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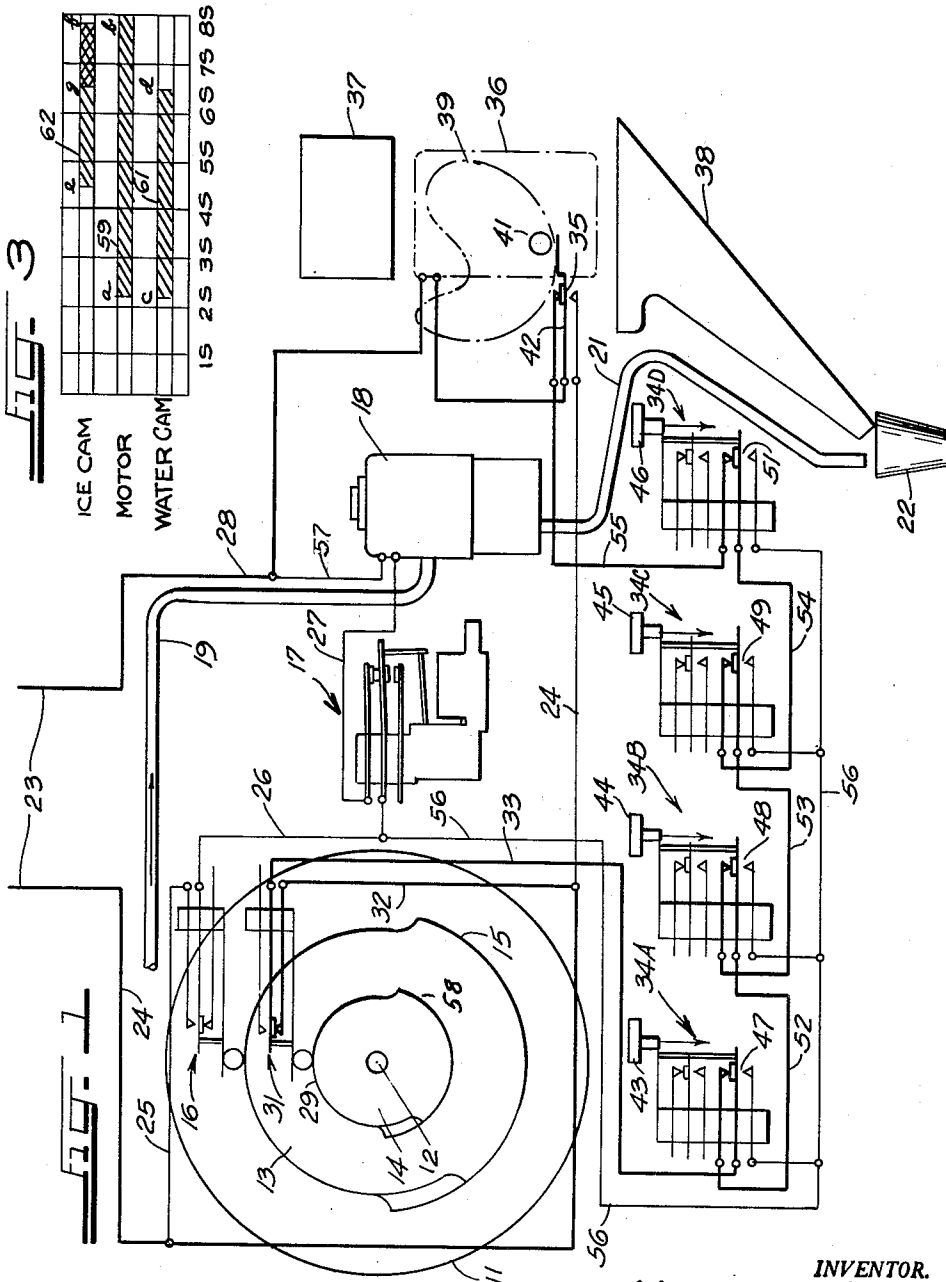
M. W. KENNEY

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MACHINE FOR VENDING DRINKS WITH OR WITHOUT ICE

Filed Feb. 12, 1962

2 Sheets-Sheet 1



INVENTOR.
MAHLON W. KENNEY
 BY *Carl V. Lloyd*

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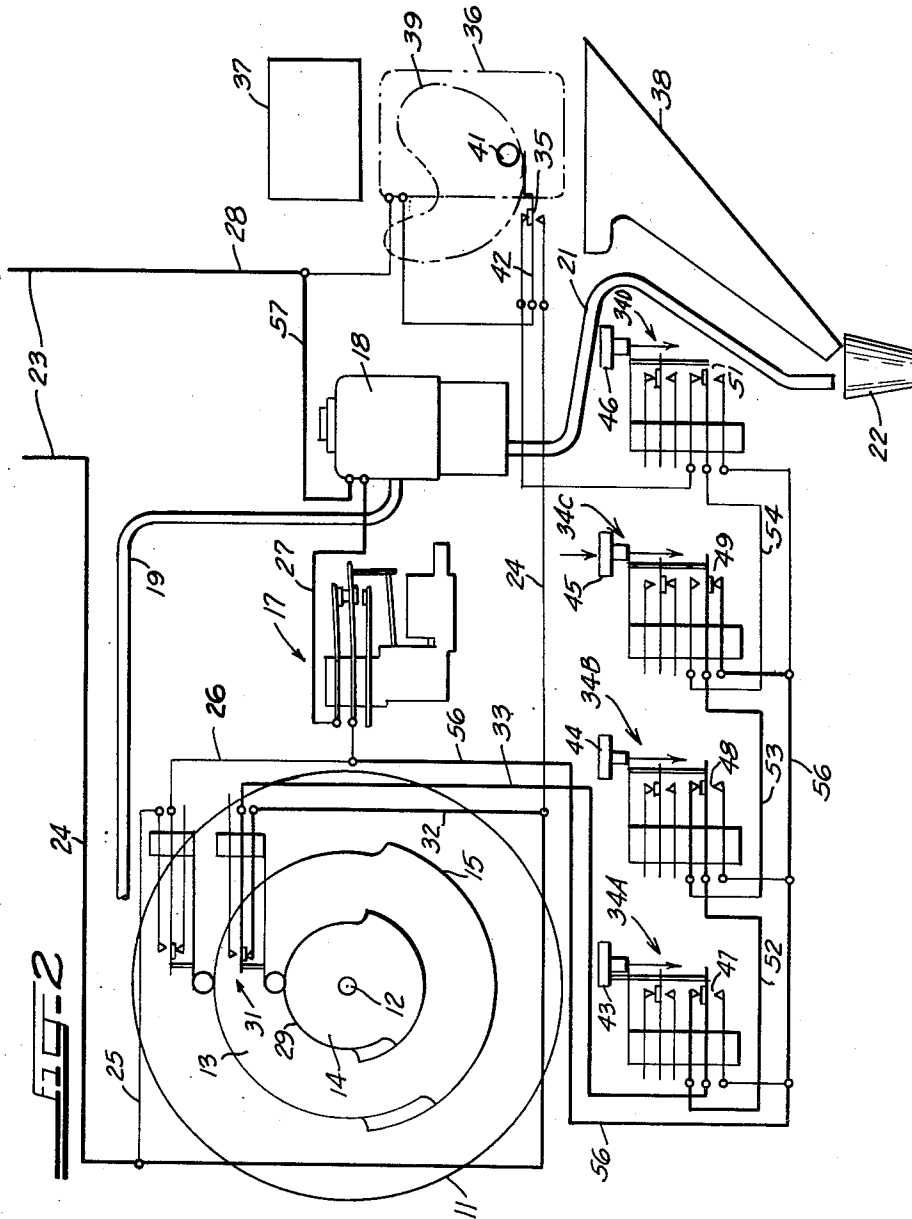
M. W. KENNEY

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2 Sheets-Sheet 2



INVENTOR.
MAHLON W. KENNEY
BY *Carl V. Floyd*
FLL

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3,164,299
MACHINE FOR VENDING DRINKS WITH OR WITHOUT ICE

Mahlon W. Kenney, Oak Park, Ill., assignor, by mesne assignments, to The Seeburg Corporation, a corporation of Delaware

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This invention relates to cold drink vending machines which are provided with means, such as the device shown in pending application of Owen J. Schwertfeger et al., Serial No. 71,771, filed November 25, 1960, for dispensing a quantity of ice into the cup upon each drink vending operation.

While most patrons of such cold drink machines wish to have ice in the drink, some do not, and it is the general object of this invention to make provision in such a machine for omitting the ice on any given operation at the option of the customer.

A more particular object is to provide such a "no-ice" feature by means of an electrical control so designed that by the simple expedient of holding the drink selector button depressed during the vending operation the customer can obtain a drink without ice, whereas if the button is momentarily depressed and released in the normal manner ice will be discharged into the cup.

A further object is to provide a drink dispenser of this character in which an additional quantity of water will flow into the cup when the ice is omitted to make up for the lost volume.

Other objects and advantages of the invention will be evident from the following description of a simplified embodiment thereof, taken in connection with the accompanying drawings, in which:

FIG. 1 is a schematic block and wiring diagram of the machine showing the condition of the electrical controlling circuit when the ice vend motor is energized by the selector switch;

FIG. 2 is a similar diagram showing the condition of the circuit when such energization of the ice vend motor is prevented by the holding of one of the selector buttons in depressed position in a "no-ice" vending operation; and

FIG. 3 is a vend cycle cam timing chart, with the part of the ice cam cycle which is used for extra water flow in case of a "no-ice" operation indicated by special hatching.

In such schematic illustration of the invention I have shown diagrammatically a drink vend motor 11, on the shaft 12 of which a water control cam 13 and an ice control cam 14 are mounted. These cams are shown as of different size for convenience in illustration, although they would normally be of substantially the same size.

The rise 15 on the water control cam closes a water vend switch 16 which, through a relay 17, activates a two-way solenoid valve 18 in a water line 19. The portion 21 of said line beyond the valve 18 leads to a vending stage at which a cup 22 is positioned, being delivered thereto from a cup-dispensing mechanism (not shown) at the outset of the vending operation as is customary in the operation of drink-vending machines. Actually provision is, or may be, made for supplying either still or carbonated water as well as selected flavors, but for simplicity only a single water line is shown.

A source of electric current is indicated at 23. When the switch 16 is closed current flows from the positive side 24 of the line through a lead 25 to switch 16, a lead 26, the relay 17, a lead 27, and the solenoid valve 18 to the negative side 28 of the line.

The dwell 29 on the ice control cam 14 closes an ice vend switch 31 which closes a circuit from a lead 32 from the positive side of the line to a lead 33, selector switch banks 34A, 34B, 34C and 34D, and a cam controlled

carry-over switch 35 to an ice vend motor 36. An ice reservoir is schematically indicated at 37 and an ice chute at 38. An ice dispenser cam 39, which may be on the order of a comparable cam shown in the above-mentioned Schwertfeger et al. application Serial No. 71,771, has a switch actuating pin 41 thereon which normally holds the switch 35 in position with the lower contact closed, but upon predetermined movement of said cam permits the movable element 42 of the switch to move to the position shown in FIGS. 1 and 2, to which position it is biased. The lower contact of said switch 35 connects to the line 24.

Push buttons 43, 44, 45 and 46 are provided for actuation of the switches in the banks 34A, 34B, 34C and 34D, respectively, and in normal operation when one of said push buttons is momentarily depressed it establishes a circuit to the flavor syrup supply means (not shown) and a circuit to the motor 11. Motor 11 then maintains itself energized for one complete revolution of the shaft 12 thereof by a conventional cam carry-over arrangement (not shown). Ice selector switches 47, 48, 49 and 51 in said switch banks 34A, 34B, 34C and 34D after such momentary operation thereof assume the position shown in FIG. 1 so that current flows therethrough from the lead 33 through leads 52, 53, 54 and 55 to the switch 35 and ice vend motor 36. This circuit to the ice vend motor is indicated by heavy lines in FIG. 1.

In case the customer does not desire to have ice in his drink, he need merely press one of the selector buttons (43-46) and hold it in its depressed position during the vending cycle. (A suitable notice or instruction to this effect may of course be placed on the machine.)

As shown in FIG. 2, the third button from the left (45) is in such depressed position, breaking the ice motor circuit at the switch 49. In this case the circuit from the positive side of the line is through lead 32, switch 31, lead 33, ice selector switches 47, 48 and 49 and back through a lead 56 to the relay 17, thence to the solenoid valve 18 and through a lead 57 to the negative side 28 of the line. The circuit just described is indicated by heavy lines in FIG. 2.

The return of current through the relay 17 and valve 18 causes the water to continue to flow until the switch 31 is opened by the rise, indicated at 58, on the ice cam 14, thereby replacing the volume in the cup which is lost by the absence of ice therein.

FIG. 3 is a vend cycle timing chart graphically illustrating the normal cycle when ice is dispensed and the utilization of part of the ice cam cycle for supplying additional water in case of a "no-ice" operation.

It shows an overall 8-second vend cycle. The cup drop takes place during approximately the first 2.25 seconds of the cycle. A selector relay (not shown) starts the motor 11 and keeps it running until a motor carry-over cam (not shown) takes over. At this point (after approximately 2.25 seconds) the contacts of the selector relay open and the motor continues to run for the remainder of the 8-second cycle, shown by the hatched part (a-b) of the center strip 59 of the chart.

The water cam provides for water flow for a period indicated by the hatched part (c-d) of the lower strip 61 (approximately 2.25 to 6.5 seconds).

In a normal "with-ice" operation the ice cam provides for operation of the ice vend motor for a period indicated by the hatched part (e-f) of the upper strip 62 of the chart. In case of a "no-ice" operation the ice vend motor is not energized but extra water, to replace the normal ice volume, is delivered during the time that the ice switch 31 remains closed after the water switch 16 opens. This time (approximately 6.5 to 7.75 seconds of the cycle) is indicated by the reversely hatched part (g-f) of the upper strip 62 of the chart.

From the foregoing description, which of course is intended to be illustrative only and from which no unnecessary limitations should be implied, it will be evident that provision is made in simple and practical manner for delivery of a drink from the machine with or without ice as the customer chooses.

I claim:

1. In a cold drink vending machine: first means, including an electrically operated valve and a circuit leading thereto, for dispensing a liquid ingredient of the drink; second means, including an electrically-controlled actuating element and a circuit leading thereto, for dispensing a portion of ice into the drink; a drink selector button; third means whereby momentary depressing of said selector button closes both of said circuits and causes delivery of a drink in the form of a predetermined quantity of liquid ingredient with ice; and fourth means whereby holding said button in a depressed position during the vending cycle opens the circuit to said actuating element, thus preventing dispensing of ice during such cycle.

2. Apparatus as set forth in claim 1, and further comprising additional circuit means whereby when said button is held in its depressed position the fourth means of said claim also causes the circuit to said valve to remain closed so as to dispense an additional quantity of liquid to replace the volume lost when ice is not dispensed.

3. In a cold drink vending machine: first means, including an electrically operated valve and a circuit leading thereto, for dispensing a liquid ingredient of the drink; second means, including an electrically-controlled actuating element and a circuit leading thereto, for dispensing a portion of ice into the drink; a plurality of drink selector buttons; third means whereby momentary operation of any one of said selector buttons closes both of said circuits and causes delivery of a drink in the form of a predetermined quantity of liquid ingredient with ice; and

fourth means whereby holding the actuated button in depressed position during a vending cycle opens the circuit to said actuating element, thus preventing dispensing of ice during such cycle.

4. Apparatus as set forth in claim 3, and further comprising additional circuit means whereby when the actuated button is held in its depressed position the fourth means of said claim also causes the circuit to said valve to remain closed so as to dispense an additional quantity of liquid to replace the volume lost when ice is not dispensed.

5. In a cold drink vending machine: a first electrical circuit including means for dispensing a liquid ingredient of the drink; a second electrical circuit including means for dispensing a portion of ice for the drink; a drink selector button; first switch means whereby momentary depressing of said drink selector button closes both of the said circuits and causes delivery of a drink in the form of a predetermined quantity of liquid ingredient with ice; and second switch means whereby holding said drink selector button in a depressed position during the vending cycle opens the said second circuit, thereby preventing dispensing of ice during such cycle.

6. A cold drink vending machine as set forth in claim 5, and further comprising an additional circuit to close the first circuit while the said second switch means is actuated, so as to dispense an additional quantity of liquid to replace the volume lost in the drink when the ice is not dispensed.

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