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VENDING MACHINE PULL ROD EJECTOR MECHANISM

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Application April 17, 1957, Serial No. 653,478

9 Claims. (Cl. 74-565)

This invention relates to vending machines, and more particularly to manually operated vending machines of the stacked-article magazine type.

Among the several objects of the invention may be noted the provision of means for preventing relatively fast operation of a manually operated vending machine by a purchaser so as to insure sufficient time for operation of such adjuncts of the machine as the coin mechanism of the machine, or auxiliary shift magazines of the machine, which means, while being of simple and economical construction, is reliable in operation and which has no tendency to impede normal relatively slow operation of the machine. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

Fig. 1 is a plan view with parts in section showing a portion of a vending machine provided with means of this invention, and showing a pull-out rod of the machine in its rearward retracted position;

Fig. 2 is a view in elevation of Fig. 1; and

Figs. 3 and 4 are views similar to Fig. 2 showing moved positions of parts.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

The present invention is particularly useful in cigarette vending machines such as are shown, for example, in the copending coassigned applications of Clements A. Ridings et al., Serial No. 501,532, filed April 15, 1955, and Serial No. 530,333, filed August 24, 1955, now Patent No. 2,823,782 and Alvin W. Holstein et al., Serial No. 631,247, filed December 28, 1956. Each of these machines has a row of magazines each adapted to hold a stack of cigarette packages, and a row of pull-out rods, one for each magazine. On pulling out any rod in the row, a draw bar is pulled forward, and on return of the pull-out rod the draw bar returns rearward. Each pull-out rod has an ejector head at its rearward end on which rests the respective stack. When a rod is pulled out, the respective stack drops down onto a shelf, and on return of the rod the head at the inner end of the rod pushes the lowermost article of the dropped stack off the shelf.

Referring to the drawings herein, there is indicated at 1 the left side wall of a vending machine of the type described above, and at M the one magazine of such a machine adjacent the left side wall. The magazine contains a stack of packages P. At 7 is indicated a horizontal plate or shelf, on which is slidable a draw bar 13. Extending rearward from the left end of the draw bar is a horizontal arm 15. At R is indicated the pull-out rod for the one magazine shown. This has a knob 31 on its outer end and a head 33 on its inner end. When the rod is in the rearward retracted position shown in Figs. 1 and

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2, the stack of packages P bears on the head. When the rod is pulled out, the head moves forward and out from under the stack, and the stack drops down onto the plate or shelf 7 (see Fig. 3). On return of the rod to retracted position, the bottom package of the dropped stack is pushed rearward off the plate or shelf 7 (see Fig. 4). The described parts carry the same reference characters as the corresponding parts in copending application Serial No. 501,532, and reference may be made to this and the other copending applications for full details. An auxiliary shift magazine arrangement is indicated at AM. This may correspond to that shown in copending application Serial No. 631,247, for example.

In accordance with this invention, there is provided means indicated generally at 41 for preventing relatively fast operation of any of the pull-out rods of a machine such as above described. This means comprises a detent 43 pivoted at 45 on the inside of the left side wall for swinging movement on a horizontal axis transverse to the machine. The detent is located between the left side wall 1 and the draw bar side arm 15. It tends to swing down (counterclockwise as viewed in Figs. 2-4) under its gravity bias. A pin 47 extends outward from the arm 15 under the detent 43. The detent normally occupies the retracted position shown in Fig. 2 determined by engagement of its lower edge with the pin 47. In this position, the detent extends generally horizontally forward from the pivot 45. As shown, the detent consists of a flat bar bent to have an offset at 49, and it is arranged to have the portion 51 thereof rearward of the offset engaged against the inside of the side wall 1 and the portion 53 thereof forward of the offset spaced inward from the side wall and adjacent the outside of the arm 15.

The lower forward corner of the detent 43 is cut away so that the detent has an angled edge portion 55 adjacent its forward end which is inclined upward and forward from the bottom edge of the detent, and a narrow nose portion 57 at its forward end having a generally horizontal bottom edge 59 which extends forward from the upper end of the angled edge portion 55. A second pin 61 extends outward from the draw bar side arm 15 at a point forward of and above the first pin 47. The location of pin 61 is such that it lies above and clear of the detent 43 when the detent is in its normal position bearing on pin 47.

When the rod R is pulled out from its retracted position of Fig. 2 to its fully extended position of Fig. 3, the draw bar 13 and its side arm 15 move forward; and the pins 47 and 61 move forward with the arm 15 from the position shown in Fig. 2 to the position shown in Fig. 3 wherein the pin 47 is under the nose 57 of the detent, and the pin 61 is forward of the detent. The detent swings down to some degree from its normal Fig. 2 position. If the rod is pushed back in relatively slowly, the pin 47 gently and relatively slowly swings the detent back to its normal position in which it is shown in dotted lines in Fig. 4. Since the pin 61 is above and clear of the detent in this position, the return of the rod to retracted position is unimpeded. However, if the rod R is pushed back in relatively fast, with consequent fast rearward movement of pin 47, the pin 47 acting as a driver imparts momentum to the detent to cause it to fly up to a position such as shown in dot-dash lines in Fig. 4 wherein its nose 57 lies in the path of the pin 61. Rearward movement of the rod R is thereupon immediately stopped by engagement of pin 61 (which acts as a stop) with the nose of the detent, thereby preventing fast return of the rod R. In order to complete the return of the rod R, if it has been stopped by the detent, the rod is pulled out slightly to release the detent, permitting the detent to drop to the normal position illustrated in dotted lines in Fig. 4.

The draw bar side arm 15 constitutes a member movable by a purchaser and the side wall 1 constitutes a fixed member. While the detent 43 is shown as pivoted on the side wall (the fixed member) and the driving pin 47 and the stop pin 61 on the arm 15 (the movable member), it will be understood that it is within the scope of the invention to reverse this relationship, i. e., mount the detent on the movable member and the driver and stop on the fixed member. Also, while as herein shown, the checking action occurs at the beginning of the return stroke of a rod R, it will be understood that the arrangement may be such as to check at some other point in the movement of rod R, as, for example, near the end of its forward stroke. In this respect, it will be understood that machines of the type to which this invention is applied usually have a ratchet and pawl arrangement (such as indicated at 89 and 91 in copending application Serial No. 501,532, for example) for enforcing full-stroke operation of any pull-out rod once it has been pulled out far enough for engagement of the ratchet with the pawl. The check means of this invention must be such as to act to stop a pull-out rod when the ratchet is out of engagement with the pawl (for example, at the beginning of the return stroke of the pull-out rod as herein shown). Otherwise, it would not be possible for a purchaser to pull out the rod to release the detent on lockup by the detent.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. In a vending machine having a member movable by a purchaser and a fixed member, means for checking the movement of the movable member to prevent relatively fast movement thereof by a purchaser, said means comprising a detent pivoted on one of said members, a first pin extending from the other member under the detent, the detent normally occupying a retracted position engaging the first pin, a second pin extending from said other member at a point spaced from and above the first pin, the second pin being located above and clear of the detent when the detent is in its retracted position, said detent having an angled edge portion toward one end engageable by the first pin when the movable member is operated by a purchaser.

2. In a vending machine of the type having a side wall, a purchaser-controlled draw bar movable transversely with respect to its own length in forward and rearward direction with respect to the machine, and an arm extending rearward from the draw bar adjacent the side wall, means for checking the movement of the draw bar to prevent relatively fast movement thereof by a purchaser, said means comprising a detent pivoted on the inside of the side wall for swinging movement on a horizontal axis transverse to the machine, said detent being located between the side wall and said arm and extending forward from its pivot, a first pin extending from said arm under the detent, the detent normally occupying a retracted position engaging the first pin and extending generally horizontally forward, a second pin extending from said arm at a point forward of and above the first pin, said second pin being located above and clear of the detent when the detent is in its retracted position, said detent having an angled edge portion toward its forward end engageable by the first pin when the draw bar is moved forward.

3. In a vending machine of the type having a reciprocable pull-out rod adapted to be pulled forward by a purchaser from a rearward retracted position and then returned to retracted position for ejecting an item to be vended, said machine further having a member movable

forward and rearward by said rod and a fixed member adjacent said movable member, means for checking the movement of said movable member and thereby checking the movement of the pull-out rod if moved relatively fast comprising a detent movably mounted on one of said members, means on the other member engageable with the detent for moving the detent relatively slowly upon relatively slow movement of the movable member thereby to move the detent only a limited amount, and for moving the detent relatively fast upon relatively fast movement of the movable member thereby to impart momentum to the detent to cause the detent to move a greater amount, said detent and said detent-moving means being so located relative to one another that engagement of said detent-moving means with said detent for moving the latter occurs only when said movable member is adjacent its most forward position, and means on said other member engageable with the detent when moved said greater amount to stop the movable member.

4. In a vending machine as set forth in claim 3, said detent being biased toward a retracted position and said detent-moving means additionally acting as means engageable by the detent for determining its retracted position.

5. In a vending machine as set forth in claim 4, said detent being pivotally mounted and being gravity-biased toward its retracted position.

6. In a vending machine of the type having a reciprocable pull-out rod adapted to be pulled forward by a purchaser from a rearward retracted position and then returned to retracted position for ejecting an item to be vended, said machine further having a member movable forward and rearward by said rod and a fixed member adjacent said movable member, means for checking the movement of said movable member and thereby checking the movement of the pull-out rod if moved relatively fast comprising a detent movably mounted on one of said members, and a driver and a stop on the other member, the detent normally occupying a retracted position clear of the stop and having a portion engageable by the driver on movement of the movable member in one direction for moving the detent, relatively slow engagement of the driver and said portion of the detent acting to move the detent relatively slowly only such a limited distance that it remains clear of the stop, relatively fast engagement of the driver and said portion of the detent acting to impart momentum to the detent to move the detent a greater distance such as to bring it into position for engagement with the stop, and said detent and said driver being so located relative to one another that engagement of the driver with said detent for moving the latter occurs only when said movable member is adjacent its most forward position.

7. In a vending machine as set forth in claim 6, said detent being biased toward its said retracted position and said driver additionally acting as means engageable by the detent for determining its retracted position.

8. In a vending machine as set forth in claim 7, said detent being pivotally mounted and being gravity-biased toward its retracted position.

9. In a vending machine of the type having a reciprocable pull-out rod adapted to be pulled forward by a purchaser from a rearward retracted position and then returned to retracted position for ejecting items to be vended, said machine further having a member movable forward and rearward by said rod and a fixed member adjacent said movable member, means for checking the movement of said movable member and thereby checking the movement of the pull-out rod if moved relatively fast comprising a detent movably mounted on one of said members, and stop means on the other of said members engageable with the detent for stopping the movable member, said detent normally occupying a position clear of said stop means and having momentum imparted thereto upon relatively fast movement of said movable member

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to cause it to move into position for engagement with the stop means, said detent and said stop means being so located relative to one another that engagement thereof occurs only when said movable member is adjacent its most forward position.

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