

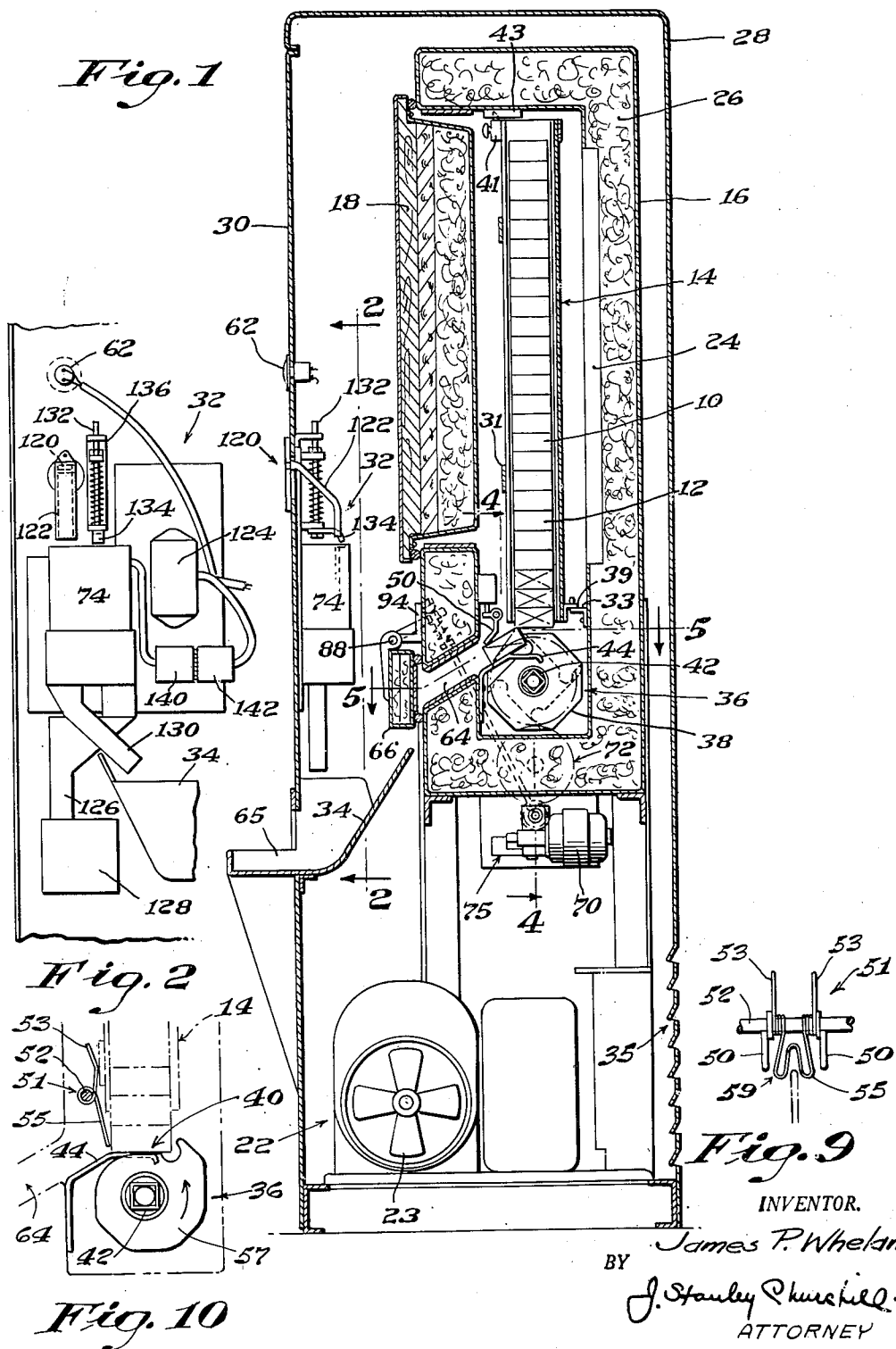
Aug. 12, 1952

J. P. WHELAN
VENDING MACHINE

2,606,803

Filed April 30, 1948

3 Sheets-Sheet 1



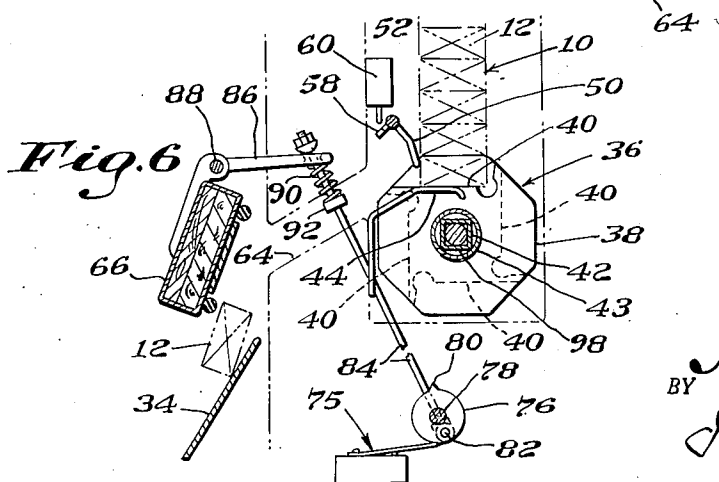
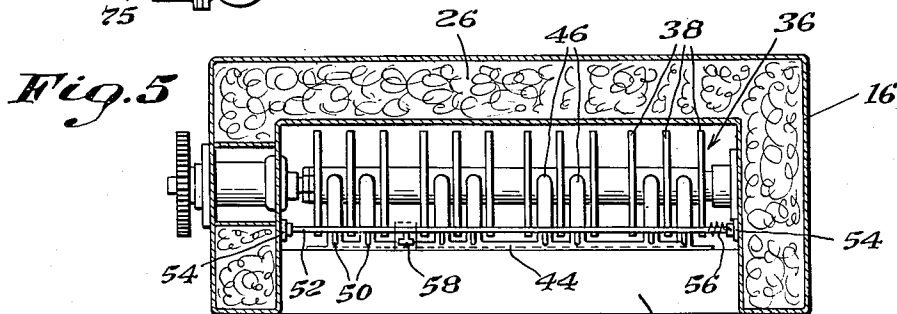
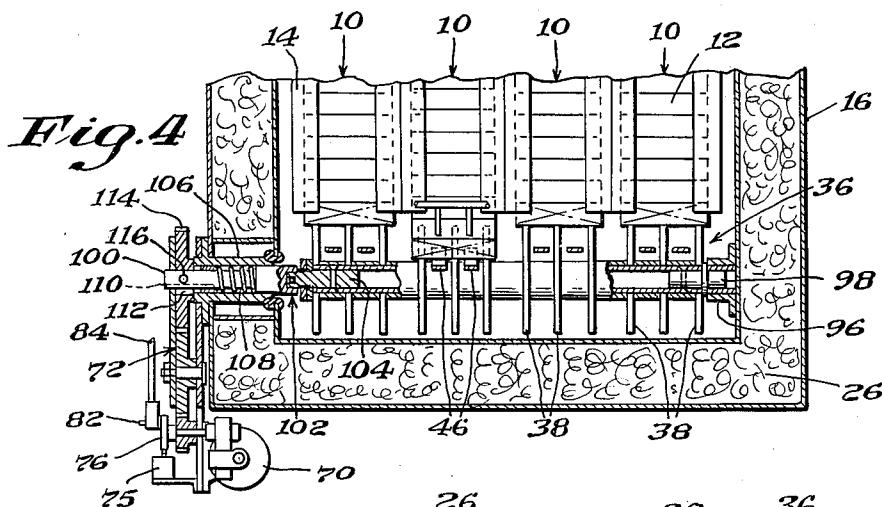
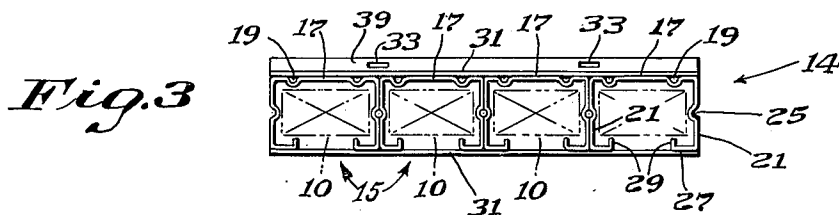
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

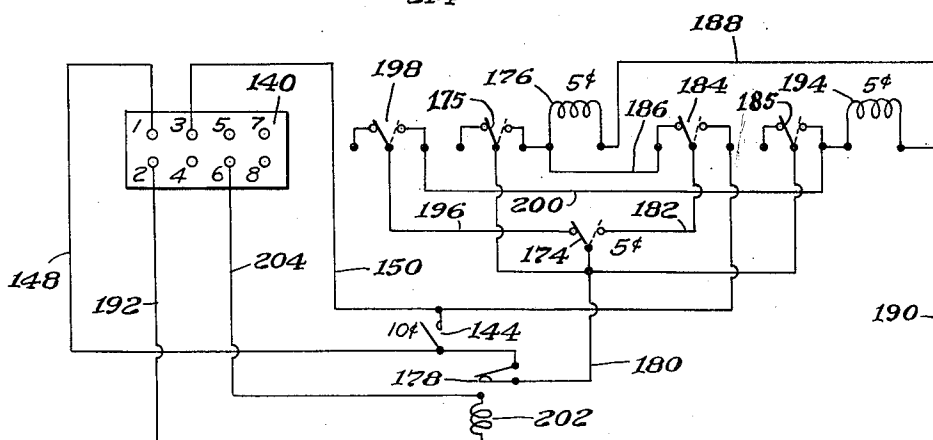
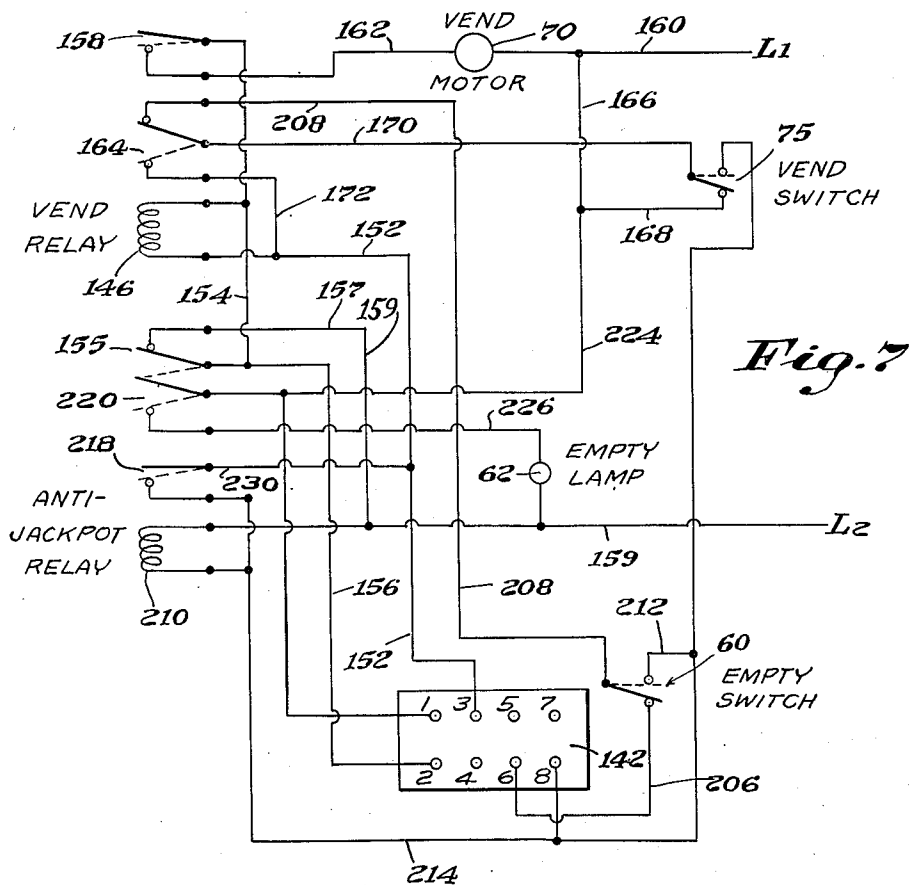


Fig. 8

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2,606,803

VENDING MACHINE

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Application April 30, 1948, Serial No. 24,363

13 Claims. (Cl. 312-63)

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This invention relates to a vending machine.

The invention has for an object to provide a novel and improved coin-operated vending machine particularly adapted for vending articles stored in a refrigerated receptacle and which is simple in construction and efficient in operation.

With this general object in view, and such others as may hereinafter appear, the invention consists in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention, Fig. 1 is a longitudinal cross sectional view of the vending machine; Fig. 2 is a detail view of the coin-operated control mechanism as seen from the line 2-2 of Fig. 1; Fig. 3 is a plan view of the article supporting magazine; Fig. 4 is a cross sectional view taken on the line 4-4 of Fig. 1; Fig. 5 is a cross sectional view taken on the line 5-5 of Fig. 1; Fig. 6 is a detail view showing an article being delivered from the machine; Figs. 7 and 8 are wiring diagrams illustrating the circuits for controlling the present vending machine; Fig. 9 is a detail view of an article engaging member; and Fig. 10 is a detail view in side elevation of a modified form of article dispensing member.

In general, the present invention contemplates a novel coin-operated vending machine particularly adapted for vending articles requiring refrigeration, such as individual cakes of packaged, chocolate-covered ice cream, and, in general comprises a refrigerated receptacle in which the articles are stored in a plurality of vertical stacks or columns and an article-dispensing member arranged to remove the lowermost article from a different stack each cycle of operation whereby the stacks will be depleted substantially uniformly.

Some of the features of the illustrated vending machine are particularly directed to maintenance of the articles in a detached and movable condition in the refrigerator and include a magazine designed to present a minimum guiding surface to the articles stored therein, and means for abruptly raising and lowering the stacks in the magazine each cycle of operation to free the articles from their attachment to the sidewalls thereof and to break up any frost accumulated on the articles, thereby preventing them from being frozen together or against the walls of the magazine while stored in the refrigerator. The illustrated vending machine is also preferably enclosed within a chamber formed by an outer

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casing spaced from the refrigerated receptacle, and, provision is made for circulating the air in the chamber to dissipate moisture forming on the outer surface of the refrigerator in hot and humid weather thus reducing to a minimum the accumulations of moisture on the floor around the machine.

Provision is also made for controlling the coin-operated vending apparatus by suitable electrical control mechanism to normally effect delivery of one article each time one or more coins of the correct denomination are inserted in the machine, and, to prevent the apparatus from continuing delivery of successive articles in the event that the control mechanism should be inadvertently short-circuited in any manner which would otherwise effect continuous operation, such as in the event that a coin becomes jammed in a position to maintain the article delivery circuit in a closed portion. The present control mechanism is also effective to render the article delivery circuit inoperative when the articles in the machine are depleted. Provision is also made in the preferred embodiment of the invention for actuating a signal when the articles in the machine are entirely depleted, to indicate to the consumer that the machine is sold out.

Referring now to the drawings, 10 represents one of a plurality of adjacent vertically arranged stacks of refrigerated articles, which may comprise individually-packaged ice-cream cakes 12 and which are supported in a magazine 14 detachably secured within a refrigerator box 16 having a door 18 through which access may be had for inserting and removing the supply magazine in order to replenish the supply of articles. The refrigerator box 16 is supported upon frame work 20 and is provided with refrigerating apparatus including a compressor unit of any usual or preferred type, indicated generally at 22, supported upon the frame and which may be connected in the usual manner to a refrigerating plate 24 disposed within the box 16, the box being provided with insulation indicated at 26 of suitable thickness.

The refrigerating and vending assembly, as herein shown, is preferably enclosed within an outer casing 28 having a door 30 affording access to the refrigerating unit and the coin-operated control mechanism, indicated 25, 32, and the article delivery chute 34 is supported upon the door 30. The walls of the casing 28 are preferably spaced from the refrigerator box, and, the lower portion of the casing may be provided with louvre openings 35 in one or more walls thereof to per-

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mit circulation of air about the refrigerator in the chamber formed by the casing 28. As herein illustrated, the air within the casing may be circulated and kept in motion about the outside of the refrigerator box by the action of the compressor fan 23 whereby to prevent excessive "sweating" or condensation of moisture on the outer surface of the refrigerator in hot and humid weather thus reducing to a minimum the accumulation of moisture and dripping of the condensate on the floor about the machine under such conditions.

As illustrated in Fig. 3, the article supply magazine 14 is particularly designed to support the packaged articles 12 in a manner such as to reduce to a minimum the liability of the packaged articles becoming frozen to the side walls thereof and, as herein shown, each stack of articles 12 is supported in an individual section 15 having a rear wall 17 provided with ribbed portions 19, side walls 21 provided with ribbed portions 25, and a partially open front wall 27 having inward extensions 29 so that a minimum surface of the walls of the magazine section 15 is arranged to contact the side and end walls of the packaged articles. Ample clearance is provided between the outer surface of the articles and the ribbed portions so that the articles may be in engagement with only one or less than all of the ribbed portions when at rest in the magazine. The magazine sections 15, as herein shown, may be secured together in adjacent relation by tie bars 31 which may be welded or otherwise secured thereto. The magazine may be detachably supported within the refrigerator by hook members 33 attached to the inner wall of the refrigerator which are engageable with slotted portions 37 formed in a lower tie bar 39. The upper portion of the magazine may be supported and detachably retained within the refrigerator by a spring latch 41 arranged to cooperate with a bar 43 secured to the upper wall of the refrigerator. As shown in Fig. 1, the refrigerating plate or coil 24 may be set back flush with the inner wall of the refrigerator to provide ample space between the plate 24 and the rear wall of the magazine 14 so as to permit a substantial thickness of frost to accumulate on the plate before it becomes necessary to defrost the unit.

The article-removing and delivery mechanism embodied in the illustrated vending machine as herein shown includes an intermittently rotatable member 36 upon which the lowermost article of each stack rests to support its respective column. The illustrated machine is shown as having four stacks of packaged articles and the delivery member 36 is arranged to be intermittently rotated one-quarter turn each cycle of operation and is designed to effect removal of an article from a different stack each quarter turn in order to deplete the stacks uniformly. The illustrated delivery member 36 comprises a plurality of sets of spaced and relatively narrow octagonal-shaped discs 38, each set, herein shown as comprising three discs, being associated with its respective stack, and each set being provided with cut out portions forming pockets 40 open at one end, and with the pockets of adjacent sets of discs 38 spaced ninety degrees apart. The pockets 40 are of a size such as to permit the lowermost article in its respective stack to drop into the pocket by gravity as the rotary unit 36 is moved therepast, as illustrated in Fig. 6, to effect removal of the article from beneath the stack.

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As herein shown, the individual discs 38 are secured to a hollow square shaft 42 and are maintained in spaced relation by tubular spacing sleeves 43. In operation, the shaft 42 is arranged to be rotated ninety degrees each cycle of operation and to come to rest with a pocket 40 disposed at an angle of approximately 45 degrees from a vertical line passing through the center of the stack 12 and through the center of the square shaft 42, as shown in Fig. 1, thus presenting the uppermost flat side of the aligned octagonal-shaped discs 38 parallel to the lowermost article in each stack when the rotary member 36 comes to rest. Thus, in operation, the corners of the octagonal discs 38 effect lifting and permit dropping of each stack each cycle of operation to assist in maintaining the articles in a detached and freely movable condition, the successive jolts of the stacks operating to break up any frost accumulated on the articles to prevent them from being frozen together or frozen against the ribbed walls of the refrigerated magazine.

From the description thus far it will be observed that in the operation of the machine, the lowermost article 12 is removed from one stack during one cycle of operation, and the lowermost article from an adjacent stack is removed during the following cycle, and so on until the lowermost article from the last stack is removed at which time a pocket 40 is again disposed to effect removal of the lowermost article in the first stack upon the next cycle in the subsequent operation of the machine. As above described, the rotary member 36 is arranged to come to rest at an angle of approximately 45 degrees, the lowermost article in each stack resting upon a flat side of the octagonal discs at this time. As illustrated in Fig. 1, the article which has just been removed from a stack is guided onto a stripper member 44 arranged to strip the article from its pocket 40 and to support the same in the position shown in Fig. 1 in readiness to be delivered from the machine during the next cycle of operation when the member 36 is again moved one quarter of a turn.

The stripper member 44, as better shown in Fig. 5 may and preferably will be made from a relatively thin spring metal and is provided with a plurality of stripper fingers 46 extended between adjacent discs 38, and, the article is maintained on the stripper member, in the position shown in Fig. 1, by pivotally mounted switch arms 50 disposed in the path of the lowermost packages and arranged to be rocked by a package being removed from the position shown in Fig. 6 into a position to engage and yieldingly bear against the top of the removed package when the rotary member 36 comes to rest. As illustrated in Fig. 5, the switch arms 50 are secured to an elongated rod 52 rockingly mounted in bearing members 54 secured to opposed end walls of the refrigerator. The rod 52 is yieldingly urged in a counter-clockwise direction by a coil spring 56 to present the arms 50 in the path of and into operative engagement with an article about to be removed, as shown in Fig. 6.

In order to assist in maintaining the article in operative position on the stripper fingers 46 and also to prevent premature delivery of a succeeding article from an adjacent stack, a plurality of spring members 51 may be provided which are loosely coiled about and pivotally supported on the rod 52 between adjacent switch rods 50. As herein shown, the spring members 51 are provided with upward extensions 53 ar-

ranged to bear against the front of the magazine 14 and downward extensions 55 arranged to extend in the path of an article being removed from a stack. In operation, the oncoming article is forced against the downward extension 55 so that when the article comes to rest, the extension 55 yieldingly bears against the top of the article.

The rod 52 is further provided with a switch engaging arm 58 arranged to cooperate with a micro-switch 60 comprising the "sold out" switch which is arranged to discontinue the operation of the delivery apparatus and to actuate a signal lamp 62 when the articles are entirely depleted as will be hereinafter more fully described.

During the following cycle of operation, the closed end of the pocket 40 in engagement with the trailing end of the article just removed is arranged to push the article beyond the influence of the switch arms 50 and the spring arms 55 and off the stripper member 44 to deposit it into an elongated angular slot or opening 64 extending across the front of the refrigerator box 16 and which is normally closed, as shown in Fig. 1, by a pivotally mounted gate 66. In operation, the gate 66 is arranged to be opened each cycle of operation at a time coinciding with the movement of the rotary member 36 one quarter of a turn to deposit the article into the slot. The article thus released is guided into the delivery chute 34 disposed below the slot 64 to be delivered to the open tray 65 formed in the door 30 from which it is removed by the consumer. During release and delivery of an article to the consumer as above described, the lowermost package of an adjacent stack is permitted to drop by gravity into the succeeding pocket as it passes thereby and to be positioned on its respective stripper fingers 46 as shown in Fig. 1, ready to be released and delivered from the machine during the following cycle of operation.

It will be observed that in operation, when an article held between the stripper fingers 46 and the spring arms 55 is forcibly pushed beyond the influence of its spring 55 to release the article into the delivery chute 64, the spring arm 55 in the path of a succeeding article in an adjacent chute operates to restrain the movement of the article being thus removed to hold it between the closed end of its pocket and the spring arm until the spring arm is thereafter yieldingly moved and bears against the top of the article. As shown in detail in Fig. 9, each individually mounted spring unit 51 is looped at its lower end, as indicated at 59, to afford clearance for the intervening article dispensing disc.

As illustrated in Fig. 10, a modified form of article dispensing member 36 may comprise a plurality of sets of discs 57, each set being shaped in a manner such as to permit gradual lowering of the stacks in successive steps during each cycle of operation from an initial high position on top of a flat side of the disc to a position in the pocket 40. As herein shown, the discs 57 are generally octagonal in shape except that the flat sides are gradually reduced in height or in their distance from the center of the shaft 42 so as to form in effect a generally spiral contour but maintaining the flat sides of the octagon so that in operation the stacks will be gradually lowered each cycle of operation until it reaches the level of the pocket 40. At the same time the stack will be jolted each cycle by the corner portions of the discs to maintain the articles in a freely movable condition. The pockets 40 in adjacent sets of

discs 57 are likewise spaced 90 degrees apart so as to effect delivery of articles from a different stack during successive cycles.

As herein illustrated, the article dispensing member 36 is arranged to be rotated one-quarter turn each cycle of operation by a one revolution speed reduction motor 70 and through gearing indicated generally at 72, the motor 70 forming a part of a circuit arranged to be closed through a vend relay upon insertion of one or more coins into the coin receiver 74 which latter forms a part of the control mechanism 32. The motor circuit is arranged to be opened at the end of one revolution by a normally closed micro-switch 75, herein termed the vend switch, forming a part of the control circuit to the vend relay and the switch 75 is arranged to be actuated by an extended portion 80 formed on a crank disc 76 fast on the motor shaft 78 to effect discontinuance of the motor at the end of one revolution. In practice, the vend relay circuit is only momentarily interrupted by the operation of the micro-switch 75 to de-energize the vend relay and thus open the motor circuit, the extended portion 80 passing beyond the switch 75 by the inertia of the motor shaft 78 before it comes to rest so that the micro-switch is again closed when the shaft 78 comes to rest.

The gate 66 is also arranged to be opened each cycle of operation by the motor 70 through connections including a crank pin 82 secured in the one revolution crank disc 76, and a link 84 connected to an arm 86 fast on the gate shaft 88. As herein shown, the gate is yieldingly urged into a closed position by a coil spring 90 interposed between a collar 92 and the underside of the arm 86, and is arranged to be positively opened upon operation of the crank, as illustrated in Fig. 6. As shown in Fig. 1, the gate shaft 88 may be rockingly mounted in bearings 94 attached to the front of the refrigerator box.

Referring now particularly to Fig. 4, the rotary member 36 may and preferably will be detachably mounted in the refrigerator and, as herein shown, the hollow square shaft 42 is provided at one end with a stub shaft 98 arranged to be received in a bearing member 96 attached to the inner wall of the refrigerator. The other end of the hollow shaft 42 is provided with a second stub shaft 104 extended therefrom which is arranged to be detachably connected to a gear shaft 100 by a pin and slot connection 102. The shaft 100 is rotatably and slidably mounted in a bearing member 106 and is urged in a direction for cooperation with the rotary member 36 by a spring 108 coiled about a reduced diameter portion of the shaft within the bearing member 106. The outer end of the shaft 100 is provided with an elongated keyway 110 arranged to cooperate with a key 112 in the gear 114 forming a part of the gear train 72 so as to permit longitudinal movement of the shaft 100. The shaft 100 is further provided with a hole 116 arranged to be exposed when the shaft is moved to the left viewing Fig. 4. With this construction it will be seen that when it is desired to remove the member 36, the unit is urged to the left to compress the spring 108 and release the stub shaft 98 from its bearing 96. At this time, the hole 116 is exposed so that a pin may be extended through the hole to hold the shaft in its retracted position whereupon the member 36 may be released from its pin and slot connection 102 to permit removal of the member.

In the operation of the machine, the consumer

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inserts one or more coins of the proper denomination into a slot 120 formed in the door 30, the coin being guided by a tube 122 into the coin-receiving unit 74 which may comprise a conventional coin-receiving and slug-rejecting mechanism commercially available. The unit 74 is mounted on the inside of the door 30 and forms a part of the control mechanism 32. In the normal operation of the machine, the coin or coins are arranged to close an electrical circuit to a relay contained in the box 124 for closing the circuit to the motor 70 and thus start a cycle of operation. Normally the coins will be guided from the receiving unit 74 through a funnel 126 into the coin collection box 128 mounted on the casing door, and slugs or coins of improper denomination will be rejected and guided through a funnel 130 to deposit the coin or slug into the chute 34 to return the same to the consumer. A spring pressed plunger rod 132 is provided to permit the consumer to effect release and return of a jammed coin. As herein shown, the plunger rod 132 is supported in a bracket 136 secured to the door 30, the plunger being provided with a handle at its upper end accessible through an opening in the front of the door and having an extension 134 at its lower end engageable with the coin-receiving unit 74.

Referring now particularly to Figures 7 and 8 illustrating the electrical control circuits for the vending machine, Fig. 8 is a wiring diagram of the coin operated switches contained in the coin receiving unit 74 and Fig. 7 is a wiring diagram of the motor circuit and the relays contained in the box 24, one of which is arranged to be energized upon closing of the coin operated switches. The circuits illustrated in the two wiring diagrams are arranged to be connected together by a multiple plug 140 and socket 142 shown in Fig. 2 and diagrammatically represented in Figures 7 and 8 and in which the terminal 1 is electrically connected to L₁ and terminal 2 is electrically connected to L₂ of the circuit shown in Fig. 7. It is understood that the circuit will operate equally well on A. C. or D. C., but for purposes of clarity in the ensuing explanation it will be arbitrarily assumed that L₁ is positive and L₂ is grounded.

In the operation of the machine, when a ten cent coin is inserted into the coin receiving unit 74 the ten cent switch 144 is momentarily closed to energize the vend relay 146 which in turn closes the circuit to the vend motor 70 to operate the machine. In the following description the circuits shown in Figures 7 and 8 are connected by the multiple plug and socket connection, and, when thus connected it will be seen that the vend relay 146 is energized upon momentary closing of the ten cent switch 144 by feeding a pulse from L₁ through terminal 3, one contact of the coin switch 144 being connected to terminal 1 by lead 148 and the other contact of the switch being connected by lead 152 to terminal 3. From terminal 3, in Fig. 7, the vend relay circuit is continued through lead 152 to one terminal of the relay 146 and the circuit is completed from the other terminal through leads 154 and 156 to the ground terminal 2, the terminal 2 being connected to the ground line L₂ through the normally closed switch 155 forming a part of the anti-jackpot relay to be hereinafter described.

As shown in Fig. 7, the vend relay 146 is arranged to close the motor circuit through switch 158, the motor circuit including lead 160 from L₁ to

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the motor and lead 162 through switch 158, then through lead 154, normally closed switch 155 and thence through leads 157, 159 to the ground line L₂. A switch 164, also closed by the vend relay 146 is arranged to continue the circuit through the relay coil 146, upon opening of the momentarily closed ten cent coin switch 144, one contact of the switch 164 being connected to L₁ through leads 160, 166, 168 through the normally closed vend switch 75 and lead 170. The other contact of switch 164 is connected to the vend relay coil through lead 172 and the circuit is completed from the relay coil to line L₂ by lead 154, switch 155 and leads 157 and 159. When the motor shaft has completed one revolution the circuit is momentarily opened at the vend switch 75 by the tooth 80 on the cam disc 76 as above described, thus de-energizing the vend relay 146 and effecting opening of the motor circuit at switch 156 and opening of the relay locking circuit at switch 164.

Similar operations of the control mechanism is effected when two five cent coins are inserted into the coin receiving unit 74, and, as illustrated in Fig. 8, insertion of the first five cent coin effects movement of the switch arm 174 to the right allowing a pulse to energize the first relay 176, the circuit including a lead 148 from terminal 1, through normally closed switch 178 and lead 182 then through the normally closed switch 184 and lead 186 to one side of the relay coil 176, the circuit being completed from the other side of the coil to the ground terminal 2 through leads 188, 190 and 192. Relay 176 then keeps itself energized through switch 175 and leads 180, switch 178, and lead 148 to terminal 1. Upon subsequent movement of the switch arm 174 to the left, the second relay 194 is energized through lead 196, switch 198, now closed by relay 176, and lead 200 to one side of the relay 194 and thence from the other side of the relay to the ground terminal 2 through leads 190, 192. Relay 194 then keeps itself energized through switch 195 and leads 180, switch 178 and lead 148 to terminal 1. Insertion of a second five cent coin feeds a pulse through switch 184, now swung to the right by the second relay and through lead 150 to terminal 3 thus energizing the vend relay 146 as above described.

Provision is also made in the illustrated control circuit for resetting the coin receiving circuits after the coins have passed through and, as herein shown, a relay 202 in the coin receiving circuit is normally energized through lead 204 from a positive terminal 6 and through lead 192 to the ground terminal 2, the ground being completed to L₂ as shown in Fig. 7 from terminal 2 through lead 156, through the normally closed switch 155 and leads 157, 159. The positive line is continued from terminal 6 in Fig. 7 to the normally closed switch 164 of the vend relay through lead 206, normally closed empty switch 60 and lead 208 to one contact of switch 164, the other contact being connected by lead 170, switch 75 and leads 162, 166 to L₁. The normally energized relay 202 is arranged in the standard coin receiving unit to permit the five and ten cent coins to pass through and to maintain switch 178 in a closed position. However, after coins to the denomination of ten cents have passed the circuit is opened at switch 164 to de-energize relay 202 thus opening switch 178 to permit resetting of the coin receiving relay circuits to their normal positions for the next cycle of operation, and to mechanically reject further coins until the vend cycle is completed.

The circuit to the relay 202 is re-established when the vend relay is de-energized at the end of the cycle of operation.

Provision is further made in the illustrated control circuit for rendering the vend relay and motor circuits inoperative in the event that the articles are entirely depleted from the machine, or, in the event that a coin becomes jammed in the coin receiving unit in a manner such as to maintain the vend relay circuit closed, and also for actuating a signal on the outside of the machine to indicate to the consumer that the machine is sold out or is out of order. When such conditions occur, a mechanically reset anti-jackpot relay 210 is arranged to be operated to open the circuit to the vend relay to prevent further operation of the motor and to close a circuit to light the signal lamp 62.

As illustrated in Fig. 7, the anti-jackpot relay 210, is arranged to be energized when the empty switch 60 is rocked to the dotted line position in Fig. 7. The empty switch is connected to line L₁ through leads 166, 169, vend switch 75, lead 170, through switch 164 and lead 208. When switch 60 is closed the circuit is continued through leads 212, 214 to one terminal of the relay 210, the other side of the relay being connected to line L₂ through lead 159. Operation of the empty switch 60 also effects opening of the circuit through terminal 6 thus de-energizing the coil 202 in the coin receiving unit and opening the switch 178 to prevent operation of the coin attached mechanism.

Upon energization of the relay 210 the ground circuit to the vend relay 146 is opened at switch 155 thus rendering the motor 70 and vend relay 146 inoperative. Simultaneously therewith the circuit to the empty lamp 62 is closed at switch 220, the lamp circuit comprising leads 160, 166, 224 connecting line L₁ to the switch 220, the circuit being continued through switch 220 and lead 226 to the lamp and through lead 159 to line L₂. Switch 218 of relay 210 is arranged to electrically lock the relay 210 in operative position through leads 152, 230 from terminal 3, through switch 218 to relay 210 and lead 159 to line L₂.

In the event that a coin becomes jammed in the coin receiving unit in a manner such as to feed a continuous current through terminal 3 to hold the vend relay 146 energized, the circuit to the anti-jackpot relay will be closed through vend switch 75 at the end of one revolution or cycle of operation. In such event, the circuit to the relay 210 will be completed from terminal 3, through leads 152, 172, switch 164 in dotted line position, then through lead 170, switch 75 in dotted line position and leads 171, 214 to the relay 210 and then through lead 159 to line L₂. The mechanically locked anti-jackpot relay 210 when actuated, as above described, prevents further operation of the machine until the relay is manually reset by the attendant.

An important feature insuring the successful operation of the above described refrigerated vending machine results from the design of the various cooperating mechanisms for affording sufficient clearance between the article and the successive mechanisms which operate upon it during its passage from storage to discharge, and between the parts of the mechanisms themselves. The storage magazine is designed so that at least a quarter of an inch of clearance is afforded between the article and the surrounding ribs and the area of contact between the ribs and the article is relatively small. The ejector or dis-

pensing member is designed to have at least a quarter of an inch of clearance between it and the lower end of the magazine and the individual ejecting disks are spaced from one another and are each narrow. The stripping fingers between the disks are narrow and spaced from the disks by at least a quarter of an inch, so that it will be observed that minimum opportunity is afforded when frost builds up on any of the parts or operating instrumentalities for either the article or the parts or instrumentalities to freeze to one another. This insures positive feeding of the articles even though when stored for relatively long periods of time and the machine is not defrosted.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. In a vending machine, a storage cabinet, means for supporting a plurality of adjacent stacks of articles within the cabinet, a rotary dispensing member having portions for cooperation with adjacent stacks arranged to remove the endmost article in a different stack each cycle of operation, and means cooperating with said rotary member for stripping the articles from said portions upon rotation of the rotary member, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation whereby to maintain the articles in a detached and freely movable condition in the stacks.

2. In a vending machine, a storage cabinet, means for supporting a plurality of adjacent stacks of articles within the cabinet, a rotary dispensing member having portions for cooperation with adjacent stacks arranged to remove the endmost article in a different stack each cycle of operation, and means cooperating with said rotary member for stripping the articles from said portions upon rotation of the rotary member, and for supporting the same in operative position to be discharged during a succeeding cycle of operation, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

3. In a vending machine, a storage cabinet, means for supporting a plurality of adjacent stacks of articles within the cabinet, a rotary dispensing member having portions for cooperation with adjacent stacks arranged to remove the end-most article in a different stack each cycle of operation, and means cooperating with said rotary member for stripping the articles from said portions upon rotation of the rotary member, and for supporting the same in operative position to be discharged during a succeeding cycle of operation, and yieldable means cooperating with said stripper for maintaining the article in said operative position until released upon rotation of the dispensing member during the succeeding cycle of operation, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

4. In a vending machine, a storage cabinet, means for supporting the articles to be vended within the cabinet in a plurality of stacks, a ro-

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tary dispensing member cooperating with all of the stacks and provided with article receiving pockets adapted to effect removal of the endmost article from the different stacks, said pockets being radially and equally spaced with relation to one another to present successive pockets into operative position with relation to successive stacks upon rotation of the dispensing member, and means for intermittently rotating the dispensing member to effect withdrawal of an article from a different stack at each intermittent increment of rotation, said dispensing member being arranged to engage the lowermost article in each stack and being shaped to effect raising and lowering of each stack at each increment of rotation whereby to maintain the articles in a detached and freely movable condition in the stacks.

5. In a vending machine, a storage cabinet having a discharge opening, means for supporting a plurality of articles in adjacent vertical stacks within the receptacle, a rotary dispensing member having a plurality of pockets, each pocket being associated with a different stack and the pockets associated with adjacent stacks being radially and equally spaced from each other, means for rotating said dispensing member through an arc corresponding to the radial spacing of said pockets whereby to effect removal of the lowermost article in a different stack each cycle of operation, and means for supporting and maintaining an article removed during one cycle of operation in alignment with said discharge opening to be discharged therethrough during the following cycle, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

6. In a vending machine, a storage cabinet having a discharge opening, means for supporting a plurality of articles in adjacent vertical stacks within the receptacle, a rotary dispensing member having a plurality of pockets, each pocket being associated with a different stack and the pockets associated with adjacent stacks being radially and equally spaced from each other, means for rotating said dispensing member through an arc corresponding to the radial spacing of said pockets whereby to effect removal of the lowermost article in a different stack each cycle of operation, and means for supporting and maintaining an article removed during one cycle of operation in alignment with said discharge opening to be discharged therethrough during the following cycle, and a closure for said discharge opening arranged to be opened each cycle of operation simultaneously with the discharge of an article, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

7. In a vending machine, a storage cabinet having a discharge opening, means for supporting a plurality of articles in adjacent vertical stacks within the cabinet, a rotary dispensing member having radially spaced pockets for cooperation with adjacent stacks and arranged to remove the lowermost article in a different stack each cycle of operation, means for rotating the dispensing member through arcs corresponding to the radial spacing of said pockets and to cause the dispensing member to come to rest with the pockets disposed in an angular position relative to the vertical stacks, and a stripper arranged to partially remove the article from its pocket and

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to support the article in operative position to be discharged through said opening during the following cycle of operation, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

8. In a vending machine, a storage cabinet having a discharge opening, means for supporting a plurality of articles in adjacent vertical stacks within the cabinet, a rotary dispensing member having radially spaced pockets for cooperation with adjacent stacks and arranged to remove the lowermost article in a different stack each cycle of operation, means for rotating the dispensing member through arcs corresponding to the radial spacing of said pockets and to cause the dispensing member to come to rest with the pockets disposed in an angular position relative to the vertical stacks, and a stripper arranged to partially remove the article from its pocket and to support the article in operative position to be discharged through said opening during the following cycle of operation, and a resilient member for each stack disposed in the path of an article being removed from the stack arranged to cooperate with said stripper to maintain the article in its partially removed position until the same is forced beyond said resilient member by its pocket upon rotation of the dispensing member during the succeeding cycle of operation, said rotary dispensing member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

9. A vending machine having a refrigerated storage cabinet, the improvement comprising means for supporting a plurality of adjacent stacks of articles in the cabinet, and a rotary dispensing member arranged to remove the lowermost article in a different stack each cycle of operation, said dispensing member comprising a plurality of sets of spaced polygonal shaped discs, each set having a pocket for cooperation with its respective stack, the pockets of adjacent sets being radially spaced from each other, the angular portions of said polygonal discs engaging the lowermost article in each stack to effect raising and lowering of each stack each cycle of operation whereby to maintain the articles in a detached and freely movable condition in the stacks.

10. A vending machine having a refrigerated storage cabinet, the improvement comprising means for supporting a plurality of adjacent stacks of articles in the cabinet, and a rotary dispensing member arranged to remove the lowermost article in a different stack each cycle of operation, said dispensing member comprising a plurality of sets of spaced and generally polygonal shaped discs, each set having a pocket for cooperation with its respective stack, the pockets of adjacent sets being radially spaced from each other, the flat sides of said generally polygonal shaped discs being progressively reduced in height from an initial maximum height substantially coextensive with the top of the pocket to a minimum height substantially coextensive with the bottom of the pocket whereby to effect gradual lowering of the stacks each cycle of operation until the lowermost article comes into alignment with its respective pocket to be removed from its stack, the angular corners of said discs effecting raising and lowering of each stack each cycle of operation.

11. A vending machine comprising a storage receptacle having a discharge opening, means

for supporting a plurality of adjacent stacks of articles in the receptacle, a rotary dispensing member having radially spaced pockets for co-operation with adjacent stacks and arranged to remove the lowermost article in a different stack 5 each cycle of operation, means including an electric motor for rotating the dispensing member through an arc corresponding to the radial spacing of said pockets, means for supporting the article removed during one cycle of operation in operative position to be discharged through said 10 opening during the following cycle, a gate for said discharge opening, and means operatively connected to the motor for opening the gate each cycle of operation, said rotary dispensing member 15 having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

12. In a refrigerated vending machine having a refrigerated storage cabinet provided with a 20 discharge opening, the improvement comprising a magazine mounted therein for supporting the articles in a plurality of adjacent vertical stacks, an ejecting member adapted to cooperate with the lowermost article in each stack, means for 25 intermittently moving the ejecting member to effect withdrawal of the lowermost article from each of successive stacks, and means for supporting the article thus withdrawn from one stack and until it is moved through the discharge 30 opening by the ejecting member upon the next cycle of operation following its withdrawal, said ejecting member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

13. In a refrigerated vending machine provided with a refrigerated storage cabinet having

a discharge opening, the improvement comprising a magazine provided with a plurality of vertical compartments arranged to support a plurality of articles in adjacent vertical stacks, the interior of each compartment being provided with 5 relatively narrow ribs and each compartment being of a sectional size to provide at least a quarter of an inch clearance between the article and said ribs, ejecting means cooperating with the lower ends of the compartments and spaced therefrom by at least a quarter of an inch, said 10 ejecting means comprising a plurality of narrow rotary disks adapted to support and engage the article being withdrawn from the compartment by a narrow area of contact therewith, said 15 ejecting member having portions for cooperation with the stacks to effect raising and lowering thereof each cycle of operation.

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