April 1, 1952 W. E. MORGAN 2,591,278

ADJUSTMENT FOR TRACTOR MOUNTED SCOOP TYPE DITCHERS

Filed July 23, 1948 2 SHEETS--SHEET 1

Fig. 3.

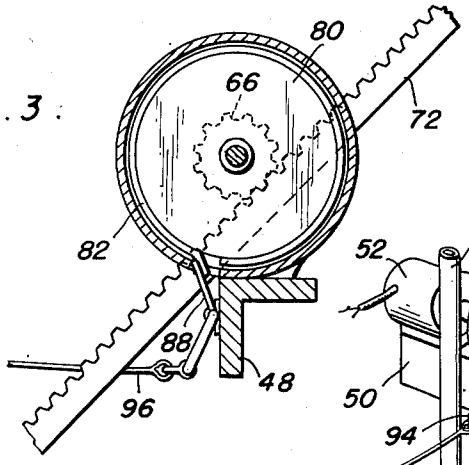
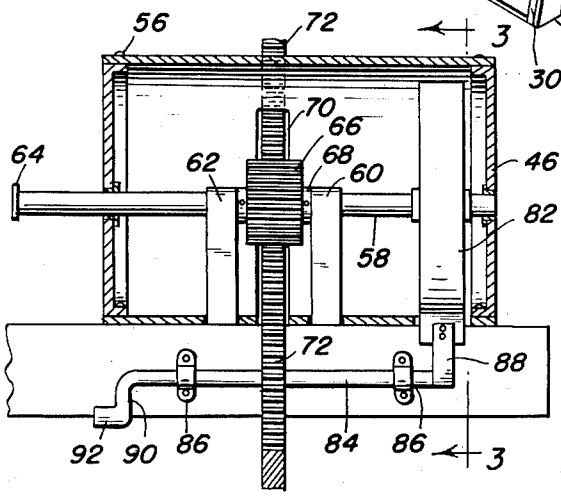


Fig. 1.

Fig. 4.



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Fig. 2.

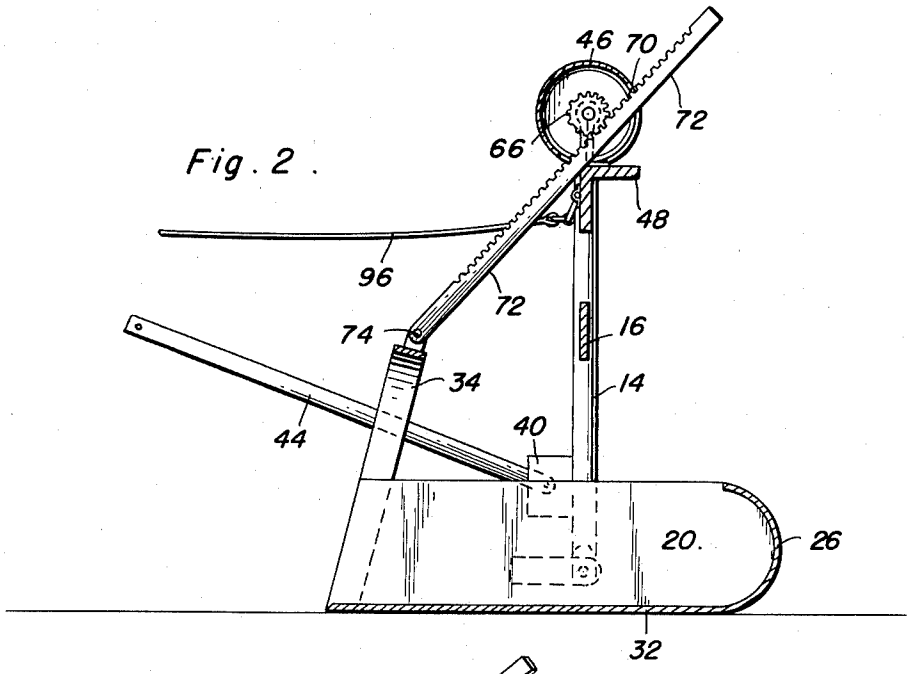
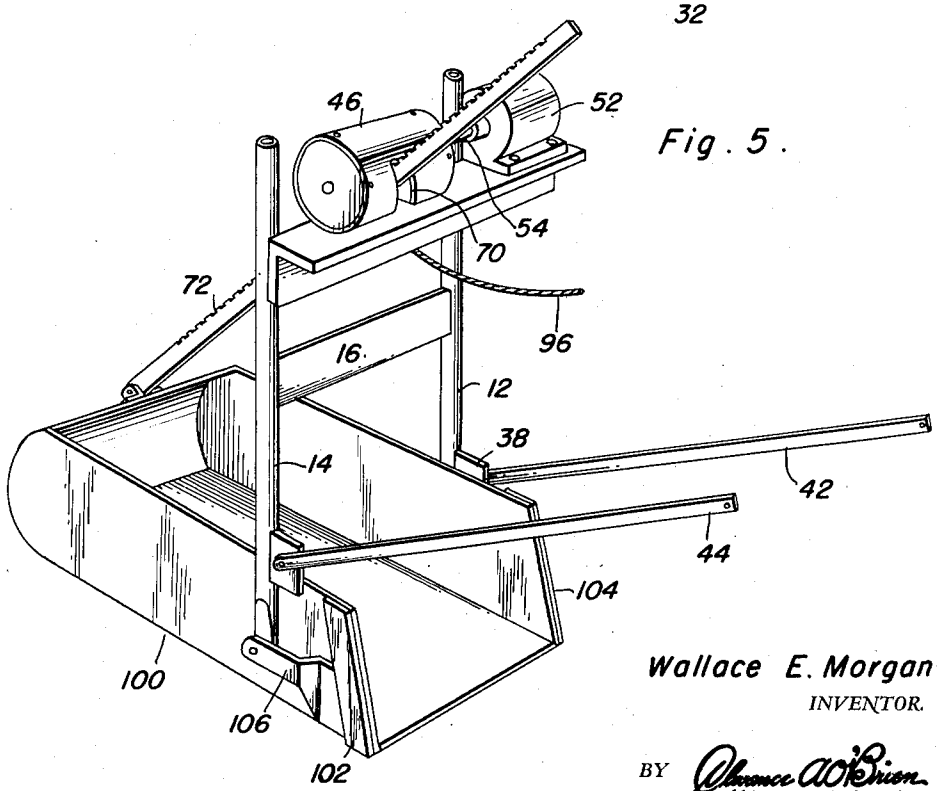


Fig. 5.



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ADJUSTMENT FOR TRACTOR MOUNTED SCOOP TYPE DITCHERS

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2 Claims. (Cl. 37—118)

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This invention relates to a tractor mounted scoop type ditcher, which is particularly designed for use with a power unit for digging trenches for tile, sewers, water mains, gas mains and the like and has for its primary object to form a straight trench or ditch.

Another important object of this invention is to provide separate operating means for the bucket of the ditching machine, the operating means being mounted on the bucket structure and functioning to control the angular positioning of the bucket.

Another object of this invention resides in the provision of means for moving the bucket in a vertical and horizontal direction and for tilting the bucket about a horizontal axis, so that the bucket can be unloaded or dumped at any point in the circle of travel or can be hoisted and still retain its full load, thus rendering itself useful for the loading of earth or other materials in cars, trucks or bins.

Another important object of this invention resides in a provision of means for controlling the angular position of the bucket, which is tiltably and pivotally mounted between a pair of lifting and supporting arms.

These and ancillary objects are attained by this invention, preferred embodiments of which are set forth in the following description and illustrated in the accompanying drawings, wherein:

Figure 1 is a view in perspective of a tractor mounted scoop type ditcher or dipper, constructed in accordance with the principles of this invention;

Figure 2 is a vertical sectional view of this invention, showing some of the elements in elevation;

Figure 3 is an enlarged sectional view, taken substantially on the transverse plane of line 3—3 of Figure 4;

Figure 4 is a sectional view taken through the control box mounted between the upright arms and disclosing the means provided for tilting the bucket about a horizontal axis, and;

Figure 5 is a view in perspective of another embodiment of this invention.

Referring now more particularly to the drawings, wherein similar characters of reference designate corresponding parts throughout, this invention generally designated by the character reference 10 comprises a pair of parallel tubular supporting and raising arms 12 and 14 joined by a transverse slat or brace bar 16. The supporting arms 12 and 14 are adapted to tiltably and

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pivotally support a bucket 18 at one end and are operatively associated with the power lift mechanism or unit of a power unit, such as a conventional tractor, at the opposite end. Thus, through the actuating agents, the supporting arms 12 and 14, the bucket 18 can be raised and lowered by the power lift mechanism of the tractor and can be moved from point to point raised in operative position, with respect to the ground. The bucket 18 consists of a pair of parallel sides 20 and 22, having opposed arcuate ends 24 which are joined by an inwardly curved or arcuate end section 26. The opposite end of the bucket is open and the sides 20 and 22 terminate in bevel edges 28 and 30, to the lower edge of which is secured a bottom section 32. An excavating lip or rim 34 is secured around the sides 18 and 20 terminating at the bottom 32, the forward edge of the rim or lip being flush with the terminating edge of the sides of the bottom. The rim 34 is substantially U-shaped and extends in arched formation above the open end in alignment with the bevel edges 28 and 30, as seen in Figure 1. The bucket 18 is pivotally supported by the lower ends of the arms 12 and 14 by means of a pair of brackets 35, which are suitably apertured to receive a pivot pin 36 extending through the bevel edges of the arms.

A pair of extending apertured ears 38 and 40 are formed on the arms, adjacent the pivot point 36 and are adapted to support a pair of extending bracing bars 42 and 44. The extending ends of the bracing bars are pivotally attached to the tractor and enables the bracing bars to serve the function of moving the excavating lip and the bucket in a straight line to form an even and straight trench and also, to brace the arms for raising and lowering the bucket.

Suitable means is provided for tilting the the bucket 18 about a horizontal axis of the pivot point 36 and comprises a control box 46, which is mounted upon an angle iron 48. The angle iron 48 is suitably secured to the bars 12 and 14 and has one end 50 extending or projecting outwardly from the arm 14, with the other end terminating at the arm 12. Mounted on the extending end 50 of the support 48 is a conventional electrical motor 52, which is reversible, and has an extending armature shaft 54. Suitably journalled in the control box 46, which may be of cylindrical or rectangular shape and which is formed from suitable material riveted as at 56, is a shaft 58. The shaft 58 is rotatably supported by a pair of bearing standards 60 and 62 and has an extending flange coupling end 64. The flange coupling 64

is complementary to a similar conventional coupling disposed on the armature shaft 54 of the motor 52, whereby the two shafts may be easily connected or disconnected.

A pinion gear 66 is keyed on the medial portion of the shaft 58 and spaced from the bearing standards 60 and 62 by means of washers or the like 68. Aligned slots or openings 70 are formed in opposite sides of the control box 46 and serve to receive an operating element, such as a rack bar 72, which is in meshing engagement with the pinion 66. The rack bar 72 is pivotally secured to the rim 34 by means of a pair of cooperating angle irons 74, which are riveted as at 76 to the rim.

Thus, it can be seen that the excavating end of the bucket 18 may be positioned in engagement with the ground, through the downward movement of the rack bar 72, actuated by the pinion 66. Upon reverse operation of the motor 52, the rack bar 72 would move upwardly and tilt the bucket about the horizontal axis 36.

Of course, suitable means is provided for braking the shaft and gear 66 and comprises a brake drum 80, which is secured on the shaft and which is actuated by a brake shoe 82. An operating arm 84 is secured to the vertical portion of the support 48 by U-shaped bearing brackets 86 and has an upwardly extending link 88 suitably secured, as by rivets or the like to the brake shoe. The opposite end of the operating rod 84 is laterally offset as at 90 in an opposite direction from the link 88 and terminates in a lateral extension 92. A clamp 94 is received around the extension 92 and secures flexible connecting means, such as a cable, rope or the like 96 to the operating arm, whereby the brake drum 80 may be braked by an operator sitting on the tractor or at any other spaced point from the operation of the bucket.

Attention is directed to Figure 5, wherein another embodiment of this invention is illustrated, the same being similar to that shown in Figure 1 insofar as the operating structure is concerned. However, the bucket 100 is pivoted adjacent its open end and the movement of the bucket at all times is controlled by the rack bar 72. The bucket shown in Figure 1, when discharging, discharges of its own weight, the open end of the bucket moving freely around the pivot point 36 towards a dumping angle.

The bucket 100 has a pair of reinforcing bars 102 and 104 disposed on the outer surfaces of the opposite sides and flush with the bevel ends of the sides, forming an excavating lip. The vertical standards 14 and 12 are pivotally secured to arms 106, which extend rearwardly from the brace bars 102 and 104.

Thus, to operate the bucket 100 in ground engagement or to release the material from the bucket, during the unloading operation, the power control unit must be employed.

With respect to the standards 12 and 14, it is to be noted that the same are adapted for attachment to the power unit or mechanism of a conventional tractor, while the extending ends of the brace bars 42 and 44 are pivotally mounted on the frame of a tractor or similar power unit

for controlling the path of travel of the bucket, when the same is lowered and raised relative to the ground. Also, it is to be noted that the buckets 100 and 18 are tiltably and pivotally mounted at the lower ends of the standards and move about a horizontal axis relative to an excavating and dumping position.

However, since many other purposes and objects of this invention will become apparent to those skilled in the art, upon a perusal of the foregoing description, and in view of the accompanying drawings, it is to be understood that certain changes may be effected thereof as coming within the spirit of the invention and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A drag scoop ditcher comprising a pair of supporting arms, a scoop pivotally mounted between the lower ends of said arms and having an open front end, a platform fixedly connecting the upper ends of said arms and having a housing mounted thereon, a gear and shaft rotatably mounted within said housing and having an end portion of said shaft extending from said housing, a prime mover mounted on said platform and connected to said shaft for driving the shaft and gear, a rackbar extending through an opening in said housing and engageable with said gear, an arch embracing the front end of said scoop and rigidly connected thereto, and one end of said rackbar being pivotally secured to said arch for effecting pivoting movement of said scoop on its pivotal mounting at the lower end of the supporting arms when said prime mover is actuated.

2. A drag scoop ditcher comprising a pair of supporting arms, a scoop pivotally mounted between the lower ends of said arms and having an open front end, a platform fixedly connecting the upper ends of said arms and having a housing mounted thereon, a gear and shaft rotatably mounted within said housing and having an end portion of said shaft extending from said housing, a prime mover mounted on said platform and connected to said shaft for driving the shaft and gear, a rackbar extending through an opening in said housing and engageable with said gear, and one end of said rackbar being pivotally secured to said scoop at one end for effecting pivoting movement of said scoop on its pivotal mounting at the lower end of the supporting arms when said prime mover is actuated.

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