

(No Model.)

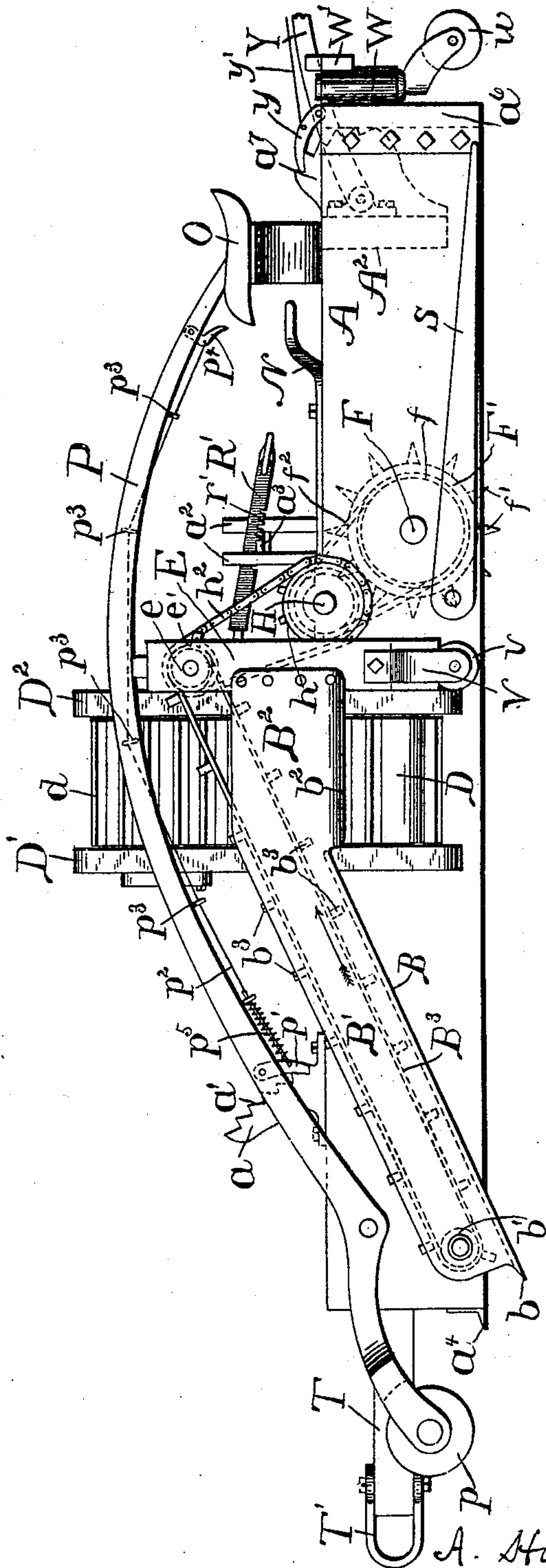
3 Sheets—Sheet 1.

A. HARDESTY.  
DITCHING MACHINE.

No. 582,421.

Patented May 11, 1897.

FIG. 1.



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(No Model.)

3 Sheets—Sheet 2.

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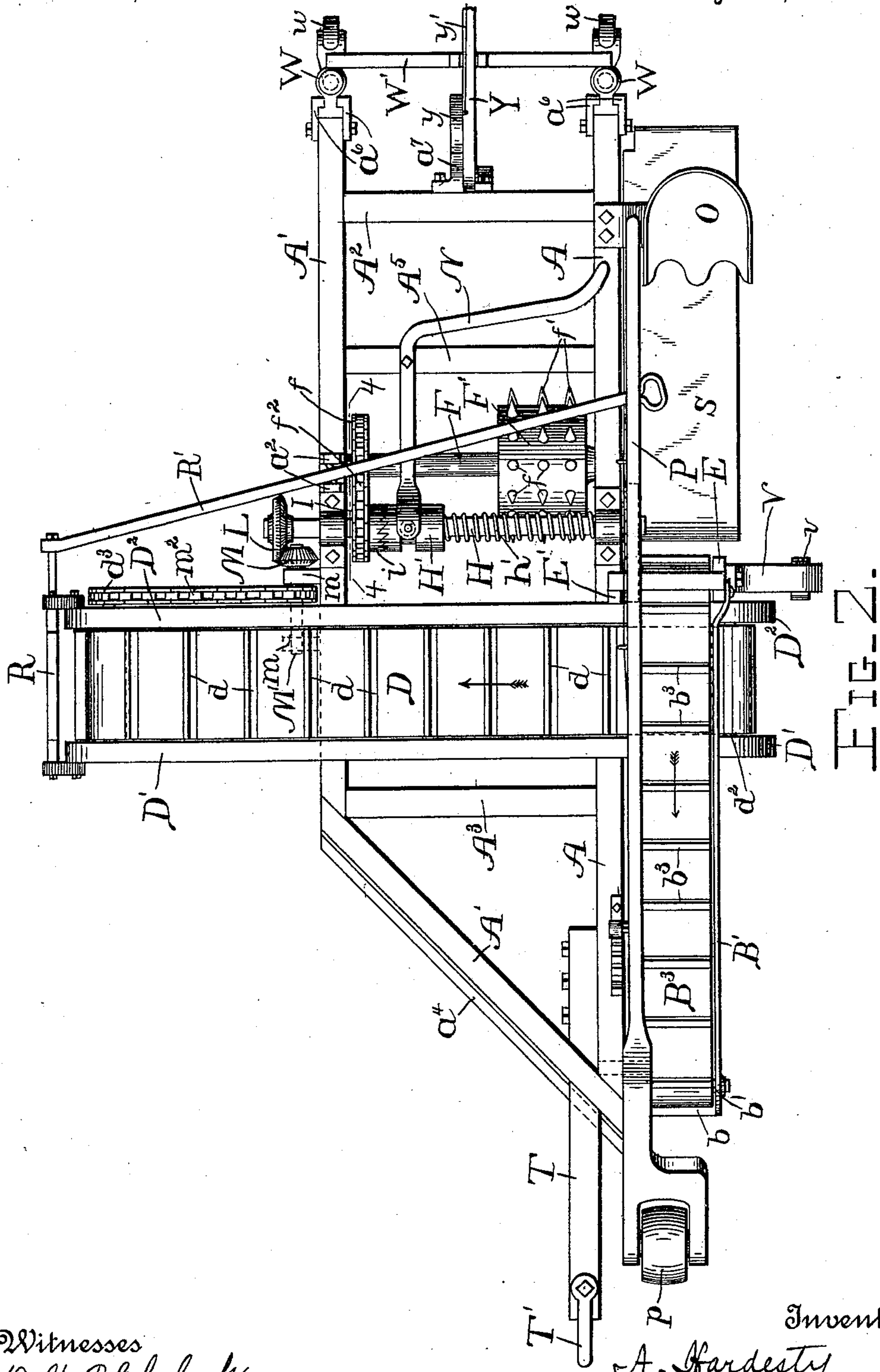


FIG. 2.

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(No Model.)

3 Sheets—Sheet 3.

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FIG. 3.

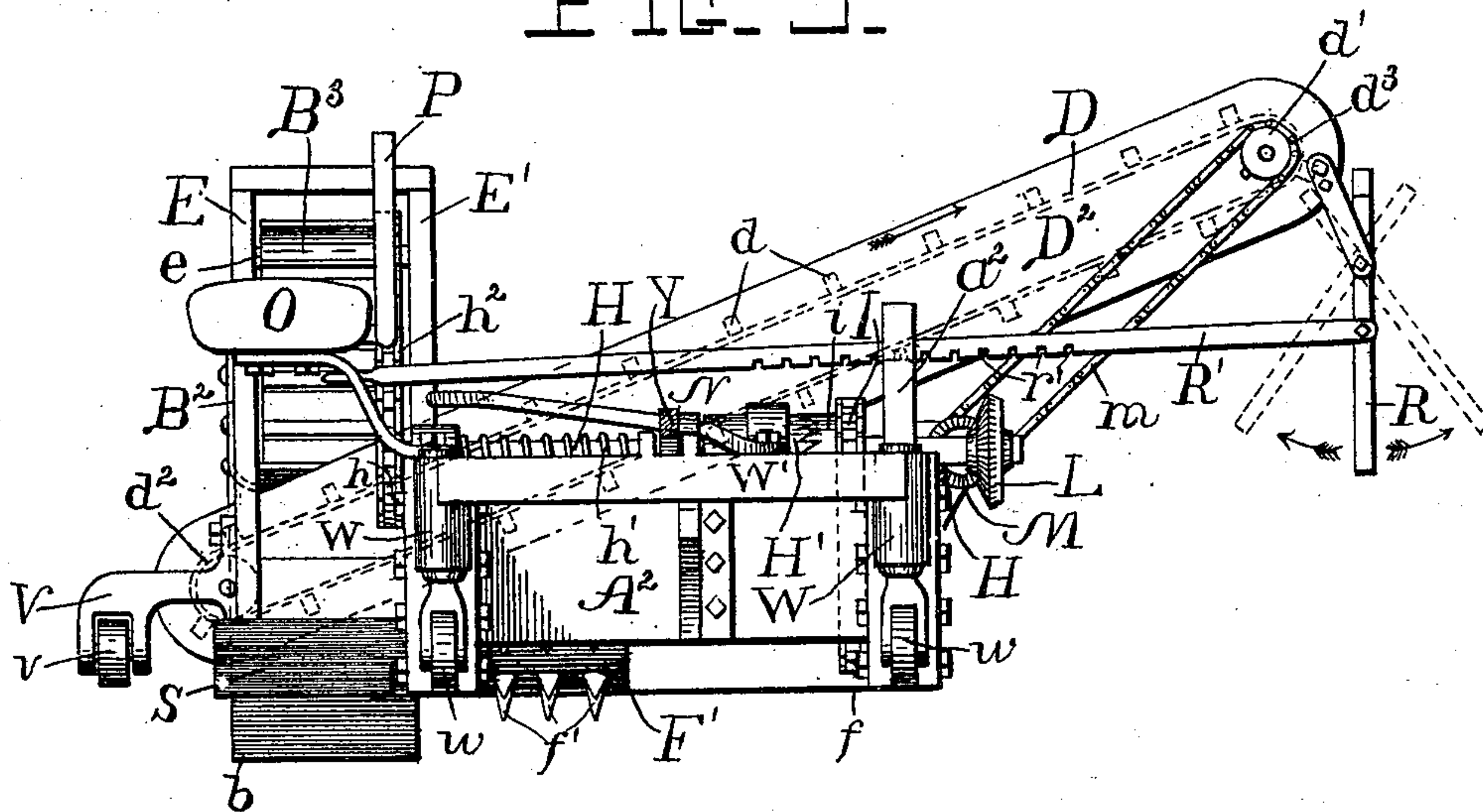
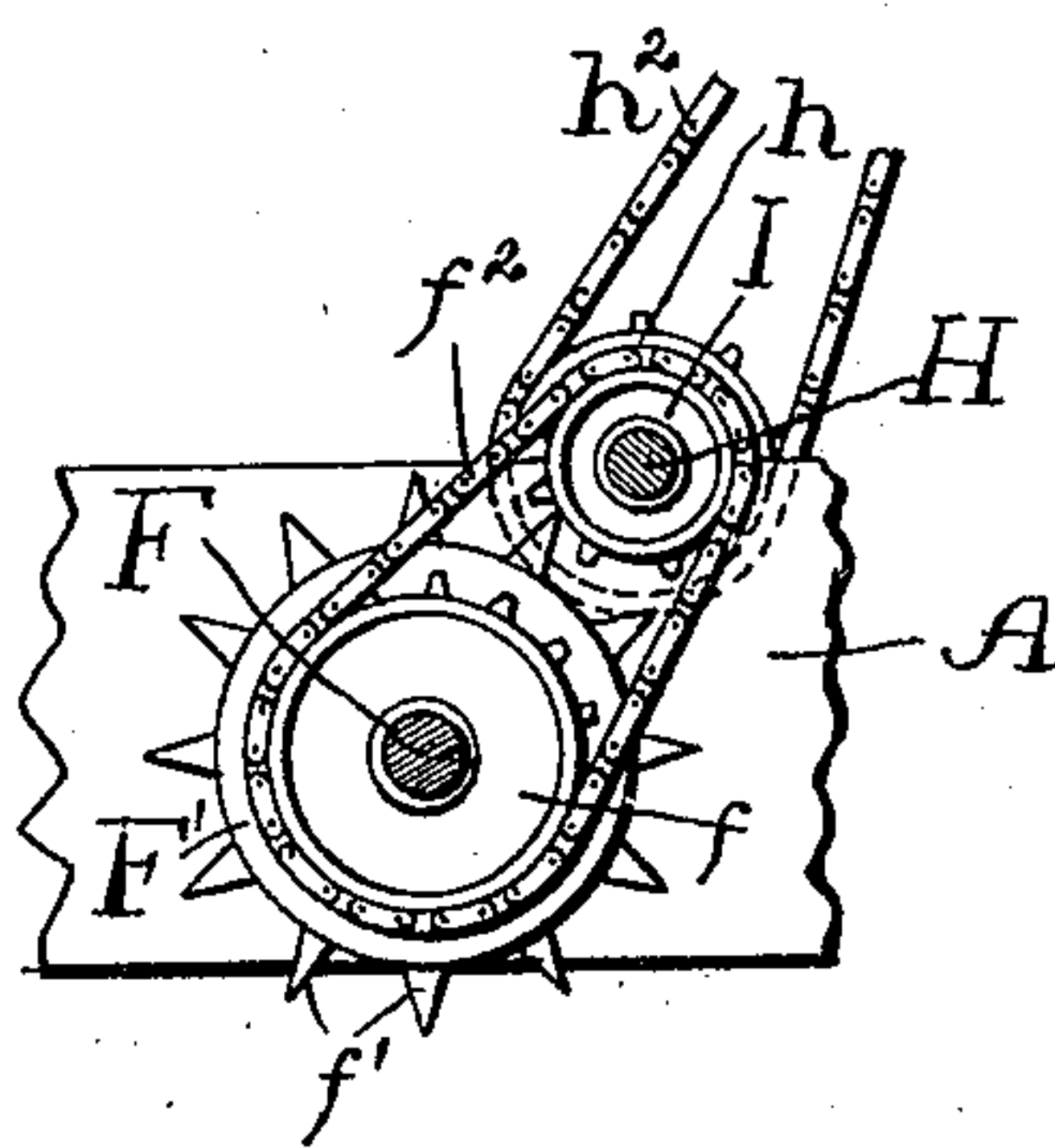


FIG. 4.



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# UNITED STATES PATENT OFFICE.

ALEXANDER HARDESTY, OF PEARCEVILLE, LOUISIANA, ASSIGNOR OF ONE-THIRD TO EMILE HERBERT, OF EUNICE, LOUISIANA.

## DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 582,421, dated May 11, 1897.

Application filed August 29, 1896. Serial No. 604,301. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER HARDESTY, a citizen of the United States, residing at Pearceville, in the parish of St. Landry and State of Louisiana, 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.

My invention relates to improvements in ditching and grading machines; and it consists in the several parts and novel features which will be hereinafter fully described and claimed.

Reference is had to the accompanying drawings, wherein the same parts are indicated by the same letters of reference throughout the several views.

Figure 1 represents a side elevation of my invention. Fig. 2 is a plan view thereof. Fig. 3 represents a rear elevation of the same, and Fig. 4 represents a detail section taken on the line 4 4 of Fig. 2.

The frame of the machine consists of the two parallel side pieces A and A', connected together by the cross-pieces A<sup>2</sup> and A<sup>3</sup> and by the inclined front piece A<sup>4</sup>, the lower edge of which is provided with a metallic scraping edge a<sup>4</sup>.

An inclined piece B is secured to the side piece A of the frame and is inclined upward and backward from the lower edge near the front of the frame to the upper edge a little forward of the middle thereof. The lower front end of the piece B projects a little below the bottom of the frame and is sharpened to form a plow or cutting edge b, which in operation will throw the earth upon the piece B.

A flange B' is formed along the side of the piece B to prevent the earth from falling over the side of the said piece and to guide it to the rear end thereof, where it will fall upon a carrier D, which will now be described.

Two parallel pieces D' and D<sup>2</sup> are arranged across the frame at right angles to the side pieces A and A', the ends on the side A extending below the rear end of the inclined piece B, from which place the pieces D' and

D<sup>2</sup> are inclined upwardly across the frame, their opposite ends extending some distance beyond and above the side A', as shown in Fig. 3. Between the ends of the pieces D' and D<sup>2</sup> are journaled rollers d' and d<sup>2</sup>, over which the carrier D, having slats or cross-pieces d, runs.

To the lower end of the side piece D<sup>2</sup> is secured an upright E, parallel with and corresponding to a similar upright E', secured to the side piece A at the junction of the piece D<sup>2</sup> therewith. In the upper ends of the pieces E and E' is journaled a roller e, and a carrier B<sup>3</sup>, having cross pieces or slats b<sup>3</sup>, runs over the roller e and a similar roller b', journaled between the flange B' and the side piece A just over the lower end of the piece B. This carrier B<sup>3</sup> is run, as will be hereinafter described, in the direction of the arrow, and the cross-pieces thereon will move the earth up along the piece B until it falls over the rear end thereof on the carrier D. The flange B' is extended, as at B<sup>2</sup>, and secured to the upright E, the lower edge thereof being bent under, as at b<sup>2</sup>, to guide the earth to the carrier D.

Within the frame is journaled a shaft F, carrying a wide traction wheel or drum F', having points f' around its periphery, which points extend below the side pieces of the frame and enter the ground, causing the said traction-wheel F' and shaft F to rotate. A sprocket-wheel f is mounted on the shaft F and connected by a sprocket-chain f<sup>2</sup> with a sprocket-wheel I, loosely mounted on a shaft H, which is journaled in the frame of the machine. This sprocket-wheel I has a clutch member i, with which a clutch H', mounted to slide on the shaft H, is adapted to engage. A spring h' is arranged to keep the clutch H' normally in engagement with the clutch member i to turn the shaft H as the machine is pulled along. On one end of the shaft H is mounted a sprocket-wheel h, connected by a sprocket-chain h<sup>2</sup> with a sprocket-wheel e' on the end of the roller e, over which runs the carrier B<sup>3</sup>. On the opposite end of the shaft H is mounted a bevel gear-wheel L, which meshes with a bevel-pinion M on a shaft M', journaled in suitable bearings m on the side A' of the frame.



The shaft  $M'$  carries a sprocket-wheel  $m'$ , from which a sprocket-chain  $m^2$  runs to a sprocket-wheel  $d^3$  on the shaft of the roller  $d'$ , which drives the carrier D. Thus the two carriers  $B^3$  and D are driven from the shaft H when the clutch  $H'$  is in engagement with the clutch member  $i$  on the sprocket-wheel I.

A bent lever N is pivoted on a piece  $A^5$ , which extends across the frame in the rear of the gearing, and one end of the said lever N is connected with the clutch  $H'$  and the other end extends to within reach of the driver seated upon the seat O.

A curved lever P is pivoted to the front part of the side A just above the front end of the carrier  $B^3$ , the forward end of which lever is bifurcated and has a roller  $p$  journaled therein. The rear end of the lever P extends rearwardly over the carrier  $B^3$  to within easy reach of the driver on the seat O. By lifting the rear end of the lever P the driver can force the roller  $p$  down upon the ground and thus ease up on the plow or cutter  $b$  to regulate the depth of the cut.

A segment  $a$ , having ratchet-teeth  $a'$ , is secured to the top edge of the side A and extends upwardly at the side of the lever P, and a pawl  $p'$  is pivoted to the side of the lever P to engage the ratchet-teeth on the said segment and hold the lever in an elevated position. A wire or small rod  $p^2$  is connected with the pawls  $p'$  and passes through eyes  $p^3$  along the side of the lever P to a handle  $p^4$  within easy reach of the driver, by means of which the pawl may be pulled out of engagement with the teeth  $a'$  on the segment  $a$  to lower the lever P. A spring  $p^5$  is arranged to keep the pawl always in engagement with the teeth  $a'$  on the said segment  $a$ .

Beneath the upper end of the carrier D is arranged a swinging chute R, (shown more clearly in Fig. 3,) and a rod  $R'$  is pivoted to the side of the said chute and extends between two uprights  $a^2$ , where it is supported on a pin or rod  $a^3$ . A series of notches  $r'$  are formed in the lower edge of the rod  $R'$  to engage the pin  $a^3$  and hold the chute in any desired position. The rod  $R'$  terminates in a handle within easy reach of the driver.

S designates a drag pivoted to the side A of the frame and extending rearwardly beneath the driver's seat, where it may be used also as a foot-rest for the driver. The object of this drag is to smooth off the loose earth left by the plow or cutter  $b$ , and the driver can exert a pressure upon it with his foot when necessary.

The operation of the invention is as follows: The horses are attached to the clevis  $T'$  on the beam T, the driver being seated upon the seat O. As the machine moves forward the scraping edge  $a^4$  will scrape off the surface of the ground, leaving it smooth, and push the scrapings off to the right-hand side of the machine. At the same time the cutter  $b$  will enter the ground, cutting out the earth

and pushing it upon the inclined piece B. The clutch H being in engagement with the clutch member  $i$  on the sprocket-wheel I, the carriers will be running and the carrier  $B^3$  will push the earth from the cutter  $b$  up the inclined piece B until it falls upon the carrier D, which will carry it across the machine and drop it on the right-hand side thereof, where it is received upon the chute R, which will guide it in the desired direction. This chute R may be inclined in either direction, as shown in dotted lines in Fig. 3, to deliver the earth toward or away from the side of the machine; the driver having the same under control by means of the rod  $R'$ . Should it be desired to raise the cutter, the driver will raise the lever P, thus pushing the roller  $p$  upon the ground, tending to lift the cutter. Should it be necessary to stop the carriers, the driver will pull upon the bent lever N to disengage the clutch  $H'$  from the clutch member  $i$ , and thus throw the shaft H out of gear. In moving the device from place to place the lever P is lifted until the weight of the front end of the machine is carried upon the roller  $p$  and the cutting edge  $b$  is lifted clear of the ground, the lever being held in its raised position by the pawl  $p'$  engaging the toothed segment  $a$ . The clutch  $H'$  is also thrown out of gear to stop the carriers.

A laterally-projecting bracket V may be secured to any convenient place on the side A of the frame and a roller  $v$  journaled in the outer end thereof in such a position as to strike the ground should the machine tilt over toward the left and prevent the same from falling over in that direction.

On the rear ends of the two side pieces A A' are provided guides  $a^6$ , in which are arranged to slide vertically sleeves W, having caster-wheels  $w$  in their lower ends. The two sleeves are connected together by a cross-bar W' and normally the wheels rest upon the ground by their own weight. Pivoted to the rear cross-bar  $A^2$  is a lever Y, which extends over the cross-bar W' and may be pressed down thereon by hand. When it is desired to turn the machine or to lift the sides from the ground for any other purpose, the lever Y is pressed down upon the cross-bar W', thus forcing the sleeves and caster-wheels  $w$  downwardly and raising the rear end of the machine. A pawl  $y$  on the lever Y will engage the teeth on a segment  $a^7$  on the cross-bar  $A^2$ , and thus hold the several parts in the desired position. A wire  $y'$  extends from the pawl  $y$  to a handle similar to the handle  $p^4$  on the lever P, but which is not shown in the drawings, and enables the operator at the end of the lever Y to disengage the pawl  $y$  when it is desirable to do so.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine of the character described, the combination with a frame, having an inclined front piece, a scraping edge upon the



said inclined front piece, an inclined cutter, means for lifting the cutter and scraper above the ground, and means for delivering the earth from the inclined cutter to a carrier; of a transverse carrier, a traction-wheel geared to the said carriers, and means for moving the machine to cause the several parts to operate, substantially as described.

2. In a machine of the character described, the combination with a frame having a transversely-inclined scraping edge, an inclined cutter, a carrier moving over the said inclined cutter, and means for raising the said cutter, of a transverse carrier, a swinging chute to receive the earth from the said carrier, a traction-wheel geared to the said carriers, and means for moving the machine to cause the several parts to operate, substantially as described.

3. In a ditching and grading machine, the combination with a frame having a transversely-inclined scraping edge, an inclined cutter, and a carrier moving over the said inclined cutter, of a transverse carrier, a traction-wheel geared to the said carriers, a clutch for throwing the said carriers in or out of gear, and means for moving the machine to cause the several parts to operate, substantially as described.

4. In a machine of the character described, the combination with a frame having a transversely-inclined scraping edge, an inclined cutter, a carrier moving over the said inclined cutter, a lever pivoted near the front of the frame and extending near the seat, a roller journaled in the front end of the said lever for raising the said cutter, of a transverse carrier, a traction-wheel geared to the said carriers, means for raising the rear end of the machine, and means for moving the machine

to cause the several parts to operate, substantially as described.

5. In a machine of the character described, the combination with a frame having a transversely-inclined scraping edge, an inclined cutter, a carrier moving over the said inclined cutter, and a lever pivoted near the front of the frame and extending near the seat, a roller journaled in the front end of the said lever for raising the said cutter, of a transverse carrier, a swinging chute to receive the earth from the said carrier, a traction-wheel geared to the said carriers, caster-wheels arranged at the rear end of the frame to lift the same, and means for moving the machine to cause the several parts to operate, substantially as described.

6. In a machine of the character described, the combination with a frame having a transversely-inclined scraping edge, an inclined cutter, a carrier moving over the said inclined cutter, and a lever pivoted near the front of the frame and extending near the seat, a roller journaled in the front end of the said lever for raising the said cutter, of a transverse carrier, a traction-wheel geared to the said carrier, sleeves at the rear end of the said frame, caster-wheels mounted in brackets to slide in the said sleeves, a lever to force the said caster-wheels down to carry the weight of the frame, and means for moving the machine to cause the several parts to operate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER HARDESTY.

Witnesses:

P. M. H. MCGEE,  
OSCAR B. COMEAU.