

W. E. PENN.
ICE BREAKER.
APPLICATION FILED JULY 11, 1910.

1,032,081.

Patented July 9, 1912.

2 SHEETS-SHEET 1.

Fig. 1

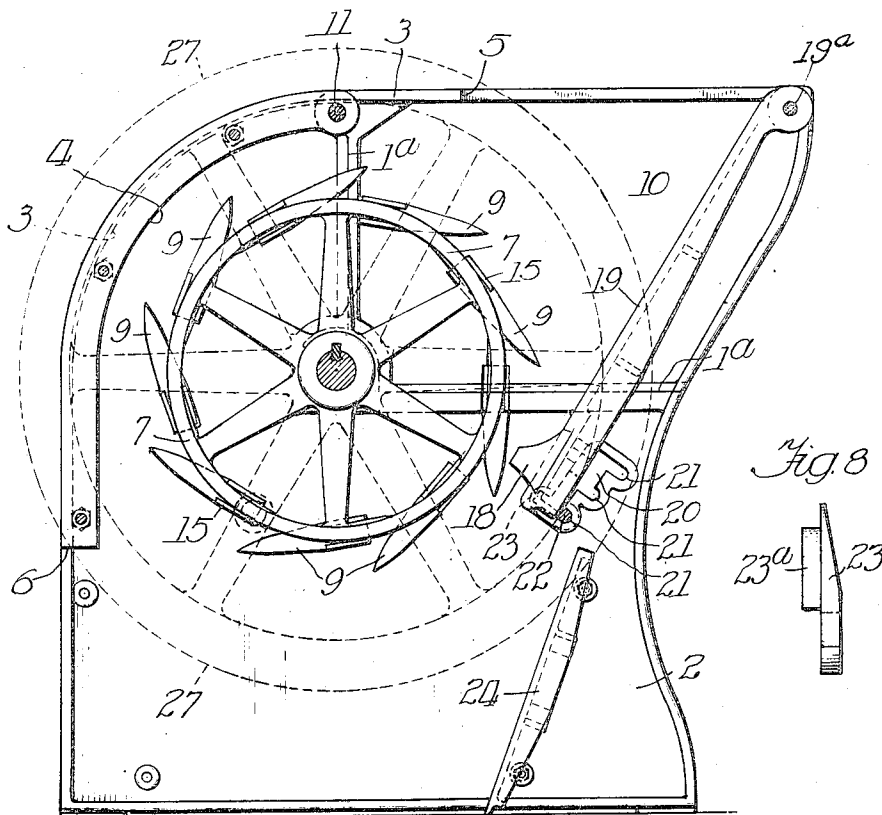


Fig. 8

Fig. 6.

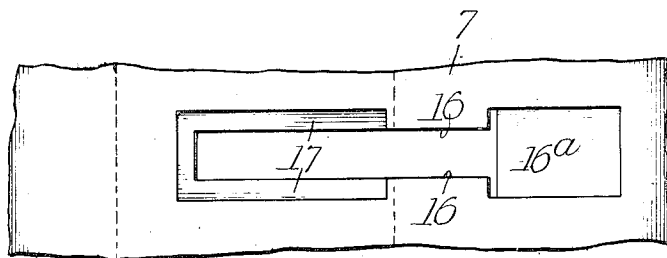
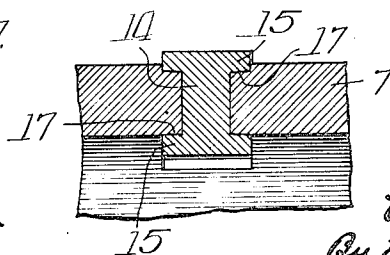


Fig. 7



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2 SHEETS—SHEET 2.

Fig. 2.

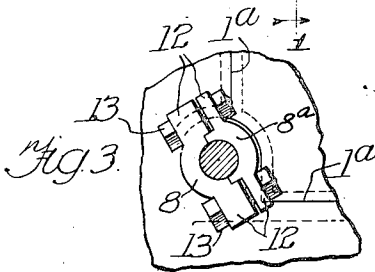
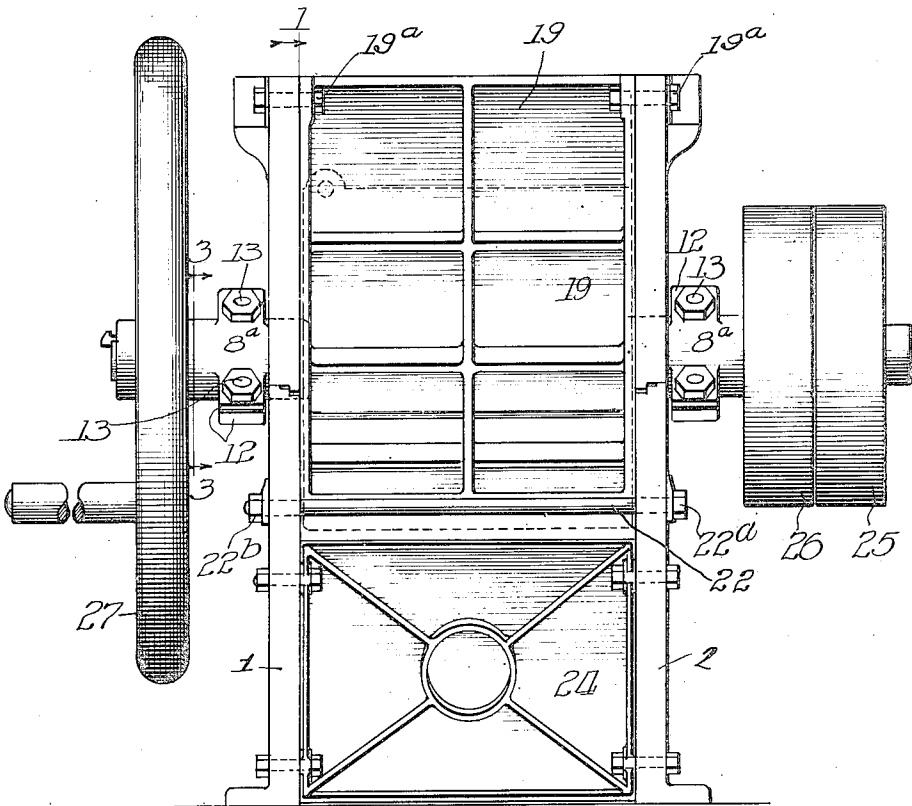


Fig. 4.

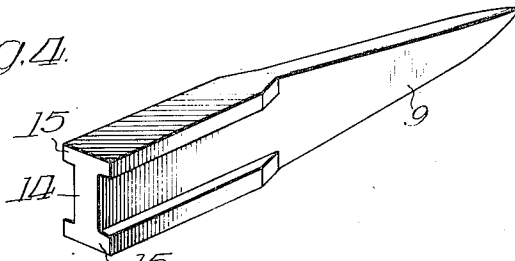
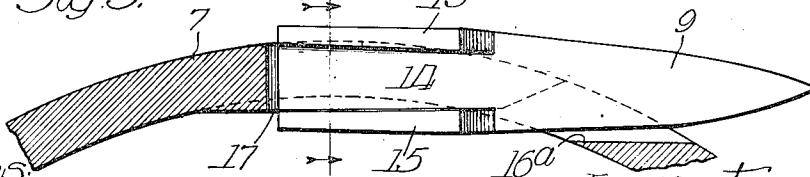


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ICE-BREAKER.

1,032,081.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed July 11, 1910. Serial No. 571,432.

To all whom it may concern:

Be it known that I, WILLIAM E. PENN, a citizen of the United States, residing at Lake Mills, in the county of Jefferson and State of Wisconsin, have invented certain new and useful Improvements in Ice-Breakers, of which the following is a specification.

This invention relates to machines for breaking or chipping ice, of the type in which a plurality of picks are mounted in the periphery of a drum which is adapted to be rotated to carry the picks into engagement with a block of ice, for the purpose of breaking the block into fragments of a size suitable for use in ice cream freezers and various other places.

One of the objects of the invention is to improve the manner of mounting the picks in the drum.

Another object is to provide an improved adjustable mounting for the stationary comb.

A further object is to produce an improved sectional casing, the parts of which are separable so that the drum mounted therein may be easily removed to permit repairs or renewal of the picks.

The invention also relates to the further features of improvement in ice breaking machines hereinafter set forth.

In the accompanying drawings, Figure 1 is a sectional view of an ice breaker embodying the features of my invention, the view being taken in the plane of line 1—1 of Fig. 2. Fig. 2 is a front elevation of the machine. Fig. 3 is a section on line 3—3 of Fig. 2. Fig. 4 is a perspective view of one of the picks. Fig. 5 is a fragmental section through the drum showing a pick in place therein. Fig. 6 is a fragmental plan view of the drum showing one of the pick-receiving openings. Fig. 7 is a section on line 7—7 of Fig. 5. Fig. 8 is a detail view of a washer used in the machine.

The embodiment of my invention herein shown comprises a casing having side walls 1 and 2, and a curved wall 3 extending between said side walls, said curved wall having flanges 4 at its side edges adapted to be bolted to the walls 1 and 2. The curved wall 3 terminates short of the forward and lower sides of the side walls 1 and 2 to provide a feeding opening 5 and a discharge opening 6.

A drum 7 is rotatably mounted in bear-

ings 8 in the side walls 1 and 2, said drum carrying a plurality of picks 9 upon its periphery. The side walls 1 and 2 are preferably divided on lines 1^a extending vertically upward and horizontally to the right (Fig. 1) from the bearings 8, to form a movable casing section 10 which is hinged at 11 upon the stationary portion of the casing, said movable section being arranged to swing upwardly to permit the drum 7 to be removed for the purpose of repairs or for renewal of the picks 9. The bearings 8 for the drum 7 are split diagonally as shown in Fig. 3, one half of each of the bearings preferably being formed integral with the stationary portion of the casing, and the other half 8^a being detachably connected to the fixed bearing sections. By this manner of dividing the bearings 8 all stress is thrown against that half of the bearing which is carried by the stationary portion of the casing. Flanges 12 on the bearing sections are arranged to receive bolts 13 for clamping said bearing sections together.

The picks 9 may be of any suitable number and are preferably staggered upon the periphery of the drum 7. The rear portion of each pick is of I form and comprises a web 14 having flanges 15 at its upper and lower edges. The web 14 is adapted to be inserted into an opening or slot 16 formed in the wall of the drum 7, the flanges 15 on said web contacting faces 17 formed on the inner and outer sides of the drum. The pick is wedged firmly in its slot 16 and is thus held firmly in its place in the drum. In the present instance, I have provided for this wedging effect by forming the faces 17 at the outer and inner sides, respectively, of the drum 7 in planes which converge in the direction of rotation of the drum, and by making the flanges 15 on opposite sides of the pick 9 converging toward the point of the pick, as clearly shown in Fig. 5. The slot 16 is somewhat widened at its entrance 16^a to permit the lower flanges 15 to pass to the inner side of the drum. It will be noted that the engagement of the picks 9 with the ice will not tend to loosen or dislodge the picks from the drum 7, but on the contrary, will drive said picks more securely into the drum. This manner of mounting the picks obviates the necessity for using screws or other fastenings which might work loose,

or become rusty so that they could not be removed when it became necessary to renew the picks.

The picks 9 are arranged to coöperate with a stationary comb 18 having, in this instance, a dove-tail connection with a plate 19 which forms a portion of the front wall of the casing. Said plate is pivoted at its upper edge, as at 19^a, to the side walls 1 and 2 and is adapted to be swung toward and away from the drum 7 to adjust the comb 18 with relation to said drum. The side walls 1 and 2 may have openings 20 therein, said openings having steps 21 formed in one edge thereof in which steps a rod 22 is adapted to lie. The lower end of the plate 19 is adapted to rest against the rod 22. As will be seen from Fig. 1, the steps 21 are located at successively greater distances from the drum 7 so that the comb 18 may be positioned at the desired distance from said drum.

Washers 23 may be placed on the rod 22, said washers having projections 23^a thereon adapted to fit in the openings 20 alongside the rod in any of the three positions of the latter so as to hold the rod in the pair of steps in which it has been placed. The washers 23 are held in place by a head 22^a and nut 22^b on the rod 22. (Fig. 2.)

In practice, several of the combs 18 will be provided, the teeth of the different combs varying in their spacing so that the ice may be broken into grades varying in size.

When it is desired to change the comb 18, the rod 22 is removed and the plate 19 swung outwardly. The comb 18 may then be slid longitudinally out of its dove-tail recess and another one substituted. When the plate has been swung inwardly again the rod 22 will be replaced in the proper pair of the steps 21.

A plate 24 positioned in the lower portion of the casing directs the broken ice falling between the drum 7 and comb 8 into the lower portion of the casing. Said plate forms the lower portion of the forward wall of the casing.

The drum 7 may be driven in any suitable way. I have herein shown a tight pulley 25 and loose pulley 26 fixed on the drum shaft so that the drum may be driven by power if desired. A hand wheel 27 may also be fixed upon the other end of the drum shaft to permit of turning the drum manually.

In operation, a cake of ice is placed in the feeding opening 5 of the casing, the cake resting against the drum 7 and the plate 19. The drum is then rotated to carry the picks 9 successively into engagement with the cake of ice to break up the ice into smaller pieces. In passing downwardly between the picks 9 and the comb 18 these pieces are broken up into fragments of the

desired size. A suitable instrument such as a shovel may be inserted through the discharge opening 6 for withdrawing the chipped ice from the casing.

I claim as my invention:

1. In an ice breaker, a rotary drum having a slot in its wall, a pick extending tangentially with reference to the drum and comprising a web adapted to be inserted into said slot, and flanges at the edges of said web adapted to lie at the inner and outer sides of the drum wall.

2. In an ice breaker, a rotary drum having a slot in its wall, and an ice pick extending tangentially with reference to the drum and comprising a web adapted to be fitted in said slot, said web having flanges at its edges arranged to contact the inner and outer surfaces of the drum adjacent to said slot, said slot having a widened portion to permit the lower flange to enter the interior of the drum.

3. In an ice breaker, a rotary drum having a transverse slot in its wall and plane surfaces adjacent said slot on the inner and outer periphery of the drum, a pick comprising a web adapted to be inserted into said slot and held therein by friction, and oppositely extending flanges at opposite edges of said web adapted to contact said plane surfaces on the drum, said slot having a widened portion to permit the lower flange to enter the interior of the drum.

4. In an ice breaker, the combination of a rotary drum having a slot in its wall, and having an outer plane surface at the sides of said slot extending substantially tangentially to the periphery of the drum, said drum having another plane surface at the sides of said slot within the drum, said plane surfaces being approximately parallel; and a removable frictionally held ice pick having a shank of I form, the web of said shank fitting in said slot and the flanges fitting against said inner and outer plane surfaces.

5. In an ice breaker, a rotary drum having a transverse slot in its wall and plane faces adjacent said slot on the outer and inner periphery of the drum, said inner and outer faces converging in the direction of rotation of the drum, and an ice pick comprising a web adapted to lie in said slot, said web having flanges at its edges converging toward the point of the pick and frictionally engaging said inner and outer faces.

6. In an ice breaker, in combination, a casing; a rotary drum mounted in said casing, and having a plurality of projections upon its periphery; a plate pivoted at its upper edge in said casing; a comb carried at the lower edge of said plate and adapted to coöperate with said projections, said casing having openings in its opposite side walls, one edge of said openings having a

plurality of steps formed therein, and a rod extending through said casing, and adapted to engage in pairs of said steps, said rod supporting the lower end of said plate.

7. In an ice breaker, in combination, a casing; a rotary drum mounted in said casing and having a plurality of projections upon its periphery; a plate hinged at its upper edge in said casing; and constituting a portion of the forward wall thereof; a comb having a dove-tail connection with said plate, said comb coöperating with the projections on said drum; and means for adjustably supporting the lower end of said plate, said plate being adapted to be swung outwardly to permit of the removal of said comb.

8. In an ice breaker, in combination, a casing, a rotary drum mounted in said casing and carrying a plurality of peripheral ice picks, a plate hinged at its upper edge in said casing and constituting a portion of the forward wall thereof, said plate having a transverse dove-tail groove in the lower portion of its inner face, a comb removably fitting in said groove and adapted to coöperate

with the ice picks on the drum; said casing having openings in opposite walls adjacent the lower edge of said plate, steps in the edges of said openings, and a rod extending 30 through said openings and adapted to lie in pairs of said steps and support said plate, said rod being withdrawable from the casing, whereby said plate may be swung outwardly to permit the withdrawal of said 35 comb from its groove in the plate.

9. In an ice breaker, a casing having bearings in its side walls; a rotary drum mounted in said bearings, said casing being divided on lines extending upwardly from 40 said bearings, and horizontally to one side thereof, to form a movable section, said movable section being hinged to the stationary portion of the casing, said bearings being divided diagonally, one-half of said 45 bearings being carried by the stationary portion of said casing, and means for holding the halves of said bearings together.

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Witnesses:

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