(No Model.)

F. K. WAY.

ICE SHAVER.

No. 384,299. Patented June 12, 1888.

Fig. 1

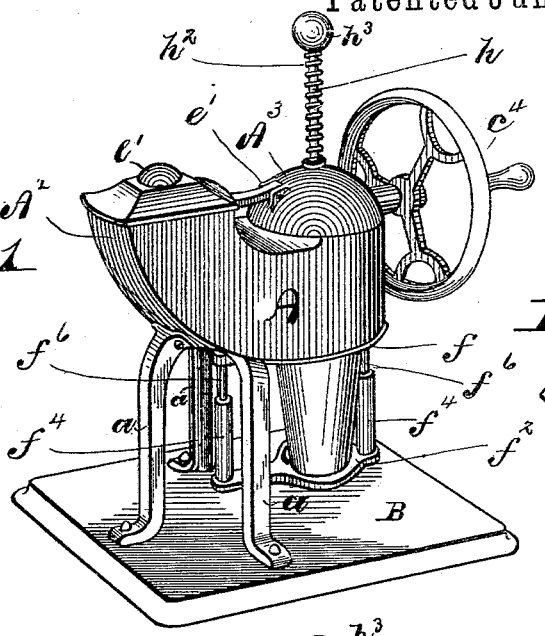

Fig. 11

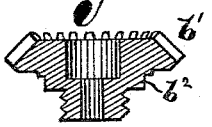

Fig. 3

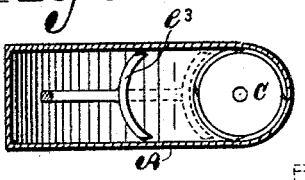

Fig. 4

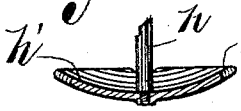

Fig. 5

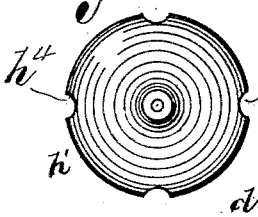

Fig. 2

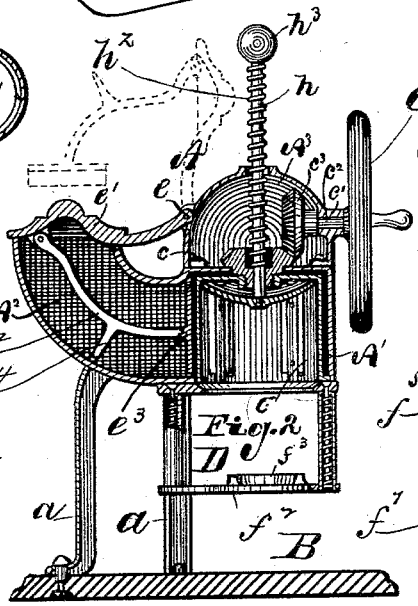

Fig. 6

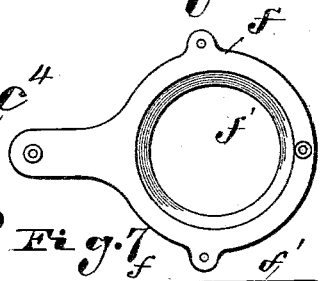

Fig. 7

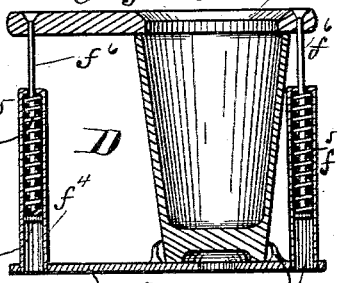

Fig. 8

Fig. 10

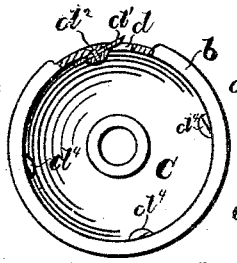

Fig. 9

Attest: C. F. Willis Baines. O. F. Avery.

Inventor. Frank K. Way. By Paul A. Staats. Att'y.

UNITED STATES PATENT OFFICE.

FRANK K. WAY, OF SPRINGFIELD, OHIO, ASSIGNOR TO JOHN FOOS, OF SAME PLACE.

ICE-SHAVER.

SPECIFICATION forming part of Letters Patent No. 384,299, dated June 12, 1888.

Application filed April 7, 1886. Serial No. 198,045. (No model.)

To all whom it may concern:

Be it known that I, FRANK K. WAY, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Ice-Shavers, of which the following is a specification.

My invention relates to improvements in ice-cutting machines.

The object of my invention is to provide a machine particularly adapted for use in connection with soda-fountains, or in saloons or restaurants, for the purpose of cutting or shaving ice to be used for cooling drinks and similar purposes.

My invention consists in a novel arrangement of the cutting or planing cylinder in connection with the receiving-reservoir and the feeding device therein.

It also consists in a holding device adapted to support a tumbler or other receiving-receptacle in position to receive the ice cuttings or shavings as they are discharged from the cylinder.

It further consists in a novel arrangement of the discharging mechanism adapted to expel the ice cuttings or shavings from the revolving cylinder into the receiving-receptacle.

It further consists in a novel arrangement of the cutting or planing cylinder and the casing thereof; and it further consists in the various constructions and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a sectional elevation view of the same, the feeding device being shown removed in dotted lines. Fig. 3 is a transverse sectional view of the same, showing the cylinder and feeding device in position. Figs. 4 and 5 are detailed views of the discharging device. Figs. 6 and 7 are detailed views of the receptacle-holding device. Figs. 8 to 11 are detailed views of the cutting or planing mechanism.

In the said drawings, A represents the main frame or casing of the device, which is preferably supported on three legs, *a*. The machine may be mounted on a base, B, as shown, or the legs *a* may be screwed directly to a counter or shelf in a convenient position for using, as desired.

The main frame or casing A is formed on one side into a circular chamber, A′, in which the revolving cylinder C is supported. Opening into this chamber A′ is a curved conduit or reservoir, A^2, also forming part of the main casing A. This conduit or reservoir extends outward and upward from the chamber A′ on an arc of a circle, preferably for a distance of ninety degrees. The chamber A′ is open at the bottom, and is preferably turned out to form a bearing for the lower end of the cylinder C, which is provided with a small annular flange, *b*, thereon. The cylinder C stands vertically in the chamber A′, and is also open at the bottom. It is closed at the top, however, and is preferably provided with a projecting boss or hub, which is tapped out to receive the hub of a small beveled pinion, *b*′, which is screw-threaded to fit thereon. This pinion *b*′ is turned off at b^2 to form a bearing in the top of the casing A, which is correspondingly bored out to receive it. Immediately above the casing A and the chamber A′ is a semi-spherical cap, A^3, secured to the casing by small screws *c*, or in any other suitable manner. In one side of this semi-spherical cap A^3 a bearing, *c*′, is formed for a shaft, c^2, which supports at the inner end a bevel-pinion, c^3, adapted to engage with the pinion *b*′ on the cylinder C, and provided at the outer end with a hand-wheel, c^4.

The cylinder C is provided on its periphery with a series of openings, *d*, through which are projected cutting knives or bits *d*′. I have shown four of these knives, though it is obvious that any suitable number may be used, as is desired. These knives are secured on the inner face of the cylinder, which is beveled off at the openings *d* to give the proper angle for cutting. They are preferably secured in place by small screws d^2, which are inserted from the outside of the cylinder and pass through slotted openings d^3, and are screwed into deflecting-strips d^4 on the inside of the cylinder.

Hinged to the cap A^3 at e is a swinging cover, e', adapted to close the top of the reservoir A^2. Pivoted to the under side of the cover e' is a curved arm, e^2, carrying at its lower end a plunger or follower, e^3, which is curved on one side to conform to the curvature of the cylinder C. The reservoir A^2 is preferably formed on the arc of a circle having its center at the point at which the cover e' is hinged. As the cover e', therefore, is raised, the plunger or follower e^3 will be withdrawn through the reservoir A^2, and will always maintain a position at right angles across the said reservoir or conduit.

Immediately below the chamber A', and secured to the casing A, is a receptacle-supporting device, D. This supporting device consists of a plate, f, provided with an opening, f', a little smaller in diameter than the top of a tumbler or other receiving-receptacle. Suspended under the plate f by an elastic or spring connection is a similar plate, f^2, which is provided with a suitable guide or stop, f^3, against which the tumbler or other receptacle is adapted to rest. The spring-connection consists, preferably, of small tubes or sleeves f^4, secured to the lower plate, f^2. These sleeves are open at the bottom and adapted to receive therein springs f^5, which rest against a shoulder or annular flange at the top of said tubes. Extending downward from the supporting-plate f are connecting-rods f^6, which extend through the springs f^5, and are each provided at the bottom with a head or flange, f^7. The springs f^5 rest at one end against the flange at the top of the sleeves and at the other end against the head on the connecting-rod, so that as the plate f^2 is drawn downward the springs are compressed. The springs are made sufficiently strong to support the receiving-receptacle, which is placed thereon against the stop or guide f^3, the pressure of the springs being adapted to hold the top or mouth of said receptacle against the upper plate and around the opening in said plate.

Extending upward through the gear b' in the top of the cylinder is a sliding stem, h, to the lower end of which is secured a piston, h', adapted to fit loosely in the cylinder C. Surrounding the stem h is a spring, h^2, which rests against the gear b' at one end and at the other against the enlarged head h^3 at the top of the stem. The piston h' is notched out at h^4 to fit over the deflecting-strips d^4 over the knives d' in the said cylinder. The stem h projects up through the semi-spherical cap A^3, an opening being formed in said cap sufficiently large to receive the spring and allow it to turn freely therein, and at the same time form a guide for said stem. The piston and stem are connected to and supported by the cylinder and its driving-gear and turn with the same.

The operation of the machine is as follows: The ice is inserted in the reservoir or conduit A^2, the cover e' being first raised up, as indicated in dotted lines in Fig. 2, thus withdrawing the follower. A tumbler or other receptacle is placed in the holder D and the cylinder revolved by turning the hand-wheel C^4. The cutting-knives of the cylinder are thus carried rapidly past the ice in the conduit, which may be forced against the cylinder, if necessary, by pressing down on the cover e'. The ice-shavings thus formed pass through the openings d in the sides of the cylinder, and, striking the deflecting-strips d^4, are forced outward, and fall through the open end of the cylinder into the receptacle below. When sufficient ice has been cut by the revolving cylinder, a downward pressure on the stem forces the piston through the cylinder, thus discharging the ice shavings or cuttings which may adhere to the deflecting-strips and the inner face of the cylinder directly into the receptacle below. The opening f' in the plate f is beveled slightly toward the center, and the piston h' is correspondingly curved, so that as the piston descends the particles of ice are discharged through said openings, leaving the interior of the cylinder entirely clean. When the stem h is released, the spring h^2 returns the piston to its normal position, and the machine is again ready for cutting.

It will be seen that this device is simple and compact, and is very effective in its operation. The reservoir A^2 being curved outward and upward, the ice may readily be inserted therein. The follower, being hinged at the center of the arc on which the reservoir or conduit is formed, forces the ice directly against the cylinder, so that all particles thereof, whether large or small, may be readily cut or shaved.

The follower-arm e^2 is made of such length that when the cover e' rests on top of the reservoir the follower e^3 just clears the knives in the cylinder. A projection, e^4, may be employed on the arm e^2 to form a handle, by means of which the follower may be forced down when the reservoir or conduit is nearly full of ice. It is evident that the device admits of modifications in form and construction without departing from the spirit of my invention. For example, the holding device D may be supported from the base instead of being suspended from the casing, the elastic connection being placed under the holding or supporting plate instead of above.

Other modifications may be employed, which will readily suggest themselves to the mind of an ordinary mechanic.

Having thus described my invention, I claim—

1. The combination, with the vertical revolving cylinder open at the bottom and provided with suitable cutting-knives in the periphery thereof, of an adjustable receptacle-holding device under said cylinder, substantially as specified.

2. The combination, with the outer casing having a vertical cylinder revolving in a chamber therein, a reservoir or conduit opening into the side of said chamber, and a receptacle-holding device under said cylinder, of the vertically-reciprocating piston adapted to be

forced downward through said cylinder and means for automatically returning said piston to its normal position, substantially as set forth.

3. The combination, with the outer casing provided with a chamber for the revolving cutting-cylinder, the curved conduit opening into said chamber, the hinged cover adapted to close said conduit, and the follower pivoted to said cover, substantially as set forth.

4. The combination, with the vertical ice-cutting cylinder, of a stationary plate under said cylinder, a supporting-plate under said stationary plate, and an elastic connection between said stationary plate and said supporting-plate, substantially as and for the purpose set forth.

5. The combination, with the outer casing, the revolving cutting-cylinder therein, suitable gearing for driving said cylinder, and a piston adapted to be forced through said cylinder, of the semi-spherical cap adapted to inclose said gearing and provided with an opening in the top thereof adapted to receive and guide the stem of said piston, substantially as set forth.

6. The combination, with the vertically-revolving cylinder having suitable cutting-knives therein, of an adjustable supporting device under said cylinder and means for expelling the cuttings or shavings from said cylinder into the receptacle, substantially as set forth.

7. The combination, with the vertical revolving cylinder provided with the knives therein and the deflecting-strips over said knives, of the reciprocating piston notched out to fit over said deflecting-strips and adapted to be forced through said cylinder, substantially as set forth.

8. The combination, with the outer casing having the chamber A′ and the curved conduit or reservoir A^2, of the vertical revolving cylinder provided with a series of cutting-knives, the said chamber being open at the bottom and adapted to form a bearing for the lower end of the cylinder, which is also open, substantially as set forth.

9. The combination, with the revolving cutting-cylinder and the plate provided with an opening therein under said cylinder, of the suspended plate f^2, having the sleeves thereon, springs in said sleeves, and connecting-rods extending through said springs and attached to said plate, substantially as set forth.

10. The combination, with the vertical revolving cutting-cylinder, of the conduit leading thereto and a follower in said conduit, said follower being adapted to fit said conduit, and being curved to conform to said cylinder, substantially as set forth.

In testimony whereof I have hereunto set my hand this 30th day of March, A. D. 1886.

FRANK K. WAY.

Witnesses:

PAUL A. STALEY,

P. J. CLEVENGER.