

Oct. 9, 1923.

1,470,028

C. S. PARKER

DITCHING APPARATUS

Filed Oct. 23, 1922

Fig. 1--

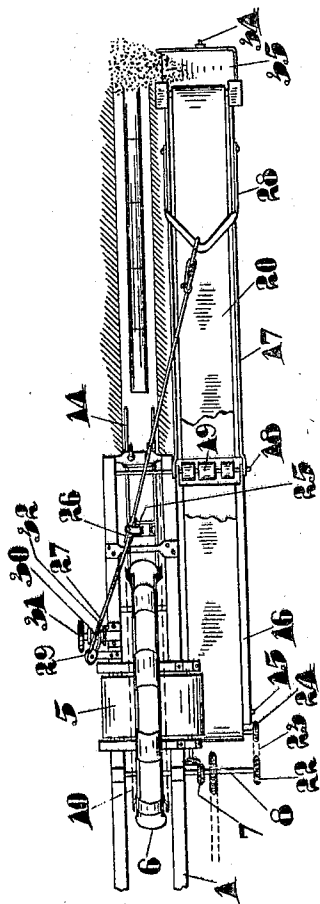


Fig. 2--

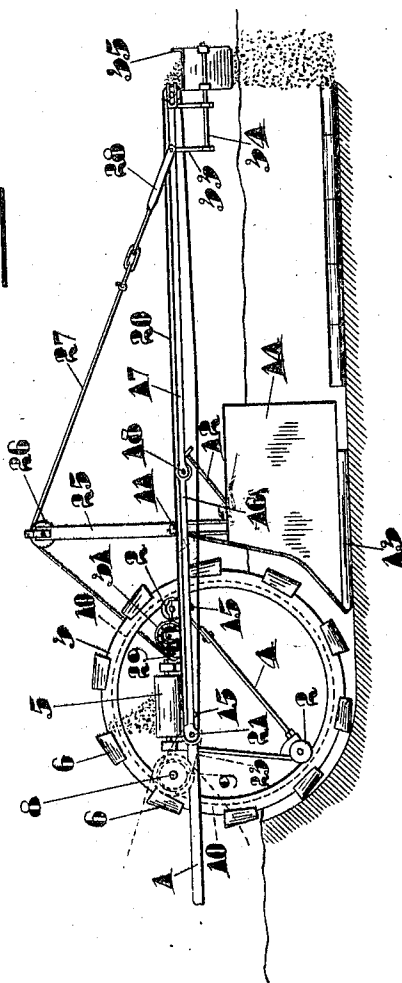
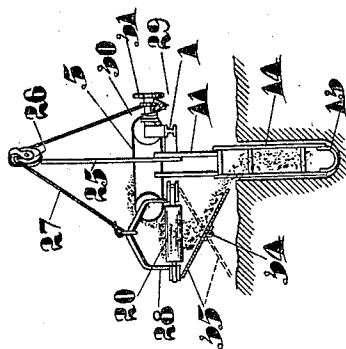


Fig. 3--



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DITCHING APPARATUS.

Application filed October 23, 1922. Serial No. 596,338.

To all whom it may concern:

Be it known that I, CALVIN S. PARKER, of the city of London, in the county of Middlesex, Province of Ontario, Canada, a subject of the King of Great Britain, have invented certain new and useful Improvements in Ditching Apparatus, of which the following is a specification.

This invention relates to ditching machine of the type in which a ditch is dug and the soil elevated by buckets travelling in a closed orbit, and in which a shoe is provided connected to the frame behind the orbit of the buckets adapted to smooth the trench bottom for the reception of drain tile, and my object is to devise means adapted for use with ditching apparatus of this type whereby the dug soil may be carried rearwardly and re-deposited in the ditch on top of the tile, thus saving the labor of filling in the soil as a separate operation after it has been deposited on the spill bank in the ordinary manner. A further object is to so arrange the apparatus that the dug soil may be deposited on the spill bank whenever conditions render it desirable.

I attain my object by means of the constructions hereinafter described and illustrated in the accompanying drawings in which—

Fig. 1 is a plan view of a ditching machine constructed in accordance with my invention;

Fig. 2 a side elevation of part of the same; and

Fig. 3 an end view partly in section.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is the frame on which the ditching wheel is journaled. While the method of journaling is immaterial as far as the present invention is concerned, I show a plurality of rollers 2 engaging the inner periphery of the rim 3 of the ditching wheel, said rollers being journaled on the frame 4 secured to the frame 1. The ditching wheel is thus spokeless and the transverse conveyor 5 may thus extend through the wheel to receive the excavated soil which drops from the buckets 6 of the ditching wheel when they reach the top. The transverse conveyor is driven by means of bevel gearing 7 from the shaft 8 journaled on the frame 1 and which serves to drive the ditching wheel through the medium of the pinion 9 which meshes with a

gear 10 formed on the ditching wheel. This shaft in practice is driven from the tractor which forms part of the complete machine, but which is not shown or described as it forms no part of the present invention.

Behind the ditching wheel the U-shaped standard 11 extends downwardly from the frame 1 and is braced by diagonal braces 12. To the lower end of this standard is secured the shoe 13 which serves to smooth the bottom of the ditch in readiness for the placing of the tile. This U-shaped standard also supports the box 14, which is open above and at the rear end and serves to maintain the side walls of the ditch until the tile can be laid.

All the parts heretofore described are old in the art and no claim is made thereto, my invention consisting in the mechanism I will now describe for the purpose of conveying the dug soil rearwardly to refill the ditch.

Extending laterally from the frame 1 are the frame members 15 to which is secured the forward part 16 of the back filler conveyor frame. The rearward part 17 of the back filler conveyor frame is hinged to the rear end of the forward part and on the hinge pin 18 are journaled one or more rollers 19. A conveyor belt 20 passes round rollers 21 at the forward end of the forward part of the back filler conveyor frame and the rear end of the rearward part thereof, the middle portion of the belt running over the rollers 19.

The conveyor belt 20 is driven from the shaft 8, which is provided with a sprocket wheel 22 engaging the sprocket chain 23, which meshes with a sprocket wheel 24 secured to the spindle of the forward roller 21 of the back filler conveyor belt.

The pivoted rearward part of the back filler conveyor frame is supported in the following manner. A post 25 is extended up from the U-shaped standard 11 so as to form in effect an upward extension thereof. At the upper end of this post is journaled a guide pulley 26. Over this pulley extends a wire stay 27, the rearward end of which is connected with a yoke 28 connected with the sides of the rearward part of the back filler conveyor frame 17. Forward of the post 25 the stay passes round a guide pulley 29 journaled on the frame 1, thence passing to a drum 30 journaled on the frame 1 and provided with a hand wheel 31 by means of

which it may be rotated. A pawl and ratchet device 32 is provided whereby the drum may be locked as adjusted.

At the rear end of the part 17 of the back filler conveyor frame are secured the forwardly extending brackets 33 carrying a spindle 34 forming an axis suitably connected to the under side of the tilting chute 35. It will be noted that the axis of the chute is located below the middle of the chute and that the chute is suitably positioned to receive the discharge from the back filler conveyor. With this arrangement the chute tends to remain tilted either in one direction or the other so that the soil delivered from the back filler conveyor may either be discharged into the ditch as indicated in full lines in the drawings or tilted to the position shown in dotted lines in Fig. 3 to discharge the dug soil on to the spill bank. The tilting chute is so positioned that its ends will engage the sides of the back filler conveyor frame to limit the tilting movement in either direction.

From the above description it will be seen that the back filling device is supported entirely from the shoe 13 through the medium of the frame 1, and is so balanced that no undue strains are imparted to the frame or other parts of the digger. By suitably elevating the rearward part of the conveyor through the medium of the stay 27 and by suitably tilting the chute 35, the dug soil may be deposited in any position desired within the limits of the adjustment. The extent to which dug soil is elevated after passing from the digging wheel being considerably less than when the soil is elevated and deposited on the spill bank as is now commonly done, the power consumed in the operation of the device is no greater than in the old type of machine and the labor and expense of back filling as a separate operation is entirely avoided.

What I claim is:—

1. In a ditching machine, the combination of a frame; ditch digging and soil elevating apparatus carried thereby; means for discharging the dug soil laterally; a trench bottom shoe; a standard rigidly supporting the shoe from the frame; a rearwardly extending back-filler conveyor frame having its forward part connected to one side of the frame; a post extending up from the standard aforesaid; a stay connected to the rear end of the conveyor frame extending over the post and connected at its forward end to the frame; and a suitably driven endless belt carried by the said conveyor frame adapted to receive the laterally discharged soil and convey it rearwardly.

2. A ditching machine, constructed as set

forth in claim 1 in which the rear part of the conveyor frame is hingedly connected to the forward part and the stay is adapted to raise and lower the rear part of the conveyor frame.

3. In a ditching machine, the combination of a frame; a ditch digging and soil elevating wheel carried thereby and adapted to discharge within its own periphery; means for receiving the soil dropped from the wheel and discharging it laterally; a trench bottom shoe; a standard rigidly supporting the shoe from the frame; a rearwardly extending back-filler conveyor frame suitably supported at one side of the frame and vertically braced from the trench bottom shoe; a suitably driven endless belt carried by the said conveyor frame adapted to receive the laterally discharged soil and convey it rearwardly; and a laterally directed chute beneath the rear end of the conveyor.

4. In a ditching machine, the combination of a frame; a ditch digging and soil elevating wheel carried thereby and adapted to discharge within its own periphery; means for receiving the soil dropped from the wheel and discharging it laterally; a trench bottom shoe; a standard rigidly supporting the shoe from the frame; a rearwardly extending back-filler conveyor frame suitably supported from the frame, the rear part of the conveyor frame being hingedly connected to the forward part; means for raising and lowering the rear part of the frame braced from the trench bottom shoe; a suitably driven endless belt carried by the said conveyor frame adapted to receive the laterally discharged soil and convey it rearwardly; and a laterally directed chute beneath the rear end of the conveyor.

5. In a ditching machine, the combination of a frame; ditch digging and soil elevating apparatus carried thereby; means for discharging the dug soil laterally; a trench bottom shoe; a standard rigidly supporting the shoe from the frame; a rearwardly extending back-filler conveyor frame having its forward part connected to one side of the frame; a post extending up from the standard aforesaid; a stay connected to the rear end of the conveyor frame extending over the post and connected at its forward end to the frame; a suitably driven endless belt carried by the said conveyor frame adapted to receive the laterally discharged soil and convey it rearwardly; and a laterally directed chute beneath the rear end of the conveyor.

Signed at London, Can. this 10th day of Oct. 1922.

CALVIN S. PARKER.