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DISPENSING APPARATUS

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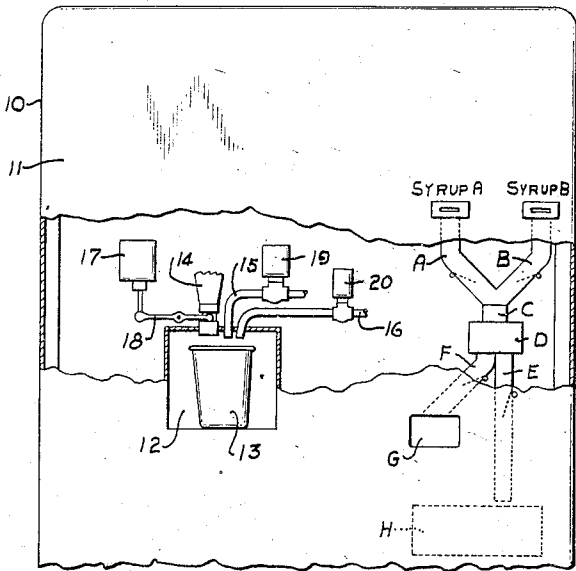


FIG. 1.

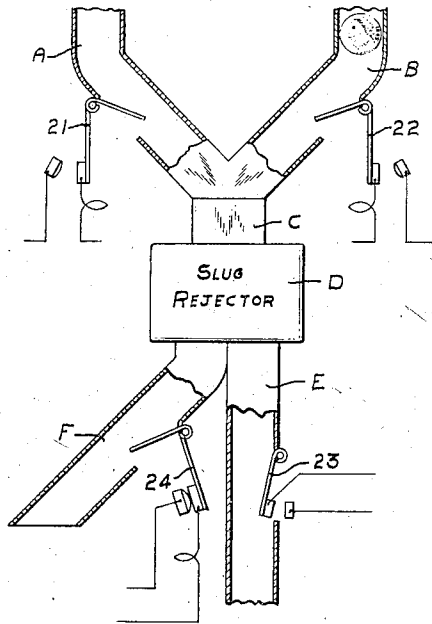
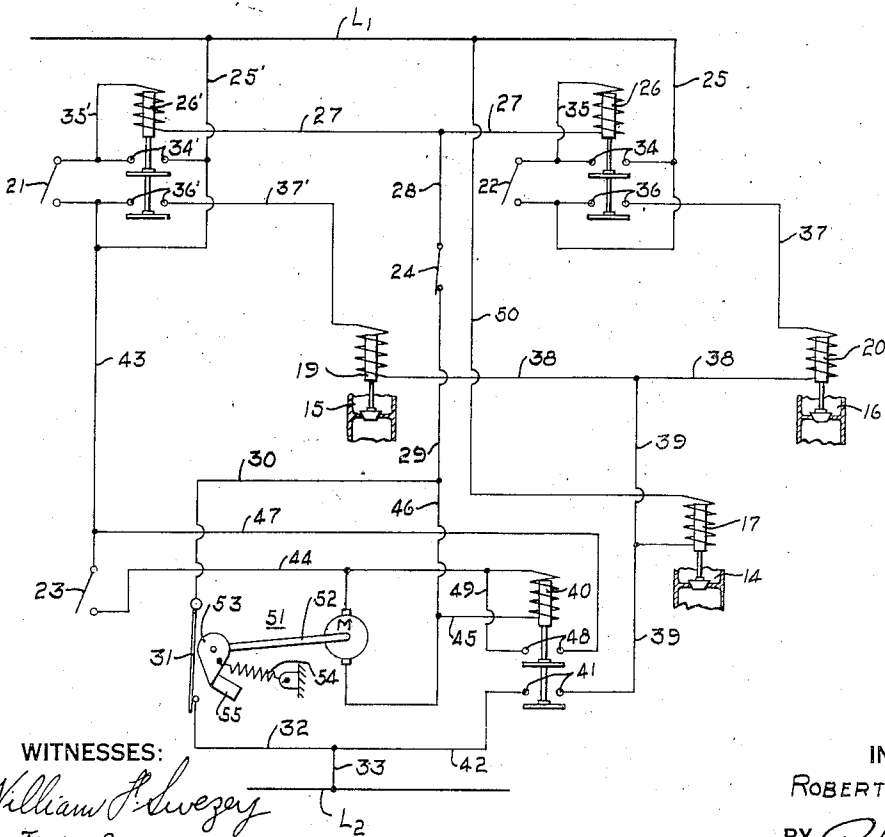


FIG. 2.



WITNESSES:

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FIG. 3.

UNITED STATES PATENT OFFICE

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DISPENSING APPARATUS

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5 Claims. (Cl. 194—13)

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This invention relates to beverage dispensing apparatus and more particularly to apparatus of the type wherein a coin is used to initiate operation of the dispensing cycle.

An object of the invention is to provide improved apparatus of the character described.

The invention is particularly adapted for that type of beverage dispensing apparatus wherein one of a number of available flavoring syrups, together with water, either sweet or carbonated, or any other diluent, are dispensed into a cup previously disposed at the beverage outlet.

Heretofore in multiple syrup apparatus, it has been necessary for the customer to perform at least two operations; one, to insert a coin in a slot and two, to operate a dial or lever or push a button to select the desired syrup flavor or to initiate operation of the apparatus. In some apparatus the syrup flavor is selected before the coin is inserted.

The present invention has for a principal object the provision of means whereby the customer selects the preferred syrup flavor by the insertion of a coin in one of several suitably marked slots, depending on the number of syrup flavors in the apparatus, whereupon the dispensing cycle automatically starts without further attention by the customer.

The invention further contemplates the dispensing of the selected flavor and water or other diluent at a common dispensing station as distinguished from those prior machines provided with separate dispensing stations for each syrup flavor.

The invention also includes electrical means for accomplishing the aforesaid objects, including means for resetting the machine to normal operating condition in the event a slug or improper coin is inserted in a flavor selecting slot.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this application, in which:

Fig. 1 is a front elevation of a beverage dispensing apparatus enclosed in a cabinet and embodying the invention, parts of the cabinet being broken away for clarity of illustration;

Fig. 2 is a diagrammatic representation of a multiple coin chute construction forming part of the invention; and

Fig. 3 is a wiring diagram showing the basic circuits of the invention.

For the purpose of illustration, it is assumed that the syrup tanks and carbonated water re-

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ceptacles are under constant pressure and that liquid flow from each source is controlled by a solenoid-operated valve, normally closed, but opened when its solenoid is energized under selected conditions. It is further assumed that the selected syrup flavor and the carbonated water are dispensed separately into and mixed in the cup. It is obvious, however, that the mixing of the beverage components could as well take place in a common mixing chamber from which the mixed beverage would flow into the cup.

It will be apparent from the following description that the invention is equally applicable to dispensing apparatus for mixtures of plain water and a selected syrup, or syrup and any diluent, and that the beverage component sources need not be under pressure but may flow by gravity to the cup or mixing chamber. It will also be apparent that the invention is applicable to the selective dispensing of any one of a plurality of pre-mixed beverages stored in separate containers.

Referring to the drawing, 10 designates a cabinet provided with a front wall 11 in which is formed a recess 12 which recess serves as a station for receiving and supporting a cup 13 beneath a beverage dispensing outlet or nozzle. In practice the cup is usually dropped automatically from a stack, but it may be inserted by hand.

The beverage dispensing outlet is here disclosed as a carbonated water conduit 14 and two syrup conduits 15 and 16. The flow of carbonated water is controlled through a valve actuated to its open position by a solenoid 17 and a pivoted lever 18. Flow of the syrup through conduits 15 and 16 is controlled by solenoid valves 19 and 20, respectively. For simplicity of illustration only two syrup conduits are shown. The actual number used, as will be apparent, is limited only by the available space.

For selecting the desired syrup flavor the following coin chute and selector mechanism is provided. The front of the cabinet is provided with two coin slots, one marked here as "Syrup A" and the other as "Syrup B." In practice, of course, the name of the beverage will be substituted. The slot marked "Syrup A" communicates with a coin chute A and the other slot with a coin chute B. Chutes A and B converge at their lower ends into a common chute C. Chute C directs the coin to a well-known "slug rejector" D which tests the coin and then directs it either to the accepted chute E or the rejected chute F. A coin or slug passing through chute F falls into a recess G in the front of the cabinet so that it can be recovered. Ac-

cepted coins pass through chute E to coin box H.

The chutes A, B, E, and F are each provided with an electric switch 21, 22, 23, and 24, respectively, adapted to be momentarily actuated by the passage of a coin through that chute. Switches 21, 22, and 23 are normally open, while switch 24 is normally closed.

Assuming that a beverage comprising flavor B is desired, a coin is inserted in the designated slot to fall into chute B. The coin in its passage momentarily closes switch 22, then passes to chute C and into slug rejector D. If accepted, it passes through chute E, momentarily closing switch 23 and then drops into coin box H.

Referring to Fig. 3 and assuming the coin has tripped switch 22 in chute B, a circuit is established from line conductors L₁ through conductor 25, switch 22, relay solenoid 26, conductor 27, conductor 28, normally closed switch 24, conductors 29 and 30, normally closed switch 31 and conductors 32, 33 to line conductor L₂. The energization of solenoid 26 sets up a holding circuit through that solenoid from L₁ through conductor 25, contacts 34, conductor 35, solenoid 26, and conductors 27, 28, switch 24, conductors 29, 30, switch 31 and conductors 32, 33 to L₂.

Energization of solenoid 26 also sets up, but does not complete, a circuit to the selected syrup valve solenoid 20. This circuit runs from L₁ through conductor 25, contacts 36, conductor 37, solenoid 20, conductors 38 and 39, contacts 41 on solenoid relay 40 and conductor 42 to conductors 33 and L₂. It should be noted, however, that at this stage the solenoid 40 is not energized and contacts 41 are open. Therefore, solenoid 20 is not energized and no syrup flow occurs.

Now, if the coin is accepted by the slug rejector D, it passes through chute E, momentarily tripping switch 23. Thereupon, a circuit is established from L₁ through conductors 25 and 43, switch 23, conductor 44, solenoid 40, conductors 45, 46, and 30, switch 31 and conductors 32, 33 to L₂. As the switch 23 is only momentarily closed, it is necessary to provide a holding circuit for relay solenoid 40. This is made from L₁ through conductors 25, 43, and 47, contacts 48, conductor 49, solenoid 40 and conductors 45, 46, and 30 through switch 31 to L₂.

With the circuit established through solenoid 40, contacts 41 are closed, completing the circuit through the selected syrup solenoid 20 and permitting syrup to flow to the cup. At the same time the syrup solenoid is energized, the water valve solenoid 17 is also energized, so that syrup and water flow simultaneously. The water valve solenoid is energized from L₁ through conductor 50, solenoid 17, conductor 39, contacts 41 and conductors 42 and 33 to L₂ when solenoid 40 is energized.

The breaking of the various circuits when the proper quantity of beverage has been dispensed is controlled by the motor-driven timer 51. This timer comprises a synchronous motor M driving a shaft 52, suitably reduced in speed, which shaft carries a cam or finger 53 normally held by a light spring 54 against an adjustable stop 55. Rotation of motor M a sufficient distance causes the finger 53 to open switch 31, clearing all circuits and conditioning the apparatus for the succeeding dispensing operation. When the switch is opened, the circuit to motor M breaks and spring 54 pulls the finger back against the adjustable stop 55, whereupon the switch 31 recloses. The position

of stop 55 determines the length of the dispensing cycle.

Motor M is initially energized when switch 23 is closed, and being in parallel with relay solenoid 17 is held in circuit as long as that relay is energized and switch 31 is closed.

Assuming that the coin is rejected by rejector D, the syrup solenoid circuit has been set up by the energization of solenoid 26, but as the coin does not pass through chute E it does not close switch 23 to energize solenoid 40 and complete the syrup and water solenoid circuits. Instead the coin or slug passes through reject chute F, tripping the normally closed switch 24 and breaking the circuit through the energized solenoid 26, thus restoring the system to its normal dispensing position. Switch 24 is in series with all the syrup selector relays so that it is effective regardless of which relay has been energized. In Fig. 3 the selector relay for "Flavor A" has been designated 26' and prime numbers have been used for all related parts similar to those used in describing the operation of relay 26 for "Flavor B." Obviously, duplicate chutes, trip switches, and relays can be used for any desired number of syrup flavors or different pre-mixed beverages. When a pre-mixed beverage is dispensed, the water solenoid 17 and its connections are omitted.

It will be seen from the foregoing description that the invention provides a system for obtaining a desired beverage from a number available by the simple act of inserting a coin in a designated slot, and it is also apparent that provision has been made for dispensing the beverage at a common outlet and for restoring the system if a faulty coin or slug has been used.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. In a beverage dispensing system of the type wherein one of a plurality of syrups is dispensed into a cup together with a common diluent at a common dispensing station at each operation of the system, and which dispensing operation is initiated by the insertion of a coin, the combination of: a plurality of syrup selecting chutes, means associated with each of said chutes and actuated by the passage of the coin through the chute for conditioning the system for dispensing the selected syrup, a common chute communicating with the plurality of syrup selecting chutes, and means associated with the common chute for initiating a cycle for dispensing the selected syrup and the common diluent.

2. In a beverage dispensing system of the type wherein one of a plurality of syrups is dispensed into a cup together with a common diluent at a common dispensing station at each operation of the system, and which dispensing operation is initiated by the insertion of a coin, the combination of: a plurality of syrup selecting chutes, means associated with each of said chutes and actuated by the passage of the coin through the chute for conditioning the system for dispensing the selected syrup, a common chute communicating with the plurality of syrup selecting chutes, means associated with the common chute for initiating a cycle for dispensing the selected syrup and the common diluent, and timing mechanism responsive to the cycle initiating means for controlling the duration of the dispensing cycle and

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thereafter restoring the system for the dispensing of any selected syrup.

3. In a beverage dispensing system of the type wherein one of a plurality of syrups is dispensed into a cup together with a common diluent at a common dispensing station at each operation of the system, and which dispensing operation is initiated by the insertion of a coin, the combination of: a plurality of syrup selecting chutes, means associated with each chute and responsive to the passage of a coin through said chute for momentarily completing an electric circuit, a solenoid relay responsive to said means for conditioning the system to dispense the selected syrup, a common chute communicating with the plurality of syrup selecting chutes, means associated with said common chute and responsive to the passage of a coin therethrough for also momentarily completing an electric circuit, and means responsive to said last-named coin-responsive means for initiating and controlling the duration of the selected syrup dispensing cycle and the diluent dispensing cycle.

4. In a beverage dispensing system of the type wherein one of a plurality of syrups is dispensed into a cup together with a common diluent at a common dispensing station at each operation of the system, and which dispensing operation is initiated by the insertion of a coin, the combination of: a plurality of syrup selecting chutes, means associated with each chute and responsive to the passage of a coin through said chute for momentarily completing an electric circuit, a solenoid relay responsive to said means for conditioning

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the system to dispense the selected syrup, a common chute communicating with the plurality of syrup selecting chutes, means associated with said chute and responsive to the passage of a coin therethrough for also momentarily completing an electric circuit, and means responsive to said last-named coin-responsive means for initiating and controlling the duration of the selected syrup dispensing cycle and the diluent dispensing cycle, said last-named means including a motor-driven timing mechanism.

5. In a beverage dispensing system of the type wherein one of a plurality of syrups is dispensed into a cup together with a common diluent, at a common dispensing station at each operation of the system, and which operation is initiated by the insertion of a coin, the combination of: a plurality of syrup selecting chutes, means associated with each of said chutes and actuated by the passage of the coin through the chute for conditioning the system for dispensing the selected syrup, a common chute communicating with the plurality of syrup selecting chutes, means associated with the common chute for initiating a cycle for dispensing the selected syrup and the common diluent, a slug-rejecting device interposed between the syrup selecting chutes and the common chutes, a slug return chute associated with the slug rejecting device, and means associated with said last-named chute for restoring the dispensing system to its normal condition when a rejected coin or slug passes through said last-named chute.

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