

March 12, 1957

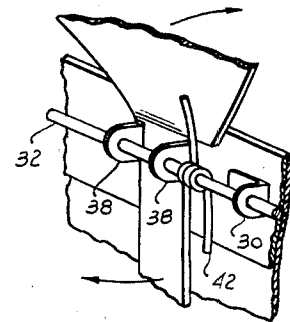
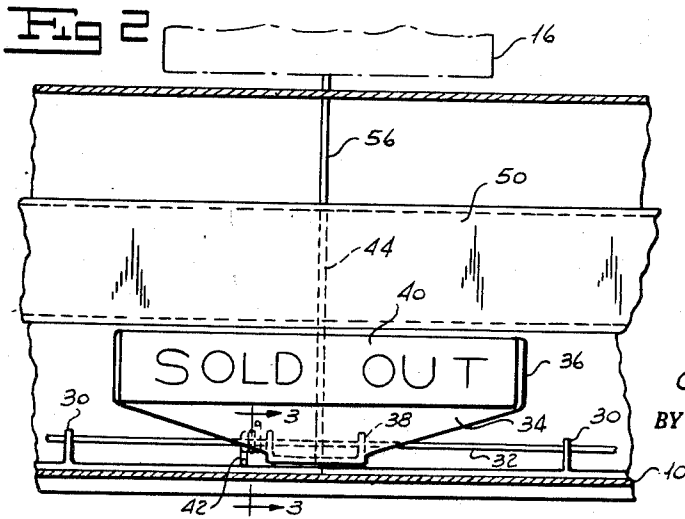
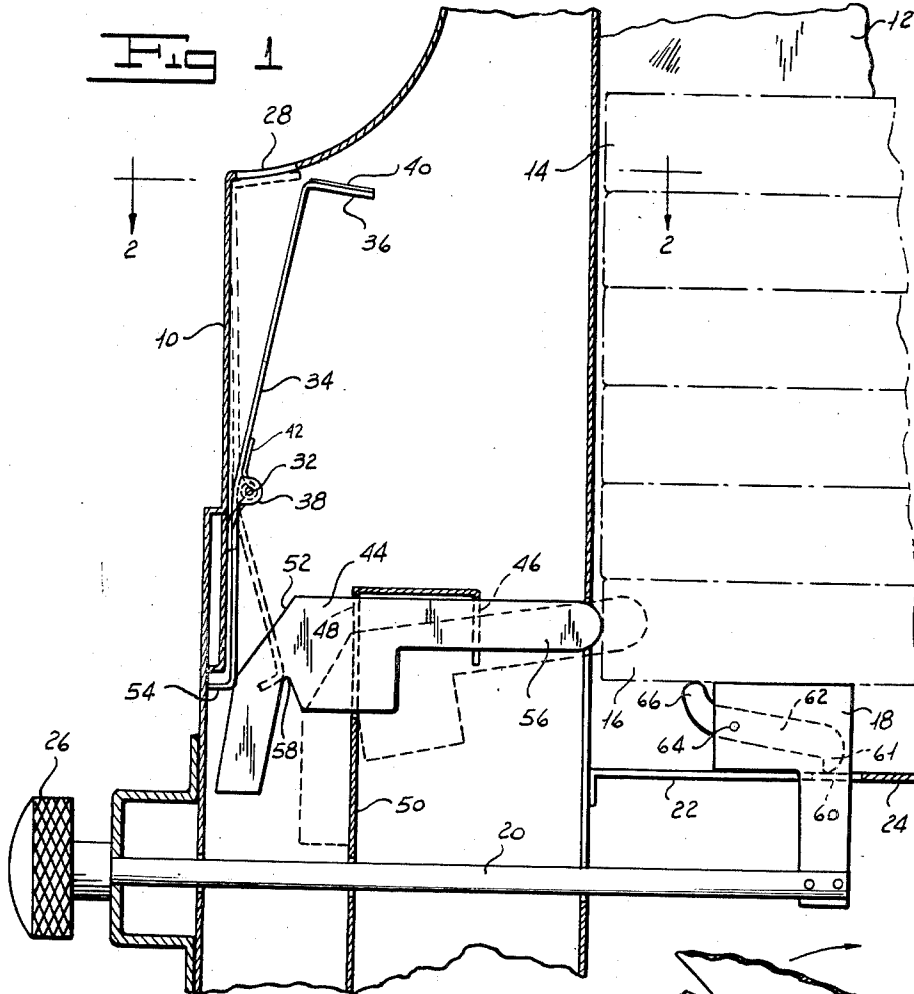
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2,784,871

EMPTY SIGNAL FOR COLUMNAR MERCHANDISING MACHINES

Filed June 7, 1952

2 Sheets-Sheet 1



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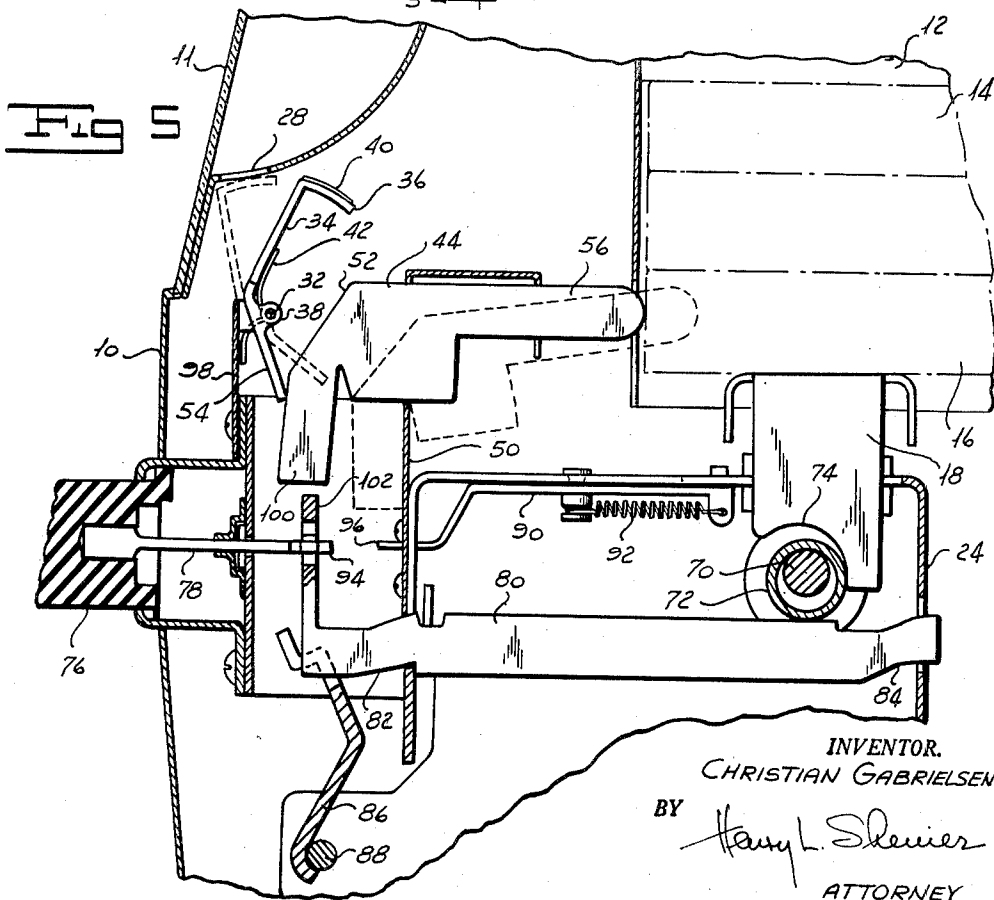
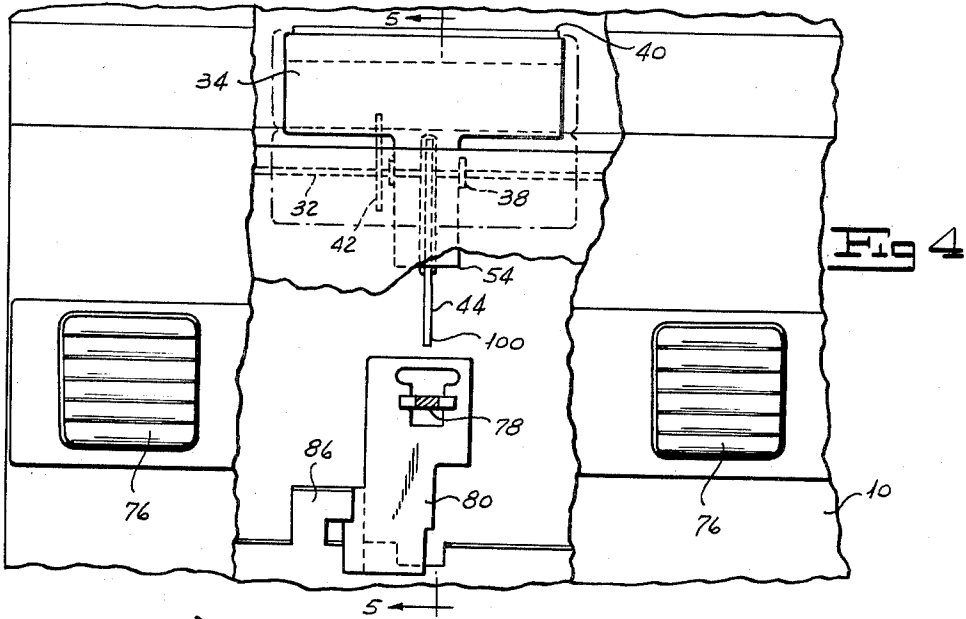
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EMPTY SIGNAL FOR COLUMNAR MERCHANDISING MACHINES

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2 Sheets-Sheet 2



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2,784,871

**EMPTY SIGNAL FOR COLUMNAR  
MERCHANDISING MACHINES**

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1 Claim. (Cl. 221-6)

My invention relates to an improvement in empty signals for columnar merchandising machines and more particularly to an empty signal of simplified construction, certainty in operation and sureness in performance.

In columnar vending machines the merchandise to be vended, as, for example, cigarettes, is stacked in a plurality of columns each provided with its own selector button in the case of electrical machines, or pull knob in the case of manual machines. Machines are provided with column locking devices to prevent the operation of a machine when a column is depleted of merchandise to prevent a purchaser from operating the machine and not receiving merchandise though losing his money. It is advantageous to provide a signal to indicate to a user that a particular column of merchandise is depleted in order to save him the annoyance and bother of attempting to operate the machine only to find that that particular brand is not present in the machine and then having to operate the coin return mechanism to get his money back. Some of the devices of the prior art which perform this function are expensive to manufacture and difficult to maintain. Others are of extremely complicated construction.

One object of my invention is to provide an improved empty signal which is simple and inexpensive to construct. Another object of my invention is to provide an empty signal which is certain in operation and trouble free in maintenance.

Another object of my invention is to provide an empty signal which in the case of electrical machines may act as an empty lock to prevent the operation of the machine as well as indicating a particular column is empty.

Other and further objects of my invention will appear from the following description:

In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

Figure 1 is a fragmentary sectional view of a columnar vending machine showing the construction of my empty signal in connection with a manual machine.

Figure 2 is a fragmentary sectional view taken along the line 2-2 of Figure 1.

Figure 3 is a fragmentary perspective view showing a detail of my empty signal.

Figure 4 is a front elevation of a portion of an electrically operated columnar vending machine with parts broken away.

Figure 5 is a sectional view taken along the line 5-5 of Figure 4.

Referring now to the drawings, the vending machine comprises a housing 10 supporting a plurality of columns 12 adapted to hold merchandise such as cigarettes indicated by the reference numeral 14 in dotted outline. The merchandise is stacked and adapted to vend the bottommost package 16 first. This package is carried by an ejector 18 which supports the column of merchandise

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within the confines of the container in a manner that the merchandise cannot be shaken or dislodged. When coins of the proper denomination are deposited in the machine the plunger 20 is freed by means well known to the art and hence not shown or described. The plunger may be pulled forwardly in a slot 22 provided in the ejector housing 24 so that the ejector 18 is free of the bottommost package 16. This package and all of the packages above it move downwardly by gravity and rest upon the top of the ejector housing 24. When the plunger operating handle 26 is again returned to the position shown in Figure 1 the ejector pushes the package of cigarettes lying upon the ejector housing 24 rearwardly to a chute for passage to the purchaser, as is well known in the art. As the ejector 18 returns in this ejecting operation it supports the remaining packages of merchandise within the container in the position shown in Figure 1.

The housing 10 is provided with a plurality of windows 28, one for each column. Mounted on the casing 10 I provide a plurality of lugs 30 through which extends a pivot rod or wire 32. The signal itself comprises a member 34 made of sheet metal or the like having an upper portion 36 bent backwardly and carrying on its upper surface a display 40 bearing the words "Sold Out" or the like. The member 34 is provided with a pair of ears 38 intermediate its ends. These ears are provided with openings through which the pivot rod 32 passes. In this manner the signal member 34 is pivotally mounted adjacent each window 28. A spring 42 biases the member 34 to rotate in a counterclockwise direction as viewed in Figure 1 and in the direction shown by the arrows in Figure 3, that is, to a position to bring the display 40 underneath the window 28, as shown by the dotted lines in Figure 1.

The empty signal operating member 44 is loosely mounted in slots 46 and 48 formed in a mounting member 50 running transversely of the machine. There is one empty signal operating member 44 for each empty signal member 34, that is one for each column. The member 44 is provided with a cam edge 52 against which the lower end 54 of the pivoted member 34 abuts. The biasing means acting through the pivoted member 34 and its lower end 54 urges the empty signal operating member 44 to the right, as viewed in Figure 1. The member 44 is formed with a portion 56 projecting beyond the mounting slot 46 and adapted to abut the edge of the lowermost package of merchandise 16. The package of merchandise, therefore, resists the movement to the right of the empty signal operating member under the influence of the biasing means and maintains the empty signal display 40 in its full line position in Figure 1 clear of the window 28. As soon as the last package of the column drops to the ejector housing 24 it will be clear of the projection 56. When this occurs the spring 42 will rotate the pivoted member 34 in a counterclockwise direction causing its lower end 54 to move to the right, urging the empty signal operating member 44 to move to the right. This motion is a simple sliding motion and continues until the notch 58 formed in the bottom edge of the empty signal operating member 44 is seated on the edge of the slot 48 formed in the mounting member 50. The empty signal, therefore, will remain in the empty indicating position until the machine is again loaded and the empty column is replenished with merchandise. At this time the service man will lift the empty signal operating member 44 and reposition it so that it again will be held outwardly, as viewed in Figure 1, by the bottommost package of cigarettes of the stack with which the column has been refilled. It is noted that the ejector housing 24 is provided with a notch 60 into which the hooked end 61 of the empty lock 62 is adapted to

fall by gravity when the last package of cigarettes is dispensed. The empty lock 62 comprises a lever pivoted around pin 64 carried by the ejector 18. The upper end 66 of the empty lock lever 62 abuts the bottom of the bottommost package of cigarettes 16 and rotates the lever in a counterclockwise direction, as viewed in Figure 1, to lift the hook 61 and maintain it out of engagement with the stop notch 60. As soon as the last package of cigarettes is dispensed gravity will cause the empty lock lever to rotate in a clockwise direction to seat the hook 61 in the notch 60 and thus prevent the ejector from being pulled to the left.

Referring now to Figures 4 and 5 in which there is shown the manner of applying my empty signal to an electric machine, there is shown a housing 10 as in the case of the mechanical machine shown in Figures 1, 2 and 3. Similarly, there are a plurality of vertical containers 12 housing packages of cigarettes 14. The lowermost package 16 of the stack rests upon an ejector 18 mounted for movement in an ejector housing 24. It is understood, of course, that there is one ejector for each column of merchandise. The front of the housing is formed with a transparent portion 11 through which a plurality of windows 28, one for each column, may be viewed. In the electric machine the ejectors 18 are operated from an electric motor, as is well understood by those skilled in the art. Only sufficient of the dispensing mechanism to enable the understanding of the instant invention will be described. Extending across the machine is an operating bar 70. Whenever the motor (not shown) of the dispensing mechanism is energized the operating bar will move to the left and back to the position shown in Figure 5. The operating bar furnishes the power for moving the selected ejector. The operating bar carries a plurality of coupling spools 72, one for each ejector. The bottom of the ejector is formed with a re-entrant portion 74 normally uncoupled from the operating bar 70. When a push button 76 is pressed it moves to the right and through link 78 moves the coupling actuating cam 80 to the right. The cam surfaces 82 and 84 of the actuating cam in moving to the right will lift the cam 80 and hence the coupling spool 72 upwardly. This couples the operating bar 70 with the ejector through the re-entrant portion 74. At the same time the movement to the right of the actuating cam 80 will rotate the member 86 which is operatively connected to the actuating cam 80 in a clockwise direction, as viewed in Figure 5, thus rotating the shaft 88 which is secured to the member 86. The rotation of shaft 88 will close a switch (not shown) when there are sufficient coins in the machine register. The switch energizes the motor and starts the vending cycle. Mounted upon the ejector housing 24 there are a plurality of buffer members 90 urged to move to the left, as viewed in Figure 5, by respective springs 92. It is understood, of course, that there is one buffer member for each push button. At the terminal portion of the stroke of the push button the end 94 of the link 78 will abut the projection 96 of the buffer member 90 and cushion the stroke of the push button.

A mounting plate 98 extends across the machine and carries a plurality of brackets 39 similar to those shown in Figure 3 for mounting the empty signal pivot rod 32 as described above. A plurality of empty signal pivoted plates 34 similar to those shown in Figures 1, 2 and 3 are pivotally mounted upon the rod 32, there being one for each column. Each of the empty signal plates 34 is provided with lugs 38 formed with holes through which the pivot rod 32 passes. Respective springs 42 are provided normally to bias the empty signal plates 34 to rotate in a counterclockwise direction as viewed in Figure 5. The upper portion of each empty signal plate 34 is bent backwardly to form a portion 36 carrying the display 40 adapted to be viewed through the window 28 when the

empty signal is rotated in a counterclockwise direction under the influence of its spring 42.

As in the previous embodiment of the invention, there is a mounting member 50 for the empty signal operating members 44 which slidably mounts the plurality of empty signal operating members, one for each empty signal. The cam surface 52 of each operating member 44 engages the lower portion 54 of each empty signal plate and rotates each plate in a clockwise direction against the action of each respective spring 42 owing to the abutment of the projection 56 against the bottommost package of merchandise 16 of each column. This holds the empty signal display 40 in the full line position shown in Figure 5 clear of its window 28 so that it cannot be seen by a user. When the last package of merchandise is dispensed the empty signal will rotate to the dotted line position shown in Figure 5 and in so doing will move the operating member 44 to its dotted line position. It is understood that this motion is permitted by the absence of a package of merchandise in the column against which the projection 56 can abut. The empty signal is now in position to be viewed through the window 28. The operating member 44 is integrally formed with a depending portion 100 so that when the operating member is in the dotted line position shown in Figure 5 this member will be in the path of the upper portion 102 of the tail of cam 80. When the push button is pressed the portion 102 contacts the depending portion 100 which blocks its movement. This contact occurs first before the switch operating member 86 has rotated to switch closing position and before the cam 80 moves upwardly sufficiently to engage the coupling spool 72 with the ejector portion 74. Accordingly, the machine is prevented from operating, first because the motor cannot be energized, and secondly because the operating bar is not coupled to the ejector. In the electrical machine, therefore, the empty signal not only shows a purchaser that a column is empty, but also positively prevents that column from being operated, that is, it performs the functions of an empty lock.

It will be seen that I have accomplished the objects of my invention. My empty signal comprises only two moving parts, the pivoted member carrying the display and the empty signal operating member 44. My empty signal is positive in that it actually senses the presence or absence of merchandise in the column and does not depend on a counting arrangement or other indirect means. Accordingly, it is simple to maintain and inexpensive to construct. Not only does my empty signal indicate to the purchaser that a particular column is empty, but in the case of an electric machine it also acts as an efficient empty lock positively preventing the operation of the machine by rendering the selector means for that column inoperative.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of my claim. It is further obvious that various changes may be made in details within the scope of my claim without departing from the spirit of my invention. It is therefore to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

In a merchandising machine a housing formed with a window, a columnar container for holding articles to be vended, an ejector for dispensing the bottommost article in the container, a signal for indicating that the container is empty, means for mounting the signal for pivotal movement to and away from a position visible through the window, biasing means for moving the signal to a position visible through the window, signal actuating means having operative engagement with the signal and the bottommost article in the container for mounting the signal in a position away from view through the window against the action of the biasing means, the construction

being such that when engagement of the actuating means with the bottommost article is lost owing to the dispensing of the last article in the container the biasing means will move the signal into position visible through the window, said signal actuating means comprising a slideable member, means carried by the housing for mounting the slideable member for movement in a generally horizontal plane, one end of the slideable member carrying a cam surface normally contacting the signal and being formed with a depending portion, movable means for operating the ejector, said depending portion being normally supported by the slideable member mounting means out of the path of movement of the ejector operating means, means carried by the other end of the slideable member for contacting the bottommost article in the container to maintain the depending portion out of the path of movement of the ejector operating means, and coating means carried by the slideable member and its mounting means for permitting the movement of the depending portion into the path of travel of the ejector operating means when

the last article in the container is dispensed to prevent the action of the ejector operating means.

## References Cited in the file of this patent

## UNITED STATES PATENTS

839,304	Long	Dec. 25, 1906
1,209,758	Richardson	Dec. 26, 1916
1,356,345	Dun Lany	Oct. 19, 1920
1,393,964	Potts et al.	Oct. 18, 1921
1,506,813	Camelo et al.	Sept. 2, 1924
1,639,615	Sapp	Aug. 16, 1927
1,788,523	Jennings et al.	Jan. 13, 1931
1,803,146	Robbins	Apr. 28, 1931
2,211,799	Tatter	Aug. 20, 1940
2,231,952	Rowe et al.	Feb. 18, 1941
2,281,487	Finkel et al.	Apr. 28, 1942
2,546,690	Gabrielsen	Mar. 27, 1951
2,610,100	Childers	Sept. 9, 1952
2,650,149	Munz et al.	Aug. 25, 1953