Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 1

Fig. 1

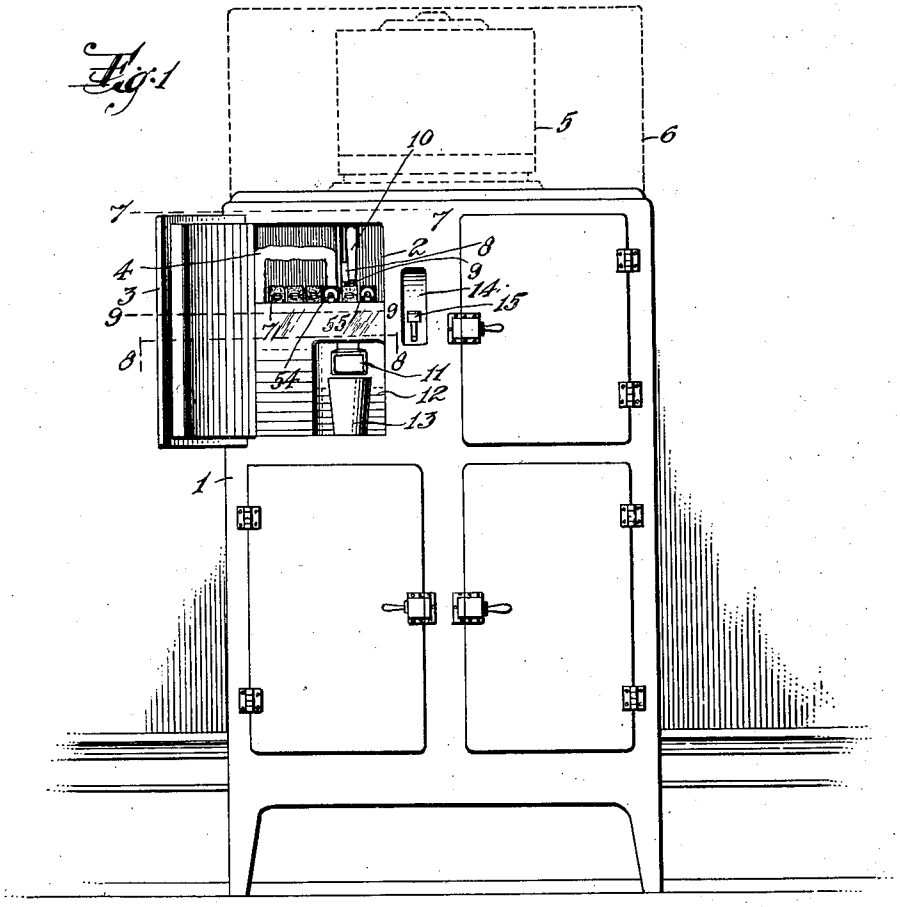


Fig. 2

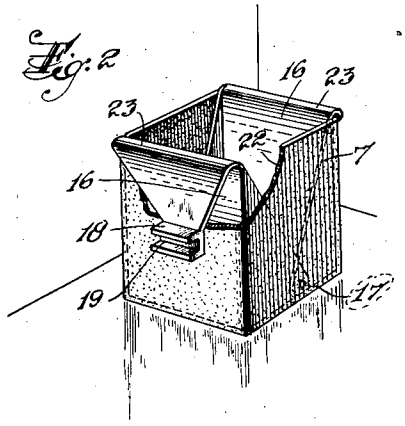
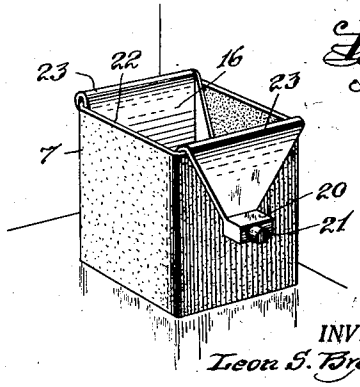


Fig. 3



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Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 2

Fig. 4

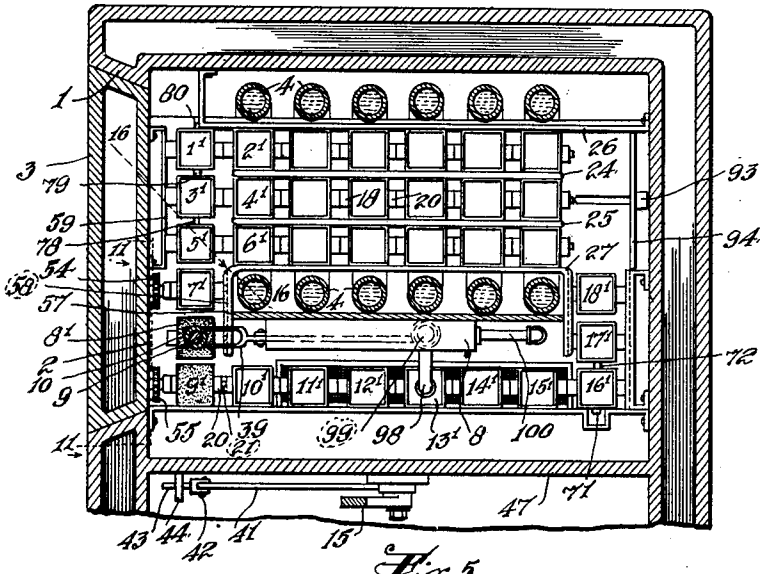
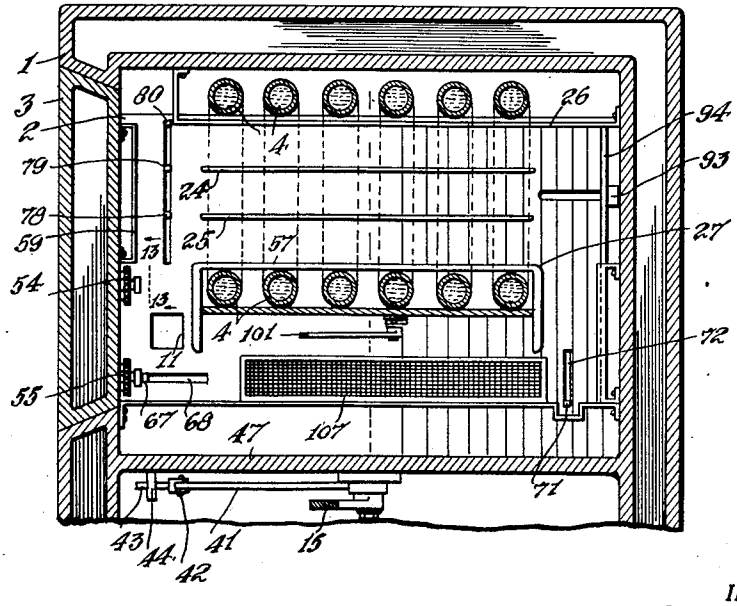


Fig. 5



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MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 3

Fig. 6

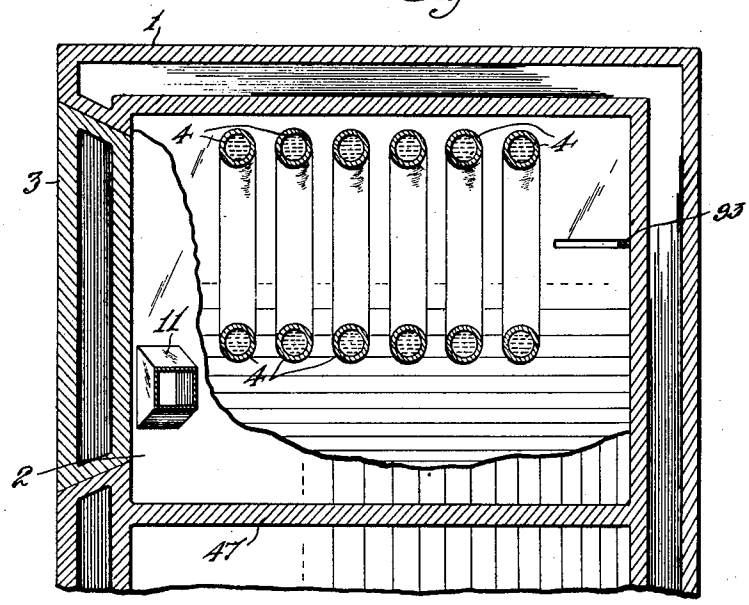
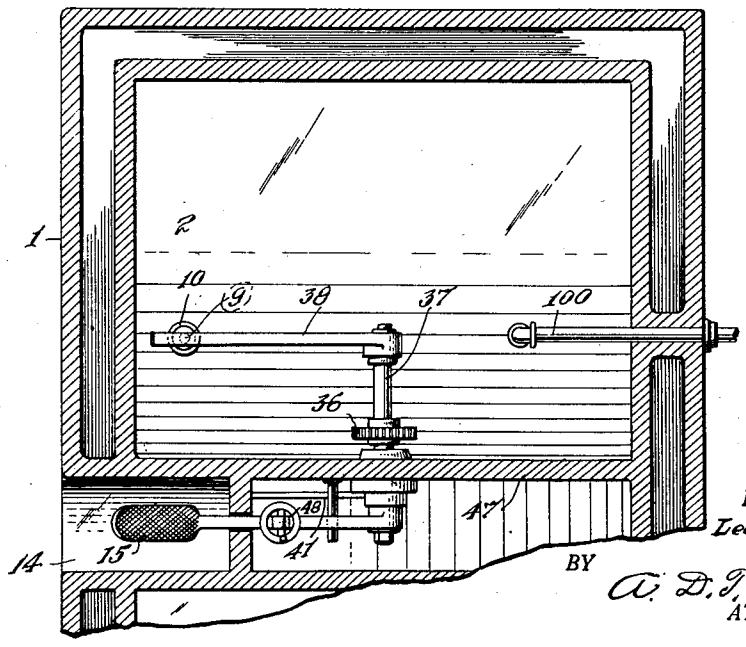


Fig. 7



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Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 4

Fig. 8

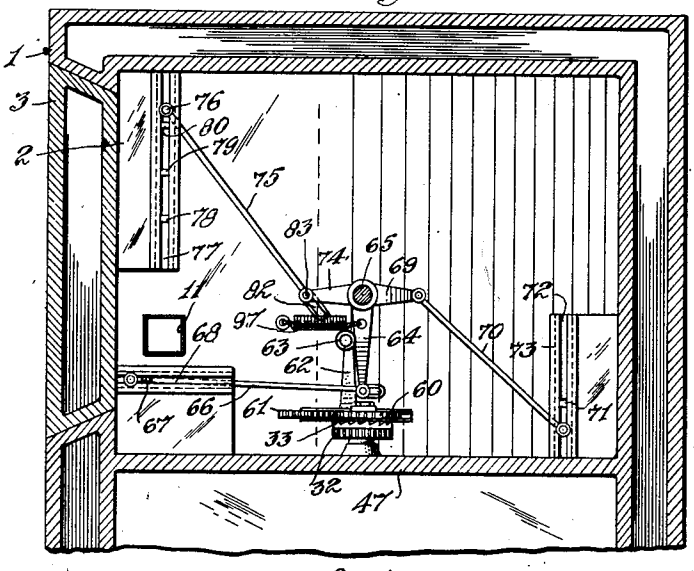
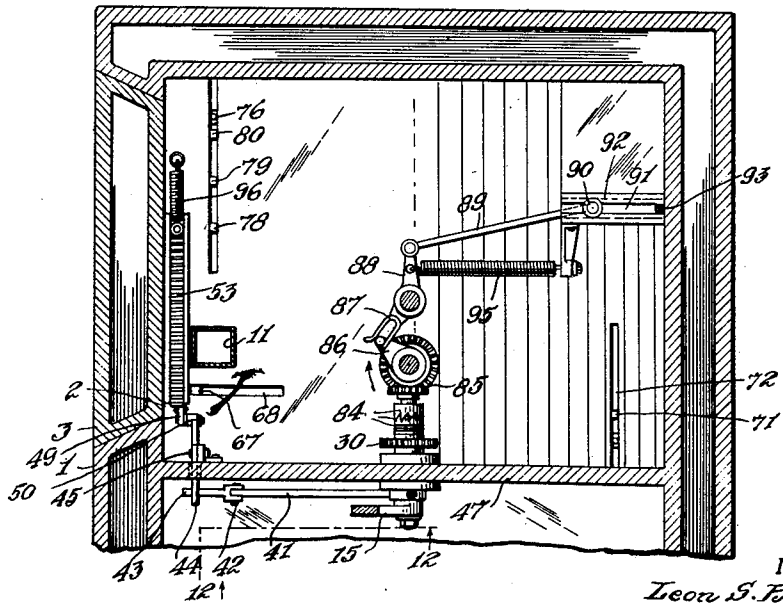


Fig. 9



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MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 5

Fig. 10

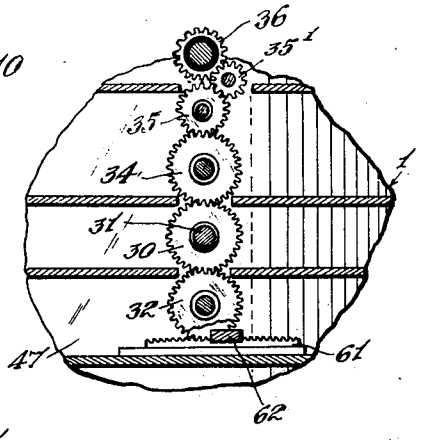


Fig. 11

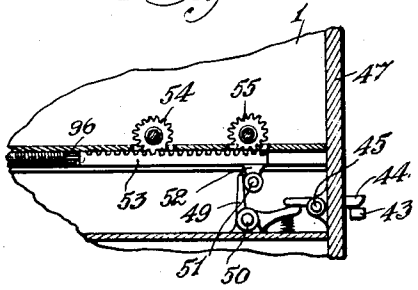


Fig. 17

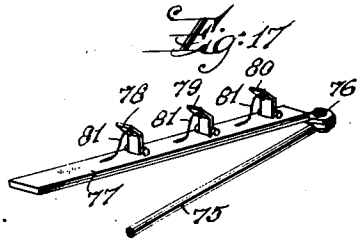


Fig. 14

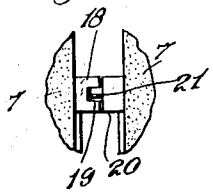


Fig. 13

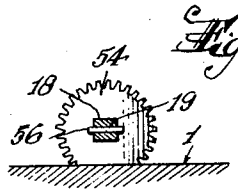


Fig. 12

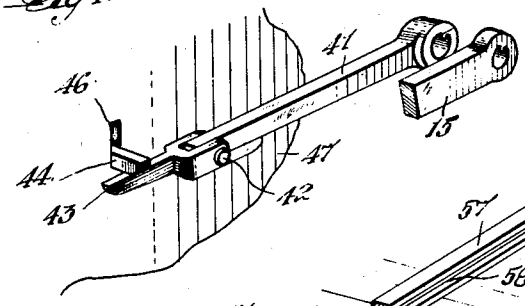


Fig. 16

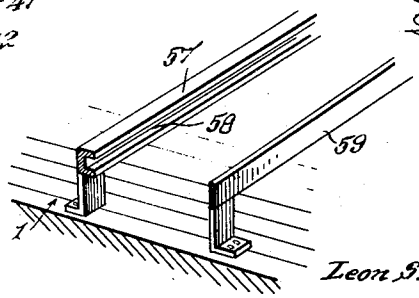
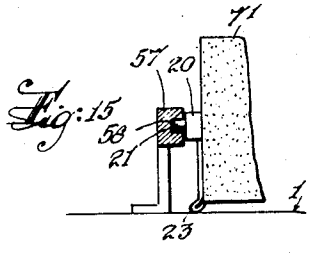


Fig. 15



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MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 6

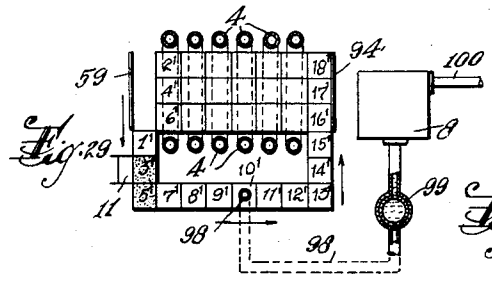


Fig. 29

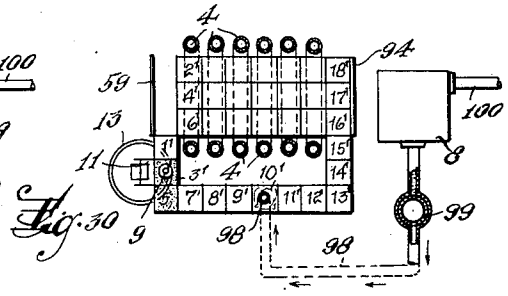


Fig. 30

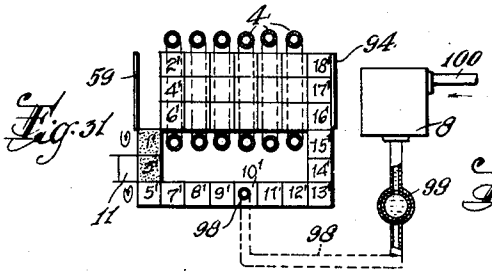


Fig. 31

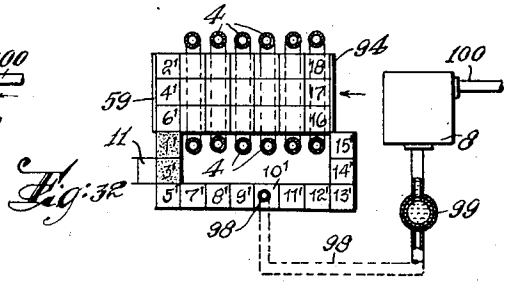


Fig. 32

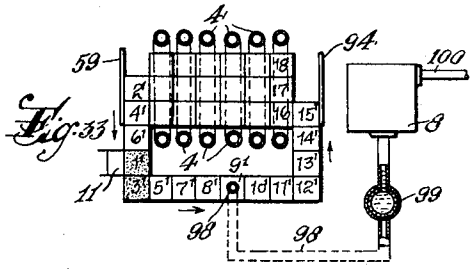


Fig. 33

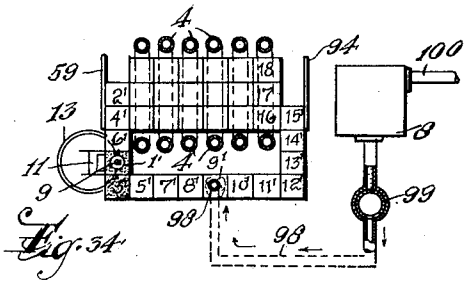


Fig. 34

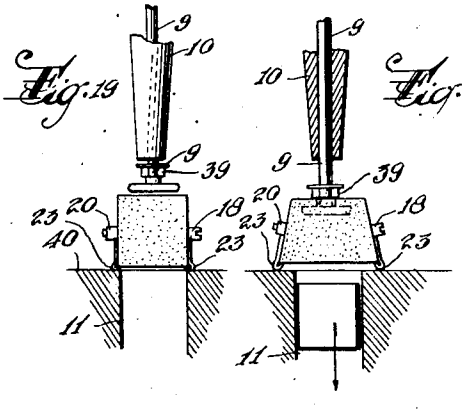


Fig. 19

Fig. 20

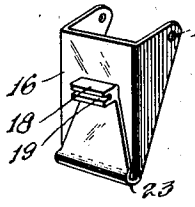


Fig. 18

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Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 7

Fig. 21

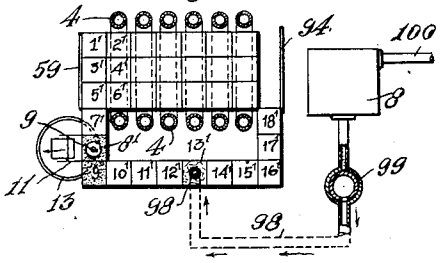


Fig. 22

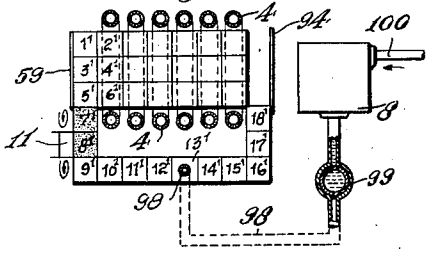


Fig. 23

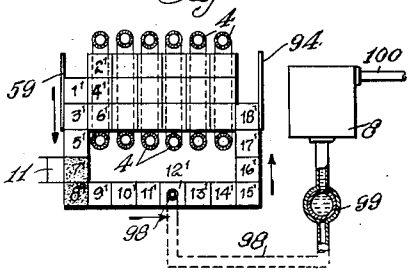


Fig. 24

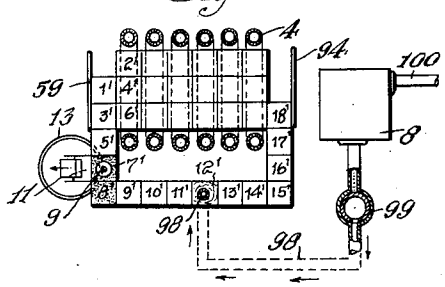


Fig. 25

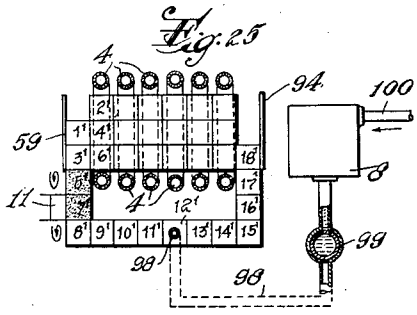


Fig. 26

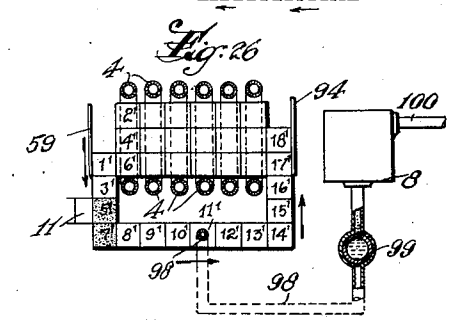


Fig. 27

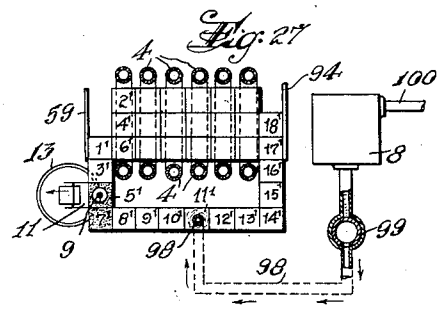
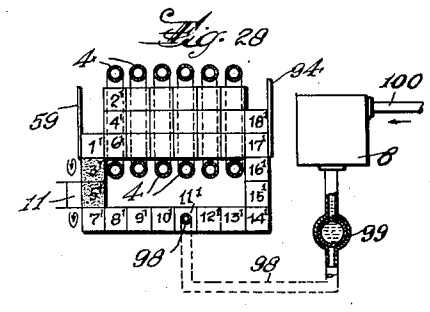


Fig. 28



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Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 8

Fig. 35

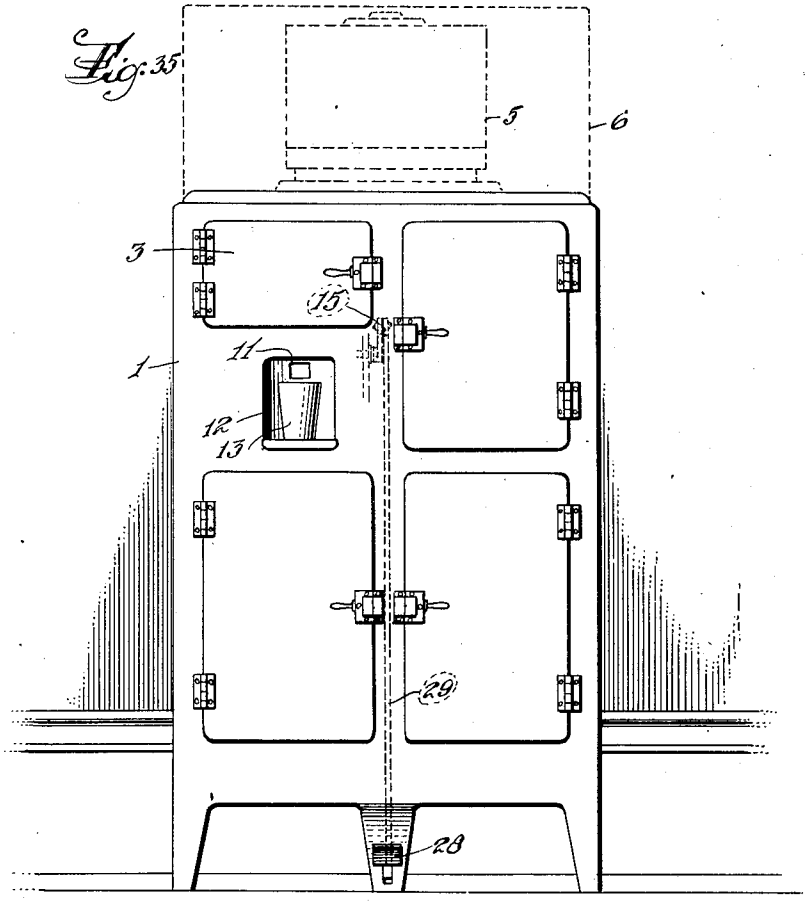
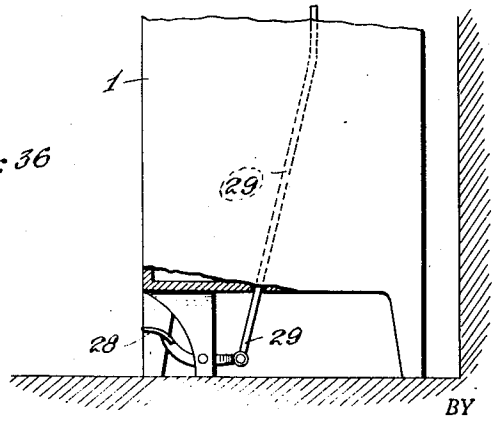


Fig. 36



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Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 9

Fig. 37

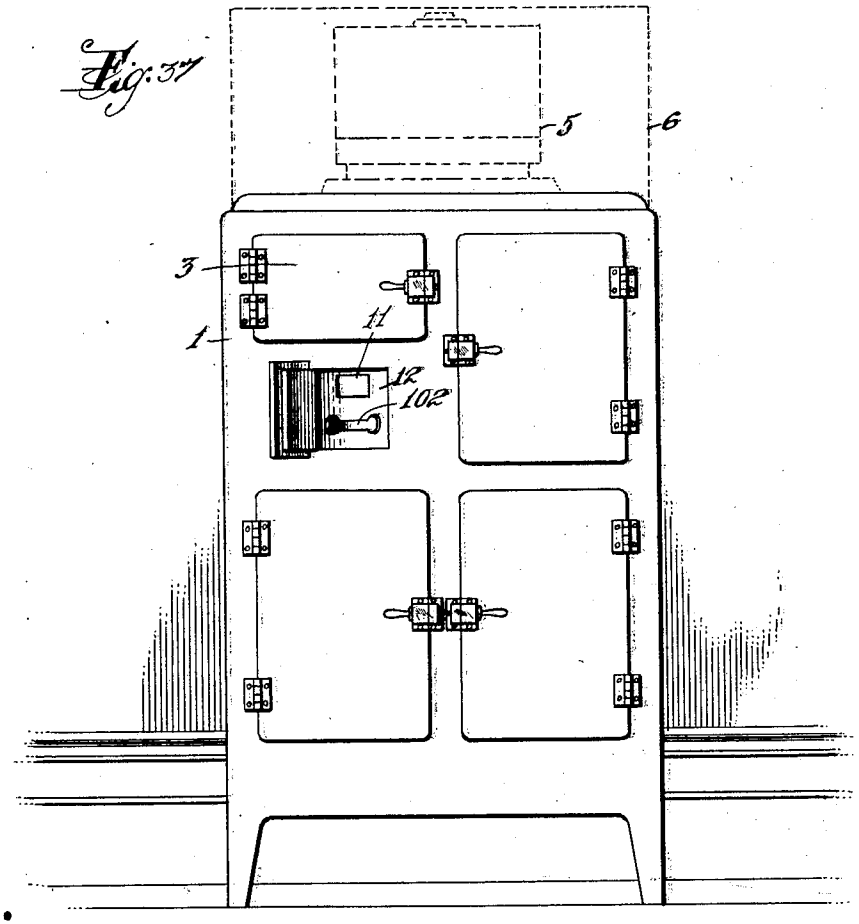
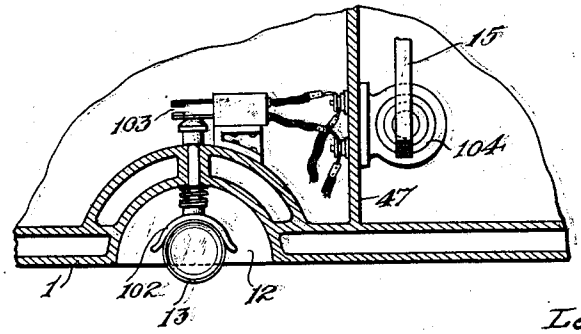


Fig. 38



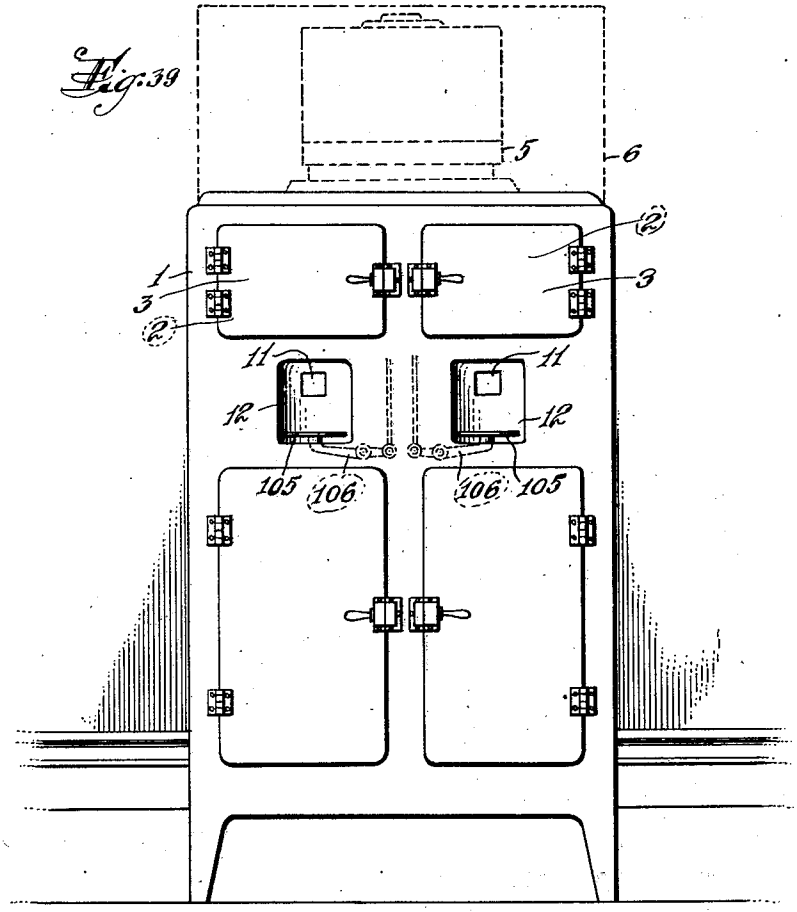
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Nov. 13, 1934. L. S. BRACH 1,980,571

MEANS FOR OBTAINING ICE BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Filed March 15, 1932 10 Sheets-Sheet 10

Fig. 39



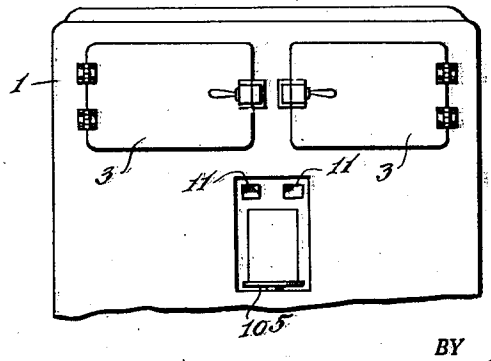


Fig. 40

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Patented Nov. 13, 1934 1,980,571

UNITED STATES PATENT OFFICE

1,980,571

MEANS FOR OBTAINING ICE-BLOCKS FROM AN AUTOMATIC TYPE REFRIGERATOR

Leon S. Brach, East Orange, N. J.

Application March 15, 1932, Serial No. 598,904

26 Claims. (Cl. 62—108.5)

This invention relates to ways and means for obtaining ice-blocks from an automatic refrigerator. By an automatic refrigerator, I mean one in which the cooling compartment is cooled by an expansion member such as found in the present-day electrically operated refrigerators.

As far as I am aware, it is now the practice to freeze ice-blocks or cubes as they are generally called, in trays having a plurality of integral compartments, or compartments formed by a movable separator whereby the water will be frozen into blocks or cubes. Consequently, when it is desired to use these ice-blocks, it is necessary to take the whole tray out of the refrigerator, and if the tray is a metal one it must be warmed by having hot water run over it or in some other manner, whereby the ice-blocks may be extracted or allowed to fall out. It frequently happens that only a very few blocks or cubes are required but this necessitates removing the whole tray just the same.

The principal object of my invention is to provide a method and apparatus or means for generally obtaining from an automatic refrigerator one ice-block at a time, although from what will be later said, it is within the scope of my invention to obtain a plurality of cubes simultaneously if desired.

While attaining the principal object, it is another object of my invention to provide means for automatically filling with water the containers from which the ice-blocks have been removed.

Another object of my invention is to provide means for pre-cooling the water before it is passed to the empty containers, whereby the freezing process may be expedited and more assurance given of a supply of ice-blocks.

Another object of my invention is to provide means by which ice-blocks may be obtained or delivered from the refrigerator by the mere actuation of a lever operated by hand or foot, or the mere placing of a receptacle in position to receive the ice-blocks or cubes. These operations may be performed without the necessity of opening the refrigerator whereby the interior temperature would be raised.

In addition to these general objects, other and further ancillary objects will be discerned by one skilled in the art of refrigeration on reading the specification taken in connection with the annexed drawings wherein:

Figure 1 is a front elevation of an automatic type refrigerator with the door to the cooling compartment open.

Figure 2 is a perspective view of one of the ice-block containers.

Figure 3 is a view at a different angle of the container shown in Figure 2.

Figure 4 is a section through a portion of the refrigerator just above the containers shown in Figures 2 and 3, when they are assembled and in working position in the refrigerator.

Figure 5 is a sectional view through the refrigerator substantially at the same place as the section in Figure 4, but without the cups or ice-block containers in place.

Figure 6 is a sectional view through a portion of the refrigerator below the sections of Figures 4 and 5, showing the flooring below the expanding coils and below the track surface on which the ice-block containers move.

Figure 7 is a section through a portion of the refrigerator on the line 7—7 of Figure 1.

Figure 8 is a sectional view through the same portion of the refrigerator but on the line 8—8 of Figure 1.

Figure 9 is a sectional view through the same portion of the refrigerator but approximately on the line 9—9 of Figure 1.

Figure 10 is a part-sectional and elevational view showing a gear means for operating the mechanism at the different levels exemplified by Figures 4 to 9 inclusive.

Figure 11 is a part-sectional and elevational view along the line 11—11 of Figure 4.

Figure 12 is a fragmentary view on the line 12—12 of Figure 9, with certain of the parts removed.

Figure 13 is a view on the line 13—13 of Figure 5.

Figure 14 is a fragmentary view showing the manner in which the containers illustrated in Figures 2 and 3 are coupled when they are passing through the expanding coil chamber.

Figure 15 is a fragmentary view of the ice-block container showing it in reverse position for the purpose of extracting the ice-block.

Figure 16 is a view looking in the direction of the arrow 16—16 of Figure 4, showing how the ice-block containers are supported during the time in which they are being turned to remove the ice-blocks therefrom.

Figure 17 is a view showing part of the advancing mechanism used for the block containers just after they are moved from the end plane of the expanding coils.

Figure 18 is a view on a reduced scale of one of the metal pieces used in the construction of the block container shown in Figures 2 and 3.

Figure 19 is a view of the block container in reverse position just previous to the application of the extracting plunger used for forcing the ice-block from the container into the exit chute.

Figure 20 is a view similar to Figure 19, but showing the plunger in down position and the ice-cube in the exit chute.

Figures 21 to 34 inclusive, illustrate diagrammatically the various steps in the progress of the ice-block containers through the refrigerator.

Figure 35 is a front view of the refrigerator showing a foot-control for extracting one of the ice-cubes from the refrigerator.

Figure 36 is a side view of the foot-pedal mechanism shown in Figure 35.

Figure 37 is a view similar to Figure 35 but showing how the ice-cube may be obtained from the refrigerator by the mere insertion of a glass or other receptacle in the receiving position.

Figure 38 is a fragmentary section showing the electrically operated means for ejecting an ice-cube by the insertion of the glass as shown in Figure 37.

Figure 39 is a view similar to Figures 35 and 37 by illustrating how a pair of ice-cubes may be obtained from the machine by the mere act of placing a pair of glasses or receptacles on a receiving shelf.

Figure 40 shows a further modification whereby a plurality of ice-cubes may be delivered into one glass or receptacle.

Referring now to the details wherein like numbers refer to corresponding parts in the various views, 1 illustrates generally a refrigerator of the automatic type having one or more compartments 2 closed by the door 3, equipped with the usual expanding coils 4. As illustrated, the condenser may be placed in any desired position, one such being shown by dotted lines 5 within a cover 6. As shown in Figure 1, the compartment 2 shows a row of ice-block containers 7. A pre-cooler 8 and extracting plunger 9 are supported in a bushing 10. A chute 11 is shown positioned in a recess 12 adapted to receive a glass or receptacle 13. In the recess 14 is positioned a hand-operated lever 15 which actuates the interior mechanism to be later described.

The containers 7 are preferably made of two similar metal pieces 16 (Fig. 18) which are pivoted together at the point 17. One of the metal pieces 16 is equipped with a lug 18 having a transverse slot 19 therein. The other piece (Fig. 3) is equipped with a lug 20 carrying a circular pin 21. The purposes of these lugs will be later referred to. After the pieces 16 have been completed as above described, they are placed in a soft rubber casing 22, thus completing the ice-block container. It is to be noted at this point that the metal pieces 16 are provided with rounded edges 23 where they are turned downwardly to receive their respective lugs 18 and 20. The object of this construction will be later pointed out in the operation of the device.

A plurality of the ice-block containers 7 are assembled within the space enclosed by the expanding coils 4 and are held in tandem relationship by spaced guide pieces 24 and 25 (Figs. 4 and 5), and the side-wall pieces 26 and 27. After being positioned within the expanding coils 4 (Fig. 4), the containers 7 are coupled together as shown in Figure 14, whereby they may be pushed through the refrigerator as will be later pointed out. The details for carrying the ice-cube containers 7 through the refrigerator will perhaps be more readily understood by describing them along with the description of the operation of the machine.

In the description of the operation of the machine, it is assumed that we start as illustrated in Figure 4 with the ice-cube containers 7 in the following set-up: All those within the expanding coils 4 are assumed to be thoroughly frozen blocks and likewise those numbered 1', 3', 5', 7'. Those numbered 10', 11', 12', are empty, and 13' as being filled with water, while 14', 15', 16', 17', 18', have already been filled with water. 8' and 9' are shown in reverse position, 8' being in the position wherein an ice-cube or block is being ejected from the machine. A drip-pan 107 is preferably placed at the filling station or under the container being filled.

Starting with the apparatus in this position, a downward movement of the lever 15 or the foot-pedal 28 connected to a rod 29 (Figs. 35 and 36), actuates a gear 30 (Fig. 10) carried on the shaft 31 to which the lever 15 is attached. The turning of the gear 30 turns the gear 32 used for operating the mechanism shown in Figure 8, but because of the dental type of clutch 33, nothing takes place in the apparatus shown in this figure on the down-stroke of the lever 15. However, idler gears 34, 35, and 35' are operated which in turn operate gear 36. The gear 36 is connected to a shaft 37 carrying a lever 38 to which is attached plunger rod 9 (Figs. 7 and 19) carried by bushing 10 (Fig. 4). The plunger 9 will be forced downward, forcing the ice-cube or block out of the container 7 as shown in Figure 20. At the same time, the plunger rod 9 actuates the forked end 39 of a valve-rod which operates the container filling valve 99. The metal edges 23 of the cup are shown in sliding position on the support piece 40. It may be noted at this point that by constructing the container so the edges 23 as described have a metal surface engaging another metal surface, allows the containers to slide easily thereon. If the soft rubber would engage the metal support 40, it would not readily slide thereon.

It should be noted that the shaft carrying the lever 15 also carries a lever 41, the shaft not being shown in Figure 12. Pivotally mounted at 42 on the end of the lever 41, is a pawl member 43 preferably having a rounded nose which strikes the end of a lever 44 pivoted at 45 (Fig. 11) and operating in a slot 46 in a frame-piece 47, but because of the pivot 42, the pawl 43 will pass the lever 44 on the downward stroke of the main operating handle or lever 15.

After the ice-cube or block has been ejected into the chute 11 as described, the handle 15 is released and a tension spring 48 (Fig. 7) will pull the levers 15 and 41 back to normal position. However, on the first part of the return stroke of the lever 41, the pawl 43 engages the end of the lever 44 and causes this to actuate a bell-crank lever 49 pivoted at 50. One arm of the bell-crank lever 49 engages a roller 51 carried on an arm 52 attached to a rack 53 which is in engagement with pinions 54 and 55 (Figs. 4 and 11), thereby turning them. The pinion 54 has a member 56 (Fig. 13) positioned within the slot 19 of the lug 18 on the container 7. Likewise, the pinion 55 connects with the container 9' (Fig. 4) in the same manner. It may be noted at this point that the

containers 7' and 8' (Fig. 4) are both guided on the side opposite to the pinion 54 by a guide-rail 57 having a guide-slot 58 therein (Figs. 15 and 16) to receive the pin 21 (Fig. 3) of the container 7. Another guide member 59 is indicated in Figure 16 to guide the opposite side of the containers when they are in the discharging position 8'. The rotation of the pinion 54 as previously described, will turn the container 7' having a frozen block therein upside-down ready to be advanced to the position 8'. Likewise, the pinion 55 will turn the container 9' which at the beginning of the upstroke is in an upside-down position and has been advanced to that position from the position 8', and the container 9' will then be in position to be moved forward into the water-filling line.

On the second part of the up-stroke of the lever 41, the gear 30 operates the gear 32 in reverse direction and the clutch 33 will then pick up and rotate the pinion 60 in mesh with the rack 61. The rack 61 carries an arm 62 having a collar 63 in engagement with a lever arm 64 pivoted at 65. Connected to the arm 64, is a rod 66 carrying a finger 67 operating in a guide-slot 68. The finger 67 (Fig. 5) is normally positioned to the left of the container 9' for the purpose of advancing the same as will be later described. Rigidly connected with the lever arm 64, is another lever arm 69 carrying a rod 70 to which is attached a finger or roller 71 corresponding to 67. This finger is carried in a slot 72 in a guide-way 73 (Figs. 8 and 5). The finger 71 is shown in position also in Figure 4 behind the container 16'.

Also rigidly connected to the lever arm 64, is an arm 74 to which is attached a rod 75 connected through a coupling member 76 (Fig. 17) with an advancing slide 77 having projections 78, 79, 80, preferably pivotally mounted thereon and each held in the position shown in Figure 17 by a similar spring 81. The bent or curved ends of the projections 78, 79, and 80 operate in back of the containers 1', 3', 5', just the upper edges thereof engaging the bottoms of the containers. It will be noted that the rod 75 is connected to the arm 74 through a lost motion arrangement comprising a slot 82 in the end-rod 75 within which the connecting pin 83 may operate. Likewise, the rod 66 is connected to the arm 64 by a similar arrangement.

The movement of the rack 61 to the lever 62, will operate all of the lever arms 64, 69, and 74, and the corresponding connecting rods 66, 70, and 75. The movement of the rod 70 will first advance the containers 16', 17', 18' to the position shown diagrammatically in Figure 23, and because of the lost motion in connection on the rods 66 and 75, the three containers just mentioned will be moved out of the way and the rod 66 will pick up the container 9' and move it, with those in front of it, forward out of the path of the movement of the containers 1', 3', 5', 7', which are operated by the rod 75 having a greater lost motion than the rod 66, and the advance plate 77 brings forward the container 5' to the position now occupied by 7' which is the advanced position of 8', and in the advancing of the container 5', it is moved into mesh with the pinion 54 as previously described, ready to be turned over by the next downward movement of the lever 15 as has been described. Likewise, the container 8' is moved into mesh with the pinion 55 to be turned right-side up on the next downward movement of the lever 15 as has been explained.

After three movements of the slide 77, the containers 1', 3', 5', will all be moved out of overlapping engagement with the containers 2', 4', 6', the same being the first cross-row within the confines of the expanding coils 4. Consequently, on the next or the fourth upward movement of the lever 15, the three containers 2', 4', 6', will be simultaneously advanced into the position as shown in Figure 32. This movement takes place before the second part of the upstroke of the lever 15 and associated mechanism is completed, and this advance is accomplished by the mechanism shown in Figure 9 wherein the gear 30 is associated with a dental clutch 84 which will now function to turn the pair of gears 85 and operate the arm 86 connected with a slotted lever 87 carrying an arm 88 to which is connected a rod 89 having a connection 90 operating in the guide-slot 91 in guide-way 92. The connecting device 90 is associated with an arm 93 which in turn operates a slide-bar 94 that is adapted to engage any three containers; for example, 16', 17', 18', after they have been advanced to the space in alignment with the opening between the expanding coils 4, or in the position as illustrated in Figure 31. It is to be noted that in the starting off of the apparatus as above described, while the containers 2', 4', 6' were advanced during the fourth cycle, it will be seen by Figure 34 that thereafter the advance of the three containers as shown in Figure 32 will take place during each third cycle.

It is to be noted that while the gears 85 are actuated each time the lever 15 is returned, the mechanical connection is such that the lever 87 is only engaged on every fourth movement of the main operating lever 15. The spring 95 is used for returning the rod 89 and other parts to normal position after they have been operated by the lever 86. The mechanism is so timed that another spring 96 (Fig. 11) draws the rack 53 to starting position after the pawl 43 of the lever 41 slides off the nose of the lever 44 during the up-stroke of the lever 41, thereby setting the pinions 54 and 55 in position to receive the containers as they are advanced by the actuation of the rod 75 and the slide member 77.

It is to be noted also that as the slide member 77 is operated to discharge the containers in the row 1', 3', 5', which containers are individually engaged by the clips 80, 79, and 78 respectively as the slide member 77 is moved backward on the return movement of the lever 74 under the action of a spring 97, the turned-over end of these clips will pass underneath the containers in front of them. For example, the clip 79 will move forward its container 3' and then on the return movement of the slide 77, the clip 79 must pass under the container 1' in order to engage it to advance it on the next advance stroke. Therefore, the clips 78, 79, and 80 are pivoted to allow them to tip over against the very light springs 81 so that they will pass under the containers.

While the containers are being manipulated in the manner above described, the empty ones have been filled by a filling pipe 98 leading from a control valve 99, associated with the pre-cooler 8 which is kept filled by a supply pipe 100. The control valve 99 is operated by a lever 101 (Fig. 5) during the actuation of the operating lever 15 so that as the containers come along into the

proper position as indicated, they are filled with a regulated quantity of water which is measured by the valve 99.

Figures 21 to 34 inclusive illustrate diagrammatically the various steps in the operation of the mechanism. For example, Figures 21, 22, and 23 indicate one cycle of operation which may be briefly restated as follows:

The operating lever 15 has been pushed down, the ice-cube is being discharged into the receptacle 13, and the valve 99 is open and discharges a measured quantity of water into the container 13'. In Figure 22, the lever 15 and associated parts is on the up-stroke and the container 7' has been turned by its pinion 54, and likewise the container 9' which is shown in upside-down position in Figure 21, has been turned by its pinion 55, the valve 99 has been closed on the discharge side and filled from the pre-cooler 8. In the final or second up-stroke of the lever 15, the containers are advanced as shown in Figure 23, and the parts are now ready for the second cycle of operation which is indicated in Figures 24, 25, and 26.

The third cycle is illustrated in Figures 27, 28, and 29, and the fourth cycle in which three of the containers are moved forward to be engaged by the advance slide 77 and in which the three containers 16', 17', and 18' are to be advanced into the freezing position, is illustrated in Figures 30, 31, 32, and 33.

Figure 34 illustrates the next cycle following the end of the fourth cycle, at the end of which cycle the single row of containers has been advanced as shown in Figure 34 which corresponds to Figure 24, and as has already been explained, the advance of three of the containers out of what I have termed the freezing position of the space enclosed by the coils 4, will then take place thereafter on each return cycle.

In Figures 37 and 38, a glass or other receptacle 13 may be inserted into the recess 12 to actuate a switch lever 102 for closing contacts 103 which will operate a small electric motor 104 to actuate the mechanism or modifications thereof as previously described.

It is to be understood that the closing of the switch contacts 103 will put the motor 104 into operation and only one cycle of operation of the mechanism hereinbefore described will be made; that is to say, after the lever 15 or equivalent thereof has been operated by the motor to eject an individual ice-block or a plurality of ice-blocks if the mechanism is arranged to do so as illustrated in Figures 39 and 40, the other mechanism will only function as hereinbefore described. Preferably, the motor will be arranged to stop after it has performed its one cycle of operation.

In Figure 39, the recess 12 is provided with a table 105 which will actuate a lever 106 controlling the aforesaid mechanism, so that when a glass or receptacle is placed on the table 105, a slight pressure on the glass or receptacle will start the mechanism into actuation. Two such devices are indicated and may control duplicate sets of parts as previously described.

In Figure 40, one of the plates 105 may be arranged to actuate more than one set of mechanisms whereby a pair of cubes will be discharged from the chute 11 at the same time.

It is of course apparent that the mechanical details entering into the construction of my apparatus may be varied over wide limits, and I therefore do not wish to be unduly limited in the interpretation of the scope of the appended claims.

Having thus described my invention, what I claim is:

1. Means for obtaining ice-blocks from an automatic refrigerator including a plurality of individual and separable containers having means by which they may be engaged for the purpose set forth, mechanism for advancing certain of said containers in transverse rows through the freezing part of the refrigerator, other mechanism for advancing a single row of containers outside said freezing part of the refrigerator, one at a time to an unloading station while maintaining those within the freezing part of the refrigerator stationary until all in said outside row have been moved to said unloading station, mechanism for ejecting the frozen blocks from the containers as they reach the unloading station, additional mechanism for moving the empty containers to a water-filling station, further mechanism for filling each container as it passes through the filling station, and means extending outside the refrigerator for starting said means into operation.

2. Means for obtaining ice-blocks from an automatic refrigerator without opening the same, said means including, a plurality of containers and mechanism including electrically operable means for moving the containers through a water-filling station, a freezing station of the refrigerator and an unloading station, said mechanism including means for holding inactive that portion of said mechanism which moves the containers through the freezing station, while a certain number of containers is moved through the unloading station, means extending outside the refrigerator for initiating the movement of said electrically operable means, the cycle of movements being automatically completed after being initially started.

3. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 2, further characterized in that the containers are individual and separable, and are passed through the unloading station in tandem relation in substantially the same plane with all the other containers.

4. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 1, further characterized in that the several steps are all initiated by the act of placing a receptacle in position to receive one of the ice-blocks.

5. Means for obtaining ice-blocks from an automatic refrigerator including, a plurality of individual and separable containers having means by which they may be engaged for the purposes set forth, mechanism for advancing certain of said containers through the freezing part of the refrigerator, other mechanism for advancing certain other of said containers to an unloading station, other mechanism for unloading each container as it reaches the unloading station, and additional mechanism for moving the empty containers to a water-filling station, and further mechanism for filling each container with a predetermined amount of water as it passes through the filling station.

6. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening

ready to have a plunger applied to the bottom of the container.

7. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening ready to have a plunger applied to the bottom of the container, further characterized that said plunger is operated by the actuation of means by a person desiring one of the blocks.

8. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening ready to have a plunger applied to the bottom of the container, further characterized that said plunger is operated by the actuation of means by a person desiring one of the blocks, and still further characterized in that said actuable means extends outside the refrigerator.

9. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening ready to have a plunger applied to the bottom of the container, further characterized that said plunger is operated by the actuation of means by a person desiring one of the blocks, and still further characterized in that means is provided for moving the container after the block has been extracted therefrom into engagement with means which turns the container to upright position ready to be advanced to the water-filling station.

10. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening ready to have a plunger applied to the bottom of the container, further characterized that said plunger is operated by the actuation of means by a person desiring one of the blocks, still further characterized in that means is provided for moving the container after the block has been extracted therefrom into engagement with means which turns the container to upright position ready to be advanced to the water-filling station, each of said containers having at least two turned-over metal edges whereby they will readily slide into returning position.

11. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening ready to have a plunger applied to the bottom of the container, said containers each being composed of two triangular-shaped metal pieces pivoted together and set in a soft rubber casing whereby the application of a plunger to the bottom of the container will expand its walls so the ice block will drop out.

12. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that the mechanism at the unloading station includes means for turning each container upside-down over a discharge opening ready to have a plunger applied to the bottom of the container, said turning means including a rack and pinion, the pinion having means for engaging said engaging means on the container.

13. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5 characterized in that means are provided for precooling the water before it is delivered to the containers.

14. Means for obtaining individual ice-blocks from an automatic refrigerator including a plurality of individual containers, a lever adapted to be operated, mechanism connected with the lever on its initial movement to eject an ice-block from an inverted container, mechanism operated on the first part of the return movement of the lever for reversing a container on each side of the container from which a block has just been ejected, and mechanism operated on the second part of the return stroke of the lever for advancing one of the reversed containers to a position where the next initial operation of said lever will eject another block and for also advancing the other reversed container now in filling position, toward a filling station, and a valve operated during the cycle to fill a container.

15. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, further characterized in that the filling mechanism includes a member actuated by a part of the unloading mechanism.

16. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, further characterized in that a plurality of tandem-arranged groups of containers are simultaneously passed through the freezing part of the refrigerator.

17. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, further characterized in that a plurality of tandem-arranged groups of containers are simultaneously passed through the freezing part of the refrigerator, and further characterized in that the mechanism advances in the same plane only a single line of containers to the unloading and refilling stations.

18. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by a mechanically-operated hand or foot lever.

19. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by an ice-block receiving receptacle lever.

20. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by a lever, an electric motor for actuating said lever, a switch for controlling the motor, and means for operating said switch, said switch-operating means adapted to be operated by placing a receptacle in position to receive an ice-block.

21. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by an electric motor, and means for starting said motor.

22. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by a lever, and means cooperating with said lever whereby,

by one operation thereof, said lever can only initiate a single cycle of operation, as set forth, of said mechanisms.

23. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by an electric motor and a switch located on the exterior of the refrigerator for controlling said motor.

24. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by an electric motor, a switch located on the exterior of the refrigerator for controlling said motor, and, further characterized in that means are provided whereby the motor will produce only a single cycle of operation of said mechanism for the initial closing of its circuit by said switch.

25. Means for obtaining ice-blocks from an automatic refrigerator as set forth in claim 5, characterized in that all of said separate mechanisms are started into operation by an electric motor, a switch located on the exterior of the refrigerator for controlling said motor, and further characterized in that means are provided whereby the motor will produce only a single cycle of operation of said mechanism for the initial closing of its circuit by said switch, and further characterized in that means are provided whereby the motor will complete a full cycle of operation of said mechanism and then stop regardless of any further operation of said switch while said cycle is in progress.

26. Means for obtaining ice-blocks individually from an automatic refrigerator including, a plurality of separable water containers having means by which they may be automatically engaged and disengaged one from the other for the purpose set forth, mechanism for moving said containers in one relation to each other through the freezing part of the refrigerator, other mechanism for moving a certain number of said containers in a different direction and relation to those coming through the freezing part of the refrigerator to a discharge station, mechanism for discharging each container as it arrives at the discharge station, further mechanism for moving the empty containers to a water filling station located on substantially the same horizontal plane with the freezing part of the refrigerator and the discharge station, further mechanism for filling each container as it passes through the filling station, and means extending without the refrigerator for starting said cycle of operations.

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