

Sept. 16, 1969

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3,467,230

DISPENSING SYSTEM

Filed Nov. 19, 1964

3 Sheets-Sheet 1

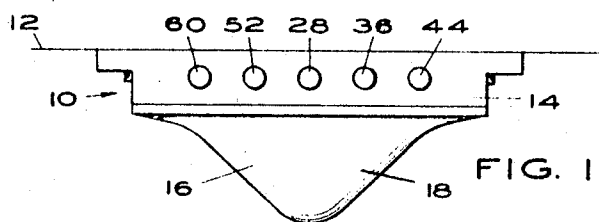


FIG. 1

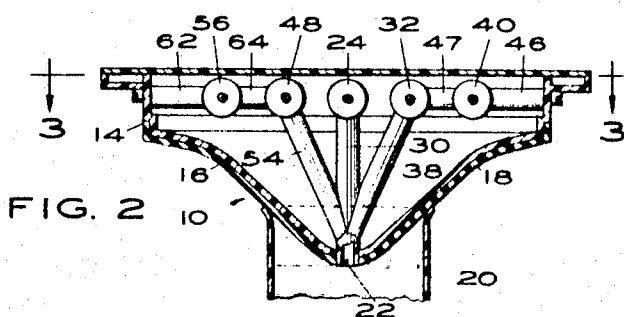


FIG. 2

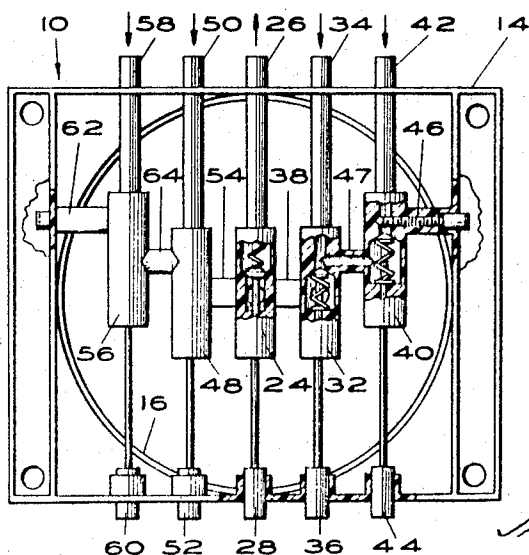


FIG. 3

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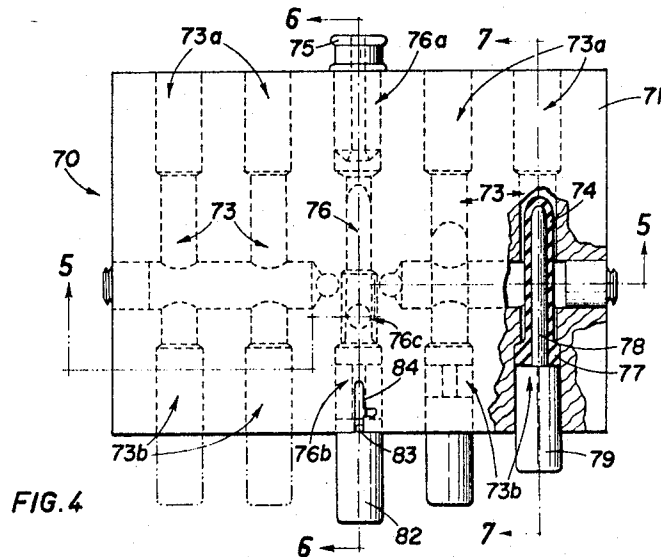


FIG. 4

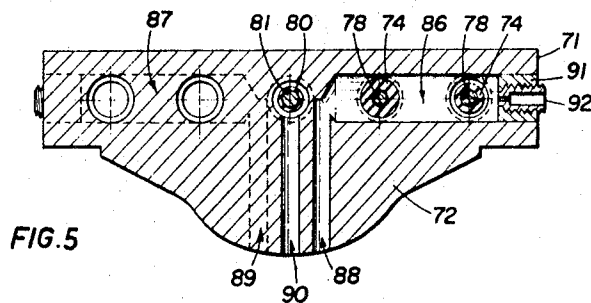


FIG. 5

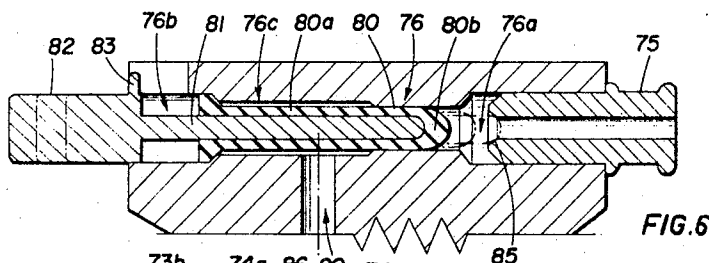


FIG. 6

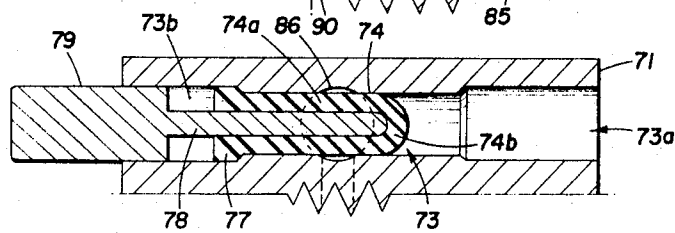


FIG. 7

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DISPENSING SYSTEM

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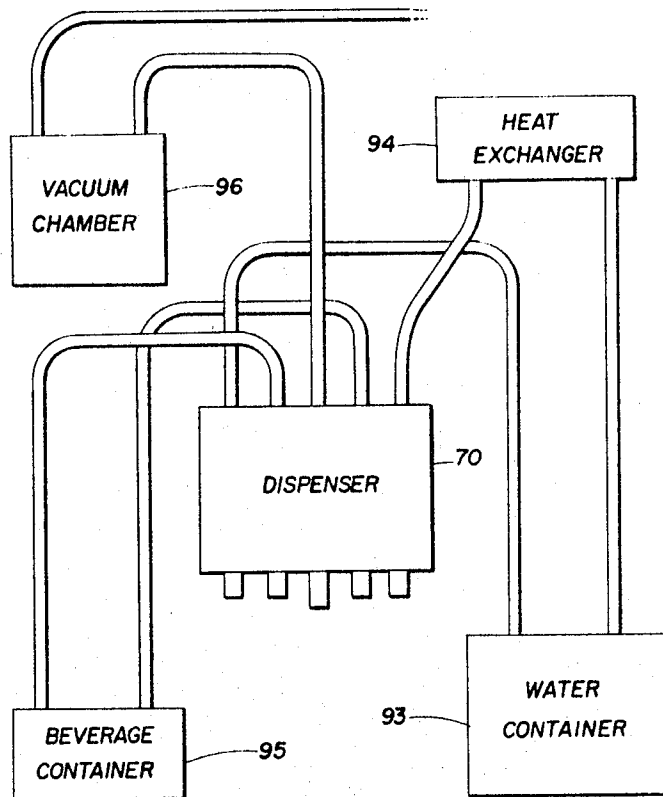


FIG. 8

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3,467,230

## DISPENSING SYSTEM

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Continuation-in-part of application Ser. No. 195,757, May 18, 1962. This application Nov. 19, 1964, Ser. No. 412,566

Int. Cl. B65b 31/00

U.S. Cl. 141—59

8 Claims

### ABSTRACT OF THE DISCLOSURE

A dispensing device having a rounded head adapted to be sealingly covered by a receptacle. A plurality of parallel valved passageways terminate in the head, at least two of which are adapted to selectively supply a beverage to the receptacle and one of which supplies a vacuum to the receptacle. Separate restricted vents are provided to communicate with the beverage passageways so as to prevent excessive vacuum in the beverage receiving receptacle.

This application is a continuation-in-part of application Ser. No. 195,757, filed May 18, 1962, now Patent No. 3,168,914, issued Feb. 9, 1965.

The present invention generally relates to an apparatus for providing hot and cold beverages in motor vehicles and more particularly to such an apparatus which employs the vacuum induced in the intake manifold of the vehicle to dispense the beverages.

Such prior devices as have been proposed by others have generally been unsatisfactory in that the liquid beverage leaked into the car or vehicle and dispensing was awkward, requiring the use of both hands. Many other disadvantages were also experienced.

The primary object of the present invention is to provide a beverage dispensing bar for installation under the dashboard of an automobile for easy access thereto.

Another object of the present invention is to provide an apparatus for dispensing hot or cold water together with flavor additives or the like, the materials being selectively dispensed by control valves.

A very important object of this invention is to provide a beverage dispenser for vehicles equipped with internal combustion engines in which the vacuum in the intake manifold is used to discharge the beverage and the glass or cup serves as a connecting chamber to communicate with the supply of beverage whereby the beverage can only be dispensed when the glass or cup is in proper orientation for receiving the beverage.

Yet another object of the present invention is to provide a beverage dispenser for automobiles which is simple in construction, easy to install, easy to operate, tamper-proof, adapted to dispense various liquids and relatively inexpensive to manufacture.

More particularly, it is an objective of this invention to provide apparatus of the type described incorporating means for aerating the beverage dispensed.

A further objective is the provision of improved servicing and maintenance for cleaning and replacement of parts.

These together with other objects and advantages which

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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 front elevation of the beverage dispenser of the present invention;

FIGURE 2 is a longitudinal section view of the device;

FIGURE 3 is a top plan sectional view taken substantially upon a plane passing along section line 3—3 of FIGURE 2 illustrating the orientation of the control valves;

FIGURE 4 is a top plan view of a further embodiment of the invention partially cut away to reveal the interior;

FIGURE 5 is a front elevation of the embodiment of FIGURE 4;

FIGURES 6 and 7 are enlarged side elevations of portions of the embodiment of FIGURE 4; and

FIGURE 8 is a schematic diagram showing the complete installation.

Referring now specifically to the drawings, numeral 10 generally designates the beverage dispenser of the present invention which is preferably mounted under the dashboard 12 of an automobile although it may be mounted in other places, if desired, or in any other vehicle, for example, having vacuum facilities available such as a military vehicle, boat, or even aircraft.

The dispenser 10 includes a hollow housing or casing 14 having a depending semi-spherical or rounded lower portion 16 which is optionally provided with an external covering of rubber 18 or similar resilient material for sealing engagement with the mouth end of a drinking glass, cup or container 20 whereby the glass 20 will be effectively sealed to portion 16 in encircling relation to a discharge opening 22 therein.

The housing 14 has a central control valve 24 communicated with the intake manifold of an internal combustion engine (not shown) by a tube or pipe 26. A control knob or handle 28 for valve 24 projects through the front of the housing for access by an operator. Also, a depending tube 30 is connected with the valve 24 and communicated with the opening 22.

Alongside valve 24 is a cold water valve 32 having tube 34 communicated with a cold water source and an operating knob or handle 36. A depending tube 38 communicates with the tube 30 or discharge opening 22. A ginger ale valve 40 is disposed alongside of valve 32 and a tube 42 extends to a ginger ale or other extract source. A control knob 44 is provided for valve 40 and a needle type regulating valve 46 is provided in tube 42 on the inlet side of valve 40 to regulate the quantity of ginger ale extract discharged into the tube 38 through tube 47 thereby providing a beverage of the desired portions of water and ginger ale.

Alongside the other side of valve 24 is a hot water valve 48 having a tube 50 communicating with a hot water supply and a control knob 52 for control thereof. The valve 48 has a depending tube 54 communicated with the discharge opening 22 and tube 30. A coffee valve 56 is provided alongside valve 48 and has a tube 58 communicated with a coffee or other extract supply source. The valve 56 has a control knob 60 and a needle type regulating valve 62 on the intake side of the valve

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56 thereby regulating the quantity of coffee extract mixed with the hot water through tube 64.

Each control knob is connected to its respective valve by any suitable link or rod and the entire structure may be of plastic, metal or combinations thereof.

In using this invention, the glass controls the operation of the device since the glass closes the opening 22 thereby inducing a vacuum in tubes 38 and 54 and in the short tubes connecting valves 40 and 56 with valves 32 and 48 thus making it impossible to overflow the glass. The valves may be conventional push-pull type and the shape and size of the housing may vary and also the arrangement of the tubing.

According to a further embodiment of this invention provision may be made for greater simplicity of working parts improving the servicing and cleaning of the apparatus and also for providing for aeration of the beverage being dispensed.

Referring therefore to FIGURES 4, 5, 6 and 7 it will be noted that this further embodiment of the invention comprises a dispenser 70 having a valve casing 71 and a depending rounded cup engaging portion or dispensing head 72 for sealably engaging the mouth of a plastic cup or container of glass or plastic or the like (not shown). Valve casing 71 is provided with a row of parallel drillings for valve passages 73 for reception of the elastically deformable rubber valve inserts 74 therein. Valve passageways 73 are provided with enlarged connection ends 73a for reception of junction fittings such as 75 therein, and at the opposite end thereof, enlarged button recesses 73b. A further central valve passageway 76 having an enlarged communication end 76a and an enlarged button recess 76b is provided parallel with valve passageways 73 for connection with the inlet manifold of an automobile or the like suction source. Passageway 76 is additionally provided with intermediate zone 76c of greater diameter than passageway 76 itself but of less diameter than button recess 76b. As stated above, each of valve passageways 73 is provided with a valve insert 74 which is preferably formed of a high grade latex rubber material compounded to meet the highest requirement of hygiene and formed with a flange 77 around one end thereof fitting within button recesses 73b and retaining insert 74 in position in passageway 73. Inserts 74 are of sleeve-like construction defining relatively thick resilient side and end walls 74a and 74b which, upon stretching, will contract across their section so as to reduce the overall exterior diameter and thus define a clearance or spacing between the insert 74 and passageway 73. Each of inserts 74 is provided with an operating rod 78 having a button 79 formed on the end thereof which is normally spaced some distance from flange 77 thereby defining a predetermined space or travel through which button 79 may be pushed to extend insert 74 before it is arrested by contact with flange 77. Passageway 76 is provided with a generally similar valve insert 80 formed of high grade latex rubber material, the overall diameter being, in this preferred embodiment, somewhat less than the overall diameter of inserts 74 and being somewhat longer than inserts 74. Insert 80 is provided with side walls 80a and end walls 80b and has an operating rod 81 formed with a push button 82 on the end thereof and any suitable intermediate positional locking device such as pin 83 may be provided for locking button 82 and operating rod 81 in an intermediate location, pin 83 riding in the T-shaped slot 84 formed in valve casing 71 for the purpose. In order to provide a further function for the valve insert 80, a valve seat 85 is formed on the inner end of junction member 75 located in communication end 76a for making sealing engagement with the end 80b of insert 80 when operating rod 81 is pushed inwardly to the full extent of its travel.

In order to communicate passageways 73 with a plastic cup or receptacle placed on the dispensing head 72 transverse passageways 86 and 87, of identical construction, are provided on each side of valve casing 71 in substan-

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tially the same plane as passageways 73 and extending from the respective side edges of valve casing 71 towards the centre thereof and terminating just short of valve passageway 76. Passageways 86 are of greater diameter than valve passageways 73, as shown in FIGURES 5 and 7 thus establishing communication between respective pairs of passageways 73 whether inserts 74 are extended or retracted. Communication with the lower end of dispensing head 72 is achieved through substantially vertical parallel drillings 88 and 89 communicating with inward ends of respective passageways 86 and 87. A third vertical drilling 90 communicates directly with intermediate zone 76c of valve passageway 76.

At the outer ends of transverse passageways 86 and 87 having air inlet means in the form of plugs 91 bonded or otherwise fastened in passageways 86 and 87 and having carefully metered inlet orifices 92 graduated to admit very limited quantities of air in response to suction developed in cup or receptacle placed upon dispensing head 72.

Referring now to the schematic diagram of FIGURE 8, this diagram illustrates the manner of connection of the dispenser, of either the embodiment of FIGURE 1 or of FIGURE 4 with the various other associated pieces of equipment on an automobile or other vehicle for the purpose of providing ability to dispense either hot or cold beverages of different kinds. Thus the dispenser which is indicated in FIGURE 8 as reference 70 which may also be the dispenser 10 is connected by suitable liquid conduits for pipes to the two outermost valves of dispenser 70, one of the connections being direct and the other of the connections passing through suitable heat exchanger means indicated generally as 94 whereby either hot or cold water may be dispensed from the dispenser.

The two intermediate valves are connected to a suitable beverage container indicated generally as 95 which may be provided with different compartments containing different beverages, the selection of which will be made by operation of the appropriate valve. The central valve is connected to a suitable vacuum chamber or accumulator indicated as 96 which is itself connected to the inlet manifold or other vacuum source.

The operation of the embodiment of FIGURES 1, 2 and 3 proceeds as follows. A suitable receptacle such as a plastic cup 20 is placed over dispensing head 16 substantially as shown in FIGURE 2 and button 28 is pushed inwardly thereby communicating a vacuum to the interior of cup 20 through passageway 30. Cup 20 is thus securely held in position on dispensing head 16 against accidental removal. The beverage is then selected by pressing either valve 40 or valve 56 momentarily to deliver a small quantity of the beverage essence into cup 20. The vacuum within cup 20 being applied up either passageway 38 or 54 and thence through either passageway 47 or 64 to the respective valve 40 or 56. The valve is then released and one or other of water valve 32 and 48 is then depressed depending upon whether a hot or cold beverage is being dispensed. This valve may be maintained depressed thus continually drawing water in container 20 by means of the vacuum which is communicated up either of conduits 38 or 54 to either valve 32 or 48 respectively. As soon as the receptacle is filled the valve can be released and the receptacle removed for consumption of the beverage. In order to regulate flow of beverage into either valve 40 or 56 the needle regulators 46 and 62 may be adjusted as desired.

The operation of the embodiment of FIGURES 4, 5, 6 and 7 proceeds as follows. A suitable cup or receptacle is applied over dispensing heads 72 and the central button 82 is depressed for approximately one-half of its travel after which it may be located clockwise to bring pin 83 into locking position in slot 84, thus maintaining a continuous suction through drilling 90 to the interior of the container. Such continuous suction will be applied through drillings 88 and 89 to transverse passageways 86 and 87 and will draw small quantities of air through

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orifices 92, such quantities of air being insufficient to bring the pressure in the container or cup up to atmospheric pressure and thus release the same, but being adequate to prevent accidental implosion of the cup which may otherwise occur where an unusually high vacuum is being applied. The beverage is then selected by pressing the appropriate button 79 momentarily which thereby extends valve insert 74 providing a clearance between itself and valve passageway 73. Such clearance thereby applies the vacuum existing in either transverse tube 86 or 87 to the beverage container 95 and a quantity of beverage will be drawn through valve passageway 73 into transverse passageways 86 or 87 and down drillings 88 or 89 and into the cup. Once a quantity of beverage has been dispensed the button 79 may be released and the water may then be added to the cup by pressing the appropriate button 79 to dispense either hot or cold water as desired. Pressure on the button 79 extends insert 74 thereby applying the vacuum either directly to the water container 93 or to the heat exchanger 94 thus delivering either cold or hot water. The flow of water will take place through the respective valve passageway 73 and into either transverse passageway 86 or 87 and down the vertical drilling 88 or 89 and into the cup. However, such passage of water through transverse passageways 86 or 87 will not prevent the passage of air through orifices 92 as described above and this will in fact continue and occur simultaneously with either passage of beverage or of water through transverse passageways 86 or 87. In fact, such beverage or water will become mixed with the air flowing therein and become partially aerated thereby somewhat in the manner of a carbonated beverage although not quite the same extent. Such aeration is particularly desirable in the case of cold beverages and in the case of hot beverages has been found to be highly palatable. As soon as the container is filled the button 79 may be released thereby permitting valve insert 74 to spring back to its original shape forcing button 79 outwardly and sealing the respective valve passageway 73 thus preventing further flow of water therethrough. However, a further limited flow of air will take place through orifices 92 and this produces the highly desirable result of drawing all residual quantities of beverage and/or water lying in transverse passageways 86 or 87 and vertical passageways 88 or 89 into the cup thereby avoiding undesirable dripping from dispenser head 72. In order to remove the filled cup from dispenser head 72 button 82 may be simply partially rotated and pressed into its fullest extent with the end 80b of insert 80 making sealing engagement with seat 85 thus cutting off the vacuum applied to valve passageway 76. The cup on dispensing head 72 may then simply be tilted sideways breaking the residual vacuum therein and the button 82 may then be released permitting insert 80 to recover its original shape and forcing button 82 outwardly and simultaneously sealing valve passageway 76.

Cleaning or servicing of the embodiment of FIGURES 4, 5, 6 and 7 may be carried by simply withdrawing button 79 and operating rods 77 and button 82 and operating rod 81 from their respective valve inserts 74 and 80 which then themselves be pried out from valve passageways 73 and 76 and may be washed and cleaned or replaced as desired. The use of valve inserts 74 and 80 permits complete sealing of all working parts of the apparatus in a simple and highly effective manner and avoids contact of any metal parts with the water and/or beverage essences which in some cases may be corrosive and thus prolongs the life of the apparatus and reduces the maintenance required.

The heat for the hot water may be provided by a suitable heat exchanger which may utilize the normally wasted heat in the exhaust products. A refrigerant system is provided for cold water and the various accessories may be positioned in the trunk or wherever desired. Various additional valves may be added if more beverages are desired. The foolproof construction of the invention

prevents children from obtaining liquid therefrom unless the glass is held in place. The vacuum will retain the glass in place as long as the engine is running and the vacuum valve.

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 I claim is:

1. Beverage dispenser for filling drinking receptacles in vehicles having a vacuum source and comprising:
  - a valve housing adapted to be mounted within said vehicle;
  - a dispensing head of rounded shape dependent from said housing; two spaced apart fluid discharge opening means and an air withdrawal opening means located between said fluid discharge means at the lower end of said head, adapted to be sealably covered by a single receptacle;
  - a group of at least three substantially parallel valve passageways of predetermined size formed side by side in said housing;
  - valve means fitting within said passageways;
  - two separate co-axial liquid communication passageways extending partially into said housing from either side thereof along an axis normal to said valve passageways and in substantially the same plane, connecting with respective outer valve passageways of said group but terminating short of and intermediate said valve passageway of said group, and having an interior diameter greater than that of said valve passageways whereby to permit liquid flow around valves in said valve passageways;
  - tube means for connecting said intermediate valve passageway to a vacuum source and said other valve passageways for selective supply of fluid beverage thereto;
  - an air withdrawal conduit extending through said housing and said dispensing head and communicating between said air withdrawal opening means and said intermediate valve passageway;
  - two liquid supply conduits extending through said housing and said dispensing head and communicating between respective said discharge openings and respective said communication passageways, and, separate restricted air inlet means on either side of said housing communicating with respective said communication passageways to permit free flow of fluid along said conduits and passageways.
2. Apparatus as claimed in claim 1, deformable valve inserts of elastic rubber material fitting snugly within said passageways and having one closed end, the other end being open and manually operable rod means within said inserts for stretching and contracting the same.
3. Apparatus as claimed in claim 1, wherein said air inlet means comprise plug members located in said respective communication passageways, and air passageways formed therein.
4. Apparatus as claimed in claim 1, including a water container connected to at least one of said valve passageways.
5. Apparatus as claimed in claim 1, including a water container connected to at least one of said valve passageways; and a heat exchanger connected to said water container and at least one of said valve passageways.
6. Apparatus as claimed in claim 1, including a liquid beverage container connected to at least one of said valve passageways.
7. Apparatus as claimed in claim 1, including a vacuum chamber connected to said first valve passageway, and means for connecting said chamber to the inlet manifold of an internal combustion engine.

8. Apparatus as claimed in claim 1, including a water container connected to at least one of said valve passageways; a heat exchanger connected to said water container and at least one of said valve passageways; a beverage container connected to at least one of said valve passageways; and a vacuum chamber connected to said first valve passageways.

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ALAN COHAN, Primary Examiner

U.S. Cl. X.R.

137—205, 606; 141—302; 222—129; 251—331