(No Model.)

2 Sheets—Sheet 1.

E. S. FIELD.

Ice Cutting Machine.

No. 234,397. Patented Nov. 16, 1880.

Fig. 1.

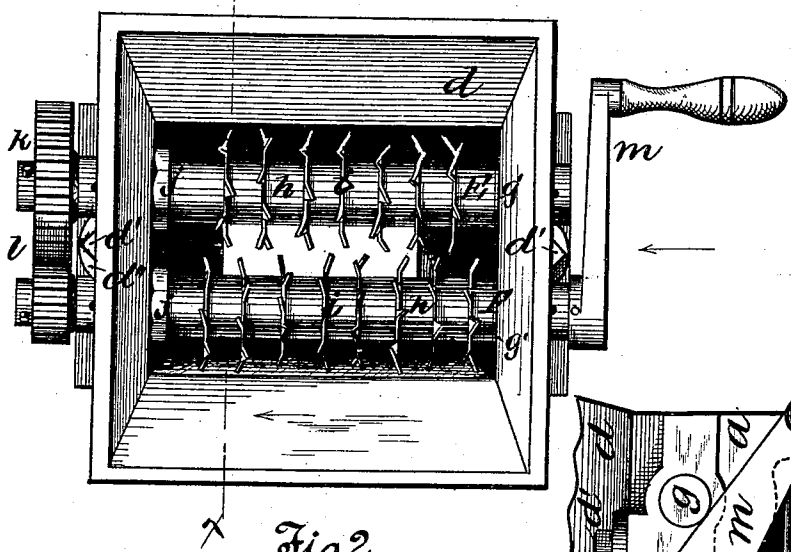


Fig. 2.

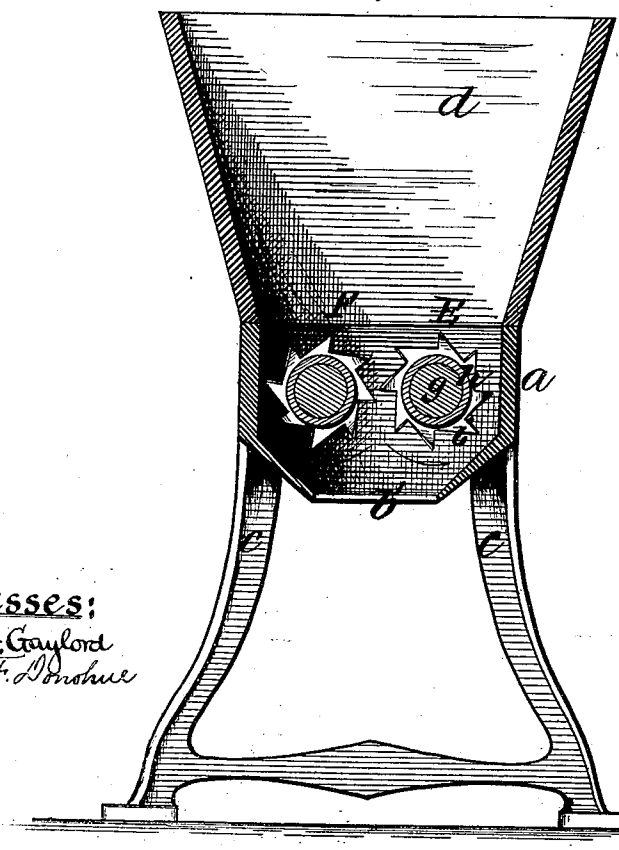
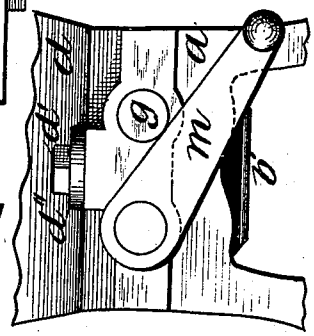


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

E. S. FIELD.

Ice Cutting Machine.

No. 234,397. Patented Nov. 16, 1880.

Fig. 4.

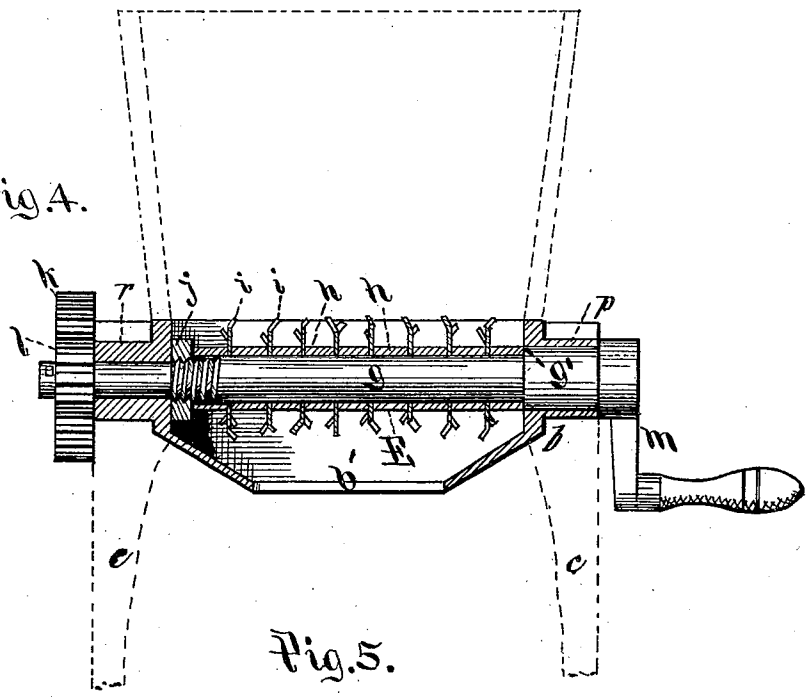


Fig. 5.

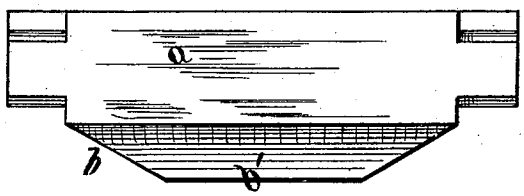
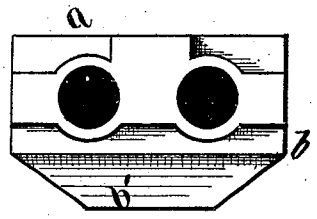


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWIN S. FIELD, OF SPRINGFIELD, MASSACHUSETTS.

ICE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 234,397, dated November 16, 1880.

Application filed April 17, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. FIELD, of Springfield, in the county of Hampden and State of Massachusetts, have invented a certain new and useful Improvement in a Machine for Cutting Ice from the Lump into Small Pieces, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a top view of a machine embodying my improvement. Fig. 2 is a view of same in section on plane *x x*. Fig. 3 is a partial end view. Fig. 4 is a central vertical section; Figs. 5 and 6, details in elevation.

My present invention relates to certain improvements in that class of machines for cutting ice in which a pair of toothed cylinders or rolls revolved in opposite directions is employed, one of the machines of this class being shown in Patent No. 181,273.

My invention consists in the peculiar shape and set of the cutting-teeth, to be hereinafter described, whereby the ice in lumps of considerable size is broken and cut into pieces of small size, convenient for cooling beverages, articles of food, and for other domestic and general use.

My invention also consists in a cutter-roll shaft having journals of different diameters, in combination with a cutter-case having solid bearings therefor of corresponding diameter, whereby the wear and consequent jar of the parts incident to bearings provided with screw-caps is entirely avoided.

My invention also consists in a cutter-case contracted at its bottom to form an opening of suitable size for the delivery of the broken ice into a drinking-receptacle placed thereunder.

In the said drawings, *a* represents a rectangular cast-iron cutter-case, supported on legs *c c* and contracted at its bottom to form a delivery-opening, *b'*, under which a drinking-glass may be placed to collect the cold water and broken ice issuing therefrom, a hopper, *d*, being located upon and secured to said case by screws *d'* passing through ears *d''*, but the box and hopper may be cast integral with each other.

The two cutter-rolls are denoted as wholes by the letters E F, each being made up of a central shaft, *g*, bearing short sleeves *h* alternating with cutters *i*, the sleeves and cutters being secured in place between the shoulders *g'* and the nuts *j*. The two shafts are rotarily hung in the cutter-case *a* and bear at one end the intermeshing gears *k* and *l*, one of them, at its opposite end, also bearing a crank, *m*.

To dispense with the ordinary caps screwed down over the journals of the shafts, and to avoid the wearing out of the threads of the screws which confine them in place, and the consequent play of the journals in said capped bearings, I form one journal, *p*, of each shaft *g* of larger diameter than its other journal, *r*, Fig. 4, and provide bearings therefor in the solid case or box *a* by drilling, boring, or casting openings of the required size through them, by which construction each shaft can be mounted by first introducing its smaller end through the larger bearing and thence into its seat in the smaller bearing.

The peculiar novelty which adapts this machine for cutting ice from the lump into small pieces consists in the shape of the cutter-teeth and the relative position and arrangement of the two sets of cutters. The two sets of teeth do not substantially intermesh, but when adjusted for cutting ice quite fine the teeth of the two sets of cutters reach to a vertical plane common to both, which may be called the "meeting-plane." A very slight intermeshing is not, of course, a material change; but any substantial intermeshing of the two sets of teeth unfits the machine for cutting and comminuting ice. The teeth or cutters may be set back from this meeting-plane, but in such case the ice is less finely divided.

The teeth *i* are not shaped like the teeth of a common circular saw, but are shaped like the teeth of a circular ratch. The points of the cutter-teeth are set alternately to one side and the other, as common saw-teeth are often set.

With the arrangement of gears shown in the drawings the roll E will revolve slower than the roll F. In such case the exact shape of the cutter-teeth *i* in the slower roll E is not essential.

I am aware that machines for crushing ice have been used in which cutting-teeth have been employed; but the form, set, and rela-

tive position of these teeth are such that they are incapable of cutting up a lump of ice of any considerable size, simply making grooves therein, and it is therefore necessary, first, to break it up into many pieces before placing it in the hopper. My teeth, however, enable me to break, by their use, a lump of a size as large as can be conveniently placed in the hopper, the operation of my teeth being to cut or pick the ice, the peculiar form, relative position, and set of the teeth producing the desired result.

To the features described in Letters Patent No. 181,273, before referred to, I lay no claim.

I claim as my invention—

1. The cutter-case *a*, with its bottom contracted to form a delivery-opening, *b'*, and with a pair of rolls, E F, driven by suitable gearing, and armed with teeth *i*, set alternately to either side, in combination with the supporting-legs *c c* and a hopper, *d*, formed integral with or separate from said case, constructed to operate substantially as and for the purpose described.

2. The metal cutter-case *a*, having solid bearings of different diameters formed integral therewith, in combination with a pair of rolls, E F, each consisting of a shaft, *g*, bearing alternate sleeves *h* and cutters *i*, the journals *p r* of said shaft *g* being of different diameters to correspond to those of the solid bearings, for the purpose set forth.

EDWIN S. FIELD.

Witnesses:

WM. E. SIMONDS,

ROBT. F. GAYLORD.