July 15, 1947. C. LAMBERT 2,423,894

HYDRAULIC POWER SCOOP

Filed March 29, 1945 3 Sheets-Sheet 1

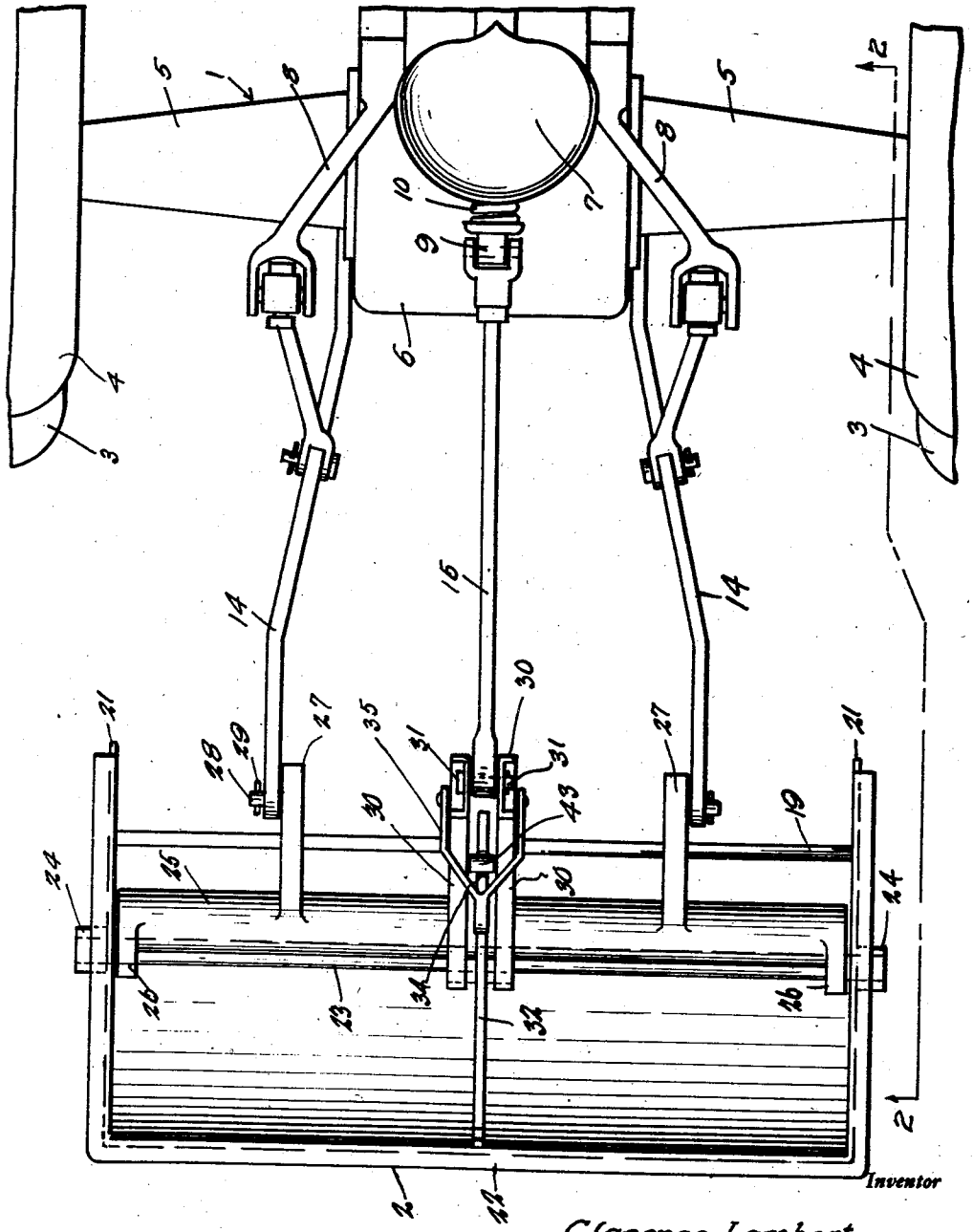


Fig. 1.

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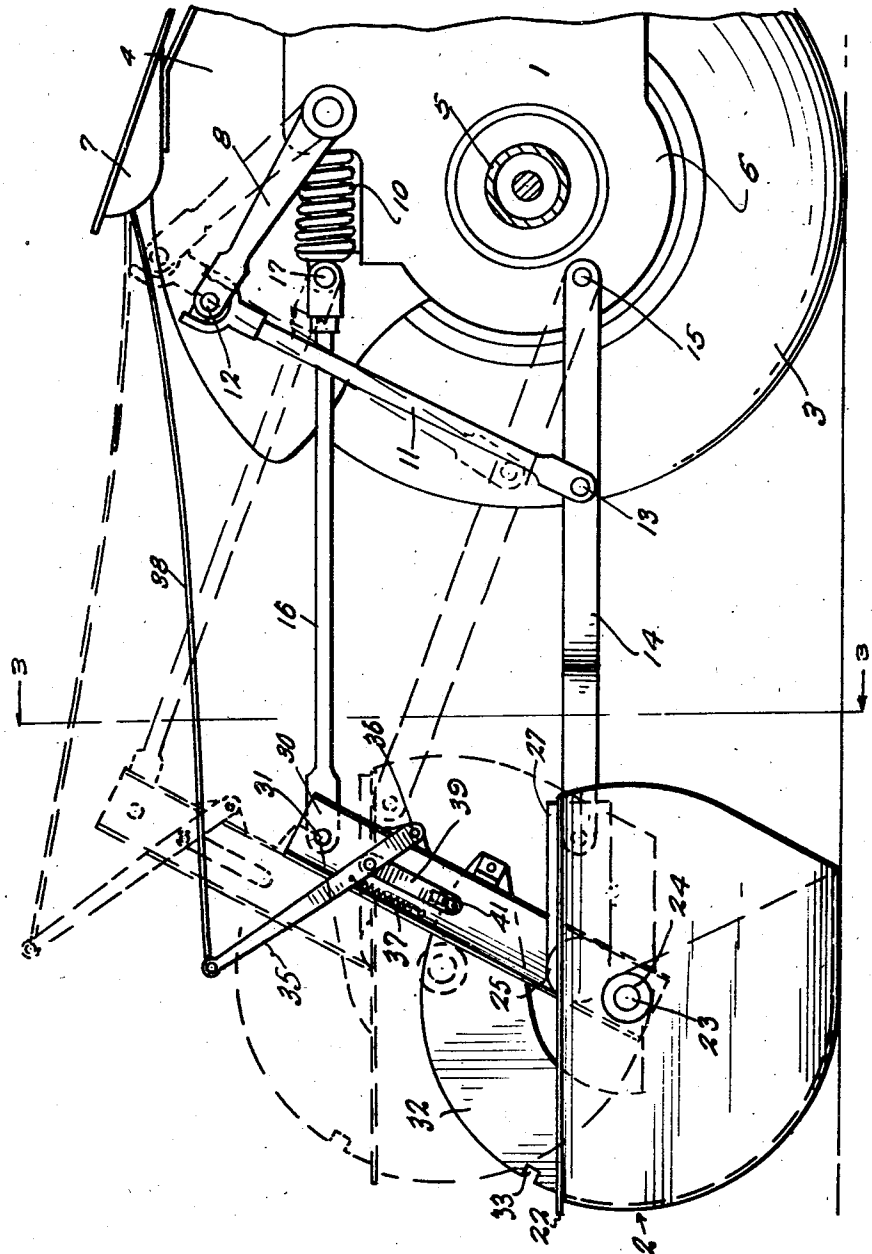


Fig. 2.

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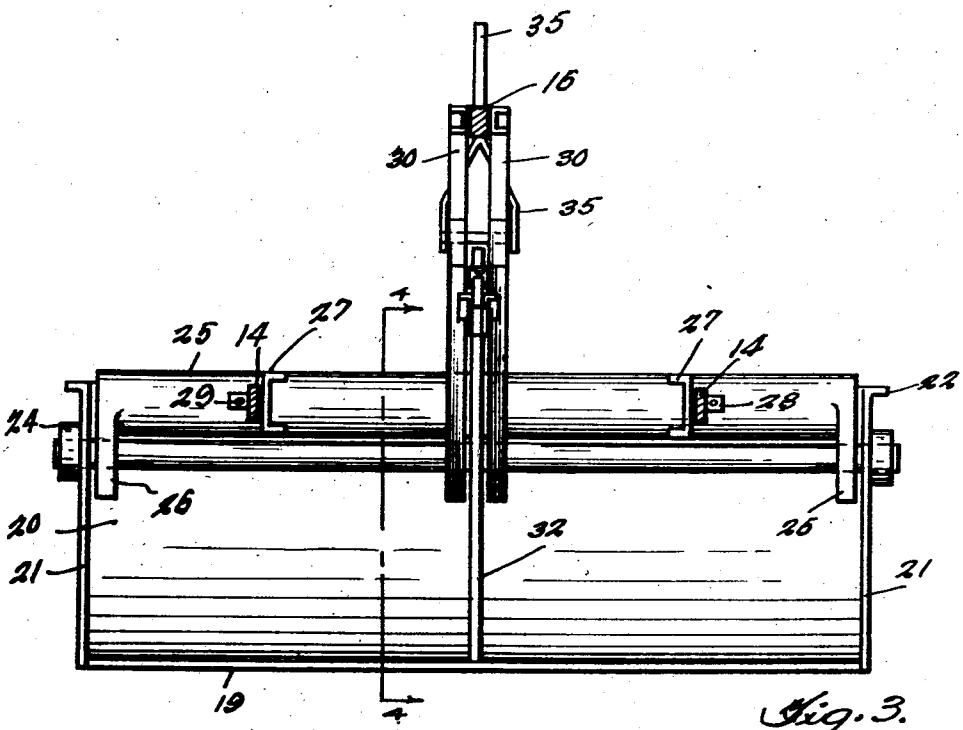


Fig. 3.

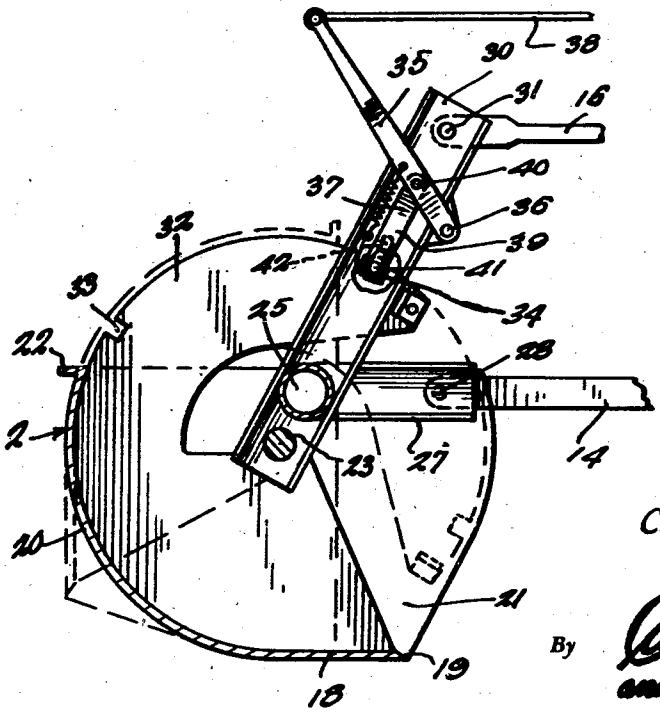


Fig. 4.

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UNITED STATES PATENT OFFICE

2,423,894

HYDRAULIC POWER SCOOP

Clarence Lambert, Smith Center, Kans.

Application March 29, 1945, Serial No. 585,454

1 Claim. (Cl. 37—124)

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My invention relates to improvements in hydraulic power scoops, the primary object in view being to provide a scoop power operative to dump a load, carry the same in elevated position, or in lowered position, over the ground, and which is especially designed to handle mud and like heavy material.

Another object is to provide a scoop of the type above set forth which is simple in construction, easy to operate, inexpensive to manufacture and service, and highly efficient in operation.

Other and subordinate objects, also comprehended by my invention, together with the precise nature of my improvements, and the advantages thereof, will be readily understood when the succeeding description and claim are read with reference to the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a view in top plan of my improved scoop in a preferred embodiment thereof,

Figure 2 is a view in side elevation,

Figure 3 is a view in vertical transverse section taken on the line 3—3 of Figure 2,

Figure 4 is a view in transverse section taken on the line 4—4 of Figure 3.

Reference being had to the drawings by numerals, according to my invention, a tractor 1 of the "Ford-Ferguson" type embodying an hydraulic power lift and an automatic control for the lift is equipped with a trailing scoop 2.

The tractor 1 has been illustrated conventionally, as sufficient for the present purposes, 3 designating the rear wheels, 4 the mud guards for the wheels, 5 the rear axle housings upon opposite sides of the transmission casing 6, 7 the seat, and 8 the usual hydraulic lift arms forming part of the hydraulic power lift automatically controlled through the medium of the compression shaft 9 backed by the spring 10. The numeral 11 designates the usual pair of lift bars connected at upper ends thereof, by universal joints 12 to the lift arms 8 and having their lower ends pivotally connected, as at 13, to the usual pair of side bars 14 pivoted, as at 15, to opposite sides of the differential casing 6 for vertical swinging movement by the lift arms 8 and lift bars 11, said side bars 14, as will be understood, forming part of the usual draw bar mechanism of such tractors. As will be understood, by those skilled in the art, the hydraulic lift mechanism of such tractor is manually controlled by a hand lever, not shown, for operation to swing the lift arms 8 upwardly and downwardly to correspondingly swing the side bars 14 accordingly, and is

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automatically controlled to swing the lift arms 8 upwardly, likewise the side bars 14, by thrust exerted against compression shaft 9 through the medium of a thrust rod 16 having its forward end pivoted to said shaft 10, as at 17, so that said rod is vertically swingable on said shaft, all as disclosed in U. S. Letters Patent to J. D. Robertson, No. 2,321,516, dated June 8, 1943, and to which attention is directed for a more complete disclosure of the hydraulic power lift mechanism of the type of tractor with which my invention is concerned.

The scoop 2 is of elongated, forwardly opening form with a flat bottom 18, a leading digger edge 19, a back 20 of substantially arcuate cross section, vertical ends 21, and a reinforcing upper edge flange 22. A scoop-supporting shaft 23 extends horizontally through the scoop 2 with its ends journaled in bearings 24 on the ends 21 and from which said scoop hangs pendent to swing rearwardly and forwardly into dumping and scooping positions, respectively.

A scoop-elevating and lowering shaft 25 is fitted endwise in said scoop 2 parallel with the shaft 23, above and forwardly of the same, with rearwardly and downwardly inclined end crank arms 26 thereon through which said shaft 23 extends and rocks therein. A pair of forwardly extending crank arms 27 on said shaft 25 spaced apart equidistantly from the ends of said shaft and fitting between the rear ends of the side bars 14 are connected at the front ends thereof to the rear ends of said bars 14 to swing vertically thereon and by means of lateral studs 28 on said arms 27 extending through said bars 14 with retaining pins 29 therein.

Suitably fixed on the scoop-elevating and lowering shaft 25 is a pair of upstanding, thrust rod operating lever arms 30 spaced close together upon opposite sides of the transverse center of said shaft 25 and having lower ends through which the shaft 23 is rotatably extended, and upper ends opposed to opposite sides of the rear end of the thrust rod 16 and pivoted thereto, as at 31, said arms 30 being parallel with the lift bars 11.

In the transverse center of the scoop 2 is an upstanding detent sector 32 fitting between the lever arms 30 and provided with a rear upper edge notch 33 and a similar front upper edge notch 34. A forked detent lever 35 straddles said lever arms 30 above said sector 32 and is pivoted to said lever arms 30, as at 36, in upstanding position for forward and rearward movement. Suitably arranged coil springs, as at 37, secured to said lever 35 and said lever arms 30, tension the lever

arms 35 against forward movement. A pull line 38 extends forwardly from said lever 35 to the driver's seat 7. A pair of links, as at 39, pivoted, as at 40, to said lever arms 30 depend therefrom alongside said arms with lower ends connected to a cross rod 41 extending through slots, as at 42, in said lever arms 30 and provided intermediate said arms 30 with a dogging roller 43 for seating in the notches 33, 34.

Referring now to the operation of my invention. Normally, the scoop 2 is pulled along the ground by the tractor 1 with the described detent mechanism holding the same against rocking, the dogging roller 43 being seated in the notch 34 of the sector 32, as will be clear. Thus the scoop 2 is locked in working position. When the scoop 2 is full, the dogging roller 43 is disengaged from the notch 34 by swinging the detent lever 35 forwardly, under a pull on the line 38, thereby elevating said roller 43 out of the notch 34 through the medium of the links 39 and in opposition to the springs 42. Thus, the scoop 2 is unlatched to roll, through engagement with the ground, and rock on the shaft 23, clockwise as viewed in Figure 4, to dump the load, said scoop rolling and rocking on said shaft 23 until the dogging roller 43 seats in the notch 33 and thus locks said scoop in dumping position. As will be manifest, by operation of the described hydraulic lift mechanism to elevate and lower the side bars 14, the scoop 2 may be elevated and lowered, as occasion may require, and as shown in dotted and full lines in Figure 2, so that the loaded scoop 2 may be dragged along the ground, while locked in working position, to pull the load along the ground, or elevated in said locked position to carry the loaded scoop elevated for subsequent lowering and dumping in the manner described. In the event that the scoop 2, while either digging or dumping, is opposed by an immovable object, or under other conditions constituting an overload on the scoop as regards its forward progress, said scoop tends to swing the lever arms 30 about the axis of the shaft 25, thereby causing the thrust

rod 16 to exert a thrust against the shaft 10, thus causing the hydraulic lift mechanism to operate, automatically, in a manner to swing the side bars 14 upwardly, all as described in the aforementioned patent, whereby the scoop will be elevated until such an overload condition is relieved.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification as regards structure and combination of parts, without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claim.

What I claim is:

The combination with a tractor, and power lift mechanism thereon including a pair of vertically swingable bars, a cross shaft having oppositely extending pairs of cranks thereon, one pair pivoted to said bars to provide for vertical swinging of said shaft on said bars relative thereto, a second shaft extending through the other pair of crank arms, a scoop suspended from the second shaft to rock thereon, a pair of side-by-side levers fast on said cross shaft to be swung thereby relative to said bars, a lift mechanism control shaft on said tractor endwise movable, a thrust rod pivoted between the ends of said levers and operatively connected to said control shaft, a notched detent sector on said scoop straddled by said levers, and sector dogging means for coaction with the sector mounted on said levers.

CLARENCE LAMBERT.

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The following references are of record in the file of this patent:

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