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(12) # EUROPEAN PATENT SPECIFICATION

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Description

The present invention relates to a liquid dispensing device according to the preamble of claim 1, mainly applicable for the dispensing of carbonated soft drinks, e.g. for homes, offices, restaurants, bars and the like.

The liquid dispensing device of this kind is known from GB-A-2,146,705. This prior art device provides two pressure vessels for two containers, that is a propper pressure vessel is provided for each container. The containers are formed by specially designed plastic bags which are arranged within the pressure vessels so as to have there outlets at the respective bottom side.

This prior art device suffers from several disadvantages: The use of specially designed deformable containers makes the dispensing device economically attractive only for locations with major beverage consumption. Furthermore the handling of the prior art device is difficult since the filed plastic bags have to be adapted to dispensing mechanism while they are held with their outlets at the respective bottom side. Finally providing of one vessel per container results in a complicated and expensive over all structure.

Furthermore there are commercially available carbonated beverages dispensers which necessarily require the use of a CO2 pressurized reservoir, in the form of a pressurized vessel, which is used either to originally prepare the beverage by admixing syrups, water and the gas -- or, in other installations, to keep the dissolved gas concentration up to the desired level.

Such installations involve considerable logistic problems as well as complexity of construction; furthermore, the use of pressurized gas vessels and the need to introduce additional quantities of gas into the liquid, often cause serious problems of foaming during the dispensing of the beverage into cups; the problem of the contents of a single bottle losing its effervescent characteristic by piecemeal consumption remains as yet unsolved.

It is an object of the present invention to provide a liquid dispensing device which has a compact structure and which is suited to dispense carbonated liquids without the occurence of foaming of the beverage. Furthermore the device itself shall be inexpensive and its handling shall be easy.

This object is solved by providing the features as setforth in the characterizing portion of claim 1. The dispensing of the liquid from the said plastic bottles is effected either intermediate an inflatable cushion provided within the pressure vessel, or directly by pneumatic or hydrostatic pressure of air or liquid, respectively, maintained within said pressure vessel.

The use of ordinary family size carbonated soft drink plastic bottles makes the handling of the liquid dispensing device easy and makes it particularly suitable for use in privat homes. The handling is furtherly made easier in particular for unskilled persons in that the bottles are placed in a normal upright position. Placing at least two bottles in a single vessel reduces the constructional effort and the costs of the device. Even if the content of an ordinary family size bottle is not cusumed in one go, the beverage does not become flat and unappetising since the CO2 or other gas mixture concentration dissolved therein is kept at a constant level. The pressure vessel accommodates bottles storing different makes or brands of liquid, each selectively dispensed by its respective discharging valve.

These and other features of the invention will become more readily understood in the light of the ensuing description of a few preferred embodiments of the invention given by way of example only, with reference to the accompanying drawings, wherein

Fig. 1 is a schematic, longitudinal cross-sectional view of a device featuring the principles of the present invention according to one embodiment thereof employing an inflatable air cushion;

Fig. 2 is a section taken along line II-II of Fig. 1;

Fig. 3 is a diagram of the pressure system of the device of Fig. 1;

Fig. 4 is a diagram of the electrical system of the device of Fig. 1;

Fig. 5 is a diagram of the refrigerating system of the device of Fig. 1;

Fig. 6 is a schematic, cross-sectional view of a pressure vessel containing a plurality of family-size, soft-drink bottles;

Fig. 7 is a section taken along line VIII-VIII of Fig. 6;

Fig. 8 is a section taken along line IX-IX of Fig. 6; and

Fig. 9 illustrates a produceable, self-contained dispenser device accommodating bottles of three different tastes.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The dispensing device, generally denoted 10 in Fig. 1 comprises a base housing portion denoted 12 and a removable head or top housing portion 14, mounted onto and sealed against the base portion 12, e.g. by clasps 16 (only one being shown).

A cylindrical, open top jacket 18 is provided within the base 12 sized to accommodate an ordinary, family size plastic bottle 20 with its screw threaded neck portion 20a received within a female screw threaded depression 22 formed in the otherwise solid structure of the head 14.

Further comprised in the head 14 is a passage 24 leading from the depression 22 (i.e. communicating with the interior of the bottle 20) to a manipulatable

dispensing valve or tap denoted 26, of any suitable type.

Within the cylindrical jacket 18, a crescent-shaped, elastic, inflatable air cushion or balloon 30 is enclosed. The cushion 30, preferably of rubber, is generally elongated and of a height substantially equal to the height of the cylindrical body portion of the bottle 20.

As further schematically shown in Fig. 1, the air cushion 30 is connected to a compressor unit 40, driven by an electric motor 50; and there is further provided a refrigeration system generally denoted 60, incorporating a cooler spiral pipe 62 surrounding the jacket 18. Preferred design details of the pneumatic, electrical and cooling systems will be given below with reference to Figs. 3, 4 and 5, respectively.

The major characteristic feature of the invention will now be readily understood, namely, that after loading the device 10 with the bottle 20, and upon inflating the cushion 30 by air pressure charged thereinto by the compressor 40, and opening the valve 26, the bottle 20 will become crimped due to its readily deformable thin plastic wall, as shown in broken lines in Figs. 1 and 2. The deformation pressure, controlled by pressostat 51 (see Fig. 4), is necessarily higher than the CO2 vapour pressure prevailing within the bottle 20.

It is thus made clear that dispensing the contents of the bottle 20, via the passage 24 by opening the valve 26, does not involve a change of the pressure within the bottle 20 or along the passage 24; this feature is most important, particularly in the case of easily foamable beverages such as Diet Coca Cola (TM) and beer, to prevent the frothing up of the beverage, as described in the preamble hereto.

As can be readily understood, the beverage can thus be intermittently consumed, without any deterioration of its quality as far as its dissolved CO2 concentration is concerned, and is supplied cool by the operation of the refrigeration system 60.

Once exhausted, exchanging of the bottle is easily performed by removing the head 14 (after deflating the air cushion 30, and releasing the clasps 16), unthreading the collapsed, flattened bottle, opening a new bottle and threading its head into the depression 22, and reassembling the unit.

In Fig. 3, a preferred embodiment of the pneumatic system is diagramatically represented. Thus, the rubber air cushion 30 is connected to the compressor 40 intermediate line 41. A selector valve 42 is provided, operable from outside the housing 12, for selectively admitting/relieving the pressure into/from the cushion 30 via passage ways 42a, 42b, respectively. Further provided are manometer 43, pressure accumulator 44, safety relief valve 45, and pressure regulating switch 51 - all according to well known design considerations and practice in equivalent systems and therefore need not be described in more detail.

Fig. 4 diagramatically illustrates the electrical system of the device of Fig. 1, comprising the compressor motor 50, the pressostat 51, and the refrigerator 60, connected by plug 53 to a power supply. Optionally, if the dispensing device 10 is designed to be self-contained and portable, for outdoor use at picnics or in the automobile, a chargeable battery 52 may be added.

Fig. 5 diagramatically shows the components of the refrigerating system 60, which comprises besides the compressor 63 and the cooling spiral 62, condenser 64, expansion valve 65 and refrigerant gas reservoir 66.

It should be noted that rather than pneumatically compacting the container 20, i.e. by inflating the air cushion 30, the device may be hydraulically operated in an analagous manner by filling the housing base portion 12 with water and applying air pressure above the water level. This concept is further developed in the embodiments of Figs. 6-8.

In Figs. 6 - 8 a further developed embodiment of the device is illustrated, designed for use with ordinary plastic bottled, soft drinks. There is provided a pressure vessel 90 with an openable lid 92, which may be sealed against the inner side of the top opening of the vessel 90 by screw tightened closing devices designated 94, of a known design. The vessel 90 contains three pairs of family size soft drinks bottles, denoted A1 and A2, B1 and B2, C1 and C2, connected to each other by brackets 96, 98, 100. The brackets are provided with female screw threaded recesses configured to receive the mouths of the bottles, thereby establishing communication therebetween, as clearly shown with respect to the bottles A1 and A2 and the bracket 96. The brackets are connected to their respective dispensing taps, namely bracket 96, via quick coupling 97 and line 102 to tap 108, and so forth.

The vessel 90 is filled with water, and charged with pressurized air by a compressor unit 114, as schematically shown. Under the constantly maintained hydrostatic pressure of the water, each one of the bottles tends to become squeezed, such that its contents can be discharged through its respective valves 108 - 112 when opened. In this manner, a plurality of soft drinks of different tastes can be dispensed by one and the same device, a readily achieved overall appearance and structure of which being exemplified in Fig. 9.

Again, the main advantages of the invention as hereinbefore detailed are plainly achieved. No external CO2 source is required to maintain the carbonated beverage under pressure; complete exhaustion of the bottles is ensured; and cooling of the drinks can be readily included in the manner analagous to that exemplified in the embodiment of Fig. 1.

Exchanging of bottles once emptied involves the relief of the pressure from the vessel 90, disconnect-

ing the coupling, and retrieving the used, compacted bottles with their common bracket for replacement by a pair of fresh, full bottles.

Thus achieved are effective, simple and low-cost method and device particularly for dispensing carbonated soft drinks, in the form of a neat unit that can be stored for use in private houses, offices and commercial places, rendering redundant the heretofore regarded indispensible use of pressurized CO2 vessels and entailed complicated installation and logistics.

Furthermore, the introduction of these devices into the market will boost the sale of the family size bottles, a goal long strived for by the soft drinks producers.

Those skilled in the art will readily appreciate that many variations, modifications and changes may be applied to the invention as herein exemplified without departing from its scope as defined in and by the appended claims.

Claims

1. A liquid dispensing device, particularly for carbonated beverages, comprising a pressure vessel (18, 70, 90) with a removable cover (14, 72, 92), two or more liquid containers (20, 74) having a deformable wall and an opening (20a, 74a), a dispensing valve (26, 108, 110, 112) in communication with the opening, and means for introducing pressurized fluid into the vessel (18, 70, 90), so that when the valve (26, 108, 110, 112) is opened the liquid is expelled by squeezing the wall of the container (20, 74), and discharged through the valve (26, 108, 110, 112), characterized in that the containers (20) are ordinary, family size, carbonated soft drink plastic bottles having a screw threaded neck portion (20a), placed in a normal, upright position by groups of two or more bottles (20) being placed within said vessel, each of the said groups of bottles (20) containing a different tasting soft drink and connected in parallel via a common adaptor member (96, 98, 100) by means of said screw threaded neck portion (20a) being screwed in a complementary female screw threaded depression (22) formed in said adaptor member (96, 98, 100) to a respective dispensing valve (108, 110, 112).

2. A device as claimed in claim 1 further comprising a refrigerating system (60) for cooling the liquid.

3. A device (14) as claimed in claim 2 wherein the refrigerating system (60) comprises a cooler pipe (62) spiraling around the container(s).

4. A device as claimed in claim 1 wherein the pressurized fluid is introduced into an elastic, inflatable cushion (30).

Patentansprüche

1. Vorrichtung zur Ausgabe von Flüssigkeiten, insbesondere für kohlensäurehaltige Getränke, umfassend einen Druckbehälter (18, 70, 90) mit einem abnehmbaren Deckel (14, 72, 92), zwei oder mehr Flüssigkeitsgefäße (20, 74) mit einer verformbaren Wand und einer Öffnung (20a, 74a), ein Ausgabeventil (26, 108, 110, 112) in Verbindung mit der Öffnung, und eine Einrichtung für die Zufuhr eines unter Druck stehenden Fluids in den Behälter (18, 70, 90), so daß, wenn das Ventil (26, 108, 110, 112) geöffnet wird, die Flüssigkeit durch Zusammendrücken der wand des Gefäßes (20, 74) herausgetrieben und durch das Ventil (26, 108, 110, 112) herausgelassen wird,
dadurch gekennzeichnet,
daß die Gefäße (20) handelsübliche Plastikflaschen in Familiengröße für kohlensäurehaltige Getränke sind, die einen mit einem Außen-Schraubgewinde versehenen Hals (20a) aufweisen und in normaler, aufrechter Stellung zu Gruppen von jeweils zwei oder mehr Flaschen (20) in dem Behälter angeordnet sind, wobei jede der genannten Gruppen von Flaschen (20) ein Getränk einer unterschiedlichen Geschmacksrichtung enthält und parallel zueinander über einen gemeinsamen Adapter (96, 98, 100) mit einem entsprechenden Auslaßventil (108, 110, 112) verbunden ist, wobei der Hals mit dem Außen-Schraubgewinde in eine in dem Adapter (96, 98, 100) ausgebildete Vertiefung (22) mit einem komplementären Schraub-Innengewinde eingeschraubt wird.

2. Vorrichtung gemäß Anspruch 1,
dadurch gekennzeichnet,
daß sie ein Kühlsystem (60) zur Kühlung der Flüssigkeit umfaßt.

3. Vorrichtung (14) gemäß Anspruch 2,
dadurch gekennzeichnet,
ündaß das Kühlsystem (60) eine Kühlschlange (62) umfaßt, welche um die Gefäße gewunden ist.

4. Vorrichtung gemäß Anspruch 1,
dadurch gekennzeichnet,
daß das druckbeaufschlagte Fluid in ein elastisches, aufblasbares Kissen (30) eingefüllt wird.

Revendications

1. Dispositif de distribution de liquides, en particulier de boissons gazeuses, comprenant un récipient soumis à pression (18, 70, 90) ayant un couvercle amovible (14, 72, 92), au moins deux réservoirs à liquide (20, 74) ayant une paroi déformable et une ouverture (20a, 74a), un robinet à soupape de distribution (26, 108, 110, 112) en communication avec l'ouverture, et des moyens pour introduire un fluide sous pression dans le récipient (18, 70, 90) de telle sorte que lorsque le robinet à soupape (26, 108, 110, 112) est ouvert, le liquide est éjecté du fait de la compression de la paroi du réservoir (20, 74), et déversé à travers le robinet à soupape (26, 108, 110, 112),
caractérisé en ce que
les réservoirs (20) sont des bouteilles de boissons gazeuses en plastique ordinaires, de grande taille, ayant un col muni d'un filet de vis (20a) placés en position normale verticale par groupes d'au moins deux bouteilles (20) placées à l'intérieur du dit recipient, chacun des dit groupes de bouteilles (20) contenant une boisson d'un goût différent et connecté en parallèle par l'intermédiaire d'un adapteur commun (96, 98, 100) à un robinet à soupape de distribution (108, 110, 112) correspondant, le dit col (20a) à filet de vis étant vissé à une cavité complémentaire à filet de vis femelle (22) formée dans le dit adapteur (96, 98, 100).

2. Dispositif selon la revendication 1 comprenant de plus un système de réfrigeration (60) pour rafraichir le liquide.

3. Dispositif (14) selon la revendication 2 selon laquelle le système de réfrigération (60) comprend un tuyau de refroidissement (62) placé en spirale autour du ou des réservoir(s).

4. Dispositif selon la revendication 1 selon laquelle le fluide sous pression est introduit dans un coussin élastique gonflable (30).

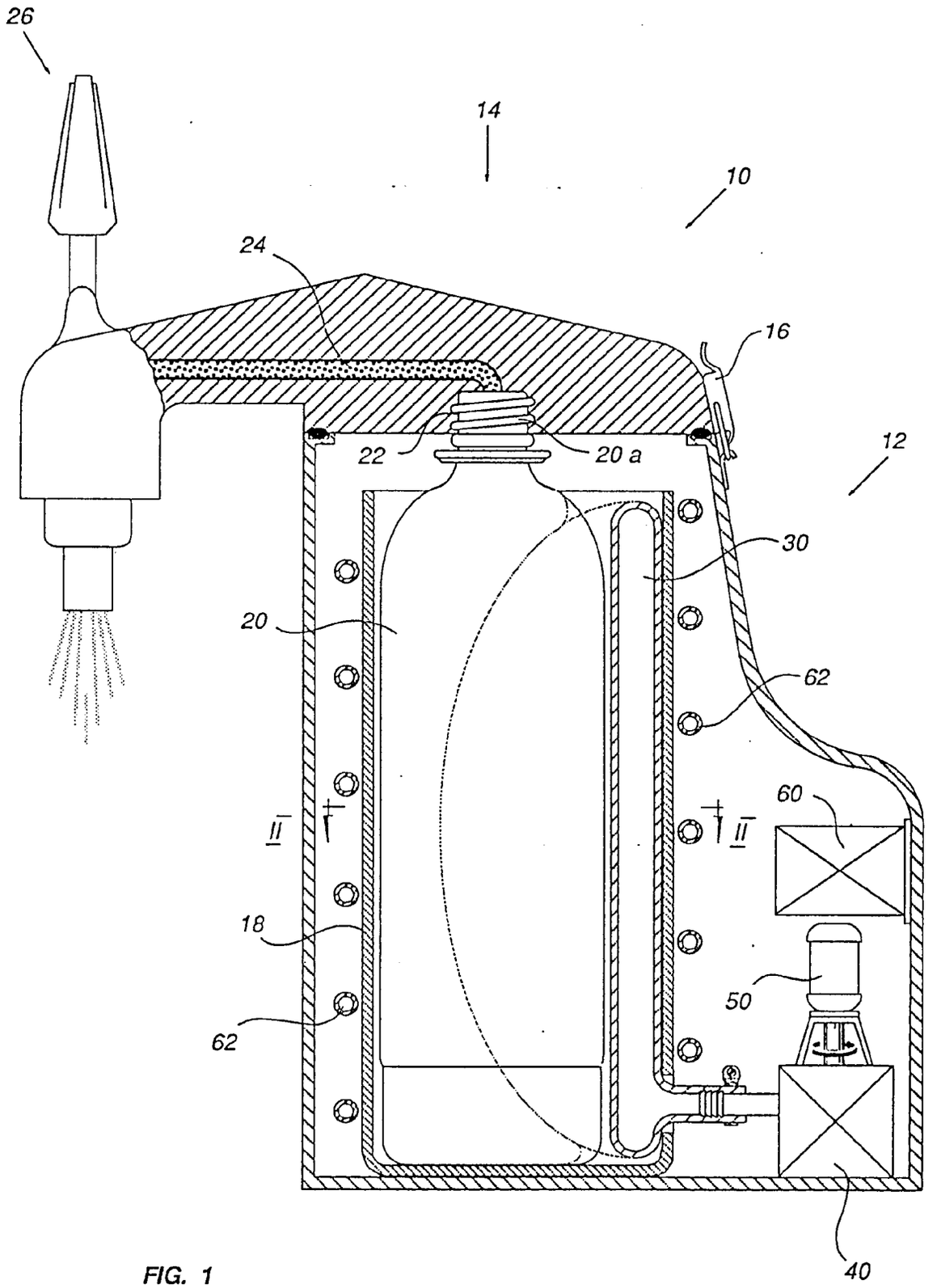

FIG. 1

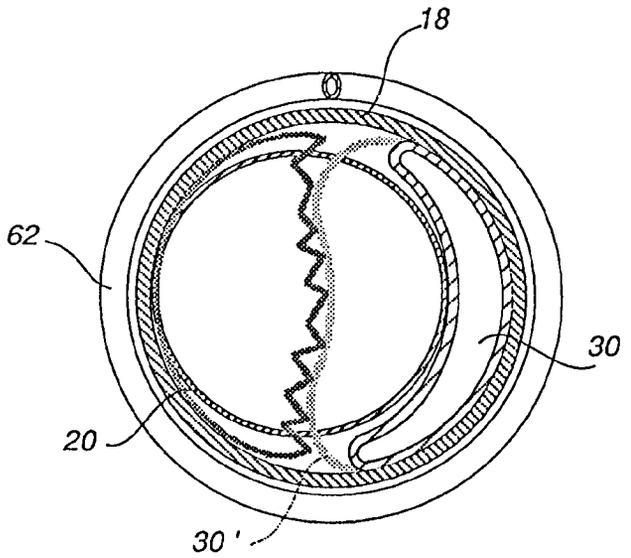

FIG. 2

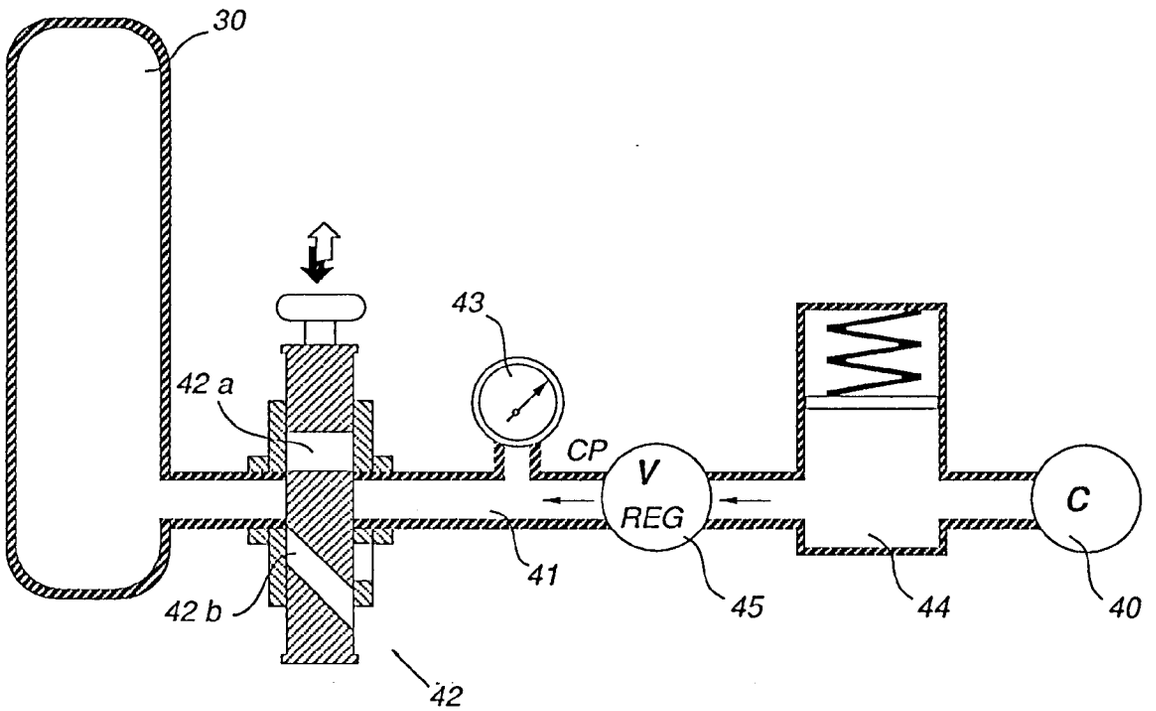

FIG. 3

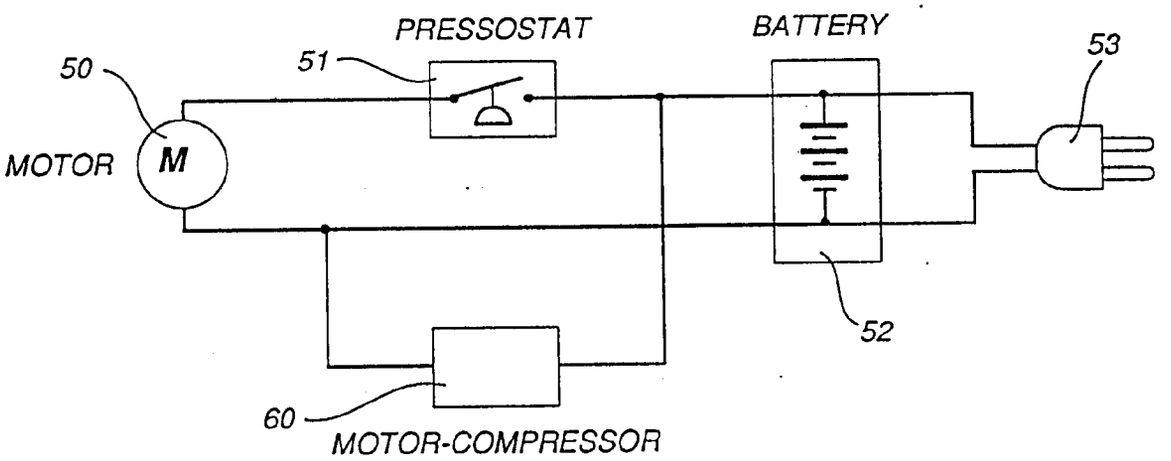
PRESSOSTAT
BATTERY
50
51
53
MOTOR
M
52
60
MOTOR-COMPRESSOR

FIG. 4

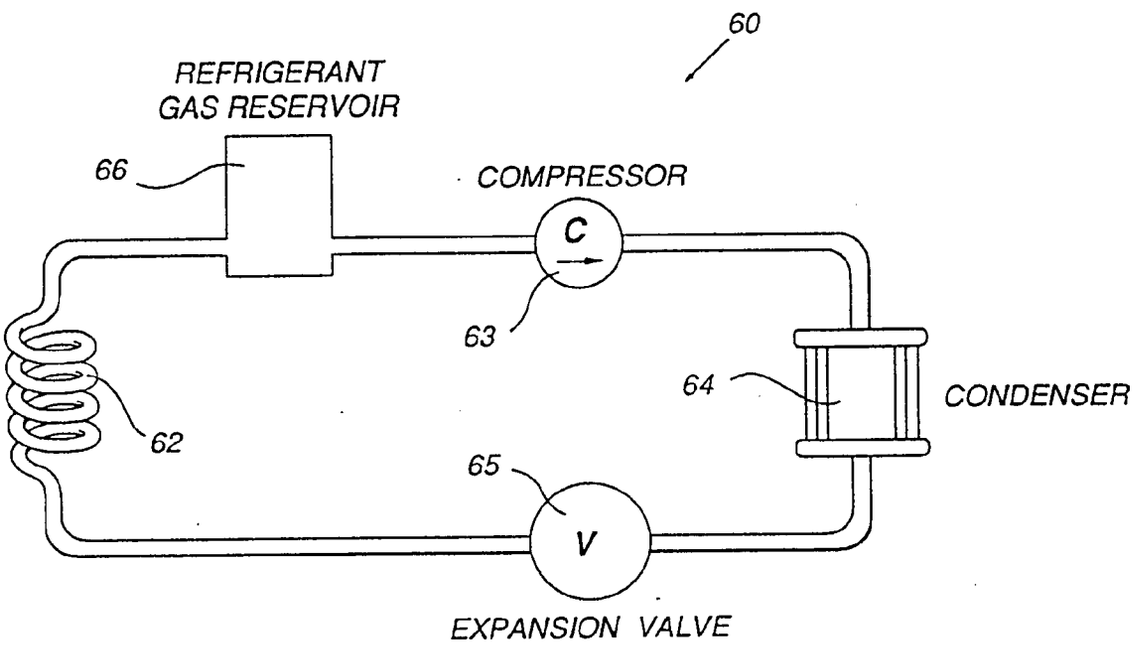
60
REFRIGERANT
GAS RESERVOIR
66
COMPRESSOR
C
63
64
CONDENSER
62
65
V
EXPANSION VALVE

FIG. 5

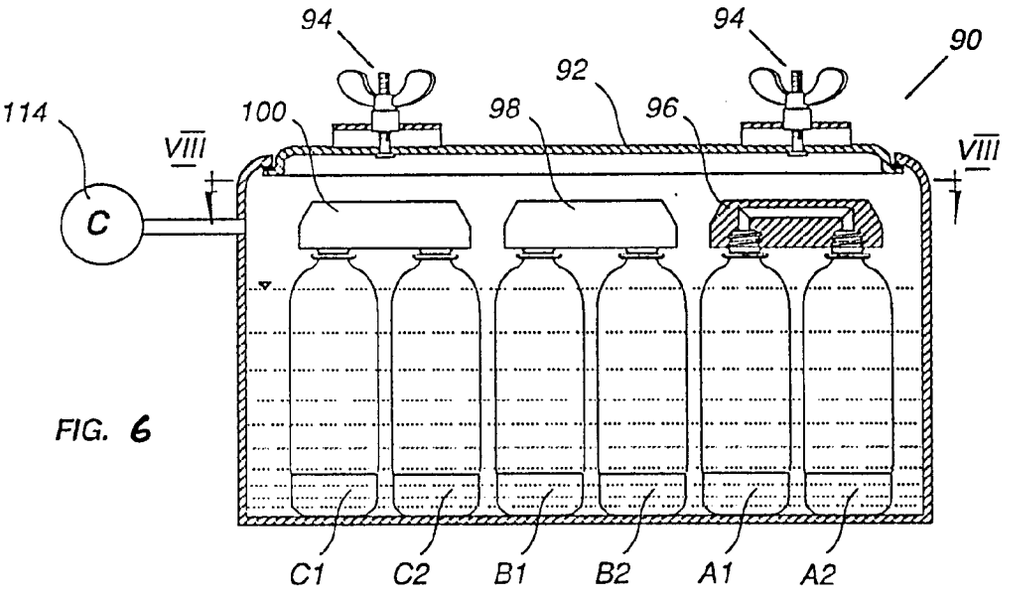

FIG. 6

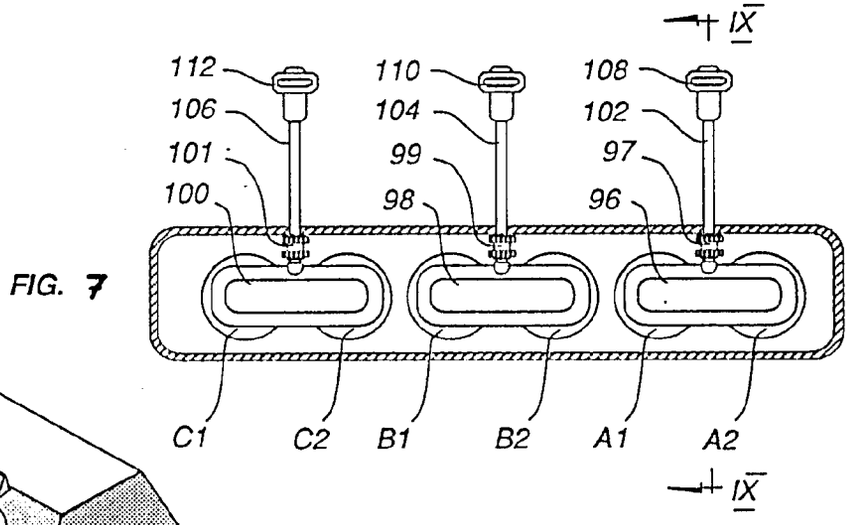

FIG. 7

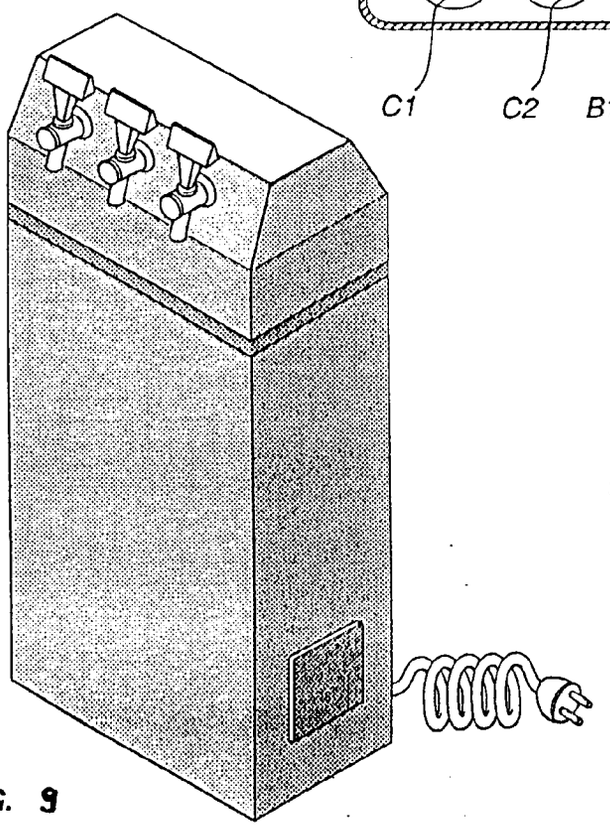

FIG. 9

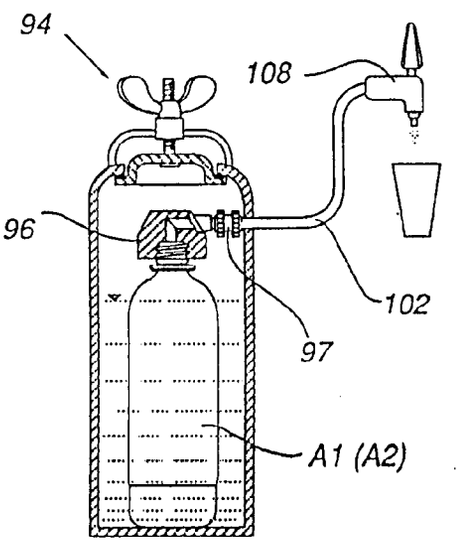

FIG. 8