

Nov. 3, 1942.

M. W. PARKER

2,300,801

SHOVEL ATTACHMENT

Filed Nov. 18, 1941

3 Sheets-Sheet 1

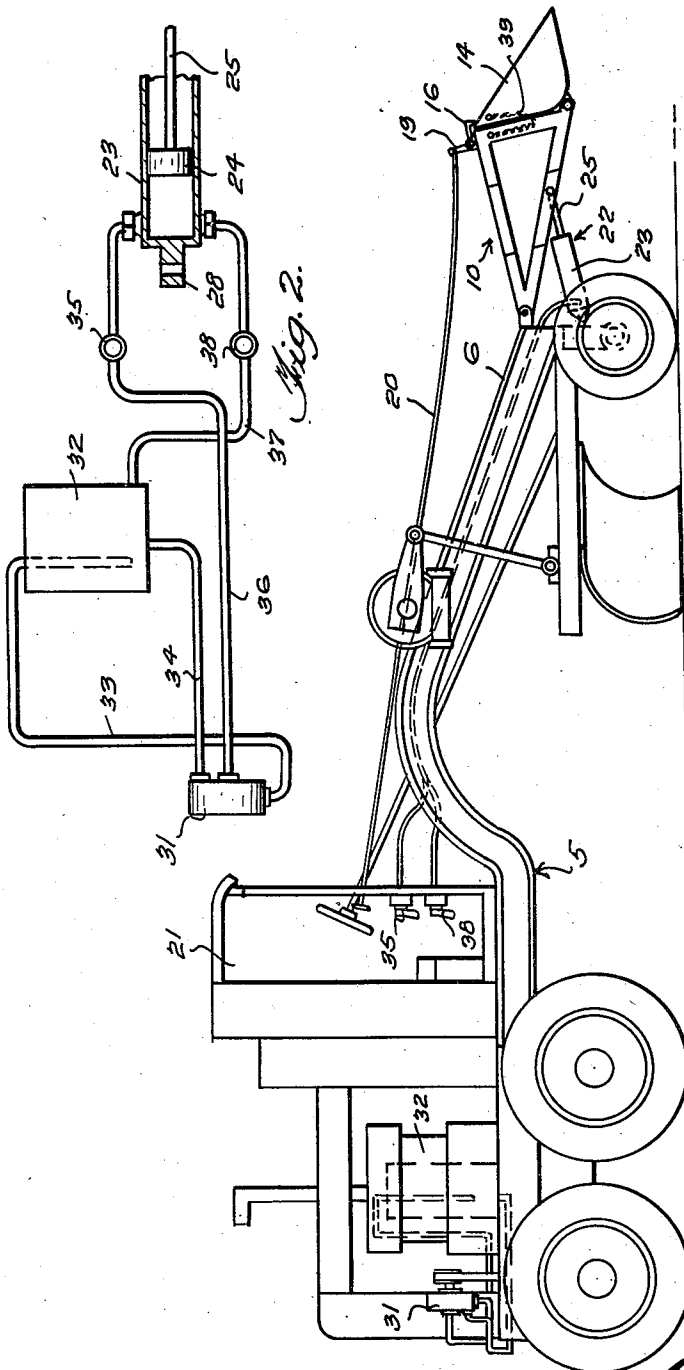


Fig. 1.

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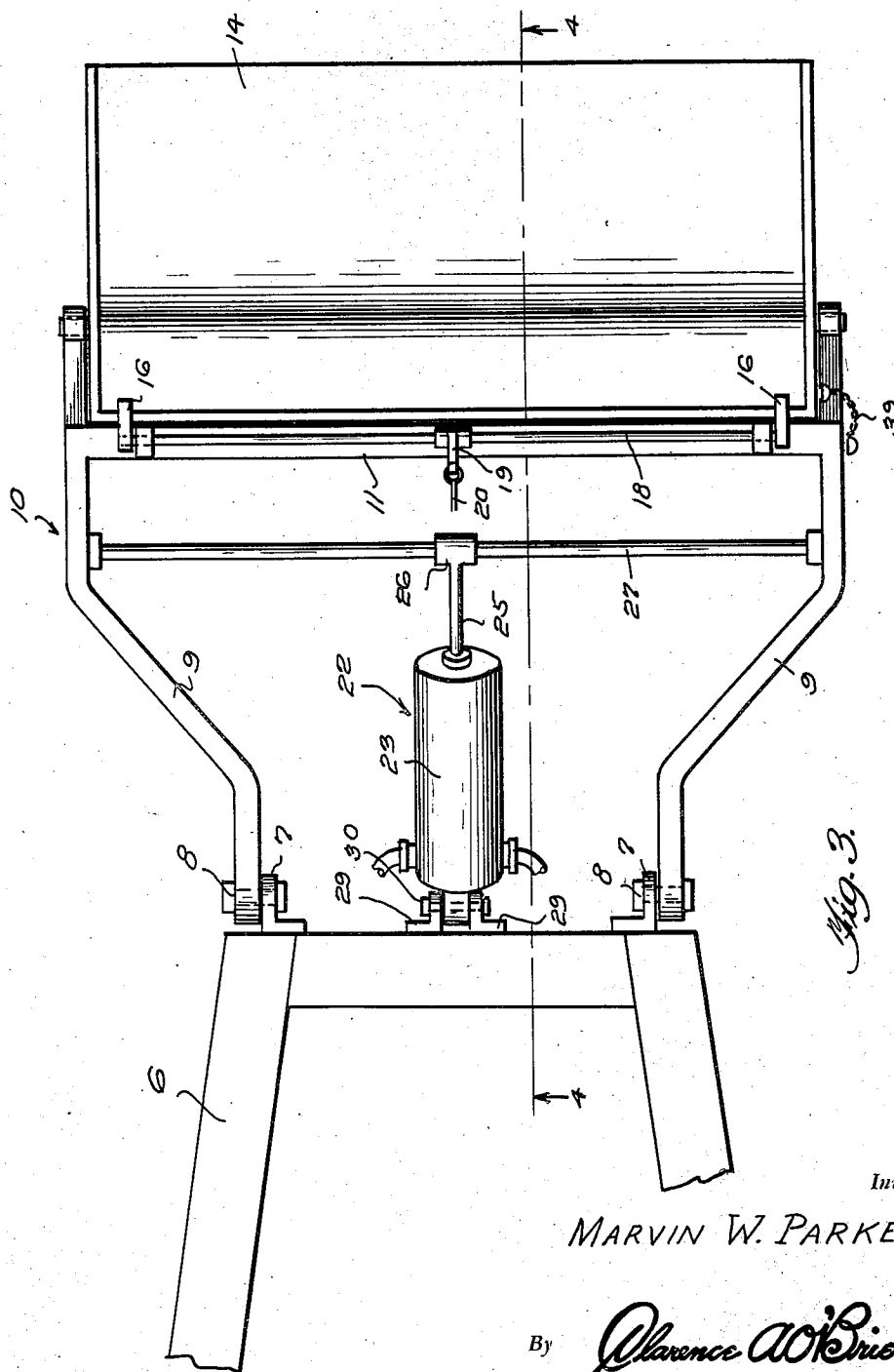
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

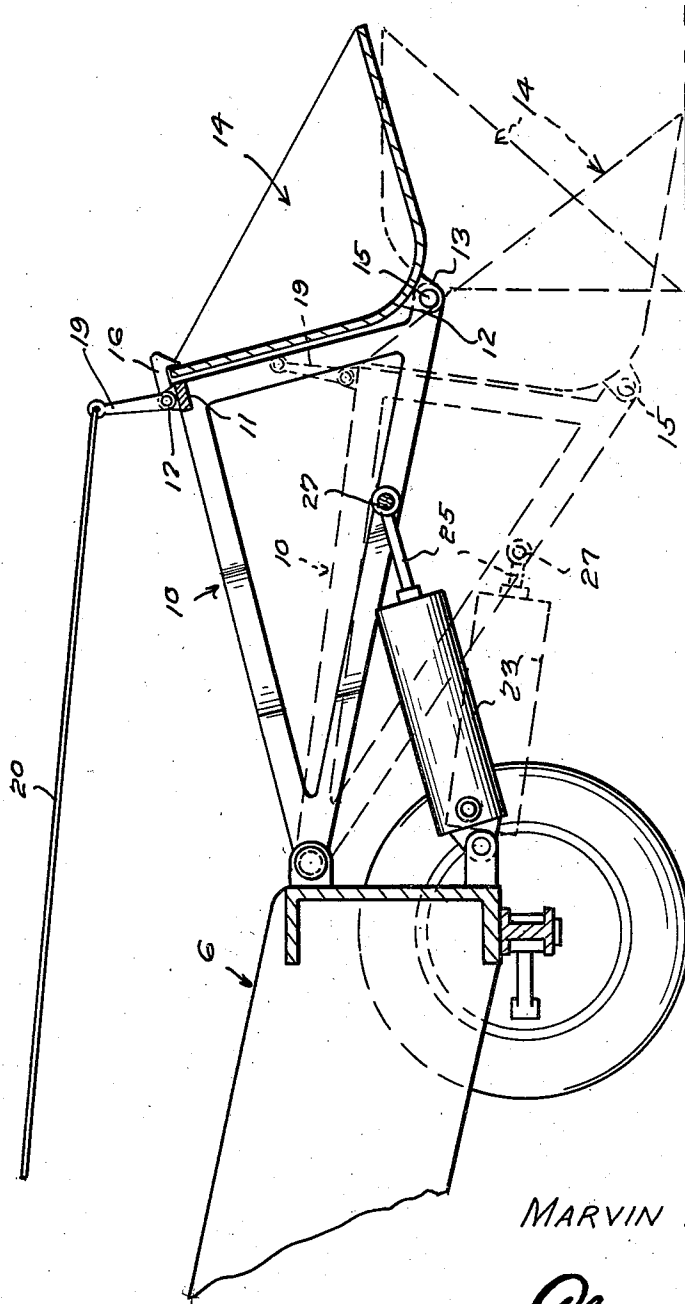


Fig. 4.

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SHOVEL ATTACHMENT

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1 Claim. (Cl. 37—124)

This invention relates broadly to earth-working machines, and an object of the invention is to provide, in the form of an attachment, a shovel which may be readily mounted on such machines as are referred to as motor graders, that is to say, machines used for grading roads and the like.

In accordance with the present invention there is provided a shovel which may be readily mounted at the front of such grader for use in loading dirt, in advance of the grader, into hauling trucks, and which can otherwise be used in the place and stead of power shovels.

A further object of the present invention is to provide a shovel attachment of this character which can be mounted on and used in conjunction with the grader without necessitating the removal of the blade and scarifier equipment of the grader.

The invention, together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein—

Figure 1 is a side elevational view of a grader having my shovel attachment mounted thereon.

Figure 2 is a diagrammatic view of an hydraulic operating mechanism for the shovel.

Figure 3 is a top plan view of the shovel attachment.

Figure 4 is a vertical sectional view taken substantially on the line 4—4 of Figure 3.

Referring more in detail to the drawings it will be seen that 5 indicates generally a conventional grading machine of a type well known, and only such parts of the machine will be specifically referred to herein as will be necessary for a complete understanding of the present invention.

In accordance with the invention, the frame 6 of the grader 5, at the forward end thereof, is provided with brackets 7—7 through the medium of which and pivot elements 8—8 there are pivoted to the frame 6 the angular side members 9 of a frame 10 forming part of the attachment, and which frame is substantially U-shaped in top plan.

The side members 9—9 of the frame 10, as shown in Figure 4, are substantially of skeleton, triangular shaped frame construction, and at the closed end of the frame, the side members 9—9 are connected by an upper cross-bar 11.

At the closed end of the frame the lower portions of the side members 9—9 are extended beyond the closed end of the frame to provide bearing lugs 12, with which cooperate lugs 13 on a shovel 14 to accommodate pivot elements 15 through the medium of which the shovel 14 is

pivotally mounted on the forward or closed end of the frame 10.

Latches 16—16 are pivoted on the bar 11, and engage the rear wall of the shovel 14, as suggested in Figure 4, for holding the shovel normally in a fixed position relative to the frame 10.

The latches 16 are provided on a pivot rod 18 that has its ends journaled in the upstanding bearings 17, and intermediate its ends the rod 18 is provided with a crank arm 19 to which is connected one end of a push and pull rod 20.

The pull rod 20 extends rearwardly to terminate within the cab 21 of the grader 5, and in convenient reach of the operator of the grader for manipulation to release the shovel 14 for dumping purposes when desired.

To control the raising and lowering of the shovel-carrying frame 10 there is provided a ram indicated generally by the reference numeral 22.

The hydraulic ram 22 is in the form of a cylinder 23 in which a piston 24 has a working fit.

Piston 24 is provided on one end of a rod 25 that at its free end is provided with a tubular cross-head 26 sleeved on one end of a cross-rod 27 mounted between the opposing sides 9 of the frame 10 as shown.

At one end thereof the cylinder 23 is provided with an apertured lug 28 that aligns with apertured lugs 29 mounted on the forward end of the frame 6 to accommodate a pivot bolt 30 through the medium of which the cylinder 23 of the ram is pivoted to the frame 6.

The reference numeral 31 indicates an hydraulic pump which is mounted at the rear of the motor grader 5 and driven through the medium of a belt and pulley drive connection, or any other power transmission means from the crank shaft of the motor of the grader 5.

The reference numeral 32 indicates a storage tank suitably mounted on the grader 5 and in operation the pump maintains a continuous flow of oil from the storage tank through the intake line 33, a constant pressure being maintained by means of an automatic pressure valve (not shown) which permits oil to flow through the bypass line 34 when the gate valve 35 in the line 36 is closed.

The reference numeral 37 indicates a return line from the ram cylinder 23 to the storage tank 32, and interposed in the line 37 is a gate valve 38.

The valves 35 and 38 are located in the cab 21 as suggested in Figure 1 so as to be convenient to the operator.

From the above it will be apparent that when it

is desired to lift the shovel, or, in other words, to raise it from the dotted line position shown in Figure 4, to the full line position shown in said figure, the operator closes the return valve 38 and opens the pressure valve 35. There being a constant pressure in the line 36, oil immediately flows into the ram cylinder 23 and exerts a pressure on the piston 24 urging the same in a direction lengthwise of the cylinder to force the frame 10 and bucket 14 associated therewith to swing upwardly as a unit to the full line position shown in Figure 4, whereupon the operator then closes the valve 35.

When the bucket has thus been raised, the contents of the bucket are readily dumped by the operator pulling on the rod 20. This will result in a raising of the latches 16 to clear the bucket 14, whereupon the bucket 14, in response to the weight of the contents thereof, will swing on its pivot 15 to the dotted line position suggested in Figure 1 for emptying the contents of the bucket.

A length of chain 39 serves to limit swinging movement of shovel 14 downwardly relative to frame 10.

To lower the bucket, the operator closes pressure valve 35 and opens return valve 38. The weight of the bucket and the pressure on the ram piston 24 then forces the oil to flow through the return line 37 to the tank 32 permitting the frame 10 to drop downwardly.

As frame 10 drops downwardly, bucket 14 swings to its normal position, whereupon the rear wall thereof is engaged by the latches 16 and the parts are then in the position suggested by broken lines in Figure 4 for a repetition of the operation above described.

It is thought that the operation and advantages

of a bucket attachment of this character will be clear to those skilled in the art without further detailed description.

It will also be understood that while I have herein illustrated what is considered the preferred embodiment of the invention, I am fully aware that in practical application of the invention minor changes may be resorted to without departing from the spirit of the invention as herein claimed.

Having thus described the invention what is claimed as new is:

In a shovel attachment for graders of a type in which the grader is provided with a transverse frame member at its front end, a shovel carrying frame comprising a pair of spaced parallel triangular-shaped side frame members including an upper leg, a lower leg and a front leg, and a transverse bar connecting the side frame members at the junction of the upper and front legs thereof, a shovel pivotally attached to the side frame members at the junction of the lower and front legs, the upper and lower legs converging at their rear ends, means pivotally connecting the rear ends of said side frame members to the transverse frame member of the grader, a transverse rod connecting the lower legs at an intermediate portion thereof, power means extending from the transverse member of the grader at a point below the side frame members to said transverse rod for raising the shovel carrying frame, and remote actuated means carried by the transverse bar for releasably securing the shovel in load-retaining position.

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