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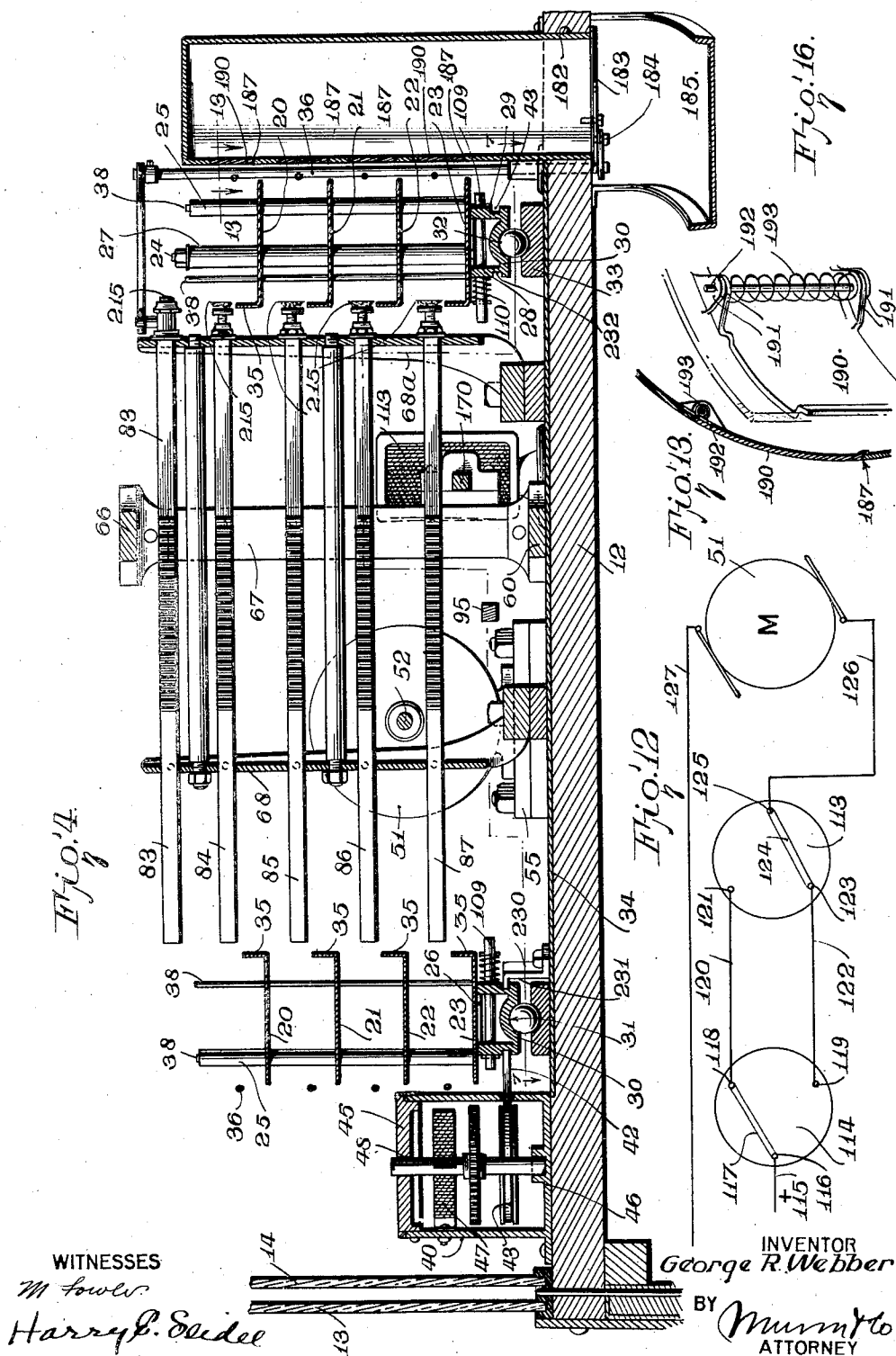
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COMBINED REFRIGERATOR AND DISPENSING DEVICE

Filed Feb. 24, 1927

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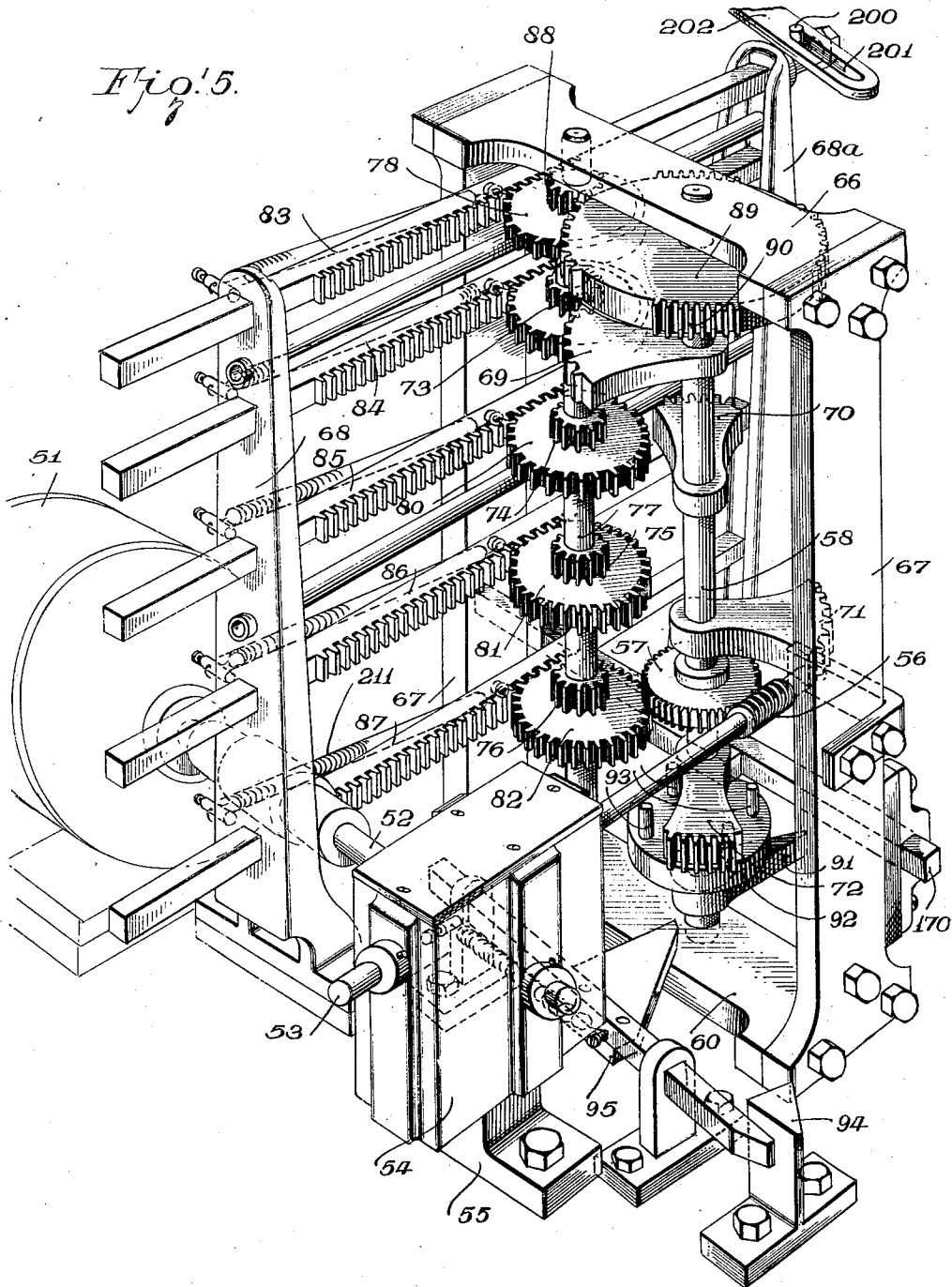
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COMBINED REFRIGERATOR AND DISPENSING DEVICE

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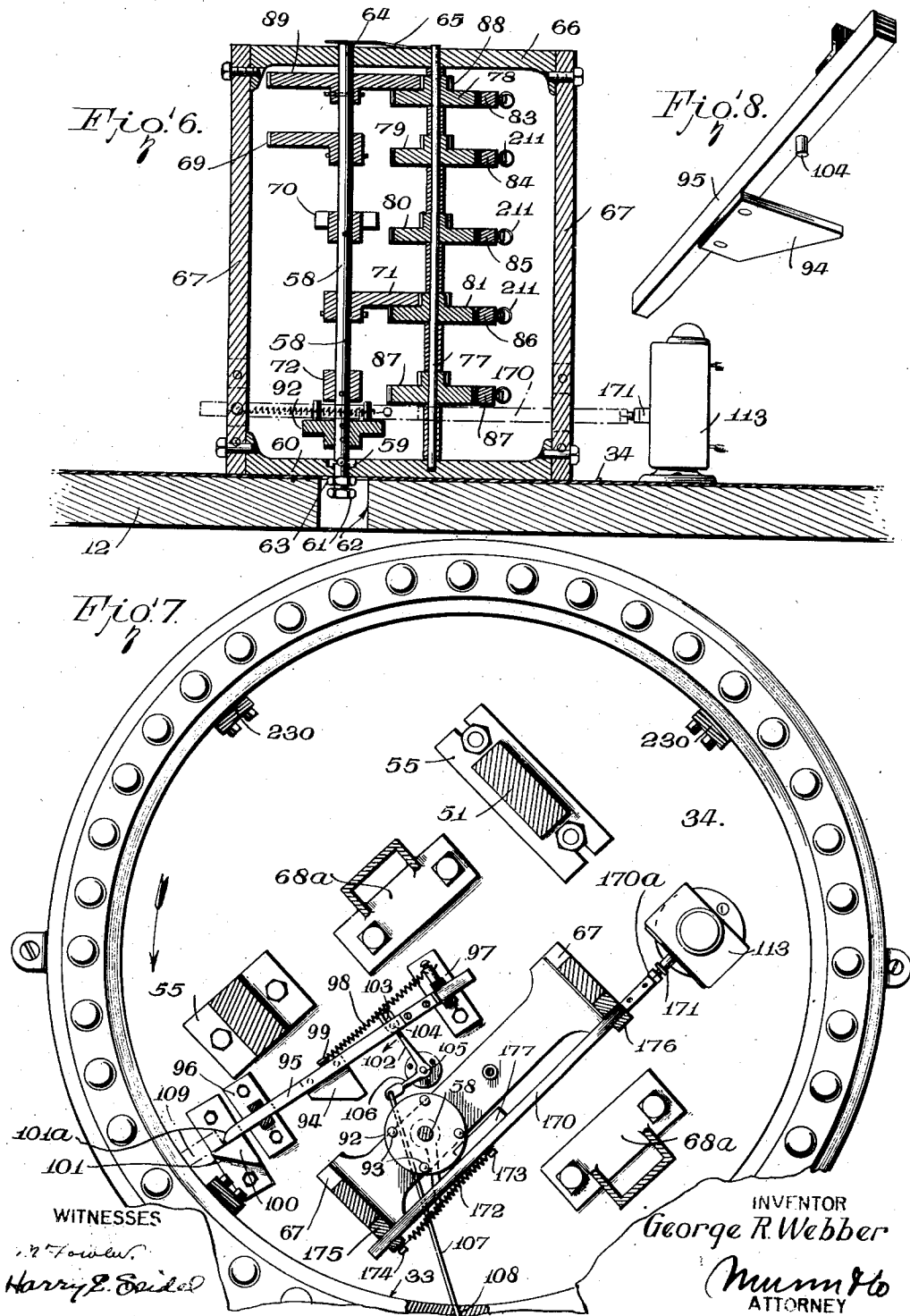
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COMBINED REFRIGERATOR AND DISPENSING DEVICE

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6 Sheets-Sheet 5



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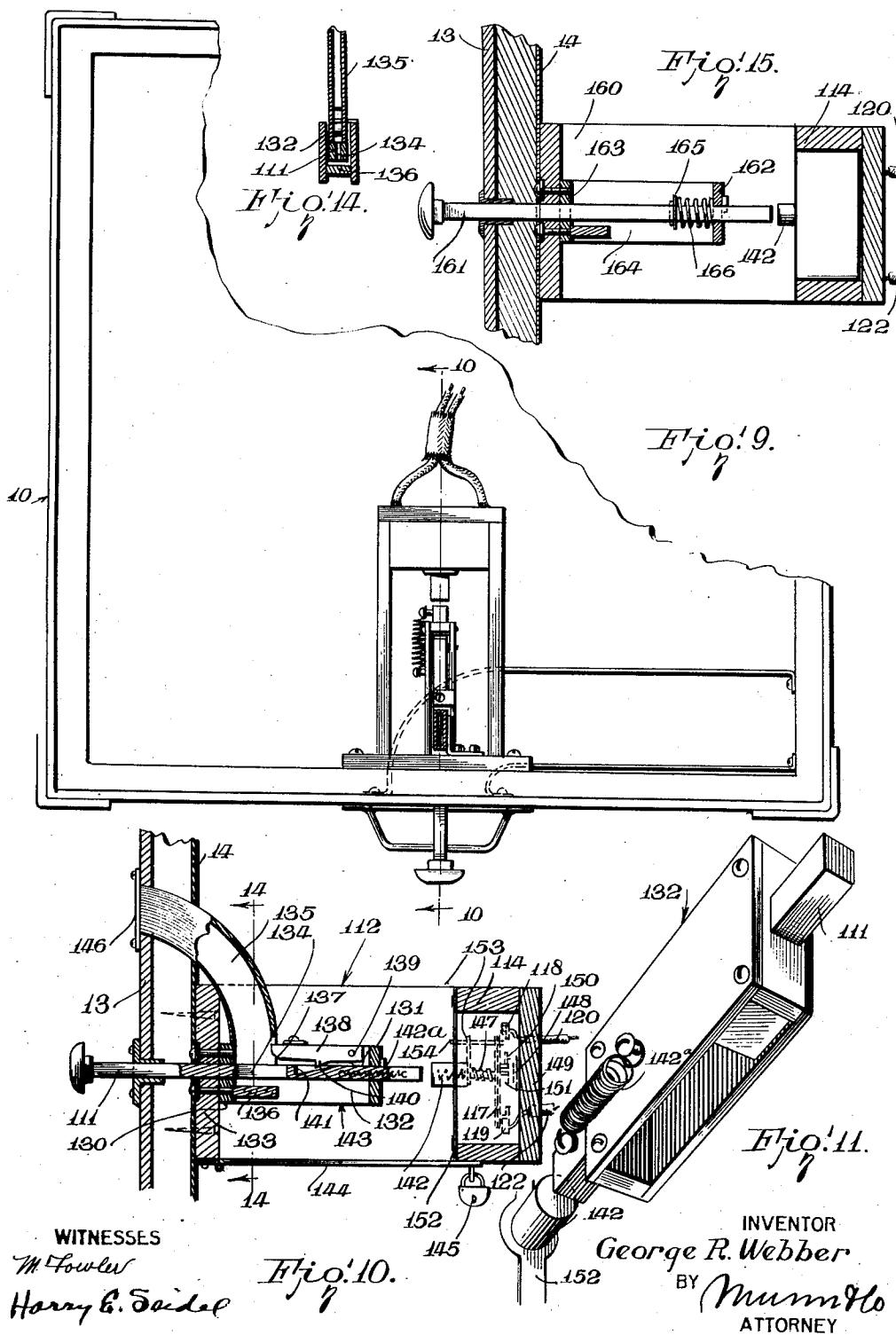
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COMBINED REFRIGERATOR AND DISPENSING DEVICE

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6 Sheets-Sheet 6



UNITED STATES PATENT OFFICE

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COMBINED REFRIGERATOR AND DISPENSING DEVICE

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This invention relates to a dispensing apparatus adapted to be associated with a cooling chamber of a refrigerator.

Broadly the invention relates to a device for dispensing comestibles from an approximately sealed cooling chamber of a refrigerator in such a manner that the temperature of the chamber will not be affected by the discharge of the comestibles from the chamber.

Another object of the invention is the provision of a device for dispensing articles from the cooling chamber of a refrigerator either through manual operation or by means of a coin for causing automatic association of the dispensing device.

Another object of the invention is the provision of a dispensing device adapted to be disposed within the cooling chamber of a refrigerator for storing a plurality of articles which must be maintained at a low temperature, the articles being successively discharged from the cooling chamber without affecting the temperature of said chamber.

A further object of the invention is the provision of a dispensing device located in a substantially sealed chamber for supporting and dispensing articles successively and in which a plurality of plungers are successively actuated at various horizontal levels for ejecting a series of the articles in a vertical plane after which the carrier for the articles is shifted for ejecting another series of articles disposed in a vertical plane.

A further object of the invention is the provision of a compact, unitary structure for supporting a plurality of articles in a chamber maintained at a temperature lower than atmospheric and in which an ejecting mechanism is embraced by a series of rotatable tables upon which the articles are placed.

A still further object of the invention is the provision of a dispensing apparatus adapted to be employed in a sealed chamber for dispensing articles from the chamber without appreciably lowering the temperature of said chamber, and in which a centrally disposed ejecting device is employed for periodically ejecting a plurality of the articles disposed in vertical planes which radiate from the cen-

ter of the ejecting mechanism, a motor being employed for causing actuation of a series of plungers disposed in a vertical plane through segmental gearing adapted to mesh with racks on the plungers and for releasing the articles from a trap interposed between the exterior and the interior of the cooling chamber.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a view in perspective of my dispensing apparatus shown incorporated in a refrigerator,

Figure 2 is a vertical section taken along the line 2—2 of Figure 1,

Figure 3 is a horizontal section through the dispensing apparatus,

Figure 4 is a vertical section showing the ejecting plungers,

Figure 5 is a view in perspective of the ejecting plungers and the operating and timing mechanism for said plungers,

Figure 6 is a vertical section taken along the line 6—6 of Figure 3,

Figure 7 is a horizontal section taken along the line 7—7 of Figure 4,

Figure 8 is a view in perspective of the locking mechanism for retaining the storage device against rotation,

Figure 9 is a fragmentary plan view showing the coin-controlled switch for setting the operating mechanism of the dispensing device in motion,

Figure 10 is a vertical section taken along the line 10—10 of Figure 9,

Figure 11 is a view in perspective of the coin-controlled switch,

Figure 12 shows diagrammatically the wiring of the circuit of the motor,

Figure 13 is a horizontal section taken along the line 13—13 of Figure 4,

Figure 14 is a vertical section taken along the line 14—14 of Figure 10,

Figure 15 shows a manually operated switch for controlling the circuit to the motor, and

Figure 16 is a fragmentary view of the container showing a door for closing inlet openings.

Referring more particularly to the drawings, 10 designates a refrigerator having a cooling chamber 11. The temperature of the cooling chamber is maintained at a predetermined degree by forcing a cool and compressed refrigerant of the usual type which is permitted to expand in coils or suitable chambers in the cooling chamber 11 for absorbing heat. The refrigerant, such as gas, is compressed in the usual compressors and the refrigerating device is thermostatically controlled. However, a refrigerator may be employed in connection with the dispensing device which has a compartment for the reception of ice.

Secured to the bottom 12 of the cooling chamber 11 is an outer shell 13 formed of transparent material which houses an inner shell 14 formed of similar material whereby the dispensing device generally designated by the numeral 15 and the articles supported by the dispensing device may be viewed from the exterior. The casing 13 and 14 may be formed of opaque material with insulation between the same if desired.

One side wall of the chamber 11 has an opening which is closed by a door 16 hinged at 17 to the wall and is adapted to approximately hermetically seal the chamber 11 from the atmosphere but is adapted to be opened for supplying the dispensing device 15 with comestibles. It will also be noted that this door is of sufficient height to permit the insertion of the articles 18 from the topmost row to the lowermost.

A plurality of shelves 20, 21, 22 and 23 are disposed in spaced relation in different horizontal planes by means of rods 24 passing through perforations in the shelves and secured at their lower ends to radially disposed bars 26. Sleeves 27 on the rods 24 maintain the shelves in spaced relation. The bars 26 are secured in any approved manner to flanges 28 and 29 of a turntable 30 which has a groove 31 adapted to receive a plurality of balls 32 resting in a track 33 secured to a metal base plate 34. The base plate is secured in turn to the bottom 12 of the chamber 11. It will be noted that the shelves and the turntable are formed in sections so that it is possible to remove a section when desired without necessitating the disassembling of the dispensing apparatus. The inner edges of the shelves are provided with upturned arcuately-shaped flanges 35 and a circular

screen or metal member 36 is disposed adjacent the outer curved edges of the shelves in order to prevent the articles on the shelf from being displaced therefrom. However, the cage or member 36 is cut away, as shown at 37, to permit the articles to be ejected beyond the end of the shelves as will be presently explained. The articles are maintained in spaced relation by rods 38 passing through perforations in the shelves 20 to 22, inclusive, and having their lower ends threaded into the lowermost shelf 23. A pair of rods 38 are in radial alignment adjacent the opposite edges of the shelves. Sleeves 25 are mounted on the rods 38 to facilitate the ejection of articles from the shelves.

A spring motor located in the casing 40 tends to rotate a turntable through a cable 42 located within a groove 43 of the table and secured at its free end to said turntable and at a point which will cause one revolution of the turntable when the cord is wound upon a drum 43 mounted on a shaft 44 having bearings in a top 45 and bottom 46 of the casing 40. A spring motor, shown at 47, is connected with a shaft 48 mounted in the casing 40 and a gear 49 rigid therewith which meshes with a gear 50 on the shaft 44 whereby the drum 43 is driven at a greater speed relative to the shaft 48 so that the greater length of cable employed will compensate for the difference between the diameter of the drum 43 and turntable 30.

A motor 51 is mounted within the space embraced by the shelves and adapted to rotate a shaft 52. This shaft drives a countershaft 53 through a speed change gearing housed within the casing 54 which is mounted on a bracket 55.

A worm 56 in mesh with a worm gear 57 which is rigid with the vertical shaft 58 is formed integrally with the shaft 53. The shaft 57 has its lower end seated in a ball bearing 59 carried by a base member 60. The bearing 59 is adjusted vertically by means of a set screw 61 having its outer free end received within a passage 62 in the table or top 12. A lock nut 63 is provided for maintaining the adjustment of the set screw and the bearing 59. The outer free end 64 of the shaft 58 is maintained against movement by means of a spring or weight 65 mounted on the bar 66 which is substantially a duplicate of the base or bar 60. Standards 67 which are similar in construction have their opposite ends bolted to the opposite ends of the bars 60 and 66. A pair of standards 68 and 68^a are secured to the metal plate 34 in parallel relation and in a plane at right angles to the plane of the standards 67. The shaft 58 is rotated through the worm 56 and worm gear 57 and is provided at spaced intervals with segmental gears 69, 70, 71 and 72. Since there are four of these gears they are placed at substantially 90° apart and are

disposed in horizontal alignment, respectively, with gears 73, 74, 75 and 76, the last-mentioned gears being mounted on a vertical shaft 77 mounted in bearings in the bars 60 and 66. A plurality of gears 78, 79, 80, 81 and 82 are disposed in spaced horizontal planes and mesh with the teeth of plungers 83, 84, 85, 86 and 87. A gear 88 is rigid with the gear 78 and both gears are loose on the shaft 77 as are the gears 79 and 82, inclusive, and the gears 73 to 76, inclusive, so that these gears are only rotated when the respective segmental gears 69 to 72 inclusive, periodically mesh with the gears 73 to 76, inclusive. A disc 89 is rigid with the shaft 58 and has segmental gears 90 at the periphery thereof which are adapted to mesh with the gear 88. Each group of the segmental gears or sets of teeth 90 are adapted to mesh with the gear 88 in advance of the meshing of the segmental gears 69 to 72, inclusive, with their respective gears 73 to 76, inclusive, so that the plunger 83 is moved in advance of the plungers 84 to 87, inclusive, for a purpose which will be presently explained.

A cam 91 is rigid with the shaft 58 and below a disc 92 which has a plurality of pins 93 disposed at an angle of 90° apart. Said cam is adapted to engage a lug 94 on a plunger 95 mounted in bearings 96 and 97 which are secured to the plate 34. The plunger is maintained in an inoperative position by means of a spring 98 secured at one end as shown at 99 to the plunger 95, the other end being secured to the bracket 97. The outer free end of the plunger 95 is adapted to move along the flat face of a triangularly-shaped block 100 which has an inclined face 101 for a purpose which will be presently described. This plunger is manually operated through a bell crank 102 which has a slot 103 received by a pin 104 carried by the plunger. The bell crank lever is pivotally mounted at 105 and has its free arm 106 connected with a link 107 which extends through an opening 108 in the base member 33. An operating handle 107^a located exteriorly of the cooling chamber 11 is connected with the link 107.

As has been stated the turntable 30 is rotated in the direction indicated by the arrow in Fig. 3 by the spring motor and cable 42 and is held against rotation by a plurality of plungers 109 mounted within bearings in the turntable 30 and disposed so that they will engage the flat face of the block 100. When the releasing rod or plunger 95 is moved outwardly and radially it will force the plungers 109 inwardly against the tension of the spring 110 and permit the free end of the plunger to ride over the outer edge of the block 100 and along the inclined face 101 whence said plungers will be moved to their outward operative position.

The motor 51 is adapted to be energized

through a source of current which is controlled either manually by a hand-operated switch through an operating arm 111 or the switch is automatically controlled by a coin-controlled mechanism located within the housing 112. A standard switching mechanism is employed in the casings 113 and 114 which are similar in construction and are so co-ordinated that the movement of the member 111 to its fullest extent will cause energization of the motor 51 for rotating the various shafts for causing the ejecting plungers to be actuated at a predetermined period after which the motor is automatically cut off for placing all the moving parts at rest. An electric wire 115 is connected with a contact 116 and an oscillating arm 117 is adapted to connect the contact 116 with contact 118 or 119 as the case may be. A wire 120 connects contact 118 of a switch 114 with contact 121 of the switch 113 while a wire 122 connects contact 119 of the switch 114 with contact 123 of the switch 113. An operating arm 124 which is connected with a terminal 125 of the wire 126 is adapted to engage either of the contacts 121 or 123. The wire 126 is connected with the motor 51 while a wire 127 forms the return line for the source of current, as shown more particularly in the diagrammatic Figure 12.

Referring more particularly to Figures 9 to 11, inclusive, and 14 and 15 it will be seen that the operating rod 111 projects beyond the outer shell 13 and through the inner shell 14 and is mounted in bearings in the end walls 130 and 131 of a casing 132 which is secured to a block 133 carried by the inner wall 14. The rod 111 has a slot 134 adapted to receive a coin of a predetermined size which is dropped into the passage 135 and rests upon a shelf 136 of the casing 132. When the rod 111 is moved inwardly it carries the coin with the same which engages the beveled edge 137 of a keeper 138, thereby rocking the keeper or lever on its pivot 139 and forcing a lug 140 out of engagement with a notch 141 in the rod 111, thereby permitting the rod to be moved to its innermost limit of travel for a reciprocating a barrel 142 in the switch box 114. A spring 142^a is adapted to return the plunger. When the coin has passed through the slot 134 and the lower open end 143 of the casing 132 it will fall upon the trap door 144 of the housing or till 112. This door is hinged and locked against unauthorized manipulation as shown at 145. The coin chute has an entrance slot 146 for the insertion of a coin.

The switch arm 117 in the box 114 is rigid with a spiral screw 147 which has a bearing at its outer end, as shown at 148 in a rear wall 149. A pawl 150 is adapted to engage a ratchet wheel 151 on the worm 147 and is adapted to prevent the worm and the arm 117 from being rotated in the opposite direction.

The sleeve 142 is internally threaded to receive the threads of the screw 147 and is adapted to be reciprocated in an opening in the bar 152 secured to the front of the switch box 114. An arm 153 secured to the sleeve 142 maintains the sleeve from rotation since a guide rod 154 receives a perforation within the arm 153. The guide rod is secured to the bar 152.

The construction shown in Figure 15 is identical with the construction shown in Figure 10 except that the coin-controlled mechanism has been eliminated and this structure is adapted for use in such places where it is only desired to eject articles from the cooling chamber and where it is not required to deposit a coin for such ejection. In this case the casing 160 is secured to the inner wall 14 with the plunger 161 moving through the inner wall and outer wall 13. The plunger is mounted in bearings in the end walls 162 and 163 of a housing 164. The plunger has a collar 165 engaged by one end of a spring 166, the other end of the spring being in engagement with the rear wall 162. The end of the plunger rod 161 is adapted to engage the barrel 142 of the switch box 114. The switch in this instance is of the same standard construction as the switch shown at 110.

The switch mechanism in the boxing 113 is of the same standard construction as the switch in the box 114. The arm 124 is actuated by a reciprocating rod 170 moving the sleeve 171 into the switch box 113. The rod 170 is maintained in a predetermined position and returns to its normal inoperative position by means of a spring 172 secured at one end as shown at 173 to the rod 170 and at its other end, as shown at 174 to a bracket 175 secured to the standard 67. The inner end of the rod is mounted for sliding movement in a bracket 176 secured to the other standard 67. The rod 170 has a lug 177 adapted to be engaged by any one of the four pins 93 on the disc 92 but moving the rod inwardly and forcing the sleeve into the switch box 113 for operating the switch arm 124. This rod is actuated four times at each revolution of the disc 92 on the shaft 58.

A container or trap 180 is disposed within the chamber 11 and is of cylindrical form having a closed top 181. The bottom of the container is seated within an opening 182 in the top 12 of the refrigerator. The bottom of said container is open and is adapted to be maintained in a closed position by a trap door 183 hingedly mounted at 184 to the member 12. Below the door 183 is a chute 185 which is sealed at its upper end to the underface of the member 12 and is carried through one side of the wall of the refrigerator and is formed into a pocket, as shown at 186, to receive the articles ejected from the cooling chamber 11. The cylinder or container 180 has a plurality of spaced openings 187 which are adapted to

align with the shelves 20 to 23, inclusive, so that when the articles are forced from the shelf through the openings 37 in the guard 36 they will discharge into the container 180 and rest momentarily upon the gate valve 183. However the valve may be opened just before the articles are forced into the container 180.

A door 190 is provided with hinges 191 swingably mounted on a pintle 192 and a spring 193 tends to maintain the doors closed so that the openings 187 which are located in vertical alignment at the inner portion of the container 180 will be maintained closed to prevent the loss of the cold air from the chamber 11. These doors are adapted to be actuated when the ejecting plungers force the articles against the doors and at the time the articles are forced into the container 180.

The trap door 183 is actuated periodically four times during the revolution of the shaft 58 by the mechanism which is controlled through the plunger rod 83. The outer end of the rod is provided with a pin 200 received by a slot 201 at one end of an arm 202 of a bell crank lever 203 pivoted at 204. The other arm 205 of the bell crank lever has a pivotal connection at 206 with an arm 207 of the gate valve 183. A coil spring 208 is secured at one end as shown at 209 to the bar 83 and at its other end, as shown at 210, to the standard 68 and is adapted to return the plunger to the normal inoperative position when the teeth of said bar has been released by any of the series of groups of teeth 90 of the disc 89. The ejecting plungers 84 to 87, inclusive, are returned to a normal inoperative position by means of springs 211 secured between the standards 68 and 68^a and to the ejecting plungers.

The operation of my device is as follows: When the shelves are completely emptied the door 16 is open and the articles are placed on the various shelves in vertical alignment and between the rollers 25 on the rods 38. These rollers facilitate the insertion and ejection of the articles from said shelves. When the space adjacent the opening at the door 16 has been filled the turntable is rotated in a direction which is opposite to that indicated by the arrow in Figure 3 to bring the succeeding spaces for the articles on the shelves before the opening, whence the next section of the shelves are filled with the articles embraced by the opening at the door 16. This process is continued until all the spaces are filled with articles. As the turntable is manually rotated it is tensioned against the action of the spring motor so that the motor is wound up and is under a tension for causing a reverse rotation of the turntable and the shelves when the dispensing apparatus is manually or automatically actuated through the operation of the rod 111. The device is now equipped with the articles and is ready

for dispensing after the door 16 has been closed.

When it is desired to operate the vending device as a coin-controlled mechanism, the structure shown in Fig. 10 is employed with the coin slot 145 having the coin-receiving opening 146 formed in one wall of the refrigerator. It is only necessary, therefore, to deposit a coin of regulation size which is required for permitting actuation of the rod 111. After this is done the rod 111 is moved inwardly and the coin acting on the inclined edge 137 of the lever 138 forces the lever upwardly when the rod 111 is moved inwardly, thereby moving the lug 140 out of engagement with the notch 141. By the elevation of the lever 138 the rod 111 may be moved inwardly through its entire path of reciprocation and force the sleeve 142 inwardly, causing the threads in said sleeve to engage the threads of the screw 147. Since the sleeve is held against rotation the screw 147 will be revolved, causing the arm 117 of the switch to be oscillated and closing the circuit between the contacts 116 and 119. Since the arm 124 closes the circuit between the contacts 123 and 125 the motor 51 will be energized, causing rotation of the shaft 52, shaft 53 and the vertical shaft 58. The disc 89 is likewise revolved and one series of teeth 90 will be moved into mesh with the gear 88, revolving said gear and gear 78 whereby the rod 83 will be moved outwardly, oscillating the arm 202 and causing opening of the trap door 183. However, the segmental gear 69 will also be moved into mesh with the gear 73, causing rotation of gear 79 and outward movement of the ejecting plunger 84 so that the head 215 of said plunger will force an article 18 against the door 190 which is opened to permit the article to be discharged into the container 180. Since the door 183 is opened about the time that the article drops into the container 180 said article will fall into the chute 185 and be received within the pocket 186.

When the shaft 58 is rotated a disc 92 will likewise be revolved, causing a pin 93 to be moved against the lug 177, forcing the rod 170 inwardly against the sleeve 171. This movement causes the arm 124 to be rocked, connecting the contacts 121 and 125 while the arm 117 is in engagement with the contacts 116 and 119, thereby breaking the circuit to the motor 51. The parts are now in position for the next actuation of the operating parts for ejecting an article from the second shelf 21.

When a second coin is deposited in the slot 146 and the rod 111 is moved inwardly the coin again actuates the lever 138 in Fig. 10, releasing the operating rod 111 to actuate the sleeve 142. This causes the arm 117 to be moved into position so that it will close the circuit between the contacts 113 and 118 and since

the arm 124 has closed the circuit through the contacts 121 and 125 the motor 51 is again energized, setting the parts in operation. The segmental gear 70 is then moved into mesh with the gear 74, causing rotation of the gear 80 and outward movement of the ejecting plunger 85.

During the rotation of the shaft 58 another pin in succession engages the lug 177, forcing the rod 170 inwardly and breaking the circuit to the motor and placing the switch arm in such a position that it will aid in closing the circuit with a switch arm 117 when the rod 111 is again actuated after a coin has been placed in the slot. It will be noted that after the rod 111 has been actuated all of the coins will drop onto the door 144 of the till 112.

After all of the segmental gears have come into play for actuating their respective gears and the plunger rods 84 to 87, inclusive, the turntable will be released through the cam 91 for setting the table in such a position that the next vertical row of articles will be disposed before the ends 215 of the plungers for ejecting another series of articles. At each full revolution of the shaft 58 the cam 91 engages the lug 94, forcing the plunger rod 95 outwardly against the stop rod 109, moving said rod outwardly so that the inner free end will clear the block 100, whence the turntable will be revolved in the direction indicated by the arrow in Figure 7. However, the next succeeding stop 109 will engage the flat face of the block 100 and retain said turntable against further rotation. As soon as the lug 94 has been released by the cam 91 a spring 98 will move the rod 95 inwardly to its inoperative position.

When a coin is again placed in the slot 146 and the rod 111 is actuated the ejecting plunger 84 will be reciprocated for forcing the article from the uppermost shelf 20. The operation is continued in the manner described until all of the articles have been dispensed from the shelves whence the shelves may then be refilled as has been previously described.

The actuating device for the switching mechanism shown in Figure 15 does not require a coin to be inserted to permit actuation of the rod 161 and this device is adapted for causing actuation of the switch in those places where the coin controlled mechanism is not desired. In such an instance it is only necessary to move the rod 161 inwardly and sufficiently to cause inward movement of the sleeve 142 for the actuation of the switch in the box 114.

It will be found that when the shelves have been emptied of all the articles that it will be necessary to release the turntable against the action of the spring motor to cause the turntable to move through an angle for placing a certain section of the shelves before the

door 16 in order that the space in advance of the motor may be properly filled. Moreover, there may be other reasons for desiring the rotation of the turntable and the shelves and this is accomplished through the actuation manually of the link 107 through the operating handle 107^a. When the operating handle is moved outwardly the link 107 rocks the bell crank lever 105, rocking the arm 102 in the direction indicated by the arrow in Figure 7 so that the rod 95 is moved outwardly against a locking bar or plunger 109, forcing the same radially outwardly until it clears the outer end of the block 100, when said rocking bar will ride over the inclined face 101 of said block. The next succeeding locking bar will engage the block 100 and hold the turntable against rotation. The link 107 may be drawn outwardly as many times as desired for actuating the plunger 95 and for releasing the members 109 from the block 100.

The turntable is maintained in position relative to the base member 33 by means of brackets 230 having lugs 231 engaging an annular groove 232 located at the inner face of the turntable. These brackets are spaced sufficiently apart to provide for easy rotation of the turntable.

It will be noted that the inner shell 14 is spaced from the outer shell 13 to provide a chamber 233 which is connected by means of a pipe 234 with a compressor 235 whereby a vacuum is drawn in the chamber for aiding in preventing the atmosphere from affecting the temperature of the cooling chamber 11. A check valve 236 is formed in the pipe line 234 for aiding in maintaining the vacuum in the chamber 233.

The purpose of the reduction gear located within the casing 40 of the spring motor is to increase the number of turns of the turntable without increasing the number of turns of the spring, thereby not only maintaining a low tension on the spring but causing the turntable to turn through a sufficient arc of a circle to wind the spring, causing the turntable to rotate through a sufficient arc to wind up all of the spring when said turntable and shelves are properly rotated.

The rod 170 has an adjustable head 170^a whereby the head may be moved towards or away from the outer end of the sleeve 171 so that the door 183 will be closed just before the switch is turned off. As has been previously explained the construction of the series of teeth on the disc 89 is such that it will tend to shift the rod 83 for opening the door 183 in advance of the shifting of any one of the ejector rods. There are eight teeth in each series designated by the numeral 90 of the rotatable member 89 while there are six teeth shown on any of the segmental gears 69 to 72, inclusive. Thus it will be seen that a tooth of each series of teeth 90 will engage

the rack 83 in advance of the engagement of a tooth on one of the segmental gears and the last tooth of the teeth 90 will still be in engagement with the teeth of the rod 83 after the last tooth of any of the segmental gears has been released by its respective gear on the shaft 77. Nevertheless, the question of the actuation of the door with respect to the ejection of the articles from the various shelves may be arranged as will be necessary to meet certain conditions during dispensing.

An indicator 240 is connected with a shaft 144 and so disposed that it may be viewed from the exterior of the cooling chamber and will indicate the number of revolutions of the shaft so that the operator of the device can readily determine when it is necessary to stop the rotation of the turntable in one direction when the spring is wound up in order to prevent injury to the motor.

The heads 215 of the ejecting rods are formed of some soft material to prevent injury to the articles when they are ejected from the shelves and discharged into the trap.

While I have shown the motor as located within the chamber 11 and embraced by the turntable and rotating shelves it will be appreciated that the motor may be disposed in any convenient position and have a shaft extending through the wall of the cooling chamber for causing rotation of the shaft 53. Furthermore, the refrigerator and all its accessories may be disposed in the basement of a store while the cooling chamber may be located on an upper floor and serve as a show case.

A series of pipes 245 are located within the cooling chamber 11 and may be arranged in any convenient manner for maintaining the chamber 11 at a predetermined temperature. The pipes are adapted to be supplied with the usual cooling fluid which is maintained under a pressure which is cooled and condensed and then permitted to expand in the pipes 245 to provide for the absorption of heat in the cooling chamber.

The beveled face 101 of the block 94 not only permits the locking rods or plungers 109 to ride over the face but will cause said locking rods or plungers to be moved inwardly when the turntable is rotated in the direction which is opposite to that shown by the arrow in Figure 3 whereby these locking rods are automatically forced outwardly against the action of the spring.

The outer end of the rod 95 is beveled as shown at 101^a which will be engaged by the plungers or locking rods 109 so that the plungers will aid in forcing the rod 95 with facility to its normal and inward inoperative position.

I claim:—

1. In a refrigerator the combination of a cooling chamber, a dispensing device in the chamber, a trap connecting the interior of

the chamber with the exterior, and means included in the dispensing device for ejecting successively a series of articles located in vertical alignment and in horizontal planes through the trap.

2. In a refrigerator having a cooling chamber, a turn table mounted for rotation in the chamber and provided with a plurality of annular shelves located in different horizontal planes, a plurality of rods located in vertical alignment, a rod being disposed adjacent the shelf, means for successively actuating the rods to force an article from the shelf, and means for rotating the turn table after a series of articles disposed in a vertical plane on the shelves have been ejected from the shelves.

3. In a refrigerator having a cooling chamber, a turn table mounted for rotation in the chamber and provided with a plurality of annular shelves located in different horizontal planes, a plurality of rods located in vertical alignment, a rod being disposed adjacent the shelf, means for successively actuating the rods to force an article from the shelf, and means for rotating the turn table after a series of articles disposed in a vertical plane on the shelves have been ejected from the shelves, and means for periodically stopping the turn table for causing ejecting of the articles from the shelves at a predetermined point in the cooling chamber.

4. In a refrigerator having a cooling chamber, a dispensing device located within the chamber, and a turn table provided with a plurality of shelves embracing the dispensing device, means for causing rotation of the turn table in one direction, and means for periodically retaining the table against rotation after a plurality of articles in vertical alignment have been ejected from the various shelves, and means included in the dispensing device for forcing a plurality of articles in vertical alignment from said shelves.

5. In a refrigerator the combination of a cooling chamber, a dispensing device located within the chamber, and a turn table provided with a plurality of shelves embracing the dispensing device, means for causing rotation of the turn table in one direction, and means for periodically retaining the table against rotation after a plurality of articles in vertical alignment have been ejected from the various shelves, and means included in the dispensing device for forcing a plurality of articles in vertical alignment from said shelves, a container located opposite the ejecting means adapted to receive the articles forced from the shelves, a trap door maintaining the container closed to the exterior of the chamber, and means actuated when the articles are successively ejected from the shelves for causing momentary opening of the trap door to release the articles from the container.

6. In a refrigerator the combination with a cooling chamber, a storage device for retaining a plurality of articles in the container, a dispensing device embraced by the storage device for ejecting the articles from the storage device, a container in the chamber having a plurality of openings, doors for closing said openings and adapted to be actuated by the articles to open position when the articles are ejected from the storage device by the dispensing mechanism, said container having an opening adapted to be placed in communication with the exterior of the chamber, a door for closing said opening, means connecting said door with the dispensing device for causing opening of the last mentioned door when articles have been forced into the container.

7. In a refrigerator having a cooling chamber, a dispensing device located within the chamber, a plurality of shelves for supporting articles, means for causing rotation of the shelves simultaneously in one direction, means for retaining the shelves against rotation, means for releasing the retaining means periodically to permit a slight angular rotation of the shelves, a plurality of plungers slidably mounted and included in the dispensing device, a plunger being disposed adjacent each shelf and adapted to engage an article forcing the same from the shelf.

8. In a refrigerator having a cooling chamber, a dispensing device located within the chamber, a plurality of shelves for supporting articles, means for causing rotation of the shelves simultaneously in one direction, means for retaining the shelves against rotation, means for releasing the retaining means periodically to permit a slight angular rotation of the shelves, a plurality of plungers slidably mounted and included in the dispensing device, a plunger being disposed adjacent each shelf and adapted to engage an article forcing the same from the shelf, and means for reciprocating the plungers and means connected with the reciprocating means for the plunger for causing actuation of the releasing means.

9. In a refrigerator having a cooling chamber, a motor in said chamber, a circuit connected with the motor, a switch for opening and closing said circuit, a shaft having operative connections with the motor, a plurality of ejecting plungers, means operatively connected between the shaft and the plungers for causing successive and periodic actuation of the ejecting plungers, and means associated with the shaft for actuating the switch for opening the switch.

10. In a refrigerator having a cooling chamber, a motor in said chamber, a circuit connected with the motor, a switch for opening and closing said circuit, a shaft having operative connections with the motor, a plurality of ejecting plungers, means operative-

ly connected between the shaft and the plungers for causing successive and periodic actuation of the ejecting plungers, and means associated with the shaft for actuating the switch for opening the switch, a second switch in the circuit adapted to be manually actuated and cooperating with the first mentioned switch for closing the circuit to the motor.

11. In a refrigerator having a cooling chamber, a motor in said chamber, a circuit connected with the motor, a switch for opening and closing said circuit, a shaft having operative connections with the motor, a plurality of ejecting plungers, means operatively connected between the shaft and the plungers for causing successive and periodic actuation of the ejecting plungers, and means associated with the shaft for actuating the switch for opening the switch, a second switch in the circuit adapted to be manually actuated and cooperating with the first mentioned switch for closing the circuit to the motor, a storage means for articles adapted to place a series of articles adjacent the plungers, means for causing rotation of the storage means, means for holding the storage means against rotation, and means for releasing the holding means after the successive plungers have ejected a series of articles from the storage means.

12. In a refrigerator having a cooling chamber, a dispensing device in the cooling chamber, a rotatable means in the chamber adapted to carry a plurality of articles in vertical alignment, a plurality of plungers adapted to force a series of articles in vertical alignment from the rotatable means, means tending to revolve the rotatable means, means for releasably holding the rotatable means against rotation, means for successively reciprocating the plungers, and means causing actuation of the releasing means after all of the series of the plungers have been actuated for ejecting articles from the rotatable means whereby the rotatable means will be moved to a predetermined angle for placing another series of vertically aligned articles adjacent the ejecting plungers.

13. In a refrigerator having a cooling chamber, a dispensing device in the cooling chamber, a rotatable means in the chamber adapted to carry a plurality of articles in vertical alignment, a plurality of plungers adapted to force a series of articles in vertical alignment from the rotatable means, means tending to revolve the rotatable means, means for releasably holding the rotatable means against rotation, means for successively reciprocating the plungers, and means causing actuation of the releasing means after all of the series of the plungers have been actuated for ejecting articles from the rotatable means whereby the rotatable means will be moved to a predetermined angle for

placing another series of vertically aligned articles adjacent the ejecting plungers, and means for periodically causing operation of the actuating means for the ejecting plungers.

14. In a refrigerator having a cooling chamber, a dispensing device in the cooling chamber, a rotatable means in the chamber adapted to carry a plurality of articles in vertical alignment, a plurality of plungers adapted to force a series of articles in vertical alignment from the rotatable means, means tending to revolve the rotatable means, means for releasably holding the rotatable means against rotation, means for successively reciprocating the plungers, and means causing actuation of the releasing means after all of the series of the plungers have been actuated for ejecting articles from the rotatable means whereby the rotatable means will be moved to a predetermined angle for placing another series of vertically aligned articles adjacent the ejecting plungers, and means for periodically actuating the releasing means independent of the first mentioned actuating means for the releasing means.

15. In a refrigerator having a cooling chamber, means for storing a series of articles in the cooling chamber, means for causing rotation of the storage means in one direction, means for holding the storage means against rotation, and means for releasing said holding means periodically, a plurality of ejecting plungers in vertical alignment for forcing the articles from the storage means, a container forming a trap between the interior and exterior of the chamber, a trap door for closing the trap for isolating the chamber from the exterior, a bell crank lever pivotally mounted in the chamber and having communication with the trap door for moving the same to open position, a plunger adapted to be actuated when an ejecting plunger is reciprocated for working the bell crank lever and for causing closing and opening of the door whereby articles ejected from the storage means are permitted to be discharged from the chamber.

16. In a refrigerator having a cooling chamber, means for storing a series of articles in the cooling chamber, means for causing rotation of the storage means in one direction, means for holding the storage means against rotation, and means for releasing said holding means periodically, a plurality of ejecting plungers in vertical alignment for forcing the articles from the storage means, a container forming a trap between the interior and exterior of the chamber, a trap door for closing the trap for isolating the chamber from the exterior, a bell crank lever pivotally mounted in the chamber and having communication with the trap door for moving the same to open position, a plunger adapted to be actuated when an ejecting plunger is re-

5 ciproccated for working the bell crank lever
and for causing closing and opening of the
door whereby articles ejected from the stor-
age means are permitted to be discharged
from the chamber, said chamber having an
entrance opening independent of the trap,
a door for closing said opening, and means
for manually releasing the storage means for
permitting a portion of the storage means to
align with the entrance opening whereby
articles may be supplied to the storage means.

10 17. In a refrigerator having a cooling
chamber, a turn table mounted for rotation
in the chamber having a plurality of shelves
for storing articles in horzional and verti-
cal planes, there being a separate shelf for
each article to be stored, means for ejecting
the articles located in a vertical plane and
means for causing a step by step rotation of
the turn table when all of the articles of a col-
umn located in a vertical plane have been
ejected, and means for stopping the turn table
when the next column of articles have been
positioned in the place of the previously
ejected articles.

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