

June 12, 1956

F. WELTY ET AL

2,750,076

BEVERAGE DISPENSING APPARATUS

Filed May 12, 1953

4 Sheets-Sheet 1

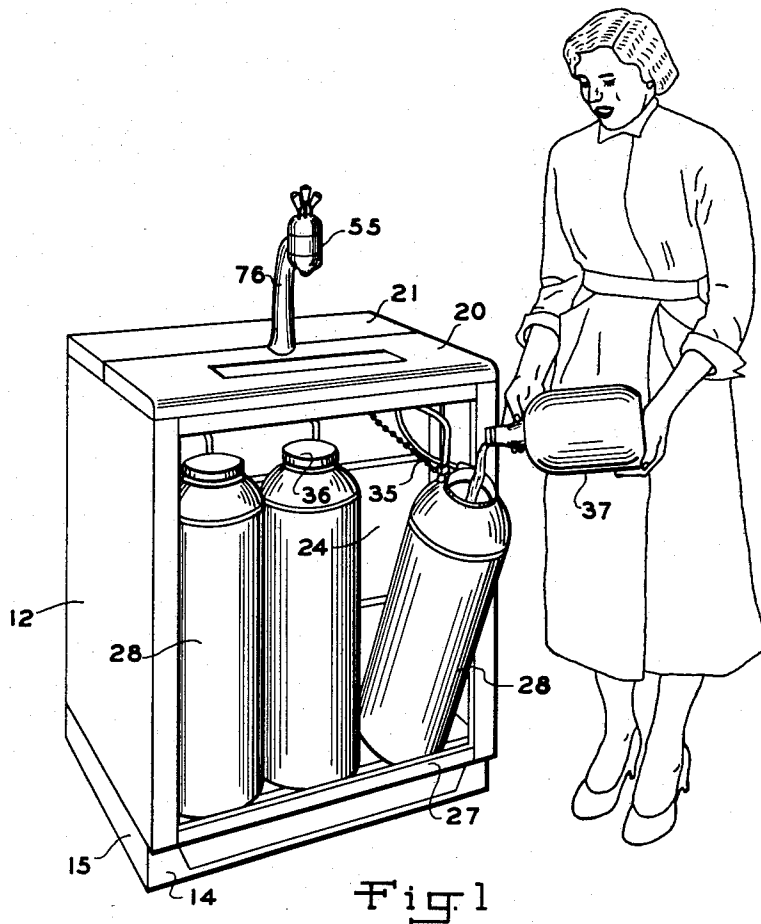


Fig. 1

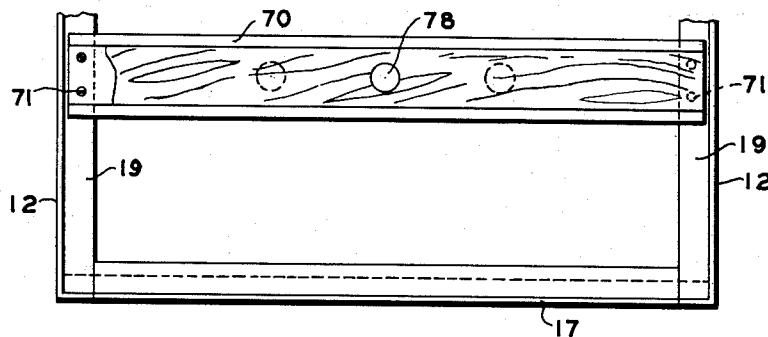


Fig. 5

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4 Sheets-Sheet 2

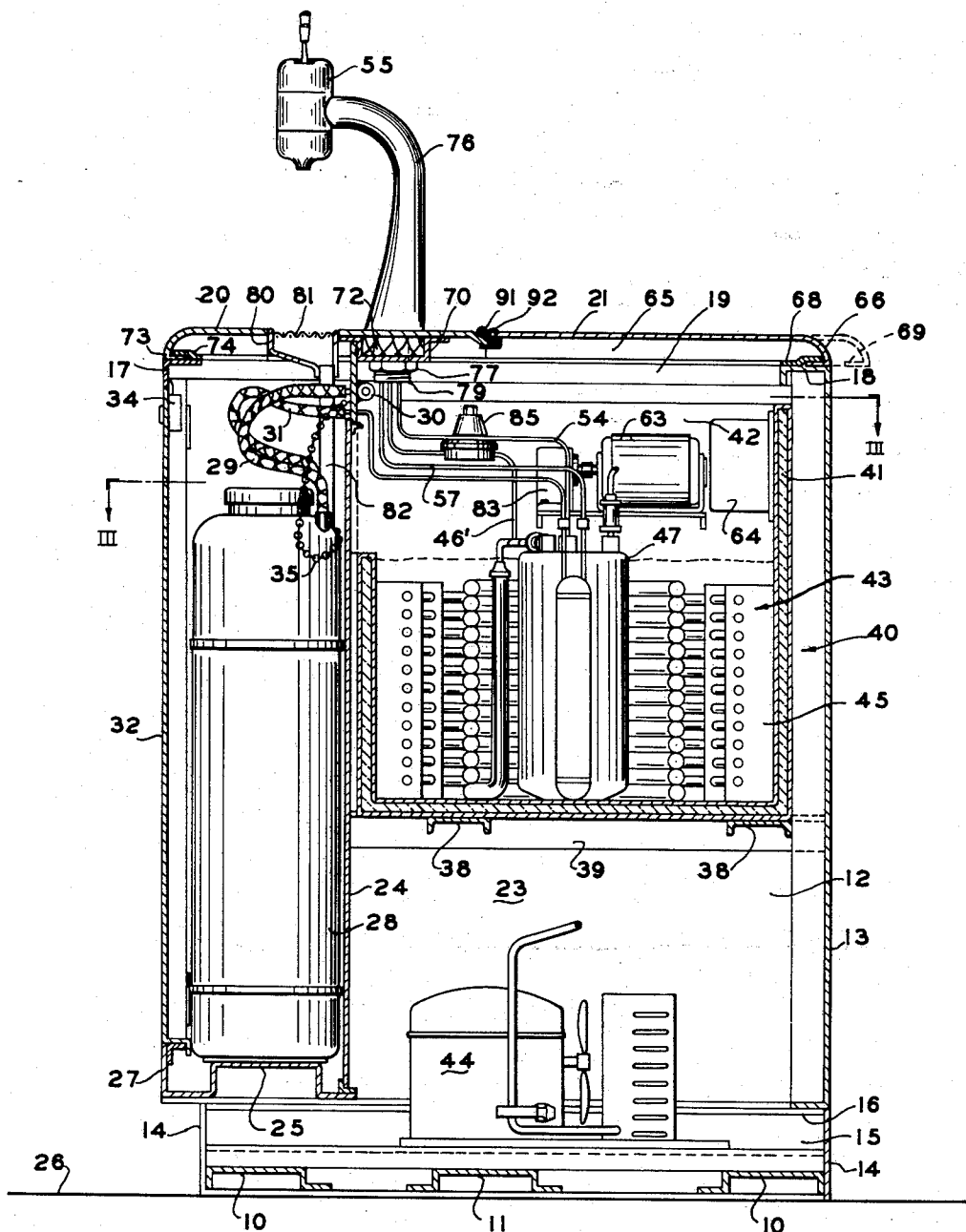


Fig. 2

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4 Sheets-Sheet 3

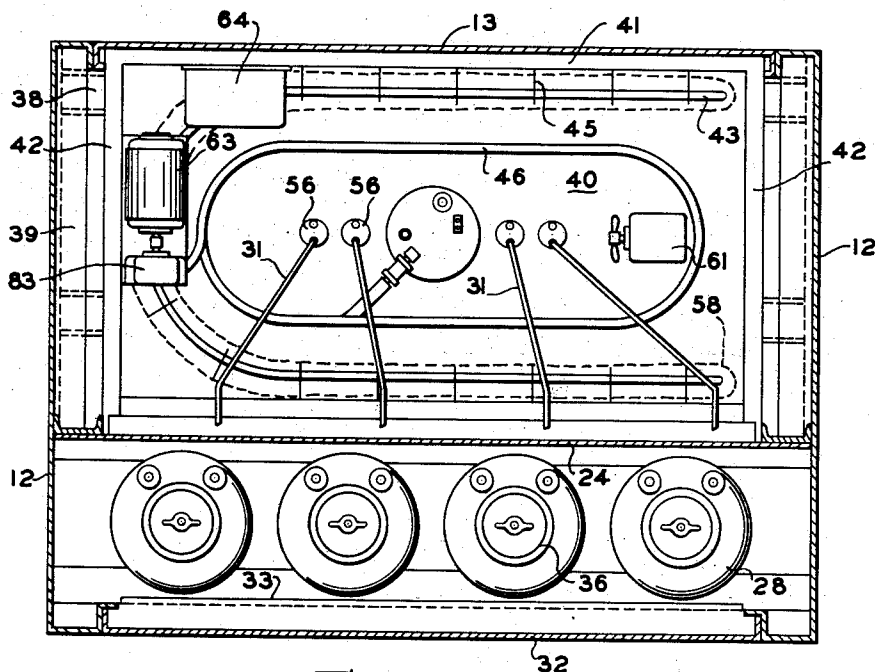


Fig. 3

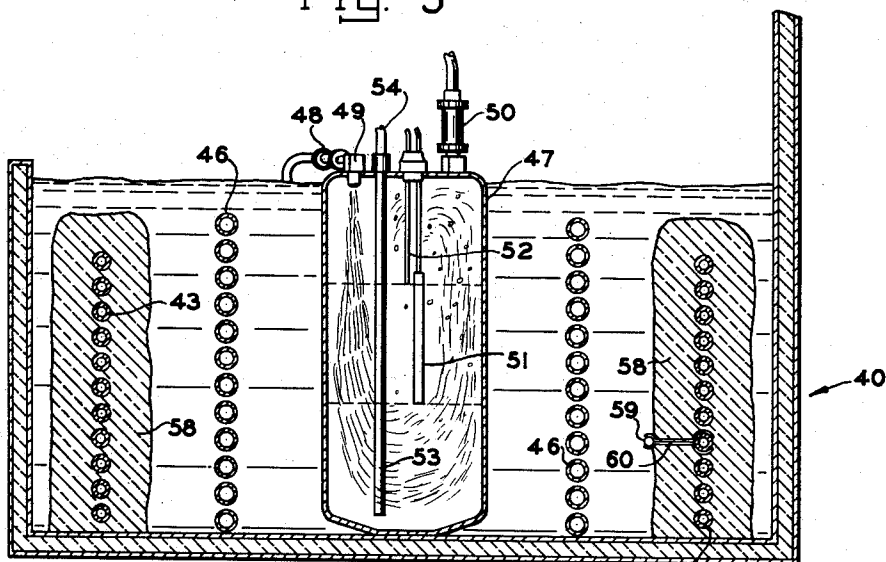


Fig. 4

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4 Sheets-Sheet 4

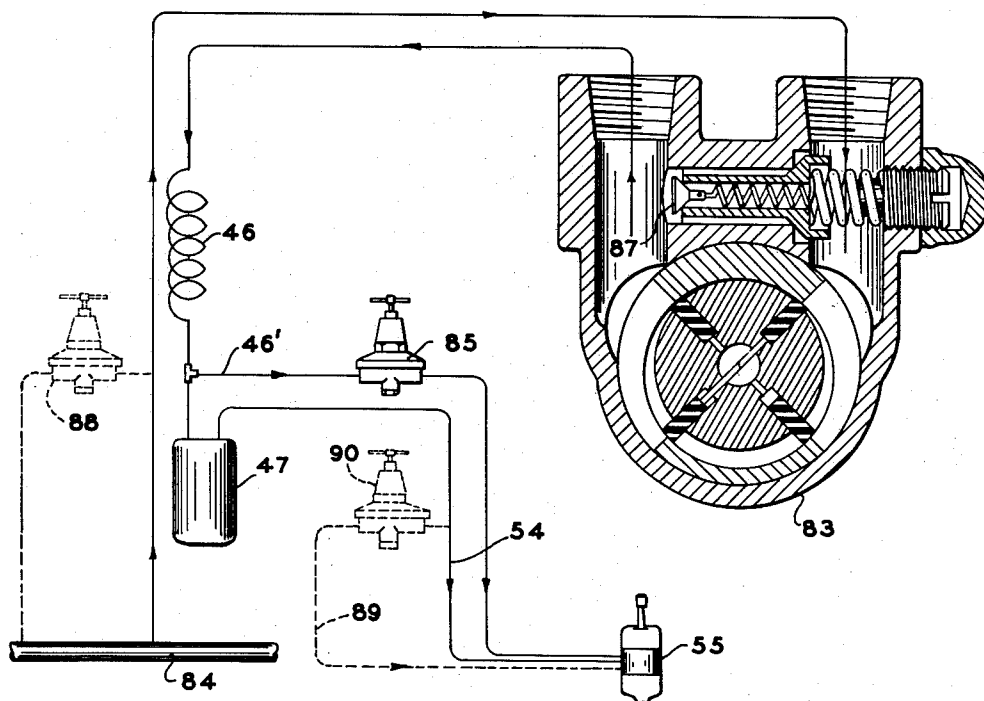


Fig. 8

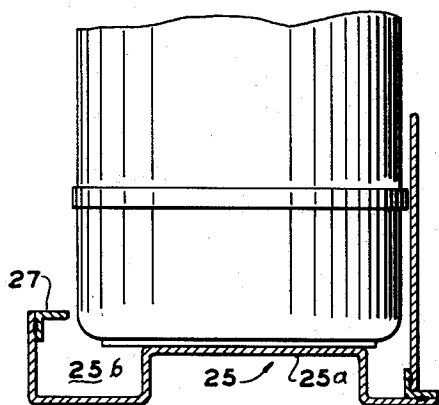


Fig. 6

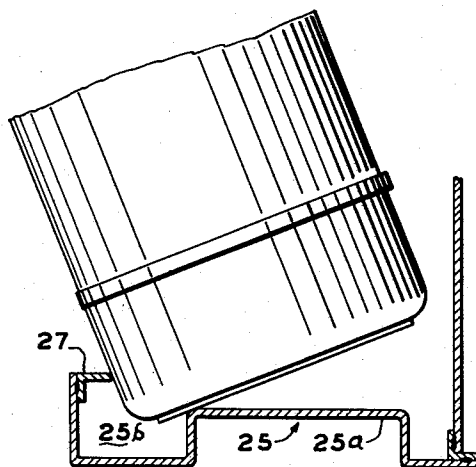


Fig. 7

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2,750,076

BEVERAGE DISPENSING APPARATUS

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Application May 12, 1953, Serial No. 354,617

15 Claims. (Cl. 222—129.1)

The present invention relates to apparatus for use in dispensing carbonated beverages and the like, and more particularly to an improved arrangement for distributing a plurality of beverages from a single self-contained dispensing cabinet or structure, and to certain specific improvements in such cabinet or structure whereby the same is rendered more suitable for the purpose intended.

An overall object of the present invention is the provision of a self-contained cabinet installation for dispensing a plurality of carbonated beverages which is characterized by a general compactness of design, economy of construction, ease and simplicity of servicing and maintenance, and versatility of application.

More specifically, the present invention contemplates the provision of a compact self-contained carbonated beverage dispensing cabinet which is arranged to house a plurality of containers for beverage flavoring syrup, apparatus for producing adequate supplies of carbonated water, and apparatus for refrigerating the beverages to a satisfactory drinking temperature. In general, the apparatus of the present invention incorporates a beverage mixing and dispensing valve of the type disclosed in our co-pending applications Ser. No. 97,409 filed June 6, 1949, now Patent No. 2,653,055, and Ser. No. 215,205 filed March 31, 1951, now Patent No. 2,702,051, and an automatic carbonating device of the type disclosed in our U. S. Patent No. 2,588,677, among other novel features, whereby a plurality of beverages may be supplied from a single compact cabinet having a minimum of external connections.

Another object of the invention resides in the provision in a dispensing installation as characterized above of a novel and highly practical arrangement for housing a plurality of flavoring syrup containers in operative relation with the other components whereby, when periodically necessary, ready access may be had to the containers for refilling the same with flavoring extract.

Another object of the invention is the provision in apparatus of the type described of an improved arrangement for providing a supply of refrigerated carbonated water. And among other things this object contemplates an improved arrangement for providing a reserve supply of carbonated water and an improved and more economical arrangement for cooling such supply to proper serving temperature.

In connection with the above object, it is a further object of this invention to provide a dispensing installation of the general type indicated which includes, in combination with the above mentioned improved arrangement for supplying carbonated water, a novel and improved arrangement for providing a supply of chilled fresh water for dispensing alone or with various flavoring syrups as may be desired.

Another object of the invention resides in a dispensing installation of the type described of an improved dispensing cabinet or structure and arrangement of components whereby ready access may be had to the carbonating apparatus and to electrical controls and the like

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so that maintenance and repairs, if and when required, may be accomplished with ease and in a minimum of time.

Yet another object of the invention is the provision of a self-contained multi-flavor beverage dispensing cabinet including a beverage mixing dispensing valve which is characterized by improved arrangements for mounting such valve at the top of the cabinet along with other improved arrangements for providing access from the top of the cabinet to other components of the dispensing installation housed within the cabinet. And this object further contemplates a simplified modification of the apparatus whereby the same may be adapted to installations wherein one or more mixing and dispensing valves are positioned remotely of the dispensing cabinet.

The above and other objects and advantages of the invention will become apparent upon full consideration of the following detailed specification and accompanying drawing wherein is disclosed a certain preferred embodiment of our invention.

In the drawing:

Figure 1 is a perspective view of a self-contained beverage dispensing cabinet constructed in accordance with the teachings of our invention, the embodiment illustrated being adapted for dispensing three flavored carbonated beverages;

Figure 2 is a section view of a four-flavor dispensing installation of the type shown in Figure 1;

Figure 3 is a section view taken generally along line III—III of Figure 2;

Figure 4 is an enlarged section view taken generally along line IV—IV of Figure 3;

Figure 5 is a fragmentary view of the top structure of the dispensing cabinet of our invention.

Figures 6 and 7 are enlarged fragmentary views of the apparatus of Figure 2, illustrating certain novel features of construction thereof; and

Figure 8 is a simplified schematic representation of a novel arrangement, as taught by our invention, for providing supplies of chilled carbonated and fresh water.

Referring now to the drawing, and initially to Figure 2 thereof, there is shown our dispensing cabinet which comprises a plurality of angle members 10 and 11, forming a base structure, and fixed back and side walls 12 and 13 formed of suitable sheet metal. In the preferred arrangement the base structure includes short wall portions 14 and 15 having inwardly directed supporting portions 16 forming, in effect a slightly raised platform upon which the bulk of the cabinet is constructed. To impart strength and rigidity to the cabinet assembly there may be provided a suitable skeleton framework of angle and other structural members, as shown at 17 at the upper forward edge of the cabinet. And the side walls 12 and 13 may be provided with inturned edge portions, as at 18 for example. By means of angle member 17 and inturned edge portions 18 and 19 there is provided a supporting surface about the edges of the cabinet, which surface provides support for top cover members 20 and 21 to be hereafter described in more detail.

In accordance with the teachings of the invention the interior of the cabinet is divided into forward and rear sections 22 and 23, respectively, by means of a dividing wall 24, and the forward section 22 is provided with a suitable floor or other support 25 which is mounted on the base structure in spaced relation to the floor 26 of the tavern or refreshment stand in which the installation is operated.

As illustrated in Figure 2, the supporting floor 25, located in the front section 22 of the cabinet, is provided with an upwardly and inwardly turned forward edge portion 27 which both forms a retaining lip at the forward edge of the support and defines a space of pre-

determined width between the lip 27 and dividing wall 24. In accordance with the teachings of the invention the supporting floor 25 is adapted to support, in the space so defined, a plurality of containers 28 for flavoring syrup or extract, which containers may be of a five gallon capacity, for example. In the embodiment illustrated in Figure 1 the floor is of sufficient length to support three such containers 28 while the embodiment of Figure 2 may be adapted to support four containers as shown in Figure 3. Also in accordance with the teachings of the invention each container 28 is provided with a flexible conduit connection 29 connected to a common manifold conduit 30 and thence to a source, not shown, of carbon dioxide or other gas under pressure, and a second flexible conduit 31 providing a syrup outlet for the container and passing through the dividing wall 24 into the rear section 23 of the cabinet as will be hereafter more fully explained.

Extending vertically between the angle member 17 and the inturned lip 27 is a removable door 32 which encloses the forward section 22 of the cabinet and serves as a front side of the entire cabinet assembly as will be apparent. Preferably, the door 32 may be quickly detached from the cabinet assembly to provide access to the syrup containers 28, and to this end we may provide suitable means, as at 33, at the lower end of the door 32 to engage the upturned lip 27, and a releasable latch 34 at the upper end of the door adapted to engage the angle member 17.

To further provide easy access to the syrup containers 28 and to simplify refilling thereof as much as possible we have secured flexible chains 35 to each of the containers, each of which chains is in turn secured to some fixed member of the general cabinet structure. In accordance with the teachings of the invention the chains 35 are of such length that the upper ends of the containers 28 may be tilted outwardly of the cabinet structure sufficiently to fully expose the tops of the containers. The tops 36 of the containers are removable, in accordance with usual practice, and thus, as shown in Figure 1, refilling of the containers 28 may be accomplished by merely tilting the containers outwardly of the cabinet, after which the containers are retained in such position by the chains 35 during filling thereof, which is generally done by emptying the contents of several commercial gallon jugs or containers 37 into the open tops of the tilted containers 28. It will be noted that the inturned lip 27 and dividing wall 24 serve to confine the lower ends of the containers 28 at all times so that the same may be tilted into exposed position with a maximum of ease and rapidity. The flexible conduits 29 and 31 are provided with sufficient slack so that the same may be readily extended to the limit of the chain 35 as the containers 28 are tilted outwardly. And usually it is desirable to provide each container with suitable valve means, not shown, whereby gas pressure may be relieved from the containers individually during filling thereof.

In order to prevent any rolling of the containers from one side to the other while the same are tilted outwardly we have provided a novel supporting arrangement for the containers which is shown in detail in Figures 6 and 7. Referring therefore to the last mentioned figures, it will be observed that the supporting floor 25 comprises a raised platform portion 25a which is of less width than the diameter of the container 28 and which is spaced substantially from the innermost edge of the inturned lip 27. The arrangement is such that the forward edge of the container 28 overhangs the platform portion 25a and is positioned over a recessed portion 25b between the platform 25a and lip 27.

Thus, as will be observed in Figure 7, when the container 28 is tilted outwardly into filling position, the forward edge of the container 28 will be received in the recess 25b while the forward edge of the platform portion 25a engages and supports the container along a line

located substantially inwardly of the forward edge of the container.

By the above described arrangement there is provided a substantial line contact between the platform portion 25a and the container 28 when the latter is in tilted position so that there is no tendency for the container to roll from one side to the other.

Mounted in the rear section 23 of the cabinet and supported in spaced relation to the base of the cabinet by means of suitable structural members 38 and 39 is a liquid retaining tank 40 which may be insulated, as shown, and which is preferably provided with high rear and side walls 41 and 42. Positioned within the tank 40 adjacent but spaced somewhat from the walls thereof is a U-shaped coil 43 which comprises the evaporating chamber of a refrigerating system including a conventional motor-compressor-condenser arrangement 44 mounted below the tank 40. In accordance with preferred construction the coil 43 is provided with a plurality of spaced fins 45 which serve to maintain the various superimposed layers of the coil in properly spaced relation and to support and maintain the coil 43 in spaced relation with the side walls of the tank 40.

Positioned within the tank 40 and within the limits of the coil 43 and spaced therefrom is a second coil 46 which is adapted to be connected to a fresh water supply, not shown, and which serves as a heat exchanger for cooling fresh water to or substantially to serving temperature.

Also located within the tank 40 and centrally with respect to the water coil 46 is a vertically disposed tank 47 forming part of a carbonator device of the type disclosed and claimed in our U. S. Patent No. 2,588,677, "Automatic Liquid Carbonator." The carbonator device is connected to the water coil 46 through a suitable check valve 48 and jet nozzle 49 (see Figure 4) and to a source of carbon dioxide gas under pressure through a second check valve 50. Suitable electrode devices 51 and 52 control the flow of water into the carbonator tank 47. And in accordance with the teachings of our above-mentioned patent fresh water is periodically injected at high velocity into the tank 47 to foam the body of water contained therein whereby the water rapidly and thoroughly absorbs carbon dioxide which is maintained under pressure in the top portion of the tank. The water thus carbonated is drawn out from the lower portion of the tank through a tube 53 which leads through conduit 54 to a special mixing and dispensing valve 55 where the carbonated water is mixed with a selected flavoring syrup during dispensing of a drink from the valve.

It is in accordance with the teachings of our invention that the water coil 46 be connected in series with the carbonator tank 47 but ahead of the latter in the direction of flow of the liquid so that only fresh water will be carried by the coil. Thus it is unnecessary to provide a cooling coil for carbonated water, as heretofore, which makes it possible to effect substantial savings in the construction of the cabinet assembly. Carbonated water must be contained and conducted by containers and conduit of stainless steel or similar non-corrosive material, while plain water may be conducted by copper conduit which is substantially more economical than stainless steel. Thus, by providing that only fresh water is contained in the coil 46 the same may be constructed of copper tubing rather than stainless steel as has been heretofore necessary. In addition, by positioning the water cooling coil 46 ahead of the carbonator tank 47 we may conveniently provide a fresh water tap 46' leading to the valve 55 whereby adequately cooled fresh water or non-carbonated flavored drinks may be dispensed when desired.

In order to provide separate supplies of chilled carbonated and fresh water while incorporating an improved carbonator device of the type disclosed in our aforementioned prior patent and while maintaining the apparatus as simple and economical as possible, we have proposed a novel fluid circuit arrangement as illustrated in Figure 8.

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It will be understood, in connection with the operation of our carbonator device, that in order to inject a high velocity stream of water into the carbonator tank against a gas pressure of, for example 125 p. s. i. it is usually necessary to provide a suitable pumping device 83 which is connected at its inlet side to a fresh water supply 84 and at its outlet side to the carbonator tank 47. And in the interest of compactness of general design, and for other reasons, it is preferable to position the pump 83 ahead of the cooling coil 46. In accordance with our prior teachings the pump 83 operates periodically when the water level in the carbonator tank reaches a predetermined low level, and such operation is discontinued when the tank 47 is filled to a predetermined high level.

Thus, it will be noted that the fresh water conduit 46', which communicates with the cooling coil 46, will be subject to water pressure variations, depending on whether or not the pump 83 is in operation. To avoid the effect of such variations at the dispensing valve 55 we have provided a pressure regulating valve 85 in the fresh water conduit 46', which valve may be adjusted to provide a constant water pressure of, for example, 30 p. s. i. at the valve 55.

Generally, to insure proper operation of the carbonator apparatus, the pump 83 should be of a positive displacement type. Accordingly, to permit a flow of fresh water to the valve 55 during times when the pump 83 is not operating we prefer to employ a novel type commercially available pump which is provided with a suitable low pressure by-pass valve 87 which will permit a flow of water in by-passing relation to the pump upon opening of the fresh water tap of the valve 55. In the illustrated arrangement the valve 87 is combined with an oppositely disposed relief valve, arranged to open at about 200 p. s. i., for example, but it will be understood that any suitable by-pass valve arrangement may be employed for the purpose herein intended.

In the present embodiment of our invention, the use of the by-pass valve 87 contemplates a water pressure at the source 84 which is somewhat less than the gas pressure maintained in the carbonator tank 47 so that there will be no undesired seepage of fresh water into the tank 47 when the pump 83 is idle. In cases where the water pressure at the source 84 is of the order of 125 p. s. i. it is preferable, and sometimes necessary to provide a regulating valve 88 in the supply circuit so that the pressure leading to the tank 47 may be maintained below a predetermined maximum.

In some dispensing installations it is desirable to provide for the dispensing of low carbonation drinks, such as fruit ades for example, and for this purpose we may provide a carbonated water conduit 89, in parallel with the conventional carbonated water conduit 54; which conduit 89 is provided with a suitable regulating valve 90 by means of which the pressure in the conduit 89 may be reduced to some desired pressure below the normal pressure within conduit 54. The arrangement is such that upon dispensing of the carbonated water in conduit 89 from the valve 55 a substantial portion of the carbonation is lost and a mildly carbonated drink provided.

Also positioned within the tank 40, within the limits of the water coil 46 is a plurality of vertically disposed tanks 56 of relatively small capacity in comparison with the carbonator tank 47, and as will be observed in Figure 3, each of these tanks is connected by means of a conduit 31 to one of the syrup containers 28. In addition, each of the tanks 56 is provided with a second connection with a conduit 57 leading to the valve 55 so that, in effect, the tanks 56 merely form part of the conduit system leading from syrup containers 28 to the valve 55. And if desired, certain of the syrup containers 28 may be connected with a different valve, not shown, where more than one is provided. Ordinarily two valves of the type shown at 55 are provided where four separate flavoring syrups are utilized.

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As indicated in Figure 4, the tank 40 is adapted to retain a liquid refrigerating medium up to a level sufficient to substantially cover the carbonator tank 47 and smaller syrup-retaining tanks 56. Any suitable means may be provided for maintaining the liquid medium at the level indicated, such as, for example, a float valve and overflow drain, not shown.

In the preferred arrangement the liquid refrigerating medium provided is plain water, rather than brine solution or the like, so that upon operation of the refrigerating apparatus 44 a bank of ice 58 is formed about the refrigerating coils 43. The body of water surrounding the ice bank 58 is thus maintained at a temperature in the order of but somewhat above 32° F., and the tanks 47 and 56 and the water coil 46, being in direct contact with this body of water, are maintained at a like temperature. And it will be noted that by immersing the tanks 47 and 56 directly in the water medium there is at all times a substantial reserve supply of beverage components at serving temperature. Thus, the apparatus is able to handle periods of peak demands substantially in excess of its normal continuous serving capacity without in any way effecting the quality of the drink dispensed. In addition, immersing the carbonator tank 47 in the refrigerating medium substantially improves the efficiency of the carbonator apparatus, it being a well-known fact that carbon dioxide is more readily dissolved and retained in water which is maintained at a low temperature.

Another feature of our apparatus which improves the peak serving demand capacity thereof is the provision and operation of the refrigerating coil 43 in such manner as to form a large ice bank 58 thereon. Thus, when the heat input into the liquid refrigerating medium is greater than the capacity of the refrigerating system 44 the ice bank is melted down while the principal body of the liquid medium is maintained at substantially the same temperature. During subsequent periods of lesser demand the ice bank is reformed to its normal extent.

Usually it is preferable to maintain the ice bank at a predetermined maximum size, and this may be accomplished by providing a control bulb 59 which is secured in spaced relation to the refrigerating coils 43 by means of a bracket 60, the arrangement being such that when the ice bank builds up to such an extent that it comes into contact with the bulb 59 the refrigerating apparatus is deenergized. An conversely, when the ice bank becomes melted down to such an extent that it no longer is in contact with the bulb 59, the refrigerating apparatus is energized.

To insure a rapid transfer of heat from the tanks 47 and 56 and water coil 46 we prefer to provide one or more agitating devices 61, which may comprise, for example, a sealed electric motor and suitable propeller, so that the body of liquid medium is circulated about the coils and tanks and about the ice bank 58. The agitating device 61 may be arranged to operate concurrently with the refrigerating apparatus or in accordance with a thermostatic control device, not shown, positioned within the body of liquid medium, or continuously. Usually the latter arrangement is preferred.

As mentioned above, proper operation of the carbonator apparatus and refrigerating equipment requires the provision of a suitable pump 83 and drive motor 63 therefor for injecting a jet stream of water into the carbonator tank against the pressure of the carbon dioxide gas therein, and the provision of suitable electrical controls for operating the motor 63, agitator 61 and refrigerating equipment 44. In accordance with the objects of the invention we have mounted the motor 63 and pump 83 on one wall 42 of the tank 40, above the level of the liquid medium. And the various control relays and devices we may house in one or more control boxes 64 mounted on a wall 41 of the tank. All this apparatus is preferably positioned toward the rear of the cabinet as illustrated in Figure 2.

To provide ready access to the motor 63 and carbonator and control apparatus we have provided a novel removable cover arrangement comprising a cover member 21 having downwardly extending side and rear walls 65 and 66 all of which walls have lower end surface portions defining substantially a single plane. The arrangement is such that the lower surface portions of the walls 65 and 66 may be evenly supported by the inturned edge portions 18 and 19 of the cabinet walls 12 and 13.

Rigidly secured to the upper surface of the edge portion 18 is an elongated strip 68 having an offset portion defining a slot opening toward the rear of the cabinet assembly. In accordance with the teachings of the invention the above described slot is adapted to have interlocking engagement with an inturned projecting portion 69 of the top wall 21 in the manner shown in Figure 2. Thus, assembly and disassembly of the top 21 from the cabinet assembly proper may be effected by sliding the top 21 toward the rear of the assembly, as indicated by broken lines of Figure 2, whereupon the top may be lifted from the assembly. And with the top 21 so removed from the assembly the carbonator and control components and other important parts of the apparatus are readily accessible for inspection and maintenance, if necessary.

Also in accordance with the teachings of the invention we provide an improved mounting arrangement for the valve 55 comprising an upwardly opening channel member 70 which extends transversely of the cabinet assembly and which is removably secured by means of a plurality of bolts 71, for example, to the portions 19 of the cabinet assembly. Positioned within the channel groove of the member 70 and preferably extending the entire length of the channel is a wooden or other semi-resilient filler member 72 which extends up to a level even with the upper edges of the channel 70.

Positioned over the channel 70 and filler 72 and partially supported thereby is a cover member 20 which is substantially similar to the cover member 21, and which is provided with an inturned projecting portion 73 at its forward edge adapted to have interlocking engagement with a recessed elongated strip 74 secured to the forward edge of the cabinet assembly at member 17. Cover 20 is also provided with depending walls defining a single plane and adapted to be supported by inturned portions 19, and angle member 17.

As will be observed in Figure 2, the front cover member 20 is provided along its rear edge with a downwardly offset portion which is adapted to underlie and support the forward edge portion of the back cover member 21. A suitable resilient gasket member 91 is preferably positioned between the overlapping cover members, and a plurality of simple screw devices 92 may be employed to secure the cover members together and form a substantially fluid tight seal therebetween.

In accordance with the teachings of the invention the offset portion of cover 20 is positioned adjacent the channel 70 and filler 72 so that firm and relatively rigid support is provided for the forward end portion of the back cover 21.

Valve 55 is mounted at the upper forward end of a curved tubular arm 76 which houses the various flavoring syrup, carbonated water and fresh water conduits in the desired combination, and which, in accordance with past practice, is provided with a downwardly extended threaded portion 77. Thus, to mount the arm 76 to the cabinet assembly we have provided the cover member 20, filler 72 and channel member 70 with one or more coinciding vertical bores 78 (depending upon the number of valves utilized in the cabinet assembly), which bore or bores are arranged to receive the threaded portions of valve mounting arms 76. As illustrated in Figure 2 the threaded portion 78 extends below the

channel 70 and is engaged by an enlarged nut 79 by means of which the arm is rigidly secured to the cabinet structure.

Generally it is desirable to provide suitable drain facilities below the valve 55 for disposing of drippings from the valve, for example, and for this purpose we provide a rectangular opening in the cover member 20 in which is positioned a drain funnel 80 having a suitable grating 81 therein which is arranged to approximately register with the upper surface of the cover 20. A drain pipe 82 connects the funnel 80 and leads to a suitable outlet connection, not shown, which is preferably located at a convenient out-of-the-way location on the cabinet assembly. And as will be readily understood, all necessary external connections to the cabinet assembly may be made at this same general location if desired.

To disassemble the valve 55 and mounting assembly the cover 21 is first removed to expose the nut 79, which nut is then removed along with the various conduit connections leading to the dispensing valve. The entire valve assembly may then be removed from the cabinet proper, and thereafter the cover 20 may be removed much the same as cover 21 is removed. The entire cabinet assembly is thus exposed and access is readily had to practically all parts and components thereof.

In many cases it may be desirable to provide access means to the refrigerating equipment positioned below the tank 40, and if this is desired a suitable removable door may be provided in one of the side or back walls 12 or 13.

In some installations of our apparatus it may be expedient to mount the dispensing valve 55 remotely of the cabinet structure, in which case the cover 20 may be provided without an aperture to receive the valve mounting arm 76, other openings being provided at one or more convenient locations about the enclosing walls of the cabinet for the beverage component conduits. It is the preferred practice in installations of this nature to provide means for cooling the conduits leading to the remote dispensing valve or valves, and with our present apparatus we may readily provide such cooling by means including a circulating pump, not shown, communicating with the main body of chilled water in the tank 40 and arranged to circulate such chilled water in suitable conduits positioned in heat exchange relation with the conduits which carry the various beverage components. The ease and simplicity of adapting the specifically illustrated cabinet installation for the above described modified installation will be readily apparent to those familiar with this art.

Thus, it should be apparent that we have fulfilled the object of our invention. We have provided a novel and highly useful self-contained cabinet assembly for dispensing a plurality of carbonated beverages which is characterized by many advanced features relating both to the construction of the assembly and to the ease and effectiveness of its use.

For example, our self-contained assembly is provided with a substantially improved arrangement for housing a plurality of flavoring syrup containers whereby the same are wholly concealed when in use while being readily accessible for refilling upon removal of a detachable front panel and mere tilting of the containers into exposed relation. By means of a raised lip on the cabinet proper and a flexible chain for limiting the tilting movement of the containers the same may be handled quickly and carelessly with a minimum of active attention on the part of the attendant. And our novel provision of a raised supporting platform positioned in spaced relation to the retaining lip 27 provides for a substantial line contact between the platform and containers when the latter are in tilted position so that there is no tendency for the containers to roll one way or the other.

Other highly advantageous features of our apparatus include the particular described refrigerating arrangement including means for providing reserve supplies of the beverage components and additional means for providing reserve supplies of heat extracting medium so that the refrigerating system may be of compact size and of moderate power capacity while at the same time enabling the apparatus to adequately handle periods of peak serving demand. Thus, in actual apparatus embodying the teachings of our invention we may provide for a normal continuous serving capacity of 240 drinks per hour, while providing for a peak demand capacity of 1800 drinks served in continuous succession, all of which drinks may be served at a temperature of 40° F., or less. Refrigerating equipment of one third horsepower capacity is ample for such a system.

Other advantages reside in the construction of our cooling system including a generally simplified arrangement of components, substantial economies resulting from the provision of the water cooling coil in series with but ahead of the carbonator tank, and improved carbonating efficiency resulting from the injection into the carbonator tank of pre-chilled water and from maintaining the water in the tank at all times at a low temperature. In addition, the combined use of our special carbonator apparatus, including a high pressure pumping device therefor, with a source of chilled fresh water between the pump and carbonator provides a highly simplified and efficient arrangement for providing sufficient supplies of chilled and fresh carbonated water at all times. Our novel arrangement of a pump, fresh water by-pass and fresh water pressure regulator permits proper dispensing of chilled fresh water independently of operation of the pump even though the fresh water supplies for the dispensing valve and carbonator tank both pass through the same cooling coil conduit which is located after the pump in the line of flow of the water.

Another advantageous feature of our apparatus, both from the standpoint of construction and operation, resides in the manner in which the cover members 20 and 21 are constructed and assembled. The rear cover 21 is normally firmly attached to the cabinet assembly proper, forming an important part thereof, yet by merely removing a small number of screws 92, sliding the cover slightly to the rear and lifting, the rear section 23 of the cabinet, containing the important working components of the apparatus, is exposed for inspection and necessary maintenance. Also, a simplified arrangement, comprising channel member 70 and wooden filler piece 72, is taught for providing a sturdy yet semi-resilient mounting for the valve 55 and supporting arm 76 and support for the cover 20; and the arrangement is such that this assembly may be readily removed to permit removal of the front cover 20, if ever necessary, in the same manner as the rear cover 21.

It should be understood, however, that the apparatus herein specifically disclosed and described is intended to be illustrative only, and reference should therefore be had to the following appended claims in determining the full scope of the invention.

We claim:

1. In a self-contained beverage dispensing cabinet of the type having means to supply separate carbonated water and flavoring syrup components to a common dispensing valve the combination of a cabinet, a vertical dividing wall in said cabinet dividing the same into front and rear sections, means comprising a supporting platform in said front section, a retaining lip extending upwardly from said platform and defining with said dividing wall a container-receiving space, a plurality of generally flat-bottomed cylindrical containers for flavoring syrup positioned in side-by-side relation in said space, said lip being positioned forwardly of the front edge of said platform and defining therewith a recess for the reception of the forward edges of said containers upon tilting

movement thereof, flexible conduit means connecting said containers and terminating on said vertical dividing wall, rigid conduit means positioned on said wall being available to connect said flexible conduit means to said valve, and flexible members connecting the upper portions of said flat-bottomed containers with said cabinet to limit the extent of outward movement of the upper portions of said flat-bottomed containers with respect to said cabinet, said retaining lip and dividing wall being adapted to substantially prevent movement of the lower portions of said flat-bottomed containers upon movement of the upper portions thereof outwardly of said cabinet, and said flat-bottomed containers sitting levelly on said platform above and in spaced relation to said recess whereby upon tilting movement said flat-bottomed containers are in a straight-line contact with said platform preventing rolling movement of said cylindrical containers.

2. Apparatus according to claim 1 further including a removable panel comprising a front side of said cabinet said panel being normally positioned in spaced relation to said dividing wall to define a retaining chamber for said containers.

3. In a beverage dispensing cabinet assembly of the type having means to supply a liquid the combination of a cabinet, a refillable flat-bottomed cylindrical container for retaining a supply of said liquid, a supporting platform for said flat-bottomed container, said platform being of less width than the diameter of said container, a raised retaining lip positioned forwardly of said platform and defining therewith a recess, and means to limit outward tilting movement of said flat-bottomed container with respect to said cabinet, said recess being adapted to receive the forward edge portion of said flat-bottomed container upon outward tilting movement thereof, and said flat-bottomed container sitting levelly on said platform above and in spaced relation to said recess whereby upon tilting movement said flat-bottomed container is in straight-line contact with said platform preventing rolling movement of said cylindrical containers.

4. In a beverage dispensing cabinet assembly of the type having means to supply a liquid the combination of a cabinet, a refillable flat-bottomed cylindrical container for retaining a supply of said liquid, said flat-bottomed container being adapted for outward tilting movement with respect to said cabinet, means to limit said outward tilting movement, and means for supporting the lower end of said flat-bottomed container comprising a retaining lip and a supporting platform defining with said lip a recess, said recess being adapted to receive the forward edge portion of said flat-bottomed container upon outward tilting movement thereof, and said flat-bottomed container sitting levelly on said platform above and in space relation to said recess whereby upon tilting movement said flat-bottomed container is in a straight-line contact with said platform preventing rolling movement of said cylindrical containers.

5. In a beverage dispensing cabinet assembly the combination of a cabinet having side walls and a top framework including supporting portions at the top of said side walls, a beverage dispensing valve, a mounting arm for said valve having a depending tubular portion at its lower end, an upwardly opening channel member secured at its opposite ends to said supporting portions, a semi-resilient filler member positioned in said open channel, said filler member and said channel member having coinciding vertical bores therethrough to receive said tubular portion, said mounting arm having means to engage said cabinet assembly at the upper side of said filler member, and means to engage the lower end of said tubular portion to secure said arm to said channel member.

6. Apparatus according to claim 5 further including a front top cover member for said cabinet, said cover member having depending walls adapted to engage said supporting portions, and said cover member having a hori-

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zontal surface portion disposed beneath said valve and arm and engaged and supported at its under surface by said channel and filler members.

7. Apparatus according to claim 6 further including a back top cover member for said cabinet, said cover member having depending walls adapted to engage said supporting portions, said front top cover member having a rearwardly extending surface portion and a downwardly offset portion along the rear edge of said portion, said offset portion being positioned adjacent said filler portion, said back top cover member overlying said offset portion and being supported thereby.

8. In a self-contained beverage dispensing cabinet assembly of the type having means to supply carbonated water and flavoring syrup components to a common mixing and dispensing valve the combination of a cabinet, means dividing said cabinet into front and rear sections, a plurality of elongated vertically disposed flat-bottomed syrup containers, retaining means in said front section adapted to receive the lower ends of said flat-bottomed containers, said retaining means being operative to retain said lower ends while permitting outward tilting movement of the upper ends of said flat-bottomed containers, said retaining means comprising a retaining lip positioned in spaced relation to said dividing means and defining a container-receiving space, and a raised supporting platform positioned in said space and having a supporting platform positioned in said space and having a forward edge positioned in spaced relation to said lip and defining therewith a recess for receiving the forward edge portions of said containers upon the same being moved into tilted position whereby a straight-line contact is formed between said flat-bottomed containers and said platform preventing rolling movement of said containers, means connecting said containers individually and said cabinet to limit the extent of outward tilting movement of the upper ends of said containers, flexible conduit means connecting said containers and terminating on the upper portion of said dividing means, and rigid conduit means adapted for connection with said flexible conduit means with said dispensing valve.

9. In a beverage dispensing cabinet assembly the combination of a cabinet, beverage refrigerating means in said cabinet comprising a tank adapted to retain a body of liquid cooling medium, a refrigerating coil immersed in said medium, a carbonator device of the type comprising a tank and means to inject a high velocity stream of water into said tank to foamesce the body of liquid retained therein, said tank being immersed in said body of cooling medium, said means to inject comprising a cooling coil for fresh water immersed in said medium, a high pressure pump adapted to force fresh water through said coil and into said tank, a fresh water dispensing line communicating with said means to inject between said tank and said coil, high pressure regulating means in said dispensing line, said pump being of the positive displacement type and having a low pressure by-pass check valve permitting flow of chilled fresh water from the inlet to the outlet side of said pump under low pressure and through said dispensing line independently of the operation thereof.

10. In a beverage dispensing cabinet assembly the combination of a cabinet having side walls and a top framework including supporting portions at the top of said side walls, a beverage dispensing valve, a mounting arm for supporting said valve extending upwardly from said top framework, a rectangular opening in said top framework positioned adjacent said arm and said valve, grating means positioned in said opening, drainage means connected with said opening whereby drippings from said valve are disposed, a vertical dividing wall in said cabinet dividing the same into front and rear sections, carbonating and cooling means supported and contained in said rear section, conduit means joining said means

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with said valve, rigid conduit means connecting said syrup cooling means and terminated in the upper portion of said vertical dividing wall, a platform in said front section, a refillable flat-bottomed cylindrical container for retaining a supply of syrup, said platform being of less width than said flat-bottomed cylindrical container, a raised retaining lip positioned forwardly of said platform thereby defining a recess, said recess being adapted to receive the forward edge of said container upon outward tilting movement thereof whereby said flat-bottomed container forms a straight edge contact with said platform, retaining members connecting the upper portion of said flat-bottomed container with said cabinet to limit the extent of outward movement of the upper portions of said flat-bottomed container with respect to said cabinet, and flexible conduit members connecting said upper portion of said container terminating in the upper portion of said vertical dividing wall whereby said flexible conduit means and said rigid conduit means may be conveniently joined.

11. Apparatus according to claim 10 further characterized by a pair of front and back cover members for said cabinet, an elongated strip secured to the supporting section at said back side wall, said strip having an offset portion defining with said supporting portions at the top of said side walls a slot rearwardly of said cabinet assembly, said back cover member having an in-turned projecting portion adapted to engage said slot whereby upon horizontal inserting movement said back cover is secured to said cabinet, and said back cover comprising substantially the only top covering for the back portion of said cabinet whereby upon removal thereof said rear section is exposed.

12. Apparatus according to claim 11 further characterized by said front cover having an inturned projecting portion, and said cabinet having means at the front edge thereof defining a slot for receiving said last mentioned projecting portion in interlocking arrangement.

13. In a beverage dispensing cabinet assembly the combination of a cabinet having side walls and a top framework including supporting portions at the top of said side walls, a vertical dividing wall in said cabinet dividing the same into front and rear sections, means comprising an insulated liquid retaining tank separating said rear section into upper and lower portions and extending into said upper portion, motor compressor means located in said lower portion, said insulated tank adapted for the reception of liquid cooling medium, said motor-compressor means connected to a condensing coil, said coil being immersed in said liquid cooling medium, a plurality of auxiliary syrup-containing tanks immersed in said liquid cooling medium, a carbonator device of the type comprising a tank and means to inject a high velocity stream of water into said tank to foamesce the body of liquid retained therein, said means to inject comprising a cooling coil for fresh water immersed in said cooling medium whereby said water coil completely surrounds said carbonating tank and said auxiliary syrup-retaining tanks, a high pressure pumping means adapted to force fresh water through said coil, said pumping means comprising a high pressure pump, a motor associated therewith, and control means for periodically energizing said pump, said pumping means being positioned in the upper portion of said rear section above and in spaced relation with said insulated tank, a beverage dispensing valve, conduit means joined with said valve and communicating with said carbonator and said auxiliary syrup-containing tanks, and said top framework having a removable portion whereby to expose said pumping means for inspection and maintenance.

14. Apparatus according to claim 13 further characterized by means for dispensing fresh chilled water, said dispensing means including a pressure regulating device, said carbonating means including a check valve adapted to admit water to said tank only under high pressure,

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and a second check valve adapted to permit the flow of fresh chilled water under low pressure from the inlet to the outlet thereof.

15. Apparatus according to claim 13 further characterized by a mounting arm for said beverage dispensing valve extending upwardly from said top framework, a rectangular opening in said top framework positioned adjacent said valve and said arm, grating positioned in said opening, and drainage means connected with said opening whereby drippings from said valve are disposed.

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