Dec. 21, 1948. E. H. LACEY 2,457,049

TRACTOR MOUNTED SCOOP CONTROL

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Fig. 1.

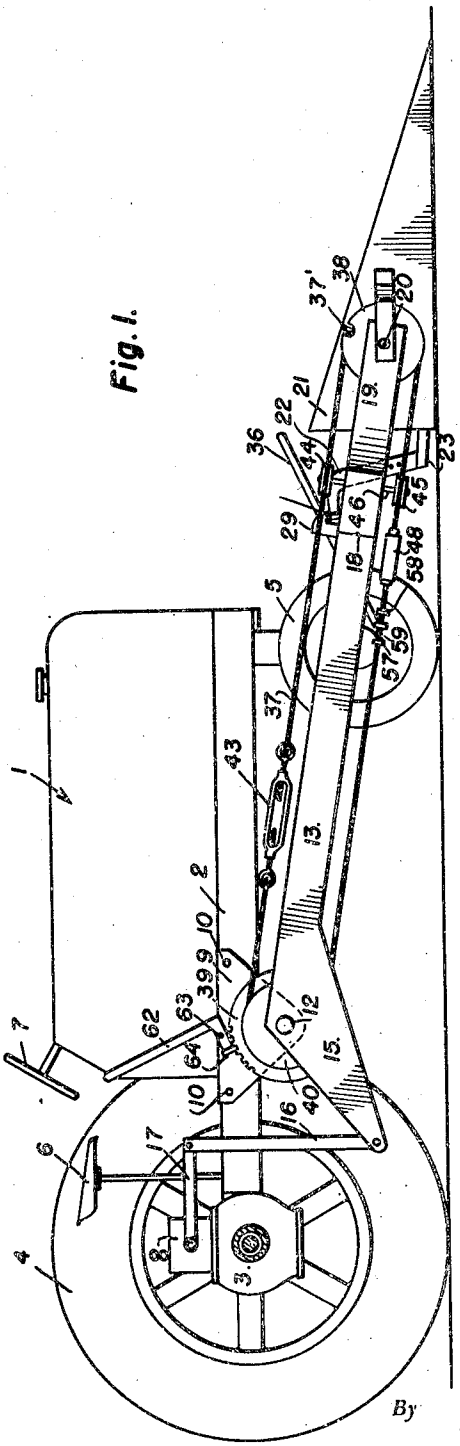
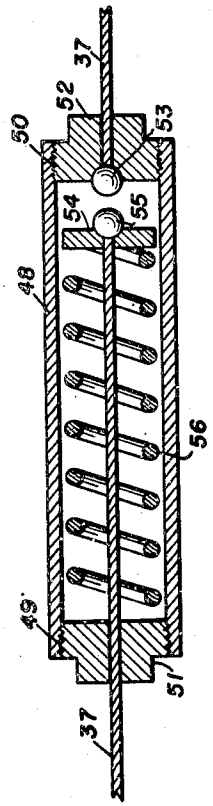


Fig. 5.



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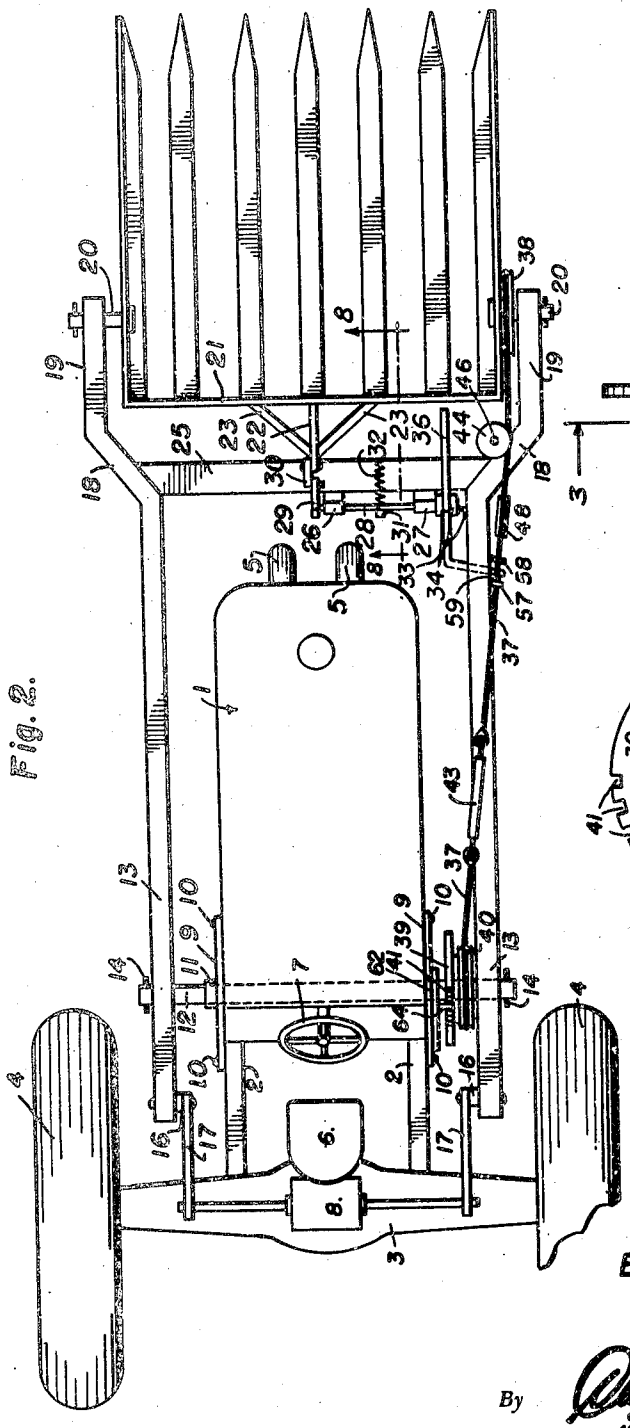


Fig. 2.

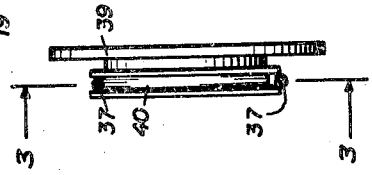


Fig. 4.

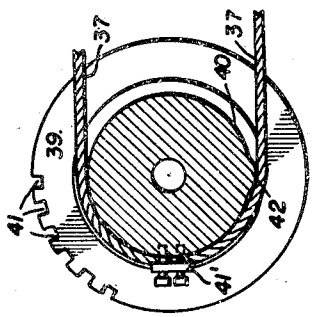


Fig. 3

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Fig. 6.

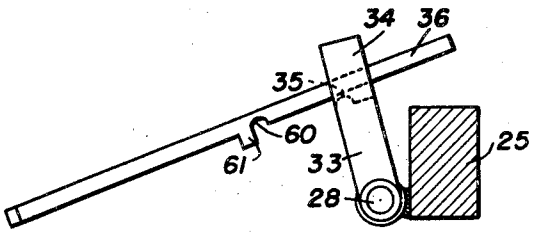


Fig. 7.

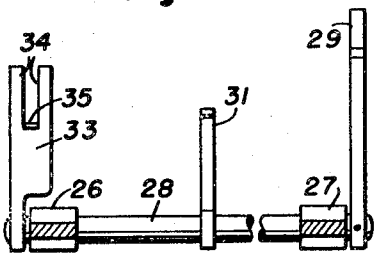


Fig. 8.

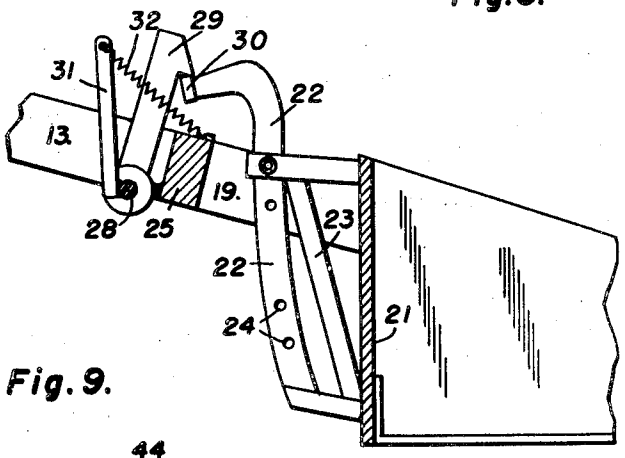
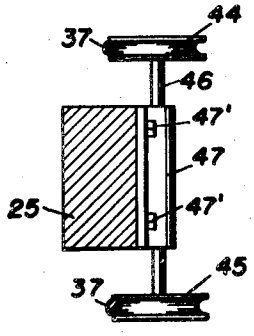


Fig. 9.



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Patented Dec. 21, 1948 2,457,049

UNITED STATES PATENT OFFICE

2,457,049

TRACTOR-MOUNTED SCOOP CONTROL

Edward H. Lacey, Sioux Falls, S. Dak.

Application April 18, 1947, Serial No. 742,334

6 Claims. (Cl. 214—140)

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This invention relates to improvements in leveling, latching and tripping devices for scoops and analogous devices.

An object of the invention is to provide an improved leveling, latching and tripping device for tractor operated scoops and analogous devices.

Another object of the invention is to provide an improved scoop attachment for tractors which will include means controllable by the driver of the tractor for leveling, latching and tripping the scoop.

A further object of the invention is to provide an improved scoop attachment for tractors which will be provided with manually controlled means for leveling the scoop as it is elevated, and means for latching or tripping the same when desired.

Another object of the invention is to provide an improved mechanism for leveling, latching and tripping a scoop or analogous device when attached to and driven by a tractor, said mechanism being highly efficient in operation, and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application:

Figure 1 is a side elevation of a tractor with the improved scoop leveling, latching and tripping mechanism shown supported thereon;

Figure 2 is a plan view of a tractor with the improved scoop leveling, latching and tripping mechanism shown supported thereon;

Figure 3 is a view taken on the line 3—3 of Figure 4;

Figure 4 is an edge view of the rack or leveling drum and pully associated therewith;

Figure 5 is a longitudinal sectional view taken through the resiliently tensioned cable take-up mechanism and housing therefor;

Figure 6 is a side elevation of the pivoted control rod guide and associated latch trip control lever shown in disengaged or released position;

Figure 7 is a front elevation of the connecting shaft with the control rod guide on one end thereof, a centrally disposed tensioning spring-supporting finger, and the scoop latch arm at the opposite end of said connecting shaft;

Figure 8 is a view taken on the line 8—8 of Figure 2, and

Figure 9 is a side elevation of the cable guiding pulleys with supporting side frame arm shown in section.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

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In carrying out the invention, there is provided a tractor generally denoted by the reference numeral 1 having spaced side frame members 2, a rear axle housing 3, rear wheels 4, front wheels 5, a seat 6, a steering wheel 7 and a power jack or take-off mechanism 8 connected with and operated by the differential gearing (not shown) in said rear axle housing or differential housing 3.

Side plates 9 are secured by means of the bolts 10 to the outer surfaces of the side frame members 2 and support the bearings 11 in which the shaft 12 is mounted transversely of the tractor and its frame.

A pair of parallel extending oppositely disposed scoop supporting bell crank arms 13 are pivotally supported upon the outer ends of the transverse shaft 12, being held thereon by means of the keys 14. The rear ends of the arms 13 are reinforced by the webs 15 and extend downwardly, being connected by the links 16 and interconnected link operating arms 17 with the jack or power take-off mechanism 8 connected with and operated by the tractor operating gearing from the tractor engine (not shown).

The forward ends of the scoop supporting arms 13 are off-set as at 18, and terminate in the forwardly extending portions 19.

A pair of inwardly extending hinge pins 20 are disposed through the forwardly extending portions 19 of the arms 13, and pivotally support the scoop 21 which consists of a U-shaped frame having a plurality of spaced forwardly extending sharpened arms or tines supported thereby. An upwardly and rearwardly extending scoop catch or locking arm 22 is secured at the center of the U-shaped scoop frame, and is reinforced by the brace arms 23 connected thereto. A plurality of openings 24 are formed through the arm 22 for adjusting the angle of the scoop 21 as desired.

A cross brace or bar 25 is connected between the scoop supporting arms 13 adjacent their off-set portions, and support the spaced bearings 26 and 27 in which the connecting shaft 28 is rotatably mounted. An upwardly extending latch finger 29 is secured to the inner end of the shaft 28 and is adapted to engage and latch over the catch 30 on the upper end of the locking arm 22. A centrally disposed upwardly extending finger 31 is secured to the shaft 28 and is connected to the rear end of a coil tensioning spring 32, whose forward end is attached to the cross brace or bar 25 to resiliently urge and hold the latch finger

29 locked over the catch 30 on the locking arm 22, thereby holding the scoop 21 in the desired fixed position with respect to its supporting arm 13.

An upwardly extending control rod guide 33 is secured to the outer end of the connecting shaft 28 and is formed with a U-shaped yoke 34 in its upper end, having a transversely extending tooth or lug 35 in the base thereof, and is adapted to support the forward end of a slidable latch trip control lever 36. The rear end of the lever 36 is angled laterally and is apertured to receive the lower reach of the scoop leveling, latching and tripping cable 37, later to be described.

A pulley or sheath 38 will be disposed on one of the hinge pins 20 between the forwardly extending portion 19 of one of the scoop supporting arms 13, being welded or otherwise secured and fixed to the adjacent side of the scoop frame.

The scoop leveling drum 39 will be rotatably mounted upon the shaft 12 and will include the pulley 40 secured thereto, said drum being formed with a purality of spaced peripherally disposed locking notches 41.

The scoop leveling, latching and tripping cable 37 will extend about the leveling drum 39 and associated pulley 40, being secured thereto by means of the clamp 41'. A lug 42 will be disposed in the groove of the pulley 40 to accelerate the trip, later to be described.

The upper reach of the cable 37 will include a turnbuckle 43 for use in tightening the cable when the same is being mounted or installed. A pair of spaced guide pulleys 44 and 45 for the cable 37 are supported upon the ends of the shaft or rod 46 mounted in the bearing bracket 47 secured to the side arm 13 by means of the bolts 47'.

The cable 37 will be secured to the forward pulley 38 by means of the cable clamp 37'. The take-up machanism for the cable 37 is located in the lower reach thereof, and comprises a tubular housing 48 which is internally threaded at its opposite ends as at 49 and 50 to receive the threaded centrally apertured cap closure members 51 and 52. One end of the cable 37 is extended through the closure member 52, and has its ends frayed out and soldered as at 53 to firmly secure the cable 37 in place. The other end of the cable 37 extends through the apertured cap member 51 and through a washer 54 disposed in the housing 48, the end thereof also being frayed and soldered as at 55 to lock the cable in place. A coil spring 56 is disposed about the cable 37 within the housing 48, with one end engaging the inner surface of the cap member 51 and its opposite end engaging the washer 54 to normally and resiliently hold the cable under tension.

Clamps 57 and 58 are adjustably secured about the lower reach of the cable 37 at opposite sides of the latch trip control lever 36 and in spaced relation thereto, while a coil tensioning spring 59 is also disposed about the cable 37 between the clamp 57 and the adjacent end of the latch trip control lever 36 to hold the same under resilient tension.

The latch trip control lever 36 is also formed with a locking notch or seat 60 in its lower edge adapted to engage and overlie the tooth or lug 35 in said control rod guide 33 when the latch finger 29 is locked over the catch 30 to lock the scoop 21 in fixed position. A lug 61 is formed on the lever 36 adjacent the notch or seat 60, and serves to re-seat and lock the seat over the tooth or lug 35 and the latch finger 29 over the

catch 30 after the scoop 21 has been dumped and the cable is being moved counter-clockwise over the pulleys 38 and 40.

A control lever 62 will be pivoted on the pin 63 on the side plate, and will be formed with a locking dog 64 adapted to be received in any one of the locking notches 41 on the leveling drum 39, being manually disengageable therefrom when it is desired to dump the scoop 21.

From the foregoing description, it will be seen that the mode of operation of the improved leveling, latching and tripping device for the tractor supported and operated scoop will be as follows: Assuming that the control lever with its locking dog 64 is in position to have said dog engaged in one of the notches 41 in the leveling drum, and that the latch member 29 is engaged over the catch 30 on the scoop catch or locking arm 22, thus holding the scoop in horizontal position, as seen in Figure 1 of the drawings, said scoop being in contact with the ground. The operator of the tractor and scoop will connect the power take-off mechanism so that the operating arms 17 will be forced downwardly, imparting motion through the arms 16 to the lower end of the bell crank scoop supporting arms 13. Said arms 13 being pivoted upon the cross head 12 will then raise the forward end of said arms with the scoop 21 supported therebetween. However, when the said arms 13 are raised, the cable 37 on the upper reach will be slackened and the cable 37 on the lower reach will be tightened to maintain the scoop level as it is raised.

As the scoop supporting arms 13 move upwardly with the scoop, the rearward movement of the lower reach of the cable 37 will draw the control rod 36 rearwardly imparting a rearward motion to control rod guide through contact of lug 35 and notch 60, pivoting shaft 28 thereby disengaging latch finger 29 from catch 30, thus transferring the control of the scoop to the leveling mechanism which is accomplished by the operation of the cable 37 and the drums 38 and 40. When the scoop 21 is at the proper height for dumping, the control lever 62 will be pushed forwardly thereby disengaging the dog 64 from the notch 41 in the leveling drum 39, allowing the scoop 21 which is balanced to tip forwardly, thereby dumping its load. In dumping the load, the leveling drum 39 will be rotated forwardly as it is drawn by the upper reach of the cable 37, since the forward drum 38 is secured to the scoop 21 and supports the forward end of the said cable 37.

To return the scoop 21 and its associated mechanism to loading position, the scoop supporting arms 13 are lowered allowing the tip of the scoop 21 to touch the ground as the tractor 1 is backed away from the dumping point, thus permitting the scoop 21 to settle to an approximately level position with the cable 37 moving the control rod 36 which has been contacted or engaged by the clamp 57 to cause the locking latch 29 to again lock over the catch 30, thus locking the scoop 21 in position.

While the preferred embodiment of the instant invention has been illustrated and described, it will be understood that it is not intended to limit the scope of the invention thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. In combination with a tractor, spaced parallel bell crank arms pivoted thereto, a scoop pivotally supported between the forward ends of said arms, pulleys supported for movement with said arms and scoop, an operating cable disposed about said pulleys, a latch for said scoop, a leveling drum secured to one of said pulleys being formed with a plurality of peripheral locking notches, and an operating lever having a pivoted dog thereon engageable with said locking notches for holding said leveling drum stationary to cause the cable to hold said scoop level as it is raised by said bellcrank arms operating said latch.

2. The combination of claim 1, wherein said cable includes resilient adjusting means, said means consisting of a housing, the ends of said cable terminating in said housing and tension means in said housing for resiliently adjusting the tension of the cable.

3. In combination with a tractor, spaced parallel bell crank arms pivoted thereto, a scoop pivotally supported between the forward ends of said arms, pulleys supported for movement with said arms and scoop, an operating cable disposed about said pulleys, a cross brace between said arms, a shaft rotatably mounted on said cross brace, a latch on said shaft, a cooperating latch on said scoop, and means for releasing said latch associated with said cable including a control rod guide on said shaft, a control rod operatively connected between said control rod guide and said cable for tripping said scoop to dump the same, a leveling drum secured to one of said pulleys being formed with a plurality of peripheral locking notches, and an operating lever having a pivoted dog thereon engageable with said locking notches for holding said leveling drum stationary to cause the cable to hold said scoop level as it is raised by said bell crank arms.

4. The subject matter as claimed in claim 3, a leveling drum secured to one of said pulleys being formed with a plurality of peripheral locking notches, an operating lever having a pivoted dog thereon engageable with said locking notches for holding said leveling drum stationary to cause the cable to hold said scoop level as it is raised by said bell crank arms for raising and lowering the same.

5. The subject matter as claimed in claim 3, a leveling drum secured to one of said pulleys being formed with a plurality of peripheral locking notches, an operating lever having a pivoted dog thereon engageable with said locking notches for holding said leveling drum stationary to cause the cable to hold said scoop level as it is raised by said bell crank arms, a power take-off connection from said tractor secured to said bell crank arms for raising and lowering the same, and a resilient cable take-up mechanism disposed in said operating cable.

6. The subject matter as claimed in claim 3, said control rod being formed with a locking seat and receiving lug adapted to positively engage said control rod guide for holding said scoop level when said control rod is released by the longitudinal movement of said cable as said bell crank arms and scoop are elevated.

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