Nov. 5, 1929. W. H. AVERILL 1,734,191

COIN CONTROLLED MECHANISM FOR VENDIND MACHINES

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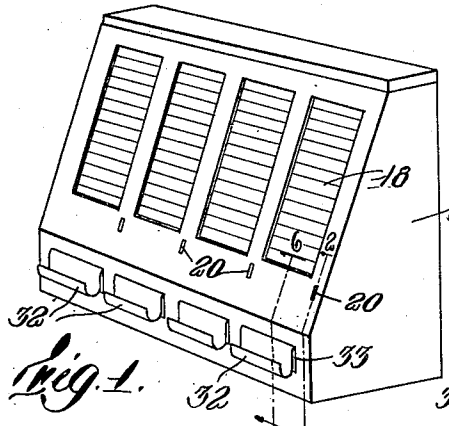


Fig. 1.

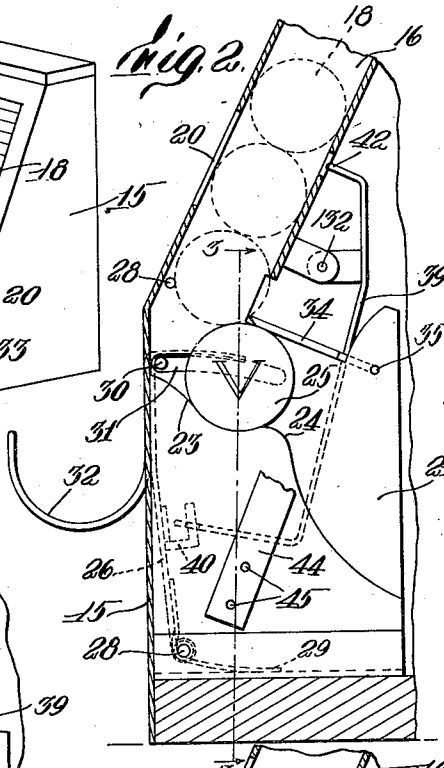


Fig. 2.

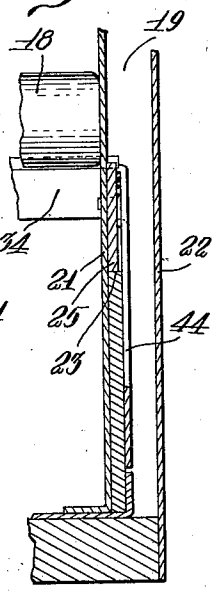


Fig. 3.

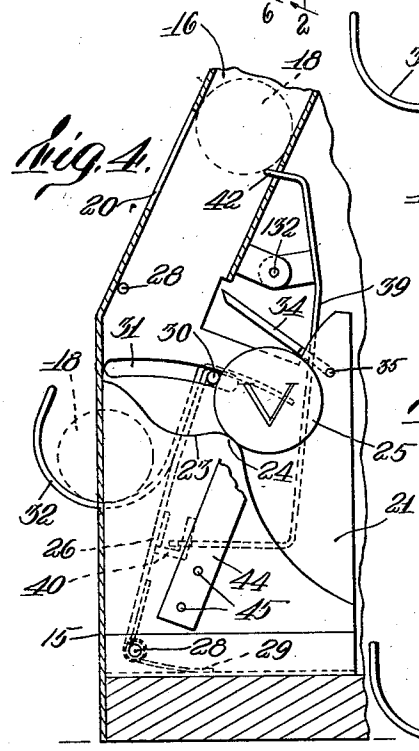


Fig. 4.

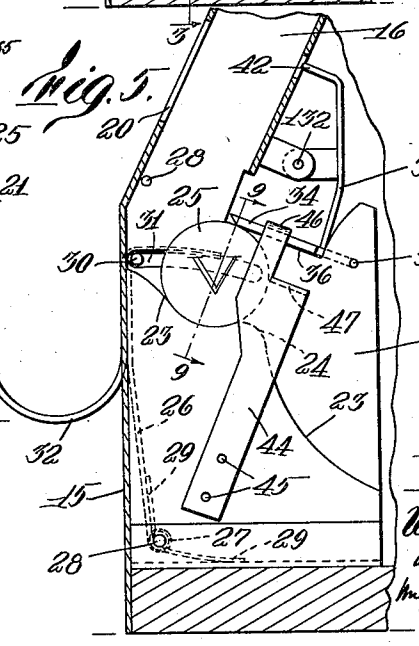


Fig. 5.

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Fig. 6.

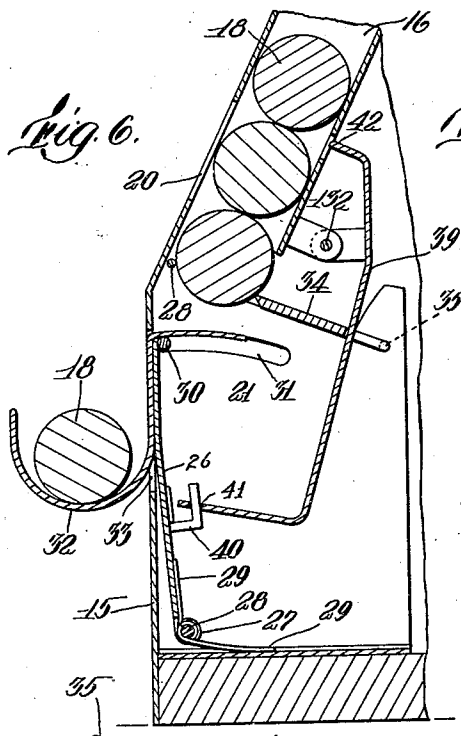


Fig. 7.

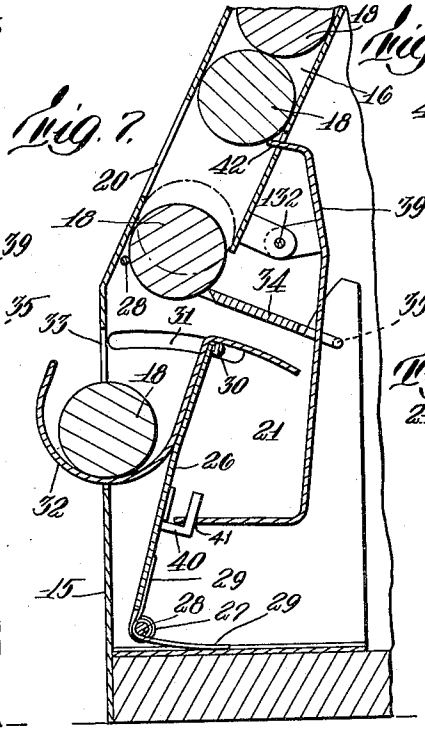


Fig. 8.

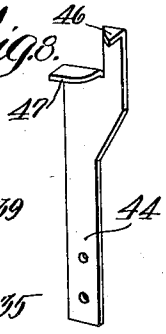


Fig. 9.

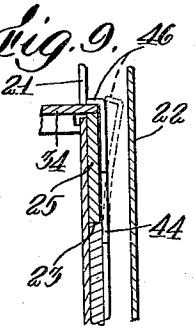


Fig. 10.

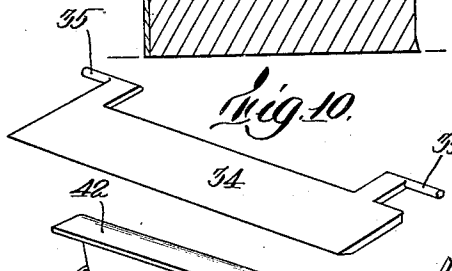
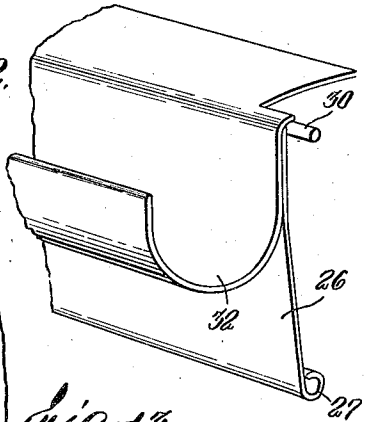


Fig. 12.



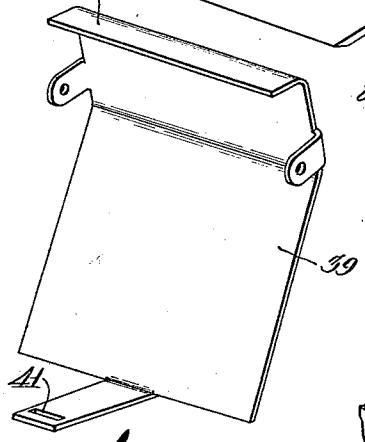


Fig. 11.

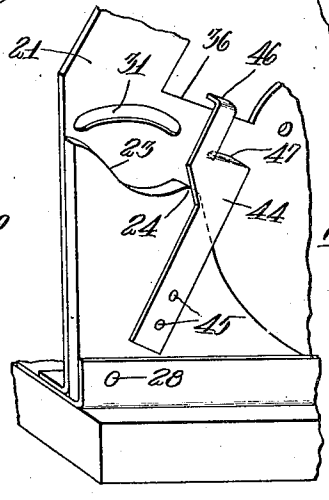


Fig. 13.

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UNITED STATES PATENT OFFICE

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COIN-CONTROLLED MECHANISM FOR VENDING MACHINES

Application filed October 17, 1928. Serial No. 313,029.

The invention relates to a vending machine which includes a holder adapted to receive and permit a downward movement of a column of articles of merchandise, a coin chute, coin-controlled mechanism for releasing the lower article when the machine is operated by a customer after the insertion of a coin in the chute, and a delivery tray adapted to receive the released article and permit its removal by the customer.

The object of the invention is to provide a vending machine having improved means for accurately letting off only a predetermined number of articles at each operation, and utilizing the delivery tray as an element of the coin-controlled let-off mechanism.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a perspective view of a vending machine composed of a plurality of independent units, each embodying the invention.

Figure 2 is a fragmentary section on line 2—2 of Figure 1.

Figure 3 is a fragmentary section on line 3—3 of Figure 2.

Figures 4 and 5 are views similar to Figure 2, showing different stages of the operation.

Figure 6 is a fragmentary section on line 6—6 of Figure 1.

Figure 7 is a view similar to Figure 6, showing a different stage of the operation.

Figure 8 is a perspective view of the holding-down member shown by Figure 5.

Figure 9 is a fragmentary section on line 9—9 of Figure 5.

Figures 10, 11, 12, and 13 are perspective views, showing separately various elements hereinafter described.

The same reference characters indicate the same parts in all of the figures.

In the drawings, 15 designates the casing of the machine, which, as shown by Figure 1, includes a plurality of units, each adapted to be independently operated. The units are alike, so that the following description of one will suffice for all.

The casing contains a holder, designated by 16, and preferably inclined, the holder being adapted to receive and permit downward movement of a column of articles 18, which, in this instance, are of cylindrical form, although articles of any form adapting them to be assembled in a column and slide downward, in a holder which is either inclined or substantially vertical, may be vended by the machine.

A coin chute designated by 19 (Figure 3) is located beside the lower portion of the holder and extends downward from a coin-receiving slot 20, in the front of the casing, to a coin box (not shown) in the lower portion of the casing. One vertical side of the chute may be formed by a partition 21 (Figures 3, 9 and 13), and the opposite vertical side by a plate 22.

The chute has an upwardly facing coin-guiding lower edge 23, provided with a hump 24, formed to raise a coin 25 pushed over it, as hereinafter described, the periphery of the coin bearing on said guiding edge.

The machine includes a coin-controlled coin pushing, article let-off and article delivering mechanism organized as next described, and adapted to release the lowest article and deliver the same outside the casing.

Said mechanism includes a primary lever 26, fulcrumed in the lower portion of the casing by means of an eye 27 on the lower end of the lever, and a rod 28 fixed in the casing. The lever 26 is normally held upright, as shown by Figures 2, 5 and 6, by a spring 29, which may be arranged as shown by Figure 6, a portion of the spring being coiled on the rod 28.

The primary lever is provided with a coin pusher 30 (Figure 12) projecting from one of its ends into the coin chute, above the guiding edge 23, through a slot 31 in the partition 21. The pusher 30 is adapted to bear on the periphery of the coin 25, and cooperate with the hump 24 in raising the coin edgewise to the position shown by Figure 4.

A tray 32 is fixed to the lever 26 and projects forward therefrom through an opening 33 in the front of the casing. 34 designates a lower detent pivoted in the casing, preferably by the trunnions 35, shown by Figure

10, one of said trunnions being journaled in the partition 21, and the other in another like partition not shown. The detent 34 is adapted to oscillate between the positions shown by Figures 2 and 4, its free edge projecting into the holder 16. When the holder is in the arresting position shown by Figure 5, its end portions bear on stops 36, one of which is shown by Figures 5 and 13, the detent engaging the lowest article 18.

A portion of the detent is now in the path of the coin 18, and is adapted to be raised by the passage of the coin over the hump 24, so that the detent is displaced, as shown by Figure 4, and caused to release the lowest article, which drops into the inwardly pushed tray 32. After the coin passes over the hump 24, it drops into a coin box and releases the detent 36, which immediately drops and arrests the next higher article, as shown by Figure 7, the engagement of said article with the detent being ensured by a deflecting stop 38 in the lower portion of the holder 29.

39 designates a secondary lever, fulcrumed at 132 in the casing behind the holder, and including a longer arm loosely connected with the primary lever 26 by a hook 40, fixed to the latter, and a slot 41 (Figure 11) receiving said hook, the slot being formed in an extension of the longer arm of the secondary lever. The shorter arm of the secondary lever is provided with an upper detent 42, which is movable in a slot in the back of the holder 16, and is adapted to arrest a higher article, as shown by Figures 4 and 7, when the lowest article is released.

The tray 32 is normally held by the spring 29, projected from the casing and is manually movable by a customer, partly into the casing, as shown by Figure 4, the tray being thus located in position to receive an article released from the holder.

When a coin is inserted in the chute, it is at first arrested in the depressed portion of the guiding edge 23, as shown by Figure 5. The user then pushes the tray and the primary lever 26 inward, thereby causing the coin to displace the lower detent 34, which is thus caused to release the lowest article. When the coin reaches the position shown by Figure 4, it is free to drop from the hump 24 and roll into a coin box.

The arrangement of the lower detent 34 is such that its free edge moves in the arc of a circle and projects into the holder to a limited extent only sufficient to enable it to cooperate with the deflecting stop 28 in supporting the lowest article. The upward movement of the detent causes it to first slightly raise the lowest article, and then release it. Immediately after the release of the coin from the hump 24, the free end of the detent engages the next higher article while the latter is descending, and cooperates with the deflecting stop 28 in arresting said article, as shown by Figure 7.

The inward movement of the primary lever 26 causes the secondary lever to project the upper detent 42 into the holder in position to arrest a higher article in the position shown by Figure 7. When the tray is released, the primary lever and tray are forced outward by the spring 29, the dropped article in the tray being exposed for removal, and the upper detent 42 retracted from the holder 20.

It will be seen that the tray and primary lever 26 are adapted to be moved by an inward pressure on the tray, to cause the described operation, and that when the tray is released after said operation, it is automatically projected to reset the mechanism and permit the removal of a dropped article.

To prevent upward displacement of the lower detent 34 by a wire or other instrumentality inserted in the casing, I provide a resilient holding-down member 44 (Figure 8), attached at 45 to one side of the coin chute below the guiding edge 23, and provided at its upper end with a holding-down ear 46, which normally bears on the upper side of the detent 34, and prevents the detent from rising, and with a cam-shaped ear 47 projecting into the path of the coin 25, the arrangement being such that the coin, in moving from the position shown by Figure 5 to that shown by Figure 4, displaces the member 44, as indicated by dotted lines in Figure 9, so that the lower detent is free to be raised by the coin.

I claim:

1. A vending machine comprising a casing containing an article holder adapted to receive and permit downward movement of a column of articles, and a coin chute located beside the holder, and a coin-controlled coin-pushing, article let-off, and a coin-controlled mechanism adapted to push a coin in the chute, let-off articles one by one from the holder, and deliver a released article at the front of the casing, said mechanism including a lever movable under the holder and provided with a coin pusher projecting into the chute, a spring normally maintaining the lever in a starting position, and a tray fixed to the lever, and normally projected thereby from the front of the casing.

2. A vending machine comprising a casing containing an article holder adapted to receive and permit downward movement of a column of articles, and a coin chute located beside the holder, and a coin-controlled coin-pushing, article let-off, and a coin-controlled mechanism adapted to push a coin in the chute, let off articles one by one from the holder, and deliver a released article at the front of the casing, said mechanism including a lever movable under the holder and provided with a coin-pusher projecting into the chute, a spring normally maintaining the lever in

a starting position, and a tray fixed to the lever, and normally projected thereby from the front of the casing, the chute being formed to upwardly guide a coin pushed therein by the coin-pusher, and a detent adapted to arrest the lowest article in the holder, and to be displaced by an upward movement of a coin in the chute to release said article.

3. A vending machine comprising a casing containing an article holder adapted to receive and permit downward movement of a column of articles, and a coin chute located beside the holder and having an upwardly facing coin-guiding lower edge provided with an upwardly projecting hump, formed to raise a coin pushed over it and a combined coin-controlled coin-pushing article let off, and article-delivering mechanism adapted to release the lowest article and deliver the same outside the casing, said mechanism including a spring-pressed normally upright primary lever fulcrumed in the lower portion of the casing below the holder, and provided with a coin-pusher projecting into the coin chute, above the coin-guiding edge thereof, and adapted to cooperate with said hump in raising and releasing a coin, a tray fixed to the lever and projecting forward therefrom through an opening in the front of the casing, a lower detent pivoted in the casing and having an oscillatory free edge, adapted to engage the lowest article in the holder, a portion of said detent being in the path of a coin raised in the chute and adapted to be upwardly displaced by the raised coin and cause the detent to release the lowest article and permit it to drop into the tray, said detent being adapted to return to its arresting position and arrest the next higher article, when the coin is released, and a secondary lever fulcrumed in the casing and having a longer arm connected with the primary lever, and a shorter arm provided with an upper detent adapted to arrest a higher article in the holder, when the lowest article is released, the tray and primary lever being manually movable inwardly, and automatically movable outwardly, when released.

4. A vending machine as specified by claim 2, comprising also a resilient holding-down member, fixed at one end to a wall of the coin chute, and provided with a holding-down ear, adapted to normally engage and prevent displacement of said detent, and with a cam-shaped ear projecting into the path of a coin in the chute, said member being displaceable by the coin, to release the detent.

In testimony whereof I have affixed my signature.

WILLIAM H. AVERILL.