H. AIKEN.

3 Sheets—Sheet 1.

Ditching Plow.

No. 2,440.

Patented Feb 1, 1842.

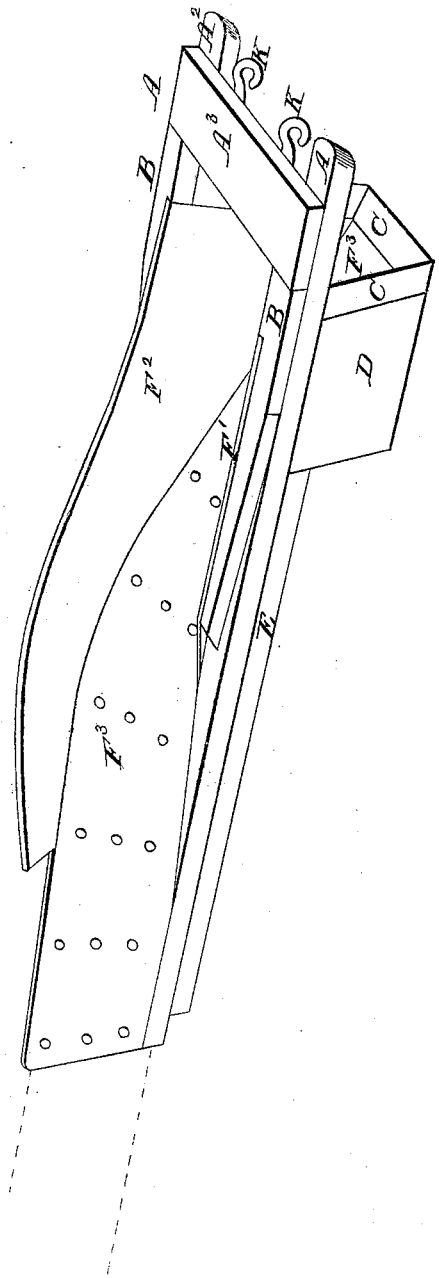

Fig. 1.

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Fig. 2

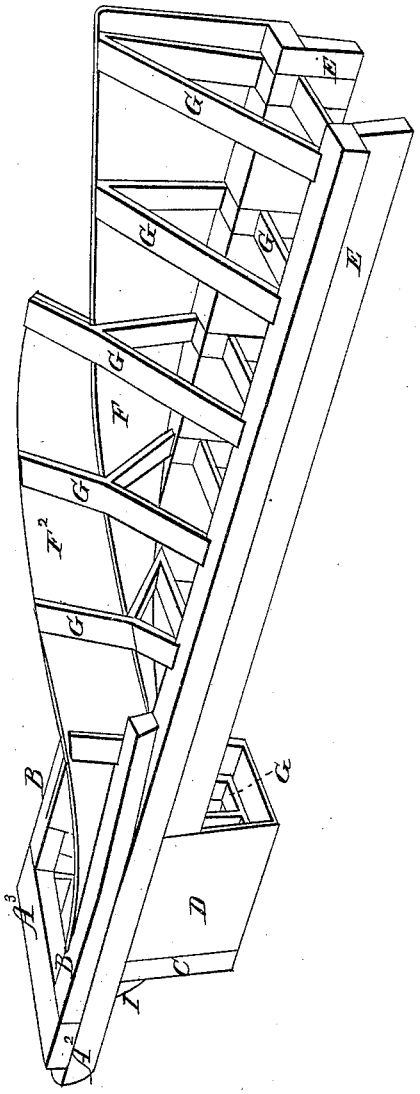


Fig. 4

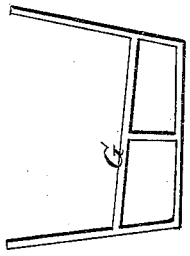
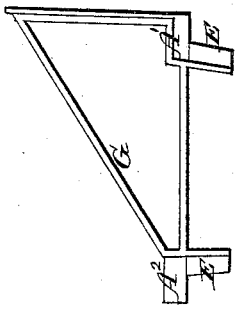


Fig. 3



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H. AIKEN.

Ditching Plow.

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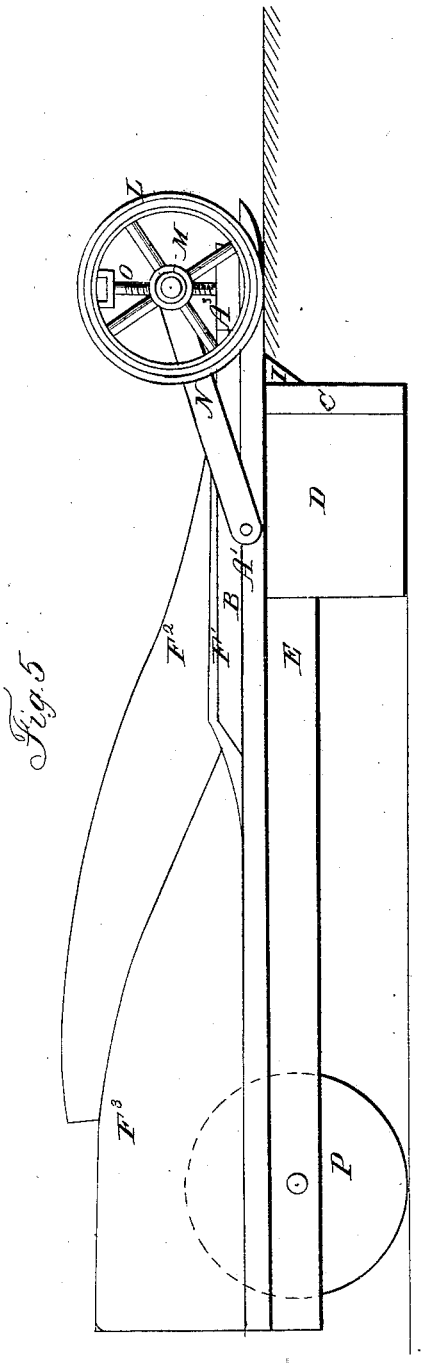

Fig. 5

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UNITED STATES PATENT OFFICE.

HERRICK AIKEN, OF FRANKLIN, NEW HAMPSHIRE.

IMPROVEMENT IN MACHINES FOR EXCAVATING DITCHES.

Specification forming part of Letters Patent No. **2,440**, dated February 1, 1842.

To all whom it may concern:

Be it known that I, HERRICK AIKEN, of Franklin, Merrimack county, State of New Hampshire, have invented a new and useful Improvement in Plows for Ditching, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the right side of the plow, showing the cutter, colters, mold-board, frame, &c. Fig. 2 is a perspective view of the left side of the plow, showing the back of the mold-board and the ribs which secure it to the frame. Fig. 3 is a vertical transverse section, showing the form of one of the rear ribs and the manner of attaching the same to the mold-board and frame; Fig. 4, a section showing one of the forward ribs; Fig. 5, a section showing the mode of arranging the regulating-wheels.

Similar letters refer to corresponding parts.

The frame, lettered A, is composed of three stout pieces of timber, A' A^2 A^3, framed together in a horizontal position. Two of these pieces, A' A^2, are each about seventeen feet long, ten inches wide, and three inches thick, and are placed parallel to each other about four feet four inches apart, and connected together by the third or transverse horizontal piece, A^3, which is about four feet four inches long, eighteen inches wide, and three inches thick, bolted on the top of the aforesaid parallel timbers near their forward ends, allowing a space underneath to prevent clogging. The parallel timbers are rounded at their forward ends on the under side, in the manner of the runners of a sled, or in any suitable manner, to prevent being obstructed by roots or other obstacles, as the said timbers slide on the ground on either side of the ditch to be cut, said timbers moving over about eight inches of their width on the ground when in operation. Two blocks, B B, are bolted on the top of said timbers A' A^2, one on each, with their forward ends against the back edge of the transverse connecting-timber A^3, to add strength and height to the frame.

The cutter C for cutting the ditch is made of iron, with a steel edge of a shape and size corresponding with the shape of the ditch to be cut—say about three feet wide at the top, two feet at the bottom, and two feet deep. The said cutter is bolted at each of its ends in a permanent manner to the side timbers, A' A^2, about ten inches back of the transverse timber A^3, being thus placed back of the transverse timber for the purpose of preventing the earth from binding or clogging at the forward part of the plow. A plate of wrought-iron, D, of corresponding shape to that of the aforesaid cutter C, is riveted to the back of said cutter, being let into a groove therein, forming a lock-joint, and extending back about two feet, and bolted to the side timbers, A' A^2, and to two guide-boards, E E, hereinafter described, placed under the side timbers, A' A^2, secured to the ribs G.

The mold-board F is made in the following manner: It consists of three parts or sections—viz, a bottom or middle section and two sides or side sections. The bottom or middle section, F^3, commences at the back of the horizontal part of the cutter which cuts the bottom of the ditch and extends back spirally in the manner of the common mold-board. The section of the mold-board F' next the embankment is made slightly winding, and extends back from the cutter half the length of the middle section of the mold-board F^3, and is jointed to its lower edge till it meets the upper side of the frame, about the middle thereof, where its upper edge is made to correspond with the top of the side block, B, fastened on the top of the frame, as far as the forward end of the said section, being placed at an angle corresponding with the angle of the side of the cutter and of the side of the ditch. The opposite side section of the mold-board F^2 extends back from the opposite side of the knife spirally, following the direction of the upper edge of the middle section of the mold-board F^3, diminishing gradually in width about two-thirds or three-fourths its length. The front part of the mold-board is placed inside the plate D and cutter C, with which it corresponds in size and shape.

The mold-board thus constructed forms a winding or spiral trough. It is supported in and secured to the frame firmly by a series of strong light cast-iron ribs, G, of a shape corresponding with that of the mold-board or winding trough, arranged transversely and parallel to each other, about two feet apart, the lower part of each rib being in length equal

to the width of the frame inside, where it is to be placed, having flanges for bolting it to the frame, a part of the rib next the mold-board or winding trough rising from the inner flange to the top of the mold-board, and at the same angle therewith, an oblique part extending from the upper end of the last-mentioned part downward to the outer flange.

The foregoing is the shape of the two rear ribs. The ribs coming against the upper and middle section of the mold-board or trough are varied in shape to correspond with the shape of the trough or mold-board, having the oblique part extended in length, and diverged from a straight line to correspond with the shape of the upper part of the mold-board or trough where it unites with the middle part. The forward ribs, embracing the forward part of the mold-board, are made with a bottom and two sides, and suitable flanges at the angles for securing them to the inside of the frame, the bottom corresponding with and supporting the bottom of the winding trough or mold-board, and the sides corresponding with and embracing the sides of the mold-board or said winding trough. The sides of the last-mentioned ribs are extended below the bottom pieces, said extended sides and horizontal piece on the outside being made to correspond in form with the inside of the metallic plate D, inside of which it is placed.

Guides or boards E, extending from the plate D to the rear end of the frame, are fastened to the ribs G on the under side of the frame A at an angle corresponding with the angle of the sides of the ditch in which they move by means of horizontal bolts, and the flanges of the ribs extending below them, said bolts passing through or into these flanges and the boards or guides. These guides are for the purpose of guiding and steadying the machine in the operation of cutting the ditch.

Two side colters, I I, are fastened to the sides of the frame in front of the side cutters, C, in a position reverse to that of the ordinary colter of a plow, the cutting-edges extending from the cutting-edges of the side cutters upward at an angle of about forty-five degrees. These colters are for the purpose of cutting through the sward.

Two strong hooks, K K, are fastened to the transverse piece of the frame, or to the sides of the frame to which the chains or blocks and tackle are attached, by which the animals draw the machine forward.

The depth (more or less) of cutting of the machine may be regulated by means of wheels L L, turning on the sward or surface of the ground, revolving on an axle, M, passing through the extremities of parallel movable levers N N, or bars attached to the sides of the frame by pins or pivots, or in any convenient way, said axle being raised or lowered by screws O, having heads attached to the frame, which screws may turn in female screws in the aforesaid axle. A wheel, P, attached to the rear end of the frame may turn in the bottom of the ditch for effecting the same object.

This winding trough or mold-board operates differently from that of the common mold-board. The former raises the earth in a body within the combined mold-board forming said trough and deposits it by the side of the ditch at the distance of a few inches therefrom, forming an embankment nearly perpendicular, while the latter or common mold-board merely turns the earth over upon the land.

This improved mold-board or trough may be made double, with a cutter in front to divide the earth and turn it upon each side of the ditch. It may be made of wood or iron.

This machine may be propelled by animals, steam, or other power applied directly, or by blocks and tackle with a grapple, or in any convenient manner. It may be made to cut the entire depth of the required ditch at one operation.

What I claim as my invention, and which I desire to secure by Letters Patent, is—

The combination of the cutter with the winding trough for making ditches, whether made in the manner above described or in any other mode substantially the same.

HERRICK AIKEN.

Witnesses:
I. H. ROWELL,
THO. R. WHITE.