

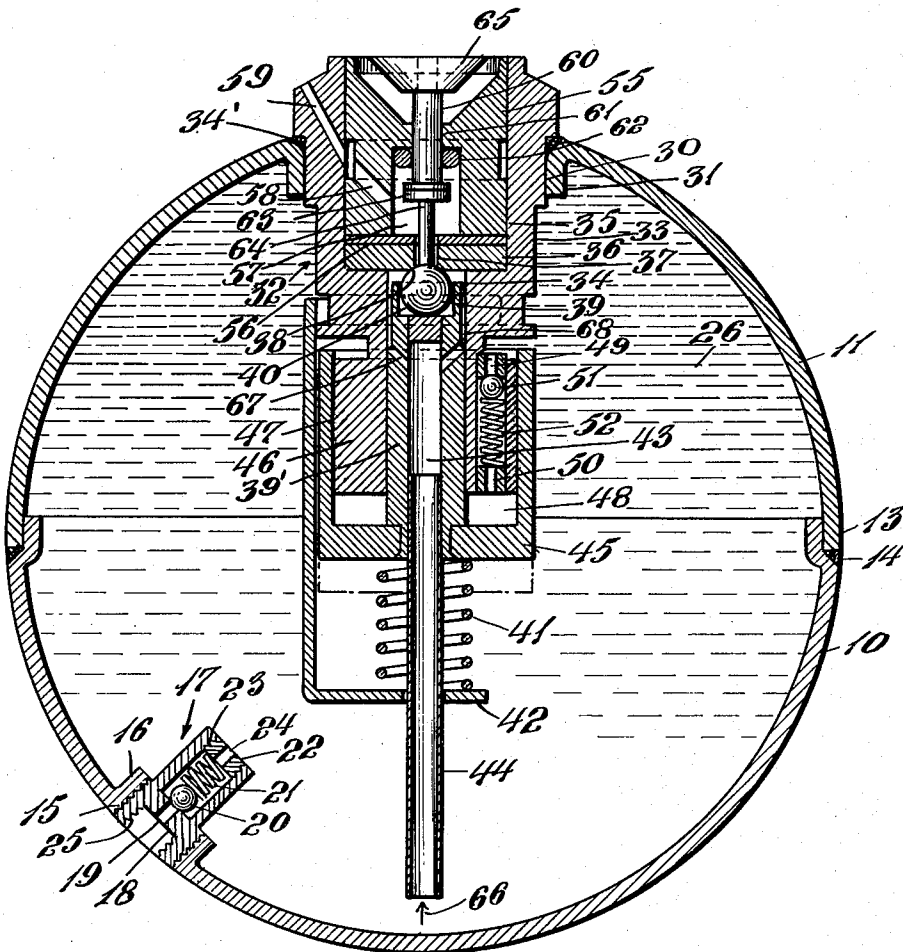
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DISPENSING CONTAINER FOR FLUID UNDER PRESSURE WITH
MANUALLY-OPERATED, SPRING-BIASED VALVE AND DASHPOT
FOR DELAYING CLOSING ACTION THEREOF.

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DISPENSING CONTAINER FOR FLUID
UNDER PRESSURE WITH MANUALLY
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ING ACTION THEREOFRobert Stevenson, Barrington, R. I., assignor to
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This invention relates to a device for dispensing fluids either of a gaseous or liquid nature, which fluids are in a container under a pressure greater than that of atmospheric.

Fluids are usually dispensed from a container in which they are carried either by shaking the fluid out of the container or by pumping the fluid out of the container by intermittently applying pressure through some actuating means thereto. Other fluids are dispensed from a container when they are under pressure by some sort of a valve control conduit through which the fluid is forced by the pressure in the container. Both of these means are subject to manual operation in that they must be manually expelled from the container or the valve which controls the container must be closed after a predetermined time by manual operation.

One of the objects of this invention is to provide a dispensing device which will, by reason of the pressure in the container, discharge for a predetermined length of time, the length of which will be dependent upon the construction of the device.

Another object of this invention is to provide a device which will discharge through a predetermined length of time and in an amount which will be dependent upon the opening or orifice through which the fluid is forced.

Another object of this invention is to provide an arrangement so that the discharge will be initiated by manual pressure but will be automatically stopped after a predetermined length of time.

Another object of this invention is to provide for a device which will control the discharge by use of the fluid which is discharged, that is, the fluid which is discharged will provide the pressure for the operating mechanism of the device.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed in the appended claims.

In proceeding with this invention, I provide a container for the fluid to be dispensed which is of a sufficient strength to hold fluid which will be under several atmospheres of pressure. A valve is provided in this container which is so constructed that when pressure is applied to a portion of the valve the valve will be forced open so as to permit the fluid to be discharged by reason of its own pressure. Resilient means are present to close the valve as soon as pressure is released, but upon the opening of the valve a dash pot is brought into play which receives some of

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the fluid which is in the container and which is forced out of the dash pot through controlled small passages so that the pressure which tends to close the valve will be delayed in so closing the valve until a predetermined length of time has elapsed, through which length of time a predetermined quantity of the fluid to be dispensed is discharged from the container. The amount of fluid to be discharged will depend upon the size of the orifice through which the fluid is to be forced. Thus, I may control the amount of fluid dispensed by reason of the size of the discharge opening.

With reference to the drawing, 10 designates the lower part of a spherical container and 11 the upper part thereof. These parts telescope as at 12 and are secured together by solder, brazing, or such equivalent means at 14. A threaded opening 15 with an inwardly extending boss 16 is provided in the lower part 10 of the container and receives a valve 17 which is threaded into the opening 15 and is provided with an intermediate wall 18 having an opening 19 closed by a ball 20 pressed against this closure by a spring 21 abutting against a plug 22 in the threaded opening 23 at one end thereof. An opening 24 is provided in this plug. Some means are threaded into the internal portion 25 of the valve for forcing of fluid into the container until a certain pressure exists, such for instance as possibly 250 lbs. The fluid under pressure will be in the form of a vapor 26.

The other or upper part 11 of the container is provided with an opening 30 having an internally extending collar 31 for the reception of a time valve designated generally 32 and comprising a body 33 which is secured in the opening and to the collar 31 by some sort of solder or brazing means 34.

This body is provided with a bore 34 and a larger bore 35. This larger bore 35 receives a plate 36 having an opening 37 therein, the lower edge of which provides a valve seat 38 which is closed by a ball valve 39. A plunger 39' is slidable in the bore 34, has a cup 40 at its upper end to receive the ball, and is urged upwardly by a spring 41 which abuts, as at 42, upon a bracket which is fixed to the body 33 of the valve. This plunger 39' is hollow as at 43 and is provided with an extension tube 44 which projects centrally through the spring 41 and moves with the plunger. A cup 45 is also secured to this plunger to move with it and slidably receives the portion 46 of the body 33. There is sufficient clearance to permit a limited discharge of fluid which may exist in the

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portion 48 below the valve body portion 46. Fluid is admitted to the portion 48 of the cup through openings 49 and 50, the opening 49 being closed by a ball valve 51 urged toward its seat by a spring 52.

The bore 35 has a block 55 inserted in it, which block engages a washer 56 which is in contact with the plate 36 and has an opening in it registering with the opening 37 in the plate 36. This block has a chamber 57 from which there extends a conduit 58 registering with a conduit 59, and one of these conduits will be of a predetermined size so as to govern the amount of discharge of the fluid within the container therefrom. The larger the diameter the more fluid will be discharged during the time that the valve is open. A stem 60 is slidably mounted through the bore 31 in the block 55 and a round soft resilient packing 62 surrounds the stem 60 so as to prevent the escape of fluid along the surface of the stem. An abutment 63 of a size greater than the body portion of the stem is present to limit the movement of the stem or the soft packing 62 therealong. The stem is reduced as at 64 and of a size so as to loosely extend through the opening 37 of the plate 36 to engage the ball valve 39 so that when pressure is exerted on the finger piece 65 the stem may be forced downwardly to apply pressure on the ball valve 39 and force it from its seat 38.

When the ball valve 39 is forced downwardly by reason of pressure on the finger piece 65 the opening 37 will permit fluid in the container to pass upwardly through the tube 44, as shown by arrow 56, and pass out through the openings 67 in the plunger 39, thence up through the spaces 68 about the plunger at its upper end, through the passage or opening 37, and thence out through the conduits 58 and 59 to the atmosphere.

At the same time that the plunger is forced downwardly, the cup 45 is also forced downwardly and by reason of the increased space or volume at 43 caused by movement of the cup downwardly away from the body part 46 of the valve, fluid will pass inwardly through the opening 49 and through the opening 50 to fill the space 48 full of fluid. Thereafter the pressure of the spring 41 will tend to move the cup upwardly, but by reason of the fluid in the area 48, this cup cannot be moved upwardly until this fluid is expelled from the chamber 48. The only way that this fluid may be expelled will be through the sliding fit at 47 between the cup 45 and the body 46. The area of this space between these two will determine the rate at which the spring 41 will raise the plunger and the cup 45 upwardly until the ball 39 engages the valve seat 38 and closes the valve. Thus the area or size of the opening space will control the time action of the operation of the valve.

I claim:

1. In a dispensing device in the form of a sealed container having an inlet opening and a discharge opening, a valve for controlling said discharge opening comprising a valve body secured to said discharge opening, a conduit through said body for the passage of fluid from said container, a valve seat in said conduit, a ball closure for said

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seat, manually operable means for moving said closure from said seat, resilient means for moving said closure into engagement on said seat and means for delaying the action of said resilient means including a chamber having a wall thereof movable with said closure when moving the same from said seat for enlarging said chamber, an inlet port to said chamber, an outlet from said chamber and a resiliently movable valve means for controlling the passage of fluid through said ports.

2. In a dispensing device in the form of a sealed container having an inlet opening and a discharge opening, a valve for controlling said discharge opening comprising a valve body secured to said discharge opening, a conduit through said body for the passage of fluid from said container, a valve seat in said conduit, a ball closure for said seat, manually operable means for moving said closure from said seat, resilient means for moving said closure into engagement on said seat and means for delaying the action of said resilient means including a chamber having a wall thereof movable with said closure when moving the same from said seat for enlarging said chamber, an inlet port to said chamber and outlet port from said chamber and a spring urged valve for controlling the passage of fluid through said ports.

3. In a dispensing device in the form of a sealed container having an inlet opening and a discharge opening, a valve for controlling said discharge opening comprising a valve body secured to said discharge opening, a conduit through said body for the passage of fluid from said container, a valve seat in said conduit, a ball closure for said seat, manually operable means for moving said closure from said seat, resilient means for moving said closure into engagement on said seat and means for delaying the action of said resilient means including a chamber having a wall thereof movable with said closure when moving the same from said seat for enlarging said chamber, an inlet port to said chamber, an outlet port from said chamber and means for controlling the passage of fluid through said ports.

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