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MECHANISM FOR RELEASING ARTICLES OF VENDING MACHINES

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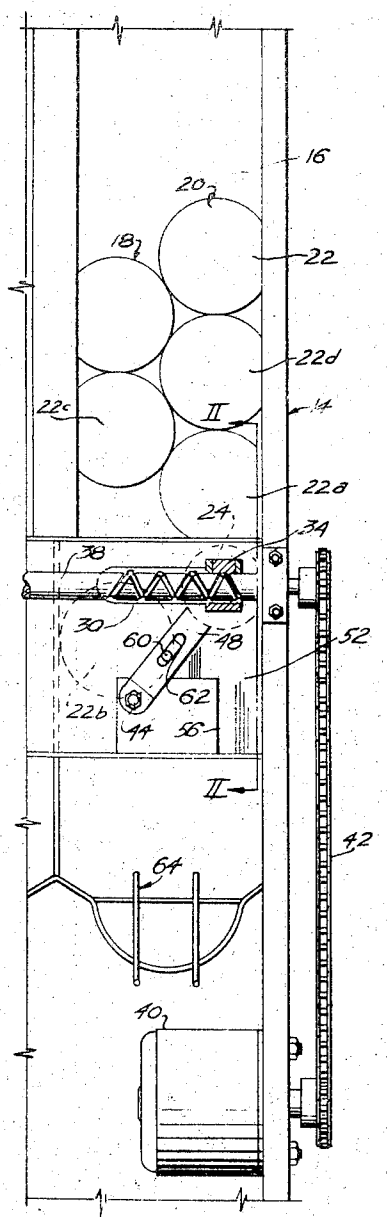


FIG. 1

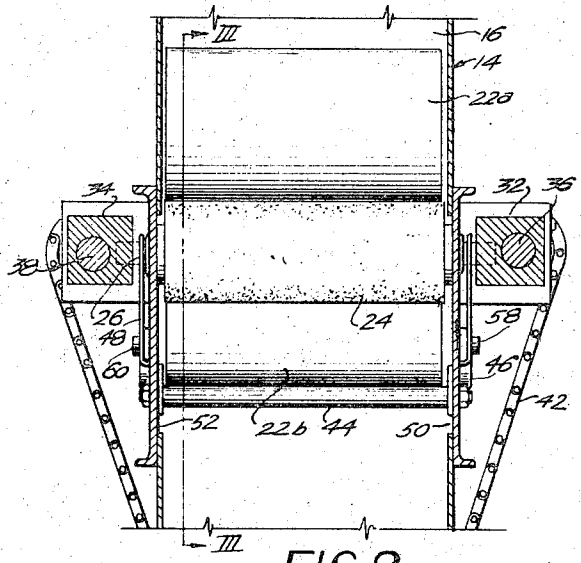


FIG. 2

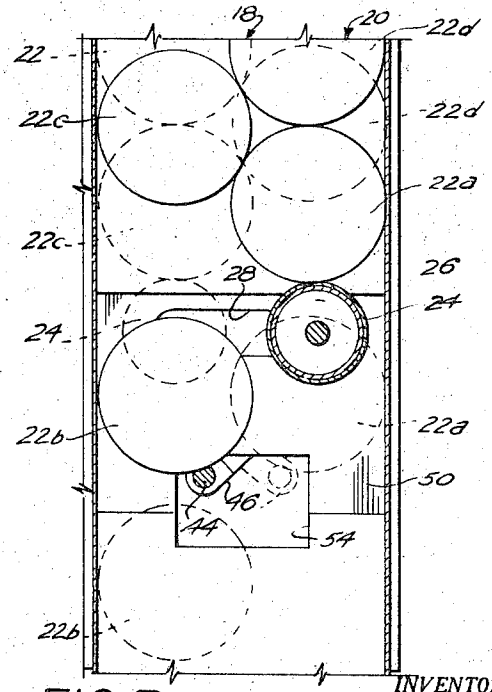


FIG. 3

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MECHANISM FOR RELEASING ARTICLES OF VENDING MACHINES

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Original application Jan. 2, 1952, Ser. No. 264,405, now Patent No. 2,762,524, dated Sept. 11, 1956. Divided and this application Apr. 2, 1956, Ser. No. 575,463

4 Claims. (Cl. 221—67)

This invention relates to the field of vending merchandise particularly through use of automatic machines of the type capable of dispensing the articles singly upon insertion of a coin.

More specifically, the present invention relates to improvements in vending machines of the "staggered stack type" such as disclosed in U.S. Letters Patent No. 2,369,882 dated February 20, 1945, and my Patents Nos. 2,585,011 and 2,585,012, both dated February 12, 1952.

In vending machines of the kind disclosed in the aforesaid patent and in my co-pending applications, it is possible to surreptitiously reach into the cabinet of the machine through the article-discharge opening thereof, manipulate the articles of the stacks and to remove an article without the necessity of inserting a coin as is contemplated by the normal operation of the machine.

It is therefore, one of the most important objects of the present invention to provide means in staggered stack vending machines for preventing malicious robbing and removal of the contents thereof in absence of insertion of a coin in the proper manner.

Another important object of this invention is to provide in a vending machine, structure underlying the stacks of articles and movable to release one article at a time as in the above mentioned patent and co-pending applications, together with apparatus operating in conjunction therewith to receive the released article and holding the same against discharge to the customer until the next cycle of operation, thereby presenting a block to access and thereby manipulation of the stacks themselves for the purpose of stealing the contents by those who may be so inclined.

It is a further important object of this invention to provide vending mechanism for articles of merchandise arranged in a pair of staggered stacks that includes a device having a pair of parallel members, the device being swingable to the end that the two members alternately discharge or release the articles which they support.

Another object of the instant invention is to provide improved actuating means which contemplates restraining of the primary article-supporting roller to a rectilinear path of reciprocation as in the prior inventions above identified, the anti-theft means in each case being swingable along an arcuate path of travel in timed relationship to the reciprocable movement of the said primary roller.

A still further object of the present invention is to provide a form of actuation which includes swinging of the anti-theft means as a function of the reciprocation of the primary roller.

In the drawing:

Figure 1 is a fragmentary, front elevational view of article-dispensing apparatus such as forms the subject matter of my said patents having improved article-releasing mechanism embodying the present invention.

Fig. 2 is an enlarged, fragmentary, cross-sectional view taken on line II—II of Fig. 1; and

Fig. 3 is a fragmentary, cross-sectional view taken on line III—III of Fig. 2.

This is a division of my co-pending application Serial No. 264,405 filed January 2, 1952, now U.S. Letters Patent No. 2,762,524 issued September 11, 1956.

As will hereinafter appear, the articles to be dispensed are stored within a suitable cabinet in pairs of stacks, the articles of one stack being offset or staggered with respect to its corresponding adjacent stack. The invention contemplates additionally the provision of a primary roller underlying the staggered stacks and confined to rectilinear, horizontal reciprocation. When the primary roller is beneath one of the stacks, the lowermost article of the latter rests upon the roller and thus both stacks are restrained against downward movement.

The means for guiding and reciprocating the primary roller shown in Figs. 1 and 3 inclusive, is identical with that forming the subject matter of my said Patent No. 2,585,012.

A suitable cabinet broadly designated by the numeral **14** is shown only in part in Fig. 1 of the drawing and includes one or more vertical compartments **16** capable of supporting and guiding a pair of staggered stacks **18** and **20** of vendable merchandise which, for purposes of illustration, comprise elongated, cylindrical articles **22**.

It is appreciated that supporting the lowermost article **22***a* of stack **20**, serves to restrain gravitational movement of both stacks **18** and **20**. Such support takes the form of an elongated, cylindrical roller **24** adapted to rotate on its longitudinal horizontal axis through the medium of a shaft therefor. Opposed walls of the cabinet **14** are provided with clearance slots **28** and **30** for the shaft **26**, and particularly for follower blocks **32** and **34** respectively, slidable therewithin for rectilinear reciprocation.

Blocks **32** and **34** are mounted on opposite ends of the shaft **26** and upon horizontal, parallel compound screws **36** and **38** respectively. Screws **36** and **38** are rotated simultaneously to reciprocate the blocks **32** and **34** and accordingly the roller **24**, by means of a prime mover **40** and a coupling chain or the like **42**. Thus, when roller **24** is moved to the left from the position shown in Fig. 1 of the drawings, and the full line position shown in Fig. 3 to the dotted line position of Fig. 3, article **22***a* will gravitate as indicated by dotted lines in Fig. 3. Article **22***a* will not however, be dispensed from the machine by such movement of the roller **24** because of the provision of apparatus to receive the same and operating as an anti-theft means as above indicated. Such apparatus includes an elongated, horizontal rod **44** that moves into the path of travel of the article **22***a* as indicated by dotted lines in Fig. 3. The rod **44** is joined to the lowermost ends of a pair of arms **46** and **48** swingably joined to and depending from the shaft **26**.

End walls **50** and **52** of the cabinet **14** within which slots **28** and **30** respectively are formed, are provided with clearance openings **54** and **56** respectively for free swinging movement of the rod **44**. Walls **50** and **52** are likewise provided with outwardly extending pins **58** and **60** respectively immediately above the openings **54** and **56** thereof that pass through corresponding slots in the arms **46** and **48**, slot **62** in arm **48** being illustrated in Fig. 1 of the drawings.

Fig. 1 illustrates by dotted lines an article **22***b* resting on the rod **44** and previously discharged from the stack **18**. Accordingly, when prime mover **40** is energized by insertion of a suitable coin in the machine and through the medium of coin control mechanism (not shown) to move the roller **24** from the full line position of Fig. 3 to the dotted line position of this figure as above indicated, arms **46** and **48** will swing on their pivot pins **58** and **60** respectively to move the rod **44** from beneath the article **22***b* to the opposite end of the openings **54** and **56** as shown by dotted lines in Fig. 3. Thus, as article **22***a* is released by the roller **24** and gravitates to the dotted line position shown in Fig. 3, the article

22*b* will likewise be released by the rod and moved to its dotted line position of Fig. 3 in the direction of the arrow. While article 22*b* falls upon a guide 64 and thence to a discharge opening (not shown) for the cabinet 14 disposed for access by the customer, the extent of gravitation of article 22*a* is limited by the rod 44. During this cycle of operation, article 22*c* of stack 18, gravitates to the position shown by dotted lines in Fig. 3 resting upon roller 24.

It can now well be appreciated that during the next cycle of operation, roller 24 will be returned to the full line position shown in Fig. 3, the article 22*a* will be discharged to the guide 64, article 22*c* will gravitate until restrained by rod 44, and article 22*d* of stack 20 will move into engagement with roller 24.

The important feature of this invention, namely, that of providing an anti-theft means, can now be well understood. A thief reaching into the machine through the outlet opening of cabinet 14 and attempting to manipulate the articles 22 within chamber 16 is hampered against removal of an article 22 by virtue of an article such as 22*b* being in a blocking position. In other words, even if stack 18 could be reached to move the same upwardly and thus cause article 22*a* to roll downwardly on roller 24, neither the article 22*a* nor the article 22*b* could be removed because of the presence of rod 44. However, article 22*b* must be moved upwardly before stacks 18 and 20 can be shifted and such action cannot aid in the stealing of articles for the reason that rod 44 cannot be moved out of the way until the screws 36 and 38 are rotated.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a vending machine, a frame including means for supporting and guiding a pair of upright stacks of articles in laterally overlapping relationship; movable structure underlying the articles and supportingly engageable with the lowermost article of either stack to restrain said lowermost article and all higher articles of both stacks against downward movement; drive means for shifting said structure laterally between positions of engagement with the lowermost articles of said stacks alternately to singly release the previously engaged lowermost article during each such shifting of said structure; a member pivotally connected adjacent its upper extremity with said structure; pivotal coupling means operably coupled with said member intermediate the upper and lower extremities of the latter and shiftably mounting the member on the frame; and apparatus mounted on and carried by said member adjacent the lower extremity of the latter for movement therewith in a lateral direction opposite to said structure, said apparatus extending below said stacks for supportingly engaging articles as same are released singly from said stacks upon movement of said structure, said apparatus being moved to release an article previously engaged thereby upon each shifting of said structure from one to the other of said positions.

2. In a vending machine as set forth in claim 1, wherein said coupling means comprises parts including an elongated slot and a pin of circular section extending therethrough, one of said parts being on the frame and the other of said parts being on the member.

3. In a vending machine as set forth in claim 2, wherein said drive means includes a rotatable, compound screw, and a follower block on the screw and pivotally connected with said member adjacent the upper extremity of the latter.

4. In a vending machine as set forth in claim 3, wherein said structure includes a rotatable, horizontally extending, article engaging roller.

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