

Dec. 24, 1935.

D. N. HUNTER ET AL

2,025,285

SCRAPER

Original Filed June 13, 1931

4 Sheets-Sheet 1

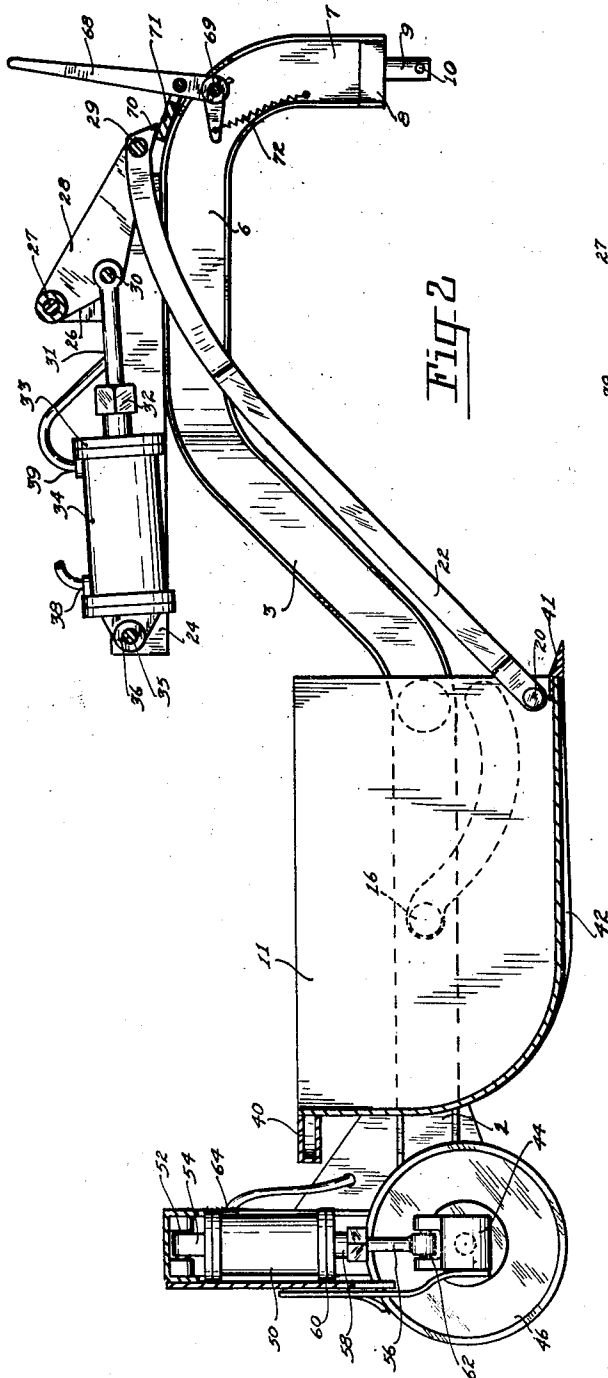


Fig. 2

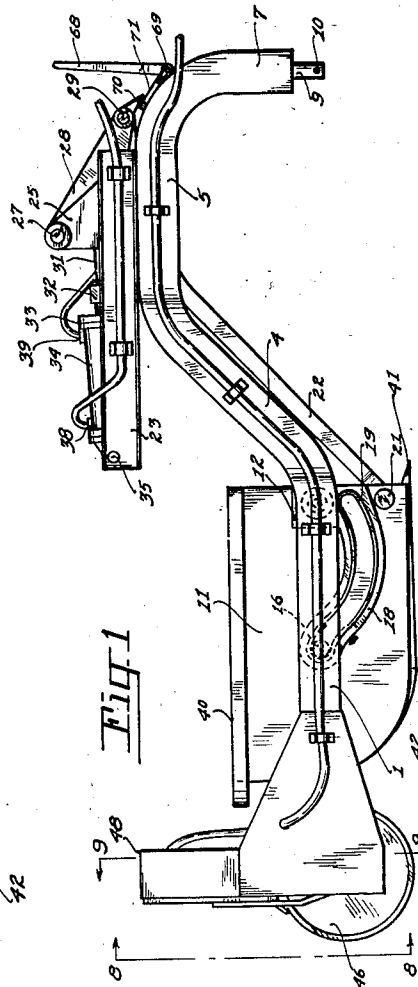


Fig. 1

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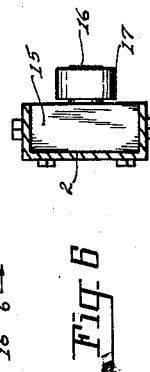
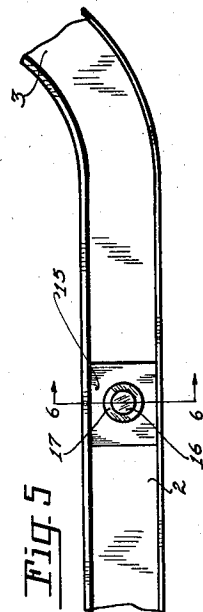
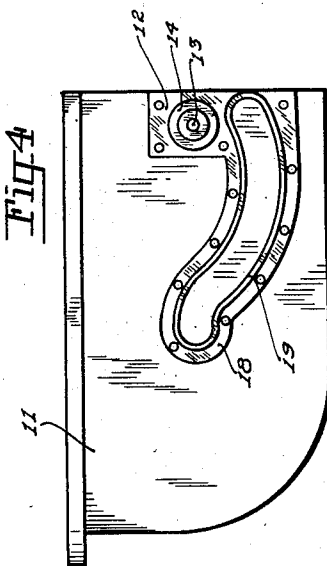
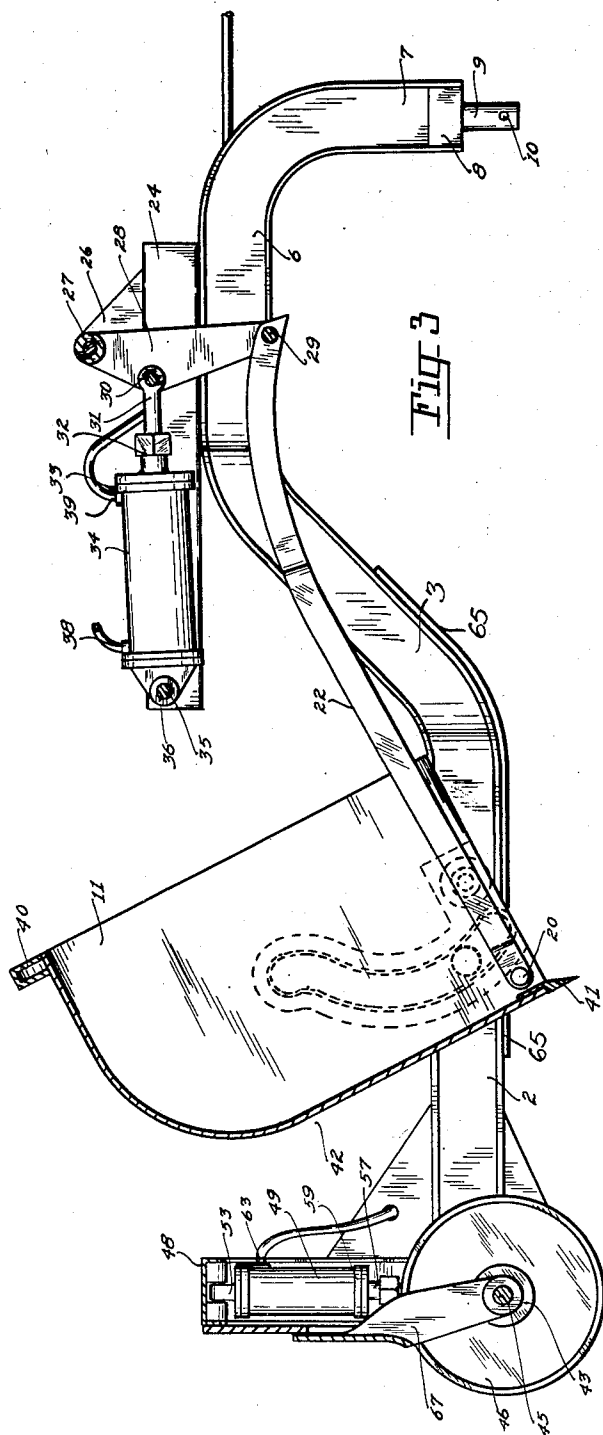
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4 Sheets-Sheet 2



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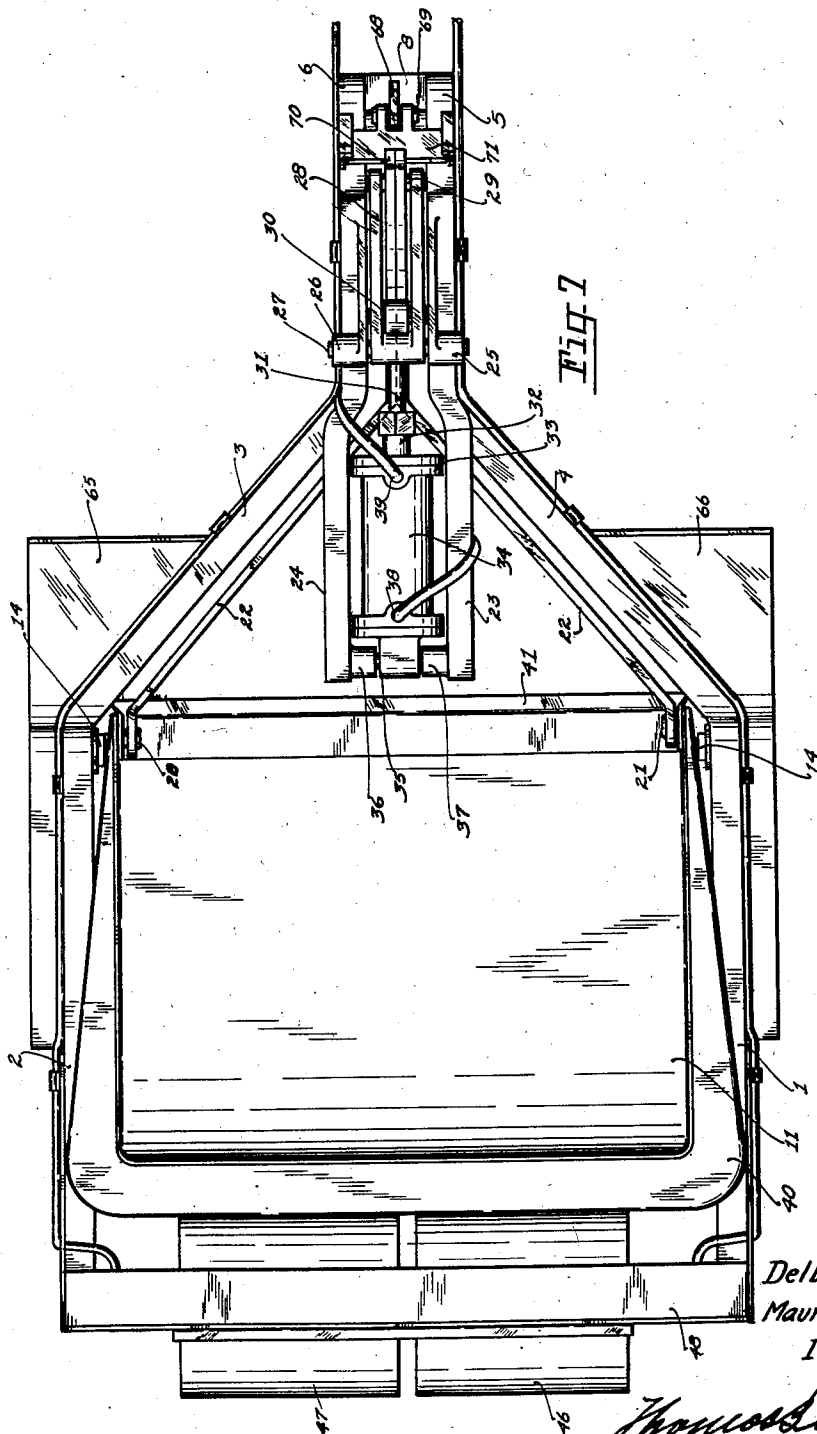
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SCRAPER

Original Filed June 13, 1931 4 Sheets-Sheet 4

Fig 8

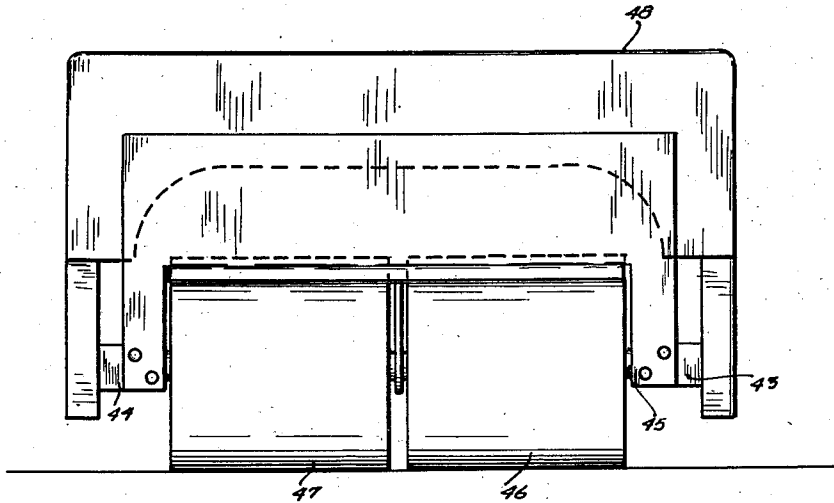


Fig 9

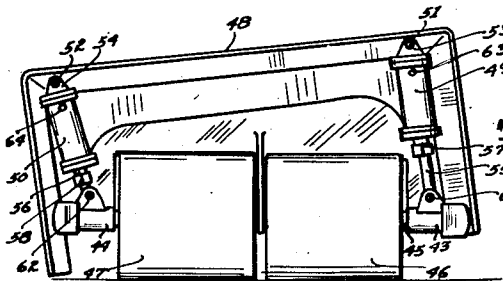
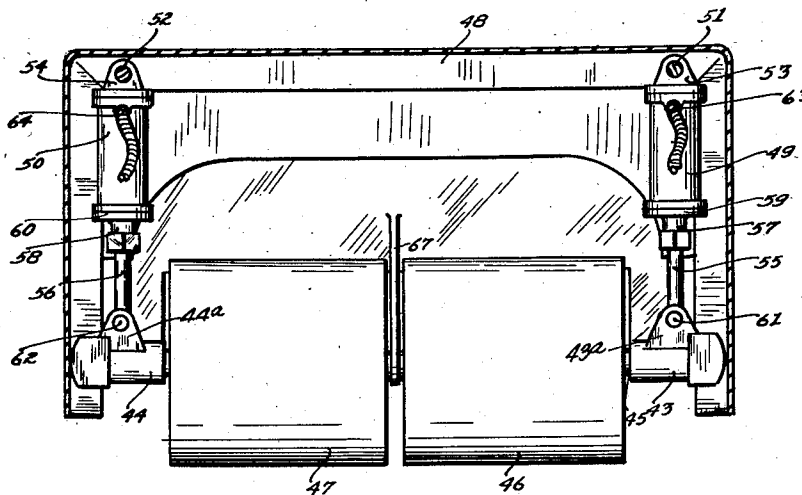


Fig 10

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UNITED STATES PATENT OFFICE

2,025,285

SCRAPER

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Refile for abandoned application Serial No.
544,102, June 13, 1931. This application Feb-
ruary 18, 1935, Serial No. 7,146

5 Claims. (Cl. 37—129)

Our invention is intended for moving of earth, rock and any and all materials that are adapted for being moved through the use of a scraper, and this application is a refile of our abandoned application 544,102 filed June 13, 1931.

The device is particularly adapted for use in conjunction with a tractor especially of the caterpillar type. It is also adapted for use where cuts and fills are to be made and where the slope of the side walls of the cut is to be developed, as the cut progresses and where it is desired to reduce a grade.

Heretofore, in devices of this kind, it has been necessary to carry an operator on the scraper to manipulate the scraper bucket. It has also been necessary to either slow the tractor up, or to back the tractor up, or to stop it entirely in order to dump the materials from the bucket and to righting of the scraper bucket after dumping.

It has been impossible heretofore to reduce the slope and surface alignment of grades to the desired effect without considerable hand work.

Through the use of our new and improved device, the scraper bucket may be filled, dumped and placed in desired cutting alignment while the tractor is being run full speed in either direction.

It is also possible, through the use of our new device, to operate the same over soft ground and to position the cutting edge of the bucket as desired in order to reduce the surface to the desired alignment.

Our device primarily consists of a goose necked frame adapted for being secured to the tractor upon its one end and for being supported upon wheels at the other end and for having a bucket disposed between the respective supports. Means are provided to tilt, dump and right the scraper bucket from the driver's seat of the tractor, and by the operator of the tractor. Means are also provided at either corner at the rear end of the device for placing the frame in desired position by the operator of the tractor in order to position the cutting plate of the scraper bucket to reduce the grade and slope to the required alignment.

A piston and piston rod are disposed in a pressure operated fluid cylinder which is provided at the top of the frame having a bridle associated therewith for placing the scraper bucket in dumping and loading position while the tractor is in motion.

The purpose and object in making the frame

of the device in the form of a goose neck is to permit a short angle turn of the tractor without, in any way, interfering with the operating efficiency of the assembled device.

The primary object of our invention is to provide a scraper of rugged construction adapted for being used in conjunction with tractors that may be used with facility in the economical handling of cuts and fills in highway construction and in other work.

A further object of our invention consists in providing a scraper construction adapted for being handled by a self-propelled vehicle that may be placed in dumping and locked position by the operator of the prime mover and for manipulating the same into dumping, loading and filling position while the prime mover is moving at full speed, in either direction.

A still further object of our invention consists in building a scraper whose cutting edge may be placed in desired position by the operator of the tractor and through the use of which he may be able to reduce the surface alignment of the cut, or fill, to desired grade irrespective of the character of the substructure over which the same is being operated.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claims, and a preferred form of embodiment of which is hereinafter shown with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a side view of the assembled device.

Fig. 2 is a sectional, side view of the assembled device. In Figs. 1 and 2, the device is shown in loading position.

Fig. 3 is a sectional, side view of the assembled device, illustrating the scraper bucket in dumping position, or in position for dragging the surface to reduce the same to approximate grade.

Fig. 4 is a side view of the bucket shown removed from the frame of the device.

Fig. 5 is a fragmentary, side view of the frame, illustrating the attaching means associated therewith that engages the outside of the bucket.

Fig. 6 is a sectional, end view of the mechanism, illustrated in Fig. 5, the same being taken on line 6—6 of Fig. 5, looking in the direction indicated.

Fig. 7 is a top, plan view of the assembled device.

Fig. 8 is a rear, end view of the assembled de-

vice, the same being taken on line 8—8 of Fig. 1, looking in the direction indicated.

Fig. 9 is a sectional, end view of the mechanism illustrated in Fig. 1, the same being taken on line 9—9 of Fig. 1, looking in the direction indicated.

Fig. 10 is a rear end view of the assembled device, illustrating the same in position for positioning the scraper bucket in desired position, relative to the frame and relative to the surface over which the same is being operated, to cut the surface to desired grade and surface alignment.

Like reference characters refer to like parts throughout the several views.

We form our device of structural members and comprise the same of two side frames having parallelly disposed rear ends 1 and 2, that are spaced sufficiently apart to permit the scraper bucket to pass therebetween. Converging front walls 3 and 4 are formed from the side frames and have parallelly disposed heads 5 and 6 that are spaced apart. The converging front walls 3 and 4 are formed into a vertical terminal end 7, that is secured to a yoke 8. The yoke 8 terminates in a king pin 9 that is adapted for being secured in a proper saddle disposed upon the tractor not here shown. Suitable means are provided on the lower end of the king pin for removably securing the same to the saddle. This may be accomplished by the placing of a hole 10 in the lower end, through which a locking pin, not here shown, may be passed. A bucket 11, of the desired shape and size, is placeable within the frame.

The side frame members are preferably made of structural channels with the legs of the channel being disposed upon the inside of the frames and from trackways. Cheek plates 12 are placed upon the open end, and upon the oppositely disposed sides, of the bucket and a journal pin 13 outwardly extends from each of the cheek plates, that is formed integral therewith. A roller 14 is disposed upon the pin and is adapted to ride within the trackways created by the legs of the channels.

A bearing block 15 is fixedly secured to each of the side frame members and within the trackway and a journal pin 16 outwardly extends from each of the bearing blocks 15 and a bearing roller 17 is mounted upon the pin 16. Bearing guide plates 18 are secured to the oppositely disposed sides of the bucket and may be formed integral with the plates 12. A cam slot 19 is formed within each of the bearing plates 18 into which the bearing roller 17 may be disposed and in which the roller 17 is adapted to ride.

Journal pins 20 and 21 extend inwardly from the lower side walls of the bucket to which bridle links 22 are attached. The two bridles 22 should be made of a shape and size to adapt them for being used as a tension member, or as a compression member with equal facility. Guide frames 23 and 24 are superposed on the heads 5 and 6 of the primary frame and are secured thereto.

Pillow blocks 25 and 26 upwardly extend from the guide frames 23 and 24 and a shaft 27 is journaled therein. A bifurcated yoke 28 is journaled about the shaft 27 and the bridle links converge and come together at their forward end and are journaled about a common shaft 29 that is disposed within the free ends of the yoke 28. The bifurcated yoke 28 carries a wrist pin 30 to which the piston rod 31 is secured. The piston

rod passes through the stuffing box 32 and through the cylinder head 33 and has a piston secured thereto, not here shown, that is reciprocally disposed within the cylinder 34. The cylinder 34 is rockably mounted relative to the guide frame members 23 and 24 about a shaft 35 that is journaled within suitable bearings 36 and 37 disposed at one end of the guide frames.

The operating fluid is admitted into the cylinder at either end thereof through inlet ports 38 and 39. Suitable conduits lead from the ports of the cylinder to the source of operating fluid supply, located upon the tractor with valves disposed therein, not here shown, for manipulating the bucket into and out of dumping position. The top wall of the bucket is stiffened by a yoke 40, and a suitable cutter blade 41 is removably secured to the lower bottom portion of the bucket. The bucket is reinforced by suitable wearing plates or runners 42 secured to the bottom thereof.

Journal bearings 43 and 44 are slidably disposed at the rear end of the frame and a shaft 45 is journaled therein and runs transversely thereof. A plurality of supporting wheels 46 and 47 here shown as two in number, are positioned upon the shaft and a yoke 48 runs over the wheeled supports. The sides of the yoke are adapted for acting as guideways for the enlarged ends of the bearings 43 and 44, which 30 have bifurcated ends 43A and 44A. Cylinders 49 and 50 are disposed upon the oppositely disposed sides of the yoke and are rockably secured thereto by journal shafts 51 and 52 that are secured to the upper portion of the yoke and which 35 act as journals for 53 and 54. Piston rods 55 and 56 pass through stuffing boxes 57 and 58 that are secured to the cylinder heads 59 and 60 and the piston rods are secured to the wrist pins 61 and 62 that are journaled relative to the bearings 43 and 44. When the operating fluid is admitted within both of the cylinders, the yoke assembly is raised equally on both sides relative to the bearing blocks, but when the operating fluid is admitted into only one cylinder, 45 only one side of the yoke assembly is raised and the primary frame and the bucket are tilted to the desired angle in order to facilitate operations. The operating fluid is conducted into the cylinders through ports 63 and 64 and suitable conduits lead therefrom to the source of supply 50 mounted upon the tractor with suitable valves, not here shown, being provided for the admission of the operating fluids into the respective cylinders, as desired.

To facilitate the handling of the device upon a fill and other places, supporting shoes 65 and 66 are provided at the oppositely disposed sides 1 and 2 of the frame. This feature assists in operating the scraper on soft material, or when the wheels lose support. A reinforcing strut 67 connects the shaft 45 with the yoke structure. A bell crank operating lever 68 is rockably supported upon a journal shaft 69 disposed through the vertical terminal end 7. A locking bar 71 is 65 fixedly secured to the lever portion of the bell crank operating lever 68 and is in registerable alignment with the locking pawls 70, extending outwardly from the ends of the bridle links, that are secured to the lower portion of the yoke 28. When the locking pawls 70 contact the upper portion of the locking bar 71, a locking engagement results, wherein the bridle members are fixedly positioned relative to the whole assembly including the cylinder assembly to the locking bar 71. 75

The bell crank lever 68 has a reacting element 72 secured to its free bell crank end, whose purpose is to normally maintain the locking bar itself relative to the locking pawls 70. When it is desired to release the locking pawls from the locking bar, operating lever 68 is manipulated. The bridle links are released from locked position, when it is desired to maneuver the bucket into dumping position.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What we claim is:

1. In a device of the class described, the combination of a pair of side frames made of structural channels, spaced apart at the rear and converging in a goose neck at the front, a common yoke adapted for supporting the two frames at their front ends, means for journaling the yoke relative to a common draw bar support, a bucket disposed between the side frames having cheek plates disposed at the oppositely disposed sides thereof, a pair of roller bearings disposed upon the oppositely disposed side of the bucket and secured thereto and adapted for being manipulated within the channelways of the side frames, cam slots disposed within the cheek plates and bearing blocks mounted within the channels of the side frames having roller bearings adapted for engagement within the cam slots disposed in the cheek plates, bridles secured to the walls of the bucket and adapted for being manipulated by a fluid pressure means, a shaft disposed transversely of and at the rear of the frame bearing blocks disposed about the shaft, said bearing blocks being slidably disposed relative to the rear ends of the frame, supporting rollers disposed upon the shaft, and means for raising either end of the shaft

for transversely tilting the bucket and the frame.

2. In a device of the class described, the combination of a structural frame, a bucket adapted for being tiltably mounted within the frame, fluid pressure means for tilting the bucket longitudinally of the frame, a shaft disposed at the rear end of the frame supporting rollers mounted upon the shaft, and fluid pressure means for independently raising either or both sides of the frame relative to the shaft for transversely tilting the bucket relative to the horizontal.

3. In a device of the class described, the combination of a frame, means for detachably attaching the frame to a tractor, a bucket tiltably mounted within the frame, fluid pressure means for placing the bucket into dumping position, and into filling position, a shaft journaled relative to the frame, and fluid pressure means for raising the frame relative to the shaft and for tilting the frame transversely relative to the shaft, and supporting rollers mounted upon the shaft.

4. In a device of the class described, the combination of a structural frame, a bucket rockably mounted relative to the frame, manually operable fluid pressure means for placing the bucket into cutting, filling and into dumping position, a shaft disposed transversely of the frame and at the rear thereof, one or more rollers mounted upon the shaft, and fluid pressure means adapted for selectively raising the ends of the shaft relative to the frame.

5. In a device of the class described, the combination of a fabricated structural frame, a bucket mounted within the frame and adapted for being manipulated into filling position and into dumping position by a fluid under pressure, a shaft disposed transversely of the rear of the frame, supporting rollers mounted upon the shaft and independent fluid pressure means adapted for being manipulated from a remote control for raising and lowering each end of the shaft independently.

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