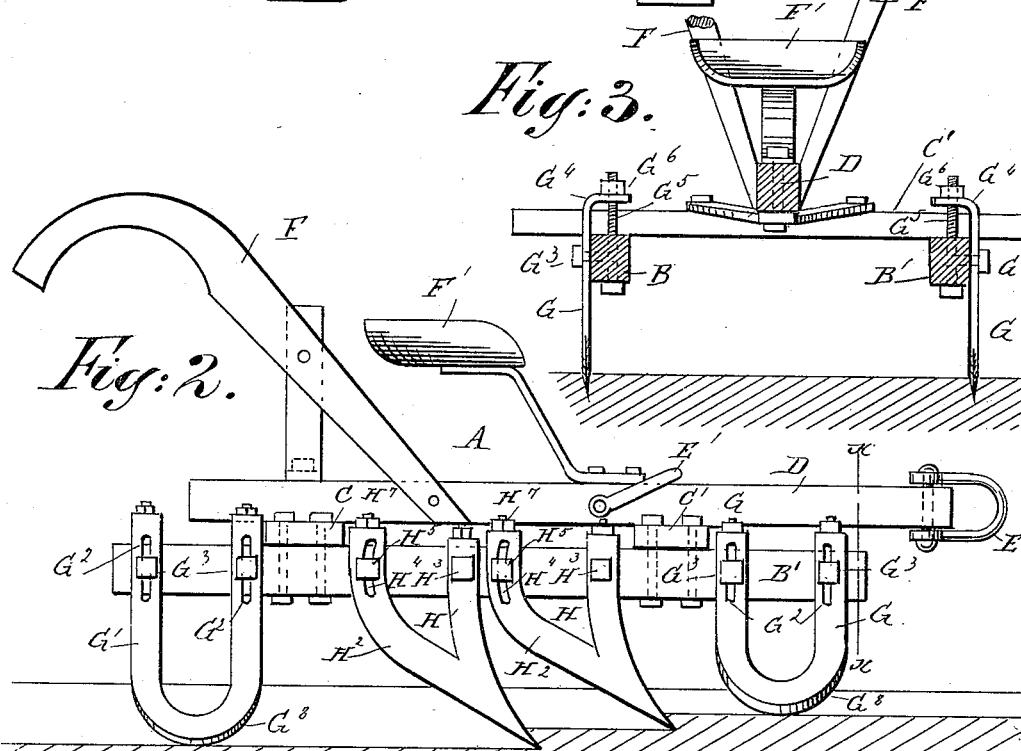
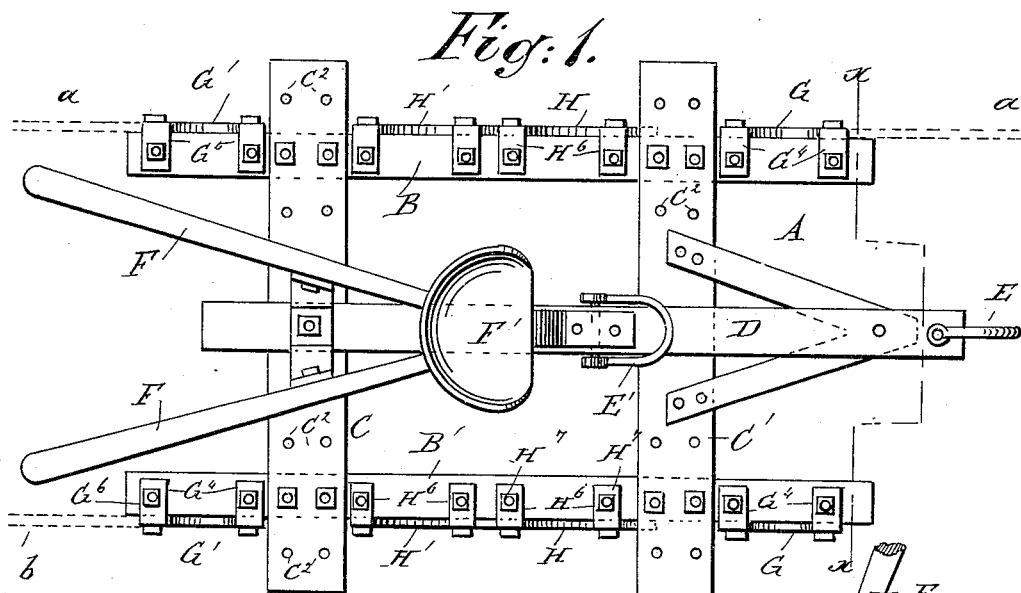


(No Model.)

H. PRAY.
ICE PLOW.

No. 419,354.

Patented Jan. 14, 1890.



WITNESSES:
Alas. Nida
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UNITED STATES PATENT OFFICE.

HAMILTON PRAY, OF CLOVE, NEW YORK.

ICE-PLOW.

SPECIFICATION forming part of Letters Patent No. 419,354, dated January 14, 1890.

Application filed August 27, 1889. Serial No. 322,142. (No model.)

To all whom it may concern:

Be it known that I, HAMILTON PRAY, of Clove, in the county of Dutchess and State of New York, have invented a new and Improved Ice-Plow, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved ice-plow which is very simple and durable in construction and effective in operation.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a side elevation of the same, and Fig. 3 is a transverse section of the same on the line $x x$ of Figs. 1 and 2.

The improved ice-plow is provided with a main frame A, comprising principally the two longitudinal beams B and B', connected with each other on top by transverse beams C and C', secured by bolts or other suitable means to the said beams B and B'. Additional sets of apertures C² in the said transverse beams C and C' permit of placing the longitudinal beams B and B' nearer together or farther apart, as desired, according to the width of the ice blocks to be cut.

On top and in the middle of the transversely-extending beams C and C' is secured a draft-beam D, provided on its front end with a clevis E, to which the horse which is to pull the ice-plow is attached. A second clevis E' is located on the draft-beam D somewhat in the rear of the transverse beam C', and this clevis serves to drag the plow after the first cut has been made, as hereinafter more fully described. On the rear end of the draft-beam D are secured the handles F for manipulating the plow. A seat F' is secured on the draft-beam D, between the transverse beams C and C'. This seat is to be occupied by the operator guiding the horse drawing the plow, and at the same time the operator furnishes additional weight for the plow.

On each of the longitudinal beams B B' is secured in the front a U-shaped vertically-

adjustable runner G, and a similarly-shaped but somewhat longer vertically-adjustable runner G' is secured at the rear end of each beam B or B'. The lower edge of each runner G or G' is beveled at G⁸, and the said runners are made U-shaped, so as to permit a convenient turning of the plow at the end of the row. In order to make the runners G and G' vertically adjustable, each is provided with the slots G², through which pass the bolts G³, screwing in the side beam B or B', respectively. On each upper end of each runner is formed an inwardly-extending flange G⁴, in which screws a bolt G⁵, held vertically in the respective side beam B or B'. Nuts G⁶ screw on the said bolts G⁵ against the said flange G⁴, to aid G³ in locking the latter in place when the runner is adjusted.

Between the two runners G and G' on each transverse beam B or B' are secured one, two, or more cutting-blades H H', each of which is pointed at its lower end, which projects forward and somewhat below the lower edge of the runners G or G'. The runners G and G', as well as the cutting-blades H and H', are in line with each other, as plainly shown in Fig. 1; but the first cutting-blade H is longer than the first runner G, the difference being the depth of the cut to be made. The second cutting-blade H' is longer than the first cutting-blade H, so that two cuts are made on each side of the plow at the forward motion of the same. The rear runner G' is of about the same length as the cutting-blade H', so that both runners G and G' support the plow and permit the cutting-blades to cut into the ice only to a depth equal to the difference in length between the runners G and G'.

The upper end of each blade H or H' is securely fastened by a bolt H³ to the respective side beam B or B', and from the lower end of each blade extends rearward and upward a brace H², provided with a segmental slot H⁴, through which passes a bolt H⁵, screwing in the respective beam B or B'.

From the upper end of each brace H² extends transversely a flange H⁶, over the top of the respective side beam, and through this flange passes a bolt H⁷, screwing in the top of the respective side beam. When the point of the blade H or H' is worn out or

breaks off, the respective blade can be readily adjusted so that the renewed points cut to the same depth as before.

The ice-plow is used as follows: When the operator begins to cut an ice-field, he first attaches the horse to the front clevis E of the draft-beam D. The animal is then started across one end of the ice-field, so that the plow, with its two sets of cutting-blades H H', cuts two grooves in the ice. As soon as the plow is at the end of the field the animal is turned around and the operator lifts the plow out of the grooves cut, turns the ice-plow, and inserts the runners and cutting-blade on one beam into the innermost groove a (see Fig. 1) previously cut. The ice-plow is now dragged forward, whereby the runners G G', as well as the cutting-blades in the groove, remain in the same, so that a second parallel groove b is cut by the cutters on the other beam. At the same time the cutting-blades in the first groove a again cut in the same way to deepen it. When the operator cuts to the end of the field, the ice-plow is conveniently turned around by lifting one of the handles F and then turning it to one side, so that the front end of the plow conveniently turns on the front U-shaped runners G. The plow is reversed and again inserted in the two grooves and the animal started forward again, so that both grooves are deepened, the outermost being again considerably deeper than the innermost. This operation is repeated until the outermost groove is sufficiently deep, after which the plow at the end of the field is moved in such a position that only one set of cutting-blades and runners on one beam are in the innermost groove, and a new groove is started in the ice-field, as before described. The operation is then again repeated, as before described. After the first cut is made, as before described, the operator hitches the animal to the second clevis E' by a chain or other suitable means. As the plow then travels in the grooves already formed, the animal is prevented from dragging the plow out of its grooves by a sidewise pull, and consequently a very regular cut is made in the ice-field.

As all the runners and blades are adjust-

able, as previously described, the relative positions of the front and rear runners with the cutting-blades may always be retained, so that the ice-plow cuts to regular depths at all times, and consequently enables the animal to drag the ice-plow over the field with great ease and at a steady uniform pull.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In an ice-plow, the combination, with a frame comprising two parallel longitudinal beams, and suitable transverse beams for connecting the said longitudinal beams with each other, of two U-shaped runners of different length held adjustably on the front and rear ends of each longitudinal beam, and cutting-blades of different length held adjustably on the said longitudinal beams between the said runners and extending below the lower ends of the front runners, substantially as shown and described.

2. In an ice-plow, the combination, with a frame comprising two parallel longitudinal beams, and suitable transverse beams for connecting the said longitudinal beams with each other, of two U-shaped runners of different length held adjustably on the front and rear ends of each longitudinal beam, and cutting-blades of different length having each a rearward brace H² with a curved slot in it, and a flange at its upper end, a horizontal bolt extending through said curved slot into the beam, and a vertical bolt extending through the flange and beam, substantially as shown and described.

3. In an ice-plow, the combination, with a frame provided with side beams, of the front and rear runners G and G', held adjustably on the said side beams, substantially as described, and cutting-blades H and H', each bolted at two different points to the beam, one point forming an axial connection and the other a curved sliding connection, in the manner described, and for the purpose set forth.

HAMILTON PRAY.

Witnesses:

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