Feb. 15, 1944. A. D. HEATH 2,341,776

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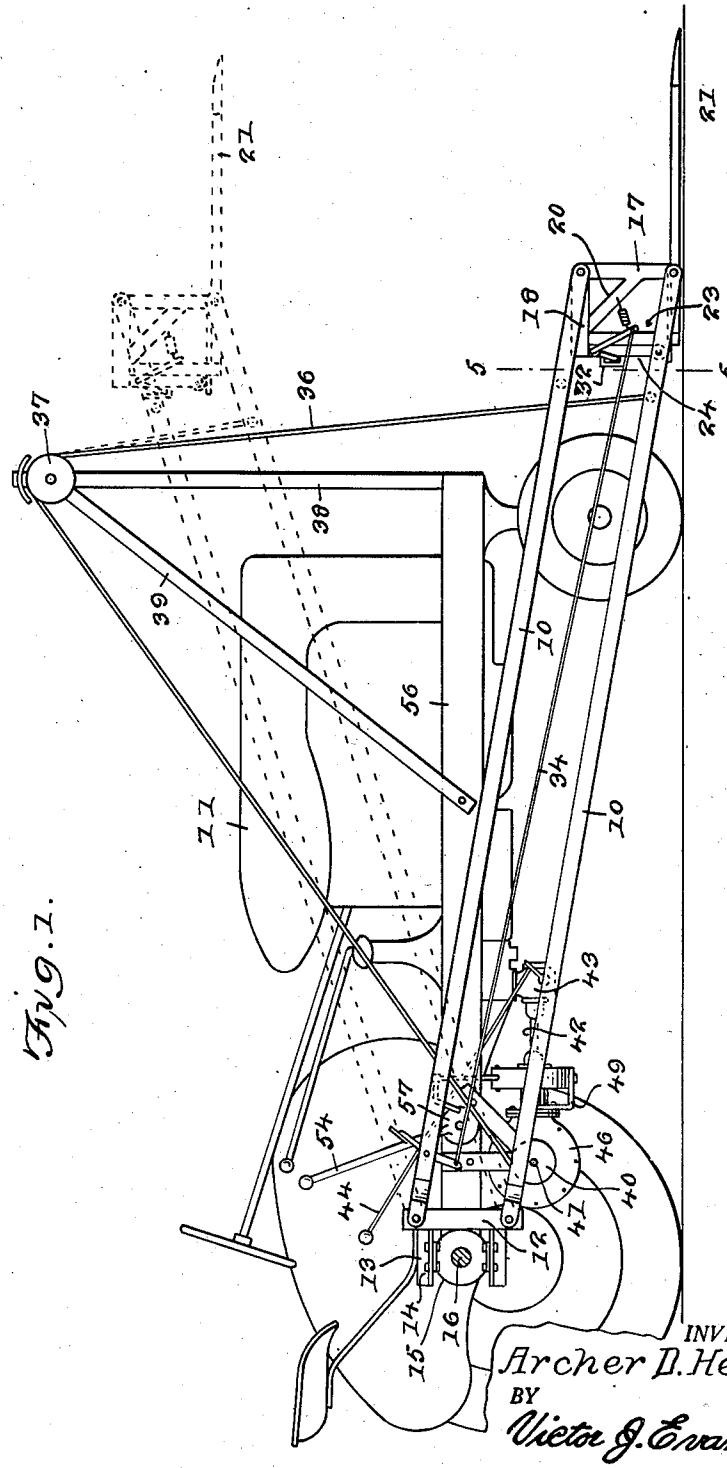


Fig. 1.

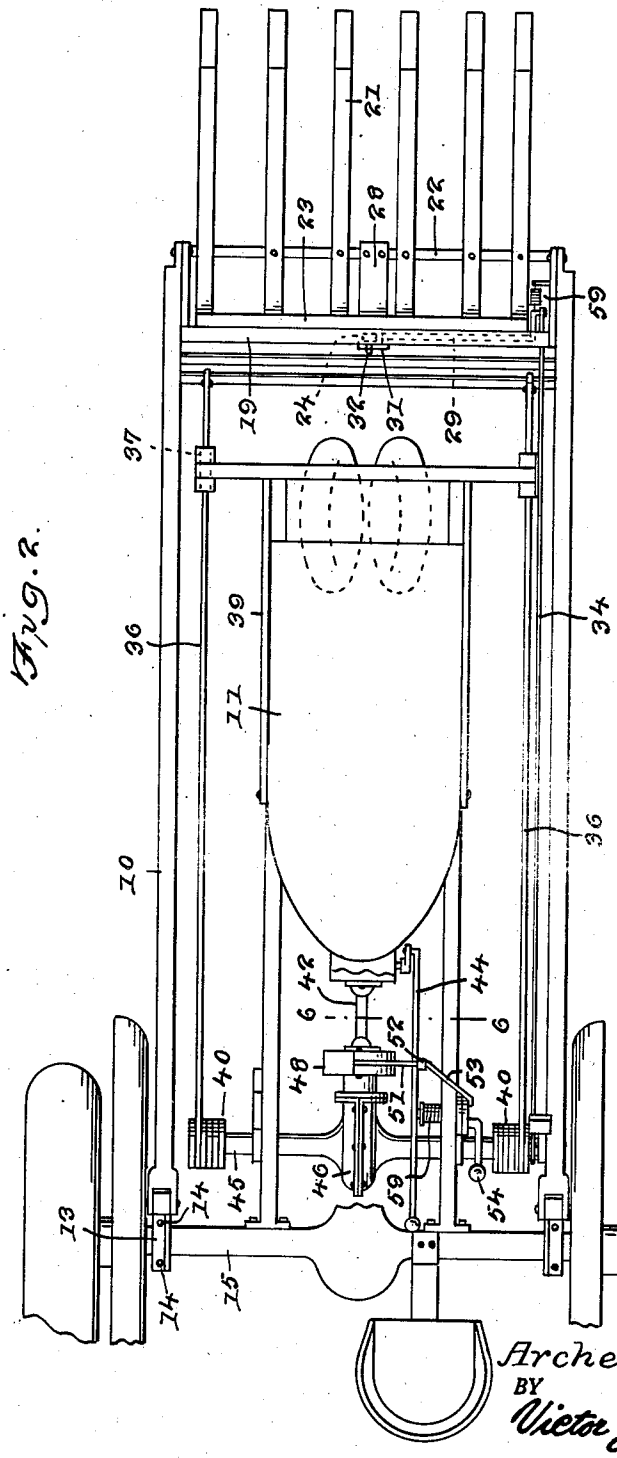
INVENTOR.
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Fig. 2.



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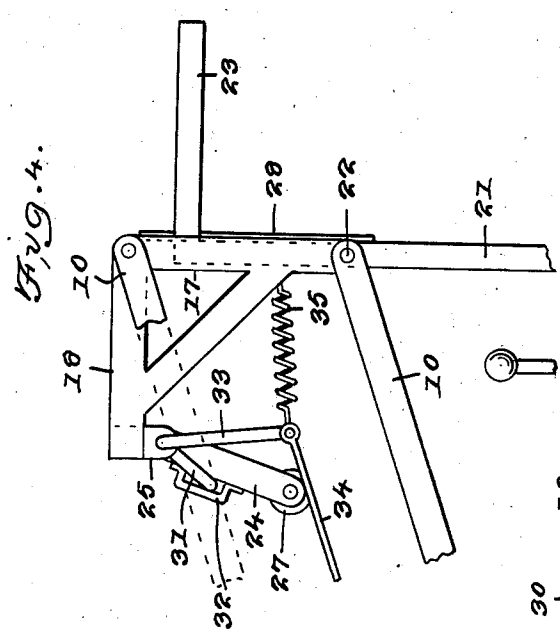


Fig. 4.

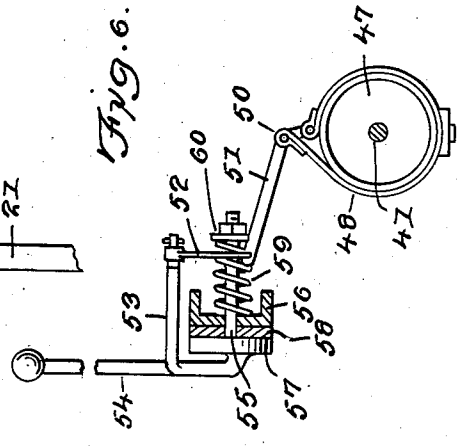


Fig. 6.

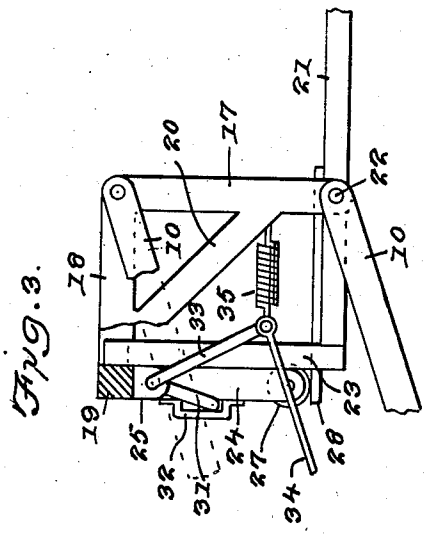


Fig. 3.

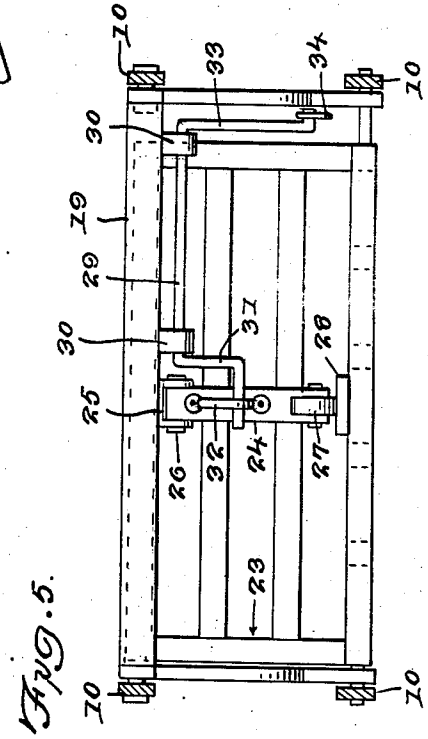


Fig. 5.

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2,341,776

LOADER

Archer D. Heath, Gowrie, Iowa

Application October 6, 1942, Serial No. 461,009

4 Claims. (Cl. 214—140)

This invention relates to a loader of a general purpose type and has for an object to provide a loader in which the arms of the fork are attached to the tractor at the rear axle so that all forward push on the fork is from the rear axle and not from a point forward on the tractor.

A further object is to provide a loader in which there are two arms for the fork on each side of the loader forming a rigid frame associated with a cross piece just back of the fork so that there will be no sidesway in the structure.

A further object is to provide a device of this character in which the fork is maintained horizontal in all positions and may be stopped and dumped from any point between the ground and its upper limit of movement.

A further object is to provide apparatus of this character which will be formed of a few strong, simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming a part of this specification:

Figure 1 is a side elevation of a loader constructed in accordance with the invention.

Figure 2 is a top plan view of the loader shown in Figure 1.

Figure 3 is a detail sectional view showing the latching means of the fork, the same being shown in latched position to hold the fork horizontal.

Figure 4 is a view similar to Figure 3 but showing the latching means in unlatched position to permit the fork to dump.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 1 showing the latching means in rear elevation.

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 2 showing the brake for stopping lift of the fork.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, the loader comprises a pair of superposed parallel arms 10 adapted to extend longitudinally on either side of a tractor 11, each pair of arms being pivotally connected at the rear ends to respective vertically disposed bars 12 which have formed integral therewith horizontally extending bracket arms 13 which are adapted to be bolted as shown at 14 to the housing 15 of the tractor rear axle 16. The front ends of each pair of superposed arms 10 are pivotally connected to vertically disposed bars 17. The arms 10 and the bars 12 and 17 on each side of the tractor form a parallelogram during pivotal movement so that the bars 10 remain parallel during all positions of their lift movement and the bars 17 remain vertical during all positions of the lift movement of the arms 10.

The bars 17 are provided at the upper ends with rearwardly extending arms 18, see Figure 3, which extend at a right angle to the bars 17 and are connected at the rear ends by a cross bar 19, this structure preventing any sidesway of the lift arms 10. The bars 17 and arms 18 are braced by inclined braces 20.

The prongs 21 of the fork are pivotally mounted near the rear ends on a pivot rod 22 which forms the pivotal connection of the lift arms 10 with the bars 17. At the rear ends the prongs are provided with extensions 23 disposed in rear of the pivot rod 22 and extending at a right angle to the prongs. The extensions 23 bear against the cross bar 19 when the prongs of the fork are in horizontal position and it will be pointed out that the prongs remain in horizontal position its height of the fork when the fork is latched in operative position.

The latching mechanism of the fork comprises a bar 24 which is pivotally mounted at the upper end on an inverted U-shaped bracket 25, see Figure 5, carried by the cross bar 19, through the medium of a pivot pin 26 as through the bracket and through the upper end of the bar. The lower end of the bar is equipped with a roller 27 which engages an abutment 28 in the nature of a flat plate which extends above and parallel with the rear ends of the prongs 21 of the fork.

A rock shaft 29 is journaled in bearings 30 carried by the cross bar 19, see Figure 5, and is equipped at one end with a crank 31 which is engaged in an U-shaped keeper 32 secured to the rear face of the bar 24. The outer end of the rock shaft is equipped with a crank 33 which is connected to a trip cord 34. A helical spring 35 is connected to the crank 33 and is connected to one of the bars 17 to normally hold the roller of the arm 34 in engagement with the abutment 28 to maintain the fork in latched operative position or receiving a load and elevating the load. When the fork is to be dumped the trip cord 34 is pulled to swing the rock shaft 29 and disengage the bar 24 from its

operative position shown in Figure 3, and move the same to its released position, shown in Figure 4, to permit the fork to swing downwardly under the influence of gravity and dump the load.

The fork is elevated through the medium of cables 36 which are attached to the lowermost lift arms 10, see Figure 1, and are thence trained upwardly over idle pulleys 37 carried at the upper end of posts 38 which extend from the front end of the tractor and are braced by inclined braces 39. The cables are thence trained rearwardly and wound upon drums 40, see Figure 2, secured on the ends of a power driven shaft 41, which is geared to a power take-off shaft 42 driven from the tractor motor and controlled by a conventional clutch 43 which is controlled by a hand lever 44, see Figure 2. The driven shaft 41 is housed in a housing 45 which is integral with the housing 46 for the gears which connect the power take-off shaft to the driven shaft.

The fork may be lifted to any desired height by clutching the driven shaft to the power and may be stopped at any desired height by declutching the driven shaft from the power.

To hold the fork at any point of its lift movement a brake wheel 47 is secured to the power take-off shaft 42 and is equipped with a brake band 48, see Figure 6. The brake band is anchored at the bottom to a bracket 49 which is bolted to the gear case housing 46, see Figure 1. The free ends of the brake band are secured to pins 50 carried by a lever 51 which is connected to a link 52 carried by a rod 53 which is integral with a brake lever 54, see Figure 6. The brake lever is provided with a stub shaft 55 which is journaled intermediate its ends in one of the frame bars 56 of the tractor. Between this frame bar and an integral disk 57 on the lever 54 a fiber disk 58 is sleeved loose on the shaft 55. A helical spring 59 is engaged on the stub shaft and bears against the frame bar 56 and against a stop washer 60 on the shaft to hold the disk 57 of the lever 54 in frictional engagement with the fiber disk 58 to hold the hand lever in adjusted positions.

When it is desired to stop the fork at any desired height the power take-off shaft 42 is declutched from the power by operating the lever 44 whereupon brake band 48 is applied to the brake wheel 47 by operating the lever 54.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. The combination with a tractor having a rear axle housing and a power take-off shaft, of a pair of superposed parallel lift arms extending longitudinally on either side of the tractor, vertically disposed bars to which the rear ends of respective pairs of the lift arms are pivoted, horizontally extending bracket arms integral with the vertically disposed bars bolted to the axle housing, vertically disposed bars to which the front ends of each pair of superposed lift arms are pivotally connected, the last named vertical bars being provided at the upper ends with rearwardly extending arms disposed at a right angle to the bars, a cross bar connecting the rear ends of the rearwardly extending arms preventing sideway of the lift arms, a fork having prongs, means pivotally connecting the prongs near their rear ends to the lift arms, extensions on the prongs disposed in rear of the pivot means extending upwardly at a right angle to the prongs, said extensions bearing against said cross bar when the prongs of the fork are in operative position, latching means for the fork carried by said cross bar, a trip cord for releasing the latching means to permit the fork to dump, a transversely disposed shaft carried by the tractor connected to the power take-off shaft to be driven by the power take-off shaft, drums on the transversely disposed shaft, cables on the drums connected to the lowermost lift arms near the front ends thereof, uprights on the front end of the tractor carrying pulleys over which the intermediate portions of the cables are trained, and brake means carried by the tractor for holding the power take-off shaft stationary when the power take-off shaft is disconnected from the power to hold the fork at any desired height of its lift movement.

2. The structure as of claim 1 and in which the pivotal means of the fork comprises a pivot rod extending transversely of and connected to the lowermost pair of lift arms at the front ends of the lift arms connected to said prongs and spaced from the rear ends of the prongs.

3. The structure as of claim 1 and in which the latching means comprises a bar pivotally connected at the upper end to said cross bar, a roller on the lower end of the bar, an abutment extending rearwardly from the fork engaged by said roller to hold the fork in latched position, a rock shaft carried by the fork, a crank arm on one end of the rock shaft, an elongated keeper on said bar receiving the crank arm for dislodging said bar from said abutment when the rock shaft is turned, and a crank arm on the other end of the rock shaft connected to said trip cord.

4. The structure as of claim 1 and in which said brake means comprises a brake wheel connected to the power take-off shaft, a brake band on the wheel connected intermediate its ends to the tractor, a lever connected at spaced points to the ends of the band for tightening the band on the brake wheel, and manually controlled means for actuating said lever.

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