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R. T. CORNELIUS
LIQUID DISPENSING APPARATUS

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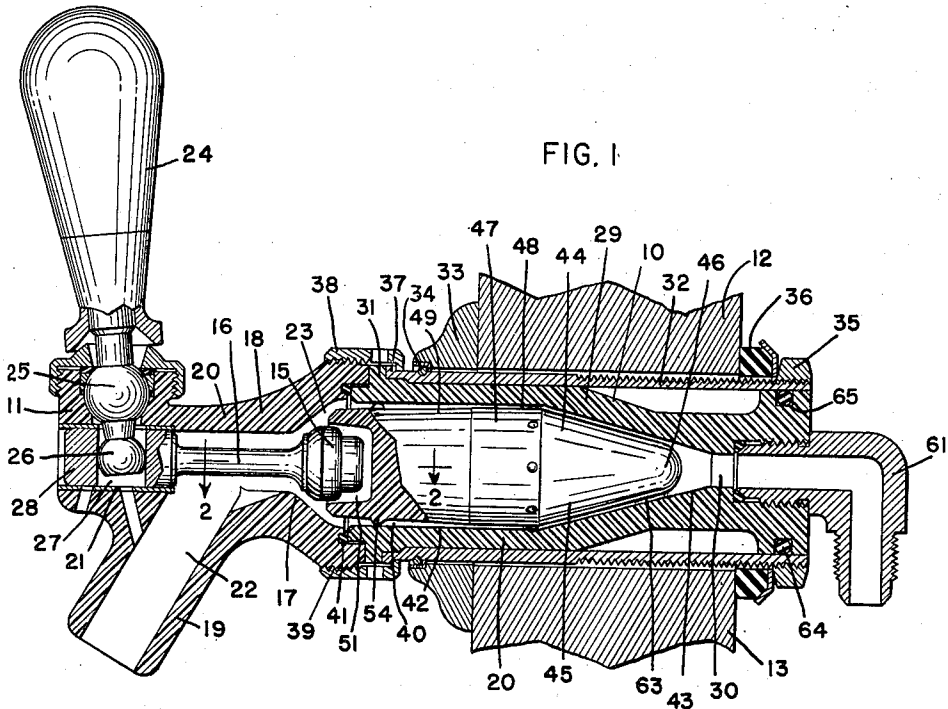


FIG. 1

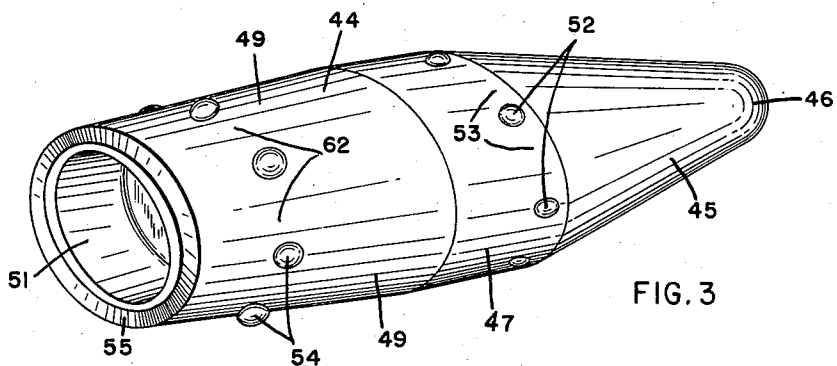


FIG. 3

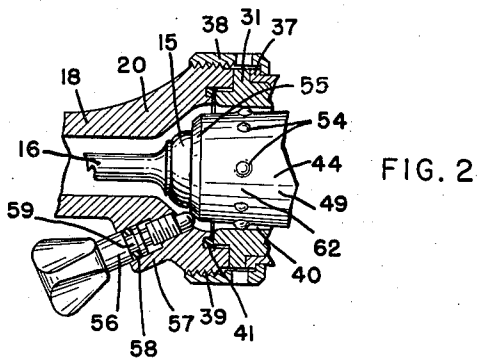


FIG. 2

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LIQUID DISPENSING APPARATUS

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5 Claims. (Cl. 251—122)

The herein disclosed invention relates to liquid dispensing apparatus and more particularly to devices for controlling the decarbonation in effervescent liquids when such liquids are dispensed under pressure.

Another object of the invention resides in providing a liquid dispensing apparatus which may be readily disassembled and reassembled for cleaning and repair.

A further object of the invention resides in providing a liquid dispensing apparatus utilizing a faucet and in which a minimum amount of liquid is contained between the seat of the faucet and the locality of refrigeration.

A still further object of the invention resides in providing a construction in which heat transfer from the exterior to the interior of the device is greatly retarded.

An object of the invention resides in providing the end of the core facing the faucet with a cavity for the reception of the head of the valve member of the faucet.

Another object of the invention resides in constructing the core, body of the decarbonation control device, and body of the faucet from a plastic material having low thermal conductivity.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawings:

Fig. 1 is an elevational-sectional view of a decarbonation control device mounted on the wall of a cooling cabinet, said device being coupled to a beverage dispensing faucet, said view illustrating an embodiment of the invention.

Fig. 2 is a fragmentary plan sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the core of the invention drawn to an enlarged scale.

The instant invention is shown incorporated in a decarbonation control device 10 which is attached to a liquid supply conduit, not illustrated, at its intake end and to a faucet 11 at its outlet end. The decarbonation control device 10 is mounted on the wall 12 of a cooling cabinet 13 or may be mounted on any other similar flat surface.

The invention may be used with a faucet of any kind. The faucet 11 is similar to that described in Letters Patent No. 2,270,932 and includes a body 18 which is formed with a horizontal neck 20 having a depending spout 19. A passageway 22 for the passage of the liquid through the faucet is formed within the body 18 and extends throughout the neck 20 and the spout 19. The passageway 22 at its inlet end is formed with an enlargement 23, said enlargement providing a shoulder 17 which serves as a valve seat. The body 18 is constructed from a plastic material having low thermal conductivity. One such material is methyl methacrylate. A valve plunger 16 is received within the passageway 22 and has a valve head 15 mounted on said valve plunger which is disposed within the enlargement 23. The plunger 16 has a cylindrical guide 28 mounted for reciprocating movement in

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a guideway 21 in said body and guides the valve head 15 for movement toward and from the seat 17. An operating handle 24 is pivotally mounted in the body 18 through a ball and socket joint 25 and has a lever 26, the end of which is received within a slot 27 formed in the guide 28. Movement of the handle 24 causes reciprocating movement of the plunger 16 and operation of the valve head 15 toward and from the valve seat 17 thus controlling the flow of liquid through the faucet.

The decarbonation control device 10 is formed with a cylindrical body 20 constructed of the same or a similar material as the body 18 of faucet 11. This body has at one end a flange 31. Said body is received within a tubular case 32 constructed of metal which extends through the wall 12 of the cooling cabinet. The case 32 passes through a collar 33 and is held in engagement therewith through a snap ring 34 carried by said case. The collar 33 engages the outer surface of the wall 12. The inner end of the case 32 is threaded to receive a nut 35 which is screwed upon the same and which engages a gasket 36 encircling the case 32 and bearing against the inner surface of the wall 12. The outer end of the case 32 is formed with a shoulder 37 which is engaged by a flanged nut 38 and which screws upon threads 39 formed on the body 18 of faucet 11. A gasket 41 acting between the body 18 of said faucet and the body 29 of the decarbonation control device 10 forms a fluid-tight connection therebetween. An O-ring 64 received in a groove 65 in the inner end of body 20 engages the bore of the tubular case 32 and prevents water from entering the space between said case and body. This ring also forms a slip-joint which permits of relative movement of said body and case due to unequal expansion thereof.

The body 29 of the decarbonation control device 10 is constructed at its outer end with a cylindrical bore 42. This bore merges into a frusto-conical bore 43, also formed in said body, and which tapers towards the innermost end of said body. The frusto-conical bore 43 is at its largest end of the same diameter as the cylindrical bore 42 and is concentric therewith. The smaller end of the bore 43 communicates with an inlet passageway 30 in said body.

Mounted within the bores of the body 29 is a core 44. This core is constructed of a plastic material of the same or an equivalent material as that of the body 18 of faucet 11 and the body 20 of the carbonation control device 10, and is cast in the desired form. The core 44 has a frusto-conical portion 45 which is of the same taper as the taper of the bore 43 and terminates in a rounded tip 46. The core 44 may be moved longitudinally to form an adjustable restricted passageway 63 which communicates with the passageway 30. Issuing from the frusto-conical portion 45 of core 44 is a cylindrical portion 47 which is of a diameter slightly less than the diameter of the bore 42 to leave an annular restricted passageway 48 therebetween of fixed cross-sectional area. The outer end of the core 44 has a frusto-conical portion 49 which is also disposed within the cylindrical bore 42. This portion forms another restricted passageway designated by the numeral 40, and the cross-sectional area of the same increases toward the discharge end of the decarbonation control device. A cavity 51 at the outer end of said decarbonation control device receives the valve head 15 of the faucet 11. By means of this construction, the surfaces of the passageways through the decarbonation control device 10 and the faucet 11 are stream-lined to prevent agitation of the liquid and a minimum amount of liquid retained within the control device. The cylindrical portion 47 is formed with a number of protuberances 52 which are in the shape of gibbosities and which project outwardly therefrom. These protuberances engage the inner surface of the bore 42 and maintain the core in spaced relation to

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the bores of the body 29 and guide said core for axial movement. The protuberances 52 are spaced circumferentially to divide the passageway 48 into branch passageways 53. On the frusto-conical portion 49 of the core are formed other protuberances 54 which are disposed about the periphery of the same near its outer end. These protuberances also engage the cylindrical bore 42 and divide the passageway 40 into branch passageways 62, and in conjunction with the protuberances 52 center the core within the bores 42 and 43 and maintain the annular passageways 63, 48 and 40 equally spaced from the bores of the body 29 throughout the circumferential extent thereof.

For adjusting the cross-sectional area of the adjustable restricted passageway 63 the construction shown in Fig. 3 is employed. The end of the frusto-conical portion 49 of the core 44 is formed with a beveled shoulder 55. A thumb screw 56 is screwed into a boss 57 on body 18 of faucet 11 and engages the said shoulder. This screw is frictionally held in adjusted position and sealed by means of an O-ring 58 mounted in a groove 59 in said screw.

The operation of the liquid dispensing apparatus is as follows: The liquid to be dispensed is connected through a suitable fitting 61 to the inner end of the body 29 and communicates with the passageway 30 in said body. This fitting in turn is connected through a plastic tube, not shown, to the container for the liquid to be dispensed. The position of the core 44, determined by the thumb screw 56, controls the degree of restriction offered by the passageway 63. In addition to this restriction, a further fixed restriction is afforded by the branch passageways 53 of the annular passageway 48 and the branch passageways 62 of the passageway 40. These restrictions control the amount of decarbonation in the liquid dispensed. The passageways 62 between the protuberances 54 increase in cross-sectional area towards the faucet 11 and prevent agitation of liquid flowing from the decarbonation control device.

The advantages of the invention are manifest. The liquid, in passing through the liquid dispensing apparatus, passes in a direct manner without sharp bends or turns. This reduces the tendency of foaming and maintains the desired amount of carbonation. The protuberances adequately guide the core for movement in the bores of the decarbonation control device body and maintain the core accurately centered within the same. These protuberances seem not to affect the flow of the liquid in its passage through the device. By means of the construction shown, the control device may be made considerably shorter than heretofore possible and with less residual liquid in the same. The device is much simpler in construction than devices heretofore used for the purpose and can be readily taken apart and cleaned. By the use of the plastic material in the core and bodies of the faucet and decarbonation control device, less heat is transferred to the residual liquid in the decarbonation control device and to the liquid passing through the faucet.

Changes in the specific form of the invention, as herein described, may be made within the scope of what is claimed without departing from the spirit of the invention.

Having described the invention, what is claimed as new and desired to be protected by Letters Patent is:

1. In a liquid dispensing apparatus comprising a body having a tapered bore, a core disposed in said body and having a tapered portion received in said bore and forming a restricted passageway therebetween, means for reciprocating said core within said bore, a detachable faucet having a passageway therethrough communicating with said bore, the combination of a sleeve constructed of metal and encircling said body, said body, core and faucet being constructed of plastic material, said body at the end thereof adjacent said faucet having a part engaging the end of the sleeve, clamping means engaging said sleeve and faucet and clamping said sleeve, body and faucet together, a slip joint between the other end of said sleeve and body and means mounted on said sleeve and engage-

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able with the wall of a cabinet for attaching the liquid dispensing device to the cabinet.

2. In a liquid dispensing apparatus comprising a body having a tapered bore, a core disposed in said body and having a tapered portion received in said bore and forming a restricted passageway therebetween, means for reciprocating said core within said bore, a detachable faucet having a passageway therethrough communicating with said bore, the combination of a sleeve constructed of metal and encircling said body, said body, core and faucet being constructed of plastic material, said body at the end thereof adjacent said faucet having an annular flange extending outwardly therefrom, the end of said sleeve engaging said flange on one side thereof and said faucet engaging said flange on the other side thereof, said sleeve having an annular shoulder disposed in proximity to said flange and facing away from said flange, said faucet having threads thereon at the portion thereof adjacent said flange, said flange, shoulder and threads being concentric, a shouldered nut engaging said shoulder and screwed on said threads for clamping said body, faucet and sleeve together, and means mounted on said sleeve and engageable with the wall of a cabinet for attaching the liquid dispensing device to the cabinet.

3. In a liquid dispensing apparatus comprising a body having a tapered bore, a core disposed in said body and having a tapered portion received in said bore and forming a restricted passageway therebetween, means for reciprocating said core within said bore, a faucet having a passageway therethrough coaxial with said bore and formed with a valve seat coaxial with respect to said passageway, an axially movable plunger disposed within said passageway, a valve head on the end of said plunger engageable with said valve seat, the combination of a metallic sleeve encircling said body, said body, core and faucet being all constructed of plastic material, clamping means for clamping said body, sleeve and faucet together, one end of said core extending in close proximity to said valve seat and being of greater diameter than said valve head, said end of the core having a cavity therein for the reception of said valve head and means mounted on said sleeve and engageable with the wall of a cabinet for attaching the liquid dispensing device to the cabinet.

4. In a liquid dispensing apparatus comprising a body having a tapered bore, a core disposed in said body and having a tapered portion received in said bore and forming a restricted passageway therebetween, means for reciprocating said core within said bore, a detachable faucet having a passageway therethrough communicating with said bore, the combination of a sleeve constructed of metal and encircling said body, said body, core and faucet being constructed of plastic material, said body at the end thereof adjacent said faucet having a flange, said faucet having a part engaging said flange on one side thereof, said sleeve having a part engaging said flange on the other side thereof, one of said parts having a shoulder facing away from said flange and the other of said parts having threads, said flange, shoulder and threads being concentric, a shouldered nut engaging said shoulder and screwed on said threads for clamping said body, faucet and sleeve together, and means mounted on said sleeve and engageable with the wall of a cabinet for attaching the liquid dispensing device to the cabinet.

5. In a liquid dispensing apparatus comprising a body having a tapered bore, a core disposed in said body and having a tapered portion received in said bore and forming a restricted passageway therebetween, means for reciprocating said core within said bore, a detachable faucet having a passageway therethrough communicating with said bore, the combination of a sleeve constructed of metal and encircling said body, said body, core and faucet being constructed of plastic material, said body at the end thereof adjacent said faucet having a flange, said faucet having a part engaging said flange on one side thereof, said sleeve having a part engaging said flange

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on the other side thereof, one of said parts having a shoulder facing away from said flange and the other of said parts having threads, said flange, shoulder and threads being concentric, a shouldered nut engaging said shoulder and screwed on said threads for clamping said body, faucet and sleeve together, a slip joint between the other end of said body and sleeve and means for attaching the sleeve to the wall of a cabinet.

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