June 11, 1940. L. STEINER 2,203,847

DISPENSING MECHANISM FOR VENDING MACHINES

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FIG. 1

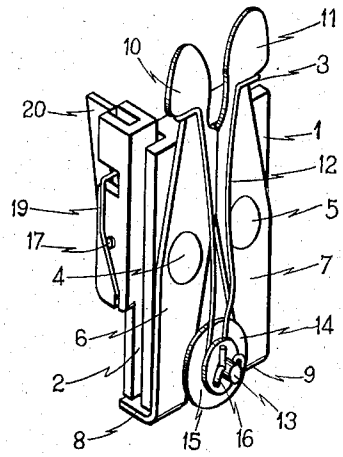


FIG. 2

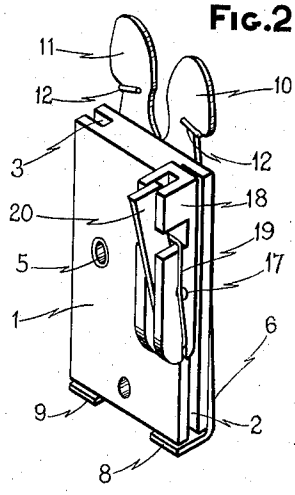
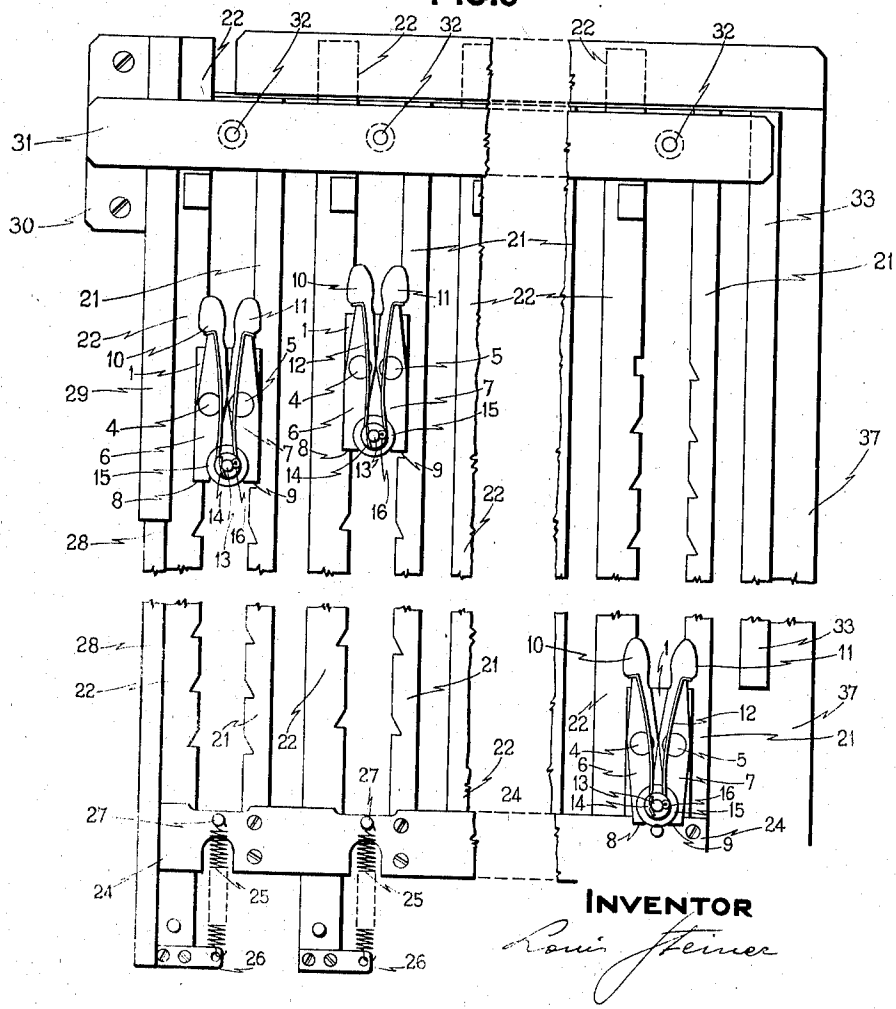


FIG. 3



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FIG. 4

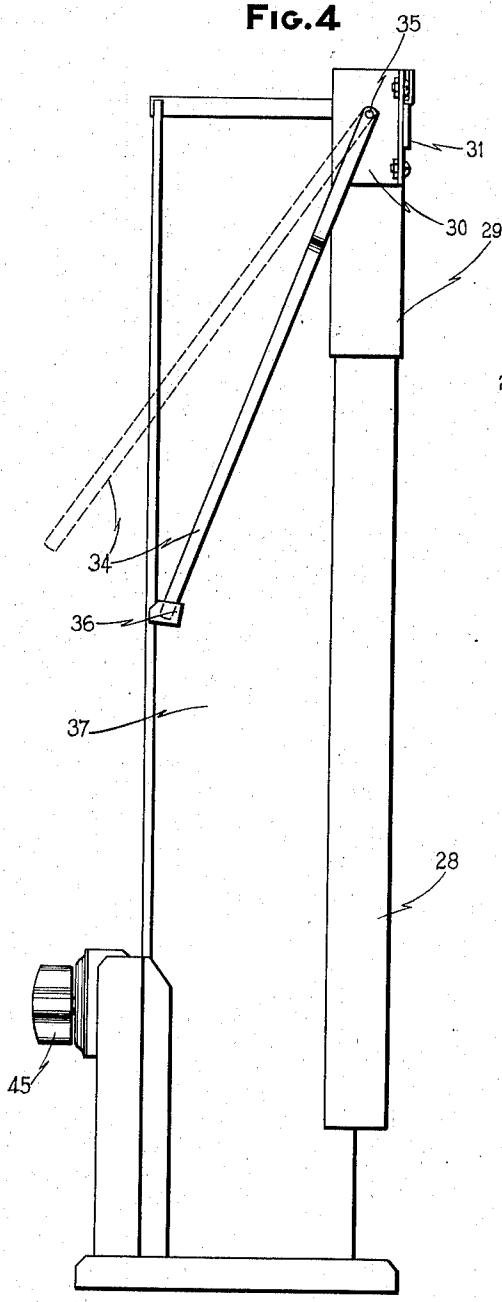


FIG. 5

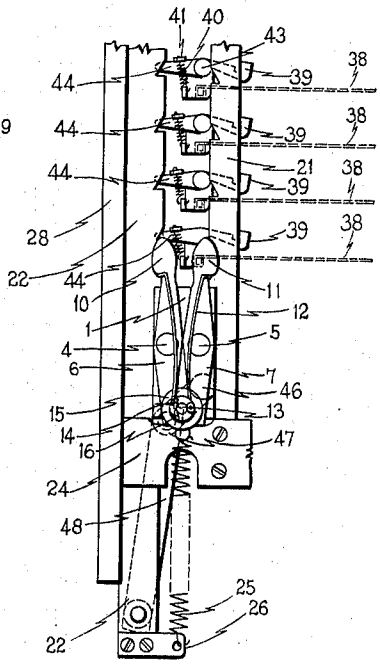
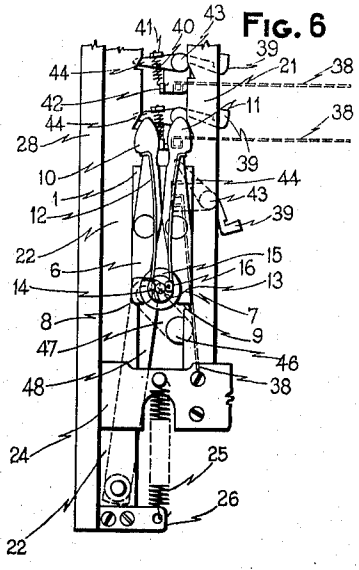


FIG. 6



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FIG. 7

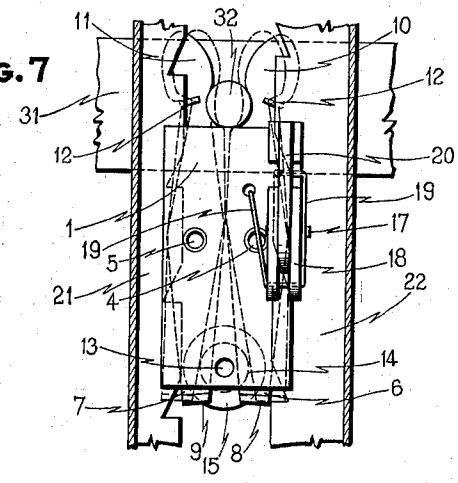
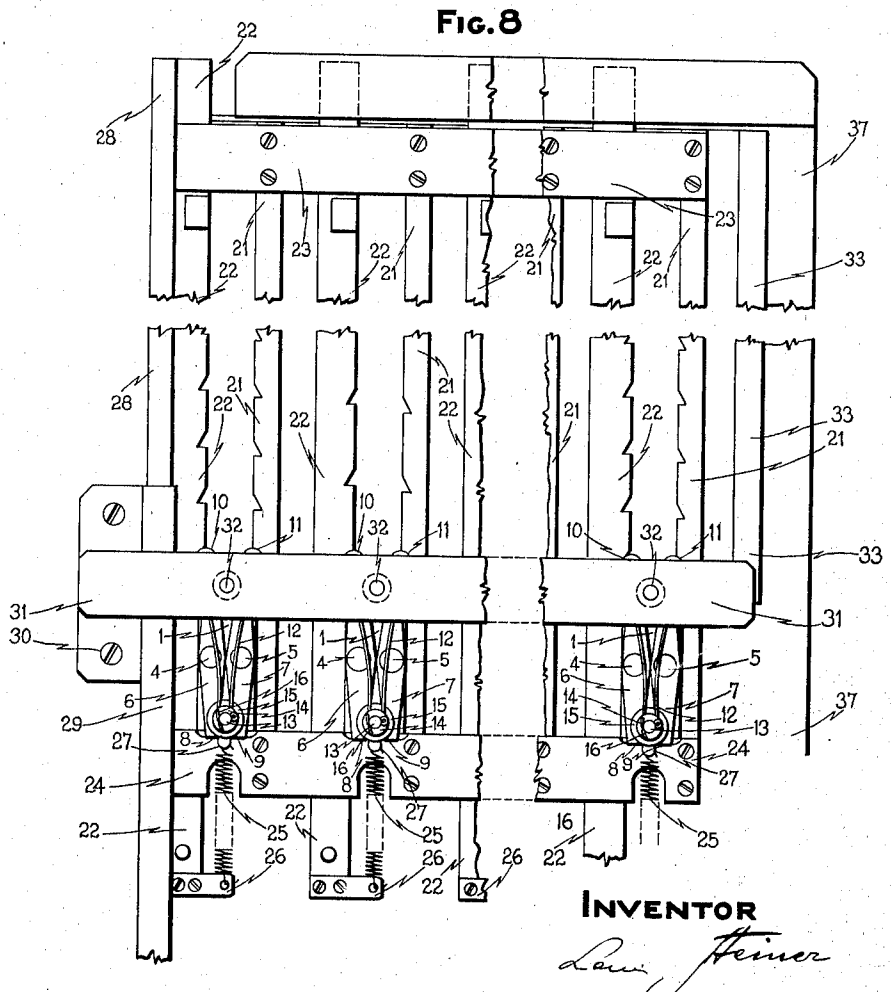


FIG. 8



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Patented June 11, 1940 2,203,847

UNITED STATES PATENT OFFICE

2,203,847

DISPENSING MECHANISM FOR VENDING MACHINES

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Application October 29, 1938, Serial No. 237,618

7 Claims. (Cl. 74—111)

The invention relates generally to vending machinery, and specially to dispensing mechanisms for such machinery. The object of the invention is to provide a new, simple, inexpensive, and reliable mechanism for successively tripping, from bottom to top, a series of article-supporting shelves such as that carried within the magazine structure of certain types of vending machines, and to provide means for readily resetting such mechanism for repetitive operation.

The mechanism of the present invention provides more economical and efficient, and more easily reset, means for successively tripping vertically disposed merchandise shelves in such check controlled machinery as vendors of small bars of candy and of other small packaged articles which may be handled similarly.

In the drawings:

Fig. 1 is an enlarged rear rectilinear perspective view of the traveler element employed in the present invention for successively tripping merchandise supporting shelves.

Fig. 2 is another enlarged rectilinear perspective view from the front of the same element.

Fig. 3 is a somewhat reduced elevational view of the rear of a typical dispensing machine showing typical means for guiding and advancing the shelf-tripping elements; and showing also mechanism provided for resetting these elements, said mechanism being in a normal or inoperative position.

Fig. 4 is a left side elevation of a typical dispensing machine showing means for handling and guiding the mechanism provided for resetting the shelf-tripping elements.

Fig. 5 is a rear elevational detail illustrating the operation of advancing a shelf-tripping element—the advancing mechanism being that one shown to the left in Fig. 3, the advancing mechanism being shown in its extreme operating position. In this figure the shelf-tripping element is shown not to have been advanced from the bottommost or starting position, the shelf to be tripped first being the bottommost of the related series.

Fig. 6 is a view of the same detail after a single shelf-tripping operation is complete, showing the shelf-tripping element advanced one step, and the bottommost shelf of the related series tripped, and the movable parts of the advancing mechanism in normal or inoperative position.

Fig. 7 is an enlarged front elevational view showing in detail the operation of the resetting mechanism in disengaging the legs of a shelf-tripping element from advanced notches of the guides of the advancing mechanism, preparatory to the operation of resetting that element to initial or starting position. This view is seen from the inside of the advancing mechanism looking rearwardly.

Fig. 8 is an elevational view from the same angle as Fig. 3, showing all shelf-tripping elements brought to the initial or starting position simultaneously by the resetting mechanism.

The present invention is intended for use with a type of vending machine within the magazine structure of which are ordinarily several independent vertically disposed series of light merchandise-supporting shelves, the shelves of the several series being arranged to be successively tripped from bottom to top. In such apparatus a variety of types of traveling shelf-tripping elements and resetting mechanisms for such elements have been suggested in the art; however, such elements, and particularly related resetting mechanisms, have been somewhat complex. The present invention is concerned mainly with an improved traveling shelf-tripping element and means for resetting one or more of such elements simultaneously and with great simplicity in dispensing mechanism of the class referred to without respect to the state of advance of any one such element relating to any one series of shelves.

The improved element is intended for use with guiding and advancing means of the type in which the element is guided vertically on two rails, both of which rails are notched with space relation to the latches of a series of shelves one of which rails is fixed to the magazine structure, the other being arranged to be reciprocated so that operation of the movable rail serves to advance the traveling shelf-tripping element one notch on the fixed rail.

With reference now to the drawings, Figs. 1 and 2 show in detail a somewhat enlarged traveling shelf-tripping element. The base of the element is a block 1, provided with vertical guide grooves 2 and 3 on the sides, and arranged to receive slidably the guiding rails of the related advancing mechanism. Pivoted at 4 and 5 on the rear surface of the block 1 are two legs 6 and 7, the legs being provided with pedal lugs 8 and 9 respectively, the lugs extending forwardly beneath the block 1, as shown. At the upper part of the element the legs 6 and 7 terminate in cams 10 and 11 respectively. A spring 12, arranged as shown in Fig. 1 engaging the necks of the cams 10 and 11 and a stud 13 protruding from the bottom rear of the block 1, and being held in place on the stud between two retaining

washers 14 and 15—the assembly being locked in position by a cotter key 16—normally tends to separate the pedal lugs 8 and 9. Pivoted at 17 within a slotted support 18 made integral with the front upper corner of the block 1, and normally held somewhat extended therefrom as shown in Figs. 1 and 2 by a control spring 19, is a dog 20, employed for successive tripping of the shelf latches of the related magazine as the element is advanced.

In Fig. 3 which shows an elevation part of the shelf-tripping mechanism for three magazines of a dispensing mechanism assumed to have a number of independently operable magazines provided with shelves to be successively tripped, a typical illustration is had of the independent states of advance of the several shelf-tripping elements—as where, for example, a different number of purchase operations has been had by each of the different magazines. The two shelf-tripping elements to the left, in the figure, are shown to have been advanced nearly all the way to the upper part of the magazine structure; the shelf-tripping element to the right is shown not to have been advanced from its initial or starting position. In this figure neither the latches of the several series of shelves nor the relative positions of the shelves themselves are indicated.

Of the three similar advancing mechanisms 21 is the fixed guide rail and rack provided, as shown in Figs. 5 and 6 with notches having spaced relation to the related series of shelf latches, the notches being arranged to be engaged by the pedal lug 9 of the related shelf-tripping element and to prevent retrograde movement of the element during the normal step by step advance of the element in a series of repetitive purchase operations had from the related magazine. 22, also provided with a corresponding series of notches, similarly arranged, is the guiding rail arranged to be reciprocated, this rail being slidably mounted in two transverse supporting members 23 (shown only in Fig. 8) and 24, and being normally held in the position shown in Fig. 3 by a return spring 25, the spring engaging an eyelet in a lug 26 fixed to the bottom of the rail 22 and to a fixed stud 27 on the transverse member 24. On the magazine structure is a rail 28 arranged to serve as a guide for a sleeve 29 which carries from a bracket 30 a transverse bar 31 provided with a number of inwardly directed cylindrical studs 32, there being one such stud positioned centrally with respect to each independent mechanism for advancing a shelf-tripping element, as shown in Figs. 3, 7, and 8. On the opposite side of the magazine structure is another rail 33 arranged to serve as a guide for the extended end of the bar 31, that end being grooved to slide on rail 33.

In Fig. 4, which is a left side elevation of a typical dispensing (vending) machine, 34 is a handle pivoted at 35 on the bracket 30 and normally held, when inoperative, in a socket 36 fixed to the side of the magazine structure 37. The normal arrangement shown in solid lines in Fig. 4 effectively supports the sleeve 29 and its related parts against gravity in the position shown in Figs. 3 and 4.

When the dispensing machine is set on location to vend articles of merchandise the initial position of each shelf-tripping element is at the bottom of its advancing mechanism. The operation of advancing the element and of tripping shelves is illustrated in Figs. 5 and 6. It is assumed that any magazine contains a vertical series of pivotally mounted shelves 38, each shelf being provided on the rear of the magazine structure 37 with a spring controlled latch 39, the latch normally engaging a notch (not shown) provided in, say, guide rail 21. With respect to each such latch 39, 40 is a control spring engaging lugs 41 and 42, as shown, 43 being the pivot of the latch and 44 an extension thereby engaged by the dog 20 so that the latch may be tripped from the retaining notch provided for normally holding the latch and its related shelf in article supporting position; and that upon rotation of a handle 45, for example as shown in Fig. 4, provided for selective operation of a magazine, a shaft 46 relating to such handle and magazine—shaft being provided with a radial extension 47 at the rear of the dispensing mechanism, such extension being connected by a link 48 with the lower extremity of a guide rail 22—the shelf-tripping element will be advanced one step as shown in Fig. 6. The successive operations are obvious. As the handle and related shaft are partially rotated—in the structure shown, clockwise—the movable guide rail 22 is brought down into the position shown in Fig. 5; in each such operation the shelf-tripping element is prevented from retrogressing either because the element is at starting position and is therefore engaging the transverse member 24, as shown in Fig. 5, or because the pedal lug 9 of the element is engaging a notch in rail 21 (cf. Fig. 3). The downward throw of rail 22 brings, in any such operation, the next most advanced notch in that rail beneath the pedal lug 8 of the shelf-tripping element; the return to normal position of rail 22 raises the element on rail 21 a distance equivalent substantially to the distance of reciprocation of rail 22, permitting pedal lug 9 of the element to engage the next most advanced notch of rail 21 as shown in Fig. 6. The engagement between dog 20 and the extension 44 of the latch next above withdraws that latch from its retaining notch and permits the related shelf to collapse. The relative positions of the shelves, within the magazine structure, are shown in dotted lines in Figs. 5 and 6. In Fig. 6 the bottommost shelf 38 is shown in its tripped position, the shelf-tripping element, in that figure, being shown in position to trip upon the next purchase operation the shelf next above.

When it is desired to resist the shelf-tripping elements of the dispensing machine this may be readily done from the front of the machine by lifting the handle 34 out of the socket 36, as indicated in dotted lines in Fig. 4, and by permitting the sleeve 29 and its related parts to trip downward on rails 28 and 33. When any stud 32 engages the cams 10 and 11 of any shelf-tripping element, the cams are separated as shown in Fig. 7 and the pedal lugs 8 and 9 are thereby withdrawn from the notches of the guide rails 21 and 22, the downward motion of the sleeve 29 then being unimpeded. It is obvious that it is immaterial how many purchase operations have been had by any one magazine. As the sleeve 29 and the bar 31 are carried downward the shelf-tripping elements are disengaged from the guide rails as and when the related studs 32 engage the cams 10 and 11 of such elements. Fig. 8 shows the sleeve 29 and the bar 31 having been brought to the bottom of the magazine structure and having reset all the shelf-tripping elements.

Having described my invention, what I claim is:

1. In apparatus of the class described, a travel-

ing element of the type arranged to be advanced step by step and to be slidably guided on notched rails, said element having pivoted members the lower ends of which are normally maintained distended under tension and arranged to engage the notches of said rails to prevent retrograde movement of said element, the upper ends of said members being normally closely approximated to each other and arranged to be wedged apart to effect disengagement of said lower ends from said notches; and manually controlled means provided with an element arranged to engage and to wedge apart the upper ends of said members, said means being slidably carried on said apparatus and arranged to be reciprocated for resetting said first named element at initial position on said rails.

2. In apparatus of the class described, a magazine structure having a notched guide mounted thereon; a traveling member slidably mounted on said guide, said member being provided with pivoted elements normally disposed under tension so as to engage an adjacent notch in said guide to prevent movement of said member in a certain direction; and means mounted on said structure arranged to reciprocate a cam with spaced relation and parallel to said guide, said cam being arranged so that engagement thereof with said pivoted means disengages said means from any such notch and prevents said means from engaging any other such notch so that said traveling member may be moved in said certain direction.

3. In a vending machine of the class described, means for resetting to initial position a traveling shelf tripping member slidably mounted on a vertically disposed notched guide, said member having means thereon normally arranged to prevent retrograde movement of said member by engaging a notch of said guide, said means for resetting including a member slidably mounted on a vertically disposed guide having spaced relation to said notched guide and having fixed on said last named member an element arranged to engage said second named means and to render inoperative said second named means upon such engagement.

4. In a vending machine of the class described, a traveling shelf tripping member slidably mounted on a vertically disposed notched guide, said member having means carried thereon normally arranged to engage a notch in said guide to prevent movement of said member in a certain direction on said guide, and manually controlled means including a member slidably carried on a guide having spaced relation to and parallel to said notched guide, said last named member arranged to engage and to render inoperative said first named means so that said member may be moved in said certain direction.

5. In a vending machine of the class described, a traveling shelf tripping member slidably mounted on a vertically disposed notched guide, said member having means thereon arranged normally to engage under tension a notch in said guide to prevent movement of said member in a certain direction; and manually controlled means slidably mounted on a guide parallel to the first mentioned guide for engaging said first mentioned means and for disengaging said means from a notch in the first mentioned guide so that said member may be moved in said certain direction.

6. In apparatus of the class described, a traveling latch tripping member consisting in a body having grooved sides arranged to engage slidably two opposing notched guides, and having pivotally mounted on said body two levers substantially mirror images of each other, the pivots thereof being positioned side by side with respect to each other and substantially distant from either end of their related levers, each of said levers having a cam formed at the top so that a member forced between the cams causes the lower ends of said levers to approximate each other, the lower end of each lever being arranged to engage a notch in one of said guides when said cams are approximated to each other; a spring arranged normally to hold said cams in close approximation; and means carried on said body arranged to trip latches.

7. In a traveling member of the class described, a pair of notch-engaging dogs pivotally mounted on said member, the pivots of said dogs being positioned substantially distant from either end of the related dog so that separation of the ends of said dogs opposite to the notch-engaging ends thereof causes the latter ends to move toward each other for the purpose of disengaging said dogs from notches.

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