Aug. 7, 1951 B. A. ANDREWS 2,563,204

VENDING MACHINE FOR BOTTLED GOODS

Filed Feb. 2, 1948 2 Sheets-Sheet 1

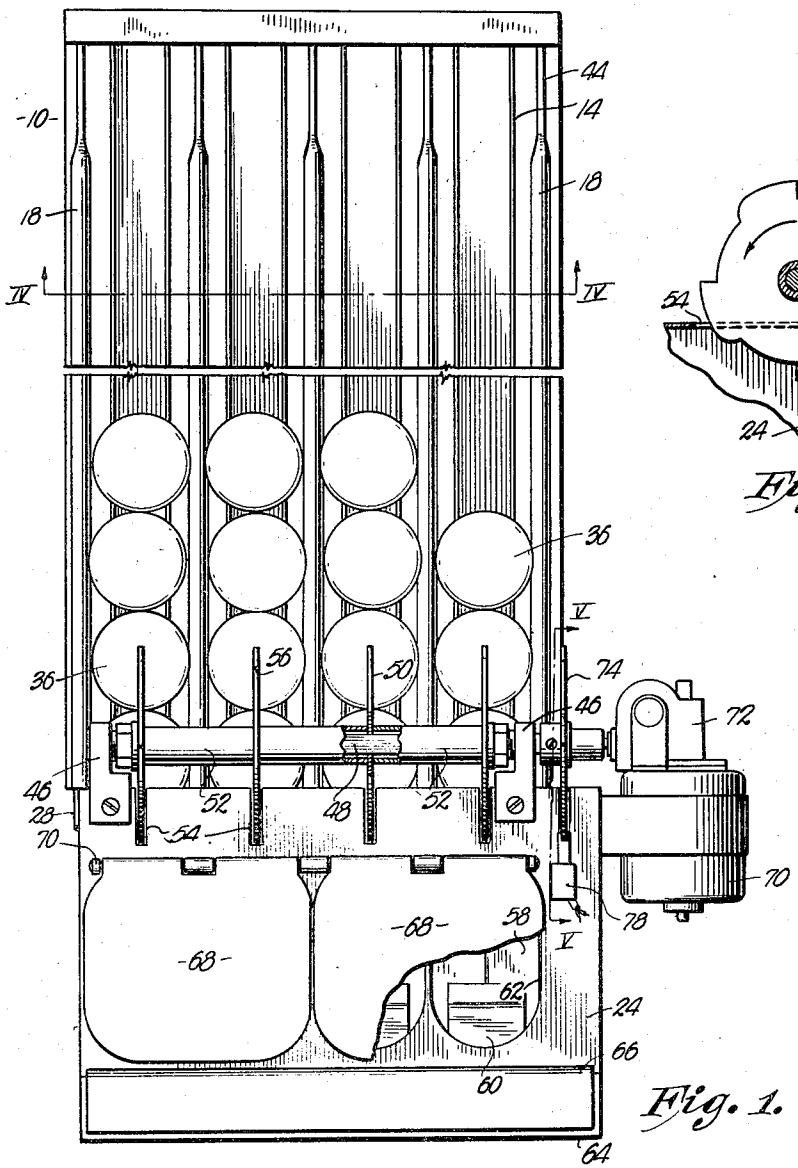


Fig. 1.

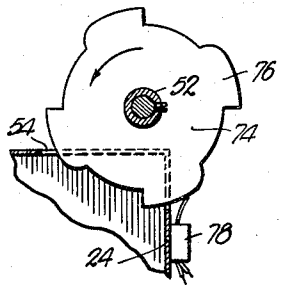


Fig. 5.

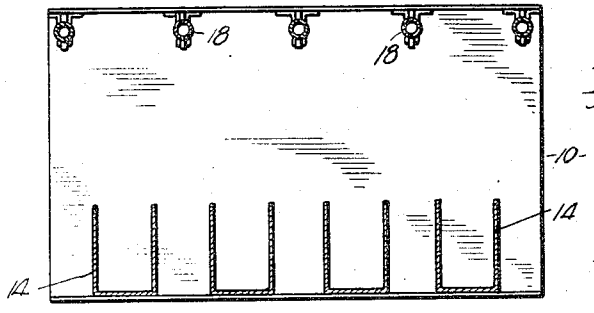


Fig. 4.

INVENTOR.
Boley A. Andrews

BY

ATTORNEY.

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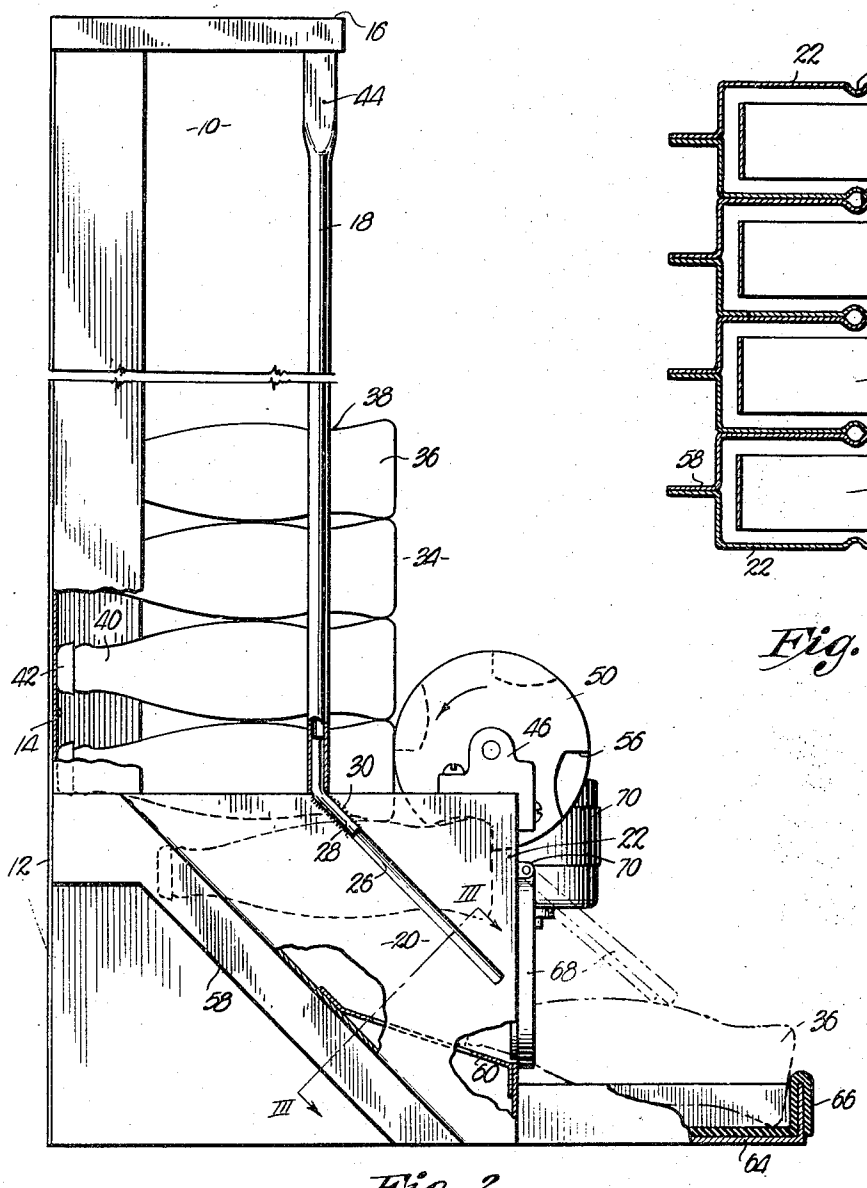


Fig. 2.

Fig. 3.

INVENTOR.
Boley A. Andrews
BY
Reel & Young
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,563,204

VENDING MACHINE FOR BOTTLED GOODS

Boley A. Andrews, Kansas City, Mo., assignor, by mesne assignments, to The Vendo Company, Kansas City, Mo., a corporation of Missouri

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4 Claims. (Cl. 312—48)

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This invention relates to automatic vending machines for bottled goods, the primary object being to provide an inexpensive assembly of parts capable of manufacturing in a relatively small unit and yet efficient in its purpose of automatically dispensing bottles one at a time upon insertion thereinto of a coin or other suitable medium.

The most important object of this invention is the provision of a bottle vending machine having means for supporting a plurality of bottles in stacked relation for discharge singly from the bottom of the stack and having means cooperable with such bottle receiving structure for normally holding the bottles against movement therefrom by action of gravity and movable to and from a position for releasing a single bottle as desired.

Another important object of this invention is the provision of a bottle vending machine having specially designed structure for supporting a plurality of bottles to be vended wherein such bottles have the peculiar configuration of having at least one area of reduced diameter, said structure constituting spaced apart guides, the bottles being positioned between said guides with said reduced area next adjacent thereto.

A further object of this invention is the provision of a bottle vending machine having the aforesaid supporting structure wherein a rotatable disc-like cam member serves to cooperate therewith in preventing discharge of the bottles by bearing directly against the bottom of the lowermost of said bottles.

A still further object of this invention is the provision of a bottle vending machine having receiving structure therefor formed to guide the bottles from the stack thereof through a downwardly inclined path of travel to a point of discharge, the rotatable cam member holding the bottles against movement on their longitudinal axis and the receiving structure holding such bottles against downward movement.

Other objects of this invention include the manner in which the rotatable cam member is provided with a plurality of notches for receiving a portion of the bottom of a bottle to be discharged when vending action takes place; the way in which the receiving structure and the cam cooperate in maintaining the bottles in a substantially horizontal position throughout their path of travel; the manner in which the cam member not only serves to release a single bottle but operates to hold other bottles in the stack against discharge; the way in which the bottle being vended remains confined in the

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guiding structure until finally released; and the manner in which the entire machine can be constructed to sequentially discharge bottles from a plurality of side-by-side stacks thereof.

Other objects will be made clear or become apparent during the course of the following specification, reference being had to the accompanying drawings, wherein:

Fig. 1 is a front elevational view of a vending machine for bottled goods made in accordance with the present invention, the covering shell therefor being entirely removed and parts being broken away for clearness.

Fig. 2 is a side elevational view thereof, parts being broken away and in section to reveal details of construction.

Fig. 3 is a fragmentary cross-sectional view taken on line III—III of Fig. 2 looking in the direction of the arrows.

Fig. 4 is a transverse cross-sectional view taken on line IV—IV of Fig. 1 looking in the direction of the arrows; and

Fig. 5 is a fragmentary detailed cross-sectional view taken on line V—V of Fig. 1.

It is recognized by those skilled in this art that there is today a great need for a vending machine for bottled goods such as beverages that is not only inexpensive to manufacture but capable of being confined in a relatively small space. Many retail establishments are greatly in need of such automatic coin controlled vending machines but are unable to utilize conventional vending machines because of the great expense thereof and the amount of space consumed thereby. To this end, details of construction play an important part and constitute one of the novel features of this invention since the stored bottles are thereby positioned relatively close together and the machine rendered non-bulky because of relatively few small assembly of parts.

In the drawings, a cabinet broadly designated by the numeral 10 has an elongated vertical back wall 12 upon which is disposed a plurality of spaced vertical channels 14. These channels 14 are U-shaped in cross-section as is clearly illustrated in Fig. 4 of the drawings and extend from the top wall 16 of cabinet 10 downwardly to a point intermediate the ends of the back panel 12.

A plurality of preferably hollow posts or guides 18 are disposed near the front of cabinet 10 in relative parallel relationship and in offset relationship with respect to the channel members 14. In other words, there is a post 18 disposed on each side of a central plane through the

channel members 14. These posts 18 are suitably affixed to the uppermost wall 16 of cabinet 10 and extend downwardly to a point substantially in alignment with the lowermost ends of the channel members 14.

A unitary case 20 disposed within the cabinet 10 near the lowermost end thereof and directly below the channel members 14 and posts 18 includes a pair of side walls 22 extending from the back wall 12 and terminating forwardly of the vertical posts 18 and a front wall 24 interconnecting said side walls 22. Each of these side walls 22 is provided with an elongated indentation 26 extending at an angle forwardly and downwardly from the lowermost end of the outermost proximal post 18.

A substantially L-shaped rod 28 having one leg thereof extending into the lowermost end of the outermost post 18 is received by the respective indentation 26 and suitably secured thereto as by welding 30. In other words, the elongated indentations 26 in the side walls 22 extend inwardly and the members 28 fit snugly into such indentations 26 on the outermost faces of the respective side walls 22.

As clearly illustrated in Fig. 3 of the drawings, the case 20 is compartmented, there being a compartment directly underlying and disposed between each pair of the vertical posts 18. Such compartments are elongated in cross section, the walls 22 defining one side of the two outermost compartments of case 10. As shown in Fig. 3, the side walls of all of these compartments, are disposed in relative side-by-side relationship and all have elongated angularly disposed substantially parallel indentations 26 formed therein. The indentations of the side walls of the compartments are in alignment to present openings 32 for receiving the bars 28 of the respective posts 18.

From the foregoing, it is clear and as illustrated in Fig. 1, that the spaced apart posts 18 and the channel members 14 cooperate in supporting a plurality of stacks 34 of bottles 36. These stacks 34 are vertically disposed and in relative close side-by-side relationship.

The bottles 36 chosen for illustration are commonly used in the field of beverages and well known to those familiar with this art and of the peculiar configuration of being provided with a portion 38 of reduced diameter. This portion 38 is utilized in the vending machine forming the subject matter of this invention to an advantage in that the posts 18 are spaced apart a distance substantially the same as the diameter of this reduced portion 38 of the bottles 36. Obviously, therefore, the distance between the posts 18 is less than the diameter of other portions of bottles 36. The bottles 36 are disposed within such receiving means with their bottoms facing the front of the machine and with their necks 40 extending into the respective channels 14.

The caps 42 of the bottles 36 bear directly and slidably against the bight of channels 14 as clearly illustrated in Fig. 2. Each of the posts 18 has a flattened portion 44 at the uppermost end thereof to increase the distance between such posts 18 at said uppermost ends. Thus the bottles 36 are placed into the stacked relationship by inserting the same between the flattened portions 44 of posts 18 the distance between such portions 44 being greater than the greatest diameter of bottles 36.

A suitable door (not shown) forming a part of the shell of the cabinet 10, may be used to render the interior of the cabinet 10, accessible for positioning bottles 36 therein. Mounted on the normally front face of the cabinet 10 and directly to the wall 24 of case 20, is a pair of spaced apart bearings 46 for rotatably receiving an elongated shaft 48 extending entirely across and in transverse relationship to the front of cabinet 10. A portion of the shaft 48 between the bearings 46 is polygonal in cross-section for receiving a plurality of disc-like cams 50. These cams 50 have openings formed centrally therethrough conforming to the polygonal cross-sectional contour of the shaft 48 and a number of sleeves 52 telescoped upon the shaft 48 and disposed between the cam members 50, hold the latter in spaced apart relationship and in parallel alignment with the longitudinal axes of bottles 36 in all of the corresponding stacks 34 thereof.

The front wall 24 of the case 20 has a number of slots 54 formed therein for receiving and clearing the rotatable cam members 50. These cam members 50 are disposed with their peripheral edge normally bearing directly against the bottom of the lowermost bottle 36 in the corresponding stack 34 thereof as clearly illustrated in Fig. 2. With such cam members 50 so disposed, they cooperate with the posts 18 in normally preventing the bottles 36 from movement downwardly toward the inclined guiding indentations 26. In other words, it is clear that in order for any bottle 36 to pass from the stack 34 thereof it must not only move downwardly but forwardly toward the shaft 48. The cam member 50 bearing against the bottom of the lowermost bottle 36 as above described prevents such movement. Each of the cams 50 is provided with a notch 56 extending inwardly from the peripheral edge thereof. Inasmuch as four rows of the stacks 34 of bottles 36 has been illustrated in the drawings, the notch 56 of one cam 50 is displaced 90° from the notch 56 of the cam 50 next adjacent thereto. Thus as the shaft 48 and cams 50 are all caused to rotate simultaneously, bottles 36 will be vended consecutively from the stacks 34. In other words, normally, the first bottle to be vended will be from the first stack 34 thereof to the left as shown in Fig. 1, the next bottle will be discharged from the stack next adjacent thereto and so on. As clearly illustrated by dotted lines in Fig. 2 of the drawing, as a cam 50 rotates, the notch 56 thereof will be moved into alignment with the bottom of the lowermost bottle 36 of the respective stack 34 thereof permitting movement of such lowermost bottle forwardly on its longitudinal axis. Such forward movement of this bottle will permit the same to move downwardly by force of gravity and this combined forward and downward movement will permit the bottle 36 to shift at an angle as the same is guided along the indentures 26. It is understood that the distance between a given pair of such indentures 26 is substantially the same as the diameter of portion 38 of bottle 36. As the bottle 36 so moves downwardly to be vended, the cap 42 thereof will move to an inclined wall 58 forming a part of the case 20. As shown in Fig. 3 of the drawings, there is an inclined wall 58 for each of the compartments thereof upon which the cap 42 of the vended bottle slides and such walls 58 are in substantial parallelism with the inclined indentures 26. As the bottle 36 being discharged approaches the lowermost end of the indentures 26, it comes to rest upon an inclined ramp 60 extending from the wall 58 toward the wall 24 of case 20 at an

angle that is less steep than that of the walls 58. There is a ramp 60 for each of the compartments of the case 20 and such ramps 60 are affixed by welding or other means of securement directly to the respective wall 58 and to the innermost face of wall 24 of case 20.

A plurality of elongated side-by-side openings 62 are formed in the front wall 24 of case 20 for receiving the bottles 36 as the same are discharged in the manner above described and a tray 64 extending laterally from the wall 24 and entirely across the front of the machine, receives the bottles as the same are vended in the manner illustrated in Fig. 2 of the drawing. This tray 64 is preferably lined with a resilient material 66 such as rubber to receive the impact of falling bottles 36. It is to be noted that the posts 18 and channel members 14 cooperate in holding the stacked bottles 36 with their longitudinal axes substantially horizontal and perpendicular to the longitudinal axes of posts 18 and channels 14. By the same token, the inclined indentures 26 formed in the walls of case 20 cooperate with the inclined wall 58 thereof in maintaining such bottles 36 with their longitudinal axes substantially horizontal as such bottles 36 move downwardly and forwardly from the stacks 36 thereof toward the tray 64. These indentures 26 extend almost entirely to the wall 24 and openings 62 thereof to the end that the discharged bottle 36 actually falls but a short distance before coming to rest within the tray 64. It is only after such bottles 36 leave the indentures 26 and come to rest upon the ramps 60 that their angularity changes to that of the bottle 36 shown in Fig. 2 within tray 64. The openings 62 formed in the wall 24 are normally covered by a pair of swingably mounted doors 68. These doors 68 are journaled upon an elongated shaft 70 extending across the front of the machine and suitably attached to the wall 24. These doors 68 will normally hang in a position closing the openings 62 and be forced to the open position by falling of a vended bottle 36. If desired, spring means may be used to yieldably hold the doors 68 in the closed position. The shaft 48 is driven by an electric motor or the like 70, having connection with a suitable source of electrical energy not shown. Gear reduction 72 operably connected with the motor 70 joins directly with one end of the shaft 48.

It is contemplated that the entire machine be controlled by a suitable coin control mechanism not illustrated since the same forms no part of the subject invention. Obviously, such coin controlled assemblies may be connected with the motor 70 in such a way as to cause rotation of shaft 48 a given distance to discharge the bottles 36 one at a time. To this end, a cam member 74 is secured to the shaft 48 and has a plurality of ears 76 formed thereon to intermittently come into contact with an actuating switch 76 mounted upon the wall 24.

It is clear to those skilled in the art that through use of suitable holding relays in conjunction with the coin controlled assembly, cam member 74 will operate to alternately open and close an electrical circuit through motor 70 by intermittently contacting switch 78.

Manifestly, the advantages and objects hereinabove set forth have been accomplished by production of the vending machine forming the subject matter of this invention. It is to be noted that the peculiar configuration of the bottles 36 makes it possible to utilize posts 18, channels 14 and guides 26 to an advantage in that a relatively small space is needed for the supply of stacked bottles 36. These bottles are easily loaded into the machine because of the flattened portions 44 of posts 18 and the bottles always remain in a substantially horizontal position without binding because of the cooperation between channels 14 and guide posts 18. Similarly, the bottles remain confined within the guiding means therefor until the same are practically ready to slide into the tray 64. Although the bottles 36 are actually discharged by force of gravity, there is no great fall thereof. The cam members 50 perform the function of not only discharging the bottles singly when the notch 56 thereof is moved into alignment with the bottom of the lowermost bottle 36, but also serve to hold all of the bottles 36 next above against discharge by the peripheral edge thereof coming into contact and bearing directly against such bottoms of bottles 36.

Many other advantages will result from the use of the machine herein set forth and it is to be undertsood that many changes can be made in details of construction particularly without departing from the spirit of the invention as defined by the claims appended hereto.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a bottle vending machine of the kind described, structure for receiving a plurality of bottles in stacked relation; means forming a part of said structure for guiding said bottles at an angle downwardly from said stack of bottles; and releasable means cooperable with said structure when unreleased for holding said bottles against movement by gravity along said guiding means, said releasable means holding the bottle next adjacent the guiding means against movement along its longitudinal axis and said guiding means holding the bottles against downward movement along their transverse axes when said means is unreleased.

2. In a bottle vending machine of the kind described, structure for slidably receiving a vertical stack of bottles to be vended; means forming a part of said structure for guiding said bottles downwardly and laterally from the vertical axis of said stack of bottles; and releasable means cooperable with said structure and said guiding means and operable when unreleased to hold said bottles against such downward and lateral movement, said releasable means normally bearing against one end of the lowermost of said bottles and being disposed within the path of lateral movement of said bottles.

3. In a bottle vending machine of the kind described, structure for slidably receiving a vertical stack of bottles to be vended; means forming a part of said structure for guiding said bottles downwardly and laterally from the vertical axis of said stack of bottles; and releasable means cooperable with said structure and said guiding means and operable when unreleased to hold said bottles against such downward and lateral movement, said releasable means including a rotatable disc disposed normally in peripheral contact with one end of the lowermost of said bottles and having at least one notch movable to and from a position for receiving a portion of said one end of the lowermost bottle, whereby to release the same for movement by gravity toward said guiding means.

4. In a bottle vending machine of the kind described, structure for slidably receiving a vertical stack of bottles to be vended; means forming

a part of said structure for guiding said bottles downwardly and laterally from the vertical axis of said stack of bottles; releasable means cooperable with said structure and said guiding means and operable when unreleased to hold said bottles against such downward and lateral movement; and means for receiving one end of the bottles and disposed to hold the bottles horizontal as the same move along said guiding means.

BOLEY A. ANDREWS.

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