# W. H. MINTER.

## APPARATUS FOR EXCAVATING DITCHES.

No. 195,833. Patented Oct. 2, 1877.

Fig. 1.

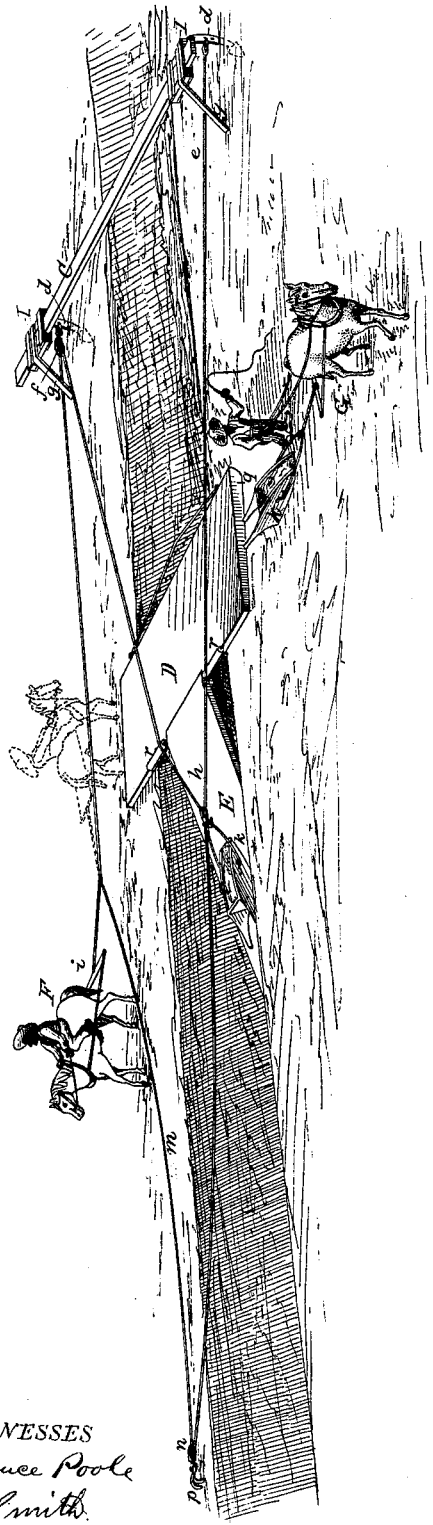

Fig. 2.

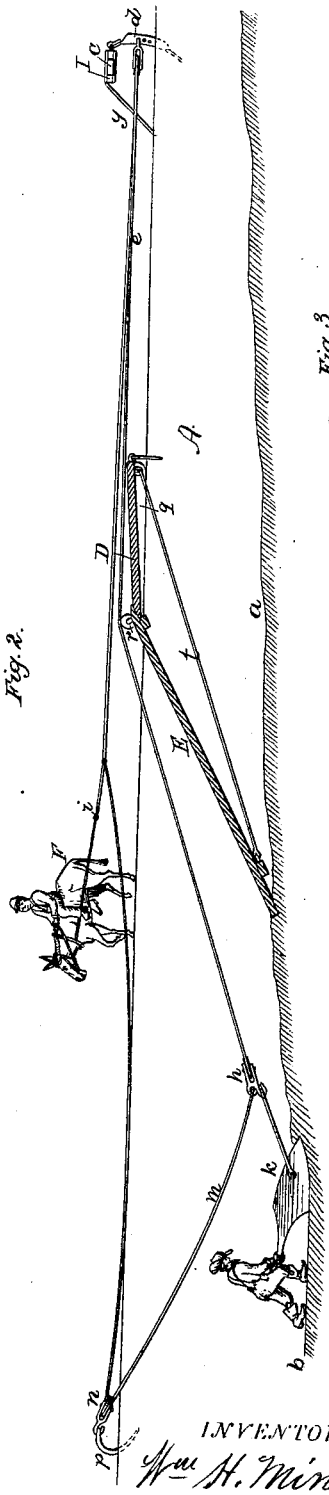

Fig. 3.

WITNESSES

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WILLIAM H. MINTER, OF LONDON, OHIO.

## IMPROVEMENT IN APPARATUS FOR EXCAVATING DITCHES.

Specification forming part of Letters Patent No. **195,833**, dated October 2, 1877; application filed May 1, 1877.

*To all whom it may concern:*

Be it known that I, WILLIAM H. MINTER, of London, Madison county, State of Ohio, have invented a new and useful Improved Apparatus for Excavating Ditches, which improvement is fully set forth in the following specification and accompanying drawing.

The particular purpose of this invention is the easy clearing out and restoration of old drainage-ditches, though it may, if required, be employed in the making of new ditches.

Open drainage-ditches soon become obstructed by matters which are washed into them by rain blown in by the winds and brought in with the water from other communicating ditches, so that their general usefulness is abridged or altogether destroyed. The restoration of such ditches is nearly as troublesome as the original opening; but by my invention a great portion of the trouble is removed, and the restoration is rendered comparatively easy and inexpensive.

My invention consists in an adjustable anchor-bar to sustain the required pulleys, a movable platform to extend across the ditch, an inclined platform extending from the cross-platform down into the ditch, and suitable road shovels or scrapers to transport the dirt from the bottom of the ditch to said platform.

That others may fully understand my invention, I will particularly describe it, having reference to the accompanying drawing, wherein—

Figure 1 is a perspective showing my apparatus in use. Fig. 2 is a longitudinal section of the same. Fig. 3 is a front elevation of the scraper or shovel.

A is the side wall of the ditch. *a* in Fig. 2 represents the present bottom of deposit brought into the ditch, as set forth. *b* is the proposed bottom grade.

C is a timber or anchor-bar sufficiently long to reach across the ditch and rest upon the firm banks on either side. This bar is provided with arms *d* attached at each end, and said arms are provided with anchor-flukes at their ends, so as to penetrate and hold in the ground, as shown. To these stocks *d* I prefer to attach the pulley rope and block *f* for operation, as hereinafter described; and in order to keep the stocks *d* in an upright position, and give them support both above and below the point of attachment to said pulley, I place upon the bar C the legs *g g*, which project forward and rest upon the ground and maintain the said bar in a position above the line of strain, as shown.

A platform, D, is also laid across the ditch, some distance in advance of the bar C, and one end of an inclined slide-board, E, is secured to the front edge of the said platform, while the other end rests in the bottom of the ditch.

One end of the rope *e* is permanently attached to one of the anchor-stocks *d*, as shown; said rope then leads off over the platform D and down the slide-board into the ditch, and, having been passed through a hook-block, *h*, it is led back to the block *f*, attached to the other anchor-stock, whence it passes again back along the bank of the ditch, and is secured to the single-tree *i*, to which a draft-animal, F, is attached.

The hook-block *h* is attached to the bail of the shovel or scraper *k*, and as the animal walks along the bank of the ditch away from the platform D, the shovel *b*, with its load, will be drawn along the ditch bottom and up the slide-board to the platform. An attendant then unhooks the block *h*, and attaches a draft-animal, G, whereby the shovel is drawn away to any desired point, and returned to the bank of the ditch opposite the point of excavation, where it is thrown down to the attendant in the ditch.

To return the block *h* after being detached from the shovel *k*, a rope, *m*, is joined to the rope *e*, at the point of attachment of the single-tree *i*, and said rope *m* is then led along the bank to a block, *n*, held by an anchor, *p*, and thence led back and secured to the block *h*. Then, after the shovel *k* has been drawn up to the platform D and detached, the animal F is turned about and retraces his steps, as shown in dotted lines Fig. 1, and thereby draws the block *h* down to the bottom of the ditch, where, by that time, the attendant has another shovel ready in position for application of the block *h*. In this way, by using alternately two or more shovels, the ditch may be rapidly cleaned and the excavated material moved away to any desired distance.

The deposit *a* may first require loosening up with a plow, and this can be operated by the

anchored pulleys and rope, as above described, when it could not be operated by any application of animal-power direct.

When the restored bottom *b* has approached inconveniently near to the foot of the slide-board E, the block *h* may be attached to the platform, and both platform and slide-board drawn back toward the anchor-bar C; and to facilitate this removal the ends of the platform are mounted upon runner-cleats, which slide upon the ground as the platform is drawn back.

Friction-rollers *r* may be placed on the edges of the platform D to prevent the rope *e* from cutting the same.

In order to accommodate ditches of different widths, it is preferable to make the anchors *d* adjustable upon the bar C, because it is not advisable to set the anchors farther from the edge of the ditch than is necessary. To accomplish this result I secure the anchor to a head, I, arranged to slide upon the bar C, so that it can be adjusted toward or from the end and fixed at such point as may be desired. The leg *g* is also secured to said head, so that said leg and the anchor *d* are simultaneously adjusted.

It is also advantageous to hinge the stock of the anchor *d* to the head I, as shown, so that said stock may be restored to an upright position by drawing the bar C backward and giving the legs *g* a new footing without resetting the anchors.

The inclined slide-board E has a string or stay-chain, *t*, stretched from its lower end to the forward edge of the platform D, as shown in Fig. 2, and the effect of this arrangement is to bind said platform and slide-board more firmly together when the loaded shovel is resting upon them. It also enables the slide-board to act as a brace to support the forward edge of said platform, to keep it from sagging under the weight which it has to bear.

The shovel K is made with flaring sides, as shown in Fig. 3, and said sides have the same inclination as that proposed for the sides of the ditch, so that the sides of the ditch may be trimmed and made of uniform slope without special treatment, but merely by the act of excavating the bottom.

Having described my invention, what I claim as new is—

1. The anchor-bar C, provided with the anchors *d* and legs *g*, for the purpose set forth.

2. The anchor-bar C, provided with the sliding heads I and the arms *g*, combined with the anchors *d*, hinged to the said heads, substantially for the purpose set forth.

3. The platform D, adapted to extend across the ditch and rest upon the banks thereof, combined with the inclined slide-board E, secured to one edge of the platform, and adapted to extend thence down into the ditch, all constructed substantially in the manner and for the purpose set forth.

4. The platform D, adapted to extend across the ditch and rest upon the bank thereof, and provided with the inclined slide-board E, combined with runners *q* across the ends of said platform, to support the same and enable it to be advanced along the side of the ditch, as set forth.

5. The platform D, extending across and resting upon the sides of the ditch, and provided with an inclined slide-board, E, attached to the rear edge of said platform, combined with the stay-chain *t*, extending from the rear end of the inclined slide-board to the front edge of the said platform, as and for the purpose set forth.

6. The anchors *d*, platform D, and inclined slide-board E, combined with the anchor *p* and traversing tackle-and-pulley system *e h n*, substantially as shown and described, whereby the excavation is effected in the manner essentially as set forth.

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Witnesses:

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