Oct. 31, 1939. A. E. SIEHRS 2,178,000

SELECTIVE VENDING MACHINE

Filed June 3, 1938 2 Sheets-Sheet 1

Fig. 1.

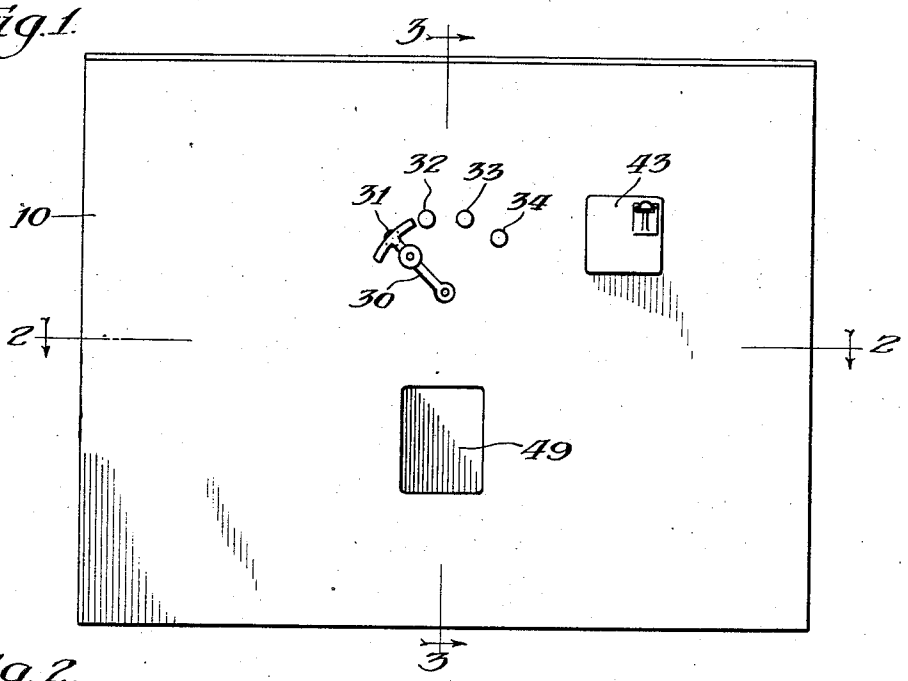
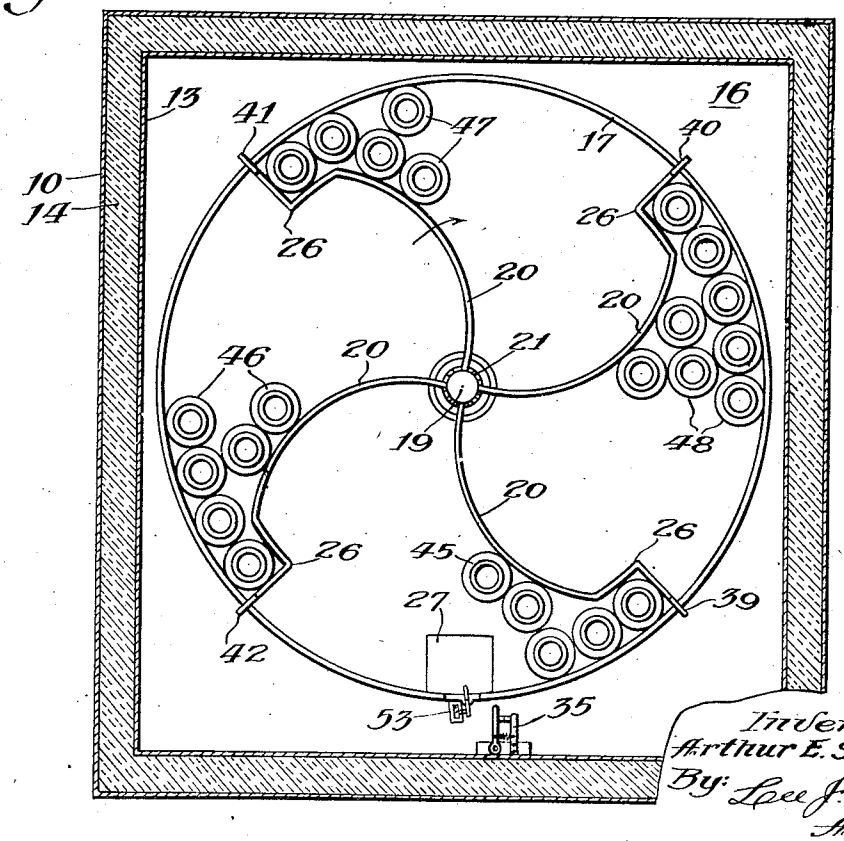


Fig. 2.



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Fig. 3.

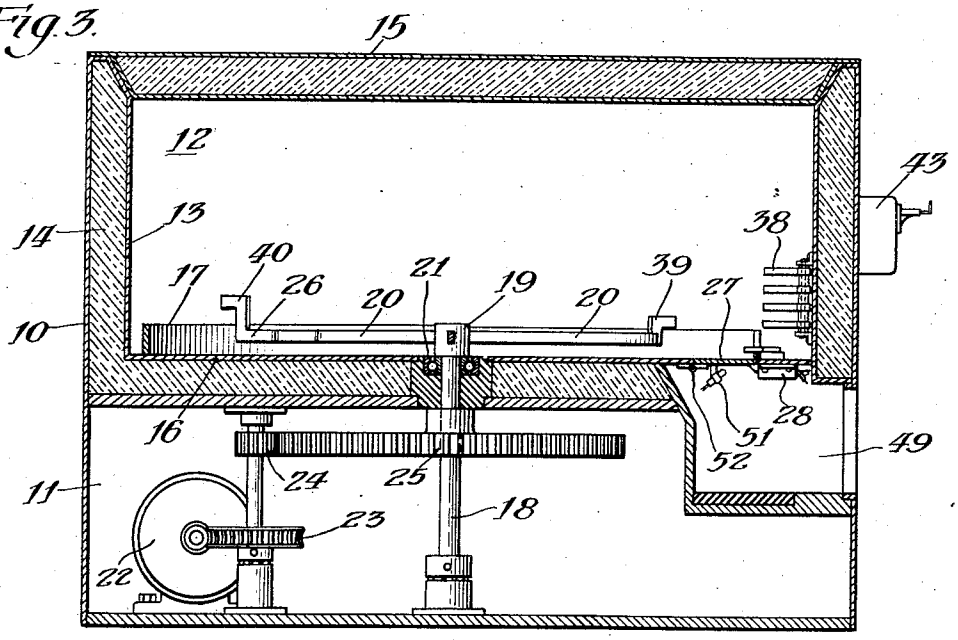


Fig. 4.

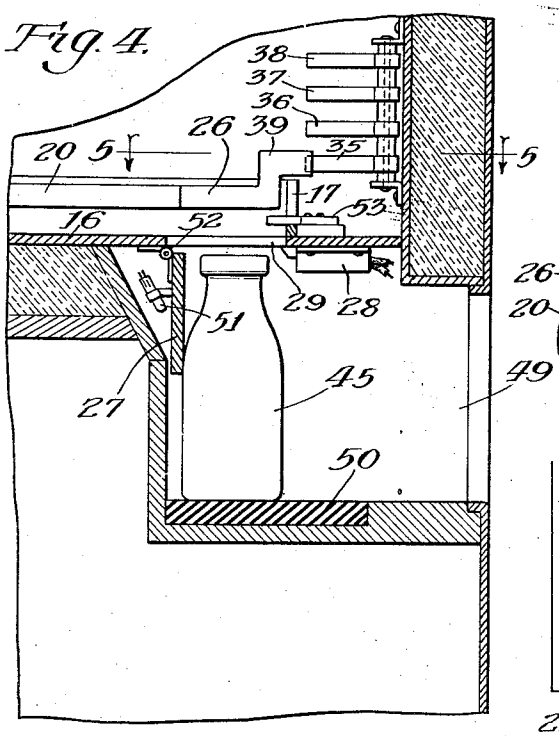


Fig. 5.

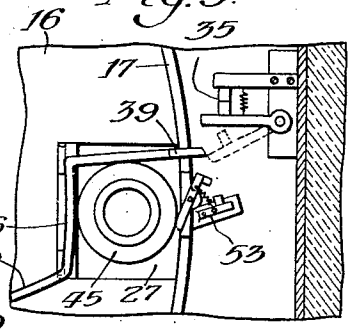
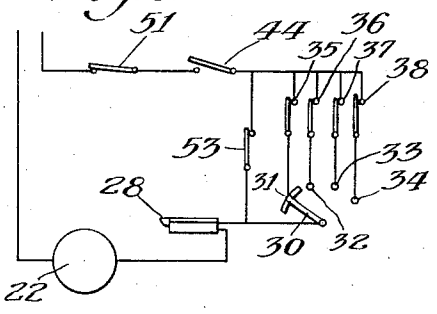


Fig. 6.



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UNITED STATES PATENT OFFICE

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SELECTIVE VENDING MACHINE

Arthur E. Siehrs, Chicago, Ill.

Application June 3, 1938, Serial No. 211,572

7 Claims. (Cl. 312—88)

This invention relates to coin controlled vending machines, and particularly to an automatic selective vending machine.

The object of this invention is to provide a machine which is adapted to vend packaged articles and particularly liquids in upright containers, and to provide the purchaser with a choice of products, flavors or brands, all in a single compact machine. Thus, for example, if the machine is to be used to vend pop, the person dropping a coin may select any one of the number or types of pop contained. Again, if the machine is to be used to sell bottles of milk, the buyer may select not only white or chocolate milk, but may also obtain pints or quarts if desired.

Other objects relate to the common supporting and storing means for the containers, the segregation of their classes, the means for selectively causing the desired article to be moved into delivery position, the automatic selective control means, the automatic coin actuation of the machine and the methods of preventing successive delivery of more than one container for a single coin.

Further objects relate to the economy of operation, the storage capacity of the machine, and the various details of construction and arrangement of parts, which will be apparent from a consideration of the following specification and the drawings, wherein:

Fig. 1 is a front elevation of my selective vending machine.

Fig. 2 is a top plan section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary section of the delivery chute and adjacent parts illustrating a container in delivered position.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a wiring diagram illustrating the electrical control circuit.

Referring to the drawings, 10 indicates generally the exterior housing of my selective vending machine, which may be supported on a suitable base or legs. The interior of the machine is conveniently divided into two compartments, the lower compartment 11 housing the gears, motor, refrigerating equipment, etc., whereas the upper compartment 12 is provided with an inner body 13 so that insulating material 14 may be utilized. The top of compartment 12 is closed with a like insulated cover 15, thus providing a closed chamber insulated against heat and cold, and which may thereby be more efficiently kept refrigerated to cool and preserve the articles to be vended, particularly when they are perishable, as for example, milk.

The base 16 of compartment 12 is provided with or formed of a smooth surface, such as, for example, non-corrosive polished metal, and forms the support for the various classes of containers to be dispensed within the confines of annular upstanding retaining rim 17. This rim 17 is of sufficient height to prevent a container from being carried over it during the operation of the machine, and further acts to assist the guiding of the containers within its confines to delivery position as hereinafter set forth.

Extending axially of the disc-like portion of the base 16 comprehended by the rim 17 is the shaft 18, to the upper end of which is secured the hub 19 carrying a plurality of spoke-like deflector arms 20. These deflector arms extend transversely across the confined portion of the base 16 to at least the guide rim 17, and are positioned adjacent to the supporting base and of sufficient height to prevent containers from crossing over them during the operation of the machine. It will also be seen that these deflector arms divide the confined supporting area into a plurality of chambers, the contents of which may be kept effectively separated between pairs of adjacent arms and the segment of guide rim comprehended by them. Also it will be evident that although I have illustrated four deflector arms to provide four chambers to result in a machine allowing four selections, selectivity may be obtained by providing two or more deflector arms of similar design to produce a machine of desired selectivity.

The shaft 18 is suitably journaled adjacent the hub 19 by means of a suitable roller bearing 21 for ease in operation, and means for rotating it and the deflector arms is provided in the lower compartment 11, such as the motor 22 and the gears 23, 24 and 25, the latter being secured to the shaft 18. Within this compartment, although not shown, may conveniently be contained refrigeration equipment and other appurtenances. For ease of operation it may be found expedient to have the deflector arms lie against the base 16, over which they may smoothly slide, or they may be supported adjacent their outer ends by means of the rim 17, or in any other suitable manner. The enclosed portion of the base 16 may also be in the form of a separate fixed disc, and may have a slight

downward slope from its center outwardly to the rim.

Each of the deflector arms 20 comprises an arcuate portion extending from the hub 19 to a point spaced approximately the width of a container from the rim 17, and thereafter is formed with a scoop portion 26 terminating at the rim 17, and which comprises one leg which is substantially parallel to the rim 17 and of a length approximately equal to the width of a container and a second leg extending radially therefrom to the rim 17. It will be understood that this scoop 26 may be formed other than by means of the two angular portions and may be cup shaped, the curvature thereof being the reverse of the arm 20. The curvature of the arms 20 is such that if an object supported on the smooth base 16 is placed in front of the arms and the arms rotated clockwise, the opposing forces are such as to eventually move the container to the outer end of the arm, and into the scoop 26 where a single container is retained during rotation.

The included portion of the base 16 is provided adjacent the rim 17 and interiorly thereof with a trap door 27. This trap door is normally held closed by means of the magnetic lock 28, and is provided with a smooth surface and beveled edges and fits closely into the opening 29 in the base 16, so that containers may be freely carried thereover until rotation of the arms 20 is stopped. The trap door may be rectangular or disc-like in shape and is of sufficient width or diameter to permit a single container to drop through when positioned thereon by means of a stopped scoop 26 and the lock 28 caused to open.

For selective operation of the machine a selector arm 30 is provided on the exterior of the machine which may be pivoted to contact with a selective tap governing the dispensing operation for each class of container to be dispensed. Thus in the illustration, the selector arm may be turned to contact either of the taps 31, 32, 33 or 34 leading to the breaker switches 35, 36, 37 and 38 respectively, the multiple tap switch being preferably of the continuous type so that there is no current break or passing from one tap to the other. The breaker switches are mounted interiorly of compartment 12 on the wall 13 thereof in a vertically aligned arrangement with respect to each other and extend out equally to a point adjacent the trap door 27 and to the right thereof.

Each of the scoops 26 is provided with an end portion which extends upwardly to a different height from that of another scoop, as at 39, 40, 41 and 42, and then outwardly and over the rim 17, the heights of these end or finger portions being equal respectively to the vertical position of the breaker switches 35, 36, 37 and 38 and their outward extensions being of sufficient length to engage the rocker arms of the respective switches momentarily as the deflector arms are rotated, and as the scoops approach registration with the trap door.

To actuate the machine a coin chute 43 is positioned exteriorly thereof, and upon insertion of a proper coin the switch 44 is caused to close. The coin box is preferably of the type which keeps the circuit closed when operated, and when the circuit is otherwise broken the switch opens and the coin is deposited. However, if the circuit is not broken within a fixed time limit, such as the time required to make two complete revolutions of the arms, the coin is returned.

Thus to selectively operate the machine wherein may be held containers of the commodities 45, 46, 47 and 48, and it is desired to purchase commodity 45, the selector arm 30 is turned to the marked tap 31 which leads through breaker switch 35. A coin is then deposited in the coin chute which closes switch 44 and completes the circuit to the motor, causing the deflector arms to be rotated clockwise. As previously set forth, the rotation of the deflector arms moves the containers outwardly to the rim 17 and positions one container in a scoop 26.

Since the switches 36, 37 and 38 are not in the circuit the deflector arm extensions 40, 41 and 42 in rotating past them do not break the circuit, but as the extension 39 breaks the switch 35 the circuit is broken, stopping the motor and permitting the container 45 to stop on the trap door 27. The breaker switches as will be noted in Fig. 5 are positioned sufficiently away from the approach side of the trap door to allow for the lag of the motor and movement of the load to permit the release of the breaker arm and to register the scoop with the trap door. As the switch is broken, the magnetic lock 28 is deenergized and springs the trap door 27, permitting the container 45 to drop through the opening 29 into the delivery chute or chamber 49 onto the cushion pad 50. The under side of the trap door is provided with additional circuit making means such as the tiltable mercury switch 51, which is normally closed when the door is urged upwardly by its spring hinge 52. However, as shown in Fig. 4, when the trap door is opened by the descent of a container the circuit remains broken until the container is removed, and prevents actuation of the machine and multiple delivery therefrom.

In order to insure proper operation of the machine, an additional switch 53 of the breaker arm type or any other suitable kind is positioned on, or through an aperture in the retaining wall 17 at the portion thereof where the trap door 27 touches it, and preferably adjacent to the series of vertically spaced breaker arms 35, 36, 37 and 38. This switch 53 is placed in the circuit parallel to the paths of all of the aforesaid breaker arms so that the breaking of any one of the respective breaker arms will not open the circuit unless the switch 53 is simultaneously opened. If, however, switch 53, and one of the selectively routed switches 35, 36, 37 or 38, are simultaneously broken, then the circuit leading to the motor is opened and rotation of the arms terminated. Thus if during actuation of the machine a selected container has not yet been properly positioned in the scoop or hand 26, the switch 53 cannot be actuated simultaneously with the selected breaker switch and the arms will continue to rotate, and thus jamming by improper positioning on the trap door is prevented. By this same expedient return of a coin is also provided if the machine does not contain any of the selected containers or their supply is exhausted. As previously stated the deposited coin is returned if the circuit is not broken in a predetermined time, and thus if no container of a selected class is engaged by a respective scoop, even though a scoop finger breaks the selected arm the circuit is not broken for failure of the switch 53 to be simultaneously actuated, and the arms continue to revolve until the circuit is broken by the return of the coin.

While I have set forth the preferred embodiment of my selective vending machine and described the parts and methods of operation

thereof in detail, it will be apparent to one skilled in the art that further modifications may be made in the general structure and in the detailed parts and their arrangement without departing from the spirit of my invention; and I therefore do not wish to be restricted thereto except as so limited by the appended claims.

I claim as my invention:

1. A selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having an entrance door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, the said arms comprising arcuate portions adapted during rotation thereof to deflect the containers outwardly towards said wall and formed with engaging end portions adapted to receive and retain during rotation individual containers, means for rotating said shaft and the arms extending therefrom, and means for selectively delivering individual containers from said end portions to said delivery chute.

2. A selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having an entrance door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, each of the said arms comprising an arcuate portion extending from said axis over said disc to a point substantially the width of a container from said wall and continuing thereto in the form of an engaging end portion, the said arms during rotation being adapted to deflect the containers towards said wall and to cause individual containers to be lodged therebetween and said engaging end portions, means for rotating said arms, and means for selectively delivering an individual container engaged by one of said end portions.

3. A selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having an entrance door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, each of the said arms comprising an arcuate portion extending from said axis over said disc to a point substantially the width of a container from said wall and continuing thereto in the form of an engaging end portion, the said arms during rotation being adapted to deflect the containers towards said wall and to cause individual containers to be lodged therebetween and said engaging end portions, means for rotating said arms, means for terminating rotation of said arms in a predetermined relationship whereby a single container of a selected class is positioned on said door by means of one of said end portions, and means for thereupon opening said door.

4. A selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having an entrance trap door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, the said arms being adapted by rotation thereof to deflect said containers towards said wall and being formed with engaging end portions adapted to receive and hold therein adjacent to said wall individual containers, means for rotating said arms, means for terminating rotation of said arms at a point where a preselected engaging end arm portion is positioned in registry with said trap door, and means for simultaneously springing said trap door to permit selective delivery from said disc to said delivery chute.

5. A selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having an entrance trap door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, the said arms being adapted during rotation thereof to deflect said containers towards said wall and being formed with engaging end portions adapted to receive and hold therein adjacent to said wall individual containers, means for rotating said arms, means for terminating rotation of said arms at a point where a preselected engaging end arm portion is positioned in registry with said trap door, means for simultaneously springing said trap door to permit selective delivery from said disc to said delivery chute, and means in association with said trap door adapted to prevent successive operation of said machine when the trap door is depressed from the plane of the disc.

6. A selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having an entrance door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, each of the said arms comprising an ar-

cuate portion extending from said axis over said disc to a point substantially the width of a container from said wall, continuing thereto in the form of an engaging hand portion and terminating in a finger portion extending therefrom and radially over said wall, the said arms during rotation being adapted to deflect the containers towards said wall and to cause individual containers to be lodged therebetween and said hand portions, means for rotating said arms, means adapted to be actuated by said fingers to terminate rotation of said arms when a container of a selected class is positioned on said entrance door and said door permitted to be depressed thereby for delivery passage therethrough.

7. A coin controlled selective vending apparatus comprising a fixed platform adapted to support a plurality of classes of commodities in individual containers to be dispensed, an annular retaining wall extending from said platform and enclosing a disc-like area thereof, a delivery chute depending from said enclosed area and having a normally closed entrance trap door in the plane of said platform, a plurality of substantially radially extending revolvable arms extending over said disc-like area, a shaft extending axially thereof, to which said arms are secured, said arms being adapted to hold said containers in segregated classes between adjacent arms, each of the said arms comprising an arcuate portion extending from said axis over said disc to a point substantially the width of a container from said wall, continuing thereto in the form of an engaging hand portion and terminating in a finger portion extending upwardly therefrom and radially outward over said wall, the said arms during rotation being adapted to deflect the containers towards said wall and to cause individual containers to be lodged therebetween and said engaging hand portions, means including a motor for rotating said arms, coin-controlled means to initiate the operation of the motor, means adapted to be actuated by said finger portions when rotated into contacting engagement therewith to selectively terminate the rotation of said arms at a point where a container of a selected class is positioned on said trap door, and means adapted to spring said trap door to permit said selected container to drop through said delivery chute.

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