

J. M. NELSON.
ICE CRUSHER.
APPLICATION FILED MAR. 15, 1909.

1,013,509.

Patented Jan. 2, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

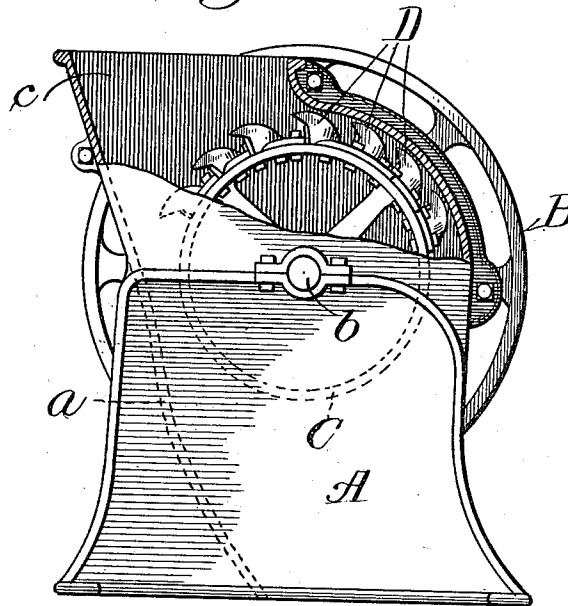
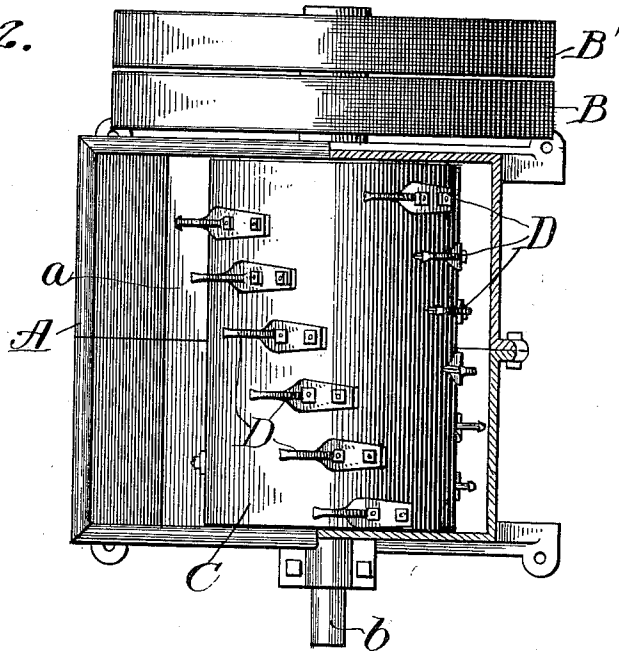


Fig. 2.



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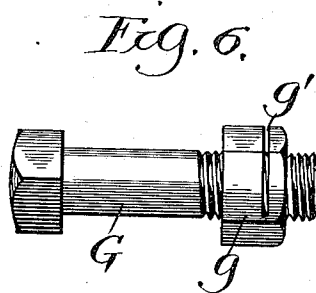
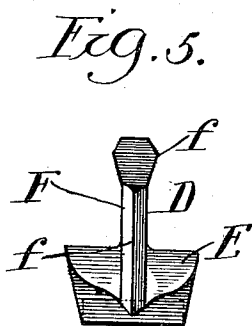
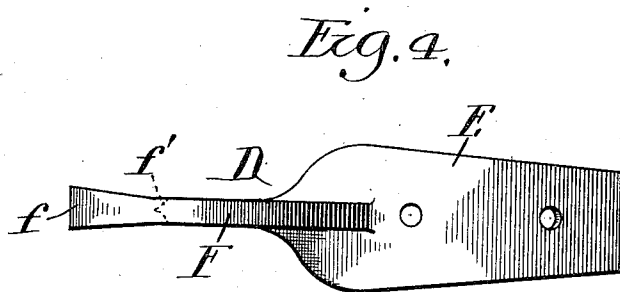
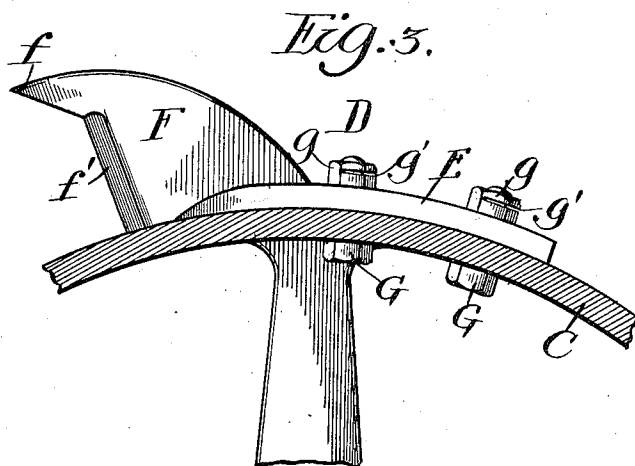
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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN M. NELSON, OF DAVENPORT, IOWA, ASSIGNOR TO DAVENPORT ICE CHIPPING MACHINE COMPANY, OF DAVENPORT, IOWA, A CORPORATION OF IOWA.

ICE-CRUSHER.

1,013,509.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed March 15, 1909. Serial No. 483,516.

To all whom it may concern:

Be it known that I, JOHN M. NELSON, a citizen of the United States, and a resident of Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Ice-Crushers, of which the following is a clear, full, and exact description.

My invention relates to machines for crushing or breaking ice from a large or small block and which, according to the size of the machine may be operated either manually or by suitable power.

The particular object of my invention is to provide a suitable breaker blade or pick, which, on account of its peculiar construction will successfully operate in such a manner as to effectively break up the ice into uniform pieces and avoid any clogging of the machine. This I accomplish in the manner hereinafter fully described and as more particularly pointed out in the claims.

In the drawings:—Figure 1 is a side elevation of an ice chipping machine having a portion of the side wall of the case broken away in order to clearly show the arrangement of my improved ice breakers or picks. Fig. 2 is a top plan view of said machine, also showing the arrangement of the picks. Fig. 3 is a side elevation of one of my improved ice chippers mounted on a fragmentary portion of the rotatable drum, and drawn to an enlarged scale. Fig. 4 is a top plan view of said ice chipper detached from the machine. Fig. 5 is a front end elevation of one of said ice breakers. Fig. 6 is a detail view, drawn to an enlarged scale, of the bolt and nut used in securing the ice breaker to the drum of the machine.

Referring to the drawings, A represents a suitable casing of an ice-crushing or breaking machine in which the breaking mechanism is adapted to be housed, and is preferably of substantially rectangular shape and constructed of two corresponding cast-metal parts. This casing has the lower portion of its front wall cut away from its bottom up to a point approximately midway its height and has its top left entirely open in order to permit of free access to the mechanism housed within the same, and also provide a mouth *c* in the upper portion thereof. As suggested in dotted lines (Fig. 1) the lower portion of the interior of this casing is provided with an

inclined shedding wall *a* that slopes from the rear wall forwardly toward the center of length of the bottom of the casing.

At a point preferably in the horizontal plane of the top of this wall *a* said casing is provided with suitable oppositely arranged bearings for journaling a horizontally disposed rotatable shaft *b*, the ends of which extend beyond its bearings and which, on one end, is provided with a loose and a fast pulley B, B', that are driven by any suitable motive power. A hollow drum C is securely mounted on this shaft *b*, mediate the side walls of the casing, and is adapted to rotate therewith. This drum is so located that approximately a quadrant thereof is below the mouth or opening *c* in the top of the casing and preferably forms the lower portion of a hopper-shaped compartment in which the block of ice to be crushed or broken is placed. Mounted in geometrical order on the circumference of this drum are four rows of ice-picks D, the special construction of the blades of which are adapted, while the machine is in operation, to crush and break the ice into small particles of uniform size, as well as prevent the clogging of the machine. These picks D are, preferably, arranged six in a row around the circumference of the drum and in staggered relation to those in the preceding and succeeding rows. Of course it will be understood that any convenient number of rows may be employed, but I prefer the use of four rows, as this is the most economical and efficient number, and I arrange each of said rows in a plane at an angle of about sixty degrees to the plane of rotation of the drum. These picks are preferably constructed of sheet-metal, cut and bent to a shape, substantially as shown in Figs. 3, 4, and 5 of the drawings. They comprise a suitable concavo-convex, or arc-shaped attaching-plate E that conforms to the segment of the circumference of the drum to which it is secured and a pick F that projects longitudinally from said arc-shaped plate E into a vertical position, at substantially right-angles to the plane thereof. These picks extend beyond the front edge of plate E and its front edge is cut away to form an advanced pointed pick end or point *f*, at its forward outer angle that projects beyond the remainder of the body of the pick and is preferably flattened

or broadened out horizontally toward its apex to present a horizontal cutting edge. The straight edge f' of the cut away portion is beveled to form a chisel-shaped cutting edge that is at right angles to the edge of the point of the pick, substantially as shown in Figs. 3 and 5 of the drawings.

The plate E of the pick is provided with one or more openings, through which suitable headed bolts G are inserted and secured in place by nuts g . These nuts are each provided with transverse kerfs g' that extend about half way through the same in a plane parallel with the plane of the top and bottom thereof, and, after said nuts have been tightened, the kerf is closed by pressing the metal thereof together, causing the threads of the nut to bind securely upon the threads on the bolt and lock the same together.

What I claim as new is:—

1. An ice-breaker comprising a plate, and a rib arising at right-angles therefrom having a vertical cutting edge, and having a

portion projecting beyond the vertical plane of said cutting-edge that is provided with a horizontal cutting-edge at substantially right angles to first-mentioned cutting-edge.

2. An ice-breaking machine comprising a suitable casing, a rotatable drum mounted within the same, and a plurality of ice-breakers carried by said drum each consisting of a plate secured to said drum, and a rib arising therefrom having a vertical cutting-edge that is radial from said drum and having a portion projecting beyond the vertical plane of said cutting-edge that is provided with a horizontal cutting-edge disposed in a plane parallel to the plane of the axis of said drum.

In testimony whereof I have hereunto set my hand and seal this 1st day of November, A. D., 1908.

JOHN M. NELSON. [L. s.]

Witnesses:

LOUISE GOEDE,
ELSIE HALDALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."