

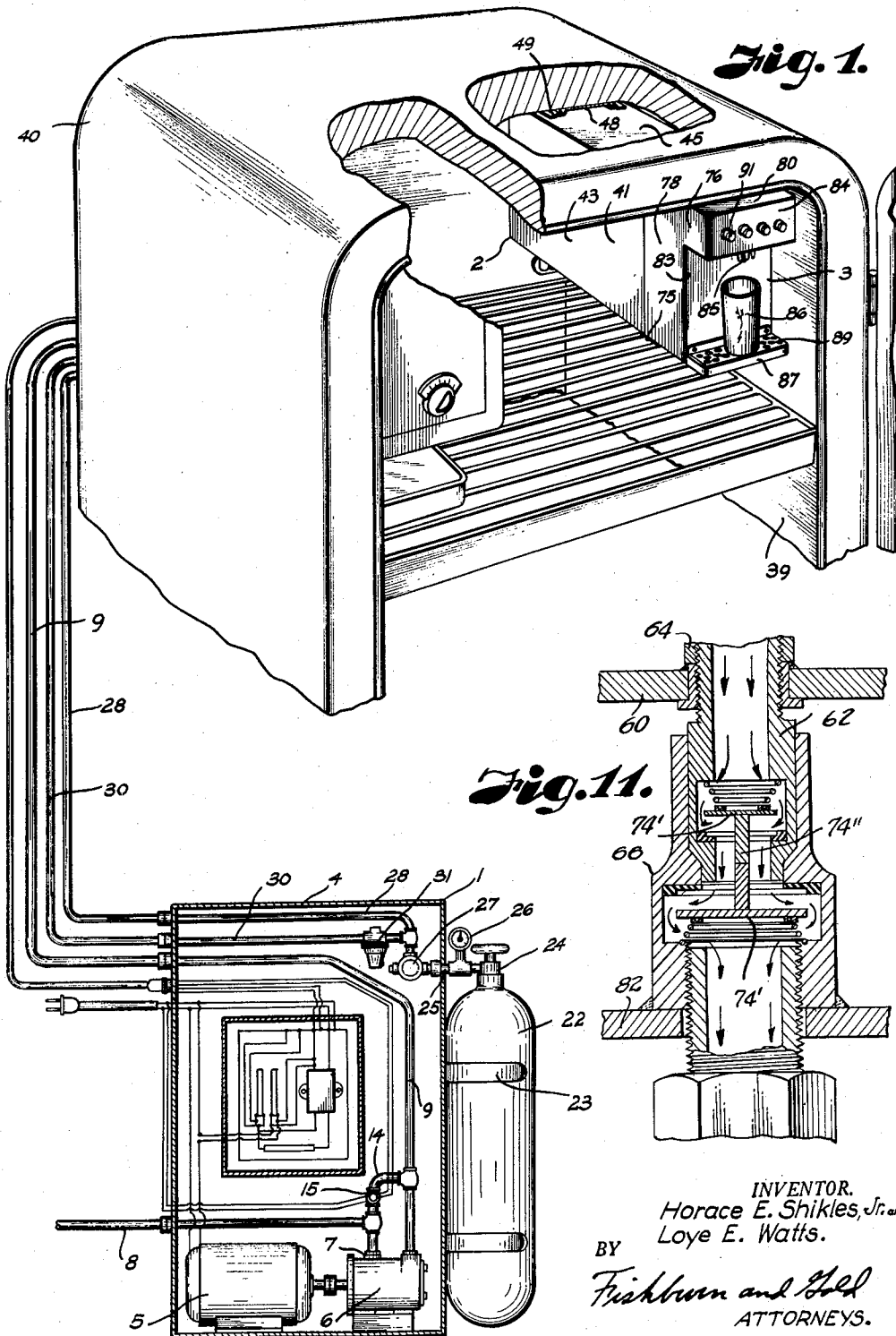
July 14, 1959

H. E. SHIKLES, JR., ET AL
BEVERAGE DISPENSING APPARATUS

2,894,377

Filed Dec. 3, 1956

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 2.

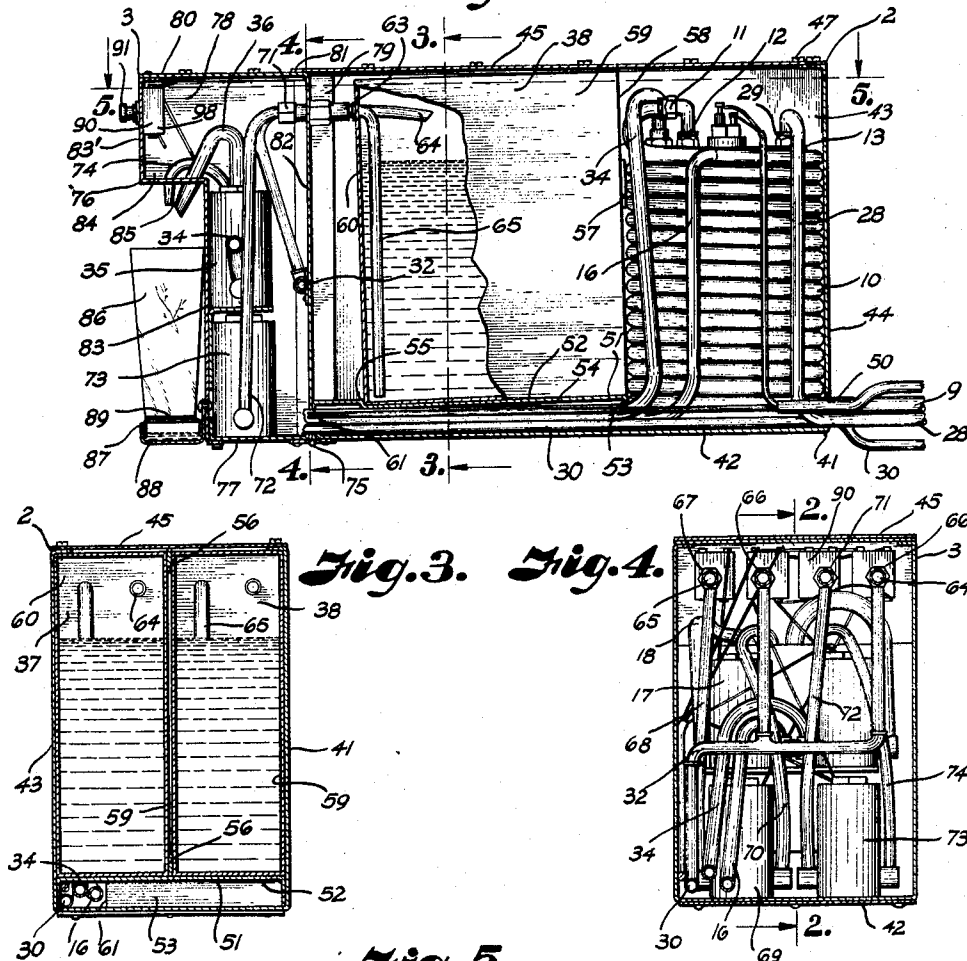


Fig. 3. Fig. 4.

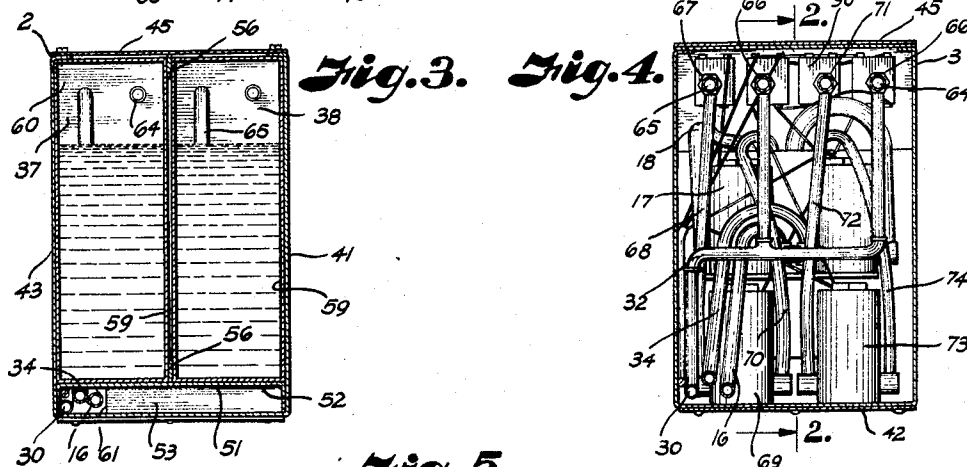
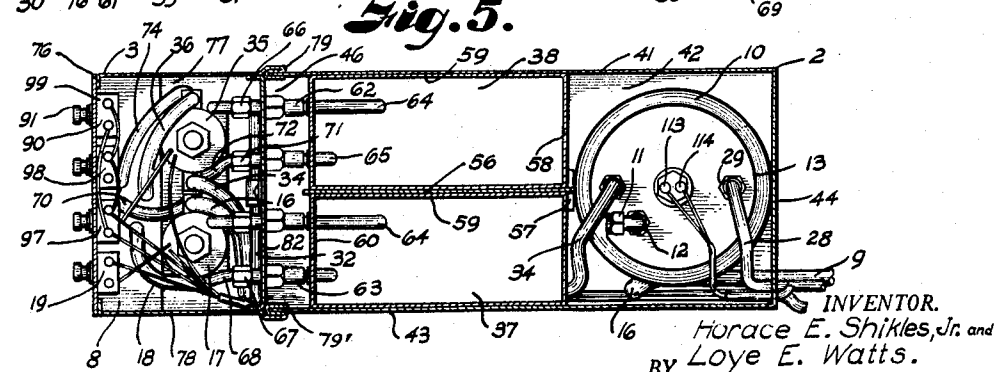


Fig. 5.



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Fig. 6.

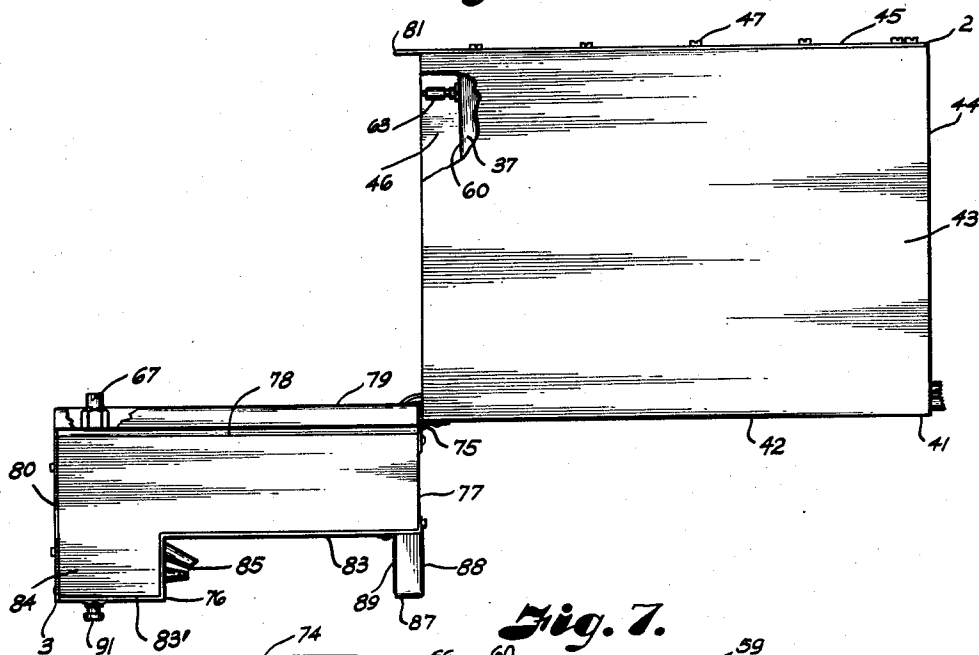


Fig. 7.

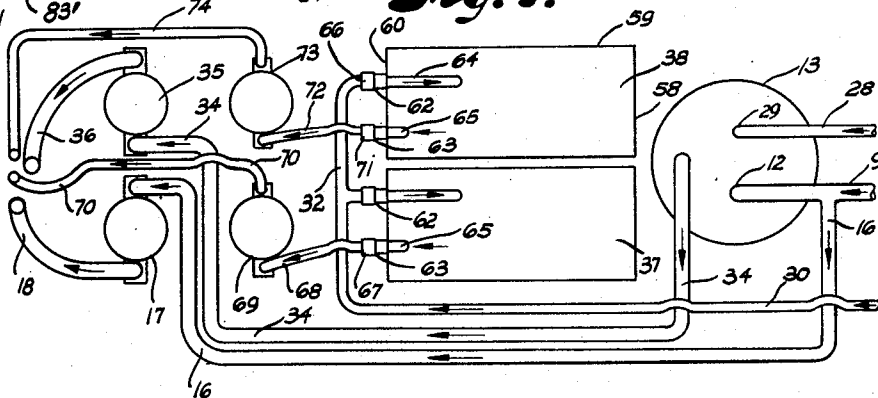
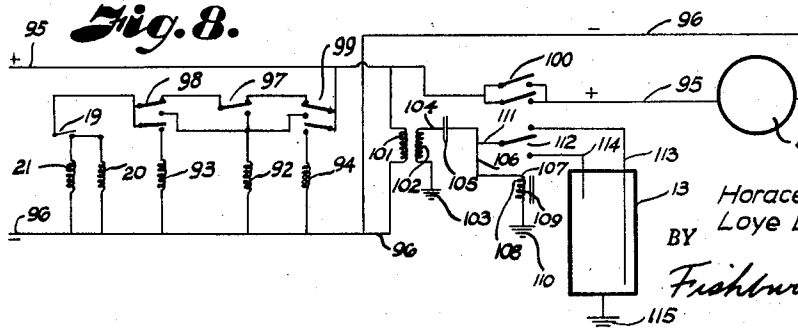


Fig. 8.



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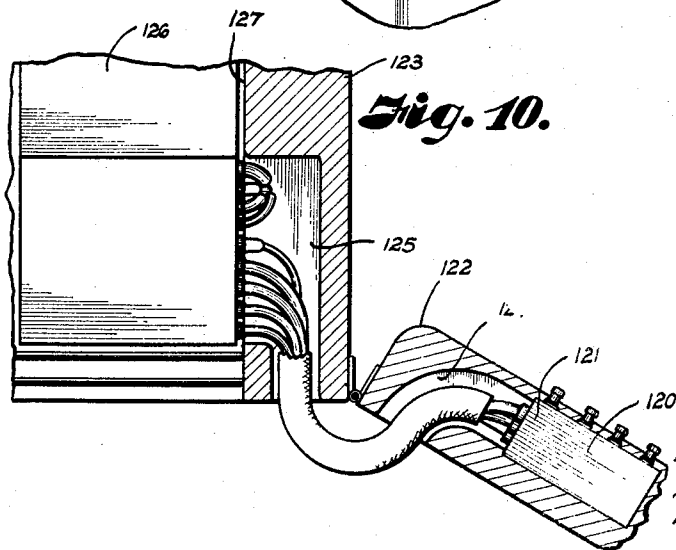
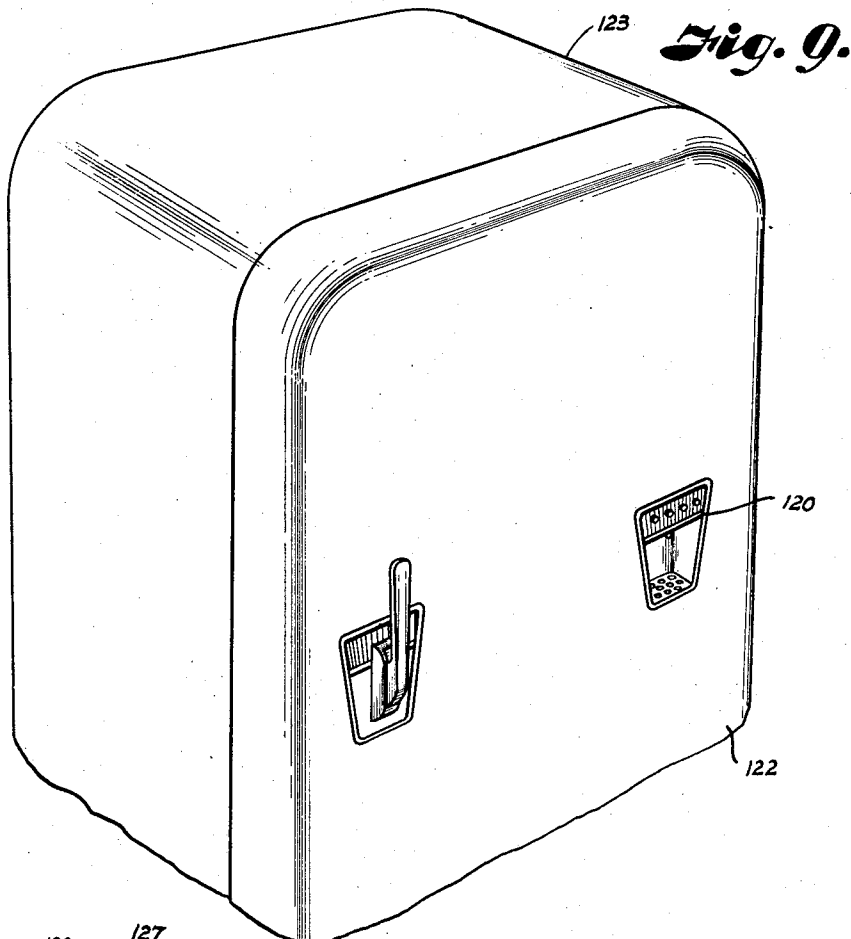
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BEVERAGE DISPENSING APPARATUS

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Application December 3, 1956, Serial No. 625,779

5 Claims. (Cl. 62—306)

This invention relates to beverage dispensing apparatus, and particularly to a novel dispensing apparatus in which water or carbonated water or a mixed beverage comprising syrup and water components is cooled and dispensed into a cup or other suitable receptacle.

The principal objects of the present invention are to provide a beverage dispensing apparatus in which syrup and water components are stored separately and maintained in a cooled condition until the dispensing mechanism is actuated whereon cooled water or carbonated water or syrup and water components are selectively delivered to a receptacle, the syrup and water components being delivered simultaneously in predetermined proportions to the receptacle for a post-mix thereof; to provide such a beverage dispensing apparatus with a plurality of syrup containers for dispensing any one of several flavors as selected by the consumer; to provide a post-mix carbonated beverage dispenser wherein a water receptacle, carbonator, syrup containers, dispensing valves and metering devices are in a compact unit adapted to be installed in a conventional refrigerator or other refrigerated housing and occupy a minimum of space yet have a large capacity with the water and gas pressure and supply and controls therefor in a second compact unit selectively remote from said first compact unit for ease of installation and service thereof; to provide such a beverage dispensing apparatus wherein the components thereof may be housed as a self-contained unit or in separated compact units for suitable disposition in refrigerators, counters, cabinets and the like for conservation of space and convenience of use; to provide such a beverage dispensing apparatus wherein the syrup containers are in a housing and the syrup maintained under pressure and the pressure lines thereof automatically closed upon opening of the housing for replacement or otherwise servicing the syrup or other units in said housing; to provide such a beverage dispensing apparatus including a housing enclosing syrup containers and a carbonator with a removable portion containing dispensing valves and metering devices wherein the housing portions have cooperative positioning structure for supporting and holding the syrup containers and separable flow line connections therefor that are automatically closed upon removal of one housing portion from the other; and to provide such a beverage dispensing apparatus that is economical to manufacture, easily installed, that has a large capacity yet occupies a minimum of usable space and that is safe and efficient in operation.

In accomplishing these and other objects of the present invention, we have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a diagrammatical view of a beverage dispensing apparatus embodying the features of the present invention with a portion thereof inside of the food compartment of a conventional refrigerator.

Fig. 2 is a longitudinal sectional view through the hous-

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ing enclosing the syrup containers, carbonator and dispensing valves, taken on the line 2—2, Fig. 4.

Fig. 3 is a transverse sectional view through the syrup container housing taken on the line 3—3, Fig. 2.

Fig. 4 is a transverse sectional view through the syrup container housing taken on the line 4—4, Fig. 2.

Fig. 5 is a horizontal sectional view through the syrup container housing taken on the line 5—5, Fig. 2.

Fig. 6 is a side elevation of the syrup container housing with the dispensing valve portion thereof in housing opening position with portions broken away to illustrate the flow line connectors.

Fig. 7 is a diagrammatic view of the syrup containers, carbonator, dispensing valves and flow lines therefor.

Fig. 8 is a diagrammatic view of the electric circuit for the controls of the dispensing apparatus.

Fig. 9 is a partial perspective view of a refrigerator showing a modified form of the beverage dispensing apparatus wherein the delivery portion thereof is mounted in the refrigerator door.

Fig. 10 is a horizontal sectional view through a refrigerator with the modified form of dispensing apparatus therein.

Fig. 11 is a sectional view through the flow duct connectors.

Referring more in detail to the drawings:

The beverage dispensing apparatus for convenience of illustration and description includes a gas and water supply unit 1, a cooled storage unit 2 and a delivery unit 3 suitably arranged and connected whereby a consumer may selectively obtain cold water, cold carbonated water and any one of several flavors of carbonated beverages. All of these components may be arranged in a self-contained unit or may be separated in order to occupy a minimum of usable space.

In the structure illustrated in Figs. 1 to 8 inclusive, the supply unit 1 and cooled storage unit 2 are separated. The supply unit 1 preferably consists of a housing 4 having a suitable motor 5 therein operatively connected with a pump 6 having its inlet 7 connected by a flow line 8 with a source of water such as the usual water service in a building.

The discharge of the pump 6 is connected by a water pressure line 9 to a coil 10 in the cooled liquid storage unit 2, with the outlet of said coil 10 connected as at 11 to an inlet 12 of a carbonated water tank 13 for delivery of cooled water thereto. A branch 14 connects the water supply pipe 8 with the pressure line 9 to by-pass the pump 6, the flow through the by-pass being controlled by a valve 15 as later described. A branch 16 has communication with the water coil 10 adjacent the outlet end thereof and leads to a discharge valve 17 which controls flow of the water through a delivery pipe 18. The valves 15 and 17 are preferably of a conventional solenoid type and arranged in electric circuit connected with a suitable source of current whereby closing of a switch 19 energizes the solenoids 20 and 21 of the valves 15 and 17 respectively to simultaneously open said valves for flow of water from the source of supply through the flow line 8, valve 15, branch or by-pass 14, flow line 9, coil 10, branch 16, valve 17 and delivery pipe 18, the valves 15 and 17 being of a type that when the switch is in circuit breaking position, the valves are closed.

Included in the gas and water supply unit 1 is a cylinder 22 of carbon dioxide gas under high pressure. In the illustrated structure, the cylinder is supported by suitable clamps 23 on the side of the housing 4; however, it may be placed inside of the housing 4 or

other suitable location for convenience of servicing. The cylinder has a valve controlled outlet 24 of conventional structure connected with the gas pressure line 25 having a suitable gauge 26 therein to show the pressure of the gas remaining in the cylinder. The pressure line 25 is connected with the inlet of a pressure reducer 27 and flow regulator to maintain on the discharge side a gas pressure of preferably 90 to 100 pounds per square inch. The discharge side of pressure regulator is connected by a flow line 28 which leads to the carbonated water tank 13 and is connected thereto as at 29 for suitably supplying carbon dioxide gas thereto at the pressure set by the regulator 27. A branch gas line 30 is connected with the flow line 28 and has a pressure reducer or regulator 31 therein whereby the gas pressure at the discharge side of said reducer is preferably of from 5 to 8 pounds per square inch. The branch line 30 is connected with a manifold line 32 for use as later described.

The carbonated water tank is of conventional structure adapted to receive water from a positive displacement type pump 6 capable of developing a pressure of more than 100 pounds, or more than the pressure normally prevailing in the carbonated water tank 13, whereby the carbon dioxide gas and water are both delivered to the tank 13, the water preferably being sprayed into the tank which is provided with a suitable maximum and minimum water level control arranged in an electric circuit whereby when the water in the carbonated water tank reaches a predetermined minimum, the electric motor 5 is energized to drive the pump 6 to supply additional water to the tank 13 until the water level reaches a predetermined maximum at which time the electric circuit to the motor is broken. The discharge pipe 34 extends in the carbonated water tank and terminates adjacent the bottom thereof, said pipe 34 leading to a valve 35 which controls the delivery of carbonated water through a delivery pipe 36. The electrical controls for the carbonated water tank are preferably arranged in the gas and water supply unit 1, and the delivery valve 35 arranged in the delivery unit 3 as later described.

In the post-mixing of carbonated beverages, it is preferable that the water component should be carbonated just prior to being used, and that both the water component and the syrup component be cooled or refrigerated to a temperature sufficiently low to produce a palatable drink. Also, the carbonated water tank should be maintained at a low temperature to insure adequate carbonation or absorption of the gas in the water and retention of the gas therein. The carbonated water tank 13 and a plurality of syrup containers 37 and 38 are contained in the cooled liquid storage unit 2, and in the form of the invention illustrated in Figs. 1 to 6 inclusive, the delivery unit or dispensing head 3 is connected with said storage unit 2 as a composite unit adapted to be mounted in a refrigerated compartment 39 of a conventional refrigerator 40 or other refrigerated container or cabinet. In the illustrated structure, the cooled liquid storage unit 2 includes a housing 41 having a bottom wall 42, side walls 43, rear wall 44, and top wall 45 of sheet metal or the like of relatively high heat conductivity connected together to provide a housing having an open front 46. In the illustrated structure, the top wall 45 is removable and is secured to the side and rear walls by suitable fastening devices 47. Suitable hangers 48 are arranged on the top wall, and arranged to cooperate with brackets 49 suitably secured to the refrigerator wall for removably mounting the housing 41 therein. The hangers 48 and brackets 49 may be arranged on any of the walls for convenience of installation in the refrigerated cabinet.

The carbonated water tank 13 rests on the bottom wall 42 adjacent the rear wall 44 and the water coil 10 encircles the carbonated water tank, as illustrated

in Fig. 2, and serves as a supply reservoir of cooled water therefor. The flow lines 9, 28 and 30, preferably extend through a wall of the refrigerator and through an opening 50 in the rear wall 44 of the housing 41 for convenience of connection.

The syrup containers 37 and 38 are preferably rectangular in cross section and of suitable size whereby one may be placed beside the other in the width of the housing 41 forwardly of the carbonated water tank 13. In the illustrated structure, a syrup container support 51 is arranged in the housing 41 and includes a platform 52 supported on legs 53 resting on the bottom wall 42 of the housing 41, the side legs engaging the side walls 43 of the housing to prevent lateral movement thereof, said platform having an inclined portion 54 which slopes forwardly and downwardly and terminates in a shoulder 55 adjacent the forward end of the housing. Vertical ribs 56 extend upwardly from the platform 52 and downwardly from the top wall 45 of the housing 41. The ribs 56 are preferably substantially midway between the side walls 43 and extend partially between the containers 37 and 38 to aid in positioning said containers. A stop plate 57 is suitably mounted in the housing 41 to engage the rear walls 58 of the syrup containers 37 and 38. In the illustrated structure, the stop plate 57 is fixed to the forward upper portion of the coil 10 as shown in Figs. 2 and 5. The syrup containers 37 and 38 are of a width whereby the side walls 59 thereof will engage the side walls 43 and the vertical ribs 56 and of a length whereby when the rear walls 58 of the syrup containers engage the stop plate 57 the bottom of the front wall 60 will engage the shoulder 55. The syrup containers are preferably of a height that they will slide into the housing 41 over the forward portion of the platform 52 and rest on the inclined portion 54 with the upper rear of said syrup containers substantially engaging the top wall 45, as illustrated in Fig. 2. The platform 52 is in spaced relation to the bottom wall 42 of the housing and the forward and rearward legs 53 have openings 61 therein for the flow lines 16, 30 and 34, and electrical conduits leading from the delivery unit along with the flow lines through the opening 50 and refrigerator wall to the supply unit 1 and source of electric current.

The syrup containers 37 and 38 each have spaced connectors 62 and 63 connected thereto, the connector 62 having communication with a duct 64 that extends into and terminates in the upper portion of the respective syrup container, and the connector 63 having communication with a duct 65 that extends into the syrup container and terminates adjacent the bottom wall thereof. The manifold 32 has connector members 66 adapted to be engaged with the respective connector members 62 whereby low pressure gas is delivered to the upper portion of the syrup containers to apply pressure on the syrup therein, tending to force the syrup through the respective ducts 65. The syrup container 37 is arranged for the connector unit 63 thereof to be connected with a connector member 67 on a flow line 68 leading to a valve 69 for controlling delivery through a delivery pipe 70. The connector unit 63 of the syrup container 38 is adapted to be engaged with a connector member 71 on a flow line 72 leading to a control valve 73 which controls delivery through a delivery pipe 74. The connectors 62, 63, 66, 67 and 71 are each preferably of the type illustrated in Fig. 11 wherein the connectors 62 and 63 sleeve into sockets 71' of the respective connectors 66, 67 and 71 and seat as at 71''. Each of the connectors have a valve 74' therein which automatically closes when the connectors are separated and are automatically opened by engagement of the valve extensions 74'' when the connectors are united as illustrated in Fig. 11, whereby there can be flow through the connector members only when the respective connectors are prop-

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erly joined together. In the structure illustrated in Figs. 1 to 6 inclusive, the delivery unit or dispensing head 3 is hingedly connected as at 75 with the forward portion of the housing 41 whereby the delivery unit may be swung to and from a position closing the forward opening 46 of said housing 41.

The delivery unit or dispensing head 3 includes a housing 76 having a bottom wall 77 hingedly connected to the bottom wall 42 of the housing 41. The delivery unit housing also includes side walls 78 provided with rear offset double folded portions 79 forming rearwardly opening grooves 79' for receiving the forward ends of the side walls 43 of the housing 41. The top wall 80 of the housing 76 extends under an extension 81 on the top wall 45 and is resiliently engaged thereby to form a spring latch tending to hold the housing 76 in closing position relative to the housing 41. A rear wall 82 is arranged in the housing 76 adjacent the offset in the side walls and connectors 66, 67 and 71 are secured thereto in a position to align with the respective connector members of the containers 37 and 38, the cooperative engagement of the side walls of the containers and housings aiding in maintaining alignment of the connector members on the respective portions of the apparatus. The housing 76 has a front wall 83 extending upwardly from the forward end of the bottom wall 77 and has an offset portion 83' which cooperates with extensions on the side walls 78 and top wall 80 to provide a forward extension 84 on the housing 76, said forward wall 83 being spaced from the rear wall 82 sufficiently to provide for enclosing of the valves 17, 35, 69 and 73, and the flow pipes leading to and from same. The delivery pipes 18, 36, 70 and 74 each extend into the extension of the housing and through the bottom thereof and terminate in spigot portions 85 that are closely positioned substantially midway the width thereof whereby all will discharge into a single glass positioned therebelow.

The glass or drinking receptacle 86 is adapted to rest on a removable shelf 87 suitably mounted on the front wall 83 and preferably arranged to form a water-receiving trough 88 and a removable perforated member 89 which will permit any drippage to pass into the trough.

Suitable switches 90 are mounted in the housing extension with control buttons 91 extending through the forward face thereof for controlling the respective valves as later described. The valves 17, 35, 69 and 73 are preferably solenoid valves having windings 21, 92, 93 and 94 respectively, connected in circuit, as illustrated in Fig. 8, with electrical leads 95 and 96 connected to a suitable source of electric current whereby actuation of a switch 97 will energize the winding 92 to open the valve 35 for delivery of carbonated water alone. Actuation of switch 98 energizes the windings 92 and 93 to open the valves 35 and 69 to deliver both carbonated water and syrup from the syrup container 37, and actuation of the switch 99 energizes the windings 92 and 94 to open the valves 35 and 73 for delivery of carbonated water and syrup from the syrup container 38, and actuation of the switch 19 energizes the windings 20 and 21 for delivery of cold water alone. The switches are arranged in the circuit whereby when carbonated water and one flavor of syrup is being delivered, the windings on the other valves cannot be energized. Also, it is preferable that the delivery tubes 70 and 74 have adjustable orifices therein for varying the quantity of syrup delivered to provide the suitable proportions of the respective syrup and carbonated water to make the desired palatable drink.

Electrical leads 95 and 96 are also connected to the motor 5 with a normally open switch 100 interposed therein and under control of means responsive to the maximum and minimum levels of water in the carbonated water tank whereby the motor 5 is energized when the level of water reaches a predetermined minimum and drives the pump 6 until the level of water

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reaches a predetermined maximum at which time the switch 100 is moved to break the circuit to the motor 5. In the level control circuit, a primary winding 101 of a transformer is connected to the leads 95 and 96, said transformer has a secondary winding 102 one side of which is grounded as at 103. The other side has a lead 104 connected to a condenser 105 and a conductor 106 leads therefrom to a relay 108 having a winding 109 one side of which is grounded as at 110 and the other side 107 connected to conductor 106 leading to the condenser 105. A branch 111 connects conductor 106 with a switch 112 which is operated by the relay 108 to complete circuits to electrodes 113 and 114 which are in the carbonated water tank, the end of the electrode 113 being near the bottom and at the predetermined minimum level of water, the electrode 114 terminating with its lower end at the predetermined maximum level of water whereby current is supplied to the electrode 113 through the water to the tank shell that is grounded as at 115. The switch 112 is normally in a position to complete a circuit to the electrode and the resistance of the winding of the relay 108 is such that the switch remains in the same position while the water level is above the lower end of the electrode 113. When the water level lowers below the electrode 113 the circuit is broken and the current actuates the relay 108 to move the switches 100 and 112 whereby the motor 5 is driven to supply water to the carbonated water tank until it reaches a level at the bottom of the electrode 114 to complete a circuit therewith. The flow of current to the electrode 114 and water reduces the flow of current through the winding 109 and causes the relay to permit the switches 100 and 112 to return to normal position breaking the circuit to the motor 5.

In using an apparatus constructed and assembled as described, with the housings 41 and 76 connected and mounted in a cooled space such as a conventional refrigerator or other suitable cabinet, and the gas and liquid supply unit 1 arranged in some suitable portion of the cabinet or in a position remote thereto for convenience of servicing, the water line 8 is connected to the source of supply and the electrical leads 95 and 96 connected with a source of electric current. The gas cylinder 22 is connected to the line 25 and the valve opened. The carbon dioxide gas flows through the reducer regulators 27 and 31 through the flow lines 28 and 30 respectively. If the carbonated water tank 13 is empty, the electric circuit is energized to energize the motor 5 driving the pump 6 to pump water under pressure through the flow line 9, coil 10 in the cooled storage unit and then to the carbonated water tank where the carbon dioxide gas is absorbed to form the carbonated water.

The delivery unit or dispensing head 3 is swung outwardly on the hinge 75 to provide access to the front of the housing 41. Filled syrup containers 37 and 38 are then placed in the housing 41 in the position shown in Figs. 2 and 3. Then the delivery unit or dispensing head 3 is hinged upwardly joining the connector members 62 with the connector members 66 and the connector members 63 with the connector members 67 and 71 respectively, which automatically opens the valves in said connector members whereby the low gas pressure from the flow line 30 enters the syrup containers 37 and 38 to apply pressure on the syrup therein.

The housing 41 is cooled by the refrigerated air in the compartment 39 cooling the water in the coil 10 and in the carbonated water tank 13. If plain cold water is desired, a drinking receptacle 86 is placed on the platform 89 and the button 91 controlling the switch 19 is moved to close the circuit to energize the windings 21 and 20, opening the valve 15 for flow of water from the line 9 through the valve 15, branch 19, flow line 9, coil 10, flow line 16 and valve 17 and delivery tube 18 whereby

the water is delivered to said receptacle. If carbonated water alone is desired, the switch button 91 connected with the switch 97 is operated to close the switch to energize the winding 92 to open the valve 35 whereby the carbonated water in the carbonated water tank 13 flows through the line 34, valve 35 and delivery tube 36 to the receptacle 86. If carbonated water and syrup from the container 37 is desired, in the form of a carbonated beverage, the switch 98 is operated whereby windings 92 and 93 are energized to open the valves 35 and 69 respectively for flow of carbonated water from the carbonated water tank, as just described, and also due to the low pressure gas supplying pressure to the syrup in the container 37 syrup is forced through the tube 65, connectors 63 and 67, line 68, valve 69 and delivery tube 70 for simultaneous delivery with the carbonated water to the receptacle 86. If carbonated water and syrup from the container 38 is desired in a carbonated beverage, the switch 99 is operated, energizing the windings 92 and 94 for delivery of carbonated water to the receptacle 86 and simultaneous delivery of syrup through the pressure acting on the syrup in the container 38 forcing same through the connectors 63, 71, tube 72, valve 73, and delivery tube 74 to the receptacle 86.

When a syrup container is empty, the delivery unit or dispensing head 3 is hinged outwardly separating the connector members whereby the valves therein automatically close whereby no syrup or gas can escape from the connectors. Then the empty syrup can is tipped to disengage the forward lower portion thereof from the shoulder 55 and pulled from the housing 41. A full container is then placed in the housing 41 and the dispensing head swung upwardly to close the forward end of the housing 41 and reconnect the connector members for continued dispensing of suitable beverages.

When the water in the carbonated water tank reaches a predetermined low level, the relay 103 is energized completing the circuit to the motor 5 to drive the pump 6 to again fill the carbonated water tank. When the gauge 26 indicates the supply of carbon dioxide gas is low, the cylinder 22 is removed and a full cylinder reconnected in the system for continued operation. As can readily be seen, the cooled liquid storage unit and dispensing head are relatively small, the units compactly arranged whereby a minimum of usable space in the refrigerator or cabinet is occupied thereby.

In the form of the invention illustrated in Figs. 9 and 10, the structure is substantially the same except that the dispensing head 120 and the switch members are arranged as a unit 121 inside of the door 122 of a refrigerator 123, and the various flow lines and electrical connectors are flexible and extend through passages 124 and 125 for connection with the cooled liquid storage unit 126 located in the cooled compartment 127 of the refrigerator. Various separable connector members may be arranged in the flow lines and electrical conduits leading to and from the cooled liquid storage unit whereby the entire unit may be removable from the compartment and the refrigerator used in a normal manner. Also, various portions of the apparatus may be combined in a manner to connect with certain of the flow lines to provide only one or more of the various cold liquids or mixed beverages obtainable from the structure disclosed in Figs. 1 to 8 inclusive.

It is to be understood that while we have illustrated and described certain forms of our invention, it is not to be limited to the specific forms or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

What we claim and desire to secure by Letters Patent is:

1. An apparatus for dispensing a cold drink through a dispensing nozzle and for maintaining the component parts of the drink in refrigerated condition prior to the dispensing operation, a cooled storage unit comprising a housing having connected bottom, side, top and rear end

walls of material having relatively high heat conductivity, means securing said housing in a cold space for maintaining the housing walls in cold condition, a carbonated water tank in the housing adjacent the rear end wall thereof, a water coil around the carbonated water tank in the housing and having connection with the carbonated water tank for delivery of cooled water thereto, a carbonating gas and water supply, means including a pressure regulator connected with the gas supply and carbonated water tank for supplying gas under pressure to said carbonated water tank, means connected with the water supply for delivering water to the water coil under pressure as cooled water is supplied to the carbonated water tank, a tank disposed in the housing forwardly of said carbonated water tank and for storing a syrup component of the mixed drink, a delivery unit removably connected with the storage unit housing for closing the forward end thereof, a cup support on the delivery unit, nozzle supported on the delivery unit for delivering liquids to a cup on the support, means connecting the gas supply to the syrup containing tank for applying pressure to the syrup therein, means for conveying cooled syrup from the tank to a nozzle in the delivery unit, means for conveying cooled carbonated water from the carbonated water tank to a nozzle, means for conveying cooled water from the water coil to a nozzle, electrically controlled valves in the syrup, carbonated water and water conveying means, and switch means in the delivery unit and connected in circuit with the respective electrically controlled valves for selective actuation of same for delivery of the respective liquids to the respective nozzles and cup on the support of the delivery unit.

2. An apparatus for dispensing a cold drink through a dispensing nozzle and for maintaining the component parts of the drink in refrigerated condition prior to the dispensing operation, a cooled storage unit comprising a housing having connected bottom, side, top and rear end walls of material having relatively high heat conductivity, means securing said housing in a cold space for maintaining the housing walls in cold condition, a carbonated water tank in the housing adjacent the rear end wall thereof, a water coil around the carbonated water tank in the housing and having connection with the carbonated water tank for delivery of cooled water thereto, a carbonating gas and water supply, means including a pressure regulator connected with the gas supply and carbonated water tank for supplying gas under pressure to said carbonated water tank, means connected with the water supply for delivering water to the water coil under pressure as cooled water is supplied to the carbonated water tank, a tank disposed in the housing for storing a syrup component of the mixed drink, a delivery unit removably connected with the storage unit housing for closing the forward end thereof, a cup support on the delivery unit, nozzles supported on the delivery unit for delivering liquids to a cup on the support, means connecting the gas supply to the syrup containing tank for applying pressure to the syrup therein, means for conveying cooled syrup from the tank to a nozzle in the delivery unit, means for conveying cooled carbonated water from the carbonated water tank to a nozzle, electrically controlled valves in the syrup, and carbonated water conveying means, switch means in the delivery unit and connected in circuit with the respective electrically controlled valves for selective actuation of same for delivery of the respective liquids to the respective nozzles and cup on the support of the delivery unit, and cut-off mechanism in the conveying means of gas and liquid to and from the syrup tank for stopping flow therein when the delivery unit is removed from the storage unit housing.

3. An apparatus for dispensing a cold drink through a dispensing nozzle and for maintaining the component parts of the drink in refrigerated condition prior to the dispensing operation, a cooled storage unit comprising a housing having connected bottom, side, top and rear

end walls of material having relatively high heat conductivity, means securing said housing in a cold space for maintaining the housing walls in cold condition, a carbonated water tank in the housing adjacent the rear end wall thereof, a water coil in the housing and having connection with the carbonated water tank for delivery of cooled water thereto, a carbonating gas and water supply, means including a pressure regulator connected with the gas supply and carbonated water tank for supplying gas under pressure to said carbonated water tank, means connected with the water supply for delivering water to the water coil under pressure as cooled water is supplied to the carbonated water tank, a plurality of tanks disposed in the housing for storing syrup components of the mixed drinks, means retaining the syrup tanks in the housing with one wall of each facing the forward end of the housing, a delivery unit removably connected with the storage unit housing for closing the forward end thereof, a cup support on the delivery unit, nozzles supported on the delivery unit for delivering liquids to a cup on the support, ducts extending into the delivery unit from the gas supply, ducts in the delivery unit for conveying cooled syrup from the tanks to the respective nozzles in the delivery unit, separable connector members on the delivery unit and forwardly facing walls of the syrup tanks and connected in the gas and syrup ducts whereby said connector members are joined when the delivery unit is in position closing the forward end of the housing, said separable connector members each having valves therein automatically closing the ducts when the delivery unit is removed from the housing, means for conveying cooled carbonated water from the carbonated water tank to a nozzle, means for conveying cooled water from the water coil to a nozzle, electrically controlled valves in the syrup ducts, carbonated water and water conveying means, and switch means in the delivery unit and connected in circuit with the respective electrically controlled valves for selective actuation of same for delivery of the respective liquids to the respective nozzles and cup on the support of the delivery unit.

4. An apparatus for dispensing a cold drink through a dispensing nozzle and for maintaining the component parts of the drink in refrigerated condition prior to the dispensing operation, a cooled storage unit comprising a housing having connected bottom, side, top and rear end walls of material having relatively high heat conductivity, means securing said housing in a cold space for maintaining the housing walls in cold condition, a carbonated water tank in the housing adjacent the rear end wall thereof, a water reservoir in the housing and having connection with the carbonated water tank for delivery of cooled water thereto, a carbonating gas and water supply, means including a pressure regulator connected with the gas supply and carbonated water tank for supplying gas under pressure to said carbonated water tank, means connected with the water supply for delivering water to the water reservoir under pressure as cooled water is supplied to the carbonated water tank, a plurality of tanks disposed in the housing for storing syrup components of the mixed drinks, means retaining the syrup tanks in the housing with one wall of each facing the forward end of the housing, a delivery unit removably connected with the storage unit housing for closing the forward end thereof, a cup support on the delivery unit, nozzles supported on the delivery unit

for delivering liquids to a cup on the support, ducts extending into the delivery unit from the gas supply, ducts in the delivery unit for conveying cooled syrup from the tanks to the respective nozzles in the delivery unit, separable connector members on the delivery unit and forwardly facing walls of the syrup tanks and connected in the gas and syrup ducts whereby said connector members are joined when the delivery unit is in position closing the forward end of the housing, said separable connector members each having valves therein automatically closing the ducts when the delivery unit is removed from the housing, means for conveying cooled carbonated water from the carbonated water tank to a nozzle, means for conveying cooled water from the water reservoir to a nozzle, electrically controlled valves in the syrup ducts, carbonated water and water conveying means, switch means in the delivery unit and connected in circuit with the respective electrically controlled valves for selective actuation of same for delivery of the respective liquids to the respective nozzles and cup on the support of the delivery unit, and means interconnecting the electrically controlled valves in the syrup ducts with the electrically controlled valve in the carbonated water conveying means whereby operation of the switches controlling delivery of syrup simultaneously effects delivery of carbonated water to the cup.

5. In a refrigerator having a door for access to a cold storage space, an apparatus for dispensing a cold drink through a dispensing nozzle and for maintaining the component parts of the drink in refrigerated condition prior to the dispensing operation, a cooled storage unit comprising, a housing having connected bottom, side, top and rear end walls of material having relatively high heat conductivity, means supporting said housing in the cold storage space of the refrigerator whereby the housing walls are maintained in cold condition, said housing being positioned with the front open end toward the refrigerator door, a carbonated water tank in the housing adjacent the rear end wall thereof, a carbonating gas and water supply, means connecting the gas supply to the carbonated water tank for supplying carbonating gas thereto, means connecting the water supply to the carbonated water tank for delivery of water thereto, a plurality of syrup tanks in the housing forwardly of the carbonated water tank with said syrup tanks side by side with one wall of each facing the front end of said housing, means in the housing removably supporting said syrup tanks, interengaging means on said syrup tanks and housing holding said tanks against unintentional movement, a delivery unit removably connected to the storage unit housing and normally closing the front end thereof, nozzles supported on the delivery unit for delivering liquids therefrom, ducts extending into the delivery unit from the gas supply, syrup tanks and carbonated water tank, means in said ducts automatically closing same when the delivery unit is removed from housing closing position, and means including valves in the syrup and carbonated water ducts for controlling delivery of said syrup and carbonated water from the nozzles in the delivery unit.

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