June 1, 1954 H. S. CHILDRES ET AL 2,680,049

DELIVERY AND RETAINING MECHANISM FOR MERCHANDISE DISPENSING APPARATUS

Filed July 9, 1951

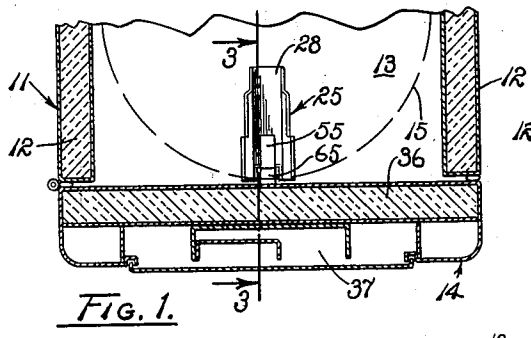


FIG. 1.

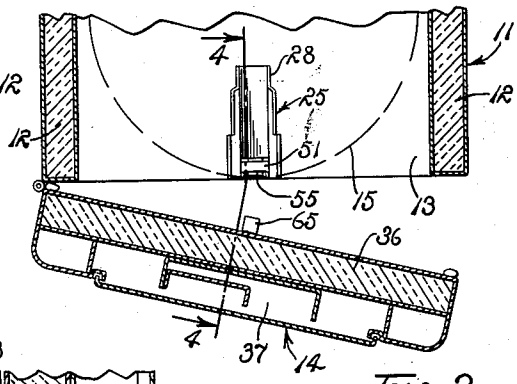


FIG. 2.

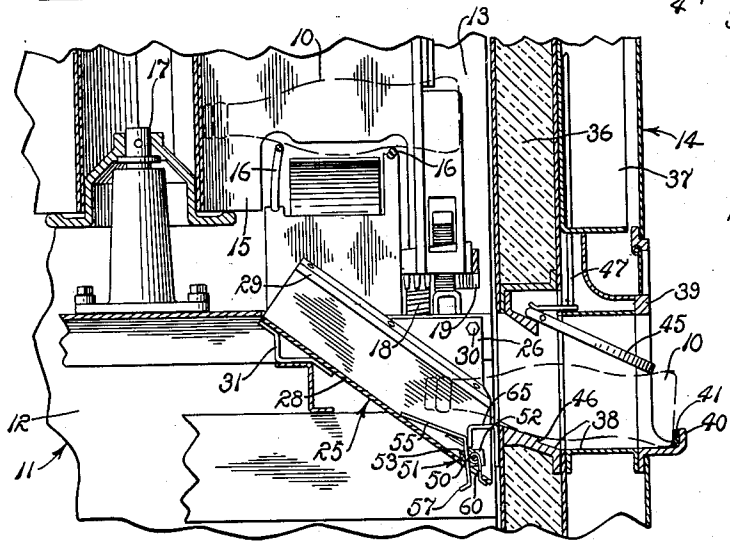


FIG. 3.

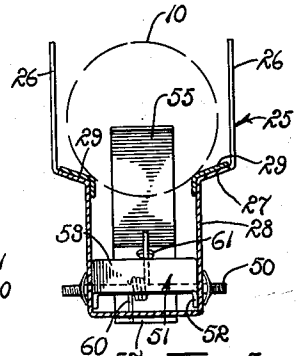


FIG. 5.

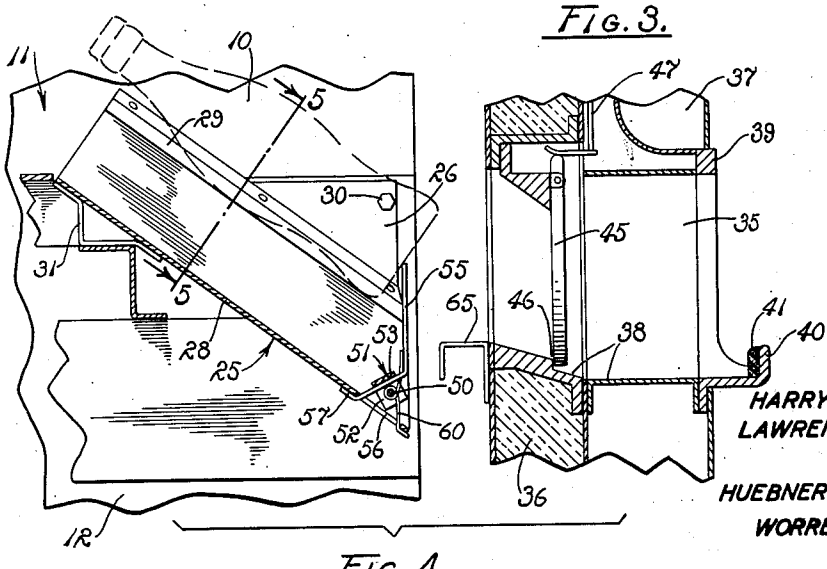


FIG. 4.

HARRY S. CHILDERS
LAWRENCE C. TOBER
INVENTORS

HUEBNER, BEEHLER,
WORREL & HERZIG
ATTORNEYS

BY Richard M. Worrel

Patented June 1, 1954 2,680,049

UNITED STATES PATENT OFFICE

2,680,049

DELIVERY AND RETAINING MECHANISM FOR MERCHANDISE DISPENSING APPARATUS

Harry S. Childers and Lawrence C. Tober, Fresno, Calif., assignors to Vendorlator Manufacturing Company, Fresno, Calif., a corporation of California

Application July 9, 1951, Serial No. 235,812

6 Claims. (Cl. 312—35)

1

The present invention relates to article dispensing apparatus and more particularly to vending machines having delivery chutes or paths extended between relatively movable portions thereof, such as between a cabinet and a door therefor, in which provision is made for the automatic trapping of merchandise in the chutes or paths in response to separation of the portions.

Although the present invention possesses utility in precluding inadvertent delivery of any type of merchandise, such as cigarettes, ice, candy bars, chewing gum, and the like, from dispensing apparatus therefor incident to the opening of such apparatus for restocking, servicing, or inspecting; the problems which the present invention overcomes are conveniently illustrated in connection with vending machines for bottled beverages. Such machines conventionally employ a cabinet having a servicing opening therein closed by a door. A bottle magazine is usually employed within the cabinet from which bottles of beverages are successively dispensed for delivery into a compartment in the door convenient to customer access. The door is closed during all normal operation and bottles individually delivered, in response to the insertion of a coin of suitable denomination into the machine, to the compartment in the door by way of a delivery chute. In several commercial forms of bottle vending machines, the opening of a door thereof results in the dropping of any bottle contained in the delivery chute and in some instances the cascading of bottles from the magazine down the chute and from the machine. The breakage incident to the opening of the doors on such machines has been substantial in spite of posted warnings that service men should endeavor to catch any bottle or bottles released from the chute by the opening of the door.

The instant application constitutes a continuation in part of United States patent application Serial No. 21,660, filed April 17, 1948, now abandoned, on a "Delivery Chute" by Harry S. Childers.

An object of the present invention is to minimize breakage and waste of merchandise incident to the inspection, restocking, and/or servicing of dispensing apparatus therefor.

Another object is automatically to trap vendible merchandise within vending machines in response to the opening of such machines.

Another object is to provide an improved trapping finger for the delivery chutes of merchandise dispensing machines which is automatically positioned to trap merchandise in response to the

2

opening of such machines and automatically retracted to inoperable position in response to the closing of such machines for operation.

A further object is to provide improved elements and arrangements thereof in a device of the character and for the purposes set forth that is economical to produce, convenient to install, and fully effective in accomplishing its intended functions.

Still further objects and advantages will become apparent in the subsequent description in the specification.

In the drawing:

Fig. 1 is a fragmentary horizontal section of a conventional vending machine showing a combined delivery chute and trapping finger of the present invention mounted in a cabinet of the machine in proximity to a door in closing relation to the cabinet.

Fig. 2 is a fragmentary horizontal section similar to Fig. 1 but showing the door in open position.

Fig. 3 is a somewhat enlarged vertical section taken on line 3—3 of Fig. 1 but showing a bottle of beverage in a magazine employed in the vending machine and a second bottle in vended position.

Fig. 4 is an enlarged fragmentary vertical section taken on line 4—4 of Fig. 2 and showing a bottle trapped within the vending machine incident to the opening of the door.

Fig. 5 is a section transversely of the delivery chute taken at a position indicated by line 5—5 of Fig. 4.

Referring in greater detail to the drawing:

A vending machine for bottled beverages 10 is fragmentarily represented at 11 having a cabinet 12 opening at a side 13, which is closable by a pivotally mounted door 14. The cabinet contains any suitable magazine 15 for the bottled beverages and means, such as the selection finger 16, for ejecting bottles from the magazine. The selection fingers may conveniently be stationary and the magazine mounted for rotation, as at 17, so as to carry bottles to the selection finger. The magazine is driven by any suitable prime mover, not shown, preferably in response to the insertion of a suitable coin into a coin controlled mechanism, also not shown. Driven connection is made to the magazine through a drive pinion 18 meshed with a circular gear 19 integral with the magazine and concentric thereto. The structure heretofore described is essentially conventional and simply illustrates an operational environment for the subject invention including means for supplying

vendible merchandise at a given point for subsequent delivery through the door 14.

A delivery chute 25 is mounted in the cabinet 12 to receive bottles 10 ejected from the magazine 15 by the selection fingers 16 and downwardly inclined therefrom to the opening 13. The delivery chute is conveniently fabricated from a single blank of sheet material and provides a pair of substantially parallel erect walls 26 providing downwardly and inwardly inclined shoulders 27 interconnected by a U-shaped channel portion 28. As evident in Fig. 5, the walls are spaced a distance greater than the maximum transverse dimensions of the body portion of the bottles 10 and the shoulders spaced a distance less than the major transverse dimensions of the bottles but greater than the transverse dimensions of the necks of the bottles. If desired, the shoulders may be overlaid by tracks 29 fitted thereto adapted slidably to support the bottles with a minimum of scratching and other damage thereto. The chute 25 may be mounted in any manner desired, such as by headed bolts 30 passed through the side walls 26 and screw-threadably engaged in the cabinet 12 and a bracket 31 connected to the channel portion and secured to the bottom of the cabinet.

The door 14 provides a compartment 35 therein in a position registrable with the extended end of the chute 25 when the door is closed. Although the door illustrated in the drawing consists of an insulated wall 36 having an externally adjacent compartmentalized chamber adapted to receive a coin control mechanism, not shown, and the like, it will be apparent that the present invention is limited to no precise form of door. The compartment 35 preferably provides a substantially horizontal floor 38 which at its inner edge is at substantially the same level as the shoulder 27. An annular facing plate 39 is mounted on the door in circumscribing relation to the compartment 35 and provides an upwardly extended lip 40 at its lower edge which functions as a bottle stop for bottles dispensed into the compartment. As shown, the lip preferably mounts a resilient cushion 41 to minimize shaking of beverages contained in the bottles as well as damage to the bottles.

It is the usual practice to mount a closing flap 45 in the door 14 in closing relation to the compartment 35. A shoulder 46 is provided in the floor 38 inwardly adjacent to the flap 45 which acts as a stop precluding inward pivotal movement of the flap and access through the compartment to the interior of the cabinet. As shown in Fig. 3, the descent of a bottle 10 down the chute 25 serves to pivot the flap 45 outwardly to emit the bottle. The door not only serves to preclude a customer from inserting his hand upwardly through the chute 25 and to exclude hot air from cabinets which are refrigerated but through engagement with a lockout linkage 47 serves to preclude additional vending operations while the compartment 35 is occupied by a bottle.

A pin 50 is mounted transversely in the U-shaped portion 28 of the chute 25 adjacent to the door 14 when the door is in closed position. An inverted U-shaped strap 51 is provided having a pair of spaced legs 52 pivotally mounted on the pin interconnected by a flat portion 53 in parallel relation to the pin. A trapping finger 55 is riveted, welded, or otherwise secured transversely of the flat portion 53 of the strap and upwardly extended from the pin. An opening 56 is preferably formed through the channel portion 28 of the chute 25 directly below the pin 50. The trapping finger is downwardly extended through the opening 56, as at 57, and return bent or otherwise formed so that by engagement with the bottom of the channel portion 28, pivotal movement of the trapping finger in a clockwise direction, as viewed in Fig. 4, is limited to a substantially upright position in blocking relation to the chute. The opening provides freedom of movement of the trapping finger 55 away from the door 14 to a retracted, inwardly and relatively downwardly pivoted position, shown in Fig. 3. Although the strap 51 as described provides a convenient means for pivotally mounting the trapping finger on the pin 50, it is to be understood that the finger may be mounted in any convenient manner attaining the described pivotal movement between an upwardly extended blocking position and a retracted position within the channel portion 28.

A helical spring 60 is mounted in circumscribing relation to the pin 50 under initial torsion by the extension of one end thereof downwardly through the opening 56 for engagement with the downwardly disposed surface of the channel portion 28 and the opposite end portion upwardly through an opening 61 provided in the finger. The spring constitutes a resilient means urging the trapping finger into its upwardly extended position.

A bracket 65 is weldably, or otherwise, secured to the inner surface of the door 14 adjacent to the floor 38 of the compartment 35 and inwardly extended therefrom at a level below the shoulders 27 of the delivery chute 25. The bracket is aligned with the trapping finger 55 so that closing of the door 14 results in the urging of the trapping finger into its retracted position.

Operation

The operation of the device of the present invention is believed to be clearly apparent and is briefly summarized at this point. Bottles 10 or other articles to be dispensed are deposited in the upper end of the delivery chute 25 for gravitational descent by whatever operational mechanism employed. With the door 14 closed, the bracket 65 engages the trapping finger 55 and urges it into retracted position within the channel portion 28 of the chute for passage thereover of articles gravitationally slid down the shoulders 27. When bottles 10 are dispensed, they slide along the shoulders 27 into the compartment 35 bottom first. As the bottom of the bottle travels over the floor 38 it pivots on the shoulders 27 for passage of the neck thereof between the shoulders in traversing the angular juncture of the chute and compartment floor. This not only tends to slow up the bottles but also permits the accessibility thereto in a delivery compartment 35 somewhat higher in relation to the magazine than would otherwise be permitted.

When the door 14 is opened, as shown in Figs. 2 and 4, the spring 60 urges the trapping finger 55 into its upwardly extended position in blocking relation to the chute. This effectively precludes gravitational descent of bottles or other articles downwardly of the chute while the door is open obviating the breakage and other damage to which they are are conventionally subjected.

Subsequent closing of the door again brings the bracket 65 into engagement with the trapping finger 55 thrusting the latter inwardly to its retracted position, shown in Figs. 1 and 3. Such inward thrusting results in a slight upward movement of any article rested thereagainst during

the closing of the door, subsequent to which the article is released for descent into the compartment 35 over the trapping finger.

The trapping of articles in response to door opening is fully automatic and dependable in its operation. The present invention in no way impedes article delivery when the door is closed because of retraction of the trapping finger from the path of travel of articles in the chute.

Although the invention has been herein shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and apparatus.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In an article dispensing apparatus having a cabinet provided with a movable door adapted to accommodate access to the interior of the cabinet to load the apparatus with articles to be dispensed and having an externally accessible delivery compartment therein through which articles are dispensed when the door is closed, said cabinet also having a delivery chute extended from within the cabinet to the delivery compartment of the door, article blocking means mounted in the cabinet adjacent to the door for reciprocal movement between a position in blocking relation to the chute and an inoperable position retracted therefrom, and control means borne by the door having controlled engagement with the blocking means to retract the blocking means in response to closing of the door.

2. In an article dispensing apparatus having a cabinet provided with a door movable to open and closed positions adapted to accommodate access to the interior of the cabinet to load the apparatus with articles to be dispensed and having an externally accessible delivery compartment therein through which articles are dispensed when the door is closed, said cabinet also having a delivery chute extended from the cabinet to the delivery compartment of the door, a trapping finger pivotally mounted in the cabinet adjacent to the door for reciprocal positioning between a position in blocking relation to the chute and an inoperable position retracted therefrom, resilient means urging the finger into blocking position, and control means mounted on the door engageable with the finger when the door is closed to move the finger to retracted position.

3. In combination with an article dispensing apparatus having an article delivery chute, a door pivotally mounted on the cabinet for movement between open and closed positions to accommodate access to the interior of the cabinet and having a delivery compartment therein in registration with the delivery chute when the door is closed, a trapping finger pivotally mounted in the delivery chute adjacent to the door for movement between a position in blocking relation to the chute and an inoperable retracted position pivoted away from the door, resilient means urging the finger into blocking position in the chute, and a bracket mounted on the door engageable with the finger to move the finger into retracted position in response to closing of the door.

4. In an article dispensing apparatus having a cabinet, an elongated delivery chute having a channel longitudinally thereof defined by parallel article supporting shoulders mounted in an inclined position in the cabinet, a door pivotally mounted on the cabinet for movement between open and closed positions adapted to permit access to the interior of the cabinet and having a delivery compartment therein in registration with the delivery chute when the door is in closed position, a trapping finger pivotally mounted between the shoulders of the delivery chute adjacent to the door for pivotal movement between an upright position in blocking relation to the chute and a downwardly and inwardly pivoted position within the channel, resilient means urging the finger into upright position, and a bracket mounted on the door below the delivery compartment engageable with the trapping finger to pivot the finger downwardly and inwardly of the channel in response to closing of the door.

5. In a vending machine provided with a cabinet for containing bottles of substantially uniform size and shape having enlarged body portions and endwardly extended necks; the combination of an elongated chute of sheet material mounted in an inclined position in the machine having an upper end positioned to receive bottles inwardly of the cabinet and a lower end positioned to deliver bottles outwardly from the cabinet, said chute having a pair of parallel side walls, shoulders downwardly and inwardly extended from the side walls spaced a distance greater than the maximum transverse dimensions of the necks of the bottles and less than the maximum transverse dimensions of the body portions of said bottles for slidably receiving the bottles thereon, and a transversely U-shaped channel portion interconnecting the shoulders; a door pivotally mounted on the cabinet for movement between open and closed positions adapted to provide access to the interior of the cabinet and having a substantially horizontal delivery compartment therein in registration with the lower end of the chute when the door is closed for dispensing bottles therethrough; a pin mounted transversely of the channel portion of the chute adjacent to the door; a trapping finger pivotally mounted on the pin for movement between an upwardly extended position above the shoulders and a retracted position within the channel portion beneath the shoulders, said finger having a downwardly directed portion extended through the channel portion and engageable with said channel portion to limit upward pivotal movement of the finger to substantially upright position; a helical spring mounted concentrically on the pin urging the finger into upwardly extended position; and a bracket mounted on the door below the delivery compartment engageable with the trapping finger above its pivotal mounting and below the shoulders of the chute to pivot the finger downwardly and inwardly of the channel portion of the chute in response to closing of the door whereby a bottle on the shoulder is permitted to slide outwardly into the delivery compartment in the closed position of the door and a bottle on the shoulders is blocked by the trapping finger from such outward sliding movement in the open position of the door.

6. In an article dispensing apparatus having a refrigerated cabinet open at a side, a door pivotally mounted on the cabinet for movement between open and closed positions in the open side

of the cabinet, said door having a delivery opening therein through which articles are dispensed when the door is closed, a closing flap pivotally mounted in the opening of the door for movement between a closed position to exclude heat from entering the cabinet and an open position to emit articles dispensed through the opening in the door, a delivery chute mounted in the cabinet having a lower end in registry with the delivery opening in the door when the door is closed, and means in the cabinet operable to deliver articles to be dispensed into the chute; the combination of a trapping finger pivotally mounted in the chute inwardly adjacent to the opening in the door for reciprocal movement between a position extended in blocking relation to the chute and an

inoperable position pivoted inwardly from the door, resilient means urging the trapping finger into blocking position in the chute, and a bracket mounted on the door engaged with the trapping finger when the door is closed to move said finger to inoperable retracted position, the closing flap being freely movable independently of the trapping finger.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,205,844	Berry	Nov. 21, 1916
2,424,303	Carlson	July 22, 1947