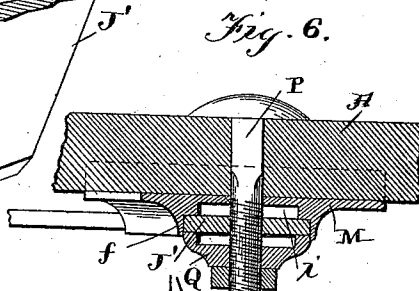
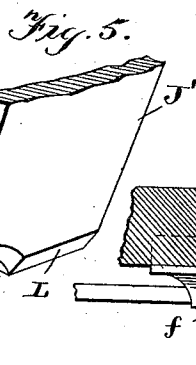
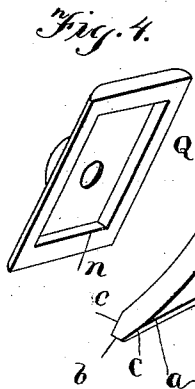
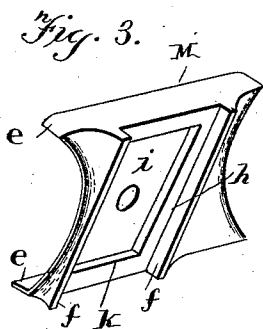
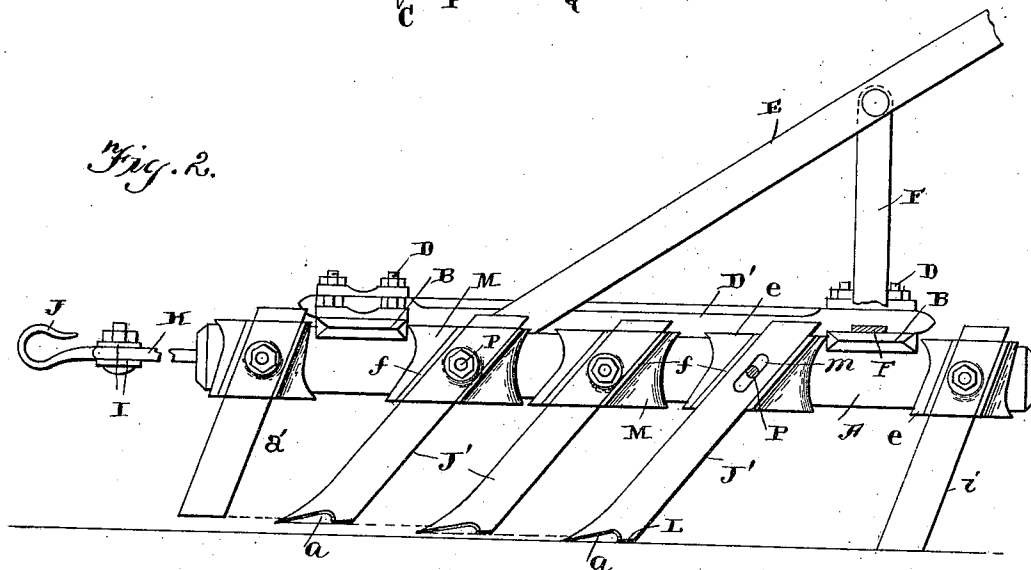
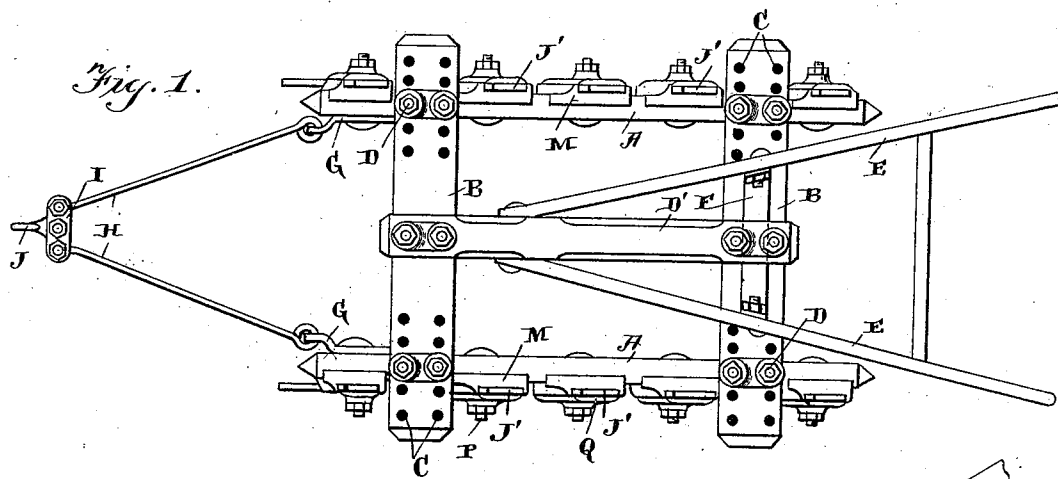


(No Model.)

C. E. BUCKLEY.
ICE GROOVING MACHINE.

No. 512,153.

Patented Jan. 2, 1894.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES E. BUCKLEY, OF AMENIA UNION, NEW YORK.

ICE-GROOVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 512,153, dated January 2, 1894.

Application filed September 21, 1893. Serial No. 486,086. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BUCKLEY, of Amenia Union, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Ice-Grooving 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in ice grooving machines, and it consists in the particular construction which will be fully described hereinafter and especially pointed out in the claims.

The objects of my invention are to provide an ice grooving machine having a particular form of casting, by means of which the knives are held in position through the medium of a single bolt and adapted to have a vertical adjustment; to provide a knife which has each side of its under edge cut away leaving a flat central portion, and by means of which the point of the knife is left with a central straight portion and with diverging edges from this straight portion extending upward to the side of the knife, thus producing a knife which effects a drawing cut in contra-distinction to dragging the straight edged knife through the ice, and by means of which bevel the cutting surface of the knife is increased, as will be readily understood, making a clear and easy cut in the ice; and to provide draft bars extending from opposite sides of the frame and loosely connected to a cross piece at their outer ends, a draft hook being between these outer ends and also loosely supported, whereby any side pull upon the rods will not effect a side pull upon the machine, thus causing it to have a side draft or to travel out of a straight line, as would be the case if the said rods were firmly connected, and also which permits of a free adjustment to any desired width of frame.

In the accompanying drawings: Figure 1, is a plan view of an ice grooving machine which embodies my invention. Fig. 2, is a side elevation of the same. Fig. 3 is a perspective view of one of the castings for holding the cutter blades. Fig. 4 is a similar view of one

of the caps for the castings. Fig. 5 is a similar view of the lower end of one of the cutter blades. Fig. 6 is a transverse section through the center of one of the castings M, the cutter blade being shown clamped therein.

A, A, indicate the side parallel bars of the frame, and B the cross bars which connect them. These cross bars are provided with a series of perforations C, through which the clamping bolts D pass, and by means of which the two side bars can be moved toward and away from each other to regulate the space between the groove cut by the machine as may be desired. These clamping bolts preferably extend vertically through the parallel portions of the frame, as shown.

Connecting the cross bars and uniting them firmly together is a central bar D', to which the lower ends of the handles E are connected, the outer ends of the handles being supported by a strap F, which extends under the said longitudinal central bar, and has its ends connected to the handles. Connected to the inner sides of the outer ends of the said parallel bars are the draft straps G, provided with eyes through their outer ends through which the inner ends of the bars H pass. The outer ends of these bars H are loosely connected with the cross piece I, and between the outer ends of these bars a draft hook J is loosely connected. Owing to this construction a side pull upon the central hook will not cause a side draft upon the frame of the machine, and this construction also permits of the free adjustments, back and forth, of the side bars, which constitute a portion of the main frame.

The knives J' consist of flat bars having their lower ends preferably extended slightly forward to make them pointed, and the under edges of the lower ends of these blades or knives are cut away, as shown at a, in the detail view thereof, which produces a knife having a straight central end portion b, with diverging portions c, from this straight portion upward, as is also clearly shown in the enlarged view. Owing to this construction a draw-cut is produced by the diverging portion of the knife, while a straight cut is produced by the straight edge, thus making a smooth cut and increasing the cutting edge of the blade, as will be readily understood. As here shown

the blade is provided with a heel L, to which, however, I make no claim and to which my invention is not limited, for this heel may be omitted if desired without affecting the result of my particularly shaped blade. These blades are removably attached to the side bars of the frame by means of castings M, which have internal horizontal flanges e, at their upper and lower edges, and with external inclined flanges f, on their outer faces forming an incline slot h. These grooves h, have their inner faces concaved as shown at i, to form the edges k, against which the inner faces of the knives rest. The upper ends of these knives are provided with longitudinal slots m, through which the clamping bolts P, pass, which also pass through the castings and the side bars of the frame. Placed upon the outer side of the blade is a cap Q, which fits within the inclined flanges of the castings, and this cap is likewise concave upon its inner side to form the peripheral edge n. The object of forming these peripheral edges upon the castings and upon the cap, is to increase the friction of the casting and cap, and also to provide for a perfect holding of the blade even where the casting is rough. As will be readily understood, if the casting is rough and has a straight inner surface, lumps are liable to occur in the casting which would prevent a secure holding of the blade. By making the casting and cap concave as just described this contingency is avoided, and the blades held in a parallel line, one with the other as will be readily understood.

The gages a', i, at opposite ends of the machine support the machine, and permit the cutting blades to cut into the ice only to a depth equal to the difference between the length thereof, which gages are held to the parallel bars in the same manner as the blades to be adjusted vertically.

From the above description it will be seen that I have produced a very simple and cheap, and yet effective ice grooving machine, and by the peculiar shape of the under sides of the cutting blades form a rest, so to speak, or runner for the blade, while its forward end is so shaped as to produce a drawing cut which makes the same easy in its cutting action and also produces a clear and smooth cut, as compared to a knife having either a V-shaped end, or the most common form of flat end from edge to edge, which is usually increased in width as compared to the

width of the main portion or shank of the blade.

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

1. An ice grooving machine comprising parallel and cross connecting bars, forming a frame and draft bars having their inner ends loosely connected with the frame, a cross bar at the outer end of the said draft bars to which the draft bars are loosely connected, and a draft hook loosely connected with the said cross piece between the outer ends of the draft bars, for the purpose described.

2. An ice grooving machine comprising parallel bars, castings attached to the sides of the bars having their inner faces provided with inwardly extending horizontal flanges and their outer faces provided with upwardly extending flanges between which the knife blades are placed, the blades placed between the flanges and provided with transverse openings, and the bolts passing through the blades, castings and the said bars, substantially as described.

3. An ice grooving machine comprising parallel bars, castings having horizontal inwardly extending flanges, upwardly extending external flanges forming a groove, the knives placed between the said external flanges and provided with a transverse opening, caps fitting between the said external flanges and engaging the outer faces of the knives, and the clamping bolts passing through the cap, knife, castings and the parallel bars substantially as set forth.

4. A knife for ice grooving machines having a straight central cutting edge and diverging side cutting edges formed by cutting away opposite sides of the lower edge of the blade, substantially as shown.

5. A knife for ice grooving machines having a heel portion, a straight central cutting edge and the under edge of the said knife having its opposite edges cut away from the point to the heel portion, thus forming a straight central end portion and upwardly diverging side portions from the said central straight portion, for the purpose specified.

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

CHARLES E. BUCKLEY.

Witnesses:

A. S. PATTISON,
JOHN D. KINNEY.