April 11, 1939. R. A. OFFICER 2,153,694

VENDING APPARATUS

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Fig. 3.

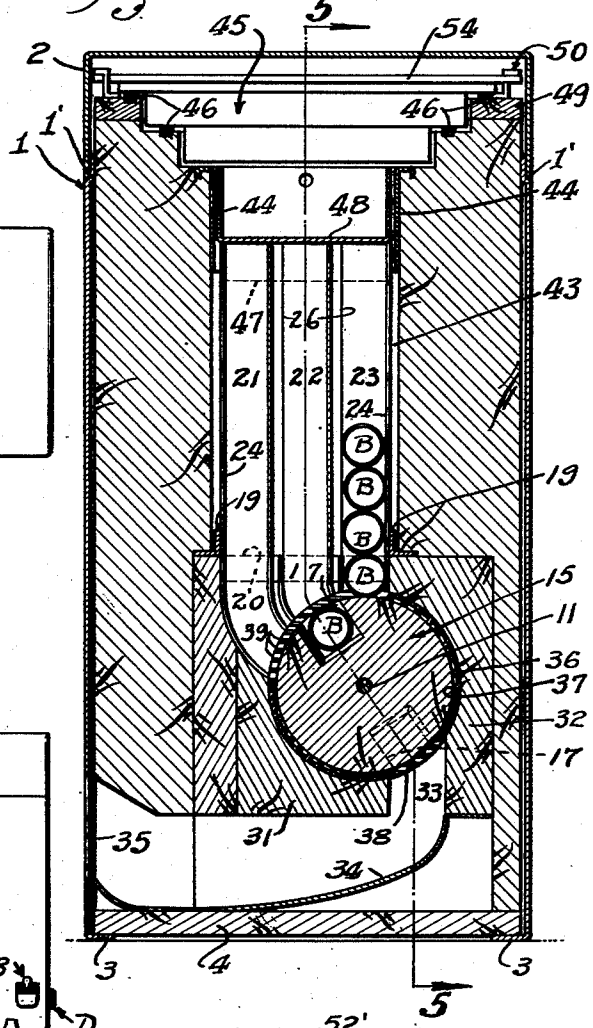


Fig. 2.

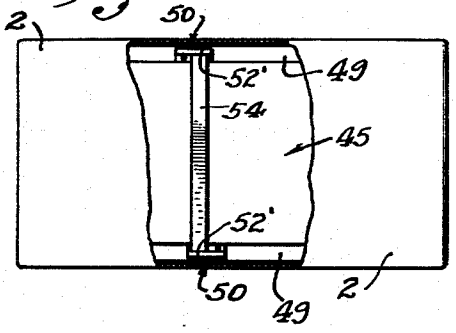


Fig. 1.

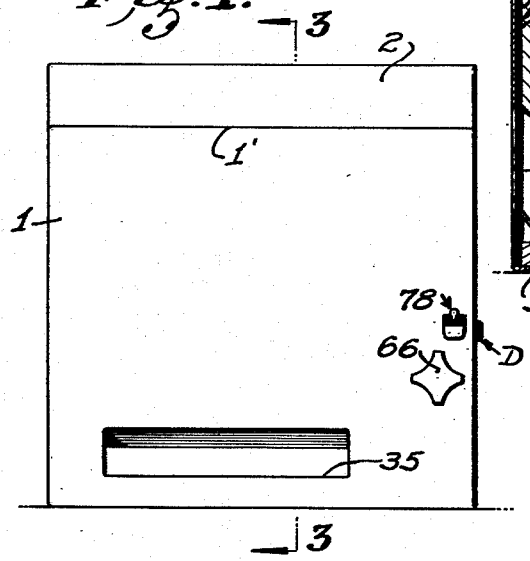
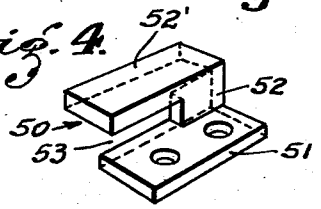


Fig. 4.



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VENDING APPARATUS

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Fig. 5.

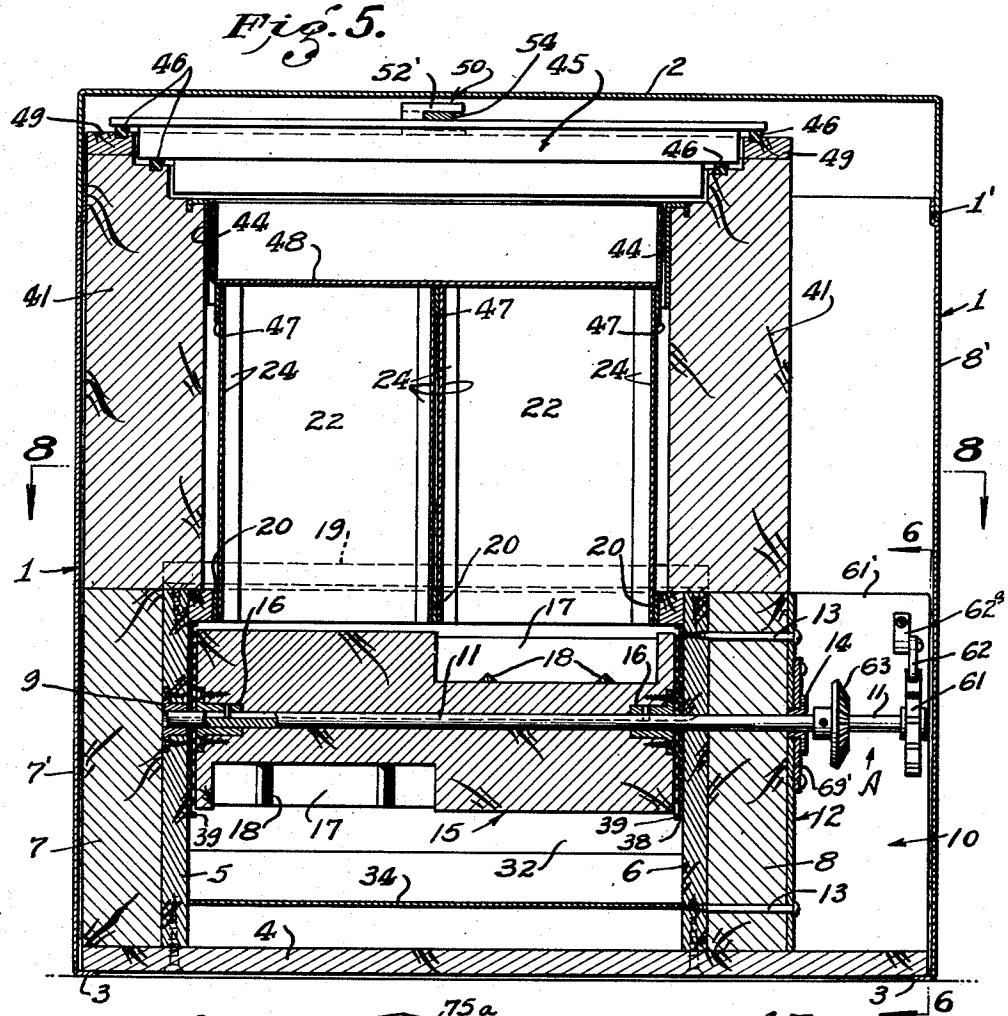


Fig. 6.

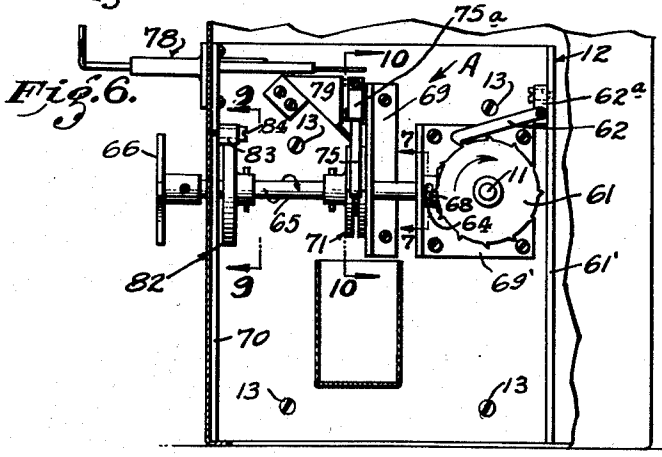
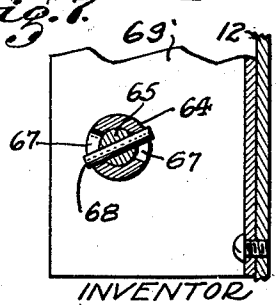


Fig. 7.



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VENDING APPARATUS

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Fig. 8.

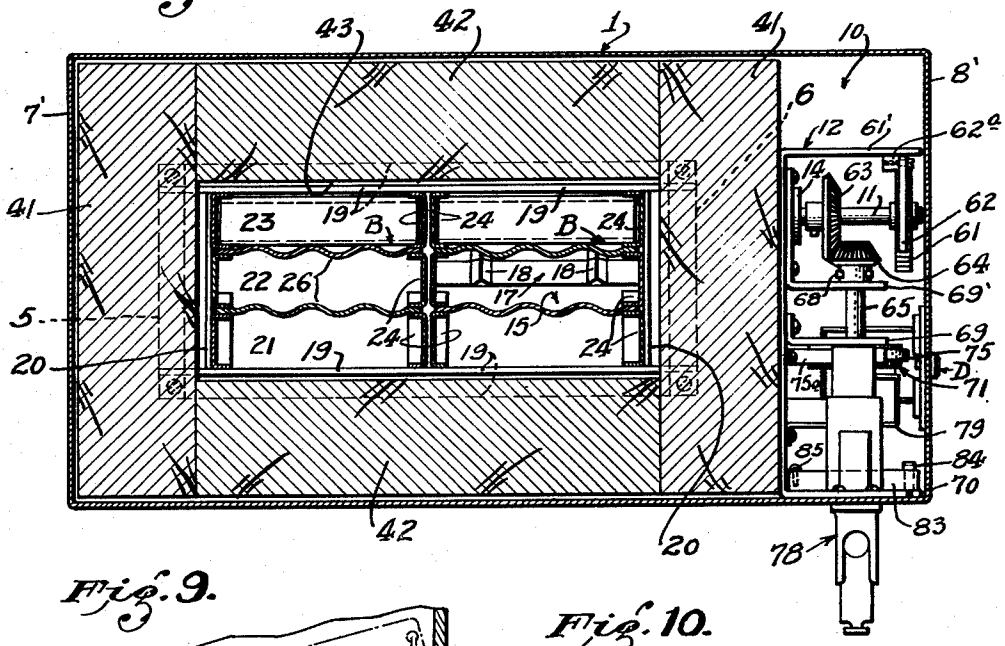


Fig. 9.

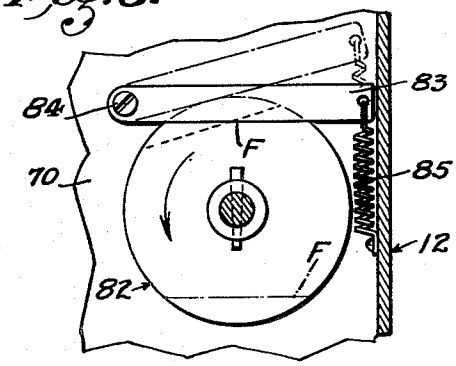
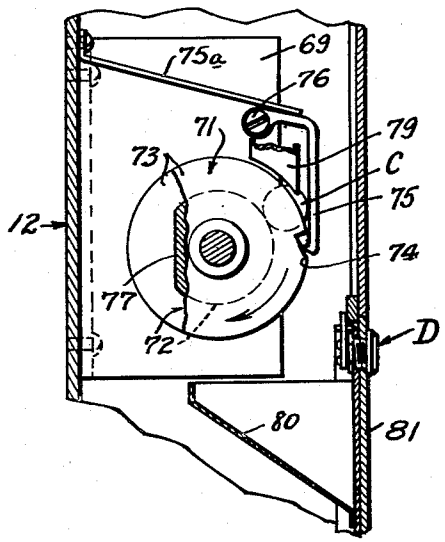


Fig. 10.



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Patented Apr. 11, 1939

2,153,694

UNITED STATES PATENT OFFICE

2,153,694

VENDING APPARATUS

Robert A. Officer, Denver, Colo., assignor to J. P. Seeburg Corporation, Chicago, Ill., a corporation of Illinois

Application June 12, 1936, Serial No. 84,842

1 Claim. (Cl. 312—36)

My invention relates to a vending apparatus, and an object of my invention is to provide a novel vending apparatus which is particularly designed to vend frozen confections.

An object is to provide a novel vending apparatus of this class which although adapted to handle frozen merchandise insures against sticking or freezing of such merchandise to the interior of the vending machine even though the machine may be infrequently operated.

Another object is to provide a novel vending machine of this class in which the merchandise vended thereby is positioned in several stacks so that the machine may be compactly built, but still contain a relatively large quantity of merchandise.

Another object is to provide a novel vending machine of this class which utilizes the divided arrangement of the merchandise into several stacks to advantage in agitating the contents of the stacks for the purpose of preventing sticking of the merchandise to each other and to the contacting walls of the apparatus.

A further object is to provide a novel vending machine of this class in which the merchandise compartment is well insulated at all times so that a minimum of refrigerant is required to maintain the merchandise at the desired temperature.

A further object is to provide a vending machine of this class which incorporates a simple and novel coin controlled operating mechanism particularly suited for operation of the vending gate of the machine.

A still further object is to provide a novel vending machine of this character in which the working parts thereof may be easily and quickly inspected or repaired.

Simplicity, cheapness and neatness of appearance are other objects and advantages.

Other objects, advantages and features of invention may appear from the accompanying drawings, the subjoined detail description and the appended claim.

The accompanying drawings illustrate the invention in a form I at present deem preferable.

Figure 1 is a front elevational view of my vending apparatus.

Fig. 2 is a plan view thereof with a portion of the cover broken away to illustrate the manner in which the refrigerant compartment lid or cover is retained in place.

Fig. 3 is an enlarged transverse sectional view through the vending machine taken on line 3—3, Fig. 1.

Fig. 4 is an enlarged perspective view of one of the cover retainer latches.

Fig. 5 is an enlarged longitudinal sectional view taken on irregular line 5—5, Fig. 3.

Fig. 6 is a fragmentary sectional view taken parallel to Fig. 3 and just inside the end wall of the vending machine substantially along the line 6—6, Fig. 5.

Fig. 7 is a detail sectional view on line 7—7, Fig. 6 showing the lost motion connection in the coin controlled operating mechanism of the vending machine.

Fig. 8 is a transverse sectional view taken on line 8—8, Fig. 5, looking in the direction of the arrows and showing the operating mechanism in plan.

Fig. 9 is a detail sectional view on enlarged scale, of the operating mechanism taken on line 9—9, Fig. 6 and showing particularly the positioning device tending to move the parts into proper position for a succeeding operation.

Fig. 10 is another detail sectional view on enlarged scale, of the operating mechanism taken on line 10—10, Fig. 6 and showing the coin operated release for permitting operation of the vending machine when the proper coin has been inserted. Parts have been broken away to expose construction otherwise hidden.

The vending machine is enclosed in a metallic shell or casing 1 of generally rectangular form and open at the top and bottom. At the top the casing is provided with an inwardly offset lip 1' adapted to receive a complementary outer cover 2. The bottom is provided with an inturned flange 3 which receives a base plate 4 of wood or the like.

Resting by their lower edges on the base plate 4 and extending transversely thereof within the shell 1 are two rectangular end plates 5 and 6. The outer or remote sides of the end plates are covered by blocks of insulation 7 and 8, such as balsa wood. The insulation block 7 completely fills the space between the end plate 5 and corresponding end wall 7' of the shell, except for a distance to clear the lip 1', while a chamber 10 is provided between the insulation block 8 and the other end wall 8' of the shell for a coin receiving and operating mechanism A to be described later.

The end plate 5 is provided with a bearing element 9 adapted to support one end of a vending gate shaft 11. The other end of the shaft 11 extends through the end plate 6 and insulation block 8 into the chamber 10. The side of the insulation block 8 which defines a wall of the chamber 10 is covered by a metal U-shaped panel

12 which is attached by screws 13 extending through the insulation block into the end plate 6. A bearing element 14 for the shaft 11 is mounted on said panel 12.

Between the confronting sides of the end plates 5 and 6 a vending gate 15 is secured to the shaft 11. The vending gate 15 is in the form of a cylinder made from insulating material such as balsa wood and has journal inserts 16 in its ends suitably keyed to the shaft 11. The vending gate is adapted to vend alternatingly or successively from two or more merchandise magazines arranged axially along the vending gate as shown best in Fig. 5. Two tiers of axially disposed magazines are shown, and in such case the vending gate is provided with two diametrically disposed pockets, recesses or channels 17 which are axially offset with respect to each other.

Each pocket or channel 17 is preferably rectangular in longitudinal area and square in transverse section and is adapted to receive and dispense a substantially cylindrical article of merchandise indicated at B in the drawings. At least two walls of each pocket are provided with a pair or more of ribs 18, preferably triangular in cross-section so that the surface contact between the merchandise and pocket is minimized. This materially aids in preventing any freezing or sticking of the merchandise in the pockets even though the vending machine may be infrequently operated.

Extending between the upper edges of the end plates 5 and 6 are a pair of angle rails 19 which are offset forwardly with respect to the axis of the vending gate. The rails 19 are connected near their lower ends and at their lower central portions by cross bars or ribs 20.

Supported by and between the cross bars 20 are a plurality of merchandise receiving tubes, three such tubes being shown above each vending channel of the vending gate and constituting a magazine. These vending tubes are arranged from front to rear and are designated respectively 21, 22 and 23. Each vending tube comprises and is formed by a pair of confronting end channels 24 the inner sides of which are connected by a partition member. The partition member 26 is corrugated and positioned between the inner ends of the channels 24 the leg portions of which form a retaining and guide wall for the articles B to be dispensed.

The rear pair of tubes 23 are positioned approximately vertically over the axis of the vending gate 15. The middle set of tubes 22 are immediately forward of the tubes 23 and their lower ends curve rearwardly to intersect the gate at substantially radial relation therewith and at an angle of approximately 34° thereto relative to the vertical center line of the tubes 23. The forward set of tubes 21 are still further curved rearwardly to intersect the forward side of the vending gate above its center and at an angle of approximately 67° to the axis of the tubes 23. With this arrangement by rotating the vending gate clockwise as viewed in Fig. 3, the merchandise in the forward stack or tube 21 is vended first, then the articles in the middle stack 22, and the articles in the rearward tubes 23 will be dispensed last.

It should be noted here, that the stacks of merchandise in the several tubes rest on the periphery of the vending gate and in the dispensing recess 17, consequently when the pocket is filled with one of the merchandise packages and rotated past the other two tubes the merchandise in these are contacted and thus shaken or bumped, thereby breaking any adherence between the merchandise and the walls of the tubes. The corrugating of the partitions 26 further aids in preventing sticking of the articles thereto.

Insulating blocks 31 and 32 preferably of balsa wood are fitted around the forward and rear sides of the vending gate 15. These blocks are provided with semi-cylindrical faces which confront the vending gate and are separated at their upper sides by the several vending tubes. The lower portions of the insulating blocks 31 and 32 define a vertical discharging slot 33, preferably intersecting the vending gate diametrically opposite from the middle vending tubes and therefore rearwardly and below the axis of the vending gate as shown best in Fig. 3. The insulating blocks 31 and 32 are spaced upwardly from the bottom plate 4. A chute or guide 34 extends from the slot 33 to the forward side of the shell 1 where the articles dispensed may be easily reached through a hand opening 35.

The confronting arcuate surfaces of the insulating blocks 31 and 32 receive sealing elements 36 preferably formed of yieldable sheet material from which extend radially inwardly directed ribs 37 engageable with the periphery of the vending gate 15 to form a plurality of dead air spaces. Similarly, the end insulating blocks 5 and 6 are provided with sealing elements 38 having axially directed horizontally disposed ribs 39 which engage the ends of the vending gate 15, as best shown in Fig. 5.

End walls 41 and side walls 42 of insulating material, such as balsa wood, surround the merchandise magazines forming an insulated compartment 43 therefore, which is slightly larger than the vending tubes to permit circulation of a chilling medium. The upper end of the compartment 43 is lined by a metal frame 44 having an outwardly flanged upper end bearing a depending lip forced into the upper edges of the insulation walls 41 and 42. The upper ends of these walls are stepped to receive a correspondingly stepped door 45. Yieldable insulation or packing material 46 may be interposed between the confronting surfaces of the walls and door around each stepped surface thereof.

The upper ends of the vending tubes 21, 22, and 23 may be tied together by cross bars 47. Resting on top of the tubes and loosely fitting in the compartment 43 is a receptacle 48 adapted to receive a refrigerant, such as "dry ice".

The upper step of the insulating walls 41 and 42 may be capped by a frame 49 to which is secured at the mid-portion of each side, a latch element 50, as best shown in Fig. 4. The latch element incorporates a securing base 51, and an upright web 52 and an overhanging lug 52' that provides a lateral and horizontal notch 53. The notches 53 of the two latch elements are mounted on the frame 49 to face in opposite directions so that a bar 54 of spring material may be disposed across the door 45 and swing into latching or unlatching positions as shown best in Fig. 2.

The vending gate is controlled by an operating mechanism A disposed in the chamber 10. The shaft 11 protrudes into the chamber 10 and its extended end receives a ratchet wheel 61 which is engaged by a pawl 62 formed at the end of an arm which overhangs the ratchet wheel and rests thereon. The other end of the arm is journalled from a bracket 62a secured to an angularly bent portion 61' of the panel 12.

Inwardly from the ratchet wheel 61 the shaft

11 is provided with a bevel gear 63 which is engaged by a pinion gear 64 mounted on the end of a drive or operating shaft 65 which extends forwardly at right angles to the shaft 11 through the forward side of the casing 1 and is there provided with a handle 66. To provide free movement between the handle and the vending gate 15, the pinion gear 64 is provided with diametrical slots 67 as shown best in Fig. 7, which receives a pin 68 extending through the shaft 65 and forms a drive connection between gear 64 and shaft 65.

The shaft 65 is journalled by brackets 69 and 69' extending into the chamber 10 from the panel 12 and also by a laterally bent portion 70 of the panel 12 at the forward extremity thereof adjacent the front wall of the casing 1. Adjacent the bracket 69 the shaft 65 is provided with a coin operated wheel 71 having a deep coin receiving channel 72 bordered by flanges 73. The flanges are provided at a common point in their peripheries with a notch 74 which is adapted to be engaged by a catch arm 75. The catch arm is journalled from the bracket 69 by a pin 76 and extends laterally then vertically downwardly therefrom to its extremity which is hooked to engage the notches 74 as shown best in Fig. 10. A leaf spring 75a presses downwardly on the lateral portion of the catch arm to insure engagement of the arm 75 in the notch 74. At a point diametrically opposite from the notches 74 the base of the channel 72 is provided with a flattened or deepened portion 77.

Above the shaft 65 there is provided a conventional coin receiving device 78 adapted to deliver a coin C into the chamber 10. The coin falls from the device 78 into a small hopper 79 which in turn deposits it in the channel 72 behind the catch arm 75. Thereupon rotation in a clockwise direction of the shaft 65 causes the coin to wedge behind the catch arm 75 and raise it from the notches 74 so as to permit continued movement. The coin stays behind the catch arm until the wheel 71 has made a half turn whereupon the flattened portion 77 permits the coin to drop by the arm 75 and into a coin box 80. The coin box 80 is preferably positioned on a door 81 suitably fitted in the adjacent end wall of the casing and the door 81 is secured to the housing by suitable latch and lock means D. The door 81 extends over a sufficient area of the end wall 8' to provide for easy access to the mechanism A.

Mounted on the shaft 65 adjacent the laterally directed portion 70 of the panel 12 is a cam wheel 82 having a flattened side F as shown best in Fig. 9 and adapted to be engaged by a traversing arm 83 hinged by a pin 84 to the panel portion 70 and urged downwardly into engagement with the cam wheel 82 by a spring 85.

The brackets 69 and 69' and the hopper 79 are secured to the U-shaped member 12 in any suitable manner as by their respective leg portions and screws.

It is believed the operation of my novel vending device is apparent from the foregoing detail description and the flattened side F of the cam wheel 82 due to operation of the traversing arm 83 operating thereon always positions the drive shaft 65 at a predetermined point so that the coin C will be properly positioned to the arm 75 as well as to properly position the pockets 17, and to properly position the notch 74 and arm 75 for a succeeding operation.

The lost motion connection 67 and 68 between the drive shaft 65 and the pinion gear 64 permits a slight rocking movement of the shaft 11 and vending gate 15 so as to insure proper delivery of an article B to be dispensed into the discharging slot 33.

The ratchet wheel 61 and pawl 62 cooperate to provide a non-reversing mechanism for the shaft 11 and the arm 75 and notch 74 cooperate to prevent a forward operation until released by a coin C.

As the gate 15 rotates and an article B is received in the pocket 17 further operation of the vending gate 15 causes the articles remaining in the stacks to be slightly elevated or "bumped" and such action tends to release any adherence of the article with the side walls of the chute or with each other, thereby insuring dispensing of a refrigerated article.

In operation of the device after the pawl 75 is released by a coin C rotation of the handle 66 will not at first impart movement to the pinion gear 64 due to the lost motion connection 67 and 68 and upon completing a dispensing operation the flat surface F on cam wheel 82 will be moved to the position shown in dotted lines in Fig. 9 whereupon upon releasing the manual tension applied to drive shaft 65 the spring 85 operating through traversing arm 83 upon the flattened surface F will cause a slight reversed movement of drive shaft 65 thereby properly positioning the notch 74 and arm 75 as well as the vending gate 15 for subsequent operations.

I claim:

In a refrigerated vending machine, a plurality of magazines having common side walls between adjacent pairs thereof, said side walls being formed with longitudinal corrugations for minimizing the contact of contained merchandise therewith, means to maintain said magazines below the freezing point, a dispensing gate mounted for rotation adjacent the discharge ends of the magazines to empty them in predetermined order, said gate being formed with package receiving pockets, supporting ribs in each such pocket constituting a cradle upon which the received package is held out of contact with the wall of the pocket and projecting beyond the periphery of the dispensing gate, and means for rotating said dispensing gate, whereby the package received therein is operative to move the packages in the several magazines and thereby to break the ice which freezes them to the sides of the respective magazines.

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