

June 7, 1955

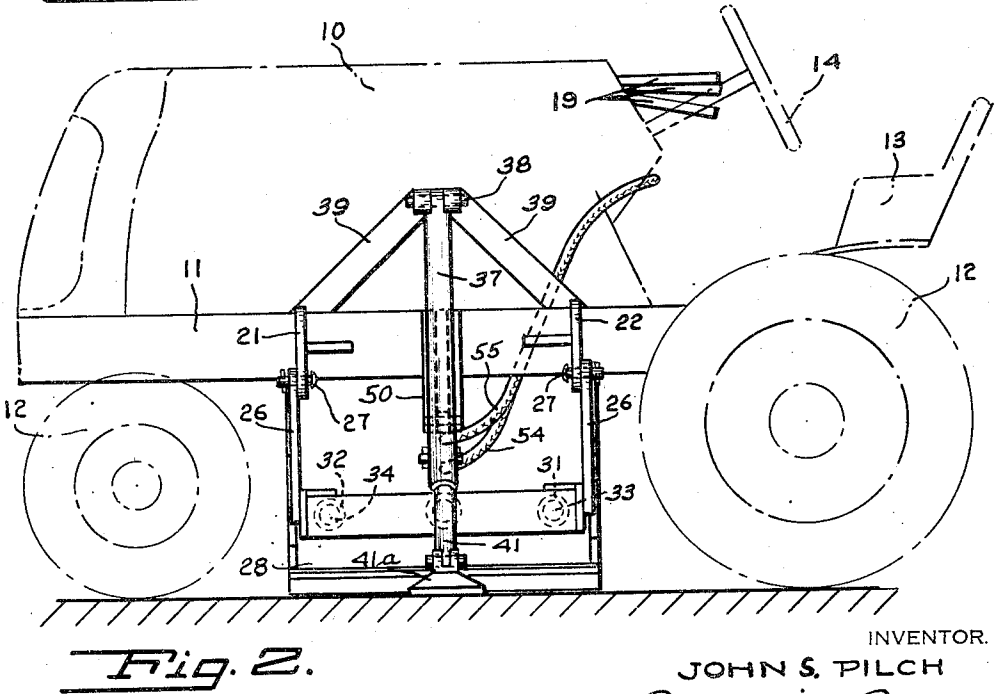
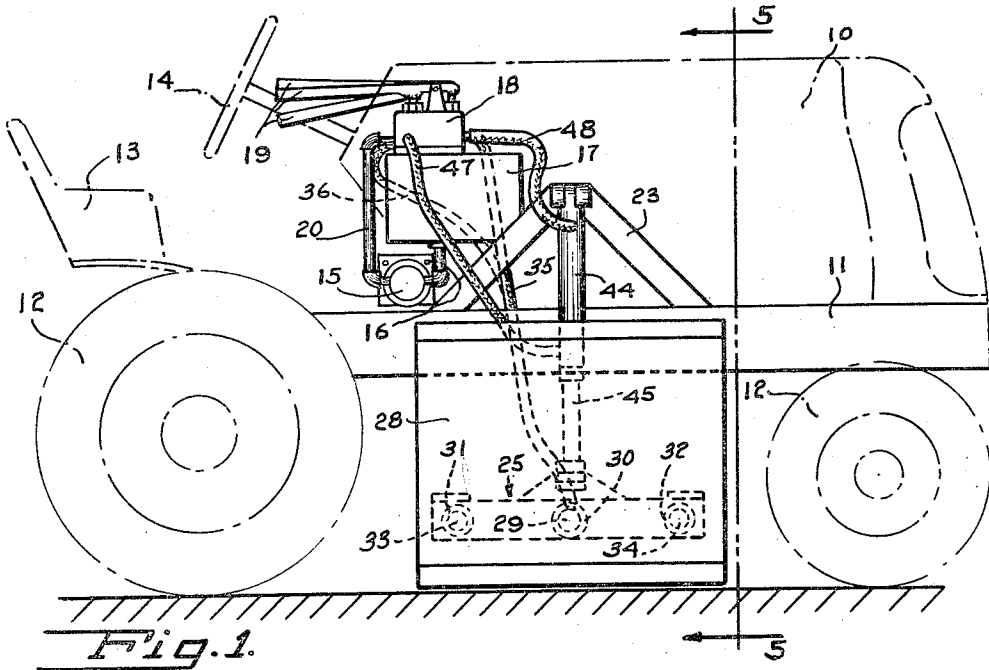
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HYDRAULICALLY OPERATED BACK-FILLING APPARATUS

Filed Sept. 9, 1949

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

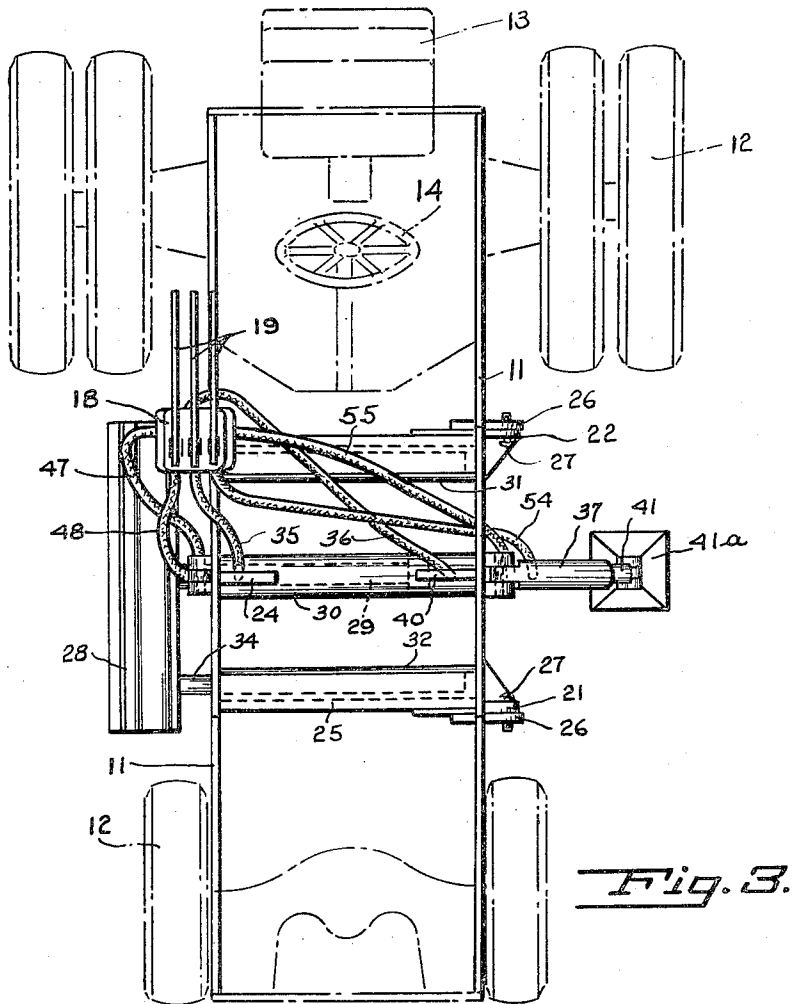


Fig. 3.

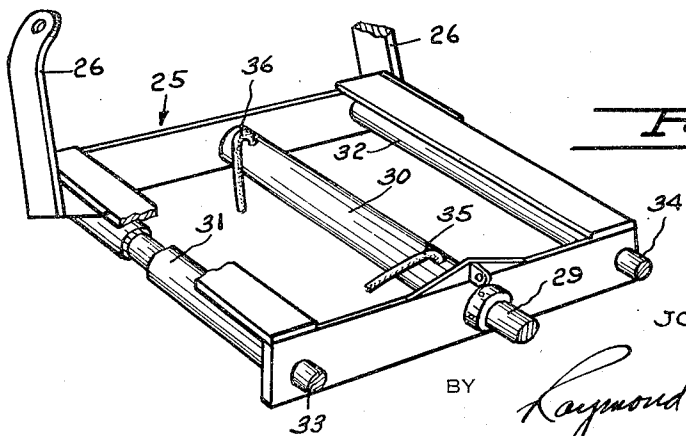


Fig. 4.

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3 Sheets-Sheet 3

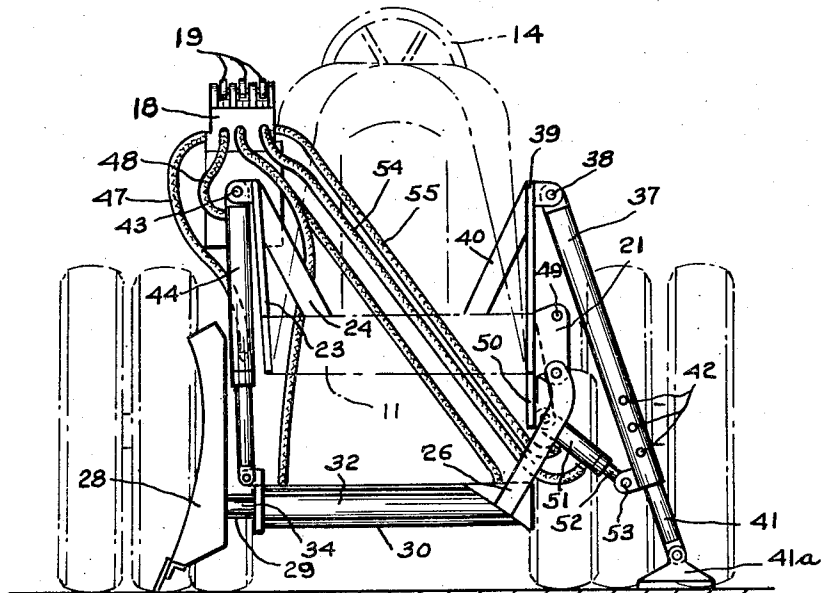
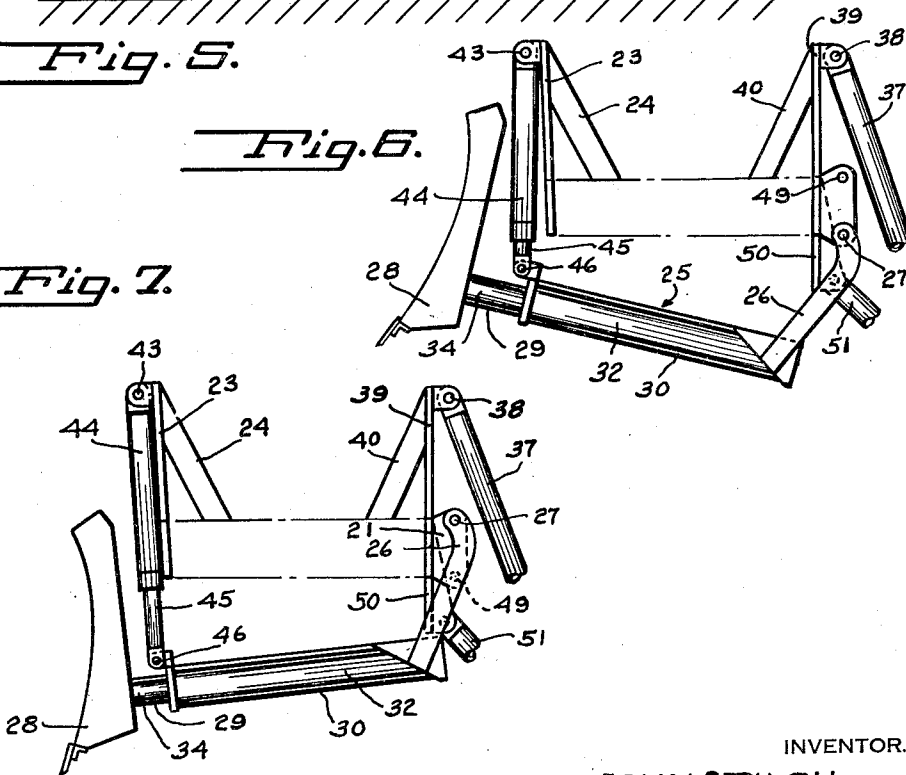


Fig. 5.

Fig. 6.

Fig. 7.



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HYDRAULICALLY OPERATED BACK-FILLING APPARATUS

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6 Claims. (Cl. 37-144)

This invention relates to earth moving apparatus, or the like, and has particular reference to a new and improved form of such apparatus which I have termed a "Sidedozer."

An object of the invention is to provide a device of the type set forth which is particularly adapted for the moving of earth or the like in a direction laterally or transverse to the direction of movement of the vehicle or tractor by which it is carried and, therefore, considerably speeds up and facilitates the movement of such material.

Another object of the invention is to provide a device of the type set forth which is adapted to be employed for such purposes as back-filling or filling in trenches without the loss of time and wear and tear on the bulldozer or tractor usually encountered in the use of a bulldozer or tractor for such purposes.

Another object of the invention is to provide a stabilizing means for a Sidedozer.

Another object of the invention is to provide a Sidedozer with means for easily and quickly varying the angle of the pusher or blade.

Another object of the invention is to provide a Sidedozer wherein the tractor and pusher or blade may be conveniently operated by a single operator.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings. It will be understood that many changes may be made in the details of construction and arrangement of parts without departing from the scope of the invention as expressed in the accompanying claims, as the preferred form has been given by way of illustration only.

Referring to the drawings:

Fig. 1 is a side view of the device embodying the invention;

Fig. 2 is a side view thereof from the opposite side;

Fig. 3 is a top or plan view thereof;

Fig. 4 is a perspective view, on an enlarged scale, of the blade carrying mechanism;

Fig. 5 is a sectional view taken on line 5-5 of Fig. 1, looking in the direction of the arrows;

Fig. 6 is a side view of the blade carrying mechanism showing the blade in one adjusted position; and

Fig. 7 is a view similar to Fig. 6 but showing the blade in another adjusted position.

In the past where bulldozers have been employed for moving a lengthy pile of earth or other material in a sidewise direction, such as when filling a trench, it has been necessary to constantly change the angular relation of the tractor or bulldozer as well as move the entire tractor back and forth relative to the pile of material to be moved for each individual push of the blade. It will be apparent that such constant movement of the bulldozer was time consuming and also caused considerable wear and tear on the entire vehicle.

It is, therefore, the principal object of the present invention to provide a new and improved Sidedozer particularly adapted for moving lengthy piles of material

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in a sidewise direction, such as for filling a trench, without the necessity of constantly moving the entire vehicle or dozer back and forth and, therefore, speeding up the moving operation while reducing the wear and tear on the entire vehicle or dozer and with which the vehicle or dozer may be driven only in a direction parallel to the axis of the pile of material to be moved and means operated by the operator of the dozer to move such pile sidewise, that is, in a direction transverse to its axis and the axis of the dozer.

Referring more particularly to the drawings wherein similar reference characters designate corresponding parts throughout, the device shown embodying the invention comprises a wheel type tractor of usual construction designated generally as 10 and including the frame 11, wheels 12, operator's seat 13 and steering wheel 14.

The tractor 10 is provided with a hydraulic operating system comprising an oil pump 15 of usual type adapted to be mechanically connected to and operated by the tractor engine. The pump 15 is connected by pipe line 16 to oil reservoir 17 whereby oil is supplied to said pump 15 from said reservoir 17.

Control valve 18, which is adapted to be operated by actuating levers 19, is connected to pump 15 by pipe line 20. The Sidedozer attachment or carriage is suspended from the frame 11 between the front and rear wheels 12 of the tractor and is carried by the transverse supports 21 and 22 which are secured to the frame 11 and by the upright support 23 which is reinforced by the struts 24. This attachment comprises the frame 25 which is pivotally mounted by the hangers 26 and pins 27 to the ends of the supports 21 and 22.

The blade or pusher 28 is carried by the ram 29 which extends into the cylinder 30 which is carried by the frame 25. On the opposite sides of the cylinder 30 are provided the cylinders 31 and 32 within which are slidably mounted the aligning pins or bars 33 and 34 respectively which are secured adjacent their free ends to the blade 28 for retaining it in alignment. The blade or pusher may be secured at any desired angle relative to the axis of the tractor 11 but preferably has its axis normal to the axis of the tractor.

The hydraulic lines 35 and 36 are connected to the opposite ends of the cylinder 30 and said lines are connected at their opposite ends to control valve 18 for effecting movement of ram 29 in either direction within cylinder 30 in the usual manner.

On the side of the tractor opposite pusher or blade 28 may be provided a stabilizer for preventing lateral movement of the tractor bodily during its operation. This stabilizer comprises a cylinder 37 pivotally connected at 38 to an upright support 39 on frame 11 which support is reinforced by struts 40. The stabilizer member 41, which carries the shoe 41a, extends into cylinder 37 and said cylinder 31 is provided with a plurality of openings 42 any of which may be aligned with an opening in stabilizer 41 and then a pin may be positioned through said aligned openings for adjusting the length of stabilizing member 41.

On the support 23 is pivotally mounted at 43 the cylinder 44 into which extends the ram 45 which is pivotally connected at 46 to the frame 25.

The hydraulic lines 47 and 48 are connected to the cylinder 44 adjacent its opposite ends and are connected to the hydraulic control valve 18 whereby the ram 45 may be raised or lowered at will.

The supports 21 and 22 may be provided with a plurality of openings 49 to which the hangers 26 are pivotally mounted by pins 27, depending upon the angular position in which the frame 25 and cylinder 30 are to be employed as shown in Figs. 6 and 7. It is not necessary that a plurality of openings 49 be provided, however, as the vertical cylinder can change the angular position of

the frame 25 without changing the pivot point of hangers 26 on supports 21 and 22.

On the frame 11 and extending from the lower side thereof is the support or strut 50 to which is pivotally secured the cylinder 51 which receives the ram 52 which is pivotally connected at 53 to the cylinder 37 of the stabilizing member. The hydraulic lines 54 and 55 are connected adjacent opposite ends of said cylinder 51 and also to the control valve 13 for hydraulically controlling said stabilizing member.

In operation the vehicle is positioned beside the pile of material to be pushed and the vehicle is headed in a direction substantially parallel to the axis of the pile of earth or other material to be moved and by operation of the control levers 19, the operator of the vehicle can cause the pusher to reciprocate without moving from his seat 13 and the vehicle is driven in a straight line with only intermittent stops to allow the pusher to push the material laterally of the axis of the vehicle and by changing the pivot point about which the support 25 is pivoted by means of the hangers 26 which may be accomplished by merely pivoting said hangers 26 to either of the openings 49 in the supports 21 and 22, the vertical angle at which the pusher 28 operates may be altered at will.

While the ram is in operation for pushing the pusher or blade, the vertical ram can be employed to change the angular position of the frame carrying the Sidedozer blade or pusher and, therefore, the angular position of this pusher may be changed during its operation to vary the angle of the pusher as desired.

The stabilizer may be employed to prevent lateral movement of the vehicle during the operation of the pusher on heavy loads and by operation of the hydraulic controls the stabilizer may be lifted or raised from the ground during the moving of the vehicle and quickly replaced for stabilizing the same when the vehicle is in desired position and the pusher is to be operated.

From the foregoing it will be seen that I have provided simple, efficient and economical means for obtaining all of the objects and advantages of the invention.

Having described my invention, I claim:

1. A device of the character described, comprising a vehicle having a stationary frame and a blade carried by said frame and operated by the operator of said vehicle, said blade being mounted adjacent a side of said vehicle and adapted to operate independently of said vehicle in a direction laterally of the direction of movement of said vehicle, hydraulic means directly connected to said blade and to said vehicle frame for effecting lateral movement of said blade relative to said frame, and a stabilizer on the side of said vehicle opposite said blade and pivotally connected to said vehicle frame for restraining said vehicle against lateral movement during the movement of said blade, and hydraulic means for operating said stabilizer.

2. In a back filling machine, a vehicle frame, a stationary supporting frame carried by and positioned substantially beneath said vehicle frame, an earth pusher blade carried by said supporting frame, and positioned at one side of said vehicle frame and mounted for re-

ciprocation laterally of said vehicle frame, and hydraulic piston and cylinder means carried by said supporting frame beneath said vehicle frame and extending laterally of said vehicle frame and connected directly to said pusher blade for effecting reciprocation thereof.

3. In the back filling machine of claim 2, a hydraulic means supporting said stationary supporting frame whereby the position of the pusher may be adjusted vertically.

4. In a back filling machine, a vehicle frame, a laterally extending stationary supporting frame beneath said vehicle frame and carried thereby, an earth moving pusher blade carried by said supporting frame and positioned at one side of said vehicle frame and mounted for reciprocation in a direction lateral to the axis of said vehicle frame, hydraulic means carried by said supporting frame for effecting reciprocation of said pusher blade and including piston and cylinder means connected directly to said pusher blade and positioned beneath said vehicle frame, said piston and cylinder means being pivotally supported relative to said vehicle frame and vertically positioned hydraulic means connected to said piston and cylinder means for changing the angular position of said blade.

5. A back-filling machine comprising a vehicle having a frame, front and rear wheeled supporting means for said frame, a hydraulic pusher means including a stationary and a movable element mounted transversely of said frame between said front and rear supporting means, the stationary element of said pusher means supported at one end on a pivot the axis of which is substantially parallel to the normal line of travel of the vehicle and supported at the other end by hydraulic lift means, and an earth pushing blade mounted on the movable portion of said hydraulic pusher means whereby earth may be pushed generally horizontally in a direction transverse to the normal line of travel of said vehicle.

6. In the back-filling machine of claim 5, a stabilizer including a shoe pivotally connected to the vehicle on the side opposite said pusher blade and a hydraulic means for swinging said stabilizer about its pivotal mounting whereby said shoe may be lowered to resist the lateral thrust of the pusher or raised during movement of said vehicle.

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