June 30, 1959 J. M. TURK 2,892,575

DISPENSER VALVE STRUCTURE

Filed March 29, 1956

Fig. 1.

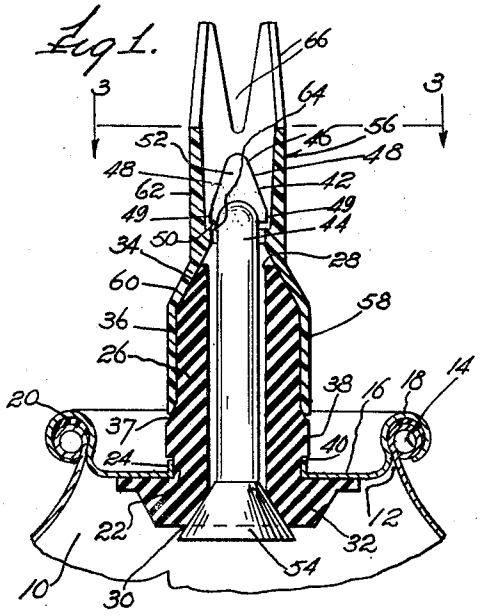



Fig. 2.

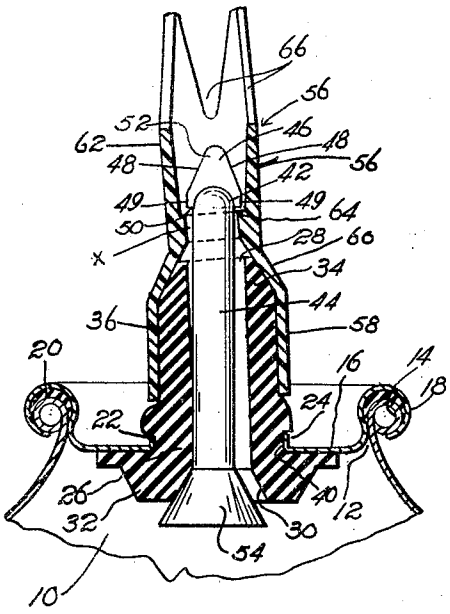



Fig. 3.

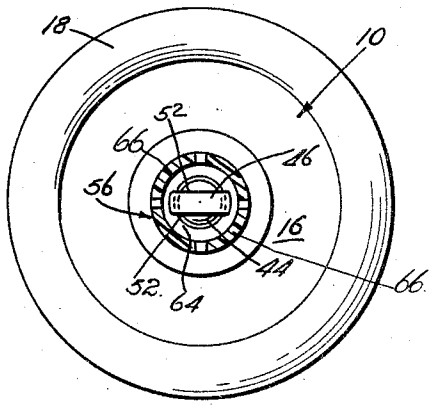
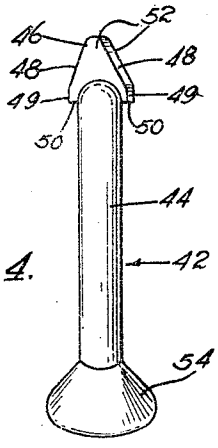



Fig. 4.

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# DISPENSER VALVE STRUCTURE

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3 Claims. (Cl. 222—394)

This invention relates to a dispenser valve structure particularly useful in connection with containers dispensing liquids under pressure.

One of the objects of this invention is to provide a valve dispensing device for use with a container filled with a pressure fluid, the pressure of the fluid normally acting to seat the valve and prevent discharge of the contents from the container, but readily operatable by a slight tilting action to permit the discharge in measured and desired amounts.

Another object is to provide a valve structure having a dispensing nozzle which is secured against detachment on its supporting plug but which is movable slightly with respect thereto.

Another object is to provide a dispenser valve of the foregoing characteristic comprising a resilient plug attached to the container, a nozzle surrounding the plug which nozzle has an internal shoulder, a stem within the plug provided with a tapered valve member on the lower end thereof and a spearhead shaped head at the upper end thereof to engage the internal shoulder of the nozzle and prevent removal of said nozzle, said nozzle being longitudinally movable a slight degree with respect to said plug.

The invention is particularly useful in connection with dispensing whipped cream, shaving cream or the like of foam products from a container in which the cream is maintained under high pressure through the use of a compressed gas well known in the art.

Other objects will become apparent as this description progresses.

In the drawings:

Fig. 1 is a sectional view of this invention showing the valve seated.

Fig. 2 is a view similar to Fig. 1 but showing the valve unseated to permit discharge of the pressure fluid.

Fig. 3 is a plan view taken on lines 3—3 of Fig. 1.

Fig. 4 is a perspective view of the valve member.

The numeral 10 designates the can or container formed of metal or some suitable material which will withstand the pressure. The container 10 has an upper end 12 provided with a rolled over edge 14. A closure 16 for the can has a peripheral edge 18 rolled about the rolled over edge 14 to secure same thereto. A resilient gasket 20 of rubber or the like is secured between the rolled over edges 14 and 18 to provide a tight seal therebetween to prevent leakage.

The closure 16 has a central opening 22 encompassed by an upstanding annular rim 24. Secured to the closure 16 is a plug or body generally indicated at 26 which is formed of resilient material such as rubber or the like having a central passage or bore 28 which terminates in a flared valve seat 30. The inner or lower end of the body 26 has an enlargement 32 surrounding said valve seat. The enlargement is contained within the container as will be subsequently described.

The outer surface of the body or plug 26 is shaped as best shown in Figs. 1 and 2 and has a tapered top section



34, an annular vertical wall section 36, a tapered section 37 which joins an annular enlarged vertical section 38. A circumferential recessed portion 40 is provided in the lower end of section 38.

The plug body 26 extends through the opening 22 in the closure 16 and is secured thereto with the annular rim 24 engaged in the circumferential recess 40 and the top of the closure 16 engaging the top of the enlargement 32 which enlargement is positioned interiorly of the container 10.

The valve structure generally indicated at 42 comprises an elongated circular stem 44 having a spear head 46 at the upper end thereof. The head has tapered sides 48 with continuing short straight vertical flat sections 49 and lower horizontal portions 50 which forms the engaging portions of the head. The other sides 52 of the head extend vertically and are flat as best seen in Fig. 4, and the diameter or distance between the sides 52 is less than the diameter of the stem 44 to provide clearance for passage of the material from the container. The lower end of the stem 44 has an outwardly flared conical shaped valve member 54 which is adapted to normally seat against the valve seat 30 due to the pressure of the fluid within the container to form a seal tight fit and prevent discharge of the fluid from the container. The valve structure is rigid and is formed preferably of a molded plastic material.

A tube or nozzle generally indicated at 56 and formed of rigid plastic material is shaped to encompass and envelope the upper portion of the body or plug member 26. The nozzle 56 has a lower annular vertical section 58 joining an inwardly tapered section 60 which merges into an upper vertical section 62. The interior of the vertical section 62 is provided with a circumferential shoulder 64 which is engaged by the engaging edges 50 of the spear head of the valve to prevent removal of the nozzle 56. The short vertical portions 49 of the spear head are in sliding engagement with the wall of the nozzle. The tapered and vertical walls 60 and 58 of the nozzle rest against the tapered and vertical walls 34 and 36 of the plug with the lower edge of the nozzle resting against the tapered portion 37 of the plug. The diameter of the internal bore of nozzle 56 adjacent the shoulder 64 and indicated by the letter X is substantially that of the diameter of the bore of plug member 26. The upper portion of the nozzle 56 is provided with radially spaced slots 66 through which the fluid is dispensed.

In initially securing the nozzle 56 it is pressed downwardly over the spear head and while the circumference of the nozzle below the shoulder 64 is smaller than the diameter of the spear head the material of both will give sufficiently to permit the nozzle 56 to pass over the spear head to be positioned as shown in Fig. 1 so that the shoulder 64 of the nozzle will be below the engaging portions 50 of the spear head to prevent upward withdrawal of the nozzle.

In normal conditions the valve head 54 is seated against the valve seat 30 due to the pressure within the container to prevent any discharge of the fluid from the container. When the valve structure is seated as shown in Fig. 1, the engaging edges 50 will be spaced slightly upwardly of the shoulder 64 and a slight upward longitudinal movement of the nozzle is permitted relative to the plug when the valve head 54 is seated. The nozzle however may not be detached from the plug due to the engagement of the spear head engaging surfaces 50 with the shoulder 64 of the nozzle. This slight "free play" of the nozzle relative to the plug facilitates the operation of the valve in discharging the fluid from the container.

To operate the valve 42 to discharge the contents under pressure, the nozzle 56 is manually engaged and tilted or pushed slightly to one side as shown in Fig. 2. The same

tilting is imparted to the plug **26** and the nozzle **56** moves upward slightly relative to the plug **26** and engages the engaging portions **50** of the spearhead of the valve member to unseat the valve head **54** from the seat **30** sufficient to permit the fluid under pressure from the container to pass upwardly through the body **26** and be dispensed from the upper end of the nozzle. Manually releasing the nozzle and body will restore the parts to their former position shown in Fig. 1 to prevent discharge of the fluid from the container. It will be seen that when the fluid is forced up under pressure that it will pass between the valve stem **44** and the bore of the plug or body and will pass between the flat sides **52** of the spearhead. Thus the fluid is forced up on the opposite sides of the spearhead and a better control is effected of the material to be discharged.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

I claim:

1. In combination with a container closure having an opening therethrough, a resilient tubular plug extending through said opening, said plug being provided with a valve seat on the inner side, a valve stem extending through said tubular plug, said valve stem being integrally formed of a plastic material and having a valve member at its lower end adapted to engage said valve seat and provided at its outer end with a preformed tapering head having portions thereof extending laterally beyond the stem to provide engaging surfaces, a separate nozzle insertable over and enveloping the upper portion of said plug and having an inwardly extending shoulder having an inside diameter less than the outside diameter of said laterally extending portions to provide a locking engagement with said nozzle and to prevent removal of said nozzle, said nozzle and laterally extending portions having sufficient resiliency to permit initial insertion through the inner side of said tubular plug to move past said inwardly extending shoulder and to effect an automatic locking engagement with said shoulder as it is passed beyond said shoulder.

2. In combination with a container closure having an opening therethrough, a resilient tubular plug extending through said opening, said plug being provided with a valve seat on the inner side, a valve stem extending through said tubular plug, said valve stem being integrally formed of a plastic material and having a valve member at its lower end adapted to engage said valve seat and provided at its outer end with a preformed head which



head has a preformed engaging surface at the lower end thereof extending laterally beyond the stem, a separate nozzle insertable over and enveloping the upper portion of said plug and having an inwardly extending shoulder having an inside diameter less than the outside diameter of said preformed engaging surface and is engaged by said laterally extending engaging surface of said head to provide a locking engagement with said nozzle and to prevent removal of said nozzle, said preformed head and laterally extending engaging surface and said nozzle having sufficient resiliency to permit initial insertion through the inner side of said tubular plug to move past said inwardly extending shoulder and to effect an automatic locking engagement with said shoulder as it is passed beyond said shoulder.

3. In combination with a container closure having an opening therethrough, a resilient tubular plug extending through said opening and having a flange engaging the inner surface of said closure, said plug being provided with a valve seat on its inner side, and a substantially rigid valve stem of lesser diameter than the internal diameter of the passage of said tubular plug, said stem being integrally formed of a plastic material and provided at its inner end with a valve member adapted to engage said valve seat and being provided on its outer end with a preformed spearhead the lower ends of which extend laterally outwardly of said stem to provide engaging surfaces, a separate nozzle insertable over and positioned on said tubular plug and having an inwardly extending annular shoulder having an inside diameter less than the outside diameter of said engaging surfaces and is engaged by said engaging surfaces to provide a locking engagement with said nozzle and to prevent removal of said nozzle from said plug body, said preformed head and laterally extending engaging surfaces and said nozzle having sufficient resiliency to permit initial insertion through the inner side of said tubular plug to move past said inwardly extending shoulder and to effect an automatic locking engagement with said annular shoulder as it is moved beyond said shoulder.

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