Nov. 27, 1956 C. A. LENHART 2,771,979

VENDING MACHINES

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Fig. 1

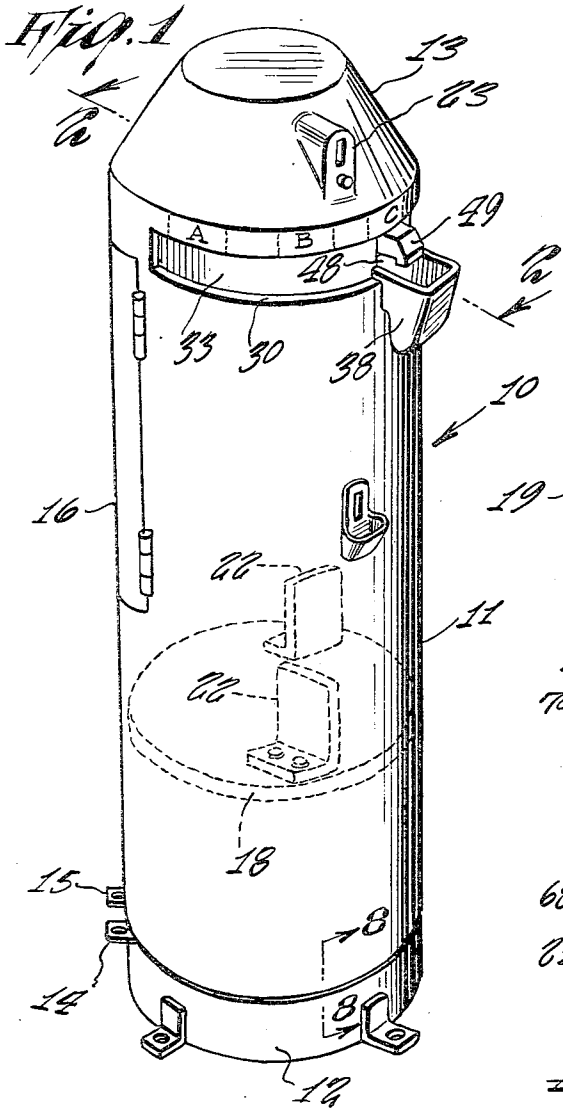
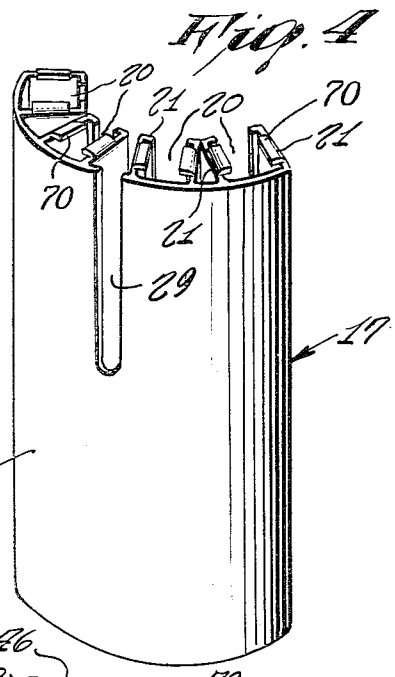


Fig. 4



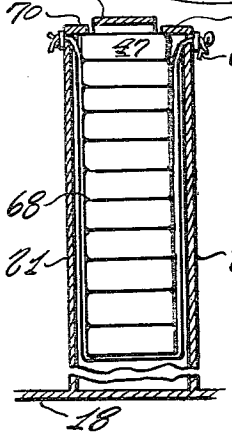


Fig. 5

Fig. 7

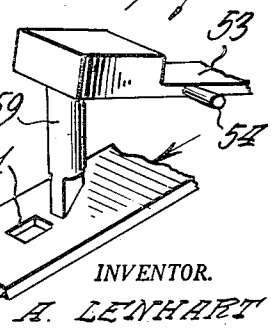


Fig. 6

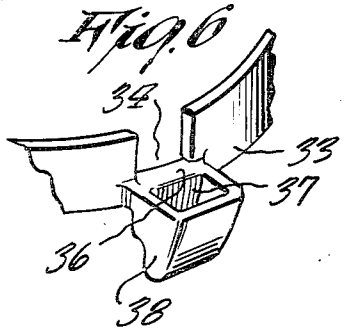
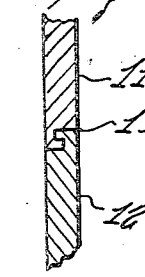


Fig. 8



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VENDING MACHINES

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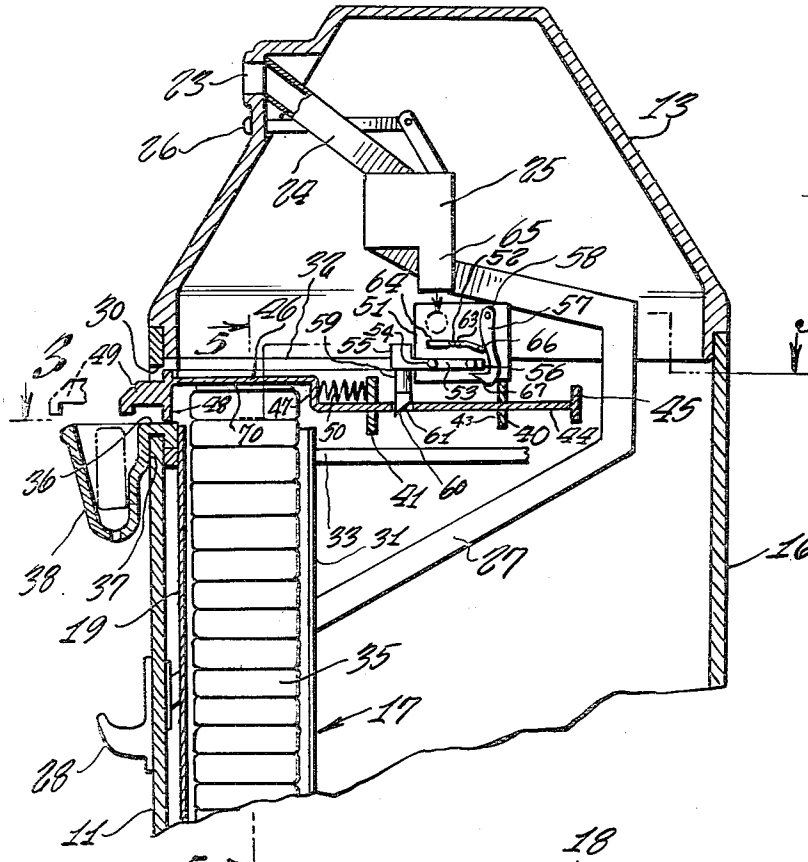


Fig. 4

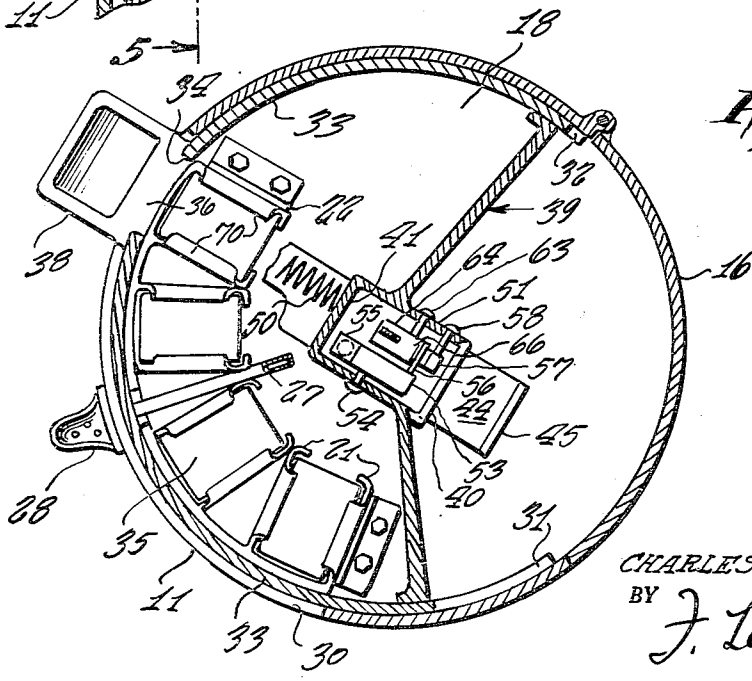


Fig. 5

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VENDING MACHINES

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5 Claims. (Cl. 194—39)

This invention relates to vending machines, and aims primarily to provide a compact, efficient and positive-action coin-operated vending machine for dispensing articles of uniform size.

Another object of the invention is the provision of a vending machine which is sturdy and efficient in construction and operation and is particularly adapted for outdoor location, for dispensing cigarettes or other articles.

A further object of the invention is the provision of a magazine containing spaced vertical compartments in which the articles for sale such as, for example, packages of cigarettes, are mounted one upon the other, together with novel structure and means for selection of the desired article or brand from any one of the plurality of tiers of articles contained in the magazine.

The above broad as well as additional and more specific objects will be clarified in the following description wherein characters of reference refer to like-numbered parts in the accompanying drawings. It is to be noted that the drawings are intended solely for the purpose of illustration and that it is therefore neither intended nor desired to limit the invention to any or all of the exact details shown or described except insofar as they may be deemed essential to the invention.

Referring briefly to the drawings,

Fig. 1 is a perspective view of a coin-operated vending machine embodying the features of the present invention.

Fig. 2 is a fragmentary sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2, but showing the bran or article selector shifted to another position.

Fig. 4 is a perspective view of the magazine of the machine, per se.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2, illustrating one means for normally urging the stack of articles in a magazine compartment, upward.

Fig. 6 is a fragmentary perspective view of the circumferentially slidable arcuate band and the cup extending from the opening therethrough.

Fig. 7 is a perspective view, with parts broken away and partly in section, of the slide cocking means in tripped position.

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 1.

Referring in detail to the drawings, the numeral 10 indicates a substantially cylindrical housing, including the intermediate cylindrical body 11 supported on the base 12 which is provided with means for bolting it to the floor, and the cover 13. The body 11 may be rotatably supported on the base 12 with the provision of any suitable means, such as a lock joint 13*a*, to prevent removal of the body from the base. Any suitable key lock, such as a padlock, not shown, whose tongue may pass through an eyelet 14 on the base and an eyelet 15 on the body, may be provided to prevent unauthorized turning of the

body. A hinged door 16 may be provided at the back of the body to give access to the interior for obvious purposes.

A magazine 17 is secured within the body 11 at the front of the latter in any desired maner; for example, it may be supported on a bottom 18 whose elevation above the base 12 will be proportional to the height of the magazine. The magazine 17 comprises a cylindrical front wall 19 having a plurality of radial vertical compartments 20 provided therebehind by spaced pairs of radial walls 21 extending inward from the wall 19. Radially extending vertical end plates 22, secured to the floor 18, between which the magazine rests, prevent movement of the magazine.

A coin insert slot 23 is positioned in the cover or head 13 of the housing, from which a conduit 24 leads into a coin selector or rejector 25. As the latter is of standard construction and is available on the market as a unit, it is not illustrated in detail herein. The coin return push-rod is shown at 26, which is part of the standard coin selector. Rejected coins pass down the chute 27 into the tray 28, the latter extending through a slot 29 in the wall 19 of the magazine.

An arcuate horizontal slot 30 is provided through the upper portion of the body 11 at the front thereof, having substantially the same length as the horizontal arcuate length of the magazine 17. Just below the level of the lower edge of the slot 30, an arcuate rail 31 is positioned horizontally against the inside of the body 11, and at about the level of the upper edge of the slot 30 a second similar rail 32 is positioned; both rails may be secured or otherwise made rigid with the body 11, in any desired manner. An arcuate band 33 of the same curvature as the rails 31 and 32, is rotatably and slidably mounted on the lower rail 31 and between the two rails and lies within the cylindrical surface of the two rails. Intermediate its length the band 33 has a notch 34 through which an article such as a package 35 of cigarettes contained in the magazine is adapted to be passed, as will be described below. The lower edge of the notch 34 has a lip 36 extending outward therefrom through the opening 30 and which may ride on the lower edge of the latter, and this lip is further turned downward as at 37 against the outer surface of the body 11 below the slot 30; thus the band 33 is restricted against radial movement inward or outward with respect to the body 11. A cup or receptacle 38, adapted to receive the discharged article, is formed integrally with the lip 36—37, or it may be attached thereto.

At any suitable place outside the housing, indicia may be placed above or below the slot 33 indicative of the kind or brand of article contained in the magazine column 20 corresponding to the arcuate position of the indicator; an example of this is shown by the letters "A," "B," and "C," Fig. 1. It is apparent that by grasping the cup 38 the band 33 may be swung through the arc of the slot 30 in either direction to position the cup under the desired brand indicator.

The rails 31 and 32 need not extend around the whole circumference of the interior wall of the body 11, as is obvious, and in Figs. 2 and 3 they are shown of less than 180 degrees, their lengths in Fig. 3 being such merely as are required for the purpose of illustration.

An approximately diametrical frame 39 is provided, having its extremities secured to the ends of the band 33. Intermediate its length, the frame 39 is provided with two spaced vertical walls 40 and 41; these walls have aligned horizontal passages 42 and 43 in which a horizontal slide 44 is slidably mounted on a diameter of the band 33. The inner end of the slide has a deformation 45 adapted to be stopped in its forward move-

ment by the wall 41. The entire slide is approximately Z-shaped, having the vertical upward deformation 47 and the forward-extending horizontal portion 46. At the forward extremity of the slide, a front vertical covering wall 43 is rigid with the slide and has a hand grip 49 thereon. The diameter on which the slide 44 lies is the same as that at the outer end of which the cup 38 is positioned, and since both the slide and the cup are fixed in relationship to the band 33, it is apparent that both swing together about the axis of the band when the grip 49, or in fact either the grip or the cup, is moved horizontally.

The space enclosed by the wall 48, the slide portion 46, and the deformation or wall 47, accommodates one article, that is the topmost, of the articles 35 contained in the magazine compartments, and more particularly the topmost of that compartment 20 which is aligned with the slide 44 and the cup 38. It is now apparent that, after the desired alignment of the slide and the cup with the brand of articles in one of the compartments 20 has been made, in the manner described, upon movement outward of the slide the wall 47 of the latter will push the topmost article 35 through the opening 30 and into the cup 38. In the outermost position of the grip 49, as determined by the stop 45, and with the article 35 deposited in the cup, the grip 49 and the outermost portion of the slide will cover the cup and thus prevent removal of the article 35 from the cup. A compression spring 50 is positioned between the slide deformation or wall 47 and the frame wall 41, thus normally urging the slide outward to its limit position.

The releasable locking and cocking means for the slide 44 may now be described. In suitable vertical support walls 51 and 52, which may be provided, as shown, above and rigid with the frame wall 40, the following parts are supported. An elongated beam or the like 53, which may be weighted as shown at 55 at its forward end, is pivotally mounted above the slide 44 on a pin 54 supported in the wall 52, the pivot being so located that the end 55 tends to descend by gravity. At or near the other end the beam 53 is provided with a rigid horizontal pin 56. A hook 57 is freely pivotally suspended from a pin 58 supported in the wall 51 and is so positioned that normally, by gravity, its barb will lie directly under the pin 56 of the beam and thus prevent the beam from swinging clockwise. A peg 59 extends downward from the weighted end of the beam and its lower end has a bevel 60 lying in a plane at right angles to the longitudinal direction of the slide 44. The latter has an opening 61 therethrough of smaller diameter than the diameter of the peg 59 so that the beveled end 60 of the peg may penetrate only partway into the hole 61. The hole 61 is so positioned in the slide that when the latter is in its innermost position, shown in Fig. 2, the beveled end of the peg registers partway, that is, as fully as is possible, in the hole 61, and the beam 53 is substantially horizontal. Remembering the tendency of the spring 50 to push the slide outward, it is apparent that outward movement of the slide is prevented by the peg 59 because the beam 53 is unable to swing clockwise, owing to engagement of the hook 57 with the beam pin 56.

A second and smaller beam or the like 62 is pivotally supported on its transverse center line on a pin 63 in the wall 51. The beam 62 is normally in perfect balance so that its lies approximately horizontal. Its outer end 64 is positioned directly under the outlet 65 of the coin selector 25, that is, also in the vertical axis of the housing 10. The inner end 66 of the beam 62 terminates close to the shank of the hook 57. It is now apparent that when a deposited coin falls upon the end 64 of the beam 62 this beam will be swung counterclockwise and the end 66 will sweep against the shank of the hook, thereby swinging the latter also counterclockwise and releasing it from engagement with the pin 56 of the beam 53. Hence the beam 53 will be free to swing clockwise,

whence the force of the spring 50 will eject the peg 59 upward from the hole 61 as the slide moves outward to its limit, as previously stated, and will deposit the topmost article 35 in the cup 38.

In order to remove the purchased article 35 from the cup 38, the purchaser will have to push the grip 49 and hence the slide 44 all the way back. During this operation, when the hole 61 becomes realigned with the end 60 of the peg 59, the peg, especially owing to the weighting of the forward end of the beam 53, will tend by gravity to fall into the hole 61. In doing this, the beam 53 must swing counterclockwise, which it can do because the pin 56 thereon can freely slide over the cam-like adjacent lower edge 67 of the barb of the hook 57, thus swinging the hook out of the way. As soon as the peg has entered the hole 61 to its limit position, previously mentioned, the hook 57 will freely swing back clockwise and its barb will be repositioned under the pin 56. Thus the previous cocked position of the mechanism will have been restored by the purchaser in the act of pushing back the slide so that he may have access to his purchased article.

The machine above described is particularly adaptable for location and use out of doors, for it can readily be made completely waterproof and the entire housing 10 can be made of solid and substantial construction.

Obviously, modifications in form or structure may be made without departing from the spirit and scope of the invention.

In order that the stack of articles 35 in each compartment 20 may be fed upward as they are dispensed, any suitable means may be provided. One such means is shown in Fig. 5, wherein a length of rubber band having its ends 69 anchored in opposite walls 21 is tensed by the weight of the stacked articles and normally urges the stack upward. The tops of the walls 21 are turned inward, as shown at 70, to provide limit stops to the upward position of the uppermost article, and the distance between these stops is less than the width of the slide so that the slide wall 47 may pass between them.

I claim:

1. A vending machine comprising a substantially cylindrical upright housing having a front portion and a rear portion, said front portion having a concentric arcuate slot therein positioned between the top and bottom of the housing, an arcuate guide rail concentric with and mounted on the inside of the housing below said slot, an arcuate band concentric with and slidably mounted on said rail behind said slot and adapted to be slid alternately in opposite circumferential directions, a magazine mounted in the front portion of the housing below said slot and having a plurality of circumferentially spaced vertical compartments adapted to contain stacks of uniformly-sized articles to be dispensed by the machine, said band having a frame supported thereon and having an opening therethrough of approximately the same height and width as one of said articles, a horizontal slide slidably supported in said frame on the same diameter of said housing as that on which said band opening lies, the outer end of said slide having a grip therein, said opening through said band having a sill, a receiver extending outward and downward from said sill adapted to receive a purchased article, resilient means normally urging said slide outward through said band opening, limit stop means limiting the outward movement of said slide to a position wherein the outer end of the slide is positioned over and covers said receiver, means supported on said frame for normally locking said slide in innermost position of the slide wherein the forward end of the slide lies substantially in said band opening, and means for releasing said locking means, said slide having the forward portion thereof rearward of said grip raised above and parallel with the rearward portion thereof thereby providing a wall between said portions of the slide, the length of said raised portion of the slide being approximately equal to

the length of one of said articles, means normally urging said stacks of articles upward, said magazine having limit stops at the top of said compartments limiting the top of the stack to the horizontal level of said slide wall whence the topmost article of the stack is engageable by said slide wall upon outward movement of said slide, said slide being adapted to be pushed back manually to said innermost position.

2. The vending machine set forth in claim 1, said resilient means comprising a compression spring mounted between said frame and said slide wall.

3. The vending machine set forth in claim 1, said machine having a base, said housing being rotatably mounted on said base and having a door in said rear portion thereof.

4. The vending machine set forth in claim 1, said receiver comprising a cup, said slide in its forewardmost limit stop position covering said cup, said slide upon being pushed back manually uncovering said cup to give access to the purchased article in the cup.

5. A vending machine comprising an upright housing having an opening therethrough, a frame inside the housing, a horizontal slide mounted in the frame and in said opening, a magazine mounted in the housing under said opening and having a vertical compartment therein adapted to hold a stack of articles of uniform dimensions, means normally urging said stack upward in said compartment, said slide having a raised horizontal forward portion parallel with the rear portion thereof, resilient means normally urging said slide forward through said opening, limit stop means limiting the forward movement of the slide to a distance approximately equal to the length of one of said articles, a beam weighted at its forward end and pivoted intermediate its length to the frame and having a peg depending from the forward end thereof,

the rear portion of said slide having an opening therethrough, said peg having a thickness larger than the length of said slide opening and having the lower extremity thereof beveled and normally engaging partway in said slide opening, a second beam pivoted intermediate its length to said frame adjacent said first beam, said machine having a coin chute terminating directly above one end of said second beam whereby a deposited coin upon impact with said one end of said second beam moves said one end downward and the other end thereof upward, and releasable means partly on said frame and partly on said first beam normally restraining said first beam against rotation about its pivot axis in a direction to raise said peg from said slide opening, said releasable means being actuated by said upward movement of said other end of said second beam to release said releasable means to permit said first beam to rotate in said direction whence the force of said resilient means on said slide causes said slide to move forward and eject said peg from said slide opening, the vending machine having a cup mounted under said housing opening adapted to receive an article moved off the top of said stack by said slide when said slide moves forward as aforesaid, said slide in its forwardmost limit stop position covering said cup and being adapted to be pushed back manually to uncover said cup and simultaneously to restore said beams and said releasable means to normal position wherein said peg registers partway in said slide opening and said releasable means restrains said first beam from rotation as aforesaid.

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