Jan. 29, 1963 A. F. CONTO 3,075,363

ICE DISPENSING ATTACHMENT FOR BEVERAGE DISPENSING MACHINE

Filed Dec. 16, 1960

Fig. 1

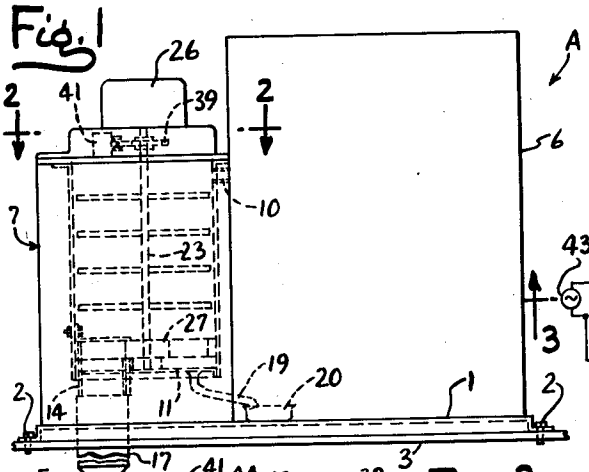


Fig. 2

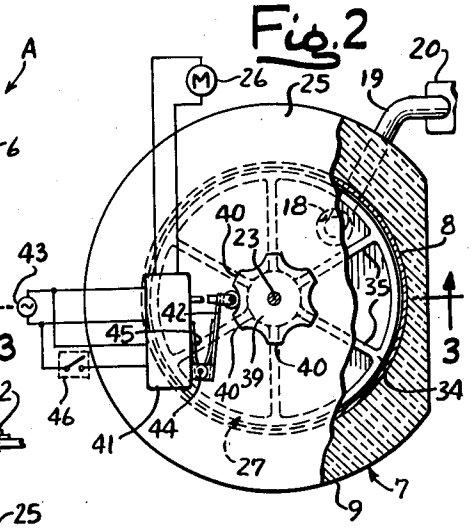


Fig. 3

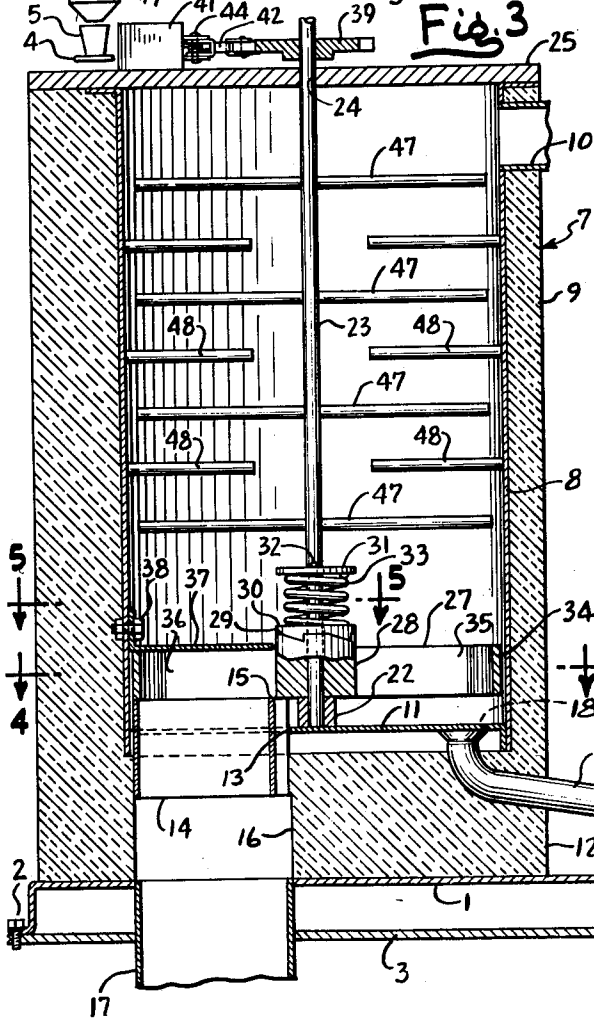


Fig. 4

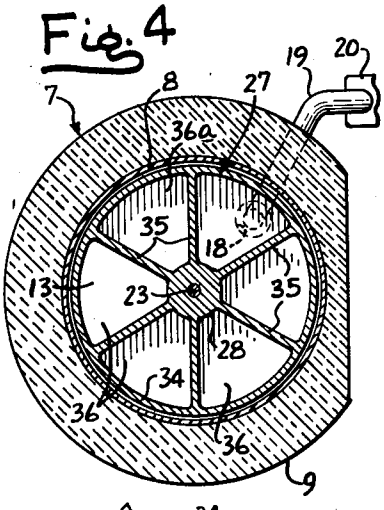
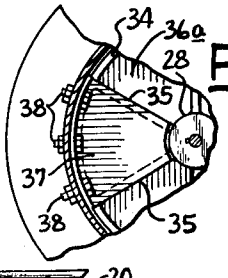


Fig. 5



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ICE DISPENSING ATTACHMENT FOR BEVERAGE DISPENSING MACHINE

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This invention relates to an ice dispensing attachment or a beverage dispensing machine.

It is a common practice in many offices, factories, and other commercial institutions, to provide soft drink dispensing machines in which the beverage is dispensed directly into a cup. Beverage dispensing machines have been developed which include as a part thereof mechanism for automatically dispensing ice into the cup at the time the latter is filled. In such machines ice may be stored in a suitable container from which a supply of ice is discharged into the cup during each cycle of operation of the machine. While these ice storage containers are insulated to prevent excessive melting of the ice stored therein, there is always a certain amount of ice which does melt and some provision must be made for draining the water thus formed from the ice storage container. This has been accomplished by a drain line connected to existing plumbing within the building in which the machine is located. This necessitates that the machine be placed near existing plumbing or, alternatively, plumbing must be run from the nearest available drain to the machine. Many locations in or outside of buildings which might otherwise be convenient for the machine are not feasible because of the lack of a nearby drain.

It is therefore an object of the present invention to provide an ice dispensing attachment suitable for incorporation into existing beverage dispensing machines, the attachment being so constructed as to eliminate the need to locate the machine near an existing drain or to construct a drain therefor in order to dissipate water from ice melted within the ice-storage compartment within the attachment.

It is also an object of the present invention to provide an attachment of the type stated which is easy to install in many types of existing beverage dispensing machines and also permits the machine to be located in a number of places which might otherwise be unfeasible.

It is another object of the present invention to provide attachment of the type stated which automatically dispenses ice into a cup during each cycle of operation of the machine and, furthermore, wherein water from the storage chamber is discharged into a receptacle within the machine and evaporated therein at a rate at least as great as accumulation of water within the receptacle.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing, forming a part thereof.

In the drawing:

FIG. 1 is a side elevational view of an ice dispensing attachment constructed in accordance with and embodying the present invention, and being mounted on a support within a beverage dispensing machine;

FIG. 2 is a fragmentary sectional view taken along line 2—2, FIG. 1;

FIG. 3 is a fragmentary sectional view taken along line 3—3 of FIG. 2;

FIGS. 4 and 5 are fragmentary sectional views taken along line 4—4 and 5—5 respectively of FIG. 3.

Referring now in more detail and by reference numerals to the drawing which illustrates a preferred embodiment of the present invention, A designates an ice dispensing attachment comprising a base 1 which is

secured by bolts 2 to a shelf or other support 3, the latter forming part of a soft drink beverage dispensing machine. The beverage dispensing machine is not shown or described in detail because such machine may be any one of a number of coin-operated machines which, during each cycle of operation thereof, fills a cup with a measured quantity of cold beverage. Suffice to say, however, that such a machine often includes a beverage dispensing platform or station 4 upon which is supported a cup 5 during the cup filling operation.

Mounted on the base 1 is an ice chip maker 6 which may be, for example, of the type shown in U.S. Patent 2,066,431, or Australian Patent 220,263 or my co-pending application Serial No. 76,394 filed contemporaneously herewith. Also mounted on the base 1 adjacent to the ice maker 6 is an ice storage bin 7 having a sheet metal cylindrical side wall 8 surrounded by heat insulation 9. The upper end of the side wall 8 has an opening for receiving a conduit 10 which connects with the ice maker 6 and through which pieces of ice are delivered from the ice maker 6 to the storage bin 7.

The storage bin 7 also has a bottom plate 11 which is spaced upwardly from an underside layer 12 of insulation, and the bottom plate 11, at one side thereof, has a downwardly presented opening 13. In this opening 13 is a small vertical duct 14 having an upper edge 15 located upwardly of the bottom plate 11. The lowermost end of the duct 14 extends downwardly into an opening 16 in the layer 12 for communication with an ice discharge chute 17. This ice discharge chute 17 extends downwardly through the beverage dispensing machine and, as shown in FIG. 1, terminates above the cup 5 when the latter is at the beverage dispensing station 4. The bottom plate 11 also has a hole 18 for communication with a water discharge conduit 19 which extends downwardly and laterally through the heat insulation and opens up, outwardly of storage bin 7, into a receptacle 20. The receptacle 20 may be mounted upon the base 1 or elsewhere, as may be convenient, within the beverage dispensing machine. Adjacent to the receptacle 20 is an electrically operated heating coil 21 which supplies heat to the receptacle 20 and for purposes presently more fully appearing.

Mounted on the bottom plate 11 centrally thereof is a thrust bearing 22 for journaling the lower end of the shaft 23 which extends upwardly through the storage bin 7 and through a hole 24 formed in a top cover 25 for the storage bin. Mounted on this top cover 25 is an electric motor 26 which drives the shaft 23. Rotatably mounted on the shaft 23 directly adjacent to and upwardly from the thrust bearing 22 is an ice-collecting wheel 27 having a hub 28 with ratchet teeth on the upwardly presented side thereof. A ratchet collar 30 is keyed for axial sliding movement along the shaft 23 but is rotatable therewith and is adapted for unidirectional driving connection with the ratchet teeth on the hub 28. A washer 31 is also mounted on the shaft 23 and is held against upward axial movement by a cross pin 32. A coil spring 33 surrounds the shaft 23 and biases the ratchet collar 30 into engagement with the hub 28.

The ice-collecting wheel 27 also has a cylindrical rim 34 which is closely spaced from the side wall 8 and joining the hub 28 and rim 34 is a plurality of radial ribs 35 for dividing the ice-collecting wheel 27 into a plurality of volumetrically equal chambers 36. As best seen in FIGS. 3 and 5 a wiper plate 37 is secured by the bolt and nut assemblies 38 to the side wall 8 above the ice-collecting wheel 28 and the opening 13. This plate 37 is sufficient to cover the chamber 36 which is located thereunder. Furthermore, the height of the ice-collecting wheel 27 is such as to be substantially the same as

the distance between the downwardly presented surface of the plate 37 and the upper edge 15 of the duct 14.

Rigidly mounted on shaft 23 just above the top cover 25 is a cam 39 having a plurality of cam lobes 40, one corresponding to each of the chambers 36. A solenoid operated switch 41 is also mounted on the top cover 25 and includes an actuating lever 42 for opening and closing the switch, thereby permitting electrical energy to be delivered from a source 43 to the motor 26. The actuating lever 42 is rockable on a pivot 44 and biased into engagement with the cam 39 by a spring 45, whereby the lever 42 operates as a follower for the cam 39. The solenoid within the switch is supplied current from the source 43 through a switch 46, the latter being part of or operatable in conjunction with a conventional coin-controlled switch found on many beverage dispensing machines.

In operation, the ice chip maker 6 delivers chipped ice through the conduit 10 to the storage bin 7. This chipped ice will build up from the bottom plate 11 and the wiper plate 37. When the coin-controlled switch 46 is actuated the solenoid within the switch 41 is energized and the switch 41 is closed, thereby permitting current to be supplied to the motor 26 which in turn rotates the shaft 23 counter-clockwise (FIG. 2). As the motor 26 begins to rotate, the conventional cup-feeding mechanism within the beverage machine drops a cup 5 to the beverage dispensing station 4 whereby the cup is positioned under the open end of the ice discharge chute 17. Chipped ice will fill all of the chambers 36 except that one which is directly underneath the plate 37. As the shaft 23 rotates the next adjacent chamber, designated as 36*a*, will move under the plate 37 carrying with it chipped ice. The plate 37 and the upper edge 15 of the duct 14 level off the ice within the chamber 36*a* so that when the latter overlies the opening 16 a measured quantity of ice substantially equal to the volume of the chamber 36*a* will drop downwardly through the opening 16 into the duct 14 and through the discharge chute 17 into the cup 5. During the rotation of the shaft 23 the coin-controlled switch 46 will automatically be opened in response to the passage of the coin through the machine, but since by that time the lever 42 will be riding up upon the adjacent cam lobe 40, the switch 41 will be held closed, permitting a continuous flow of current to the motor 26. When the lever 42 reaches the next low point on the cam, that is, between two lobes 40, the switch 41 will be opened to de-energize the motor and stop the rotation of the shaft 23. Since the foregoing is repeated for each time a coin is deposited in the machine, it is apparent that for each cycle of operation of the beverage dispensing machine, a measured quantity of ice may be delivered to the cup 5.

In connection with the present invention it should also be noted that the shaft 23 and the side wall 8 may have baffles 47, 48 mounted thereon to insure that the chipped ice builds up from the bottom of the bin 7 in a level column and does not tend to pack in one region within the storage bin 7.

Notwithstanding the presence of the heat insulation 9, 12, a certain amount of the chipped ice within the storage bin 7 will melt and drain downwardly through the ice-collecting wheel 27 to the bottom plate 11 and into the water discharge conduit 19 where it is carried to the receptacle 20. In order to dissipate the water in the receptacle 20 sufficient energy is supplied to the heating coil 21 to heat the receptacle and evaporate the water therein. The amount of electrical energy supplied to the coil 21 can be adjusted so that sufficient heat is supplied to the receptacle 20 to evaporate the water at a rate at least as great as the accumulation of water within the receptacle 20.

In compliance with the requirements of the patent statutes I have herein shown and described a preferred embodiment of the invention. It is, however, to be understood that the invention is not limited to the precise construction herein shown, the same being merely illustrative of the principles of the invention. What is considered now and desired to be secured by Letters Patent is:

In a beverage dispensing machine having a support and a beverage dispensing station; an ice discharge chute terminating at its lower end at the beverage dispensing station, an ice dispensing attachment mounted on said support, said ice dispensing attachment having a storage bin, means for making chipped ice and delivering same to the storage bin, said storage bin having an opening in communication with said chute and through which chipped ice is delivered from the storage bin to the beverage-dispensing station, means operable within the storage bin for delivering a predetermined quantity of the chipped ice to said opening for discharge into said chute, said means including a rotatable shaft in the storage bin extending upwardly through the upper end of the storage bin and being journalled at its lower end in the storage bin, a wheel mounted on the shaft, said wheel having a plurality of volumetrically equal chambers for successively collecting a measured quantity of ice, motor means in driving connection with the part of the shaft above the upper end of the storage bin for driving said shaft a fraction of a revolution during each cycle to position one of said chambers over the opening for each cycle, and cam-controlled switch means operable automatically in response to each cycle of the machine for energizing the motor for the predetermined period of time required to drive the shaft said fraction of a revolution, a receptacle below the storage bin, a water discharge conduit in communication with the storage bin for draining water from the storage bin and delivering it to the receptacle, and heating means independent of the ice making means adjacent to the receptacle and supplying sufficient heat thereto for evaporating the water in the receptacle at a rate at least as great as the rate of accumulation of water in the receptacle.

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