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R. R. SMITH

ICE SHAVING MACHINE

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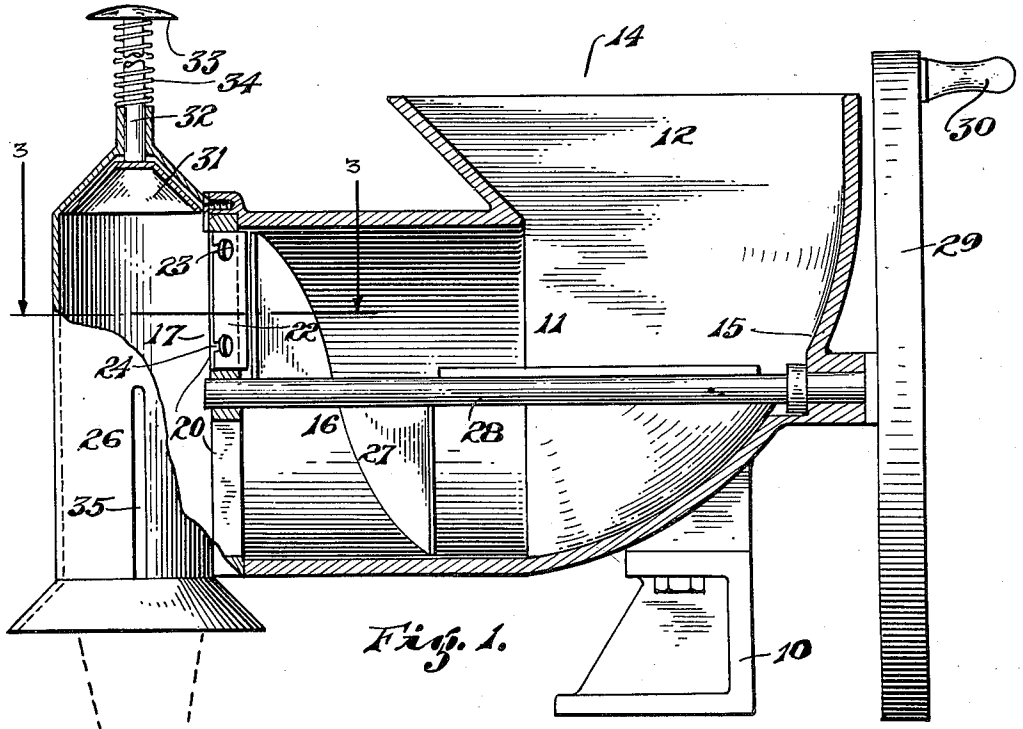

Fig. 1.

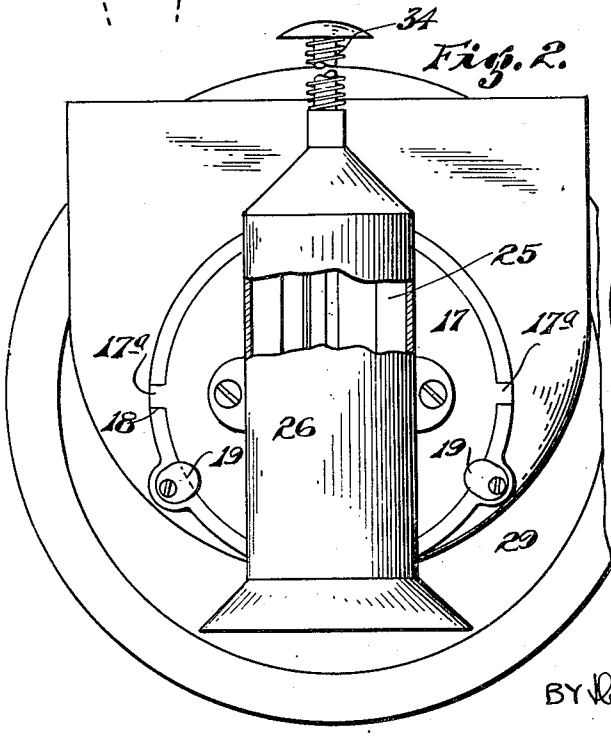

Fig. 2.

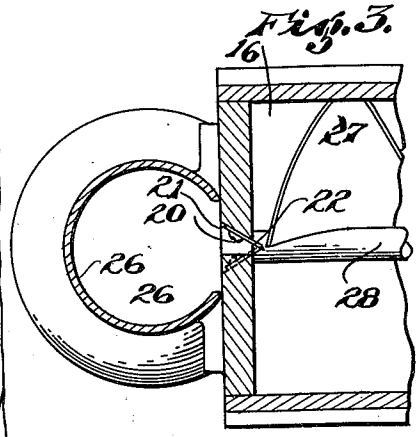

Fig. 3.

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RALSTON R. SMITH, OF OAKLAND, CALIFORNIA.

ICE-SHAVING MACHINE.

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This invention relates to ice shaving or grinding machines adapted for use by confectioners in making iced confections.

A confection consisting of ground or shaved ice placed in a paper cone and then flavored by saturating the ice with a flavoring syrup has been favorably received by the public. Prior to my invention the ground ice for these cones was obtained by scraping a small toothed device over a block of ice until a sufficient quantity of shavings was accumulated to fill a cone. This process necessitating considerable labor and time was deemed unsatisfactory. Therefore, it is the principal object of the present invention to provide a generally improved machine capable of operation to reduce ice to finely divided particles and to dispense the same in desired quantities into cones.

In carrying out this object, I provide a feed hopper which is contiguous to a grinding cylinder wherein blades and a feeding device cooperate to reduce pieces of ice into finely divided particles. These particles are discharged into a dispenser which is adapted to receive the end of a cone. A plunger operates in the dispenser to transfer particles of ice from the dispenser to the cone.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a view in central vertical section of a device embodying the present form of the invention.

Fig. 2 is an end elevation of the same.

Fig. 3 is a fragmentary view in plan section taken on line 3—3 of Fig. 1.

Referring more particularly to the accompanying drawings, 10 indicates a supporting base which is adapted to be secured to a counter or the like for supporting the machine in an operative position. Bolted or otherwise secured to the base 10 is the body portion 11 of the machine. This body portion 11 includes a hopper 12 which is formed with an open mouth 14 and a concave wall 15 that constitutes both the rear and bottom wall of the hopper. Adjacent the hopper a grinding or shaving chamber 16 is formed. This chamber 16 is cylindrical and horizontally disposed in a plane relative to the hopper so that ice fed into the hopper will be directed by its concave wall 15 into the grinding chamber 16.

As it will be noticed in the drawings the end of the grinding chamber adjacent the hopper is open. The other end is fitted with a cutting disk 17. This disk agrees in diameter with the interior circumference of the chamber 16 so that it will snugly nest within the end thereof. To removably secure the disk in a stationary position within the end of the chamber, it is formed with radial lugs 17^a on its periphery which engage and fit within recesses 18 formed in the end of the cylinder 16. Small locking plates 19 are secured to the end of the cylinder 16 and abut against the outer end of the grinding disk to removably hold it in place.

The grinding disk is formed with diametrically opposed radial slots 20 which are vertically disposed. Contiguous to one edge of each slot, at the outer face of the disk, an oblique surface 21 is formed for receiving cutting or shaving blades 22. Screws 23 are projected through slotted openings 24 in the blades and threaded into the disk to secure the blades against the oblique surfaces referred to, with the cutting edges of the blades projecting inwardly from the inner face of the disk. As the openings 24 in the blades are slotted, the distance with which the blades project from the inner face of the disk may be adjusted.

As the surfaces upon which the blades are secured are oblique and oppositely disposed, the cutting edges of the blades will be directed at opposite angles. Therefore, when pieces of ice to be ground are forced in a circular path over the face of the disk, both blades will be effective in shaving or cutting the ice. The shavings or cuttings will be directed by the obliquely disposed blades through the slots 20 into a dispenser 26.

To force the ice against the inner face of the disk and cause it to move in a circular path thereover, I provide a helical feeding blade 27 which is disposed concentrically within the chamber 16 and which is of a diameter but slightly less than this chamber. This helical feeding blade 27 is secured on a shaft 28 which is horizontally disposed and journalled at its opposite ends in the hopper 12 and in the cutting disk 17. This shaft 28 is collared to prevent it from moving axially.

To revolve the shaft 28 and consequently the feed blade 27, the outer end of the shaft is fitted with a fly wheel 29 having a handle

30 by which it may be revolved. One end of the helical blade 27 is contiguous to the cutting edges of the blades 22 and when the former is revolved, any ice disposed within the chamber 16 will be forced forwardly against the inner face of the disk 17 and in a circular path over the cutting edges of the blades. During such movement the cutting edges of the blades will shave cuttings from the ice and cause them to discharge through the slots 20 into the dispenser 26.

The dispenser 26 is cylindrical and vertically disposed and centrally located with respect to the vertical axis of the disk 17, and is secured to the outer face thereof by screws. The wall of the dispenser which abuts against the cutting disk is formed with a vertical opening which is in alignment with the slots 20 formed in the disk so that the cuttings passing through the slots 20 will discharge into the dispenser 26. The lower end of the dispenser is open and flared so that a cone may be yieldingly held therein as shown in dotted lines in Fig. 1. The upper end of the dispenser 26 is fitted with a frusto-conical plunger 31 having a vertical rod 32 which projects upwardly through and is guided into the upper end of the dispenser 26. The outer end of the plunger rod 32 is formed with a knob 33 by which the plunger may be actuated. A compression spring 34 is interposed between the under side of this knob and the upper end of the dispenser 26 and normally tends to maintain the plunger 31 in its uppermost position.

It is obvious that by depressing the plunger 31 through the medium of the rod 32 and the knob 33, the plunger will move downwardly in the chamber 25 and discharge any ice cuttings therein through its lower end.

In actual operation of the device, a block of ice is broken up into small pieces which are deposited in the hopper 12. A cone is then inserted into the lower end of the dispensing device 26. By revolving the fly wheel 29 by means of the handle 30, the helical feeding blade 27 will be revolved and will feed the pieces of ice fed into the hopper toward the blades. This will cause the latter to shave or grind the ice and to deliver the ground particles or shavings into the dispenser 26.

When sufficient shavings or ground particles have been accumulated in the dispenser, the plunger 31 is depressed to force the ground particles or shavings into the cone held at the lower end of the dispenser. As the plunger 31 is frusto-conical the upper end of the ice packed in the cone will be conical and of neat appearance. The cone of the ground ice therein may then be removed from the dispenser and impregnated with a flavoring syrup.

It should be stated that a gauge slot 35 is formed in the side of the dispenser so that the quantity of the ground ice particles in the dispenser may be determined and permit the ice fed into each cone to be regulated.

When it is desired to cleanse the machine, it is only necessary to remove the small locking plates and remove the disk 17 and the dispenser 26. All the parts of the machine will then be exposed for cleansing or adjustments.

From the foregoing it is obvious that a very simple and efficient machine is provided by which ice may be rapidly ground to provide so-called "snow" for ice confections of all descriptions.

While I have shown the preferred form of my invention, it is to be understood that various changes in its construction may be made by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

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

1. A machine of the character described comprising a body portion having a feed hopper, cutting means cooperating with the hopper to reduce pieces of ice deposited therein to finely divided particles, a dispenser connected with the body portion adjacent the cutting means and adapted to receive the upper end of a cone and yieldably support the same in a vertical position, and a reciprocable plunger associated with the dispenser and adapted to discharge the finely divided particles of ice in the dispenser into a cone held by the dispenser.

2. A machine of the character described comprising a body portion including a feed hopper and a horizontally disposed grinding cylinder, operative grinding means within the cylinder for reducing pieces of ice to finely divided particles, a vertically disposed dispensing chamber detachably connected to the end of the grinding cylinder and adapted to receive the finely divided particles of ice from the grinding means, the lower end of said dispensing chamber being open whereby the end of a cone may be inserted therein and yieldably held in a vertical position, a vertical reciprocable plunger in said dispensing chamber, said plunger being operative to transfer ice from said chamber to a cone supported thereby.

3. A machine of the character described comprising a feed hopper, a horizontally disposed grinding cylinder contiguous thereto, a cutting disk removably fitted to one end of said cylinder, vertically disposed radial cutting blades carried by said disk, said disk having openings formed therethrough contiguous to said blades, operative means for feeding ice through the cylinder and over said blades whereby the lat-

ter will reduce the ice to finely divided particles which will be discharged through said openings, a vertically disposed dispensing cylinder detachably secured to said disk and having an opening therein registering with the openings in said disk whereby ice discharged through said openings in the disk will pass into said dispensing cylinder, the lower end of said dispensing cylinder being open whereby the end of a cone may be inserted therein and yieldably held in a vertical position, and a vertical reciprocable plunger normally held at the upper end of the cylinder and reciprocable to discharge ice from said cylinder into a cone held by said cylinder.

4. A machine of the character described comprising a feed hopper, a horizontally disposed grinding cylinder connected to said hopper at one end, a cutting disk removably secured to the other end of the cylinder, said disk having vertically disposed radial slots formed therein, radial blades carried by said cutting disk contiguous to said slot, a revoluble helical blade within the cylinder adapted when revolved to feed ice from the hopper against the cutting edges of said blades, a vertically disposed dispensing cylinder detachably connected to said disk, said cylinder having a vertical opening formed therein in register with the radial openings in the disk whereby ice ground by said blades will discharge through the openings into the dispensing cylinder, the lower end of said dispensing cylinder being open and adapted to receive the end of a cone and yieldably support the same in a vertical position, and a plunger in said dispensing cylinder capable of operation to dispense ice from the dispenser into a cone inserted into the lower end of said dispenser.

5. A machine of the character described comprising a feed hopper having an open upper end, a horizontally disposed grinding cylinder having an open end in communication with the interior of said hopper, a cutting disk removably connected to the other end of the grinding cylinder, vertically disposed radial blades carried by said disk, said disk having vertically disposed radial slots formed therethrough contiguous to said blades, a rotatable shaft extending horizontally through the hopper and cylinder, a helical blade secured to said shaft and disposed within the cylinder and adapted to be rotated by said shaft to feed ice to the cutting edges of said blades whereby said blades will grind the ice and the particles thereof will discharge through said openings in the disk, a vertically disposed dispensing cylinder detachably secured to the upper surface of the disk and having a vertical opening therein in register with the openings in the disk whereby the ice discharging through said openings will enter the dispensing cylinder, the lower end of said cylinder being open whereby to receive the end of a cone, a hollow conical plunger normally disposed at the upper end of the cylinder, and an operating rod for said plunger projecting through the upper end of the cylinder whereby said plunger may be operated to discharge ice through the lower end of the cylinder into a cone.

6. A machine of the character described comprising a feed hopper having an open upper end, a horizontally disposed grinding cylinder having an open end in communication with the interior of said hopper, a cutting disk removably connected to the other end of the grinding cylinder, vertically disposed radial blades carried by said disk, said disk having vertically disposed radial slots formed therethrough contiguous to said blades, a rotatable shaft extending horizontally through the hopper and cylinder, a helical blade secured to said shaft and disposed within the cylinder and adapted to be rotated by said shaft to feed ice to the cutting edges of said blades whereby said blades will grind the ice and the particles thereof will discharge through said openings in the disk, a vertically disposed dispensing cylinder detachably secured to the upper surface of the disk and having a vertical opening therein in register with the openings in the disk whereby the ice discharging through said openings will enter the dispensing cylinder, the lower end of said cylinder being open whereby to receive the end of a cone, a hollow conical plunger normally disposed at the upper end of the cylinder, and an operating rod for said plunger projecting through the upper end of the cylinder whereby said plunger may be operated to discharge ice through the lower end of the cylinder into a cone, and a vertical slot formed in the side of said dispensing cylinder whereby the quantity of ice in said dispensing cylinder may be determined and the amount dispensed into the cone regulated.

7. A machine of the character described comprising a hopper, a horizontally disposed grinding cylinder contiguous to the hopper, a cutting disk at the end of the grinding cylinder, radial blades carried by said disk, a shaft extending horizontally through said hopper, a helical blade carried by said shaft and adapted to cooperate with said cutting blades in finely dividing ice fed into the hopper, openings in said disk contiguous to said blades whereby the ice finely divided by the blades will pass through the disk, a cylinder secured to the outer end of the disk to receive the finely divided ice, one end of said cylinder being open whereby to receive the end of a cone, a conical plunger normally disposed at the other end of the cylinder, an operating rod for said plunger pro-

jecting through the end of the cylinder whereby said plunger may be operated to discharge the ice through the open end of the cylinder, said cylinder having a vertical slot in one side thereof whereby the quantity of ice in the cylinder may be determined.

8. A machine of the character described comprising a horizontally disposed grinding cylinder, a feed hopper formed integral with said cylinder at one end thereof, said feed hopper having an open upper end whereby ice may be placed therein to enter the cylinder, a vertically disposed dispensing cylinder detachably secured at the other end of the grinding cylinder and in communication with the interior thereof, grinding means intermediate the grinding cylinder and dispensing cylinder for grinding ice fed to the grinding cylinder and discharging it into the dispensing cylinder, the lower end of said dispensing cylinder being open whereby a cone may be inserted therein, a plunger reciprocably mounted in the dispensing cylinder and normally held at the upper end thereof, said plunger being capable of travel through said cylinder to dispense the ground ice therein into a cone in the lower end of the cylinder, said plunger being hollow and frusto-conical whereby to give its shape to the ground ice dispensed into the cone.

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