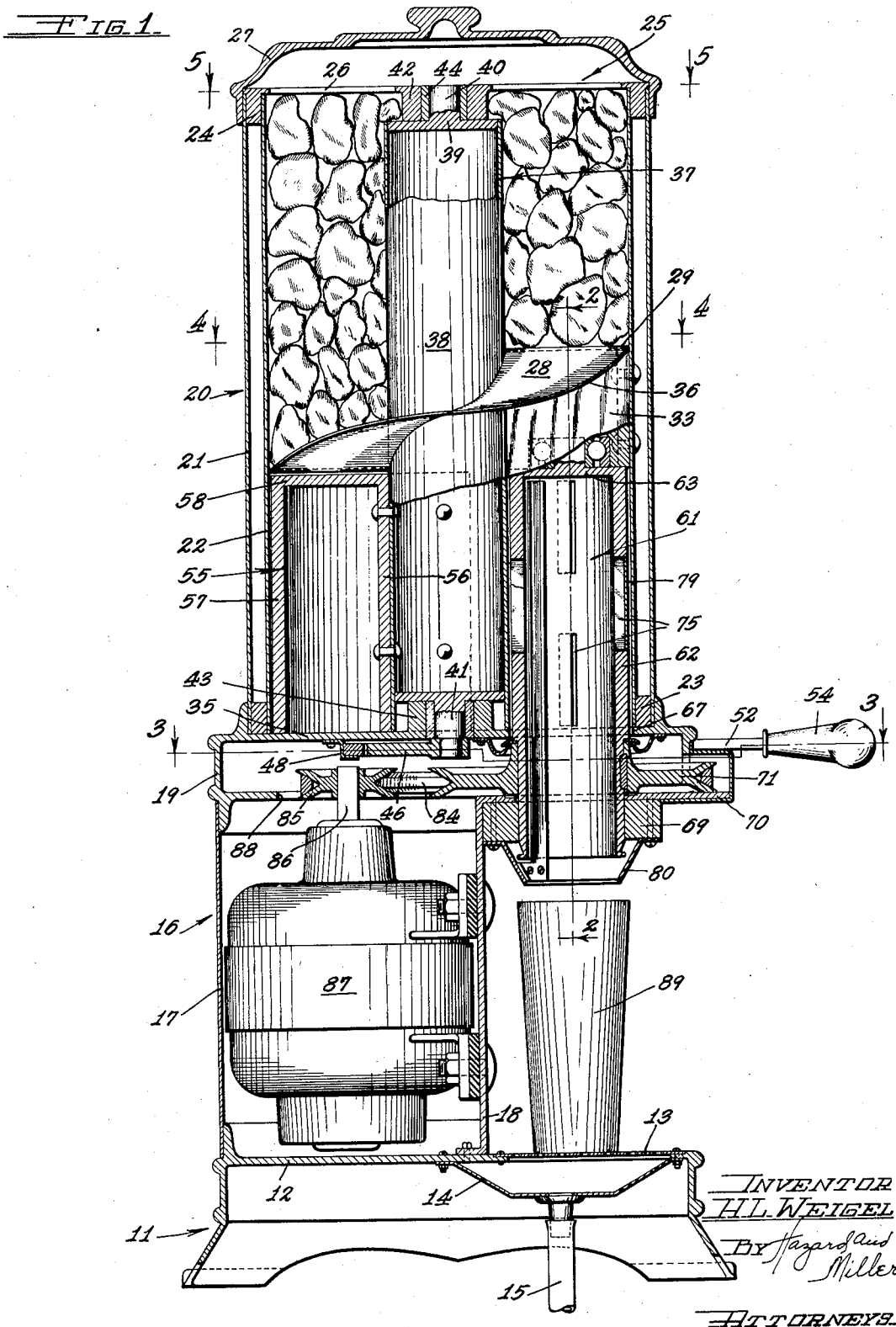


Nov. 14, 1933.

H. L. WEIGEL
ICE SHAVING MACHINE
Filed May 7, 1932

1,935,104
3 Sheets-Sheet 1



Nov. 14, 1933.

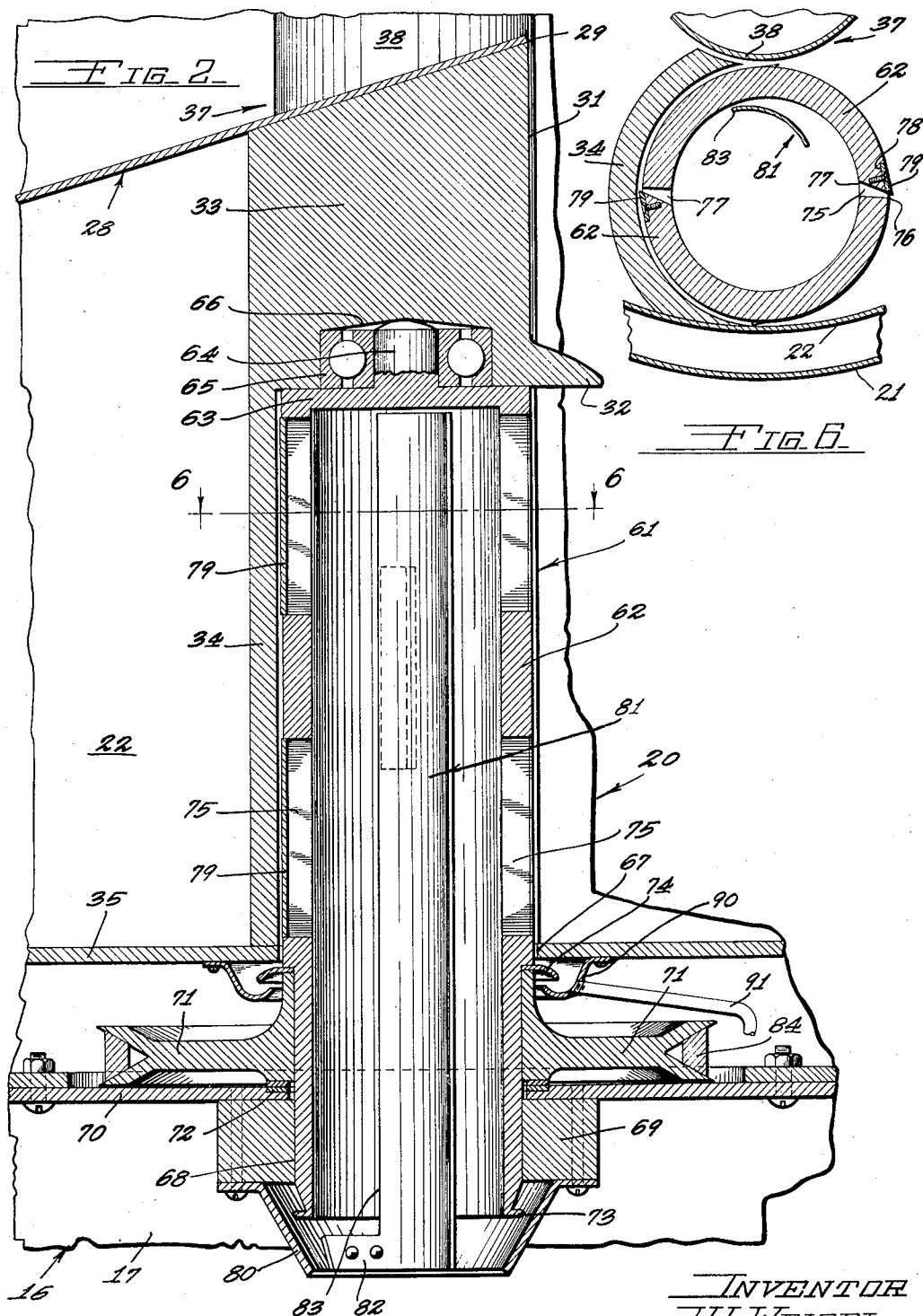
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FIG. 3.

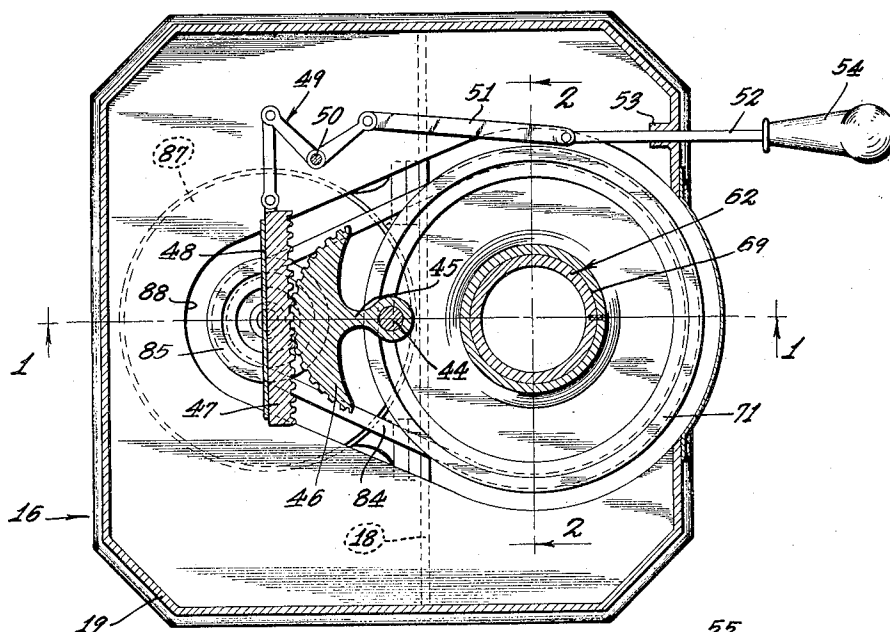


FIG. 4.

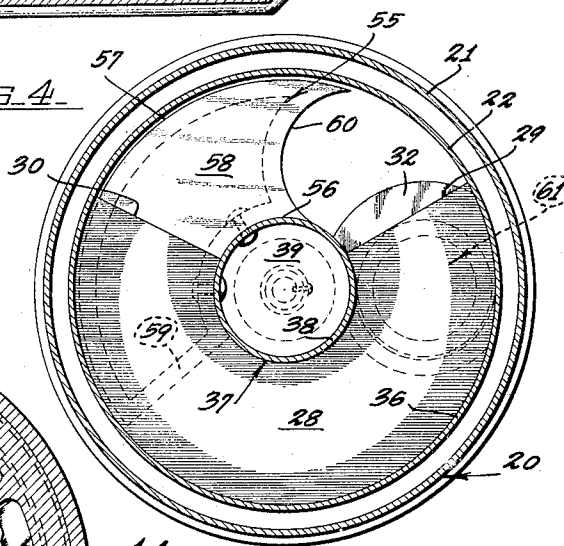
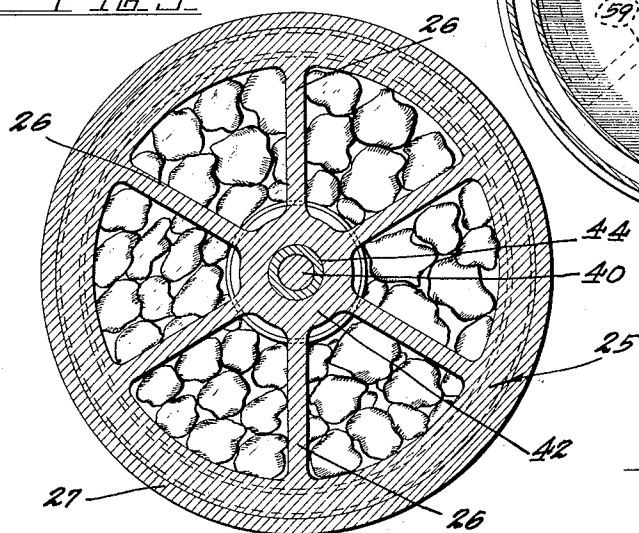


FIG. 5.



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UNITED STATES PATENT OFFICE

1,935,104

ICE SHAVING MACHINE

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Application May 7, 1932. Serial No. 609,854

13 Claims. (Cl. 83—62)

My invention pertains to a machine for making fine shavings of ice to obtain a snow-like appearance of the ice, the machine being principally adapted for serving shaved ice for cooling drinks or for making flavored ices.

An object and feature of my invention is the construction of a machine which is compact and may be used on a soda water fountain counter or the like, and which lends itself to rapid shaving of the ice, the power being derived from an electric motor. Also, another object I have had in mind is to construct a machine which will be silent in operation, which is easy to control and manipulate to obtain ice shaved in the manner desired, and to shave the ice so rapidly that it cannot become soggy with water, which is the case with certain ice shaving machines in which the ice shavings become saturated with water from the melted ice.

In a machine of the above type, certain objects and features of my invention from a mechanical standpoint is the construction of an ice shaving machine in which a vertical cylindrical ice shaver is used, this having blades. The shaver is hollow so that the shavings are forced from the outside of the cylindrical shaver to the center and then drop in a glass or other receiving vessel.

Another object and feature of my invention in regard to the shaver is the use of a press or pressure device which may press the ice against the shaving cylinder at any desired pressure in order to force the shaved ice through rapidly or more slowly.

In connection with the use of the ice press, a further object and feature of my invention is having this rotatable so that the pressing surface may be removed from the shaving cylinder to allow deposit of ice, this ice dropping into the space between the pressure face and the cylinder from an ice chamber or bin located above the shaving cylinder.

Another object and feature in regard to the ice chamber and the ice press is the provision of a sloping surface or slide to allow the ice to slide downwardly and drop into a space opened by the movement of the ice press when retracted, such ice press being retracted underneath said ice slide. The general construction of the ice chamber, slide, and the location of the shaving cylinder is, preferably, to use a cylindrical container structure with a rotatable hollow cylinder in the center. This hollow cylinder at the bottom carries the ice press which may be housed underneath the slide which is formed in the man-

ner of a helix to allow dropping of the ice to fill the space between the end of the slide and the shaving cylinder which is located at one side of the machine.

Another feature of my invention relates to the control of the ice press in the manually operated machine, this preferably being done by moving a rod or lever which projects from, preferably, the front of the machine, and this causes the ice press to rotate on its axis to bring the lumps of ice into contact with the cutting blades on the periphery of the shaving cylinder.

Another detailed feature of my invention relates to the use of a cleaning blade fitted internally of the shaving cylinder to scrape the ice shavings from the interior wall of such cylinder and allow depositing of these in a receptacle.

My invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a vertical section on the line 1—1 of Fig. 3 in the direction of the arrows, with certain parts shown in elevation.

Fig. 2 is a vertical section on the line 2—2 of Figs. 1 and 3 in the direction of the arrows, showing the shaving cylinder enlarged.

Fig. 3 is a horizontal section on the line 3—3 of Fig. 1 in the direction of the arrows.

Fig. 4 is a horizontal section on the line 4—4 of Fig. 1 in the direction of the arrows.

Fig. 5 is a horizontal section on the line 5—5 of Fig. 1 in the direction of the arrows.

Fig. 6 is a horizontal detail section on the line 6—6 of Fig. 2 in the direction of the arrows, through the shaving cylinder.

In constructing my invention I utilize a pedestal 11 which may rest on the counter of a soda water fountain installation. This has a base plate 12, one section of which is cut out and has a foraminated plate 13. A sink 14 is below the foraminated plate to catch water drippings, and a drain pipe 15 is connected to the bottom of the sink. A substantial intermediate supporting stand 16 extends upwardly from the base. This has an outer wall 17 and a front transverse wall 18. The shape may be anything that is suitable. On this stand there is an upper base 19 and on this base there is supported a container designated generally by the numeral 20. This is illustrated as being cylindrical, having an outer wall 21 and an inner wall 22 spaced apart, having spacing rings 23 at the bottom and 24 at the top. The spacing ring at the top is part of a spider 25, this spider having radial arms 26. A detachable cover 27 forms a cover for the container and allows inserting of the ice.

Inside of the container, forming a fixed structure, there is an ice chute or slide 28. This has an upper edge 29 and a lower edge 30. It will be seen on reference to Fig. 4 that these edges are slightly over 120 degrees part. They can have a small angle, if desired, but the slide 28 which forms a helix should be greater than a half circle and as large as possible. Extending downwardly from the edge 29 there is, preferably, a radial and vertical surface 31. At the lower part of this surface there is an extending lip 32 to divert the ice, as hereinunder detailed. The support for the ice chute or slide is illustrated as having a solid body structure 33 with a curved segmental wall 34. This wall at the bottom rests on the floor plate 35 which is part of a casting forming the base 19. The chute or slide at its outer periphery 36 is preferably welded to the inner wall 22 of the container. The metal of this slide must be sufficiently stiff and rigid so that it will form a strong structure to support ice packed above this slide, the stack of ice being indicated in Fig. 1, the ice being inserted through the lid and between the arms or ribs of the spider 25.

A rotatable cylinder 37 is illustrated as having a sheet metal cylindrical wall 38 and upper and lower ends 39, these having stub shafts 40 and 41. These stub shafts are journaled in a hub 42 at the top forming part of the spider 25 and a hub 43 at the bottom forming part of the bottom plate 35. Bushings 44 are used in the journals. The stub shaft 41 at the bottom has a gear arm 45 connected thereto with a segmental gear 46. Meshing with this gear is a rack 47 which is supported and guided by a straight guide 48 secured to the under side of the base plate 35. A bell crank 49 pivoted at 50 on the under side of the plate 35 has one arm connected to the rack 47 and another to a link 51, which link is connected to a slide rod 52 operating through a guide 53 in the front of the base 19. This rod has a hand grip end 54. Such latter construction is for the purpose of rotating a cylinder.

This cylinder 37 forms the mounting for the ice press designated by the assembly 55. This ice press has an inner wall 56 secured to the cylinder wall 38 by rivets or the like, an outer wall 57 which is contiguous to the inner wall 22 of the container, and an upper flat connecting surface 58. The upper surface has a clearance underneath the lower edge 30 of the ice chute or slide 28. This also, preferably, has an enclosed end 59 at the back and a curved closed end 60 at its front or exposed end. The curvature at the front wall is part of a circle to conform to the cylindrical ice shaver described hereinunder. By this construction the ice press, by operating the handle 54, may be moved completely underneath the ice chute or slide 28 and when so moved it leaves a large open space from the line 29 of the chute to the line 30 and from the top of the container to the base plate 35 in which ice may be stacked as well as the ice being stacked on top of the sloping surface of the chute.

The ice shaver designated by the assembly numeral 61 has a cylindrical construction 62 next to its side walls. This has a closed top 63 with a stub shaft 64 extending upwardly (note Fig. 2), which stub shaft is mounted in anti-friction bearings 65 in a socket or recess 66 in the metal body 33 of the ice chute or slide. This cylinder extends through an opening 67 in the plate 35 of the base. It is illustrated as having a reduced section 68 at the bottom which is journaled

in a bottom bearing 69, which bearing is bolted to a lower plate 70 forming part of the casting of the base 19. A pulley wheel 71 is keyed on the section 68 of the cylinder and there are thrust bearings 72 between this pulley and the plate 70. This supports the weight of the cylindrical ice shaver. The bottom of the cylinder has an outstanding bead 73. On the upper edge of the hub of the pulley 71 there is a water deflecting wing 74.

The ice shaving cylinder is provided with a series of slots 75. These are illustrated as being narrow at the outer part 76 and wide at the inner part 77, thus giving an enlarged clearance. At the outside of the cylinder there are recesses 78 with shaving blades 79 attached by screws or the like. These blades direct the shavings through the slots 75. In the construction illustrated, there are two diametrically opposite shaving blades at the bottom of the cylinder, two at the top in alignment therewith, and an intermediate pair at right angles to the first two pairs. This gives six shaving blades but, manifestly, a greater or lesser number may be utilized.

In connection with the use of the shaving blades, there is a substantial funnel structure 80 attached to the lower bearing 69 and depending therebelow, and extending upwardly from this there is a scraper 81. This has a base 82 riveted or bolted to the funnel 80. This is formed on a curve and has a scraping edge 83 contiguous to the inside cylindrical surface of the cylindrical ice shaver.

The cylindrical ice shaver is rotated by means of a belt 84 which is driven by a driving pulley 85 attached to the shaft 86 of the electric motor 87. This motor is illustrated as being bolted to the front wall 18 of the stand 16, the shaft 86 extending upwardly through an opening 88 in the bottom plate 70. A receptacle illustrated as a glass 89 may rest on the perforated plate 13 directly below the ice shaving cylinder to receive the shaved ice.

An annular trough 90 is secured underneath the plate 35 to receive the drip from the ring 74 and from this trough there is a waste pipe 91 which may lead in any convenient direction to discharge the sink 14. This carries any water from the ice which trickles down on the outside of the cylindrical ice shaver.

In construction and operation of my invention, when the ice container is first filled, by removing the cover 27, with broken ice, the ice press 55 is moved by operating the handle 54, the bell crank 49, the rack 47, and the segmental gear 46, and by turning the cylinder 37 so that the ice press is housed as completely as possible underneath the ice chute or slide 28. As above mentioned, this allows the ice container to be filled between the cylindrical ice shaver and the front wall 60 of the ice press and between the cylinder wall 38 and the inner wall 22 of the container. Ice is also packed on top of the ice chute 28. When it is desired to shave ice, the handle 54 and the rod 52 are reciprocated to rotate the cylinder 37 in the proper direction to cause the ice press, through the medium of its face wall 60, to press the ice against the outside of the cylindrical ice shaver. The shavings cut by the blades 79 pass inwardly through the slots 76, and should these tend to cling to the inside surface of the cylindrical cutter, they are removed by the scraping blade 81 and dropped through the lower open end of the cylinder and through the spout 80 into the recep-

tacle 89. The electric motor may be started and stopped by any suitable control switch. When the front face 60 of the ice press approaches the cylindrical ice shaver, the motion may be reversed and the ice press again housed, allowing the ice above the press to fall downwardly into the space between the press and the shaving cylinder. A certain amount of this ice will slide on the ice chute 28 so that the ice may all be used up, the amount first shaved being that between the shaver and the ice press, and subsequently the ice resting on top of the chute. It is obvious that by varying the pressure of the ice press on the broken ice that this may be forced through the cylindrical shaver at varying speeds and thus shave the ice to a coarse or a fine degree; and as soon as the pressure is released the machine will cease shaving the ice.

From the above description, together with the drawings, it will be seen that in my invention, there are certain important features such as the cylindrical ice shaving cylinder which has slots therethrough being made hollow and cutting blades operating on the periphery. This, in rotating on its vertical axis, and having an opening at the bottom, permits a direct downward discharge of the ice which has been cut into shavings.

Another characteristic feature is the employment of the ice press, this being designed to rotate in an annular space, such space being between the rotatable cylinder and the inner wall of the container. This cylinder is, in effect, a vertical shaft, and the rotation of such shaft forces the ice back between the ice press and the shaving device into contact with such latter device.

Another important characteristic of my invention is a cover structure over part of the annular chamber between the cylinder 37 and the container wall. This allows partly housing of the ice press for packing of the ice between the press and the shaver, and also when the initial quantity of ice has been shaved the ice on the top of this cover, which is formed in the manner of an ice chute, may drop into the lower space and then be forced against the shaving cylinder.

Various changes may be made in the details of construction without departing from the scope of the invention as defined by the appended claims.

I claim:

1. In an ice shaving machine, an ice container, an ice press mounted therein, an ice shaving device having shaving blades, means to rotate the ice press to bring said press contiguous to the shaving device or remote therefrom and when remote there being a space in the container for packing ice, and means for discharge of the ice and shavings, the container having an ice chute, and the ice press in one position being housed below said chute to leave a space between the press and the ice shaving device, the ice chute being adapted to support packed ice in the container and to slide the ice downwardly into the space between the shaving device and the ice press when the press is retracted.

2. In an ice shaving machine, a cylindrical ice container having a rotatable shaft extending centrally therethrough, an ice shaving device at one side of the cylinder between the shaft and wall of the container, an ice press secured to the shaft and rotatable and having a pressure face, the ice press when retracted forming a space between the shaving device and the face of the ice press for packing of ice, the ice press being

adapted to force the ice from said space into contact with the shaving device.

3. In an ice shaving machine as claimed in claim 2, the shaving device comprising a cylinder with blades, the axis of the cylinder being parallel to said shaft, the container having an ice chute positioned above the ice press when said press is retracted, said chute being of helical shape.

4. In an ice shaving machine, an ice container, a structure therein forming an annular space, a vertical, hollow, rotatable shaving cylinder having shaving blades and slots therethrough positioned in said annular space, a movable ice press also mounted in the annular space, a cover for part of said space, means to rotate the ice press to house same at least partly underneath the cover, leaving part of the annular space between the press and the shaving cylinder for packing ice, the ice press in its rotation forcing the ice in the space between the press and the shaving cylinder into contact with the blades in the cylinder, the shaving cylinder having an opening in the bottom for discharge of the shaved ice.

5. In an ice shaving machine as claimed in claim 4, the cover over part of the annular space comprising a fixed ice chute or slide adapted to slide the ice into the space between the retracted press and the shaving cylinder.

6. In an ice shaving machine, an ice container, a central vertical shaft, there being an annular space between the shaft and the inside of the container, a vertical hollow rotatable shaving cylinder open at the bottom and having slots with shaving blades vertically mounted in one part of the space, a sloping ice chute forming a cover for part of said space, an ice press connected to said shaft, said shaft being rotatable to retract the ice press at least partly underneath the ice chute to permit filling the space between the press and the shaving cylinder with ice, the press being movable in a forward direction to press the ice in the latter space against the shaving cylinder.

7. In an ice shaving machine, an ice container having a central structure and an annular space between said structure and the inside of the container, a shaving device in said annular space, a covering structure for one part of the annular space, a rotatable ice press fitting in the annular space and rotatable therein and in the retracted position being at least partly housed underneath said covering and movable therefrom to press ice between the press and the shaving device.

8. In an ice shaving machine, an ice container having a cylindrical inside wall, a cylindrical central structure, there being an annular space between the central structure and the said wall, an ice press, a cylindrical ice shaving device mounted in the said annular space, means to relatively rotate the ice container and the cylindrical structure to exert a pressure on ice packed in the annular space between the ice press and the ice shaving device.

9. In an ice shaving machine as claimed in claim 8, and a helically arranged ice chute over part of the annular space between the ice container and the cylindrical structure adapted to slide ice packed thereon into the space between the ice press and the ice shaving device when the ice press is retracted.

10. In an ice shaving machine, a stationary floor plate having an inner and an outer cylindrical structure mounted thereon with an annular space therebetween, the floor plate having an opening, and a cylindrical ice shaving device

extending upwardly through the said opening into the said annular space, an ice press secured to one of said structures, one of said cylindrical structures being stationary as regards the floor plate, and the other being rotatable thereon to press ice packed between the ice press and the ice shaving device against the latter device.

11. In an ice shaving machine as claimed in claim 10, a sloping ice chute located in the annular space and extending partly thereabout and forming a cover for a housing to accommodate the ice press when retracted from the ice shaving device, the ice chute discharging ice packed thereon into the annular space between the ice having device and the ice press.

12. An ice shaving machine comprising in combination a pedestal having a stand with a base thereon and a stationary floor plate in the base, an inner and outer cylindrical structure mounted on the floor plate, one having rotational movement in reference to the other, an ice press secured to the rotatable structure, there being an annular space between the inner and outer cylindrical structures, an opening extending through the floor plate into said annular space and a cylindrical rotatable ice shaving device extending through said opening and having an axis parallel to that of the said cylindrical structures, a sloping ice chute secured to the stationary structure and extending partly around the annular space and forming a cover for a housing to accommodate the ice press when retracted from the ice shaving device, the outer structure having an opening at the top with a cover for inserting and packing ice, means to rotate the ice shaving device, and means to rotate the rotatable cylindrical structure.

13. An ice shaving machine as claimed in claim 12, an electric motor mounted in the stand and having a drive to the rotatable ice shaving device, and a plate on the pedestal at one side of the stand directly below the ice shaving device for mounting a receptacle to receive the shaved ice.

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25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150