R. W. SANBORN.

Ice-Plow.

No. 165,427. Patented July 13, 1875.

Fig. 1.

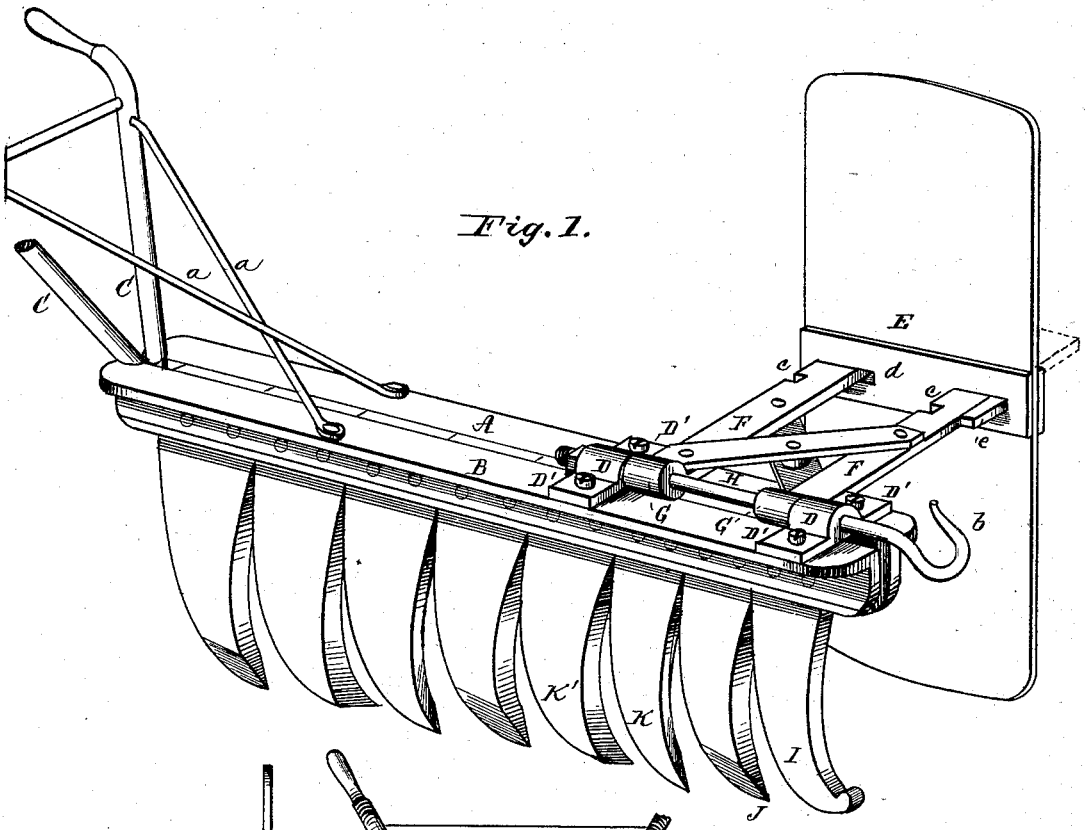
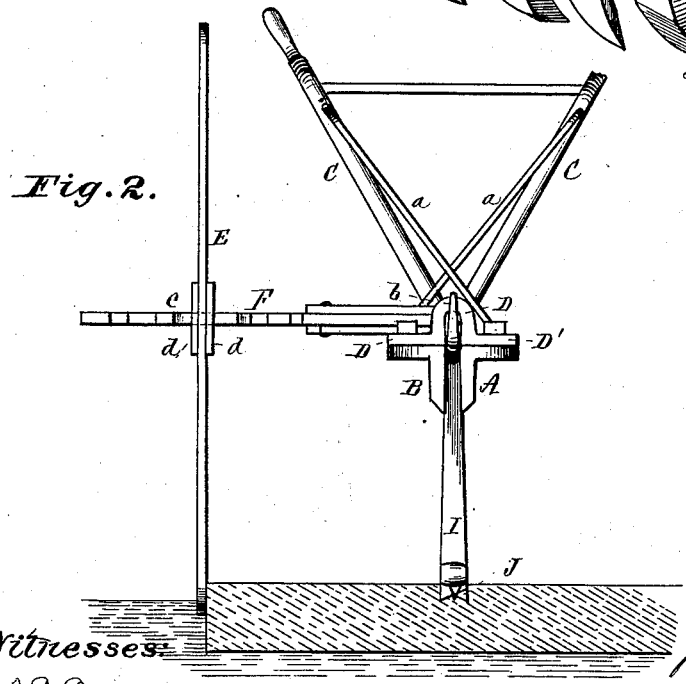


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

RODMAN W. SANBORN, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN ICE-PLOWS.

Specification forming part of Letters Patent No. **165,427**, dated July 13, 1875; application filed December 3, 1874.

To all whom it may concern:

Be it known that I, RODMAN W. SANBORN, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Ice-Plows, of which the following is a specification:

This invention relates to certain improvements in ice-plows, designed to render the same more durable and simple in construction and effective in operation than others heretofore constructed.

The invention consists, first, in the provision of a reversible or revolving gage, which is hinged to the plow-beam, so as to be used on either side of the same for running along the previous cut or channel made by the plow, in order to obtain blocks of a uniform size; second, in making the gage plate or board laterally adjustable on its hinged supporting-arms, for the purpose of varying the relative distance apart of the cuts made by the plow; third, in providing a draft-hook, the stem of which serves as a pintle upon which the gage turns, the arms of the gage being provided with eyes and the beam with thimbles, through which the draft-hook passes; fourth, in the combination, in an ice-plow, of a diamond-pointed tooth and cutting-teeth, having oblique lower cutting-edges, which are set alternately to the right and left, so as to enlarge and clear the kerf cut by the diamond teeth.

In the accompanying drawings, Figure 1 is a perspective view of an ice-plow constructed according to my invention; and Fig. 2 is a front view of the same.

The beam of the plow is composed of two plates of angle-iron, A B, between the vertical portions of which the upper ends of the plow or cutting teeth are firmly secured. Handles C are applied to the rear end of the plow for guiding the same, and they are attached to the beam in a firm manner and braced by diagonal rods *a*. The cutting-teeth are all arranged in the same horizontal line, and they gradually increase in length from the front to the rear of the plow, so as to cause the same to properly penetrate into the ice notwithstanding the upward tendency of the plow by reason of the draft-force applied to its front end. To the top of the angle-plates forming the plow-beam are attached thimbles D, which are formed or provided with lateral flanges D′ for securing the same to the beam by means of screws or bolts. Said flanges and screws serve also, in connection with the bolts or rivets passing transversely through the beam, to secure the component parts firmly together. A reversible or revolving gage and guide-board, E, is applied to the beam of the plow, and is so contrived that it can be made to run on both sides of the cutter, and for this purpose the gage-board is attached to arms F, having eyes or thimbles G at their inner ends, through which and through the thimbles on the beam is passed a draft-rod, H. Said rod is provided with a hooked front end, *b*, for the attachment of the draft force, and its other end, which terminates in rear of the thimble D, has a nut applied to it for securing the draft-rod in place. By this means the draft-rod subserves also the function of a pintle, upon which the gage or arms of the same can turn so as to operate on either side of the plow. The gage-board E is made adjustable in a horizontal direction by providing the supporting-arms thereof with notches *c*, and the gage-board with slotted catch-plates *d*, said plates being so arranged that after the supporting-arms are passed through the same a slight longitudinal movement of the gage-board will cause them to engage with the notches in the arms when a wedge or key, *e*, is driven between the other side edge of the supporting-arm into the opening left in the gage, so as to secure the same firmly in position. By making the gage reversible and adjustable every facility is offered for using the plow in different localities, and for cutting large and small blocks, the size of which is, of course, determined by the relative position of the gage-board in relation to the beam of the plow. The teeth or cutters for cutting or channeling the ice are preceded by a guide runner or tooth, I, having a rounded lower end for readily gliding over the ice. In rear of this guide-runner is located a diamond-pointed cutting-tooth, J, having a curved shank or body, reduced in cross-area at its lower end, made pointed, and provided with an angular or sharp rear lower surface, which tends to form a narrow channel or groove in the ice. This diamond-pointed cutter is followed by a pair of chisel-pointed teeth, K K′, which are provided with oblique

lower horizontal cutting-edges set in opposite directions, so as to form what may be termed right and left cutting-teeth. These chisel-teeth are designed to enlarge the channel or cut made by the diamond-tooth, which they effectually serve to do by reason of their cutting-action to the right and left of the cut made by the preceding tooth. The three teeth described are followed by an indefinite number of corresponding teeth—one, two, or more sets.

By grouping together the different-shaped teeth as proposed by me, it is possible to cut clear and even channels in the ice. All chips or fragmentary particles removed by the cutters are thrown out of the cut or channel, and thus the progress of the plow is not retarded in any way, and the whole operation of cutting ice is accompanied with little labor, and rendered simple and perfect in all particulars.

What I claim is—

1. The combination, with an ice-plow, of a gage or guide plate, hinged or pivoted to the plow-beam, and capable of being turned on its axis, for bringing it to either side of the plow, substantially as described, for the purpose specified.

2. The combination of the pivoted supporting-arms F and horizontally-adjustable gage-board E, as and for the purpose specified.

3. The combination, in an ice-plow, of the thimble D and draft-rod H, with the gage-board E and pivoted supporting-arms having eyes G, as and for the purpose specified.

4. The combination, in an ice-plow, of a diamond-pointed tooth or teeth, with right and left cutting chisels or teeth, as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand.

RODMAN W. SANBORN.

Witnesses:
J. K. SAMSON,
E. H. BILLINGS.