Dec. 29, 1959 H. P. BRIGGS 2,919,053

PROPORTIONING DRINK-DISPENSER

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Fig. 1

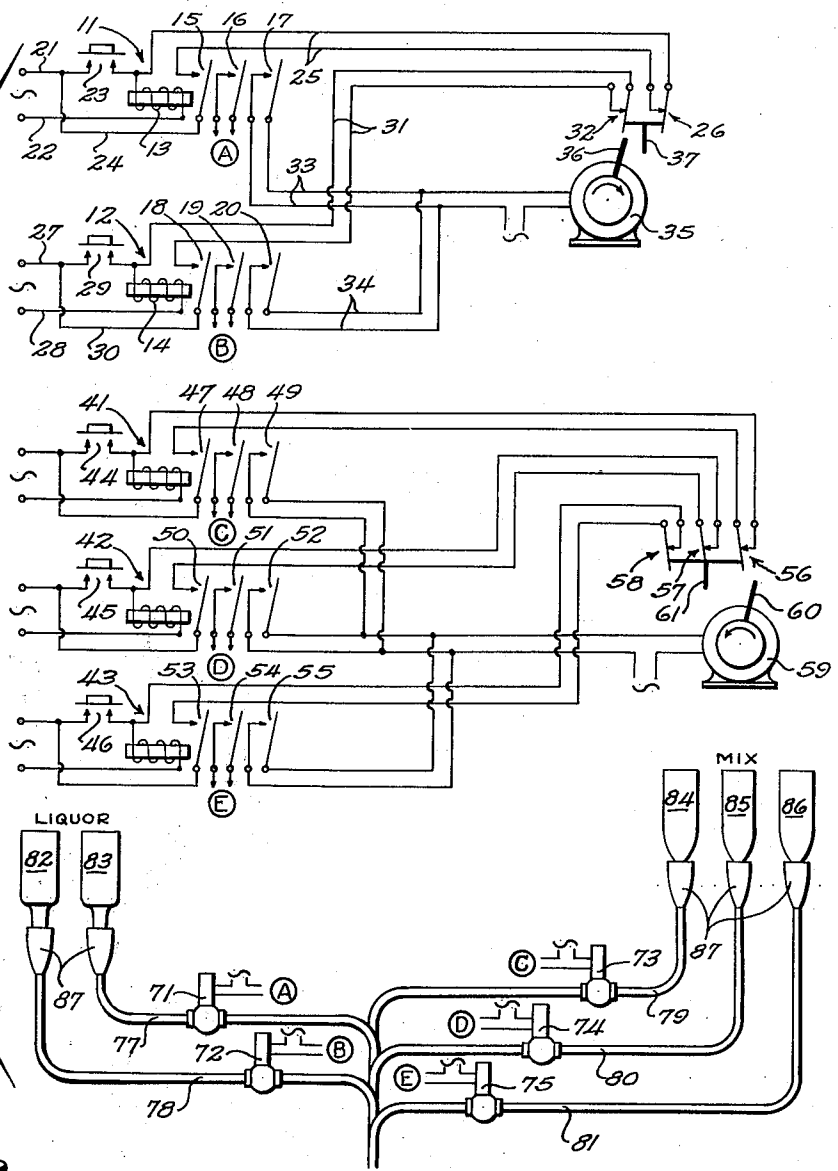
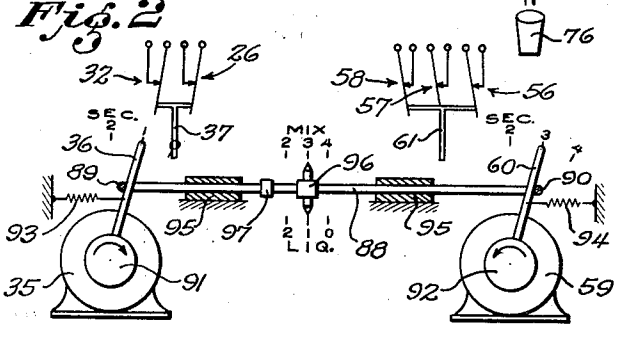


Fig. 2



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PROPORTIONING DRINK-DISPENSER

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1 Claim. (Cl. 222—76)

This invention relates to liquid dispensing systems, a main object of the invention being to provide a system for automatically dispending drinks of the highball type, each having a preselected alcoholic content.

Another object of the invention is to provide a system of the character described in the preceding object whereby the total quantity of liquid delivered to a receptacle is always the same regardless of its alcoholic content; this object being accomplished by the provision of quantity-selecting means arranged so that as the quantity of either of the components of the drink is increased the quantity of the other component is proportionately decreased.

Another object is to provide individual valves for dispensing the liquid components of a highball, and adjustable time-controlled means for opening each of the valves for a period corresponding to the selected quantity of liquid to be dispensed through the valve.

Further objects and advantages of the invention will become apparent from the following description and accompanying drawing, and from the appended claim.

In the drawing:

Figure 1 is a diagrammatic view of a liquid dispensing system embodying this invention; and

Figure 2 is a diagram showing means for proportionately adjusting the settings of the electric timers shown in Fig. 1.

In the upper part of Fig. 1, and generally indicated by the numerals **11** and **12**, are two identical electromagnetic relays each adapted when energized by passage of current through its respective coil **13** or **14** to effect, in conventional manner, closing of three pairs of normally-open switch contacts indicated in relay **11** by the numerals **15**, **16** and **17** and in relay **12** by numerals **18**, **19** and **20**.

The coil **13** of relay **11** is connected by wires **21** and **22**, in series with a normally-open momentarily-operable push-button switch **23**, to a source of electrical energy indicated by the sine-curve symbol. This symbol appears at numerous places in the drawing and designates a common source (preferably) of low-voltage alternating current. One of the pair of switch contacts **15** is connected by a wire **24** directly to the source-wire **21**, the other of contacts **15** being connected by a wire **25**, in which a normally-closed switch **26** is inserted, to the upper terminal of coil **13**. Since the lower terminal of this coil is connected to the other source-wire **22**, when the relay is energized by closing of push-button switch **23** and contacts **15** consequently close, energization of the relay is maintained through these contacts (and normally-closed switch **26**) so that the relay is held-in electrically and will drop-out only when switch **26** is opened.

The coil **14** of relay **12** is connected in similar manner to the electric source by wires **27**, **28** and a push-button switch **29**; one of the "holding" contacts **18** of this relay being connected to the source by a wire **30**, and the other to the upper terminal of the coil by a wire **31** in which is inserted another normally-closed switch **32** the opening of which effects drop-out of this relay after it has held-in in response to momentary actuation of the push-button switch **29**.

The switch contacts **17** of relay **11** and **20** of relay **12** are connected, in parallel with each other, by wires **33** and **34** respectively to an electric motor **35** in series with the electric source indicated by the symbol, so that this motor is energized in response to energization of either of the relays. Driven by motor **35** in the direction of the arrow, at slow speed as through internal gearing, is an arm **36** engageable with a T-bracket **37** to which the movable elements of switches **26** and **32** are secured.

Movement of bracket **37** (to the right) by the motor-arm **36** effects opening of switches **26** and **32** and thereby interruption of the hold-in circuits of the associated relays **11** and **12** so that the one of the relays through which energization of the motor was initiated drops-out and thereby effects deenergization of the motor. In other words: after momentary actuation of push-button switch **23** or **29** the associated relay **11** or **12** remains held-in only during the period that the motor-arm **36** then moves from a set position into engagement with the bracket **37**. As will be explained hereinafter, it is intended that only one of the switches **23** or **29** be actuated at a time.

In Fig. 1 below the relay and motor system just described is another such system; the only difference between these systems being that in the lower system there is an additional relay cooperable with the motor. The three relays **41**, **42** and **43** in the lower system are individually controllable by push-button switches **44**, **45** and **46** and have sets of switch contacts **47—49**, **50—52** and **53—55** respectively. The hold-in contacts **47**, **50** and **53** of the relays are connected to the coils of the relays through normally-closed switches **56**, **57** and **58** respectively, and the relay contacts **49**, **52** and **55** are connected, in parallel with each other, in the energizing circuit of an electric motor **59** which drives (in the direction of the arrow) an arm **60** engageable with a T-bracket **61** to which the movable elements of switches **56—58** are secured. The operation of this three-relay system is identical with that of the two-relay system described above: upon actuation of any one of the push-button switches **44—46** the associated relay pulls-in (so that motor **59** is then energized) and subsequently drops-out when the switches **56—58** are opened by the motor.

In the lower part of Fig. 1 is a liquid delivering system which comprises five normally-closed solenoid valves **71—75** energization of which is controlled by the middle pair of contacts **16**, **19**, **48**, **51** and **54** of relays **11**, **12**, **41**, **42** and **43** respectively. The terminals of these contacts and the energizing circuits of the solenoid valves are indicated respectively by the letters A, B, C, D and E to avoid the showing of pairs of wires interconnecting these points. When any of the five relays pulls-in, the valve associated with the middle pair of contacts of that relay is energized and operated to open position. Each of the solenoid valves is inserted in a pipe leading to a bottle from which liquid can flow by gravity, when the valve is opened, to a receptacle or drinking glass **76** over which the lower ends of all of the pipes are positioned. The pipes and bottles associated with valves **71—75** are indicated respectively by numerals **78—81** and **82—86**. Between each of the bottles and pipes is a device **87** which facilitates replacement of the bottle when empty and permits air to enter the bottle as the liquid is dispensed. As is indicated by the legends, the bottles **82** and **83** contain different liquors, such as bourbon and scotch whiskies, while the bottles **84**, **85** and **86** contain liquids suitable for mixing with the liquor, such as water, seltzer water and ginger ale.

The diagram of Fig. 2 discloses an illustrative arrangement for proportionately adjusting the time-settings of the means for effecting drop-out of the relays. This arrangement comprises a rod **88** having bent-up ends **89** and **90** engageable with the motor-arms **36** and **60** to determine the position of these arms prior to energization of the motors. The arms **36** and **60** may, for example, be connected to the respective motors through magnetic clutches **91** and **92** arranged so that they are energized concurrently with the motors and then afford a positive driving connection between the motor and the arm. When the magnetic clutches are deenergized (upon drop-out of the controlling relays) the arms **36** and **60** are disengaged from the motors and free to move under the force of their respective bias springs **93** and **94** to their stopped positions in engagement with the bent ends **89** and **90** of the adjusting rod **88**. This rod is mounted for manual lengthwise movement in guides **95** which are arranged to frictionally grip the rod so that its position is not altered by the impact of arms **36**, **60** when they are suddenly disengaged from the motors.

It is to be borne in mind that the rod **88** remains stationary during the drink-dispensing operation, and that its main function is to provide the simultaneously adjustable stops **89**, **90** relative to which the arms **36**, **60** move when their respective motors are energized.

As can be seen in Fig. 2, the tips of the motor-arms **36**, **60** cooperate with scales, graduated in seconds, and indicate the approximate periods that will elapse before the motors (and magnetic clutches **91**, **92**) are deenergized in response to actuation of the respective relay-release switches **26**, **32** and **57**, **58**, **59** by the motor-arms.

In the operation of the system if, for example, relay **11** is energized by momentary actuation of the push-button switch **23**, this relay will pull-in and remain held-in for one second (as indicated in Fig. 2 by the setting of arm **36**) during which period the valve **71**, energized through contacts **16** of the relay, will be open so that a predetermined quantity of liquor will be delivered to receptacle **76** from bottle **83**. In like manner, if the push-button switch **45** is actuated the valve **74** will open and remain open for the three-second period indicated by the setting of arm **60**, and a corresponding quantity of liquid from bottle **85** will be dispensed.

It is to be understood that the rate of flow from each of the bottles to the receptacle is substantially the same, so that the quantity of liquid dispensed is in direct proportion to the time that the valve is open. When the timers are set as shown in Fig. 2 and one of each of the groups of push-button switches **23**, **29** and **44**, **45**, **46** is actuated, one part of liquor and three parts of mix will be delivered to form the drink; these proportions being indicated in Fig. 2 by a double-ended pointer **96** carried by rod **88**. As was mentioned above, means may be provided for preventing the dispensing of more than one kind of liquor or mix at a time. Such means may consist of a mechanical interlock for each of the groups of push-buttons, or electrical means for preventing concurrent energization of more than one relay of a group. Push-buttons associated respectively with the liquor and the mix may be pressed at the same time or in sequence. If desired, individual push-buttons may

be provided for each of the possible combinations of drinks (such as "Scotch and Soda" or "Bourbon and Water") and arranged to effect simultaneous energization of the corresponding relays.

The proportioning means is shown set for dispensing a drink of the usual (1:3) strength or alcoholic content. If a somewhat weaker or stronger drink is desired the rod **88** is moved accordingly to the right or the left so that the quantities of the liquor and mix delivered will be in the proportions of, say, ½:3½ for a weaker drink, or 1½:2½ for a stronger one. It will be observed that the total quantity of liquid delivered to the receptacle is the same at all settings of the proportioning means.

A stop, indicated at **97**, may be provided on bar **88** for preventing accidental dispensing of a drink stronger than in the proportion of 2:2; optionally, means may be provided for sounding a warning if the proportioning means is moved beyond that position. If "straight" liquor is desired, only the push-button associated with the liquor is pressed. If no liquor is desired, the indicator is moved to the 0:4 position so that only seltzer water or the like can be dispensed.

The invention as described above and shown diagrammatically is obviously susceptible of modification without departing from the spirit of the invention, and I intend therefore that no limitations be placed on the invention except as defined by the scope of the appended claim.

I claim as my invention:

In a system for delivering optionally beverages of different proportions of two ingredient liquids, so as to maintain the total amount of liquid substantially the same independently of the proportions: a first valve for delivering one of the ingredients; a second valve for delivering the second of said ingredients; a pair of electrical circuit means respectively for controlling the opening of the valves; a pair of circuit controllers respectively located in said circuit means, and adapted to be so operated as to terminate the periods during which said valves are open; a pair of movable operators respectively for the circuit controllers; a pair of electric motors respectively for moving the operators toward valve-closing positions; a common means for simultaneously determining the starting positions of said operators to predetermine the ratio of the ingredients; and means responsive to the opening of the valves for energizing the motors and to couple them to the operators; the adjustment of the starting positions being such that as the time for moving one operator to valve-closing position is increased, the time for moving the other operator to its valve-closing position is correspondingly decreased.

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