

Oct. 16, 1934.

W. D. McKINNEY

1,977,320

SNOW MAKING MACHINE

Filed Sept. 10, 1932

4 Sheets-Sheet 1

FIG. 1

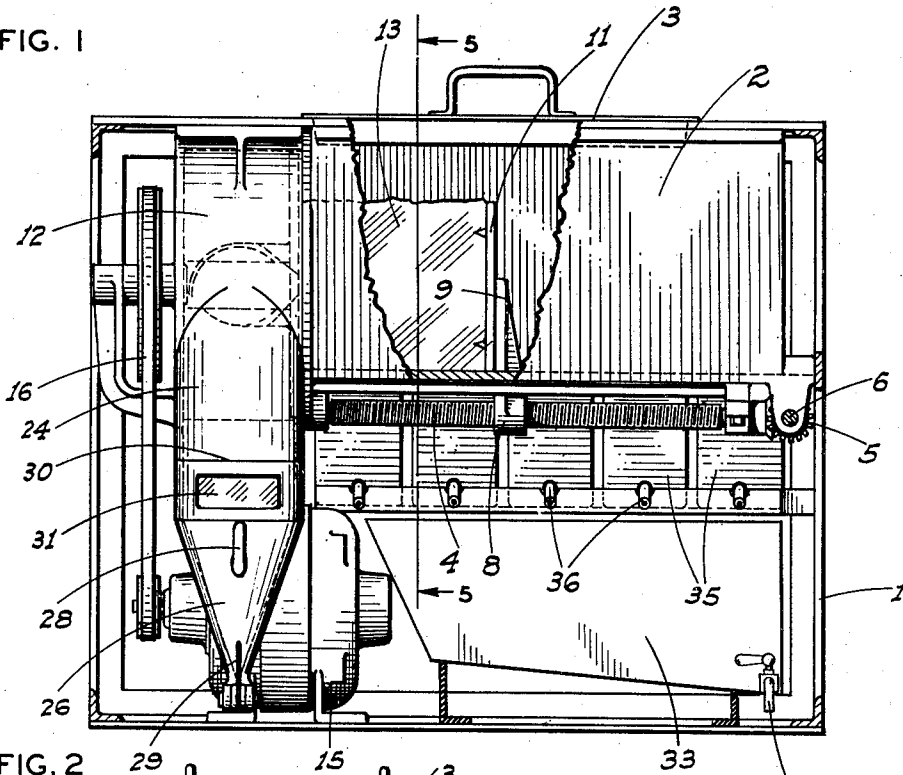
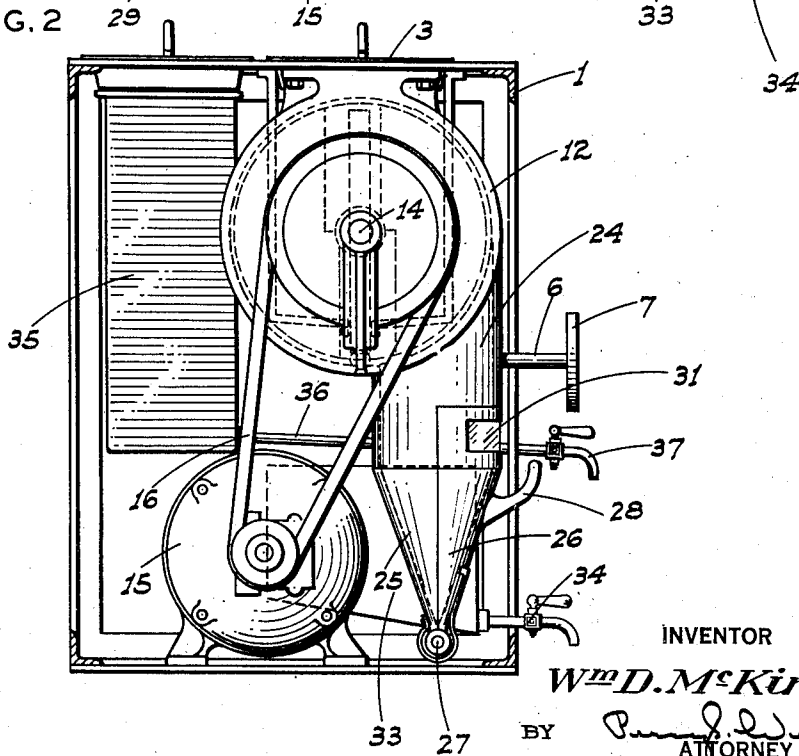


FIG. 2



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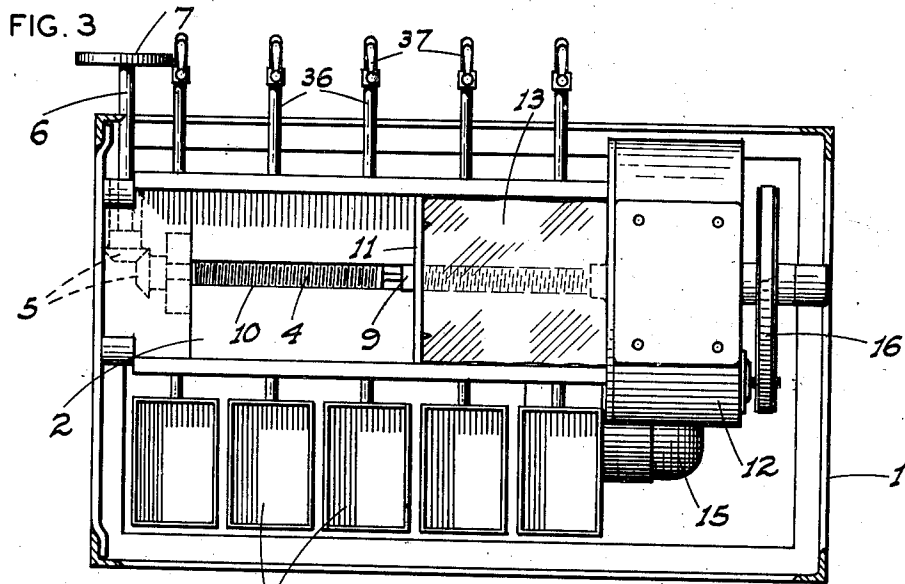
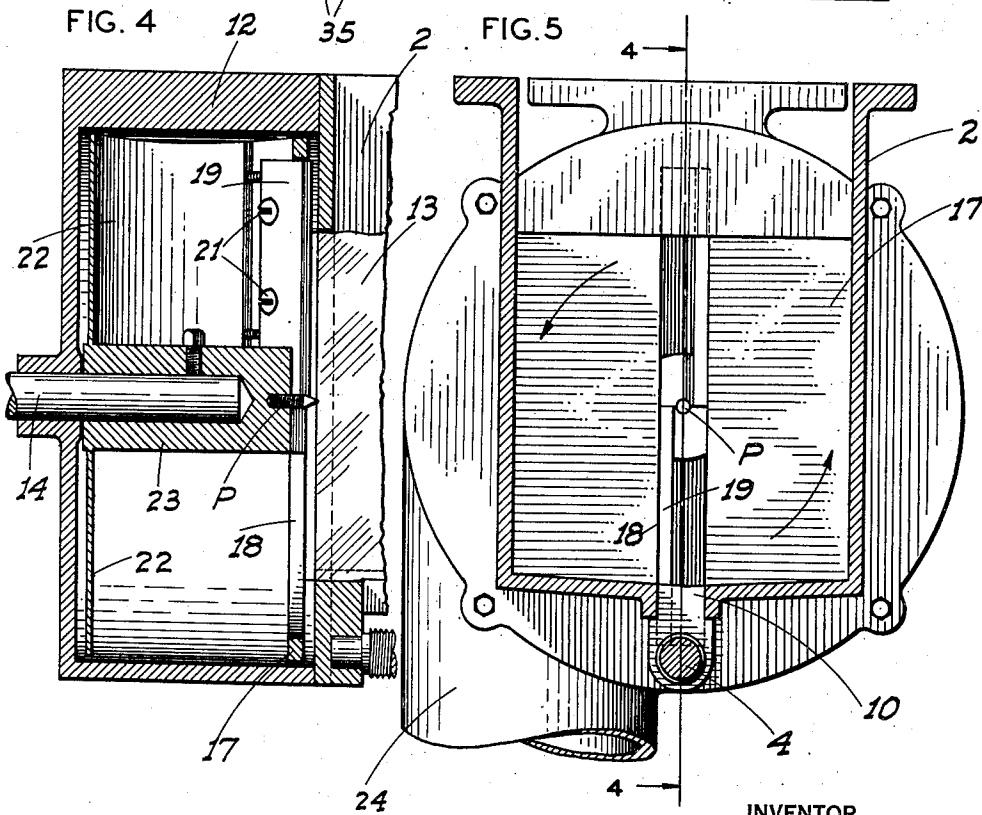
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FIG. 6

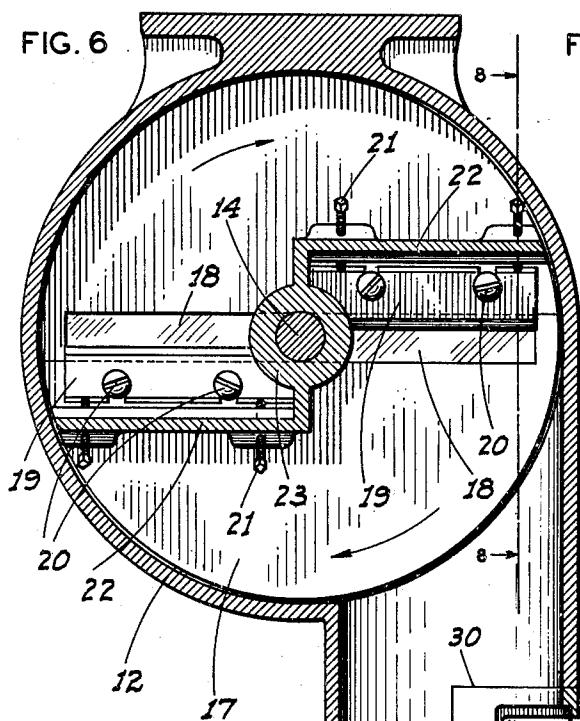


FIG. 7

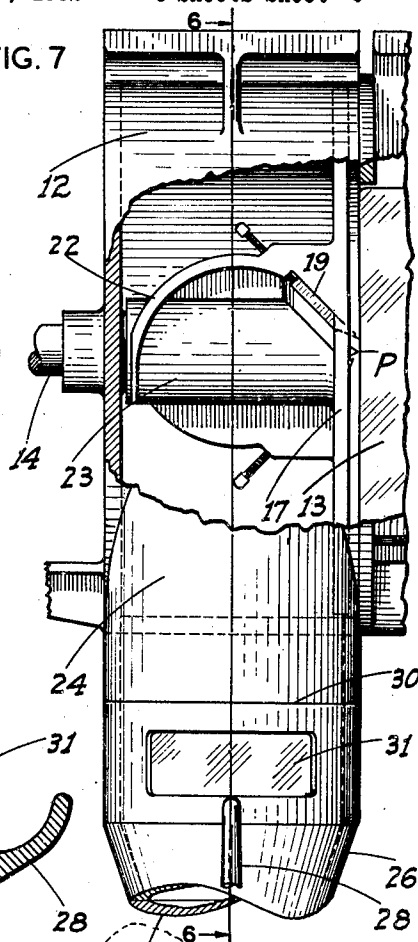
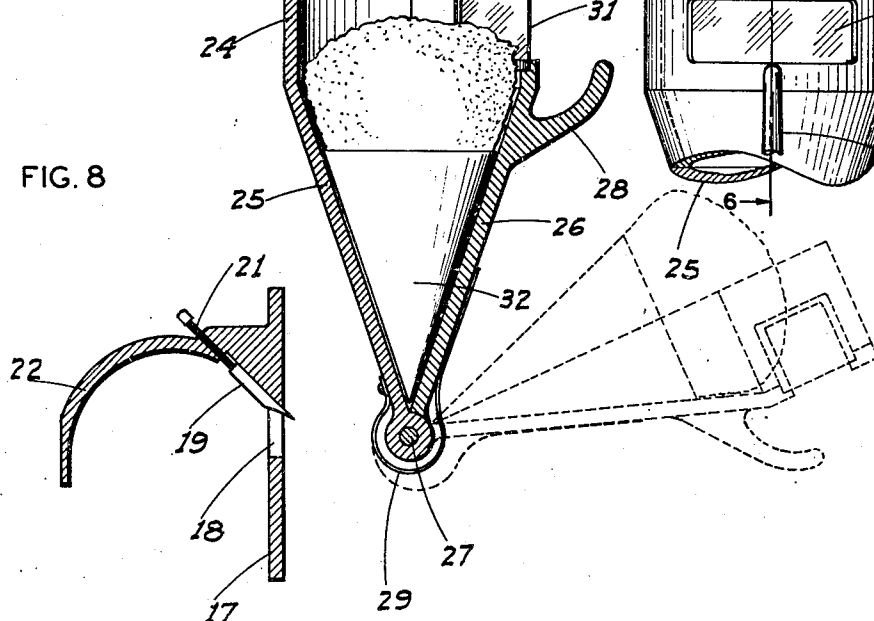


FIG. 8



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FIG. 9

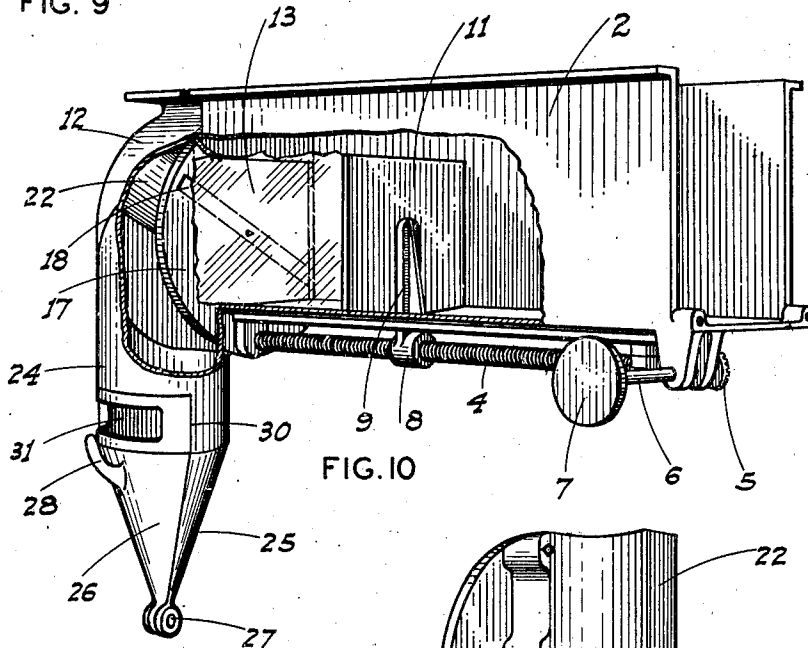


FIG. 10

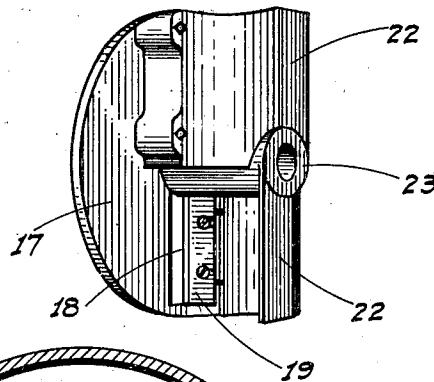
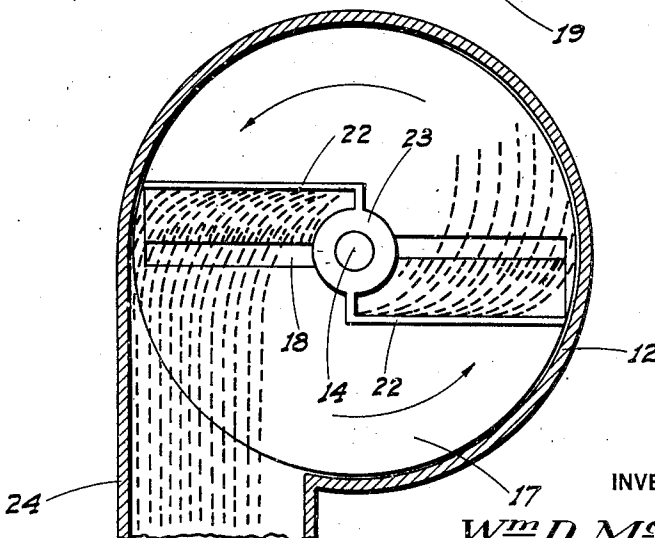


FIG. 11



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UNITED STATES PATENT OFFICE

1,977,320

SNOW MAKING MACHINE

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Application September 10, 1932, Serial No. 632,503

2 Claims. (Cl. 83—62)

This invention relates to machines for shaving ice for use in various drinks and other confections such as are dispensed at soda fountains and the like. The principal object of my invention is to provide a machine of this nature which operating on a solid cake of ice will transform the same into such fine particles as to form actual snow; and I have found that a material of this nature in combination with flavoring and other ingredients makes a very delectable drink or confection.

A further object is to provide a machine for the purpose so constructed that there is no tendency for the cake of ice to freeze to the cutting or shaving elements or to any driven part. The machine will therefore never jam from this cause and a relatively small motor is sufficient for effective operation.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views: Fig. 1 is a side elevation of the machine with certain parts broken away.

Fig. 2 is an end view of the same.

Fig. 3 is a top plan view of the machine.

In these three views the side plates of the housing of the machine have been removed so as to expose the internal mechanism.

Fig. 4 is an enlarged vertical cross section of the rotary ice shaving and snow making unit taken on the line 4—4 of Fig. 5.

Fig. 5 is an enlarged fragmentary cross section on the line 5—5 of Fig. 1.

Fig. 6 is a transverse section of the rectangular shaving unit and the discharge receptacle taken on the line 6—6 of Fig. 7.

Fig. 7 is an enlarged fragmentary side view of the mechanism shown in Fig. 6 partly broken away.

Fig. 8 is a fragmentary vertical section taken on the line 8—8 of Fig. 6.

Fig. 9 is a perspective view of the operating mechanism of the machine removed from the supporting casing and partly broken away.

Fig. 10 is a perspective view of the rotary shaving unit detached.

Fig. 11 is a front diagrammatic view of the unit showing the direction of movement of the ice fragments or snow.

Referring now more particularly to the characters of reference on the drawings, the machine preferably comprises a rectangular external housing 1 which covers and conceals all mechanism and which is preferably of a neat and relatively ornamental character so that it may be set in an exposed position on a counter or the like.

Mounted in the housing is an open-topped horizontal receptacle 2 of rectangular cross section and of cross sectional dimensions corresponding to those of a cake of ice of a certain standard size. A removable lid 3 on the housing 1 over the receptacle renders the latter accessible for the insertion of the ice.

Mounted in connection with and under the receptacle is a long screw 4 connected by gearing 5 at one end to a laterally extending shaft 6 having a hand wheel 7 on its outer end; said wheel being disposed outwardly of the adjacent side of the housing 1. The screw 4 has a collar 8 threaded thereon from which an arm 9 projects upwardly and through a slot 10 cut lengthwise in the bottom of the receptacle and extending parallel to the screw. A vertical pusher plate 11 is secured to the arm above the bottom of the receptacle and has a running fit in the latter.

The receptacle at its end opposite the gearing 5 communicates with a vertical circular housing 12, the axis of which is disposed centrally of the cross sectional area of the cake of ice 13 of the size intended to be used in the receptacle. A horizontal shaft 14 is journaled in and projects through the outer or back wall of the housing 12 axially thereof, which shaft is connected in driving relation with a motor 15 mounted in the housing 1 at the bottom by belting 16 or the like.

Fixed axially with and ahead of the shaft adjacent the forward end of the housing 12, or about where it connects with the receptacle 2, is a disc or face plate 17 substantially the same diameter as the interior of the housing. This plate has a diametrically extending slot 18 cut therethrough. Straight edged knives 19 parallel to each other project through the slot on the opposite sides of the same and on opposite sides of the shaft from the back of the plate 17. These knives are disposed in angular relation to said plate as shown in Fig. 8 and face in relatively opposite directions as shown in Fig. 6, or so that when one blade is facing up the other is facing down. Each knife engages one edge of the corresponding portion of the slot and projects from the front face of the plate 17 a short distance, depending on the coarseness of the cut desired. The knives are also disposed so that their adjacent ends are in diametral alignment with each other so that they will engage the entire surface of the ice. The width of the slot 18 is such that relatively large spaces are left between the cutting edges of the knives and the opposite edges of the slot, for the passage of the shaved ice therethrough. The knives are mounted on the plate 17 by adjustable screws 20 and are engaged on their back edges by adjust-

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ment screws 21 so that said knives may be adjusted for projection from the plate.

Curved deflector baffles 22 are integral or rigid with the plate 17. These baffles extend lengthwise of the slot 18 on opposite sides of the shaft to adjacent the back of the housing 12; said baffles being disposed substantially tangent to the knives and starting adjacent their back ends, as shown in Figs. 7 and 8. Said baffles transversely are parallel to the longitudinal plane of the slot. As indicated said baffles, like the knives, are disposed in opposed relation to each other and are on opposite sides of the shaft 14, having continuous connection along their adjacent edges with a hub or sleeve 23 on the shaft 14, which extends the full length of the baffles. The knives are concave on their leading sides as shown so as to be substantially symmetrical with the curve of the baffles. Said baffles serve for one thing as a means to connect the plate 17 to the hub and shaft since said plate can have no actual connection with the hub on account of the continuous slot 18 and the close end positioning of the knives relative to each other.

Depending from the forward side of the housing 12 relative to the direction of rotation of the plate 17 and tangent to the housing is a discharge chute 24 preferably of circular cross section which terminates at its lower end and on its back side in a segmental cone shaped extension 25. A front matching segment 26 of the cone extension 25 is pivotally connected thereto at the bottom as at 27 for downward swinging movement as indicated in Fig. 6. A handle lug 28 is provided on the segment 26 whereby the same may be pulled down while a spring 29 yieldably holds the same up. The front of the chute 24 is also cut away for a certain distance above the cone segment 26 as shown at 30, the upper end of the member 26 being correspondingly shaped to fit in and match the cut away portion of the chute 4.

The upper end portion of the member 26 has a transparent inspection window 31 therein above the lug 28. The cone portions 25 and 26 together form a holder to closely fit about a cone cup 32 of suitable character into which the snow is dispensed, the cup being inserted and removed by lowering the front member 26.

In operation the cup is placed in position in the holder and the motor started, a cake of ice being of course in position in the receptacle 2. The wheel 7 is then manipulated to advance the block of ice against the knives, the advance being of course limited by the face plate 17. As the rapidly revolving knives shave off the ice from the adjacent edge of the block and throw the shavings back through the slot 18 said shavings are caught by the baffles 22 and whirled centrifugally about the housing until they fall through the chute 24 and into the cup. The ice is held from possible lateral displacement due to the pressure of the knives by a center point P mounted in the hub 23 and engaging the ice block ahead of the knives. This throwing of the ice shavings or particles about the housing before they are discharged into the cup breaks them up into minute particles and aerates them, so that they are deposited in the cup in the form of light fluffy snow rather than ice. The window 31 enables the operator to see when the cup is properly filled so that he may act accordingly.

Since the knives project beyond the face plate 17 and the ice block never tends to advance of

itself it will never be engaged with said plate when the operation of the machine is halted, and consequently it will never freeze to the plate during a period of inactivity. The motor therefore has no undue resistance to overcome when started. The block may possibly freeze to the bottom of the receptacle but such frozen contact can be easily broken loose with the pressure exertable against the pusher plate 11 through the screw 4.

Any water caused by melting of the ice and which drains through the slot 10 is caught by a tray 33 disposed in the housing 1 under the receptacle 2 and provided with a drain faucet 34 connected to its lowest point.

Preferably, but not necessarily, the housing 1 is considerably wider than the receptacle 2, which is disposed to one side of the housing, so as to provide for the mounting of a row of flavoring syrup tanks 35 in said housing to one side of the receptacle. Discharge conduits 36 project from the bottoms of the tanks under the receptacle and screw 4 and are provided with faucets 37 on their outward ends outwardly of the opposite side of the housing, or on the same side as the wheel 7 and the cup holder.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A snow making machine comprising a vertical rotary face plate having a diametrically disposed slot therethrough, knives mounted on and back of the plate and projecting through the slot lengthwise thereof and in opposed relation on opposite sides of the axis of the plate, said knives being set with their leading sides at an obtuse angle to the plate, and with clearance between said sides and adjacent sides of the slot, means to feed a block of ice against the knives to cause shavings to be removed therefrom and diverted through the slot, a housing about and extending back from the plate, a tangential outlet chute depending from the housing, and concavely curved deflectors whose axis of curvature is parallel to the slot rigid with and projecting to adjacent the back of the housing from adjacent and substantially tangent to the knives at their inner ends, said deflectors extending the full length of the knives.

2. In a snow making machine, a cylindrical housing closed at the back and having a bottom outlet, a plate turnably mounted in and substantially closing the front of the housing and provided with a radial slot, means to rotate the plate, means to shave and feed ice through the slot and into the housing with the rotation of the plate, and a deflector of concavely curved cross section disposed in the housing behind and rigid with the plate, the major axis of the deflector being substantially parallel to the slot and the inner face of said deflector having direct connection at its forward edge with and extending along the following edge of the slot.

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