April 8, 1958 F. A. WALTER 2,829,798

MERCHANDISE HOLDING MEANS FOR VENDING MACHINES

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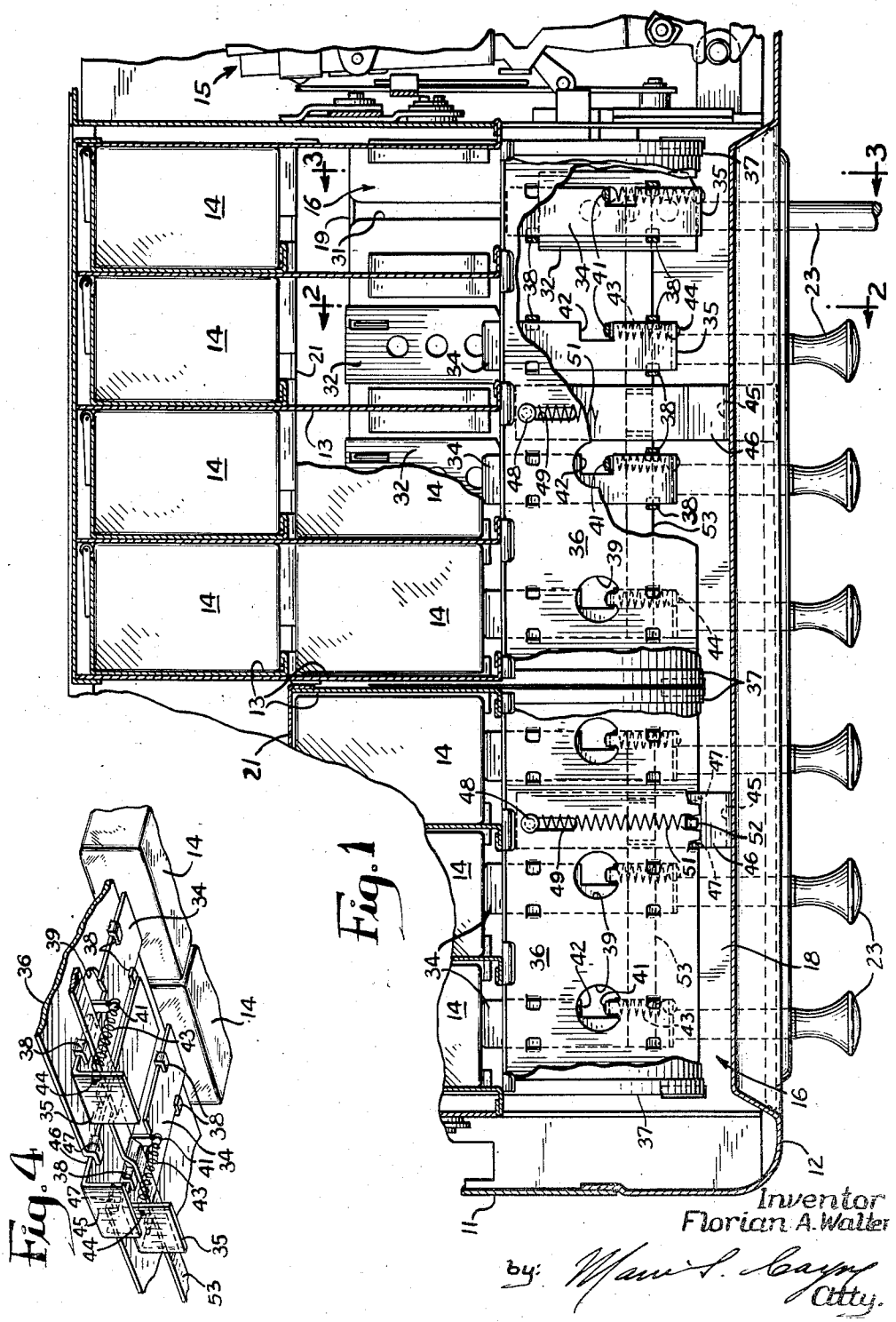

Fig. 1

Fig. 4

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Fig. 2

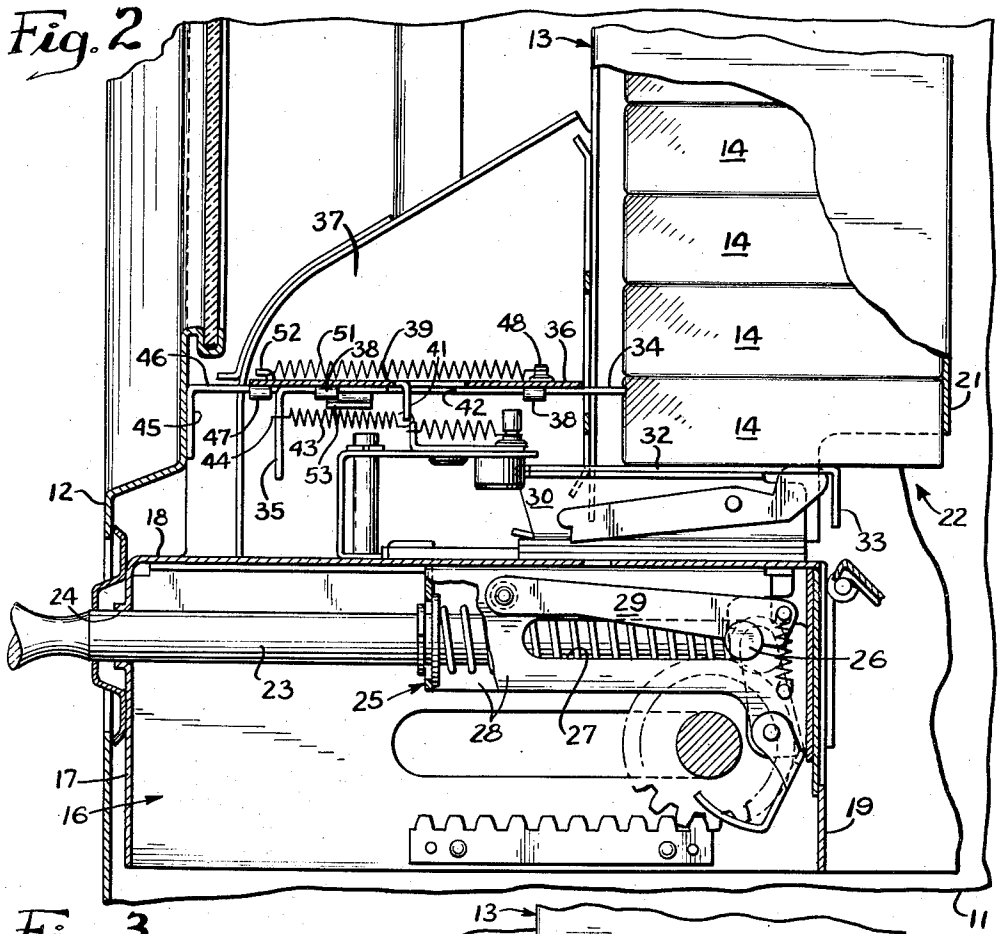
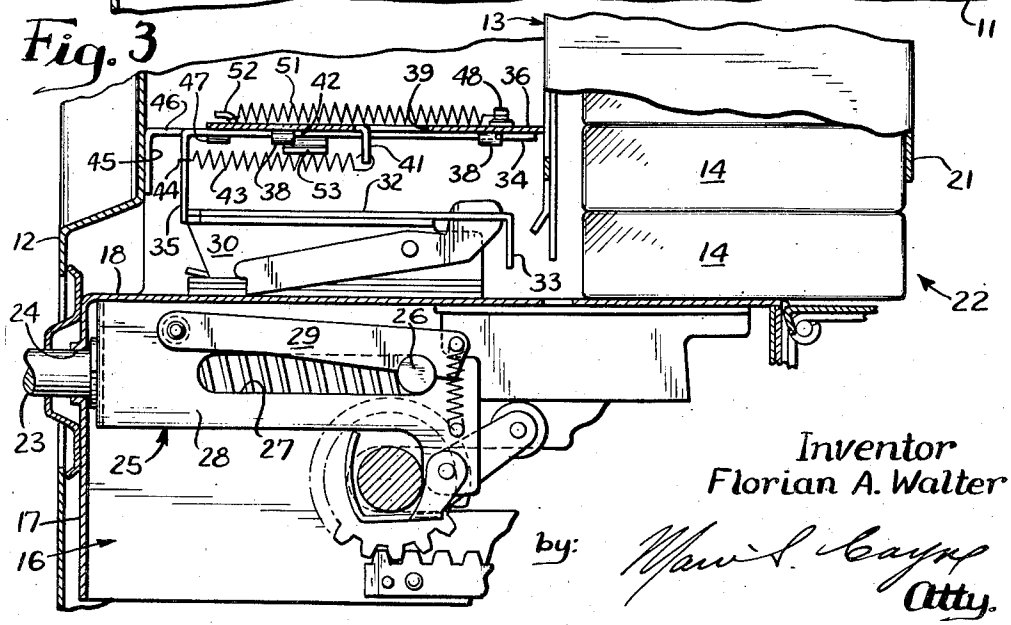


Fig. 3



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MERCHANDISE HOLDING MEANS FOR VENDING MACHINES

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Application September 30, 1954, Serial No. 459,236

7 Claims. (Cl. 221—131)

The invention relates to improvements in a structure and apparatus for frictionally holding vendable articles of merchandise contained in a coin-controlled vending machine against unintended vending and is more specifically concerned with the provision of novel pressure fingers arranged to co-act with the articles of merchandise to prevent the vending of said articles through fraudulent or faulty operation of the machine.

Coin-controlled vending machines of the character disclosed in the co-pending application of Harry B. Stoner, Serial No. 428,293, filed May 7, 1954, include a plurality of substantially vertically arranged racks each containing packages or articles of merchandise to be vended selectively upon manual operation of selected vending means. As is common in such machines, the manually actuable means is locked normally by an associated coin-controlled mechanism and can be actuated to vend merchandise only after the coin-controlled mechanism has been conditioned to be unlocked by the presence therein of a coin or coins.

The specific coin-controlled mechanism and the specific manually actuable means forms no part of the present invention, except insofar as said manually actuable vending means is effective to permit the novel pressure fingers to be effective normally and to render them ineffective during operation of the manually actuable vending means. In general, a pressure finger is provided for each stack of merchandise and it normally bears against the lowermost article of merchandise in the related stack so as to prevent said article from being vended improperly. It is, therefore, an object of the invention to provide novelly constructed and mounted pressure fingers, one for each stack of merchandise in a vending machine.

The pressure fingers are mounted in such manner that pressure on a related stack is relieved during a vending operation and it is an object of the invention to provide a novel arrangement and association of parts to render such pressure fingers ineffective when related manually actuable vending means is operated to vend merchandise.

The presence, is a merchandise vending machine, of pressure fingers of the character herein disclosed is such that means must be provided to relieve the pressure on the merchandise in all of the racks during servicing of the machine and it is, therefore, another object of the invention to provide such means.

Another object is to provide, in a merchandise vending machine, novelly constructed pressure fingers.

Another object is to provide a novel mechanical connection between the manually actuable vending means and the related pressure fingers.

Another object is to provide, in a merchandise vending machine of a kind normally housed within a cabinet, novel merchandise holding means which is rendered ineffective when the cabinet door is opened during servicing of the machine.

Another object is to provide pressure fingers of the character described which are not expensive to manufacture and install in a vending machine, which are very simply and ruggedly constructed, do not interfere with the servicing of the machine, are entirely automatic in their operation and will require no servicing.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a fragmentary top plan view of a vending machine mechanism showing portions broken away and illustrating, in section, a part of the cabinet within which the mechanism is enclosed.

Fig. 2 is a fragmentary vertical sectional view taken substantially along line 2—2 of Fig. 1.

Fig. 3 is a fragmentary vertical sectional view similar to Fig. 2, but taken along line 3—3 of Fig. 1.

Fig. 4 is a fragmentary perspective view of the pressure fingers illustrating their mounting and association with vendable articles of merchandise.

The invention relates to improvements in merchandise vending machines and is more particularly concerned with novel means for frictionally holding merchandise within the racks containing the same prior to actuation of the merchandise vending mechanism.

The merchandise vending machine disclosed herein for purposes of illustration is of the kind shown in the companion pending application hereinabove identified. The merchandise storage means and the vending mechanism to be described presently is housed within a suitable cabinet, generally indicated at **11**, which includes as part of its front wall a door **12** adapted for movement from the closed position illustrated into an open position so as to afford access to the merchandise storage means and vending mechanism for servicing. The merchandise storage means consists of a plurality of upright racks **13** each adapted to contain a stack of articles of merchandise **14**. In the present instance, the merchandise consists of packages of the same or different brands of cigarettes which are to be selectively vended from any one of the racks upon manipulation of associated manually actuable means rendered operable when coin-controlled mechanism associated therewith and indicated generally at **15** is unlocked in the presence of a coin or coins. Inasmuch as this coin-controlled mechanism constitutes no part of the present invention, no further description of its structure is deemed necessary.

The merchandise racks **13**, which are rectangular in section, are arranged side by side longitudinally of the width of the merchandise vending assembly adjacent the rear end of a chassis **16** which underlies all of said racks. The chassis **16** is fabricated from sheet metal stock and it includes a front wall **17**, a top wall **18**, and a depending rear wall **19** which is located forwardly of the back wall **21** of the racks **13**. The back wall **21** of the racks **13** terminates above the plane of the top wall **18** of the chassis so as to define a vending opening **22** through

which an article of merchandise 14 is discharged each time the manually actuable vending mechanism now to be described is actuated.

Because the basic structure of each of the racks 13 is identical insofar as the present invention is concerned, and the construction and operation of the vending mechanisms associated with each rack are alike, only one such vending mechanism is illustrated and described in detail, it being understood that the description is equally applicable to each of the vending mechanisms and that like numerals identify corresponding parts.

Referring now to Fig. 2, the vending mechanism includes a manually reciprocal plunger 23 which extends through an opening 24 in the chassis front wall 17. The plunger 23 carries, slidable thereon within the confines of the chassis 16, a slide assembly generally indicated at 25 which normally is connected to the plunger 23 in such manner as to be movable therewith during normal machine operation. Means is provided, however, to permit the plunger 23 to be actuated independently of the slide assembly 25, should the machine or mechanism be jammed or otherwise rendered inoperative, so as to avoid part breakage. The means for accomplishing this forms no part of the present invention and it should therefore be sufficient to note that the plunger 23 has, adjacent its rear end, a laterally extending pin 26 which extends through slots 27 (only one shown) in the spaced side walls 28 of the slide assembly. A spring-held latch 29 normally is in engagement with the pin 26 so as to afford a mechanical connection between the slide assembly and its plunger. However, should the slide assembly 25 be held against operation during movement of the plunger 23, the pin 26 is cammed out of engagement with the latch 29 to permit free movement of the plunger.

Slide assembly 25 includes an upstanding built-up structure 30 which projects through a slot 31 (Fig. 1) in the chassis top wall 18 and this structure has mounted firmly on its upper face and ejector plate 32 which normally provides a floor for the lowermost article of merchandise in the related rack 13. It should be sufficient for the purposes of the present disclosure to note that when the coin-controlled mechanism 15 is conditioned to be unlocked by the presence of a coin or coins, any one of the plungers 23 may be selectively pulled outwardly. Such movement of the plunger (to the left in Fig. 2) carries with it normally the slide assembly 25 and the ejector plate 32. When the ejector plate is withdrawn substantially into the position illustrated in Fig. 3, the lowermost package of merchandise formerly supported thereon drops downwardly and rests upon the chassis top wall 18. When the plunger 23, its slide mechanism 25 and ejector plate 32 are returned to their initial positions, a downturned flange 33, provided on the rearmost end of the ejector plate 32, engages the lowermost package 14 of merchandise and pushes it ahead of it so as to cause it to be discharged through the vending opening 22 for delivery to the customer.

It has been established that on occasion articles of merchandise may become displaced in the racks 13 should the vending machine be rocked, tilted, or in any manner jarred sufficiently to cause such displacement. When this occurs, proper vending is prevented and also there is the possibility of one or more packages of merchandise being vended inadvertently, or fraudulently.

In order to avoid such a situation or any other undesirable condition arising from premature displacement of the lowermost article of merchandise, the vending machine is provided with novel pressure fingers 34 one associated with each rack. As is best illustrated in Figs. 1 and 2, each pressure finger 34 normally has its rearmost edge bear against the opposed end of the lowermost article of merchandise 14 in the related rack 13. However, because the stack of merchandise must drop down following withdrawal of the ejector plate 32, it is necessary to provide means whereby the pressure fingers 34 may be moved to positions of non-engagement with the merchandise during the vending operation. It is, of course, also necessary that only the pressure finger associated with the merchandise being vended is made ineffective while the remaining pressure fingers remain in merchandise holding position.

As is perhaps best illustrated in Fig. 4, the pressure fingers 34 are identical and each consists of a piece of strap metal having one end turned downwardly to provide an end flange 35 for a purpose to become apparent presently. These pressure fingers are slidably mounted on the bottom face of a horizontal floor plate 36 which is spaced above the ejector plates 32 and extends substantially the entire width of the vending machine mechanism. The plate 36 may be supported at its ends in forwardly extending brackets 37 constituting a part of the rack assembly. In order to hold the pressure fingers 34 slidably against the underside of the floor plate 36, said floor plate has a plurality of lugs 38 struck out of its body downwardly to define sets of opposed guides to receive and guide the edge margins of the finger 34 mounted therein.

The floor plate 36 is provided also with cutouts 39 each having a depending prong 41 disposed to lie within the confines of an edge recess 42 in the related pressure finger 34. This prong 41 constitutes a stop for limiting sliding movement of the pressure finger 34 transversely of the floor plate 36 and further affords means for anchoring one end of a tension spring 43, the other end of which is connected, as at 44, to the finger flange 35. This spring 43 normally urges the pressure finger against the lowermost article of merchandise in the related rack so as to bind said article between the finger and the rack back wall 21. Should no merchandise be present within the rack, the action of the spring is limited by abutment of an end of the recess 42 with the prong 41.

The flange 35 on the pressure finger 34 also functions to provide a mechanical connection between the ejector plate 32 and the related pressure finger 34 for moving said finger from its engagement with the merchandise as illustrated in Fig. 2, forwardly out of engagement therewith as in shown in Fig. 3. As there illustrated, the forward edge or end of the ejector plate 32 has been carried forward into abutment with the flange 35 and has carried the pressure finger flange 35 forwardly with it so as to relieve pressure on the merchandise and thereby permit said merchandise to drop into position for one article thereof to be vended. As soon as the actual vending operation is initiated, that is; when the ejector plate 32 starts its return to its normal position, the spring 43 will pull the pressure finger 34 toward the rear of the machine so that it can again abut the article of merchandise now seated upon the top of the ejector plate 32. It should be quite evident that the action of the pressure fingers is entirely automatic and is dependent upon operation of its related ejector mechanism.

When it becomes necessary to service the machine such as, for example, to replenish the supply of merchandise in the racks, it is necessary that the pressure finger be moved into an ineffective position so as not to interfere with the proper loading of the merchandise in the racks. Such servicing is accomplished by opening the door 12 constituting substantially the entire front of the machine. When the door is in the closed position illustrated in the drawings, it bears against a downturned flange 45 on a slide element 46. Upon referring to Fig. 1, it will be observed that there are two side elements 46 mounted on the bottom face of the floor plate 36 and guided in struck out lugs 47. Each slide element has an upstanding pin 48 extending through a slot 49 in the floor plate 36. This pin provides an anchor for one end of a tension spring 51, the other end of which is engaged over a lug 52 struck out of the forward edge of the floor plate 36. The spring 51 normally tends to urge the slide element 46 toward the front of the

machine so that when the door **12** of the cabinet **11** is open, said slide elements **46** will assume the position illustrated in broken lines in Fig. 1.

The slide element **46** has a transverse bar **53** secured thereto which is offset downwardly so as to lie in a plane beneath the pressure fingers **34**. Still referring to Fig. 1, it will be noted that there are two slide elements **46**, one associated with a group of four pressure fingers **34**, and the other associated with a group of three pressure fingers. The foregoing construction and the operation to be now described with respect to one of the slide elements **46** is identical in both instances and like numerals will, of course, identify corresponding parts. As noted, the transverse bar **53** extending laterally on either side of the slide element **46** normally is out of contact with the related pressure fingers **34**. However, when the door of the cabinet is open and the slides assume the broken line positions shown in Fig. 1, the bar **53** will abut the downturn flange **35** on each of the related pressure fingers and carry said fingers forwardly a distance sufficient to carry their rearmost ends out of engagement with the merchandise. When the door **12** is closed, after servicing the machine, all of the pressure fingers are restored to operative position automatically.

It should be quite apparent that the novel means for holding the merchandise properly positioned within the rack is very simply constructed and positive in its operation. The pressure fingers **34** and slide elements **46** are sheet metal stampings, consequently, their cost is maintained at a minimum and due to simplicity of the structure, there is no possibility of the pressure fingers becoming inoperative because of any structural failure except in the event that a spring **43** or **51** should break. Such springs can, however, be easily replaced owing to their ready accessibility.

It is believed that my invention, its mode of construction and assembly, and many of its advantages, should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a merchandise vending machine including a plurality of racks each to contain a stack of articles of merchandise to be vended and a plurality of reciprocal means operable selectively to vend an article of merchandise from a selected rack, yieldable means normally bearing against the stacks to prevent inadvertent vending, said means comprising a plurality of reciprocal fingers, one for each stack springs one operatively connected to each finger to normally urge them into endwise contact with the merchandise in a related rack, said reciprocal means being engagable with a related finger for moving the finger out of engagement with the merchandise during a vending operation a plate, movable means normally holding said plate in a predetermined position under spring tension, and means on said plate engageable with the reciprocal fingers to withdraw them from contact with the merchandise when the movable means is displaced.

2. In a merchandise vending machine of the character recited in claim 1, in which the movable means holding the plate in said predetermined position consists of a door in a housing enclosing the vending mechanism.

3. In a merchandise vending machine of the character recited in claim 1, in which the plate carries a transverse bar bridging the reciprocal fingers and engageable with projections on said fingers.

4. In a merchandise vending machine of the character recited in claim 1, in which the reciprocal fingers and plate are mounted on a floor plate located above the plane of the reciprocal means.

5. In a vending machine including a housing having a normally closed door, a plurality of substantially vertically arranged racks each adapted to contain a stack of articles to be vended, ejector mechanisms associated one with each rack, said ejector mechanisms being selectively operable to eject the lowermost article from its related rack, spring pressed fingers one associated with each rack normally engaging said lowermost article to prevent inadvertent ejection, means on the ejector mechanisms operative during a vending cycle to carry the related finger out of engagement with the article to be vended, and means common to all of said fingers operative to carry all of said fingers out of engagement with the lowermost articles in said racks when the housing door is moved into an open position.

6. In a merchandise vending machine including a housing and a plurality of racks each to contain merchandise to be vended, said housing having a normally closed service door, a plurality of slidable means selectively operable to vend merchandise from selected racks, pressure fingers one associated with each rack normally effective to maintain said merchandise against being vended, means operable when said door is opened to render all of said pressure fingers ineffective, and means on each pressure finger engageable by the related slidable means for rendering a pressure finger ineffective during operation of its related slidable means.

7. In a merchandise vending machine including a cabinet having a service door and having upstanding racks in said cabinet each containing articles of merchandise to be vended and means associated with each rack selectively operable to vend merchandise from a selected rack, means normally frictionally holding the lowermost article of merchandise in the racks, means on the merchandise vending means engageable with said holding means during a part of its operating cycle to relieve said article of merchandise from said holding means, and means operably connecting the door and said holding means effective when said door is open to render said holding means ineffective.

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