

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. 28,320, dated May 15, 1860.

To all whom it may concern:

Be it known that we, CHARLES O. WEST, JOHN R. SMITH, JOHN CAREY, GEORGE JANNEY, REUBEN HUNT, AMOS HOCKETT, DAVID WEST, ELIEL WEST, and JEPHTE GARNER, all of Martinsville, in the county of Clinton and State of Ohio, have invented a new and Improved Ditching-Machine; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical longitudinal section, taken through our machine, with the double mold-board discharges attached, for throwing the earth off on each side of the ditch. Fig. 2 is a top or plan view of the same, showing more clearly the wings of the mold-board for discharging the earth laterally. Fig. 3 is a perspective view of a single discharging mold-board and cutter.

Similar letters of reference indicate corresponding parts in the several figures.

This invention is an improved machine for forming ditches of any width or depth, having either vertical or inclined sides, the latter being the best, on account of the sides not being so liable to fall in by constant washing. They are also more easily formed and kept free from inundation. The machine can be used for digging ditches around farms, for draining water, irrigating land, forming roads, railroads, and for any and all purposes where a ditching-machine can be made serviceable.

The great difficulty and expense in ditching or forming trenches for carrying off water with machines heretofore used arises from the fact that after the earth has been loosened by a plow or otherwise, it must all be raised or removed, and cast a sufficient distance from the trench to prevent its washing back again, and either a separate machine must be used for removing this earth in small quantities, or else it is thrown out on the side of the bank with shovels, requiring a great expenditure of time and labor, which, with our machine, is rendered, to a great degree, unnecessary, for the earth is removed sufficiently far from the ditches to prevent its returning again, and the ditch is per-

fectly formed and the earth removed at one operation or in once passing along.

To enable others skilled in the art to fully understand our invention, we will proceed to describe its construction and use.

By reference to the accompanying drawings, A represents a triangular beam with a clevis, B, in front, to which the draft-chain of the team is attached. This frame is made of strong and substantial timber, and has a square iron bar, C, passing transversely through its front end, which projects out on either side of it an equal distance, and receives through its ends the vertical elevating and depressing screws D D, which are operated by levers *a a* on their upper ends. These screws D D have their bearings in two standards, E E, properly braced, and attached to a sled, F, which runs over the surface of the ground and permits the front end of the beam to be elevated or depressed for regulating the depth of cut of the plow, as hereinafter described. The rear end of the beam A, is hinged to the top and sides of the plow or ditcher, and can be readily removed either for transportation or for attaching another ditcher, which is shown by Fig. 3 of the drawings, by withdrawing the bolt *b*.

We have arranged on the inside of the transverse piece of the beam A, and in the middle of its length, a colter, H, which is secured by a key-wedge, *c*, or by any other suitable device. Said colter precedes the plow and extends down a suitable distance into the ground, and greatly assists in loosening the soil for its reception by the plow. On top of this same piece which supports the colter, is a vertical standard, I, proceeding up a suitable distance from the beam A to receive a brace-rod, J, which extends from the top of this piece to near the front end of beam A, at which point it is connected by bolts, and serves as a brace for the vertical post I.

The plow, which will be hereinafter described, is supported and sustained by the brace-rod K, which is pivoted to the top of post I and connected to the rear part of the plow by a screw-rod, which is on the end of rod K, which passes through a lug, *d*, on the plow, and receives on each side of said lug a nut, *e*. By

this device the heel of the plow can be adjusted so as to throw the plow-point deeper in the ground, as occasion may require. The plow shown attached to the frame, Figs. 1 and 2, is a double plow, having an inclined bottom L, extending up and back from the point, and gradually increasing in width, as shown by Fig. 2, having a fin or cutter, M, placed in the middle of its width and extending up slightly above the two sides N N. This fin M serves an important purpose in separating or dividing the mass of earth as it is forced up the inclined bottom L, so that it will pass out and be delivered on the sides of the ditch by the concave discharges L' L', the action of which is somewhat similar to that of the ordinary mold-board of a plow. The earth, which is divided by the fin M, is kept in each channel by a rib, e', which serves as a partition.

f f are ledges or guards turned over and outward from the sides N N of the plow. The front edges of each side N are cutting-edges. P is the sole of the plow, and P' the standard proceeding up from the heel of P, and secured to the rear part of the inclined bottom L.

If the ditch to be dug is to be very wide at its top, with both sides inclined, the double discharging-plow of Figs. 1 and 2 is used; but if a narrow ditch is found all sufficient, the plow of Fig. 3 is used, having only one discharger and one inclined side, the other being vertical. This single plow is attached to the beam A, and braced and adjusted in the same manner as described for the double plow.

For facility of transporting our machine, the plow can be detached from the beam A by withdrawing the bolt b, that secures the two together.

Having thus described our invention and improvement, what we claim, and desire to secure by Letters Patent, is—

1. The employment of the fin M in combination with the inclined bottom L, as and for the purpose herein shown and described.

2. The combination of the rib e' with the inclined bottom L, as and for the purpose set forth.

3. The employment of a hinged triangular beam, A, and adjustable sled F in combination with the plow, as and for the purpose herein shown and described.

4. The combination, with the plow, the beam A, and sled F, of the adjustable pivoted brace-rod K, standard I, and front brace-rod, J, as and for the purpose herein shown and described.

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