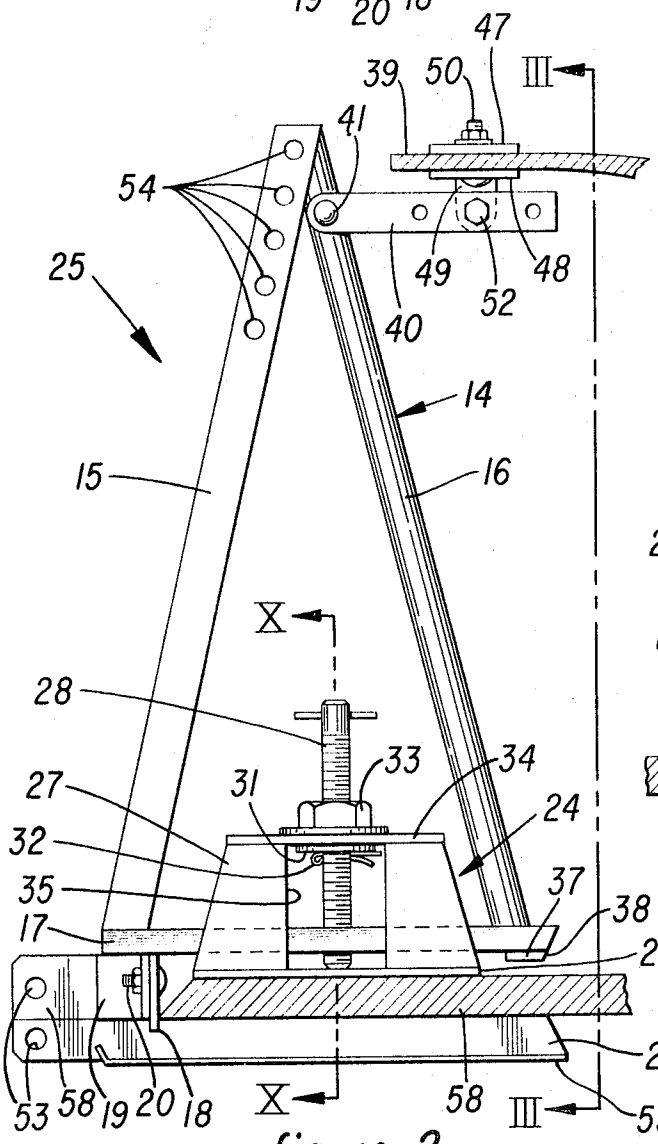


figure 2

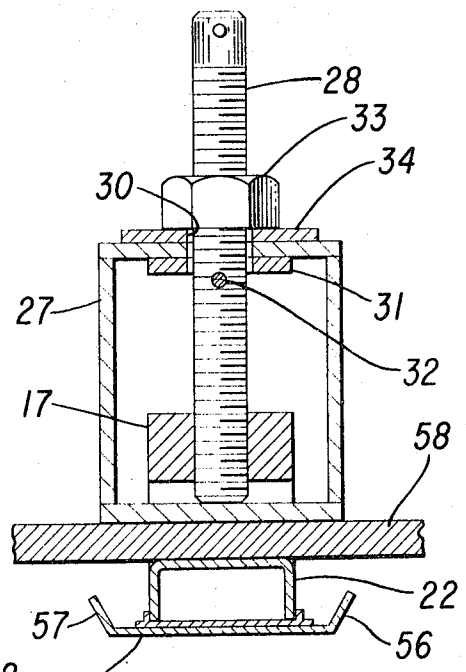


figure 10

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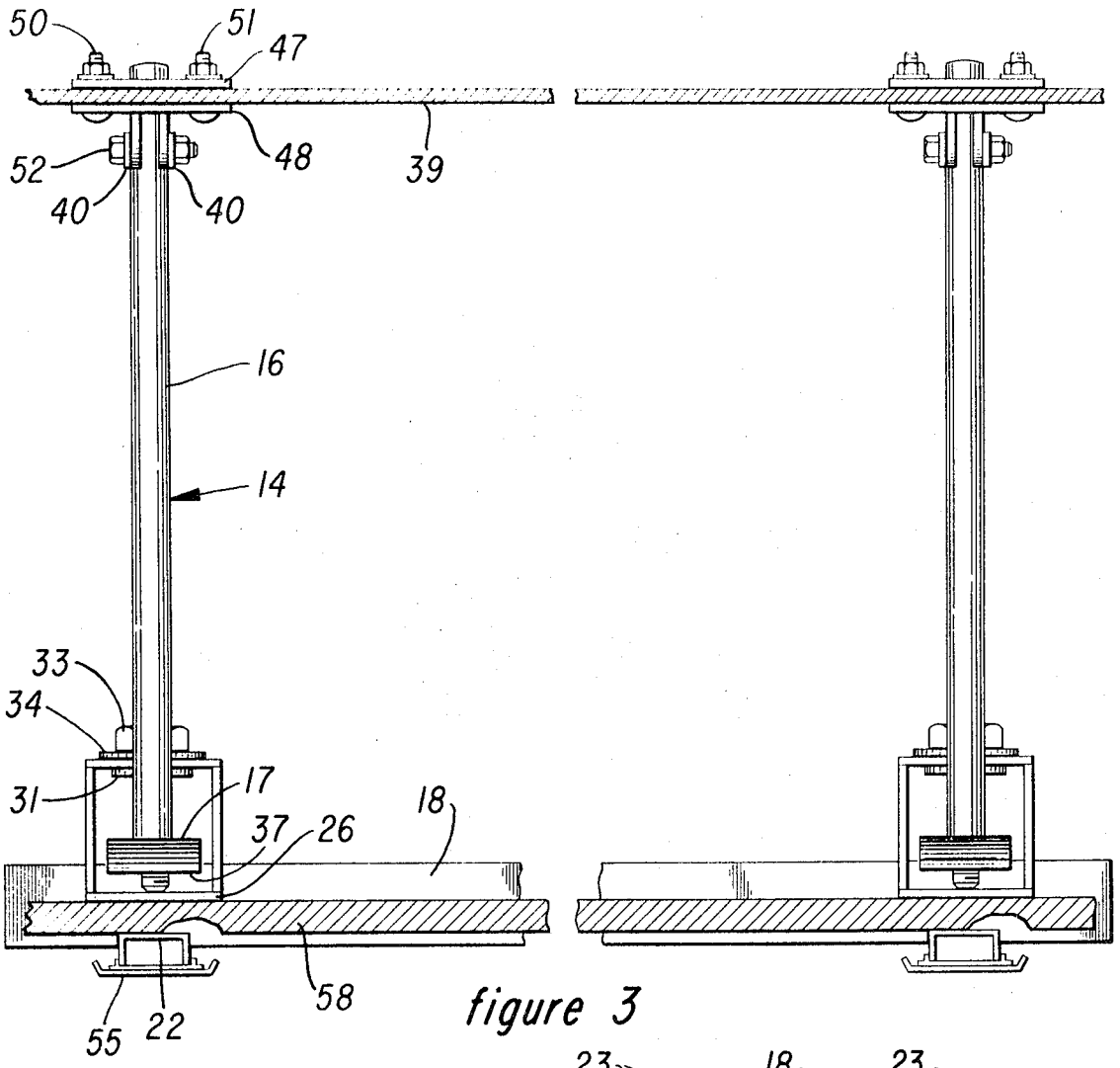

figure 3

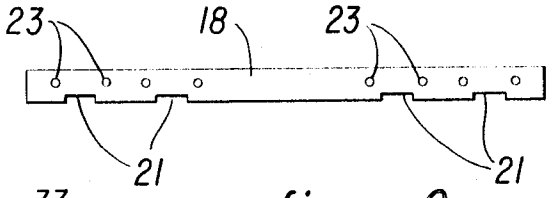

figure 9

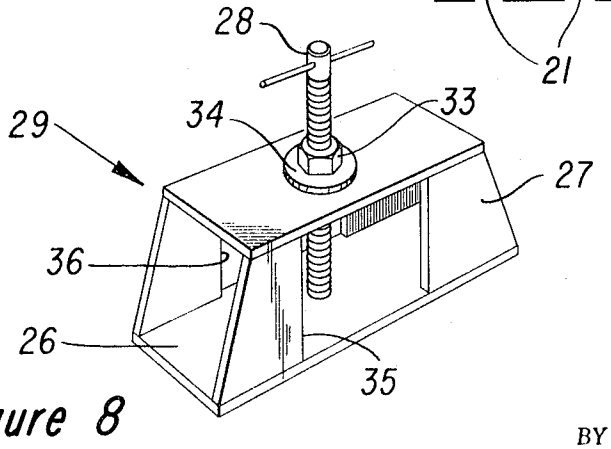

figure 8

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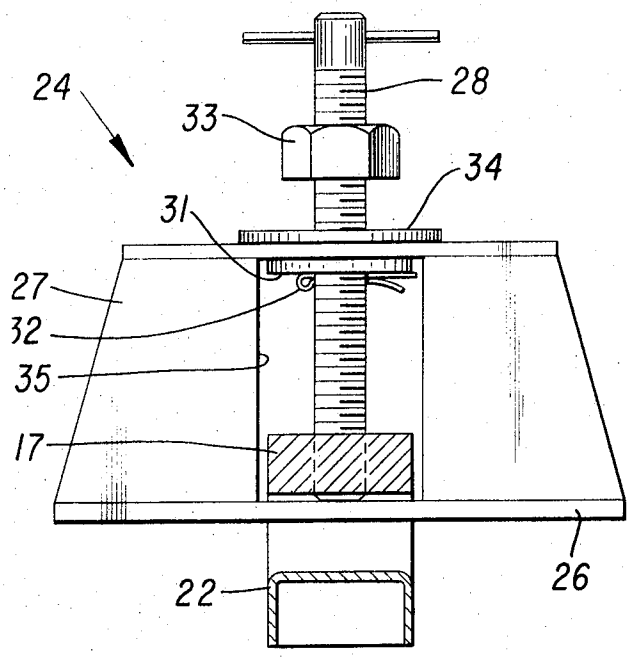

figure 4

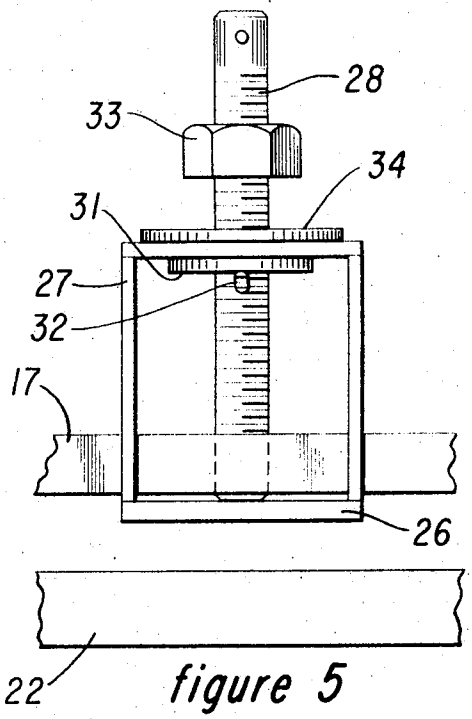

figure 5

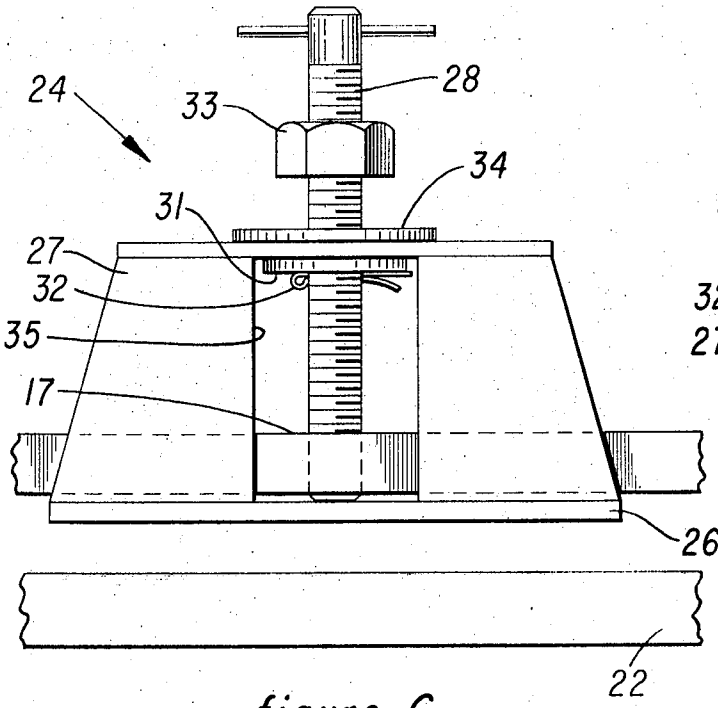

figure 6

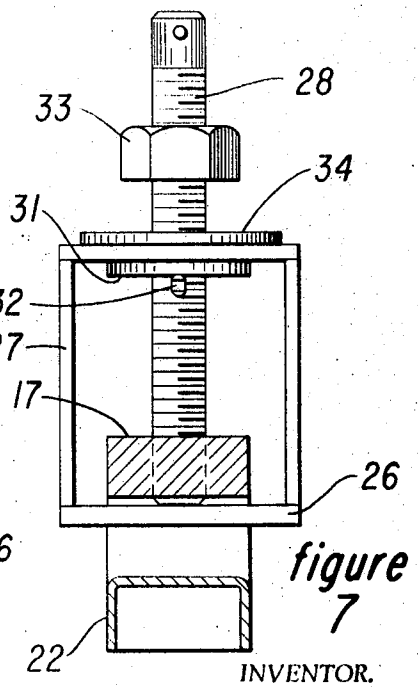

figure 7

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CONVERTER BRACKET FOR A LIFT BUCKET

BACKGROUND OF THE INVENTION

For material handling and loading a lift bucket loader, also sometimes referred to as front or rear end bucket loader, hydraulically operated and carried by a mobile unit, is commonly employed. Frequently during use, however, a need arises to change over to a scraper blade, a rake, fork lift, snow plow, or the like. Methods for effecting such a changeover usually involve the removal of the lift bucket and the remounting of the desired working tool, which methods are cumbersome and costly inasmuch as a substantial expenditure of time and effort are required to implement the change.

Several attempts have also been made in the art to provide an adapter bracket which would dispense with the otherwise requisite removal of the lift bucket; however, such attempts have been limited to adapters designed for a particular working tool such as a scraper blade, for example, require cumbersome connections, and do not possess universal applicability and versatility needed for an efficient utilization of available machinery and manpower with least capital commitment.

SUMMARY OF THE INVENTION

The herein disclosed and claimed converter bracket for a lift bucket is of universal applicability and can readily accommodate a wide variety of working tools. The converter bracket comprises a frame means adapted to hold a desired working tool and a clamp means integral with said frame means and adapted for attachment to the lower portion of a lift bucket. The clamp means comprises a bearing member and a movable pressure plate which is urged toward said bearing member while a portion of the lift bucket is held therebetween.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings,

FIG. 1 is a schematic view showing a tractor-mounted lift-bucket provided with the converter bracket of the present invention having a scraper blade affixed thereto;

FIG. 2 is a side elevation view of a converter bracket of this invention without a working tool attached thereto;

FIG. 3 is a sectional elevation of a converter bracket taken along the lines III—III shown in FIG. 2.

FIG. 4 is an elevational view, partially in section, of a clamp means of the present invention with the pressure plate positioned transverse to the bearing member;

FIG. 5 is an elevation view of the clamp means of FIG. 4 taken at 90° to the view thereof in FIG. 4;

FIG. 6 is an elevation view of a clamp means of the present invention with the pressure plate positioned in substantially longitudinal alignment with the bearing member;

FIG. 7 is an elevation view, partially in section, of the clamp means of FIG. 6 taken at 90° to the view thereof in FIG. 6;

FIG. 8 is an isometric view of a pressure plate assembly;

FIG. 9 is a front elevation view of a transverse member of the converter bracket frame means; and

FIG. 10 is a partial sectional elevation view of the clamp means shown in FIG. 2 along the line X—X.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, a tractor **10** (FIG. 1) provided with a hydraulically operated lift bucket **11** is fitted with converter bracket **12** to which is attached a bulldozer blade **13**. Alternatively, any other desired working tool such as a fork lift, bush rake, or the like can be attached to bracket **12** in lieu of blade **13**.

The converter bracket **12** (FIG. 2) comprises a frame means **25** made up of at least one side frame member **14** having a front leg **15**, back leg **16**, and lower leg **17**. The side frame member **14** is triangular-shaped, with the front leg **15** and back leg **16** converging and fixed relative to each other at their upper ends. When more than one side frame member **14** is utilized in mounting a working tool, a transverse member or bar **18** connects the several side frame members **14** in a spaced, parallel relationship to each other. The transverse member **18** can be secured to side frame member **14** by means of angle bracket **19** welded thereon and bolt **20**, by welding, or any other convenient manner. If variable spacings between the side frame members is contemplate during use, the former securing method is preferred.

For convenience in obtaining the desired spacing of the side frame members, notches or recesses **21** (FIG. 9) can be machined in the transverse member **18** along the lateral edges thereof for often used spacings. These notches can be adapted to engage either the lower leg **17** of the side frame member **14** or the bearing member **22** immovably secured to the frame means below the lower leg **17** of side frame member **14** and spaced therefrom, as will be discussed in detail hereinbelow. Openings **23** in transverse member **18** are adapted to accommodate bolts **20**.

Clamp means **24** (FIGS. 2, 4, 5, 6 and 7) integral with the frame means **25** comprise a bearing member **22** fixedly secured to side frame member **14** near the junction of front leg **15** and lower leg **17**, juxtaposed to the lower leg **17** and spaced therefrom, and a pressure plate **26** movably mounted on lower leg **17** of side frame **14** by means of channel **27**. Other mounting means, such as a pair of U-bolts around the lower leg **17**, for example, can be employed as well in lieu of channel **27**. The bearing member **22** and pressure plate **26** are situated relative to each other so as to receive a lower portion **27** of lift bucket **11** therebetween and to clamp down thereon in response to the urging of a force generating means such as screw **28** which threadedly engages lower leg **17** and bears against pressure plate **26**. In another embodiment of this invention a wedge means, or the like, can be driven between pressure plate **26** and lower leg **17** so that plate **26** is urged toward bearing member **22** and holds a lower portion **27** of lift bucket **11** securely therebetween.

Pressure plate assembly **29** (FIG. 8) comprises an inverted, U-shaped channel **27** with pressure plate **26** affixed across the lower portion thereof. Screw **28** enters through an opening **30** (FIG. 10) at the top of channel **27** and passes through washer **31** before engaging the threads cut in lower leg **17**. Washer **31** is held in place by pin **32** and serves to raise pressure plate assembly **29** as camp means **24** is released from lift bucket portion **58** by bearing against the upper inner surface of channel **27** as screw **28** moves upwardly. Nut **33** and washer **34** serve to secure screw **28** in the clamp-down position in the conventional manner.

In pressure plate assembly **29** the side portions of channel **27** are provided with aligned cut-outs **35** and **36** which can accommodate a wedge as set forth hereinabove, and can also provide means for situating pressure plate **26** transversely to the bearing member **22** as shown in FIGS. 4 and 5 when the cut-outs **35** and **36** are made sufficiently large to accommodate lower leg **17** of side frame member **14**.

As shown in FIGS. 2 and 3, a guard **37** provided with a beveled rear surface **38** can be affixed to the underside of lower leg **17** near the rearward portion thereof so as to prevent an inadvertent contact of lift bucket portion **58** with pressure plate assembly **29** as bucket **11** is inserted into bracket **12**, with the possible attendant damage to or bending of the parts.

While the converter bracket **12** is principally secured to lift bucket **11** at the lower portion **58** thereof, it is usually desirable to secure bracket **12** also to an upper portion **29** of lift bucket **11**, particularly when heavy loads are to be encountered. To this end a supporting arm **40** is conveniently attached to side frame member **14** on the back leg **16** and near the upper portion thereof with a bolt **41** or the like (FIG. 2). Similarly, a supporting arm **42** (FIG. 1) can be attached to both front leg **15** and back leg **16** by means of bolts **43** and **44**, or the like.

Attachment of supporting arms such as **40** or **42** to lift bucket **11** can be achieved in any convenient manner. For example, a pair of plates **45** and **46** (FIG. 1) can be pivotally mounted on supporting arm **42** by any suitable means, and can

engage lift bucket **11** therebetween at any convenient location, plates **45** and **46** being pulled together by bolts or other suitable fasteners, not shown in the drawing. In the alternative, a pair of plates **47** and **48** (FIGS. **2** and **3**) can be mounted on an auxiliary arm such as **49** which, in turn, is bolted on supporting arm **40** by means of bolt **52**, and then fastened to upper lift bucket portion **39** with through-bolts **50** and **51**. Moreover, when only one side frame member **14** is utilized to form the converter bracket, a pair of supporting arms connecting the side frame member with the upper corners of lift bucket **11** may be employed.

The desired working tool is conveniently affixed to converter bracket **12** by means of bolts through openings **53** and **54** (FIG. **2**), in a suitable frame extension or spacer **58**, or the like, or the tool can be welded onto the bracket **12**, if desired, as in the case of fork lift tines, for example.

Optionally, a skid **55** (FIGS. **2** and **10**) may be mounted under the bearing member **22** if the nature of the work to be performed so warrants, for example, when it is desired to operate a scraper blade at some distance above the ground level, as for snow removal purposes. A skid provided with upwardly curved lateral edges **56** and **57** is preferred because of its enhanced sideways mobility.

The foregoing specification and the drawings are illustrative of the present invention. Still other modifications, variations, and rearrangements of parts within the spirit and scope of this invention will be apparent to the skilled artisan.

I claim:

1. A lift bucket converter bracket comprising:

a frame means for holding a desired working tool;

a clamp means integral with said frame means comprising a bearing member immovably secured below said frame means, a pressure plate movably depending from said frame means and adapted to bear against said bearing member, and screw means threadedly engaged with said frame means and urging said pressure plate against said bearing member, said pressure plate and said bearing member receiving a lower portion of the lift bucket therebetween; and

a supporting arm extending rearwardly from the upper portion of said frame means and affixed to an upper portion of the lift bucket.

2. A lift bucket converter bracket in accordance with claim **1** wherein a skid is mounted under said bearing member.

3. A lift bucket converter bracket which comprises:

a frame means adapted to hold a desired working tool and comprising at least a pair of spaced, parallel, triangular-shaped side frame members each including a front leg, a back leg, and a lower leg, said front leg and said back leg converging at their upper ends, and a transverse bar removably connecting the side frame members in a spaced relationship relative to each other; and

a clamp means adapted to attach to the lower portion of the bucket and comprising a bearing member juxtaposed to the lower leg of each of said frame members, in spaced relationship thereto, and fixedly secured to the respective side frame member near the junction of the lower leg with the front leg thereof, an inverted U-shaped channel member enveloping the lower leg of each of said side frame members, a pressure plate across the bottom of said U-shaped channel member adapted to bear against said bearing member, and force generating means reacting against said frame and urging said pressure plate toward said bearing member; said pressure plate and said bearing member being adapted to receive a lower portion of the lift bucket therebetween.

4. A lift bucket converter bracket in accordance with claim **3** wherein a skid provided with upwardly curved lateral edges is mounted under said bearing member.

5. A lift bucket converter bracket which comprises:

a frame means adapted to hold a desired working tool and comprising a pair of spaced, parallel, triangular-shaped side frame members each including a front leg, a back leg, and a lower leg, said front leg and said back leg converging at their upper ends, and a transverse bar removably connecting the side frame members in a spaced relationship relative to each other;

a clamp means adapted to attach to the lower portion of the bucket and comprising an elongated bearing member juxtaposed to the lower leg of each of said frame members, in spaced relationship and coplanar with the respective side frame member and fixedly secured thereto near the junction of the lower leg with the front leg thereof, an inverted U-shaped channel member enveloping the lower leg of each of said side frame members, a pressure plate across the bottom of said U-shaped channel member adapted to bear against said bearing member, a screw means passing through said U-shaped channel member, threadedly engaged with said lower leg and adapted to urge said pressure plate toward said bearing member; said pressure plate and said bearing member being adapted to receive a lower portion of the lift bucket therebetween; and a supporting arm affixed to and extending rearwardly from the upper portion of each of said side frame members and adapted to attach to an upper portion of the lift bucket.

6. A lift bucket converter bracket in accordance with claim **5** wherein the longitudinal dimension of said pressure plate is parallel to said bearing member.

7. A lift bucket converter bracket in accordance with claim **5** wherein the longitudinal dimension of said pressure plate is transverse to said bearing member.

8. A lift bucket converter bracket in accordance with claim **5** wherein a skid provided with upwardly curved lateral edges is mounted under said bearing member.

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