April 19, 1938. C. V. VANBERGEN 2,114,363

DISPENSING MACHINE

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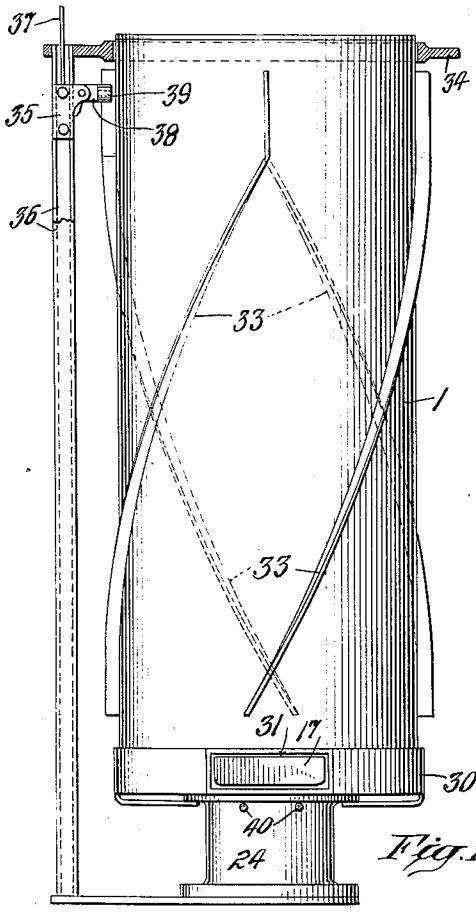


Fig. 1.

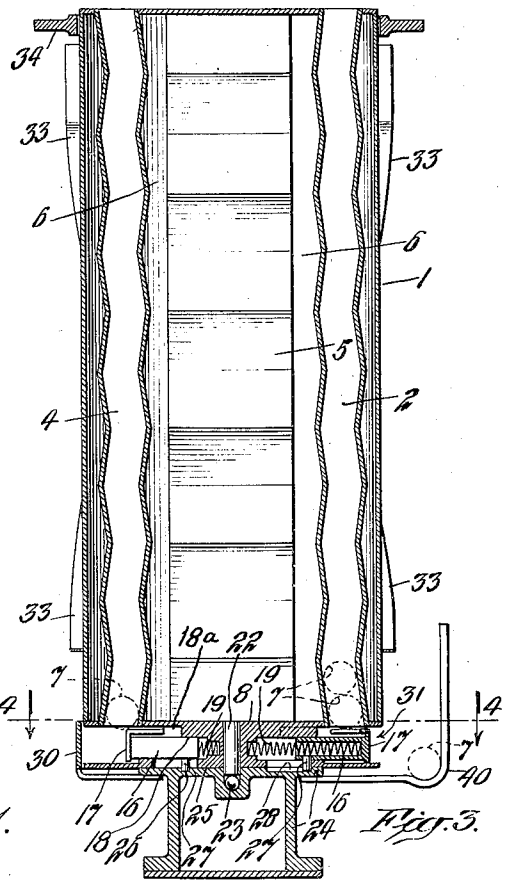


Fig. 3.

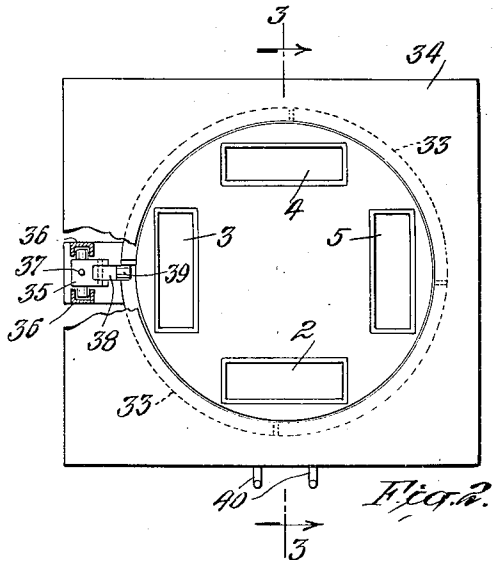


Fig. 2.

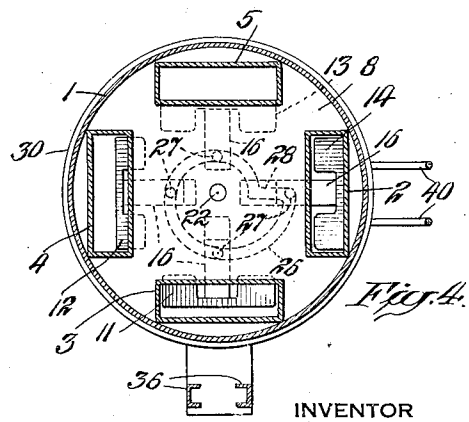


Fig. 4.

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DISPENSING MACHINE

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3 Claims. (Cl. 312—64)

This invention relates to machines for dispensing separate packages and particularly to machines operable by coin-freed mechanism for vending goods such as cartons of ice cream.

The invention has for its objects to provide a machine for dispensing goods of the aforesaid character, which is simple in construction and operation and which is adapted to contain and deliver a very much greater number of packages without attention than is possible with apparatus of usual construction.

With these objects in view the invention provides a magazine containing the packages stored in a plurality of separate piles in chutes or the like and a similar plurality of ejectors operatively associated with the magazine. Relative rotation between the magazine and an ejector operating device effects ejection of a package from each chute or the like as the latter comes to a certain rotary position relative to the said ejector operating device.

One embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which:

Fig. 1 is a side elevation of a magazine and ejector mechanism embodying the invention;

Fig. 2 is a plan view of the parts of the machine shown in Fig. 1;

Fig. 3 is a vertical section on line 3—3 of Fig. 2, the operating mechanism for the magazine being omitted for the sake of clearness; and

Fig. 4 is a section taken along the line 4—4 of Fig. 3, illustrating the operation of the ejector mechanism.

Referring to the drawing, the magazine 1 comprises a vertical refrigerated cylinder which contains four substantially vertical chutes 2, 3, 4 and 5 and includes a closed central space 6 which contains the refrigerant. The chutes are disposed at angles of 90° to each other, as shown in Figs. 2 and 4, that is to say in diametrically opposite pairs 2, 4 and 3, 5 with respect to the cross-section of the magazine 1, and are somewhat sinusoidal or corrugated in a vertical direction, as shown in Fig. 3, in order to prevent the cartons 7 from turning over and taking up a vertical instead of a horizontal position.

The magazine 1 is mounted upon a bottom plate 8 which is fixed to the magazine at its lower end and forms a housing for four spring-loaded ejectors 11, 12, 13 and 14. The ejectors are located in radial alignment with the chutes; as shown in Figs. 3 and 4, the ejectors 11 to 14 correspond with the chutes 3, 4, 5 and 2 respectively. Each ejector consists of a cylindrical plunger-like part 16 provided with a transverse extension 17 at its outer end constituting an ejector head so that the complete ejector body is substantially T shaped.

Each plunger-like part 16 is slidable in a radial bore 18 formed in the bottom plate 8 which is also provided with recesses 18a to house the ejector heads 17 when the ejectors are fully retracted, as in the case of the ejector 13 in Fig. 4. A compression spring 19 is located within each plunger-like part 16, its inner end abutting the end of the bore 18 while its outer end abuts the inner surface of the ejector head 17, as shown in Fig. 3, so that each spring 19 constantly urges its plunger 16 outwardly.

A spindle 22 is provided at the bottom of the magazine 1, being rigidly secured in the bottom plate 8 and carried in a thrust bearing 23 in a stationary ejector-operating device 24. The latter comprises a cam plate 25 having a snail cam track 26 in its upper surface into which four pins 27 project, one of said pins being secured to the plunger-like part 16 of each ejector 11 to 14. The cam track 26 is of the form shown in Fig. 4, having a radial part 28. As will be seen from Fig. 3, the aforesaid pins 27 project downwardly from the spring-loaded plungers 16 into the cam track 26 and the cam plate 25 actually forms the supporting base and bottom bearing for the magazine; a peripheral collar 30 is secured to the cam plate and has a single opening 31 directly in front of the radial part 28 of the cam track 26. A wire lip or receptacle 40 is provided to receive the carton which is ejected through the aperture 31.

The cylinder 1 of the magazine has four spiral vanes 33 fixed upon its outer surface, each vane overlapping the next somewhat as shown in Fig. 1. The vanes terminate short of the lower end of the cylinder 1 for a purpose to be described hereinafter. The cylinder 1 is rotatively held at its upper end by a bearing ring 34. A toggle 35, slidable in vertical toggle guides 36 which are secured to the bearing ring 34 at their upper ends and to the stationary ejector-operating device 24 at their lower ends, is secured to a cable 37 fixed to a winding drum (not shown) operated for example by an electric motor. One arm 38 of the toggle is provided with a roller 39, this arm being movable upwards from the horizontal position in which it is shown to a vertical position, but immovable below the horizontal.

The operation of the mechanism described above is as follows:

Assuming that cartons have been fed into the chutes 2 to 5 and that the magazine 1 is at rest

in the position in which it is shown in Figs. 3 and 4 in relation to the stationary ejector-operating device, the ejectors 11 to 14 will, due to the contour of the cam track 26, be in the following positions: The ejector 14, due to its pin 27 being located in the radial part 28 of the cam track 26, is at the outer limit of its travel and is directly under the cartons 7 of the chute 2, having by its outward movement ejected a carton through the opening 31 into the wire lip or receptacle 40 as shown in Fig. 3. The ejector 11 is withdrawn one-third of its stroke from beneath its pile of cartons in the chute 3, the ejector 12 two-thirds of its stroke from beneath the cartons in the chute 4 and the ejector 13 is withdrawn completely thereby allowing the bottom carton to fall from the chute 5 into position immediately in front of it. This last mentioned carton is prevented from rolling out by the stationary collar 30, which as stated has only one opening 31. All the ejector springs 19 with the exception of that of the ejector 14 are under compression. Upon turning the magazine 1 a quarter of a revolution in clockwise direction, the ejector 13 takes the place of the ejector 14 relatively to the cam plate 25, the pin 27 of ejector 13 moving in the cam track 26 until it reaches the radial part 28 of the latter when it is released to project the plunger 16 of the ejector 13 outwardly to eject the carton which in the previous position of the parts fell from the chute 5 into position in front of the ejector 13. The ejector 14 is now one-third withdrawn, the ejector 11 two-thirds withdrawn and the ejector 12 completely withdrawn, a carton having fallen from its chute 4 in front of it ready to be ejected when the magazine has been turned another quarter of a revolution.

The magazine 1 is rotated by means of the toggle 35 and spiral vanes 33. When the mechanism described forms part of a coin-freed vending machine, insertion of an appropriate coin into the machine causes the switching on of an electric motor through the medium of the coin mechanism, and a winding drum operated by the motor winds in the cable 37 and raises the toggle 35 which, when the magazine 1 is at rest, is at the bottom of its guides 36. The roller 39 on the toggle arm 38 engages one of the vanes 33 and, on reaching the position shown in Fig. 1, has turned the magazine through one-quarter of a revolution in a clockwise direction. When the electric motor is switched off, the toggle 35 returns by gravity and, due to the overlapping of the vanes 33, the toggle 35 rides over the lower end of the vane next to the one with which it has previously contacted and is then in position to effect a further partial rotation of the magazine.

The magazine may alternatively be rotated by other means, for instance by the motion of withdrawing a drawer by hand or by any other suitable method. The mechanism described need not form part of a coin-freed machine, and may be employed substantially in the form described, with suitable alternative means for rotating the magazine, for domestic or other use for the dispensing of any desired goods.

Although a particular embodiment of my invention has been shown for purposes of illustration, various changes and modifications may be made therein as will appear to a person skilled in the art. The invention is only to be limited in accordance with the following claims when interpreted in view of the prior art.

The invention claimed is:

1. A machine for dispensing separate packages comprising a rotatable magazine having chutes adapted to contain said packages stored in a plurality of separate piles, an ejector operatively associated with each chute, means actuating said ejectors upon rotation of said magazine for successively ejecting a package from each chute when it assumes a given angular position, a set of spiral vanes on the periphery of said magazine spaced in accordance with said chutes and an axially movable member successively engaging successive vanes to rotate said magazine by steps for successively bringing said chutes into discharge position.

2. A machine for dispensing separate packages comprising a rotatable magazine having chutes adapted to contain said packages stored in four angularly displaced piles, an ejector mounted for radial movement to eject the lower package from each chute, and means actuating said ejectors upon rotation of said magazine so that in each operating position of said magazine one of said ejectors has ejected a package and is still at the outer limit of its stroke directly beneath the packages in the corresponding chute, the next ejector is withdrawn one-third of its stroke from beneath the packages in its chute, a third ejector is withdrawn two-thirds of its stroke but still supports the cartons in its chute, and the fourth is withdrawn fully thereby allowing the bottom package of its chute to fall downward into position for ejection at the next operation of the machine.

3. A machine for dispensing separate packages comprising a magazine having chutes adapted to contain said packages stored in a plurality of separate piles, an ejector operatively associated with each chute and mounted for radial movement relatively to said magazine, and means actuating said ejectors upon relative rotation between said magazine and said actuating means so that in each relative operating position of said magazine and actuating means one of said ejectors which has just ejected a package is fully advanced and lies beneath its chute to support the packages therein, the next ejector is partially retracted but still lies beneath its chute and supports the packages therein, while the ejector immediately preceding said fully advanced ejector is fully retracted to allow a package to drop from its chute in front of the ejector in position for ejection at the next operation of the machine.

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