Aug. 8, 1944. L. W. DOGGETT 2,355,426

CUP CHAMBER DOOR ASSEMBLY FOR BEVERAGE VENDING MACHINES

Filed Dec. 13, 1940 2 Sheets-Sheet 1

Fig.1.

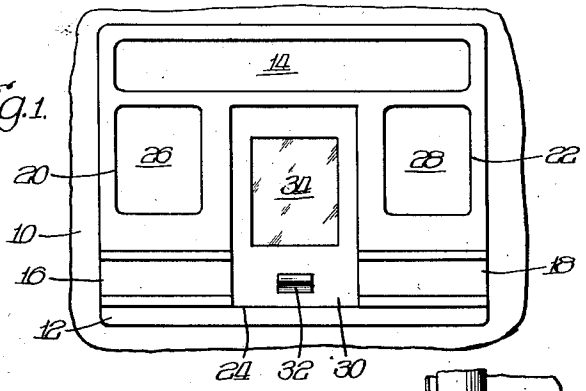


Fig.5.

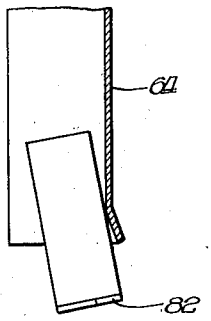


Fig.2.

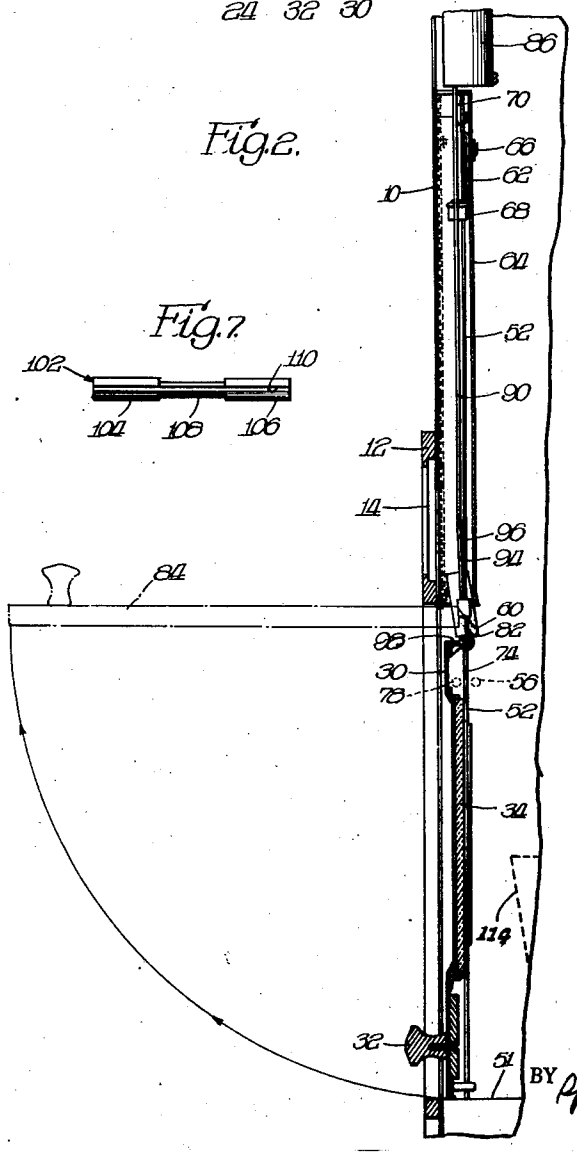


Fig.6.

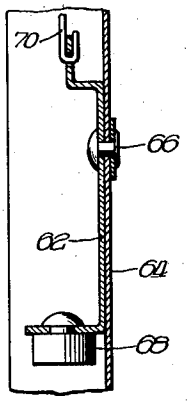


Fig.7.

Fig.8.

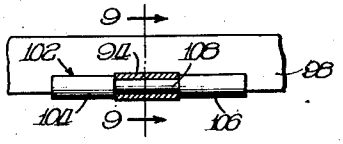
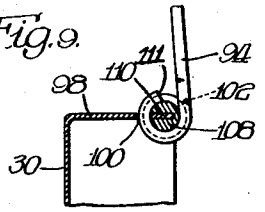


Fig.9.



INVENTOR.
Leo W. Doggett
BY Spencer, Morgall, Johnston & Cook.
Att'ys.

Aug. 8, 1944. L. W. DOGGETT 2,355,426

CUP CHAMBER DOOR ASSEMBLY FOR BEVERAGE VENDING MACHINES

Filed Dec. 13, 1940 2 Sheets-Sheet 2

Fig. 3.

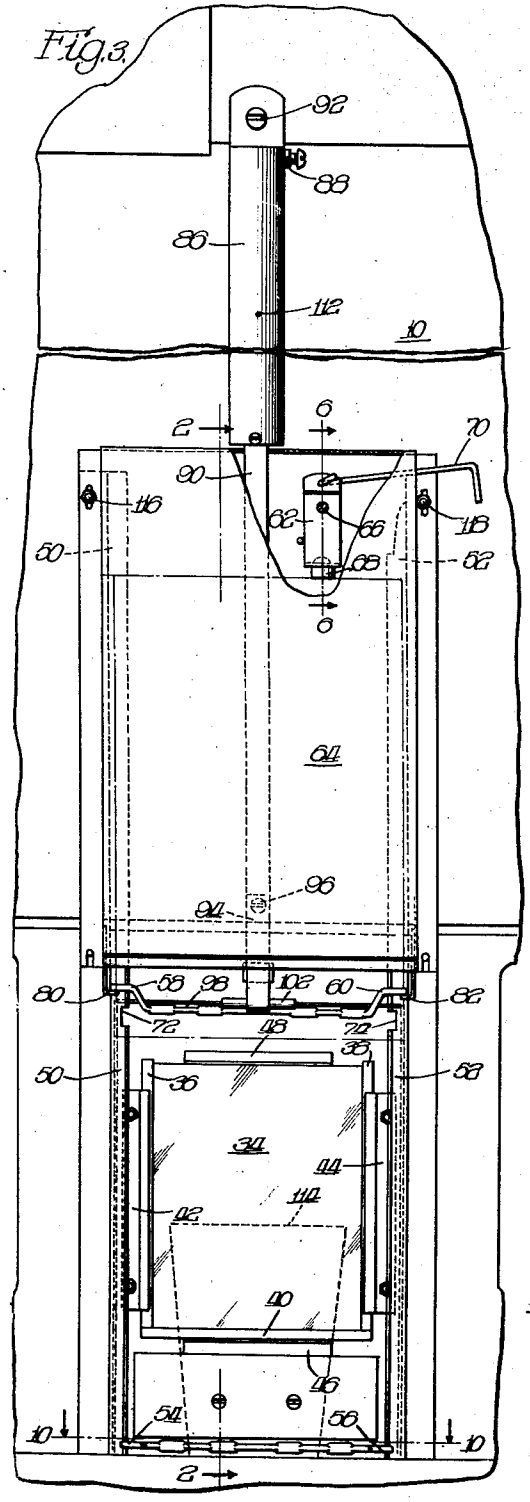


Fig. 4.

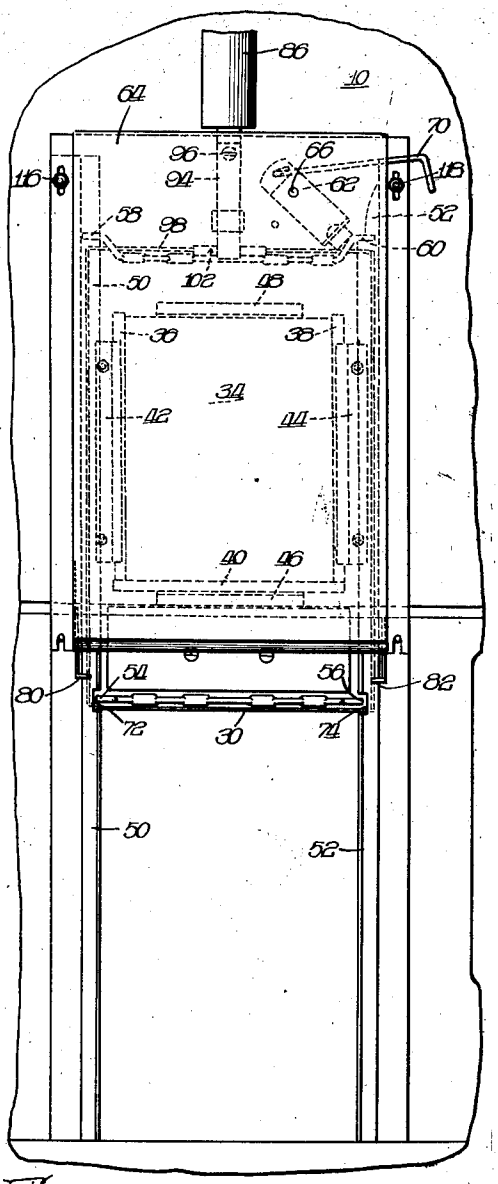
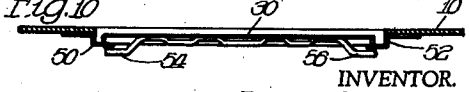


Fig. 10



INVENTOR.
Leo W. Doggett
BY Spencer, Morgall, Johnston & Cook
Attys.

Patented Aug. 8, 1944 2,355,426

UNITED STATES PATENT OFFICE

2,355,426

CUP CHAMBER DOOR ASSEMBLY FOR BEVERAGE VENDING MACHINES

Leo W. Doggett, Chicago, Ill., assignor to Automatic Canteen Company of America, Chicago, Ill., a corporation of Delaware

Application December 13, 1940, Serial No. 369,975

5 Claims. (Cl. 312—189)

This invention relates to improvements in cup chamber door assemblies for beverage vending machines and particularly to assemblies for doors of the vertical sliding type.

A cup chamber is a comparatively small recess open at the front and tightly closed at the rear disposed commonly in the front wall of a beverage vending machine for the purpose of housing a paper cup positioned beneath a delivery spout during the beverage dispensing cycle. Sanitary conditions, and the law in some cases, require a door on these cup chambers, which door is normally closed so that flies and the like will be afforded a minimum opportunity of reaching the beverage dispensing equipment. Swinging doors and movable cup chamber floors for moving the cup of beverage outside of the vending machine have been proposed heretofore but these devices are subject to various objections and are not generally preferred. Vertically sliding doors, on the other hand, are frequently used but these also are subject to certain objections. One objection arises from the difficulty of cleaning the inside of the door which commonly has a glass window in it. Where the rear wall of the cup chamber is rigidly fastened to the vending machine wall to prevent access to the interior of the vending machine, a service man cannot get to the rear side of a vertically sliding cup chamber door through the wall of the cup chamber. On the other hand, he has great difficulty properly cleaning the rear wall of a cup chamber door by drawing it down over his wrist and wiping the inside of the door with the limited action then permitted. Another objection resides in the fact that it is necessary to hold a vertically movable door in open position with one hand while removing a cup with the other.

The first object of this invention is to provide a cup chamber door of the vertical sliding type which will be tamper proof but which, by a simple action within the machine, may be permitted to swing outwardly from the cup chamber so that its inside may be cleaned.

The second object of this invention is to provide a new and improved delayed return or door check for a cup chamber door such that the door moves from open toward closed position at a slow rate of speed until the door has dropped to a point where a cup may no longer be removed from the cup chamber without tilting, whereupon the door completes its downward movement at an increased speed.

A third object is to provide a new and improved means of disconnecting the door from the door check so that the door may be completely removed from the vending machine.

These and such other objects as may hereinafter appear are attained in one embodiment of the invention shown in the drawings, wherein:

Figure 1 is a view in elevation of a portion of the front of a liquid vending machine;

Figure 2 is a sectional view of my new and improved vertical sliding door;

Figure 3 is a rear view in elevation of my door assembly with the cup chamber door in closed position;

Figure 4 is a view similar to Figure 3 but with the cup chamber door in open, unlocked position;

Figure 5 is an enlarged view of a door guide stop;

Figure 6 is a view in section of the door stop taken on the line 6—6 of Figure 3;

Figure 7 is a side view of a bearing member which provides a desired radius for a hinge strip;

Figure 8 is a top view of a portion of the cup chamber door showing a hinge strip holding the bearing member in assembled relationship to the cup chamber door;

Figure 9 is a view taken on the line 9—9 of Figure 8; and

Figure 10 is a view taken on the line 10—10 of Figure 3.

Continuing to refer to the drawings and particularly to Figures 1 and 2, 10 identifies a portion of the front wall of a vending machine upon which is mounted by any suitable means a plate 12 which provides three panels 14, 16 and 18 for informative data and has three openings 20, 22 and 24. Doors 26 and 28 swinging inwardly permit a customer to introduce a used cup for discharge into a waste pail within the vending machine.

The opening 24 is closed by a vertically sliding door 30 having a handle 32 and a transparent glass 34 held in assembled relationship thereto by any suitable means such as rubber gaskets 36, 38 and 40, see Figure 3, together with flange members 42 and 44 and brackets 46 and 48. Continuing to refer to Figure 3, two guide rails 50 and 52 fastened by any suitable means to the inner side of the vending machine wall 10 provide the means, in conjunction with lower door guides 54 and 56 and upper door guides 58 and 60, of limiting the door to vertical movement. Referring to Figure 10, it will be noted that the door guides 54 and 56 are opposite ends of a bar fastened to the back of the door by any suitable means. These door guides are spaced from the

door panel by a distance sufficient to provide clearance for the guide rails 50 and 52.

Referring to Figure 3, a door stop 62 pivotally supported on a protective plate 64, see Figures 2 and 6, at the point 66 carries a buffer member 68 and may be pivoted toward horizontal position by a control means 70 which projects outside of the protective plate 64. The guide rail 52, see Figure 4, is cut away in its upper portion to permit this pivotal movement of the door stop 62.

The operation of the vertical cup chamber door is evident. The door 30 may be moved upwardly or downwardly along the guide rails 50 and 52 between the floor 51 and the door stop buffer 68.

A feature of my invention is the provision of means for permitting the cup chamber door to swing outwardly for cleaning purposes. Referring to Figure 3, two notches 72 and 74 are cut in the guide rails 50 and 52 at points immediately above the upper limit of normal movement of the two lower door guides 54 and 56. A service man having access to the interior of the machine may by the control means 70 pivot the door stop 62 so as to occupy the position shown in Figure 4, under which circumstances the door 30 may be moved vertically until the door guides 54 and 56 are in horizontal alignment with the notches 72 and 74. Referring to Figure 2, the notch 74 is indicated with the end of the door guide 56 shown in dotted position adacent thereto. When in this position the cup chamber door 30 may be drawn forwardly so as to bring the door guides 54 and 56 forwardly of the guide rails 50 and 52 so that, referring to Figure 2, the end of the door guide 56 may be moved to the dotted position 78. The door may now be drawn downwardly until the upper door guides 60 and 58, which are moving between the upper portions of the rail guides 50 and 52 and the protective cover 64, engage the shoulders or door guide stops 80 and 82, disposed adjacent to the rail guides, see Figure 3. Figure 5 is an enlarged view of a door guide stop 82. The door 30 may now be pivoted outwardly to occupy the position 84 shown in Figure 2 and while in that position may readily be cleaned.

A second feature of my invention relates to a door check for controlling the speed of descent of the door 30 from open to closed position. This door check, referring to Figure 3, comprises a cylinder and piston of any suitable type 86 having an adjustable inlet valve 88 and a piston rod 90. The cylinder and piston 86 is suspended from the inside wall 10 of the vending machine cabinet by any suitable means at the point 92. The piston rod 90 has fastened to its lower end a hinge strip 94 which is held in assembled relationship thereto by a single screw 96. The top of the cup chamber door has an inwardly directed flange 98, see Figure 9, centrally of which is disposed an elongated slot 100, sufficiently large to receive the hinge strip 94. In order to provide the hinge strip 94 with a proper bearing surface, a bearing member 102, see Figure 7, having enlarged end portions 104 and 106 with a smaller central portion 108 and having a deep slot 110, is inserted over the flange wall 98, see Figure 9, with the central portion 108 in alignment with the slot 100. The hinge strip 94 is then drawn upwardly through the slot 100 and its end 111 is turned over to form a permanent coupling, permitting the door, however, to pivot on the bearing member 102.

Referring now to Figure 3, a hole 112 is positioned in the wall of the cylinder 86 at a point such that when the bottom of the door 30 has reached a point where a beverage cup, indicated in dotted outline by the numeral 114, may no longer be removed from the cup chamber without tilting it, the piston will be immediately below the hole 112. The result of this arrangement is that the descent of the door from the uppermost position to the point where the piston passes the hole 112 will be controlled by the adjustable inlet valve 88 and that after the piston has dropped below the hole 112, its rate of descent will be increased in accordance with the increased amount of air entering the upper portion of the cylinder 86. I adjust the valve 88 so that the door will descend quite slowly until the piston reaches the hole 112 so that a customer will have ample time to remove a cup from a cup chamber and then make the hole 112 sufficiently large to permit the door to complete its closing very quickly. By this arrangement the desirable length of time for holding the door open for a customer to remove a cup is not permitted to continue to control the descent of the door when the door has reached a point where a filled cup can no longer be removed.

In order to remove the door 60 completely from the vending machine, all that is necessary is to remove two nuts 116 and 118, see Figure 3, whereupon the protective plate 64 may be withdrawn. This exposes the rear of the door 30 and when it is in its uppermost position, as in Figure 4, the screw 96 may be removed to disconnect the door 30 from the piston rod 90. By drawing down the door 30 with the door guides 54 and 56 in front of the guide rails 50 and 52, until the upper door guides 58 and 60 engage the door guide stops 80 and 82, the door may be swung toward the position 84 in Figure 3, and by tilting the door laterally, first one door guide as 58 may be brought forwardly of the opening 24 and then the other door guide. By this means the door may be completely removed from the vending machine.

The particular means here described for permitting a vertically movable door of a cup chamber to be moved into such a position that it may be cleaned on the inside as well as the outside is not to be construed as the sole embodiment of applicant's invention. Moreover, new and novel results obtained by this structure are particularly pertinent to cup chamber construction in vending machines and greatly facilitates a service man's properly cleaning the window such as 34.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A closure device for an opening in a wall comprising, a closure member, spaced apart guide rails, upper and lower guides mounted on the closure member to normally maintain the closure member in assembled relation with said guide rails and permit only sliding movement of the closure member longitudinally thereof, said guide rails comprising means whereby the lower closure member guides can be released from association with said guide rails to thereby permit the closure member to be swung outwardly, and pivoting means comprising said upper guides for supporting said closure member when it is swung outwardly.

2. A closure device for an opening in a wall comprising, a closure member, means for mounting said closure member for longitudinal sliding

movement only, said means comprising means operable when said closure member is in open position for altering said first means to thereby permit swinging movement of said closure member.

3. In a beverage vending machine, a vertical cup chamber wall having an opening therein, a vertically movable closure member for said opening, guide rails disposed at opposite sides of said opening and extending therebeyond substantially parallel to said wall, upper and lower guides on said closure member cooperating with said guide rails, said guides and guide rails normally permitting movement of said closure member only substantially parallel with said wall, a stop for said closure member normally limiting its opening movement to a normal travel commensurate with the size of said opening, oppositely disposed notches in said guide rails immediately beyond the limit of normal travel of said lower closure member guides in the direction of said stop, means for adjusting said stop to permit said lower closure member guides to be moved beyond their normal travel to said notches and to be disengaged from said guide rails at said notches, and pivoting means for the upper guides when said closure member is closed with said lower guides disengaged whereby said closure member may be swung open from its closed position to a position substantially normal to said guide rails.

4. In a beverage vending machine, a vertical cup chamber wall having an opening therein, a vertically movable closure member for said opening, guide rails disposed at opposite sides of said opening and extending therebeyond substantially parallel to said wall, guides on said closure member adjacent each end thereof cooperating with said guide rails, said guides and guide rails normally permitting movement of said closure member only substantially parallel with said wall, a stop for said closure member normally limiting its opening movement to a normal travel commensurate with the size of said opening, notches in said guide rails immediately beyond the limit of normal travel of said lower closure member guides in the direction of said stop, means for adjusting said stop to permit said closure member guides at the far end of said closure member with respect to said stop to be moved beyond their normal travel to said notches and to be disengaged from said guide rails at said notches, and pivoting means for the near guides with respect to said stop when said closure member is closed with the far guides disengaged whereby said closure member may be swung open from its closed position to a position substantially normal to said guide rails.

5. A wall having an opening therein, guide rails mounted adjacent the sides of said opening, a closure member having means whereby it is guided by said rails and normally limited thereby to movement longitudinally, limiting means mounted on said wall for limiting the movement of said closure member when it is moved to open position, said means being adapted to move out of the path of movement of said closure member to permit further movement thereof, and said guide rails comprising means whereby the closure member can be swung outwardly after the removal of said limiting means.

LEO W. DOGGETT.