Nov. 9, 1948. W. V. WARREN 2,453,649

SHOVEL LOADER ATTACHMENT FOR TRACTORS

Filed April 5, 1946 4 Sheets-Sheet 1

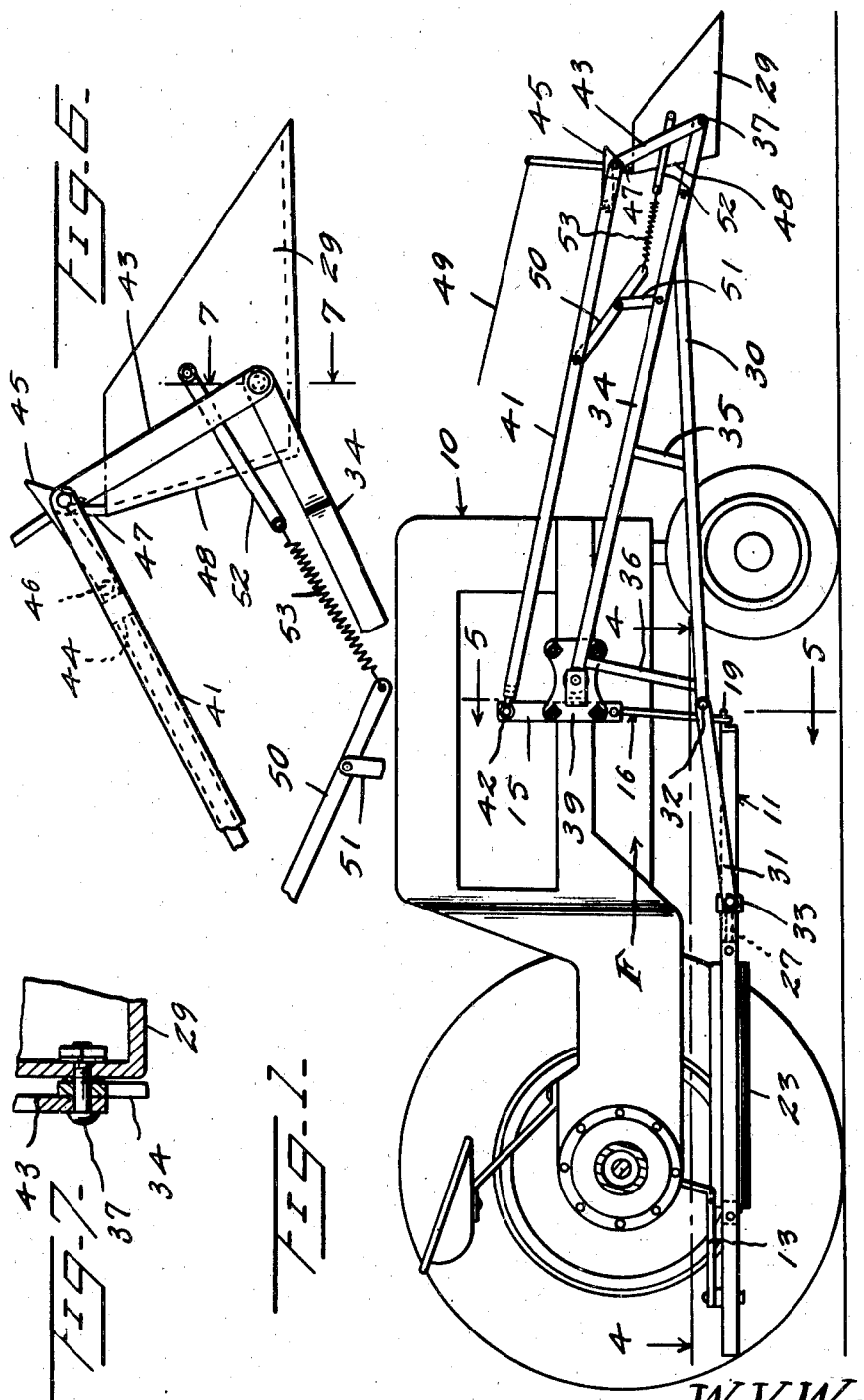

FIG. 6.

FIG. 7.

FIG. 1.

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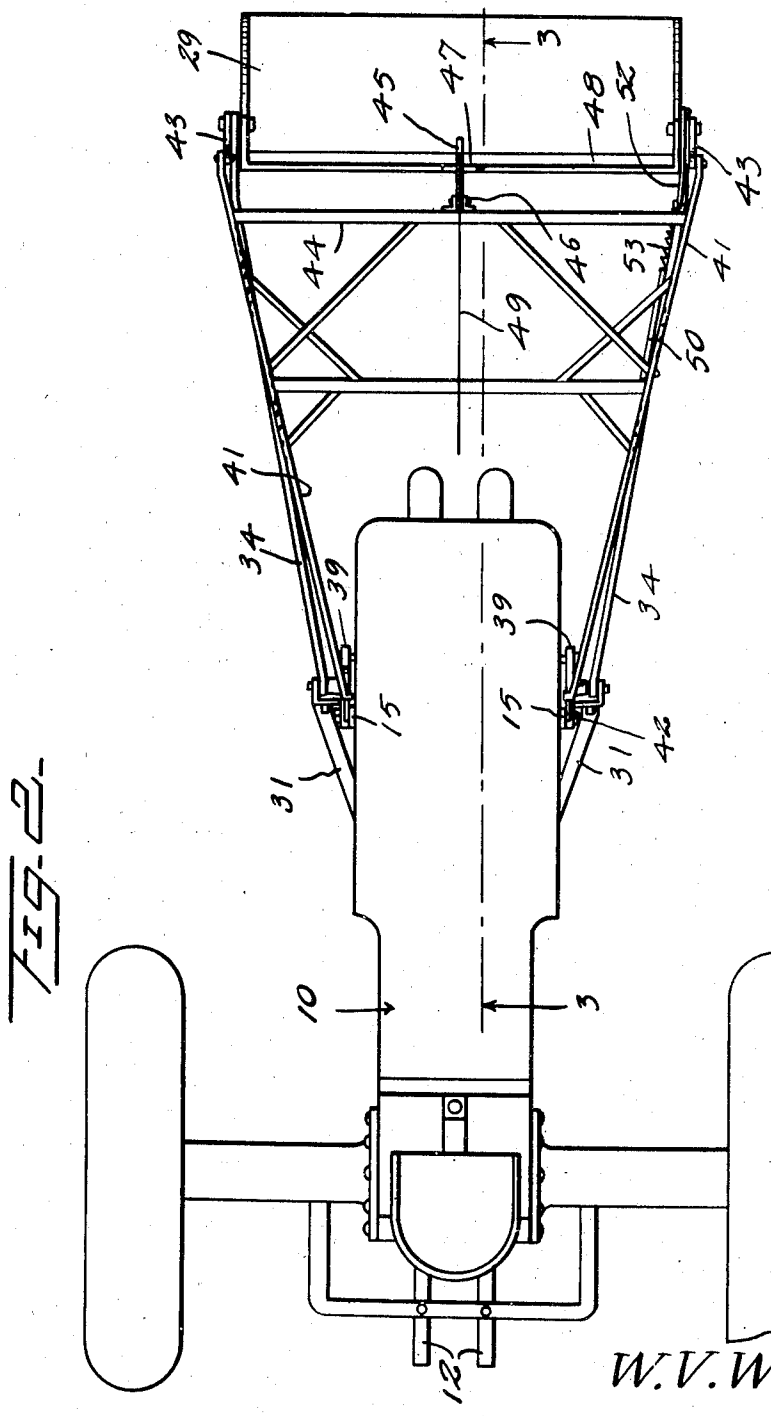

Fig. 2.

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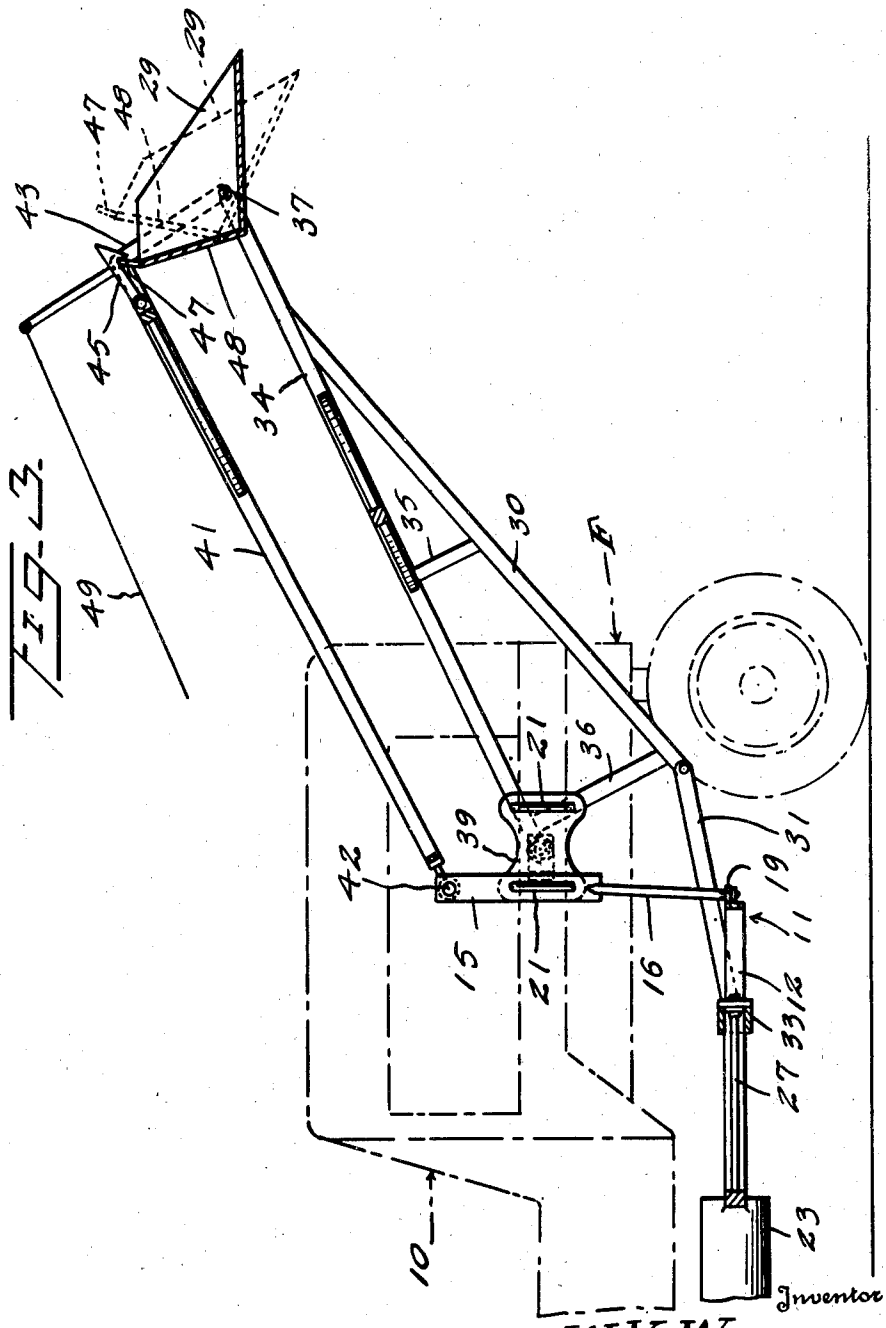

FIG. 3.

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FIG. 4.

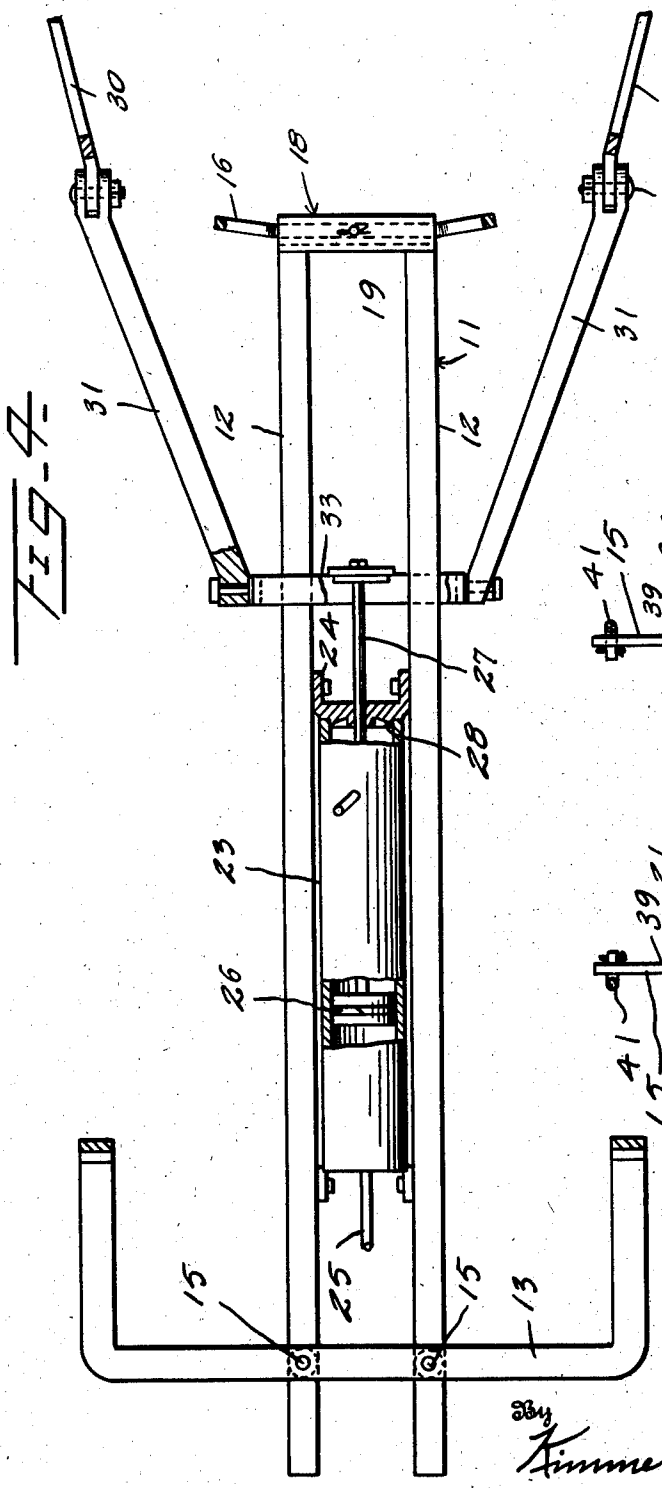
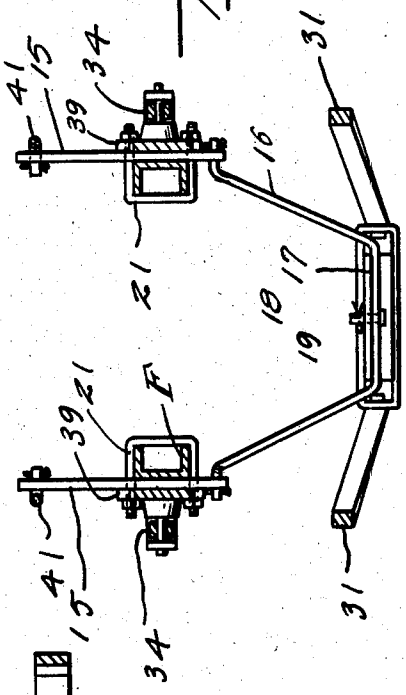


FIG. 5.



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2,453,649

SHOVEL LOADER ATTACHMENT FOR TRACTORS

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Application April 5, 1946, Serial No. 659,937

4 Claims. (Cl. 214—140)

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This invention relates to material handling apparatus, and is an improvement over the construction embodied in Patent 2,377,112.

An object of this invention is to provide in a material handling apparatus for attachment to a tractor, an improved means for maintaining the scoop level during the elevation of the scoop.

Another object of the invention is to provide a levelling device for the scoop which is simple in construction, and will efficiently maintain the scoop with the bottom thereof substantially horizontal during the elevation of the scoop prior to the dumping thereof.

With a construction of this kind when the scoop is elevated the material in the scoop will not spill over the rear wall thereof as is the case with scoops which are either fixedly secured or fixedly locked on the elevating arms of the handling apparatus.

With the above and such other objects in view, as may hereinafter more fully appear the invention consists of the novel construction, combination and arrangement of parts, but it will be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a detail side elevation of a material handling apparatus constructed according to an embodiment of this invention mounted on a conventional tractor.

Figure 2 is a plan view of the device.

Figure 3 is a fragmental sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a fragmental sectional view, partly in detail, taken on the line 4—4 of Figure 1.

Figure 5 is a sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a fragmental side elevation of the scoop in elevated position.

Figure 7 is a fragmental sectional view taken on the line 7—7 of Figure 6.

Referring to the drawings the numeral 10 designates generally a tractor of conventional construction which has mounted thereon, a material handling device constructed according to an embodiment of this invention. The material handling attachment includes a frame structure, generally designated as 11, which is formed of a pair of elonagted bars 12, positioned beneath the frame of the tractor and extending lengthwise thereof. The rear ends of the frame bars 12 are secured to the drawbar of the tractor.

The forward ends of the longitudinal bars 12 are suspendingly secured to the frame F of the

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tractor by means of a pair of vertical bars 15. The bars 15 are secured to the upper ends of a U-shaped forward suspending member 16, which has a bight 17 thereof secured under a connecting bar 18, which extends across the forward ends of the bars 12.

The legs of the U-shaped member 16 are upwardly and outwardly divergent and terminate in holes in the lower end at the vertical bars 15.

A clamping bar 21 is adapted to engage on the inner side of one of the frame members F of the tractor is extended through a bar 15 and bracket 39. The bars 12 have mounted thereon an elongated hydraulic elevating cylinder 23. The cylinder 23 is secured between the bars 12 by means of bolts through ears 24 on the ends of the cylinder 23. The cylinder 23 is connected by means of a hose or tubular member 25 to a source of liquid pressure supply.

A piston 26 is slidably in the cylinder 23, and has a piston rod 27 secured thereto, and extending through the forward head or wall 28 of the cylinder. A scoop 29 is disposed forwardly of the tractor 10, being rockably mounted between the pair of forwardly divergent arms or levers 30.

The arms or levers 30, at their rear ends are pivotally connected to links 31, as at 32, and the links 31, at their rear ends are pivotally connected to a cross head 33, which is fixed to the forward end of the piston rod 27.

The scoop supporting leverage also includes forwardly divergent supporting lever arms 34 which extend upwardly and rearwardly, being fixed relative to the arms 30 by bracing or connecting members 35 and 36. The scoop 29 is pivotally secured as at 37 to the forward ends of the lever arms 34, and the rear ends of the lever arms 34 are pivotally mounted, as at 38, on the brackets 39, which are fixed to the frame F of the tractor by the bars 21.

In order to provide for maintaining the scoop 29 with the bottom thereof approximately horizontal during the elevation of the scoop when filled, I have provided a pair of elongated links or bars 41, which are pivotally secured at their rear ends, as at 42, to the upper ends of the vertical bars 15. The forward ends of the arms or bars 41 are pivotally secured to the upper ends of links 43, which are pivotally carried by the pivots 37, and extend upwardly at the opposite sides of the scoop 29.

The arms 41 are connected together adjacent the forward ends thereof, by a connecting bar 44, and a latch or hook 45, is pivotally mounted between a pair of ears 46 carried by the central

portion of the connecting bar 44. The latch member 45 is adapted to engage over a keeper or the like 47 carried by the rear wall 48 of the scoop 29, and an elongated cable or releasing member 49 is secured at one end of the latch member 45, and may be extended rearwardly to a convenient position for operation by the operator.

In the use and operation of this device the scoop 29 is lowered by retracing the piston 26, into the cylinder 23, the scoop 29 being lowered to substantially ground level. After the material has been loaded into the scoop 29, the piston 26 may be moved forwardly thereby pushing the supporting frame structure for the scoop 29 upwardly. At this time the arms or bars 41 will maintain the scoop 29 in substantially level position due to the fact that the pivot or fulcrum for the arms 41 is above and rearwardly of the pivot 38 for the scoop lever arms 30 and 34.

When the scoop is elevated to its uppermost position, it will be disposed, as shown in full lines in Figure 3. In order to release the scoop to discharging the latch 45 is pulled upwardly and rearwardly, releasing the latch from the keeper 47 so that the scoop may gravitatingly swing downwardly to discharging position. The scoop is returned to the loading position by the spring 53. The links 50, 51 and 52 are arranged to provide for a delayed action in returning the scoop to loading position so there will be time allowed for the material to fall from the scoop. This is accomplished by providing the spring 53 and the links 50, 51 and 52 so that in the raised position of the scoop spring 49 will be free from tension due to the fact that pivot 37 on levers 30 is moved back relative to latch 45 and the forward ends of levers 41. As the scoop is lowered spring 49 is put under tension and will swing the scoop upwardly to latched and loading position.

What is claimed is:

1. In a material handling means, a scoop, means swingably supporting said scoop, means for elevating said scoop, said elevating means including means for maintaining said scoop in approximately horizontal loading position during elevation thereof, releasable latch means for holding said scoop in loading position, and means carried by said elevating means and engaging said scoop active by lowering of said scoop for effecting delayed movement of said scoop from a discharging position to a loading position.

2. In a material handling means, a scoop, means swingably supporting said scoop, said means including means for supporting said scoop in approximately horizontal loading position during elevation thereof, releasable latch means for holding said scoop in loading position, and spring means carried by said supporting means tensioned by lowering of said scoop supporting means for effecting movement of said scoop from a discharging position to a loading position.

3. A material handling attachment for a tractor comprising a scoop, a pair of elongated supporting arms pivotally secured at one end thereof to said scoop, means pivotally securing the opposite ends of said arms to the tractor, means for rocking said arms whereby to elevate or lower said scoop, a second pair of arms disposed approximately in parallel relation with respect to said first pair of arms connected between said tractor and said scoop for holding said scoop in approximately horizontal position during the raising and lowering thereof, releasable latch means for holding said scoop in loading position, a link pivotally connected at one end to one of said second pair of arms intermediate the length of said one arm, a resilient member between the other end of said link and said scoop, a second link pivotally connected at one end to one of said first pair of arms intermediate the length of said arm and pivotally connected at the other end intermediate the length of said first link for tensioning said resilient member upon lowering of said supporting arms and said scoop.

4. A material handling attachment for a tractor, comprising a scoop, parallel vertically spaced apart supporting arms pivotally connected between said scoop and said tractor, means for rocking said arms whereby to elevate or lower said scoop in substantially horizontal loading position, releasable latching means for holding said scoop in loading position, a link pivotally connected to each of said arms, means pivotally connecting said links together and a resilient member between one of said links and said scoop whereby said resilient member is tensioned upon lowering of said arms and said scoop for biasing said scoop from a discharge to loading position upon lowering of said scoop supporting arms.

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