

H. M. WATERHOUSE.
DITCHING MACHINE.
APPLICATION FILED SEPT. 18, 1916.

Patented July 23, 1918.
5 SHEETS—SHEET 1.

1,273,206.

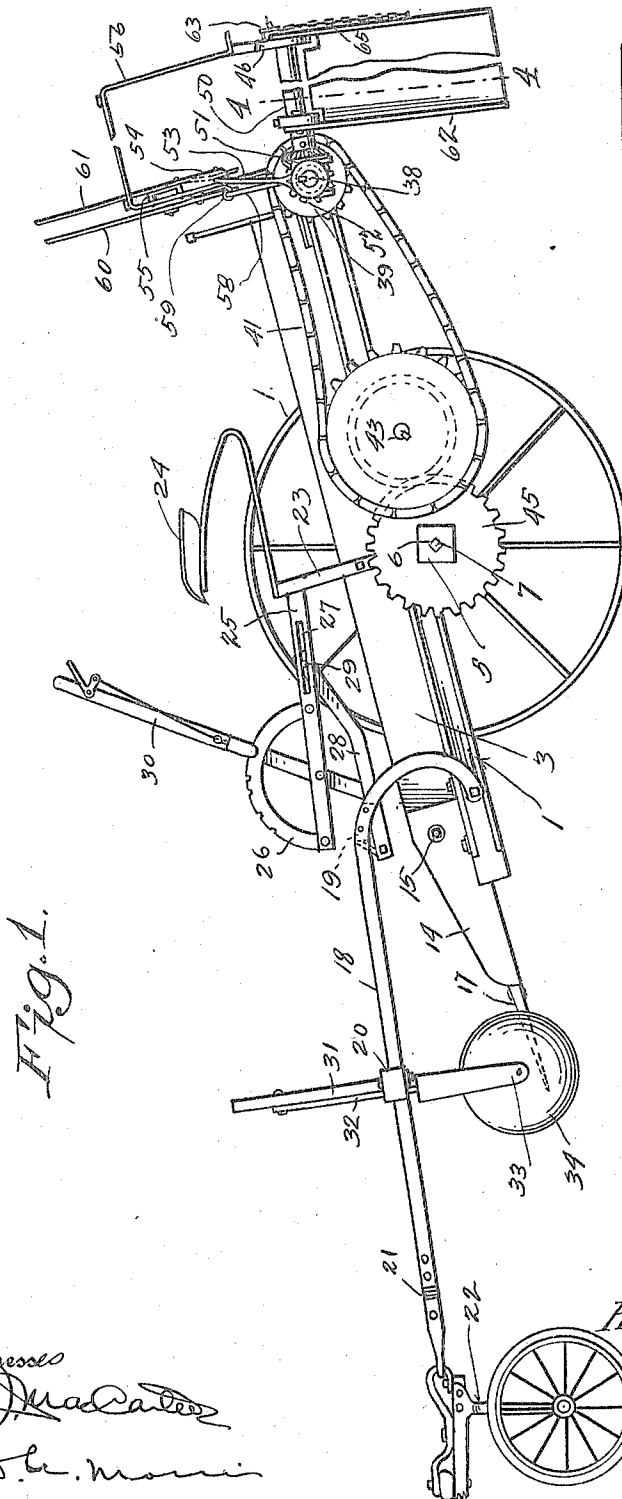


Fig. 1.

Witnesses
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H. M. Waterhouse

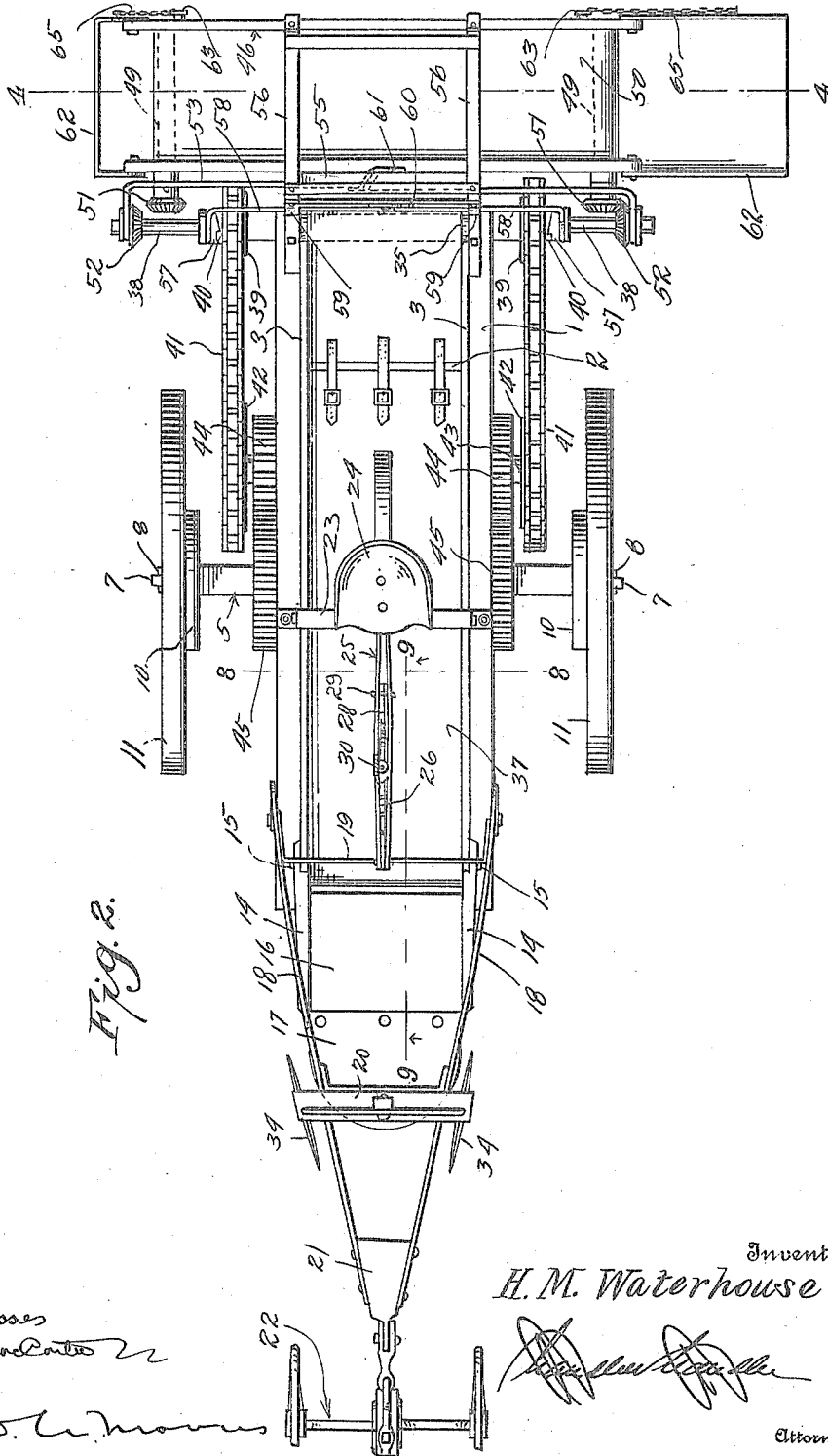
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5 SHEETS—SHEET 2.



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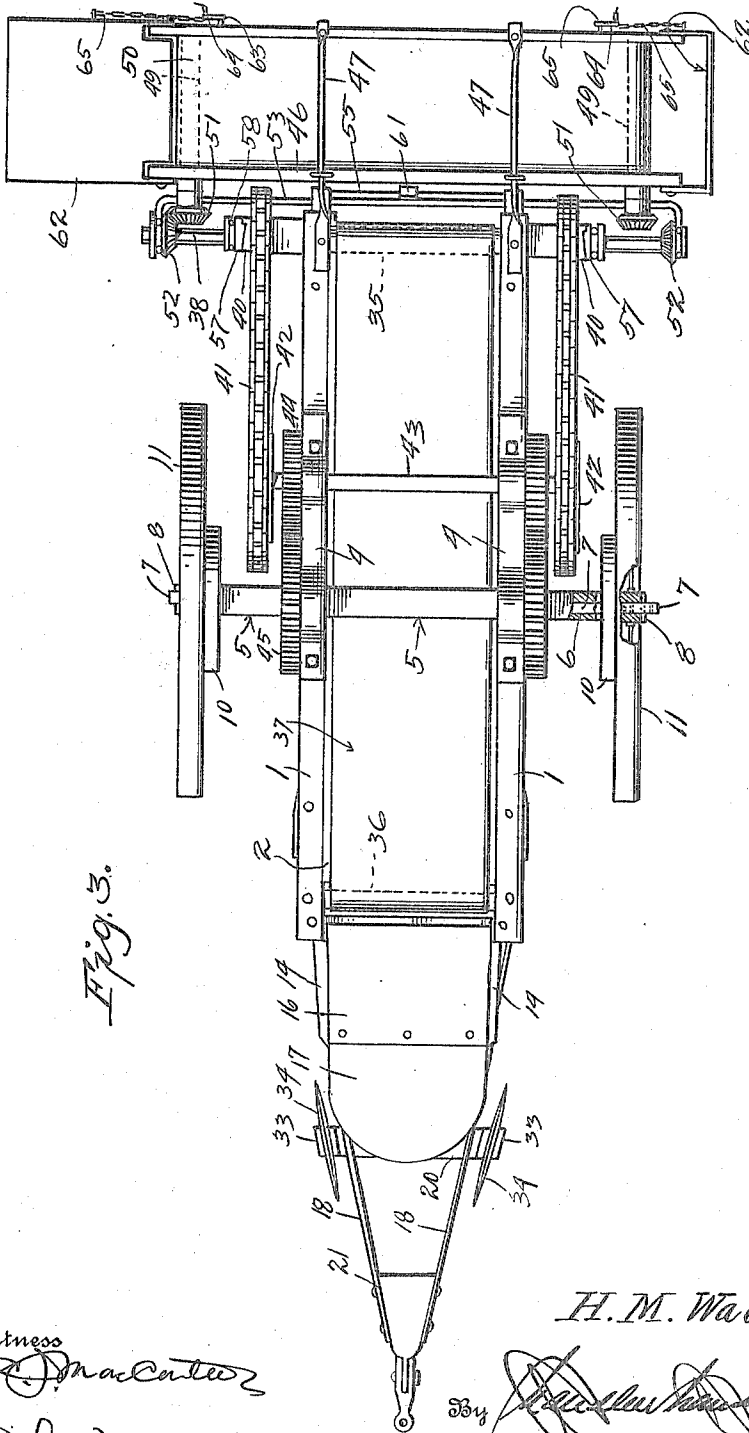


Fig. 3.

Witness

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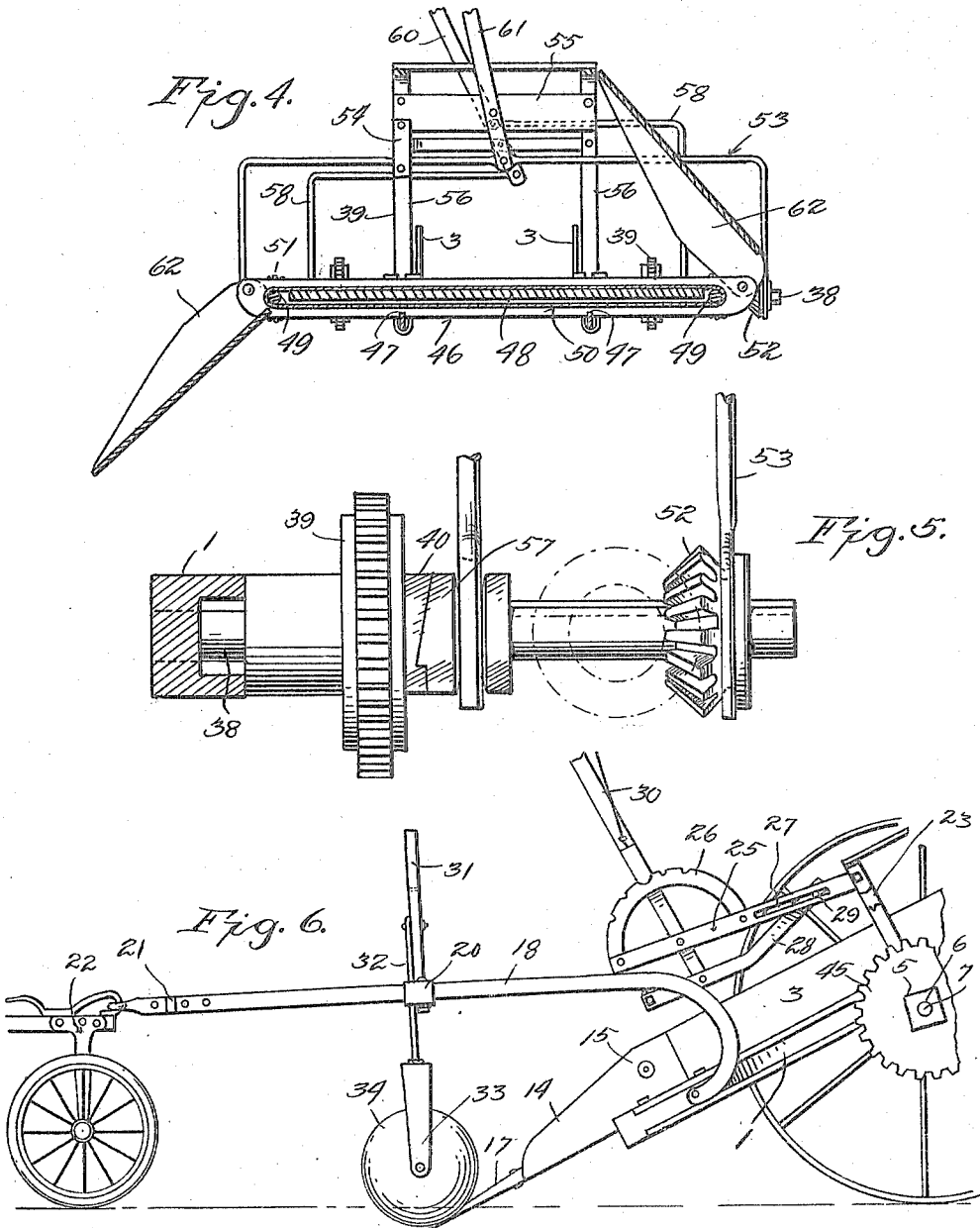
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5 SHEETS—SHEET 4.

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5 SHEETS—SHEET 5.

Fig. 8.

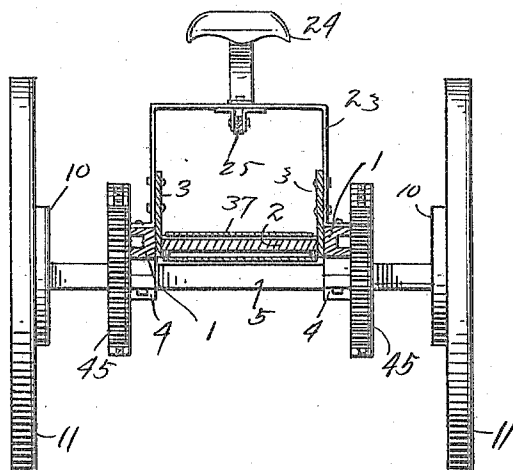


Fig. 9.

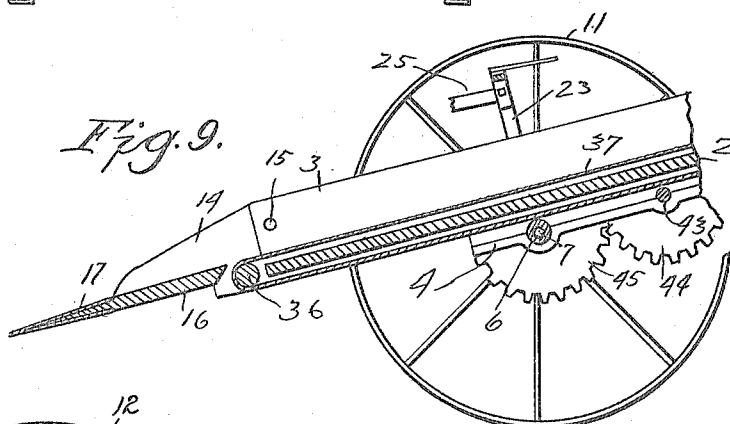


Fig. 10.

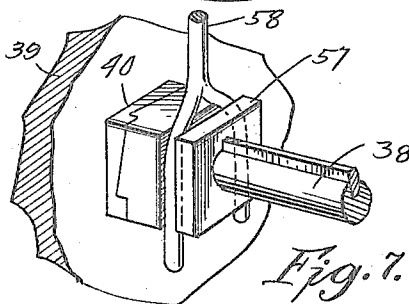
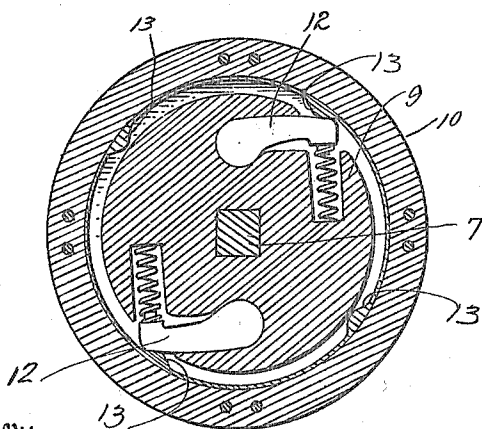


Fig. 7.

Inventor

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Witness

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UNITED STATES PATENT OFFICE.

HARVEY M. WATERHOUSE, OF HAYDEN, COLORADO, ASSIGNOR OF ONE-HALF TO
ALBERT G. KIMBALL, OF HAYDEN, COLORADO.

DITCHING-MACHINE.

1,273,206.

Specification of Letters Patent.

Patented July 23, 1918.

Application filed September 18, 1916. Serial No. 120,882.

To all whom it may concern:

Be it known that I, HARVEY M. WATERHOUSE, a citizen of the United States, residing at Hayden, in the county of Routt, State of Colorado, have invented certain new and useful Improvements in Ditching-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a ditching machine.

An object of the invention resides in the provision of a machine by means of which a ditch may be dug, the dirt lifted and ejected from either side of the machine.

A further object of the invention resides in so constructing the machine that the depth of the ditch may be regulated at the will of the operator.

A still further object of the invention resides in the provision of a generally improved structure of machines of this character.

With these and other objects in view, such as will appear as my description progresses, my invention comprises the combination and arrangement of parts as set forth in and falling within the scope of the appended claims.

In the drawing:

Figure 1 is a side elevation of a machine constructed in accordance with my invention with the rear wheel broken away and the plow raised from the ground;

Fig. 2 is a top plan view;

Fig. 3 is a bottom plan;

Fig. 4 is a section on line 4—4 of Fig. 2;

Fig. 5 is an enlarged detail of one of the clutches and one set of driving gears for the rear conveyer;

Fig. 6 is a fragmental side elevation showing the plow in its lowered position;

Fig. 7 is a perspective view of the clutch shown in Fig. 5;

Fig. 8 is a section on line 8—8 of Fig. 2;

Fig. 9 is a section on line 9—9 of Fig. 2, and

Fig. 10 is a detail of the wheel clutch.

The embodiment of the invention illustrated in the drawing includes a frame which consists of side bars 1 between which a rigid apron 2 extends. Side boards 3 extend upwardly from the apron from end to

end thereof. Mounted in a pair of bearing members 4 which are secured to the under sides of the side bars 1 of the frame are the circular portions of an axle 5 which is rectangular a greater portion of its length and has a longitudinally extending rectangular hole 6 therein, into which hole a pair of extensible axles 7 extend and are slidable being held in their various adjusted positions by pins 8 which extend through apertures in the axle 5 and through the extensible axles 7. Secured to the outer end of each of the extensible axles 7 is a disk 9 which rotates within a drum 10. These drums 10 are secured to the supporting wheels 11 and each of the disks 9 is provided with a plurality of spring pressed pawls 12 which engage lugs 13 within the adjacent drum 10 and thus cause the disk 9 and the drum, together with the adjacent wheel, to rotate together in one direction but permit the wheel to rotate independently of the disk in the other direction, that is to say when the machine is being drawn forwardly the rotation of the wheels will cause the rotation of the axle 5 but when the machine is being moved to the rear the wheels will rotate independently of the axle so that the driving mechanism, later to be described, will not be actuated. Extending from the forward ends of the side bars 1 are plates 14 which are secured to the side bars and the side boards 3 by bolts 15. A receiving board 16 extends between these plates 14 and the inner edge thereof terminates in spaced relation to the apron 2. Secured to the upper and lower faces of the receiving board 16 at the forward edge thereof are plates which are, at their edges, brought together and form a plow 17 that is detachably secured to the board 16. Pivoted to the side bars 1 is a pair of upwardly and forwardly extending bars 18 which are joined together by a cross bar 19 near the rear thereof and by a rectangular cross bar 20 near the front thereof. These bars 18 converge and are secured to a block 21, to which block a forward truck 22 is attached, which truck is provided with suitable draft means for the attachment of horses. Thus the forward end of the machine is supported.

In order that the plow may be raised or lowered with relation to the ground to any degree desired, I have secured to the side

boards 3 an inverted U-shaped frame 23 which carries an operator's seat 24 and to which an arm 25 is secured, which arm extends forwardly therefrom and is provided adjacent its forward end with a quadrant rack 26 and between the quadrant rack and the point of securement to the frame 23 with an elongated slot 27. A link 28 is pivoted to the cross bar 19 and is provided with a pin 29 which slides in the slot 27. A controlling lever 30 is pivoted to the link 28 between its ends and to the arm 25 and is provided with a spring pressed pawl which coöperates with the aforementioned quadrant rack. Thus as the lever 30 is operated it will, through the link 25 cause the plow 17 to be raised or lowered to the desired degree. Extending upwardly from the cross bar 20 is a standard 31 on which an inverted U-shaped frame 32 is adjustably mounted, the legs of which frame extend through the cross bar 20. On the lower ends of these legs bearing members 33 which carry colters 34 are revolvably mounted, with colters are located to the sides and slightly in advance of the plow 17. A roller 35 is mounted in the side bars 1 at the rear end of the apron 2 and a similar roller 36 is mounted at the forward end of the apron but to the rear of the receiving plate 16 and an endless conveyer belt 37 passes around these rollers and over the apron 2 so that the dirt which is lifted by the plow 17 will be carried rearwardly of the machine. The trunnions 38 of the rear roller 35 extend from the side bars 1 and on each of these trunnions a sprocket 39 is loosely mounted, which sprocket is provided with a clutch member 40. A chain 41 passes around each of these sprockets 39. These chains also pass around relatively larger sprockets 42 which are keyed to a shaft 43, which shaft is mounted in bearing members 4 which are carried by the side bars 1. Secured to this shaft 43 at the sides of the frame of the machine are gears 44 which mesh with relatively larger gears 45 which are keyed to the main axle 5. Thus when the machine is drawn forwardly and the wheels are clutched to the extensible axle 7 the axle 5 will be rotated and through the aforementioned gears, sprockets and chains the sprockets 31 will be rotated.

A frame 46 is secured to the rear of the main frame by brackets 47, which frame includes a transversely extending apron 48. A pair of rollers 49 is mounted in this frame 46 at the ends of the apron 48 and an endless conveyer belt 50 passes around these rollers immediately to the rear of the conveyer belt 37. Secured to one end of each of the rollers 49 is a beveled gear 51 which is adapted to mesh with a similar gear 52 carried by the trunnions 38. These gears 52 are slidable on the trunnions but rotatable therewith and are adapted to be alternately shifted into

and out of engagement with the gears 51. This shifting of the gears 52 is accomplished by means of a shifter arm 53, which arm is rigid and is connected to both of the gears 52 so that when one is shifted in one direction the other will be shifted in the opposite direction. This shifter arm 53 is supported by a block 54 which depends from a cross bar 55, which cross bar is carried by a rectangular upwardly extending frame 56. A pair of clutch members 57 which, are adapted to coöperate with the clutch members 40 on the sprockets 39, are rotatable with but slidable on the trunnions 38 and are shifted into and out of engagement with the clutch members 40 by means of shifter arms 58 which extend through guides 59 on the frame 56 and are connected to a lever 60 which is pivoted to the said frame 56. The arm 53 is connected to a controlling lever 61 which is pivoted to the cross bar 55. Thus the gears 52 together with the adjacent clutch members may be shifted into operative positions on either side of the machine so as to cause the conveyer belt 50 to travel in either direction desired. A chute 62 is pivoted to each end of the frame 46 and is adapted to be raised and lowered so that the dirt may be ejected from either side of the machine. Secured to the frame 46 adjacent to each of these chutes is a loop 63 into which a chain 65 is adapted to extend, which chain is secured to the adjacent chute and is thus adapted to maintain the chute in either its raised or its lowered positions.

Thus it will be seen that I have provided a machine by means of which ditches of various depths may be dug and have so mounted the wheels that they may be adjusted independently of each other with relation to the body of the machine in accordance with the requirements for the particular ditch being dug. Furthermore I have provided conveyers for raising the dirt and ejecting it from either side of the machine and have provided novel means for operating the conveyer and for raising and lowering the plow.

While I have illustrated and described a particular embodiment of my invention, it has merely been for the sake of convenience and I do not wish to be limited to the particular embodiment as it is obvious that numerous changes may be made in the details of construction without departing from the spirit of the invention or exceeding the scope of the appended claims.

What I claim is:—

1. In a ditching machine, the combination with a frame, of wheels pivotally supporting the same between its ends, a pair of bars pivoted to the forward end of the frame and extending upwardly and forwardly therefrom, a truck supporting the forward ends of the bars, a cross bar extending between

5 said first mentioned bars, a frame extending
upwardly from the first mentioned frame,
an arm extending forwardly from the last
mentioned frame and having a quadrant
rack on the forward end thereof and a slot
to the rear of the quadrant rack, a link con-
nected to the cross bar and having a pin
slidable in said slot and a lever pivoted to
the link and to the arm and having a spring
10 pressed pawl coöperating with the quadrant
rack.

2. In a ditching machine, the combination
with a frame, of wheels pivotally support-
ing the same between its ends, a pair of
15 bars pivoted to the forward end of the

frame, a second frame extending upwardly
from the first mentioned frame, an arm
extending forwardly from said second frame
and having a slot therein, a link connected
to said pair of bars and having slidable en- 20
gagement in said slot, a lever pivoted to said
link and said arm and means associated with
said lever for retaining the same in adjusted
positions.

In testimony whereof, I affix my signa- 25
ture, in the presence of two witnesses.

HARVEY M. WATERHOUSE.

Witnesses:

A. P. Wood,

B. J. HOFSTETTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."