March 14, 1950 W. S. TANDLER ET AL 2,500,438

DISPENSING AND VENDING MACHINE

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FIG. 1

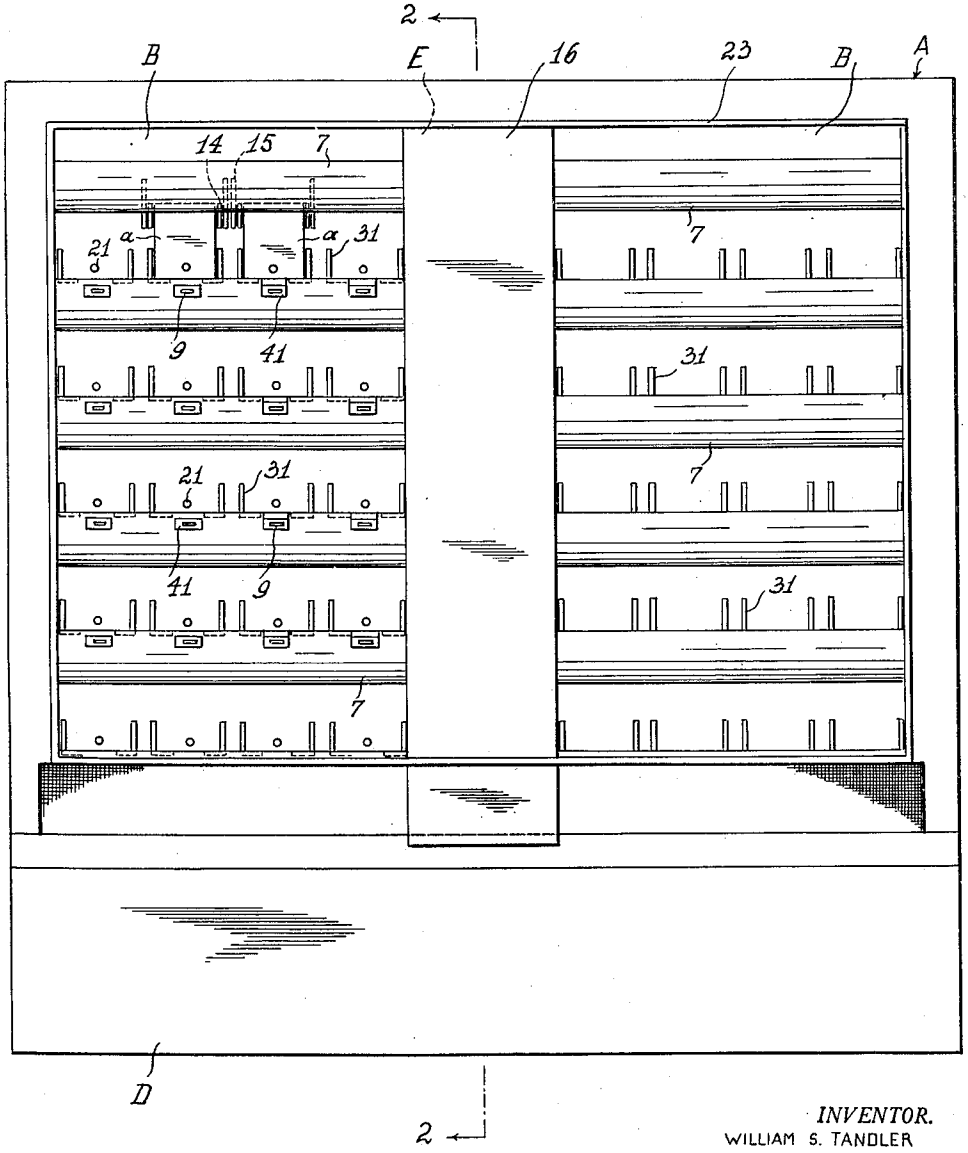

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Fig. 2

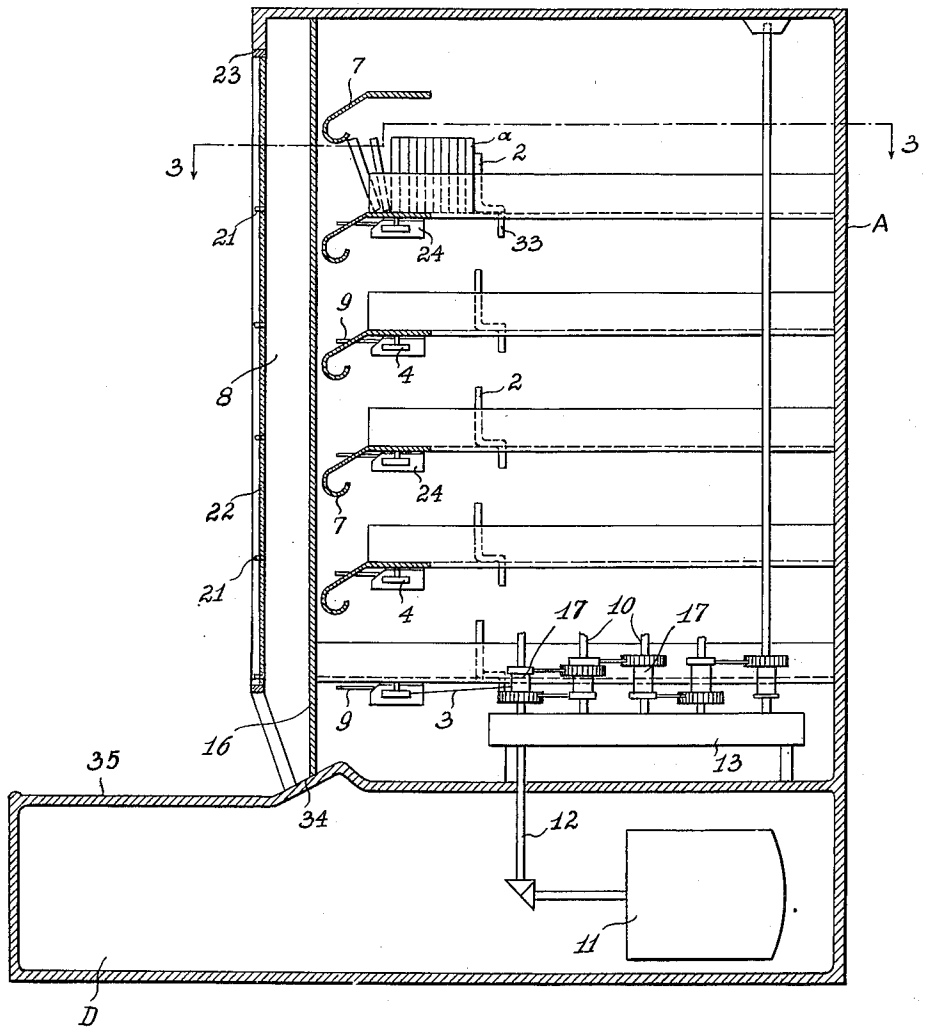

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Fig. 3

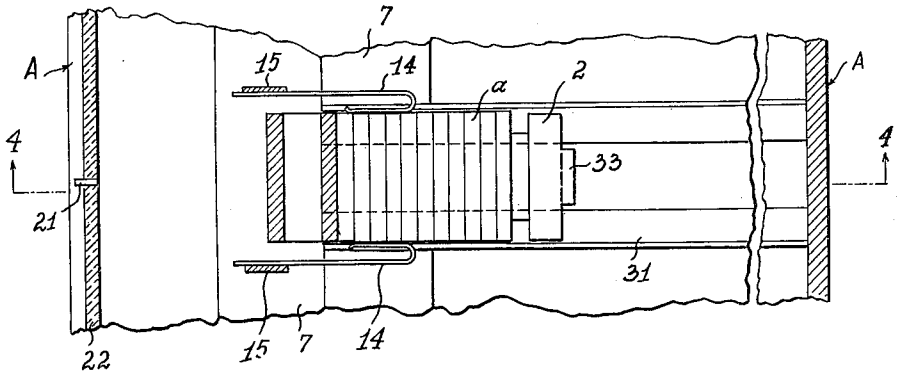
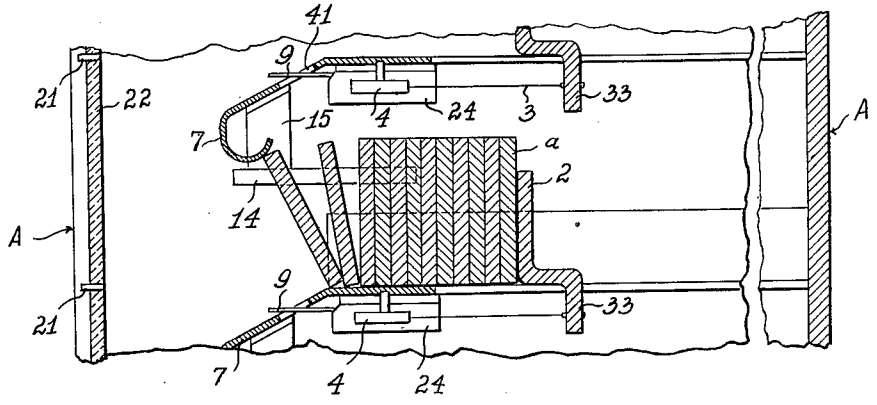


Fig. 4



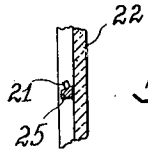


Fig. 5

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UNITED STATES PATENT OFFICE

2,500,438

DISPENSING AND VENDING MACHINE

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Application September 8, 1945, Serial No. 615,160

7 Claims. (Cl. 312—63)

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This invention relates to a device for dispensing and vending individual articles of merchandise, such as merchandise packages, books and the like.

The invention is a continuation in part of our copending prior patent application Serial No. 572,220, filed January 10, 1945.

A dispensing device is disclosed in this co-pending patent application, where the individual articles to be dispensed are supported on trays which are located within a housing in horizontal rows and in vertical banks; a pusher correlated to each tray is provided to advance the articles to a place of delivery; the pusher is actuated by electrically motivated and controlled means and is rendered inoperative when a package passes and is discharged at the front portion of the tray, whereby further advance of the articles is interrupted.

It is the object of this invention to prevent the accidental discharge of the articles and to assure proper discharge of the articles to a place of delivery.

It is a further object of the invention to afford the direct viewing and the selection of a certain desired article and to, therefore, enable the purchaser to see what he buys.

It is another object of the invention to simplify the construction of the dispenser disclosed in our co-pending U. S. patent application and to secure its reliable unobstructed operation.

Additional objects achieved by the invention will become apparent as this specification proceeds.

The invention will now be described in detail with reference to the accompanying drawings illustrating a preferred embodiment of the same which is particularly useful for the vending and dispensing of rectangularly shaped goods, for instance, books.

In the drawings,

Fig. 1 is a front elevation of the dispenser;

Fig. 2 is a vertical sectional elevation on line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional elevation on line 3—3 of Fig. 2;

Fig. 4 is a vertical sectional elevation on line 4—4 of Fig. 3 and

Fig. 5 is a further modification of a constructional detail shown in Figs. 3 and 4.

The dispenser housing is denominated in the drawings by the letter A. Its inner space is subdivided into two lateral compartments B, a central compartment E and a bottom compartment D. The two lateral compartments B accommodate the articles *a*, Figs. 2, 3, 4, which are adjacently stacked on pairs of spaced parallel angle irons 31; in this manner the compartments B are subdivided into a plurality of article carrying tracks or passages extending through the greater part of the width of housing A.

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The front ends of angle irons 31 are joined to lips 7 extending transversely of the housing A, the lips being supported in the outer housing walls in any convenient manner. The uppermost lip 7 is supported in spaced relationship to the uppermost row of pairs of angle irons 31.

The articles, *a*, rest on the smaller flanges of the spaced parallel angle irons 31 and they are held in their upright position by the larger flanges.

A pusher 2 is slidably mounted on the angle irons 31 and may be advanced to advance the articles, *a*, on the tracks formed by the flanges of the two angle irons 31.

A pulley 4 is mounted on and below each track at the underside of the front end of the same and a rope 3 runs over the pulley. One end of the rope is fastened to the lower part 33 of pusher 2 and the other end is connected to one of the sleeves 17, Fig. 2. Each pusher 2 is connected to a different corresponding sleeve 17 and is driven independently of all of the other pushers. Only one of the pusher and sleeve driving systems will be described herein, it being understood that all of the other driving systems are the same. The sleeve is a part of a driving assembly which advances the pusher 2. This assembly is operated from motor 11 through the intermediate action of shaft 12. The rotation of shaft 12 is transmitted to transmission gears of customary construction housed in gear chamber 13; shafts 10 entering gear chamber 13 from above are continuously driven by these gears; the rotation of shafts 10 is transmitted to sleeves 17 by an oscillating pawl and rotatable ratchet drive only upon the actuation of push buttons 21, which close an electric circuit which energizes a solenoid to cause the oscillating pawl to engage the ratchet and thereby rotate the sleeve 17, as described in detail in our co-pending application Serial No. 572,220. Accordingly, pusher 2 is only advanced when its correlated push button 21 is actuated.

If, therefore, the electrical circuit is closed by actuating push button 21, sleeve 17 of the selected track is rotated; the correlated rope 3 is wound upon the sleeve and advancing pusher 2 moves the articles, *a*, towards delivery chute 8. When the front article during the advance by

pusher 2 reaches the end of the supporting passage, it will have the tendency to topple over; the articles following the front article, which are now not any more held by mutual contact in the upright position may follow the first article in the tendency to topple over. To remedy this situation discharge lips 7 are provided which extend in a transverse direction through housing A. These lips are so shaped as to engage the upper end to prevent the articles, *a*, from toppling over and to maintain the same in an inclined position; Figs. 2 and 4.

To avoid the clogging of the inclined articles, which would interfere with the proper action of pusher 2, an arrangement is provided which will now be described.

A restricted number of articles located next to and behind the inclined front articles are held in the original straight upright position. This is achieved in the present embodiment of the invention by springs 14. These springs are carried by brackets 15 fastened to lips 7. The operative ends of springs 14 are bent inwardly to permit an unobstructed entrance and exit of the articles therebetween and from the same. Due to the resiliency of springs 14 the articles approaching the discharge end of the passages are kept in vertical position, only those front articles which are released from the grip of the springs by the pusher, being permitted to assume the inclined position shown in Figs. 2 and 4. They are, however, prevented by lip 7 from toppling off the end of the support. The article thereby remains on the support in an inclined position until the pusher advances the lower edge of the article a sufficient distance to slide it off the end of the support whereupon the article drops by gravity and is discharged.

Thus the discharged articles slide over lip 7 into discharge chute 8 avoiding clogging. They fall freely into inclined delivery chute 34 and arrive finally on platform 35 from where they may be picked up by the purchaser.

A device for stopping the advance of the pusher consisting of a normally closed switch 24 is fastened to the forward end of each track, as also described in our co-pending application Serial No. 527,220. The switch is in a customary manner provided with a resilient contact tongue 9 projecting through an opening 41 of lip 7, Figs. 1, 4.

A package pushed from the platform strikes against the resilient tongue 9. The latter opens the switch which will interrupt the circuit closed by the actuation of a push button and stop further advance of the pusher in a manner described in detail in our co-pending application Serial No. 572,220. After the package has been discharged from the track, tongue 9 returns to its former position and the switch is closed.

In the present exemplification of the invention forty passages or tracks are provided in housing A. Each chamber B contains twenty pairs of tracks, while center compartment E accommodates the pusher driving assemblies correlated to the individual passages. The driving assemblies arranged in compartment E are hidden from direct sight by front wall 16. The passages are in the same manner as the trays of our co-pending application arranged in horizontal rows and in vertically superposed banks.

Another important feature of the invention consists in the construction of the front wall of housing A.

As previously stated the merchandise or articles to be sold are displayed in the instant vending machine on a plurality of tracks arranged in horizontal rows and vertical banks.

It is of decisive importance in such an arrangement that the merchandise is visibly displayed so that each article can be seen individually and selected accordingly. For this purpose a window 22 is provided which has a frame 23, the latter being removably inserted in the front wall of housing A.

Push buttons 21 mounted in the window pane are in correlation with the individual tracks. Thus, if a push button placed in front of a certain article is pressed, the pusher of this same track is actuated and will move the merchandise forward, as described above, so that it drops out into chute 8.

The coordination of each push button in front of the merchandise which is clearly visible to the customer is of the greatest importance. Visibility in selling, sales identification of the merchandise without inscription, are decisive advantages.

Another modification of the merchandise selecting arrangement is shown in Fig. 5; in conformity therewith transverse struts 25 are arranged in front of the glass pane 22; the push buttons 21 are mounted on these struts. If desired, the window pane 22 may be subdivided in sections in conformity with the number of the horizontal rows of tracks and the struts may then be used to support the window sections.

As many changes could be made in the above construction of a vending machine and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and without limitation of the invention.

We claim:

1. A dispensing device comprising a first support for a plurality of aligned articles supported in erect position thereon, means for advancing said articles along said support for discharge at one end thereof, a second support spaced vertically above said first support, means for advancing articles along said second support for discharge at one end thereof, an inclined lip projecting from said one end of said second support above and in spaced relation to said one end of said first support, said lip extending outwardly beyond the said one ends of said supports and being engageable with the upper edge of the leading article as it falls off said one end of said first support to retain it frictionally in outwardly inclined relation to said support, said means for advancing said article being movable to displace the lower edge of said leading article from said support while said article engages said lip, and means extending outwardly from said lip in the path of discharge of an article from said second support for stopping said advancing means thereon upon discharge of an article from said second support.

2. The dispensing device set forth in claim 1, in which said lip includes a downwardly and outwardly inclined portion and a reversely curled portion engageable with the upper edge of the article.

3. A dispensing device comprising a support for a plurality of aligned articles supported in erect position thereon, means for advancing said articles along said support for discharge at one end thereof, an inclined lip above and in spaced

relation to said one end of said support, said lip extending outwardly beyond said one end of said support and being engageable with the upper edge of the leading article as it falls off said one end of said support to retain it frictionally in outwardly inclined relation to said support, said means for advancing said article being movable to displace the lower edge of said leading article from said support while said article engages said lip, and a pair of spring members on opposite sides of said support frictionally engageable with another article behind said leading article, when the latter is inclined to the support, to retain said another article in erect position.

4. A dispensing device comprising a support for a plurality of aligned articles supported in erect position thereon, means for advancing said articles along said support for discharge at one end thereof, an inclined lip above and in spaced relation to said one end of said support, said lip extending outwardly beyond said one end of said support and being engageable with the upper edge of the leading article as it falls off said one end of said support to retain it frictionally in outwardly inclined relation to said support, said means for advancing said article being movable to displace the lower edge of said leading article from said support while said article engages said lip, and a pair of spring members at opposite sides of said support inwardly of said one end of said support, said spring members each having a portion extending away from said one end substantially parallel to the sides of said support, and having inwardly bent and forwardly extending end portions engageable with the sides of articles behind said leading article.

5. A dispensing and vending machine for individual articles of merchandise comprising in a housing a plurality of alined article supporting trays located in adjacent relation in horizontal rows and in spaced superposed relation in vertical banks, a pusher movably mounted on each tray to advance the articles on the same and discharge them in succession at one end of said tray, means to advance the pusher, means adjacent to said one end of each tray in the path of an article discharged at said one end of each tray to interrupt the advance movement of the pusher, means above each tray for preventing the front article on said tray from falling over beyond an inclined position relative to said tray, and means adjacent the sides of said tray for frictionally engaging at least one article adjacent to said front article for holding said adjacent article in an upright position.

6. A dispensing and vending machine comprising in a housing a plurality of alined article supporting trays located in adjacent relation in horizontal rows and in spaced superposed relation in vertical banks, a pusher mounted on each tray to advance the articles along the same to discharge them successively at one end of each tray, means to advance the pusher, means actuated by discharge of an article at said one end of each tray to interrupt the advance movement of the pusher, a discharge lip connected with the front end of each tray in a horizontal row, said lip being inclined downwardly to engage at least one front article in the next lower horizontal row and prevent it from toppling over and to maintain the same in an inclined position and means at the sides of said one tray to engage frictionally the edges of at least one article adjacent to the said front article to retain it in erect position.

7. A dispensing and vending machine comprising in a housing a plurality of article supports located in adjacent relation in horizontal rows and in spaced superposed relation in vertical banks, a pusher movably mounted on each support to advance the articles on the same and over its front portion to a place of delivery, means to move the pusher, means actuated by the article passing the front portion of each support to interrupt the movement of the pusher, a discharge lip connected with the front end of the supports in one horizontal row, said lip being inclined downwardly to engage at least one front article in the next lower horizontal row and prevent it from toppling over, and springs at opposite sides of said supports frictionally engageable with at least one article behind the said front article to retain said one article upright.

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