April 4, 1967 C. W. SCOGGINS ETAL 3,312,083

PORTABLE HOME SODA FOUNTAIN

Filed Aug. 25, 1964 3 Sheets-Sheet 1

Fig. 1

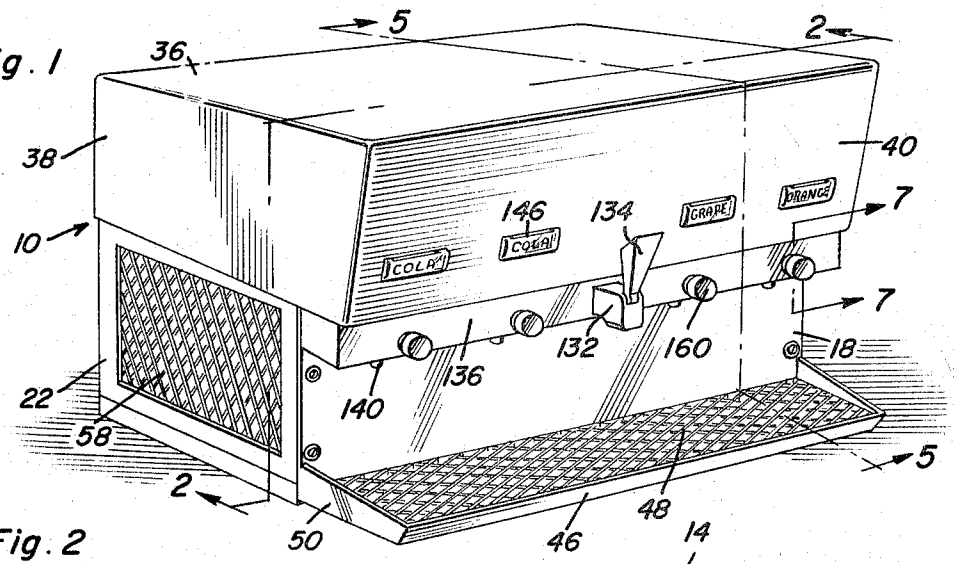
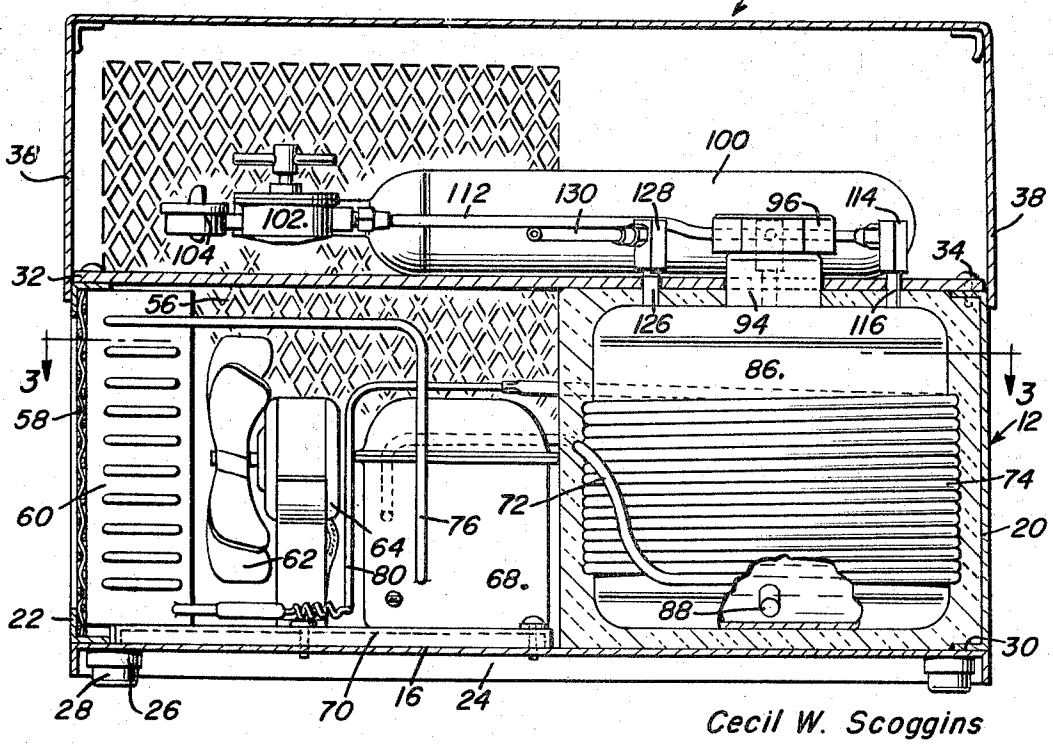


Fig. 2



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Filed Aug. 25, 1964 3 Sheets-Sheet 2

Fig. 3

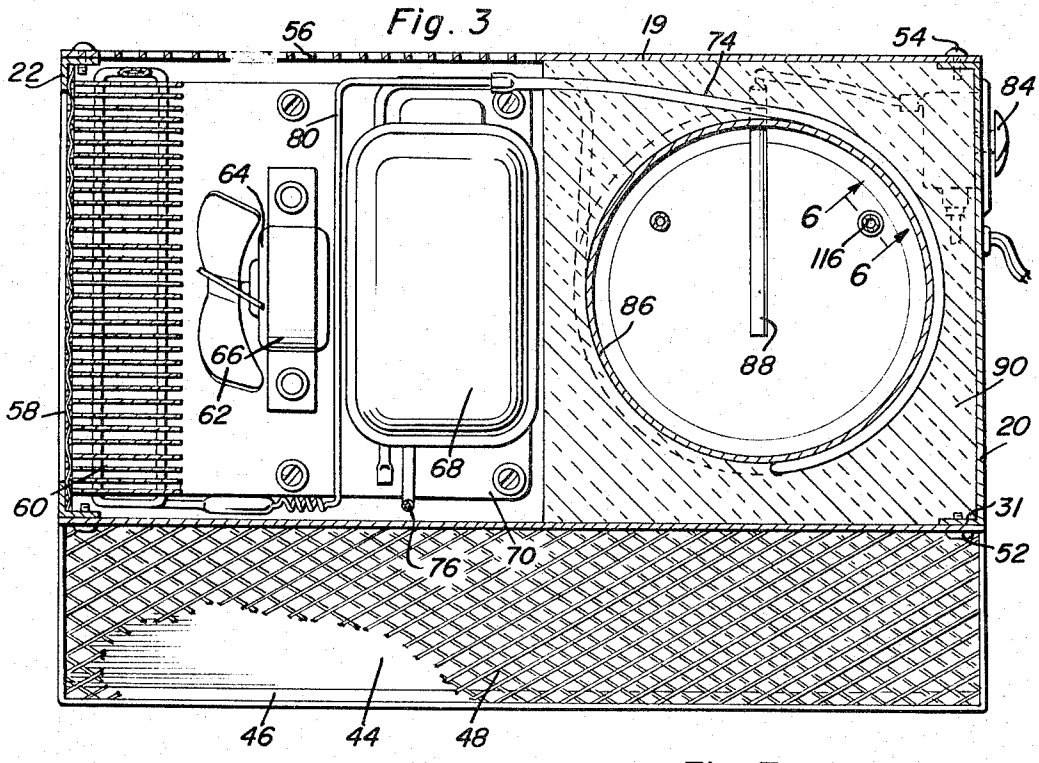


Fig. 9

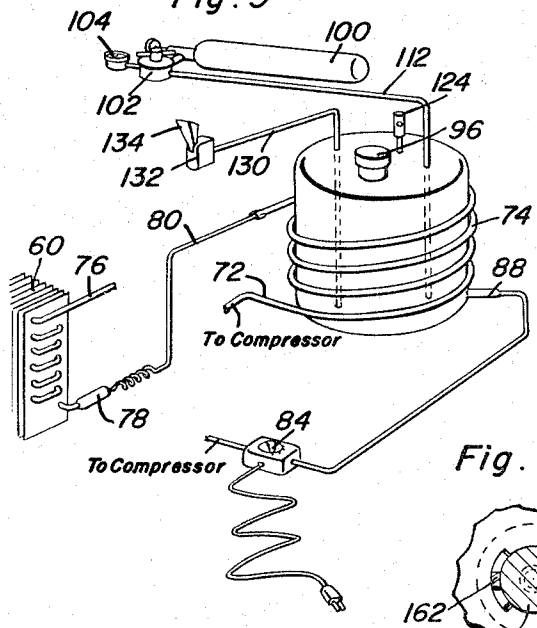


Fig. 7

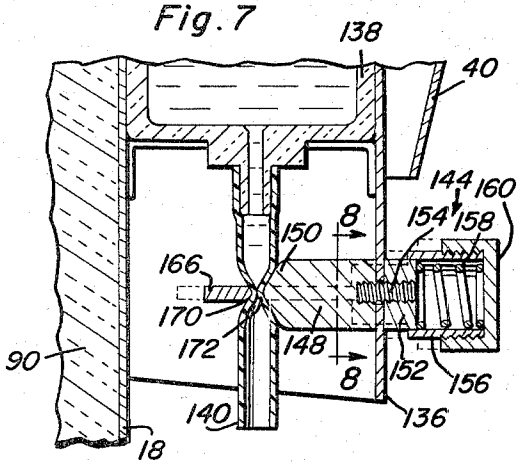
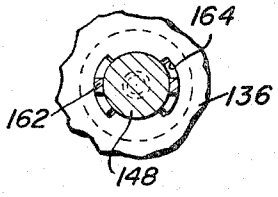


Fig. 8



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PORTABLE HOME SODA FOUNTAIN

Filed Aug. 25, 1964 3 Sheets-Sheet 3

Fig. 4

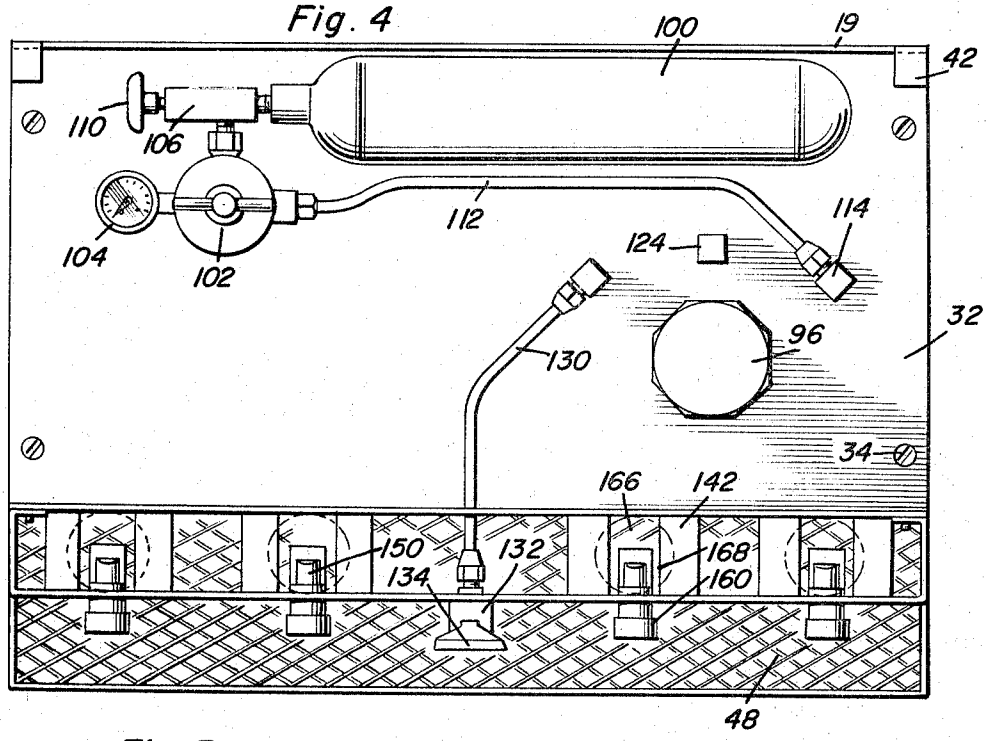


Fig. 5

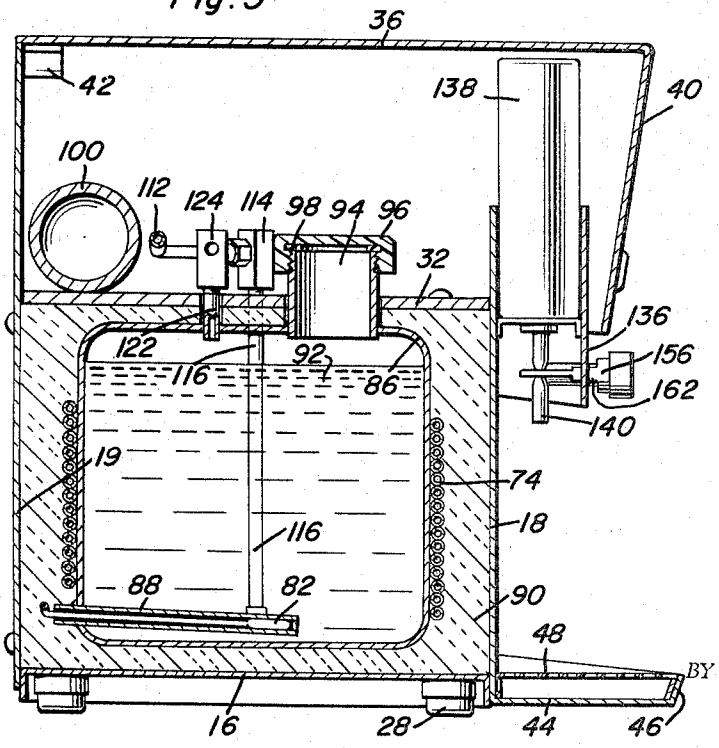
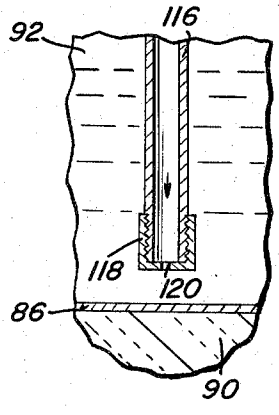


Fig. 6



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3,312,083

PORTABLE HOME SODA FOUNTAIN

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Filed Aug. 25, 1964, Ser. No. 391,935
2 Claims. (Cl. 62—390)

The present invention generally relates to a soda fountain construction and more particularly to a portable self-contained soda fountain especially adapted for use in the home or the like and includes means for dispensing various liquid flavoring materials together with means for dispensing carbonated water which is refrigerated so that such carbonated water will be cold for mixing with the flavor material which is also dispensed from the soda fountain.

Another object of the present invention is to provide a portable home soda fountain having a novel refrigeration assembly associated with a carbonated water tank together with a novel association of a carbon dioxide pressure tank with a water tank so that the carbon dioxide will be intimately commingled with the water for discharge thereof from a carbonated water faucet.

Another object of the present invention is to provide a portable home soda fountain which is constructed in such a manner that a supply of the various flavoring materials may be readily replenished and the supply of water also readily replenished.

Yet another feature of the present invention is to provide a soda fountain which is simple in construction, easy to use, effective for retaining the carbonated water cold and relatively inexpensive to maintain.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the portable home soda fountain of the present invention;

FIGURE 2 is a vertical sectional view taken substantially upon a plane passing along the section line 2—2 of FIGURE 1 illustrating the interior structural details of the present invention;

FIGURE 3 is a longitudinal, plan sectional view taken substantially upon a plane passing along section line 3—3 of FIGURE 2 illustrating further structural details of the invention;

FIG. 4 is a plan view of the device with the cover removed therefrom;

FIGURE 5 is a transverse, sectional view taken substantially upon a plane passing along section line 5—5 of FIGURE 1 illustrating further structural details of the invention;

FIGURE 6 is a detail sectional view taken substantially upon a plane passing along section line 6—6 of FIGURE 3, on an enlarged scale, illustrating the structure of the inlet orifice for carbon dioxide;

FIGURE 7 is a detail sectional view taken substantially upon a plane passing along section line 7—7 of FIGURE 1 illustrating the details of construction of one of the control devices for the flavoring material;

FIGURE 8 is a detail sectional view taken substantially upon a plane passing along section line 8—8 of FIGURE 7 illustrating further structural details of the control mechanism; and

FIGURE 9 is a schematic view of the refrigeration system illustrating the association of the refrigerating coil with the carbonated water tank.

Referring now specifically to the drawings, the numeral 10 generally designates the portable home soda fountain which includes a hollow cabinet structure 12 having a

removable closure lid or cap 14 which conceals certain of the components of the soda fountain.

The cabinet or housing 12 includes a bottom wall 16, an upstanding front wall 18, an upstanding rear wall 19 and upstanding end walls 20 and 22. The bottom 16 has a downwardly depending skirt 24 which partially conceals supporting feet 26 which may have a resilient component 28 attached thereto for engaging a supporting surface. The back panel 19 extends downwardly alongside the flange or skirt 24 and also has an upper end portion which extends upwardly beyond the top edge of the front wall 18 as illustrated in FIGURE 5. As illustrated in FIGURE 2 the end walls 20 and 22 have inturned top and bottom flanges 30 in which the bottom flanges are secured to the bottom wall 16 by any suitable means such as welding, soldering or the like. Attached to the upper inturned flanges 30 on the end walls 20 and 22 is a top plate or cover 32 secured thereto by suitable fasteners 34.

The cover 14 includes a top panel 36, depending end panels 38 and a depending and inwardly inclined front panel 40 which has the lower edge therefore terminating in spaced relation to the front wall 18. The back edge of the top panel 36 rests on the upper edge of the rear wall 19 and angled clips 42 secured thereto.

Extending laterially outwardly from the bottom edge of the front panel 18 is a trough member 44 having an upturned outer edge 46 receiving a screen or reticulated member 48 therein so that any drippage or spillage will be received. The ends of the trough 44 are closed by end pieces 50 having an inclined upper edge and the front panel 18 is secured to flanges 31 on the forward edges of the end plates 20 and 22 by fasteners 52 and the rear wall 19 is secured to similar flanges 31 by fasteners 54. The rear wall 19 is provided with a screened or reticulated grill 56 therein and the end wall 22 is provided with a similar screen or grill 58 of reticulated material to enable air circulation over a condenser 60 of a refrigeration system which is conventional in construction and may be of the finned coil type. A fan 62 is disposed behind the condenser 60 and the fan 62 is driven by a fan motor 64 supported by a suitable bracket 66. Inwardly of the fan motor 64, there is provided a compressor motor unit 68 of conventional construction and which may be hermetically sealed and mounted on a suitable supporting plate 70 with any suitable vibration absorbing means associated therewith. The compressor motor unit has a suction line 72 returning from an evaporator coil 74 and a hot gas discharge line 76 extending to the condenser 60. The condensor 60 discharges the refrigerant through a strainer 78 and a capillary tube 80 which forms an expansion device or flow restrictor to enable the liquid refrigerant to expand into the evaporator coil 74. The components of the refrigeration system are conventional except the particular configuration of the evaporator coil 74. Further, a heat sensitive bulb 82 is provided for controlling operation of the compressor in a conventional manner with there being a thermostat 84 for enabling the evaporator coil to cool a carbonated water tank 86 to a desired lowered temperature.

As illustrated in FIGURES 2 and 5, the evaporator coil 74 encircles the water tank 86 over a substantial portion of the cylindrical peripheral wall thereof. The heat sensing bulb 82 is received within an inclined tube 88 inserted into the bottom portion of the tank 86 as illustrated in FIGURE 5. The entire tank 86 is enclosed with insulation material 90 which may be in the form of expanded plastic which not only insulates the tank 86 and the water 92 therein but also supports the tank and evaporator coil 74 within the housing.

The upper end of the tank 86 is provided with a cylindrical pipe 94 rigidly affixed thereto which extends up-

wardly through the insulation material 90 and also through the top plate 32 with the pipe 94 being relatively large and provided with a screw-threaded cap 96 sealed to the upper end thereof by a sealing gasket 98 so that water 92 may be poured into the tank 86 through the pipe 94 by merely removing the cover 14 and then removing the cap 96 so that water may be introduced into the tank 86 by any suitable means such as pouring from a container or using a filling hose or the like.

Disposed freely on top of the board or plate 32 adjacent the rear wall 19 is a cylinder of compressed carbon dioxide 100 having a regulating valve 102 communicated therewith and also a pressure indicating gauge 104 to indicate the outlet pressure. The regulating valve 102 is supported on a manual valve 106 and provided with a hand control knob 110 for opening and closing the valve The cylinder 100, valve 106 and pressure regulator 102 lie freely in place and can be moved or lifted up for disconnection of regulator 102 from cylinder valve 106. The regulating valve 102 has a tube 112 communicated therewith extending to an adapter or fitting 114 extending downwardly through the plate 32 by virture of an enlongated tube 116 which extends down to and is disposed adjacent the bottom of the tank 86. The tube 116 is provided with a screw-threaded cap 118 disposed on the lower end thereof with the cap having an orifice 120 therein to enable discharge of carbon dioxide gas into the tank 86 near the bottom thereof so that it will be intimately commingled and mixed with the water 92 within the tank 86 so that such water will be carbonated.

Also extending through the top plate 32 and into the tank 86 is a tube 122 having a popoff valve fitting 124 on the upper end thereof which is set at a pressure well below the rupturing pressure of the tank 86 thus assuring that any excess pressure built up in the tank 86 will be discharged.

Also extending down through the top plate 32 is a carbonated water outlet tube 126 terminating adjacent to but spaced above the bottom of the tank 86 and provided with a fitting 128 on the upper end thereof connected with a tube 130 that extends to and is connected to an outlet faucet 132 having a valve control handle 134 associated therewith with the faucet 132 being orientated above the trough 44 as illustrated in FIGURE 1.

Mounted between the upper end of the front panel 18 and front skirt member 136 is a plurality of inverted containers 138 of various flavoring materials. Each of the containers 138 has a discharge tube 140 of flexible material such as plastic or the like and the discharge tube 140 extends down through pairs of brackets 142 which are spaced from each other and the tube 140 extends through a tube pinching valve or assembly 144. Also, the front panel 40 of the cover is provided with transparent inserts 146 with indicia revealed therethrough indicating the particular flavoring controlled by the pinch valves 144.

FIGURE 7 illustrates the details of the pinch valves which includes an abutment 148 having a transverse beveled edge 150 engaging the side of the tube 140 adjacent the skirt 136. The abutment 148 is held stationary by the provision of a retainer 152 having screw-threaded stud means 154 extending through the skirt 136 thus anchoring the abutment 148 in place. Slidable on the retainer 152 is a sleeve 156 having a spring 158 received therein with one end of the spring 58 engaging a cap 160 fixed to the sleeve 156 and the other end engaging the outer end of the retainer 152.

The sleeve 156 includes a pair of diametrically opposed axial extensions 162 which extend through slots 164 in the skirt 136 to prevent rotation of the knob 160 and also to prevent rotation of the pinch plate 166 which is provided as a connector between a pair of arms 168 connected with the axial extensions 162. As illustrated in FIGURE 7, the transverse plate 166 is provided with a transverse beveled edge 170 in alignment with the

beveled edge 150 so that the spring 158 will bias the plate 166 toward the abutment 148 for pinching the tube at 172 thus closing the tube and maintaining the tube closed until the plunger or abutment 160 is pushed inwardly.

The operation of the refrigerant system is conventional in that the motor compressor unit 68 receives expanded gaseous refrigerant from the evaporator coil 74 through the suction line 72. The hot gas refrigerant is then discharged to the condenser 60 from the motor compressor through the hot gaseous discharge line 76. Air is drawn in through the screen or grill 58 by the axial flow fan 62 that is driven by the motor 64. Air is then discharged through the grill 56 and the condensed refrigerant passes through strainer 78 and, if desired, a receiver may be provided and then through the restriction device in the form of the capillary tube 80 for maintaining the necessary flow restriction so that the condensed liquid refrigerant may expand into the evaporator coil 74 which due to its to its contact with and in heat exchange relation with the tank 86 will maintain the water in the tank 86 at a predetermined temperature as controlled by the heat bulb which is inserted into the bottom of the tank 86 and which controls operation of the refrigerant system by virtue of its being operatively associated with a temperature control switch 84 that controls electrical input from the male plug to the compressor motor unit and fan motor thus operating the refrigerant system when the temperature of the water in the tank reaches a predetermined maximum and cutting the refrigerant system off when the temperature of the water in the tank 86 has been lowered to a preset lower temperature with the control switch 84 having an adjustment arrangement or thermostat for controlling operation of the refrigerant system.

Operation of the dispensing mechanisms for the various liquid flavorings or syrups will be clearly understood from a perusal of FIGURE 7. The association of the carbon dioxide cylinder 100 with the inlet orifice 120 is also obvious as is the pressure control and reducing valve 102 which will only discharge carbon dioxide into the tank as the pressure therein is reduced to a point below the discharge pressure setting of the pressure regulating valve 102 with the faucet 134 being employed to discharge carbonated water into the drinks.

The water supply in the tank may be replenished by removing the cap 96 in an obvious manner after the cover for the entire device has been removed. With this construction the fountain is portable and may be installed at any place having a sufficient supporting area and an electrical outlet such as a conventional female plug found in most homes.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A portable home soda fountain comprising a cabinet, a closed water tank in said cabinet capable of withstanding pressure, a cooling coil disposed exteriorly against the tank in heat exchange relation thereto, a refrigeration system disposed within said cabinet and operatively associated with the cooling coil for cooling the cooling coil thereby cooling the water tank and water therein, a faucet communicated with the water tank, and pressure means communicated with the water tank for pressurizing the water therein for discharging water when the faucet is opened, said pressure means having a discharge orifice disposed interiorly of the tank and adjacent the bottom thereof whereby the pressurizing medium will be discharged at the bottom of the supply of water in the

tank, said pressure source including a cylinder of compressed carbon dioxide, a regulating valve regulating the pressure of carbon dioxide admitted into the bottom of said tank whereby the carbon dioxide will pressurize the water and mix with the water so that carbonated water may be discharged from the tank, said tank having a carbonated water outlet tube connected with the faucet and extending into the top of the tank and terminating adjacent the bottom thereof for assuring discharge of carbonated water substantially throughout the vertical height of the tank, heat sensitive means disposed in said tank, and means operated by the heat sensitive means for controlling operation of the refrigeration system, said pressure source including a discharge nozzle of reduced diameter at the inlet end thereof for increasing the velocity of the carbon dioxide as it is discharged into the water adjacent the bottom thereof, said cabinet including insulating material completely surrounding and encompassing said tank except for access means for the water outlet, heat sensitive means and carbon dioxide inlet, said tank having a large filler pipe associated therewith for enabling the tank to be refilled, a closure plug for said pipe thus enabling the water supply in the tank to be replenished, said cabinet including a trough underlying the carbonated water faucet, a removable lid overlying said cabinet and concealing the carbon dioxide cylinder, the closure plug for the pipe and the fittings for inlet and

outlet in relation to the tank, said tank including a pressure release valve to enable excess pressure to be discharged, a plurality of flavoring syrup container members mounted on said cabinet, each said container including a valved discharge for selectively dispensing each of said flavor syrups.

2. The structure defined in claim 1 wherein the valved discharge for each flavoring syrup container includes a flexible discharge hose, and spring-biased means pinching the discharge hose on opposite sides thereof for closing said hose, said spring-biased means including a manual operating handle for releasing the pressure exerted on the hose for opening the hose and discharging flavoring syrup therefrom.

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