Feb. 3, 1953 C. S. BALAZ 2,627,362

VENDING MACHINE

Filed Dec. 28, 1948 4 Sheets-Sheet 1

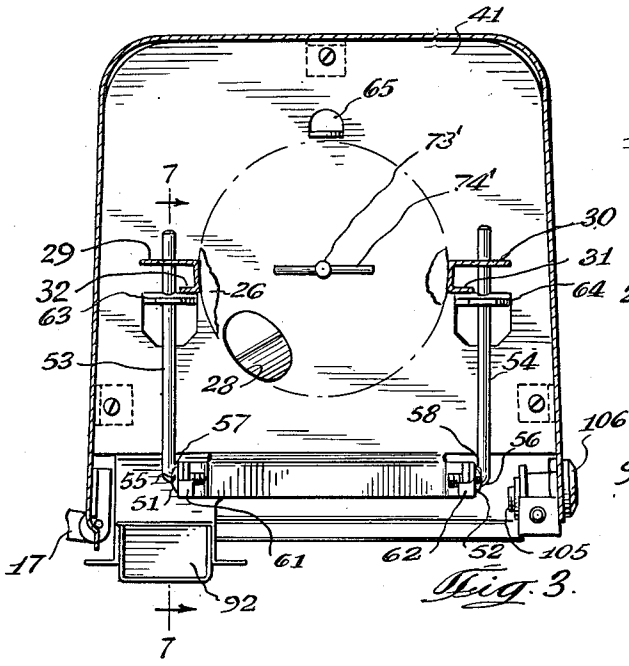


Fig. 3.

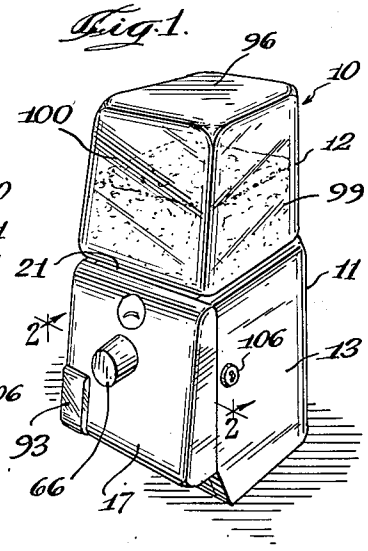


Fig. 1.

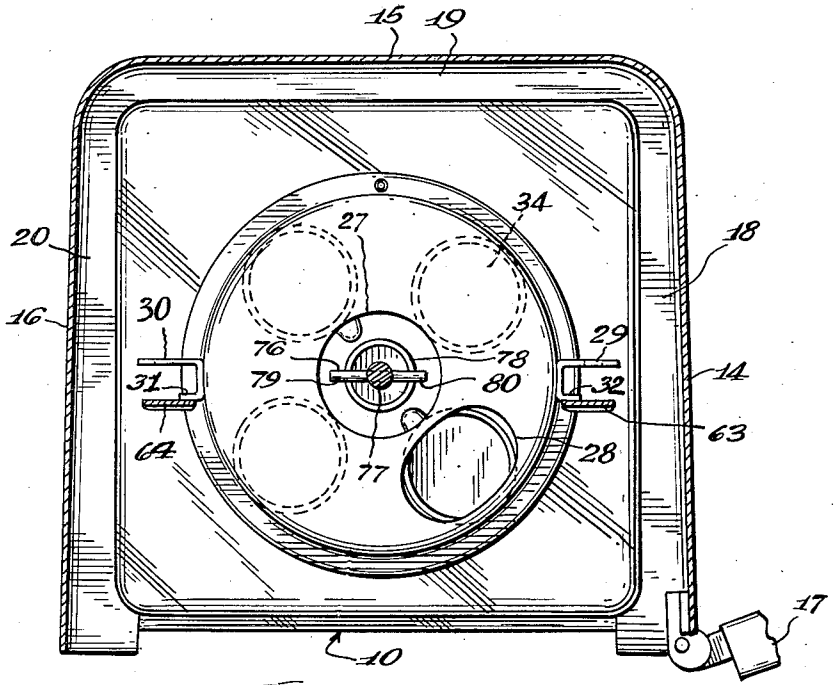


Fig. 4.

Inventor:
Charles S. Balaz
By Eli Mullin
Attorney

Feb. 3, 1953 C. S. BALAZ 2,627,362

VENDING MACHINE

Filed Dec. 28, 1948 4 Sheets-Sheet 2

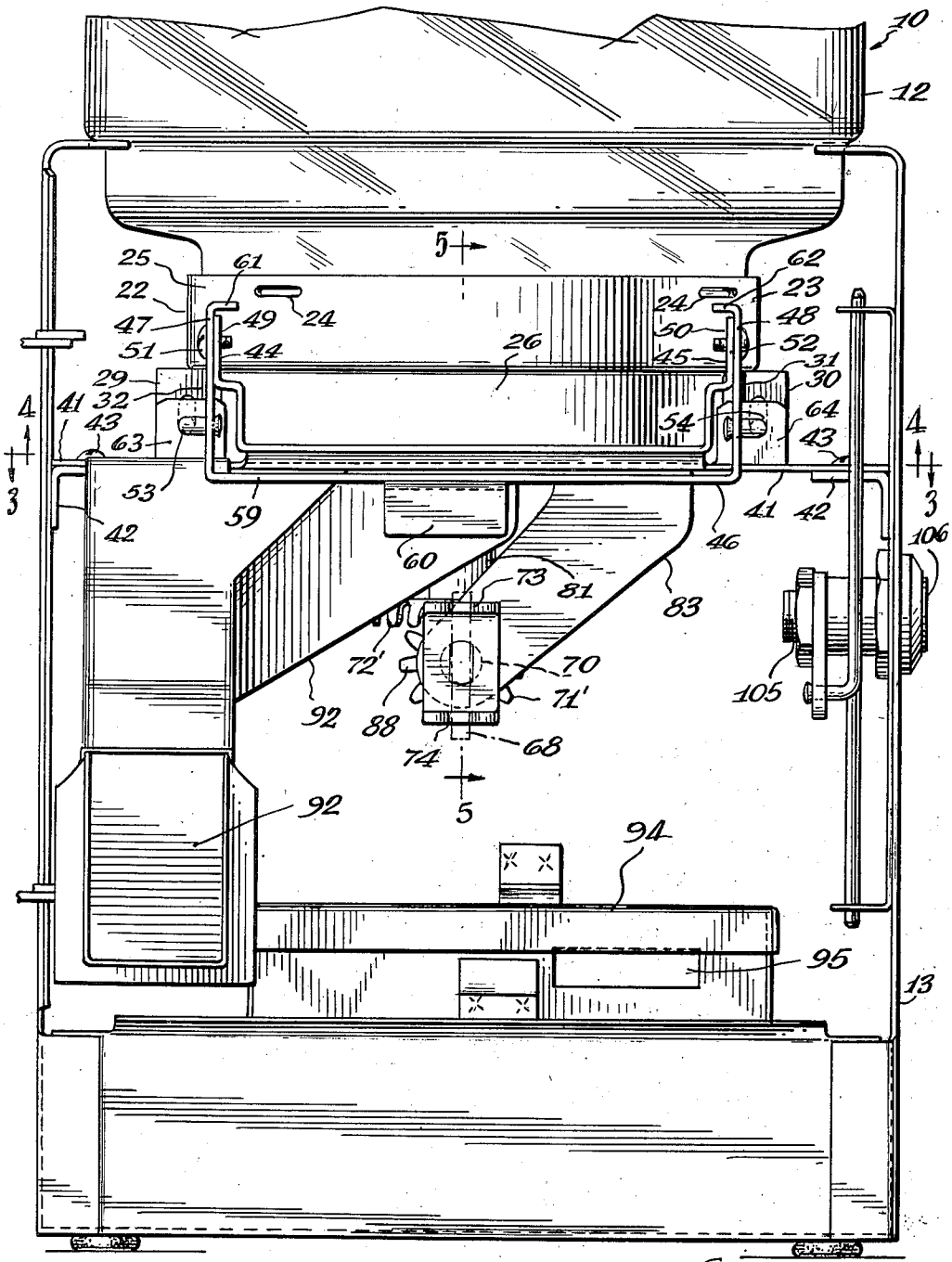


Fig. 2.

Inventor
Charles S. Balaz
By Eli Mullin
Attorney

Feb. 3, 1953 C. S. BALAZ 2,627,362

VENDING MACHINE

Filed Dec. 28, 1948 4 Sheets-Sheet 3

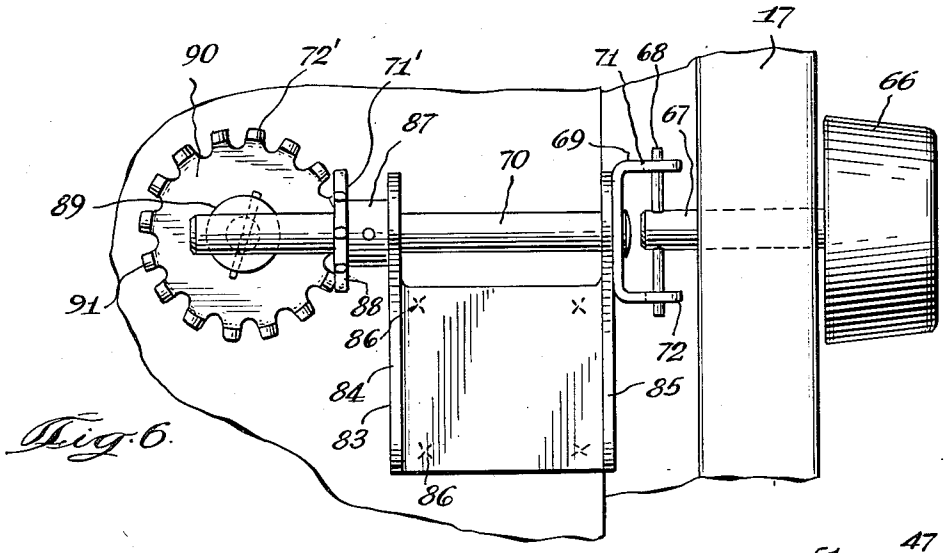


Fig. 6.

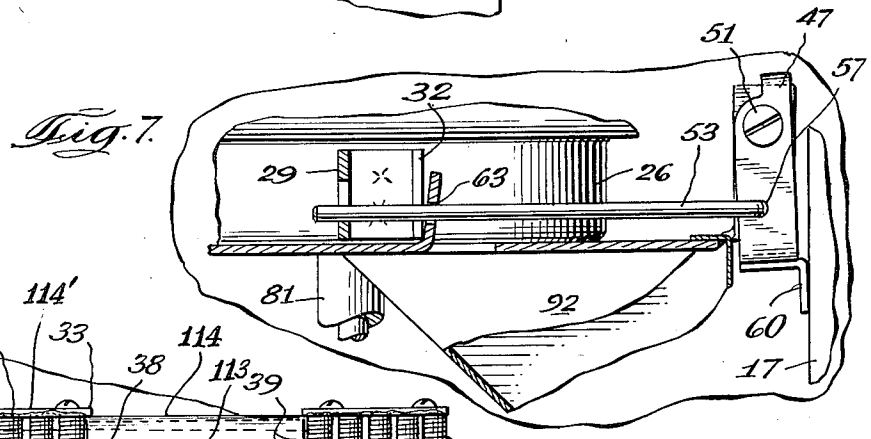


Fig. 7.

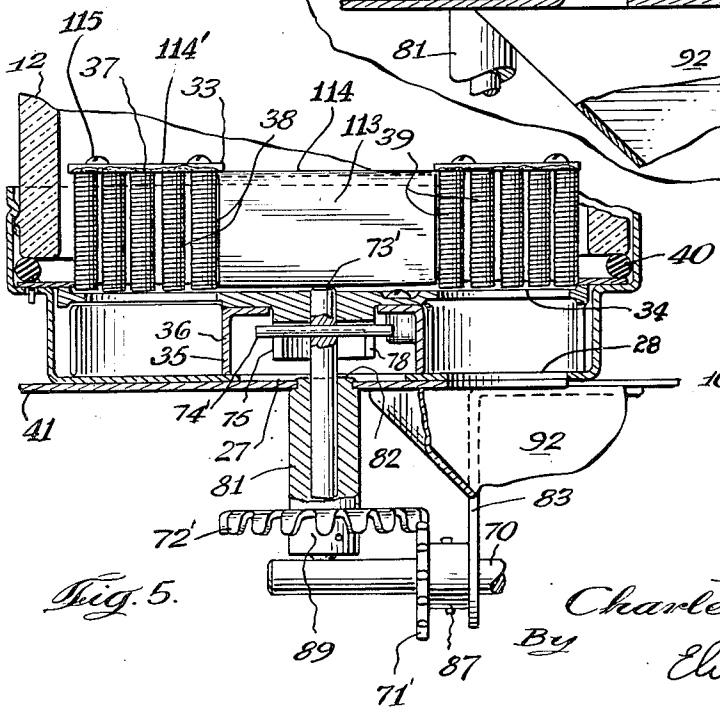


Fig. 5.

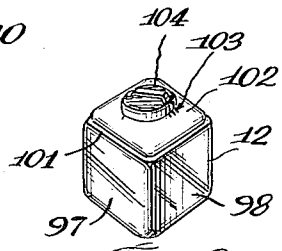


Fig. 8.

Inventor:
Charles S. Balaz
By
Eli Mullin
Attorney

Feb. 3, 1953 C. S. BALAZ 2,627,362

VENDING MACHINE

Filed Dec. 28, 1948 4 Sheets-Sheet 4

Fig. 9.

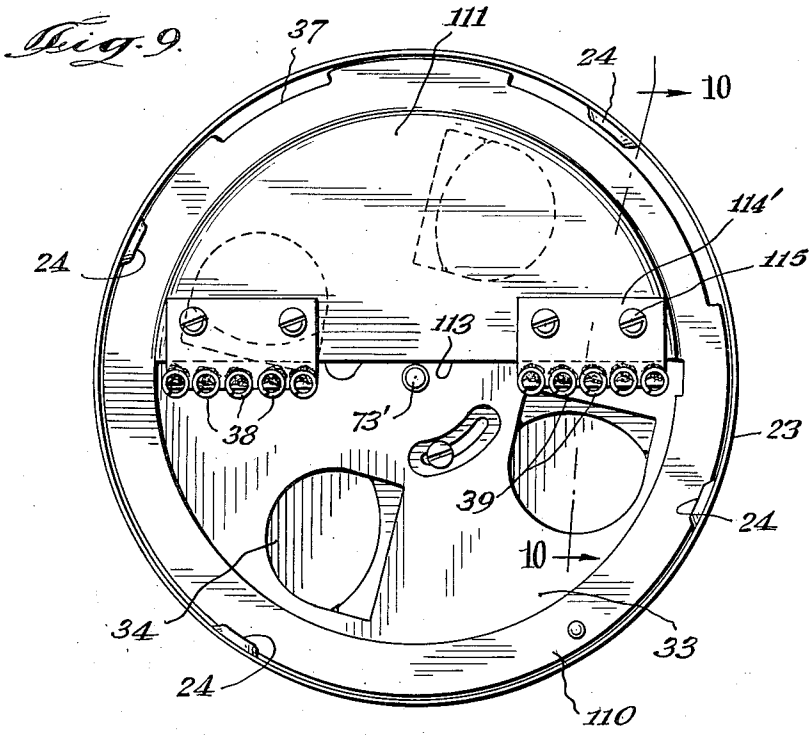
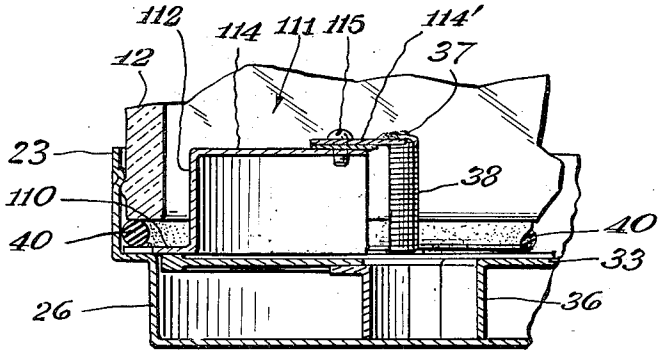


Fig. 10.



Inventor:
Charles S. Balaz
By Eli Mullin
Attorney

Patented Feb. 3, 1953 2,627,362

UNITED STATES PATENT OFFICE

2,627,362

VENDING MACHINE

Charles S. Balaz, Morris, Ill., assignor to The Northwestern Corporation, Morris, Ill.

Application December 28, 1948, Serial No. 67,650

13 Claims. (Cl. 222—2)

1

This invention relates to vending machines, and more particularly to improvements in coin-controlled bulk merchandise vending machines of the type adapted to dispense confections, nuts, ball gum and the like. Specifically this invention is directed to improvements in the merchandise storage receptacle, in the mechanism for associating the same with the machine, and in the actuating mechanism and transmission.

Vending machines of the type adapted to dispense bulk merchandise heretofore have comprised a pedestal or standard containing a coin mechanism, an actuating mechanism and a dispensing mechanism; and a merchandise storage vessel usually comprising a glass globe positioned in the top of the pedestal.

In the past these glass globes have been constructed with an opening at the top through which the merchandise could be introduced to the globe. To remove the globe from the machine it was usually necessary to partially dismantle the pedestal, an operation which required considerable time and some skill.

In servicing these machines it was necessary for the operator, after dismantling the machine and removing the glass globe, to remove the unused portion of the merchandise from the globe, clean the globe, then return the globe to the machine, reconstruct the machine and refill the storage globe. Since vending machines are often located in factory areas, railroad stations and platforms and similar industrial locations, this method of servicing was definitely not only time consuming, but unsanitary in that an opportunity existed for admission of dirt and bacteria to the globe. Moreover, when the merchandise was poured into the top of the globe often times it was contaminated or lost by spilling.

In those machines which did not use open-top glass globes, to refill the machine it was necessary to invert the entire machine before removing the globe from the pedestal so that the contents would remain in the receptacle.

It is, therefore, a primary object of this invention to provide a vending machine which will overcome all of the disadvantages set forth above.

Another object is to provide a vending machine having a sanitary merchandise storage cartridge which may be readily removed and replaced.

A further object is to afford a vending machine which will permit removal of the merchandise receptacle without necessitating even partial dismantling of the machine. An object relating thereto is to afford a locking device which will securely retain the merchandise receptacle cartridge within the machine, but which will permit removal by a simple lever movement.

2

Still another object is to afford a self-contained mechandise dispensing unit.

Yet a further object is to provide a self-contained removable dispensing unit which may also function as a closure member for the merchandise globe, and which may be readily attached to and removed from the globe.

Yet another object is to provide actuating means in a vending machine so constructed that it may be readily coupled to or uncoupled from the vending mechanism without necessitating any dismantling or rebuilding of the machine.

And still a further object is to provide a vending machine having a removable merchandise container and made up of self-contained and removable units so that the servicing of the machine requires a minimum expenditure of time and effort.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a perspective view of the assembled vending machines embodying the principles of this invention;

Fig. 2 is an enlarged front elevational view of the vending machine pedestal interior, with the door removed showing some of the internal mechanism and a portion of the merchandise storage globe;

Fig. 3 is a sectional view taken on line 3—3 in Fig. 2, viewed in the direction indicated and illus-

trating the mounting plate and globe retaining mechanism;

Fig. 4 is a sectional view taken on line 4—4 in Fig. 2, viewed in the opposite direction and illustrating the merchandise wheel cup and actuating arm connection;

Fig. 5 is a fragmentary sectional view taken on line 5—5 in Fig. 2, viewed in the direction indicated and illustrating the merchandise wheel cup and part of the actuating arm transmission;

Fig. 6 is an enlarged detail view of the separable actuating mechanism and transmission viewed from below the mounting plate;

Fig. 7 is an enlarged sectional view taken on line 7—7 in Fig. 3, viewed in the direction indicated and illustrating a detail of construction of the merchandise wheel cup retaining and locking mechanism;

Fig. 8 is a perspective view of a merchandise globe for use in connection with the vending machine, with a replaceable carrying cover attached thereto;

Fig. 9 is a top plan view of the merchandise dispensing and measuring mechanism; and

Fig. 10 is a sectional view taken on the plane of line 10—10 in Fig. 9, viewed in the direction indicated and illustrating details of the resilient measuring and levelling device.

Referring now to the drawings, reference numeral 10 indicates generally a vending machine consisting of a pedestal 11 having a merchandise globe 12 associated therewith.

The pedestal 11 comprises an outer housing 13 of generally rectangular construction including vertical walls 14, 15 and 16 with a bottom member and a hinged door 17 closing the front thereof. The top of the pedestal outer housing 13 is left open so that the inverted globe 12 may be fitted therein. The walls 14, 15 and 16 are inwardly flanged as at 18, 19 and 20 along the upper edges thereof. Likewise, a flange 21 is formed along the top edge of the door 17. These flanged portions 18, 19, 20 and 21 cooperate with the glass globe 12 to afford an effective seal therebetween.

A merchandise dispensing unit 22 comprising a circular merchandise wheel cup 23 having a plurality of bayonet lugs such as 24 is provided. These bayonet lugs 24 permit the cup to be removably fastened on the neck of the merchandise globe 12 so that the same may serve as a cover for the merchandise receptacle, thereby affording a replaceable cartridge. The cup 23 is formed with a top portion 25 and a lower portion 26 of reduced diameter. In the bottom of the cup 23 a central opening 27 is formed, and adjacent thereto but separated therefrom, a dispensing opening 28 is also provided. L-shaped, perforated retaining lugs 29 and 30 are affixed as by welding to the outer surface of the reduced diameter portion 26 of merchandise wheel cup 23 at diametrically opposed positions. These retaining lugs may be formed with short guide legs 31 and 32. The function of these retaining lugs will become apparent as the description proceeds.

The dispensing mechanism, which is rotatable within the cup 23, comprises a two-piece merchandise wheel 33 having a plurality of adjustable dispensing openings such as 34, and having a central annular hub portion 35 which may be defined by a depending circular wall 36. Within this hub 35 is provided a structure, which will later be described, the functioning of which is to afford a coupling with an actuating transmission shaft for rotating the merchandise wheel 33.

A stationary but removable resilient measuring and levelling device 37 having brushes 38 and 39 is positioned over the merchandise wheel 33 within the cup 23. As shown in Figs. 5, 9 and 10 in the drawings, this measuring and levelling device 37 comprises a metal gasket 110 having integrally formed, as by stamping, an inverted half-cup structure 111 occupying approximately one-half of the central area of the gasket 110. The half-cup 111 in turn comprises a semi-annular upwardly projecting wall 112, a front wall 113 and a top 114. The two groups of brushes 38 and 39 are mounted in front of openings in the front wall 113 of the cup 111 at diametrically opposed positions, and may be affixed as by brackets 114' and screws 115.

In operation the merchandise wheel 33 is rotated by an actuating mechanism (to be described in detail later) and revolves immediately below the measuring and levelling device 37 which is stationary. The merchandise fills the dispensing cavities 34 and as each filled cavity moves beneath the brushes 38 and 39 proper measuring is accomplished by the levelling off or skimming off of the excess merchandise. This action also insures agitation of the merchandise to prevent jamming with resultant injury to the merchandise. The entire assembly is retained within the cup by a tubular rubber gasket 40 which may be readily fitted about the periphery of the measuring device 37 within the cup 23. This gasket 40 also cushions the mouth edge of the glass globe 12 when the dispensing unit 22 is fastened to the globe.

When it is desired to insert the merchandise globe into the machine, the merchandise dispensing unit comprising the wheel cup 22 and the dispensing mechanism contained therein, is fastened over the mouth of the globe 12 by means of cooperating bayonet threads and lugs 24. This assembled unit or cartridge is then inverted and placed within the pedestal and positioned and retained therein in a manner which will now be described.

A mounting plate 41 is affixed within the pedestal in a horizontal plane by means of brackets such as 42 and screws such as 43. This plate 41 is spaced from the top of the pedestal a distance sufficient to permit the merchandise dispensing unit 22 to be placed therein. The plate 41 carries a structure comprising a novel mechanism for retaining the merchandise cartridge in locked position upon the pedestal 11. At the front edge of the plate 41 there is provided a pair of upstanding members 44 and 45 which may be integrally formed with the plate, as for example by stamping and bending. These members 44 and 45 form standards providing support for a U-shaped lever 46 which has its free ends 47 and 48 pivoted thereto as shown at 49 and 50 for swinging movement about the pivot points 51 and 52. These free ends 47 and 48 comprise arms which carry rods 53 and 54 having bent ends 55 and 56 pivoted thereto at the bottom portions as at 57 and 58, and arranged to reciprocate the rods in a plane substantially parallel with the plate 41. Lever 46 is further formed with a cross-arm 59 to the center of which a lever handle 60 may be affixed as by welding, and the free ends of arms 47 and 48 may be bent inwardly as at 61 and 62 to afford motion-limiting means for the lever 46.

Perforated guide lugs 63 and 64 are provided upon said plate for the dual purpose of assuring entrance of the rods 53 and 54 into the perforations of the retaining lugs 29 and 30, and also to

anchor the free ends of rods 53 and 54 to the mounting plate 41. A positioning lug 65 is also provided near the rear of the mounting plate 41 to assist in guiding and properly positioning the dispensing unit 22 upon the plate 41 for locking engagement therewith.

Thus, when it is desired to position and lock the merchandise cartridge, comprising the globe 12 and dispensing unit 22, within the pedestal, the cartridge is positioned so that the guide legs 31 and 32 of the retaining lugs 29 and 30 bear against the back of guide legs 63 and 64, and the rear of the cup 23 bears against the positioning lug 65. The cartridge is then lowered until it rests upon the plate 41, so that the perforations of guide lugs 63 and 64 are aligned with the perforations of retaining lugs 29 and 30. The operator then pushes down upon the lever handle 60 swinging the lever 46 about its pivot points 51 and 52. This reciprocates the rods 53 and 54 forwardly until the ends enter the perforations of the retaining lugs 29 and 30. The bottom of the retaining lug perforations may be positioned slightly above true alignment with the rods 53 and 54 to insure a slight bearing relationship which will more securely lock the cartridge within the pedestal. To unlock the mechanism for the purpose of removing the cartridge, the operator merely pulls up on the lever handle 60 causing the lever 46 to swing forwardly upon its pivot points 51 and 52 in the opposite direction. The rods 53 and 54 are thereby reciprocated forwardly until they are withdrawn from the retaining lug perforations, and the cartridge may then be lifted out of the pedestal. The guide lugs 63 and 64 may be slightly canted forwardly (Fig. 7) to permit ready positioning and removal of the cartridge.

To permit removal of the merchandise cartridge without necessitating the disconnecting of any parts or partial dismantling of the machine, a novel actuating transmission mechanism has been developed. Attention is directed to Figs. 2 and 6 of the drawings. This actuating mechanism comprises an actuating knob 66 which is mounted on the outer end of a shaft 67 which in turn is journaled through the pedestal door 17. This actuating knob 66 is controlled by a coin mechanism (not shown in the drawings) which may be of the usual and ordinary type commonly employed in vending machines.

The shaft 67 has a pin 68 rigidly secured to the inner end thereof forming bayonet points on opposite sides of the shaft. This pin 68 cooperates with a U-shaped coupler 69 rigidly affixed to the outer end of a transmission shaft 70. The coupler 69 has its arms 71 and 72 bifurcated as at 73 and 74 so that the pin 68 may be seated therein to connect the shafts 67 and 70. Since the bifurcations 73 and 74 are open, the coupling is readily closed or broken by merely swinging the pedestal door 17 to its open or closed position.

On the opposite end of the shaft 70 a pinion 71' is rigidly mounted for cooperation with a gear 72'. This gear is rigidly mounted on the bottom end of a stub shaft 73'. The opposite end of the stub shaft 73' is positioned through a central opening in the mounting plate 41 and has a pin 74', identical with the pin 68, rigidly secured thereto and also forming bayonet points on opposite sides of this shaft. This pin 74' cooperates with the previously mentioned structure provided within the hub 35 of the merchandise wheel 33 to complete the transmission of the actuating force which rotates the merchandise wheel to dispense the merchandise.

This final coupling structure comprises a depending knob 75 having a transverse slot 76 formed therein and a central opening 77 formed axially therethrough. The slot 76 is adapted to accommodate therein the pin 74', and the opening 77 is adapted to rotatably receive the upwardly protruding end of the stub shaft 73'. Since this slot is also open the coupling may be readily made or broken by merely lifting or lowering the cartridge with the merchandise wheel 33 attached thereto. To insure positive action of the coupling the knob 75 may be formed with a depending wall 78, bifurcated as at 79 and 80 in alignment with the slot 76.

To insure ready rotation of stub shaft 73' and to maintain gear 72' in cooperation with pinion 71', a bushing sleeve 81 may be disposed about the shaft between the gear and the mounting plate 41. The upper end of this bushing 81 may be rigidly secured within the central opening of the plate 41 as shown at 82 in Fig. 5 of the drawings.

A bracket 83 having perforated depending arms 84 and 85 is provided for rotatably mounting the shaft 70 therein. This bracket 83 is affixed to the bottom of the mounting plate as by spot welding at 86.

Although the gears 71' and 72' may be of the conventional type, for economy of manufacture the gears illustrated in the drawings are preferred. The pinion gear 71' comprises a hub 87 with gear teeth 88 formed integrally at one end. The gear 72' comprises a hub 89 and a round plate 90 with gear teeth 91 formed in the marginal edges thereof. These teeth 91 are bent downwardly in a plane substantially perpendicular to that of the plate 90 so that they may mesh with the pinion teeth.

A merchandise chute 92 is provided to permit the dispensed merchandise to pass into the hands of the operator. This chute may be of any conventional construction which will carry the dispensed merchandise down from the dispensing opening and through a hinged dispensing cover 93 provided in the door 17 of the vending machine.

A removable coin box 94 is placed in the bottom of the pedestal 11, and is further provided with an opening 95 through which the coins ejected by the coin mechanism (not shown in the drawings) may pass.

Turning now to a more detailed description of the merchandise globe 12, as shown in Figs. 2 and 8 of the drawings, it may be of substantially rectangular shape including a top 96, substantially vertical walls 97, 98 and 99 and an inclined front wall 100. Near the bottom of the walls an encircling shoulder 101 is afforded by reducing the dimension of the walls at that point. A bottom closure wall 102 is formed integrally with walls 97, 98, 99 and 100 and a circular bottle-neck 103 is centrally positioned therein. When the globe is inverted and placed in the machine the shoulder 101 cooperates with the flanges 14, 15, 16 and 21 to provide a substantially watertite seal.

Although a cartridge consisting of the globe 12 and dispensing unit 22 may be utilized exclusively for replacement purposes, a carrying cover 104 may be temporarily substituted for the unit 22 during the time the filled globe is being transported to the site of the vending machine. The dispensing unit 22 which is at that time removed

from the used cartridge taken out of the machine may then be substituted for the cover 104 and this cartridge then inserted into the machine.

Finally a pedestal door locking device 105 is provided for locking the machine. The locking mechanism is entirely enclosed within the pedestal housing, but may be controlled by insertion of the proper key within a key-hole 106 provided on the outside of the pedestal 11. Thus a single lock may be used to close the entire machine including the merchandise storage member, all of the mechanism and the coin box.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a coin-controlled vending machine comprising a pedestal containing actuating means and a dispensing chute and having a separable merchandise storage cartridge mounted in said pedestal, a locking device positioned within said pedestal and adapted to cooperate with said cartridge to retain the same within said pedestal, said locking device comprising a lever and a pair of retaining rods adapted for reciprocation by said lever into and out of locking engagement with said cartridge.

2. In a coin-controlled vending machine comprising a pedestal containing actuating means and a dispensing chute and having a separable merchandise storage cartridge mounted in said pedestal, a mounting plate positioned within said pedestal having standards for pivotally mounting a locking lever, a pair of retaining rods pivoted to said lever and adapted for reciprocation by said lever to locking engagement with said cartridge.

3. In a coin-controlled vending machine comprising a pedestal having an open-topped housing and a pivoted swinging side door, an actuating knob mounted on the outer end of a shaft journaled through said door, said shaft having a connecting pin affixed to the inner end thereof, a mounting plate positioned within said pedestal in spaced relationship with the top thereof, dispensing means supported on said mounting plate and containing a rotatable merchandise wheel, a central depending axially drilled slotted knob integrally formed with said merchandise wheel, a transmission shaft rotatably mounted within a bracket beneath said plate, a bifurcated connecting bracket affixed to one end of said transmission shaft and adapted to cooperate with said connecting pin, and a pinion mounted on the other end of said shaft, a vertically positioned stub shaft having a transmission gear affixed to one end adapted to cooperate with said pinion, and a connecting pin affixed to the other end thereof adapted to cooperate with said slotted knob for rotation of said merchandise wheel, a merchandise storage member positioned over and communicating with said dispensing means, and means for locking said storage member within said pedestal.

4. In a coin-controlled vending machine comprising a pedestal containing actuating means, merchandise storage means and dispensing means, said dispensing means comprising a rotatable merchandise wheel contained within a cup-shaped housing, a pair of perforated retaining lugs affixed to the side of said housing at diametrically opposed positions, a mounting plate positioned within said pedestal and supporting thereon said dispensing means, a pair of standards positions at the front of said plate, a pair of perforated lugs positioned on said plate for alignment with said retaining lugs, a lever pivotally mounted on said standards, a pair of retaining rods pivotally mounted at the ends thereof to said lever and adapted for reciprocation by said lever through said perforated lugs and into said retaining lugs, and transmission means connecting said actuating means and said dispensing means.

5. In a coin-controlled vending machine comprising a pedestal containing actuating means, merchandise storage means and dispensing means, said dispensing means comprising a rotatable merchandise wheel contained within a cup-shaped housing, a mounting plate positioned within said pedestal and supporting thereon said dispensing means, a lever operated locking device positioned on and affixed to said mounting plate and adapted to cooperate with means provided on said cup-shaped housing to removably affix said housing and storage means to said pedestal, and transmission means connecting said actuating means and said dispensing means.

6. In a coin controlled vending machine having actuating means, dispensing means, a separable self-contained merchandise storage cartridge, and a pedestal; a reciprocating lever mechanism mounted in said pedestal and adapted to associate said cartridge with said pedestal.

7. The vending machine of claim 6 in which said lever mechanism is mounted on a mounting plate positioned within said pedestal.

8. The vending machine of claim 6 in which said cartridge is provided with retaining lugs adapted to cooperate with said lever mechanism to lock the cartridge within the machine.

9. The vending machine of claim 6 in which said cartridge comprises a merchandise storage globe and a removable cover, said cover containing means for associating said cartridge with said actuating means.

10. The vending machine of claim 6 in which said cartridge comprises a merchandise storage globe and a removable cover, said cover containing a merchandise dispensing wheel and a resilient measuring and levelling device.

11. In a coin controlled vending machine having actuating means, dispensing means, a separable self-contained merchandise storage cartridge, and a pedestal; a reciprocating lever mechanism mounted in said pedestal and adapted to associate said cartridge with said pedestal, and a readily separable transmission mechanism connecting said actuating means with said dispensing means, said mechanism separable at the point of connection with said dispensing means.

12. The vending machine of claim 11 in which said transmission mechanism comprises a separable shaft disposed between said actuating means and said dispensing means, and a plurality of cooperating male and female couplers together with a stub shaft and a pinion and gear connecting said shaft to said dispensing means and to said actuating means.

13. The vending machine of claim 11 in which said transmission mechanism comprises a plu-

rality of shafts and gears disposed between said actuating means and said dispensing means, and a plurality of separable cooperating male and female couplers connecting one of said shafts to said dispensing means and connecting at least two of said shafts one to the other.

CHARLES S. BALAZ.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,189,954	Jacobs	July 4, 1916
1,395,871	Randell et al.	Nov. 1, 1921
1,787,644	Schermack	Jan. 6, 1931
1,978,167	Rabkin	Oct. 23, 1934
2,019,916	Leasley	Nov. 5, 1935
2,129,185	Simmons	Sept. 6, 1938

FOREIGN PATENTS

Number	Country	Date
179,464	Canada	Sept. 25, 1917