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SANITARY SELF-CLOSING FAUCET

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Fig. 1.

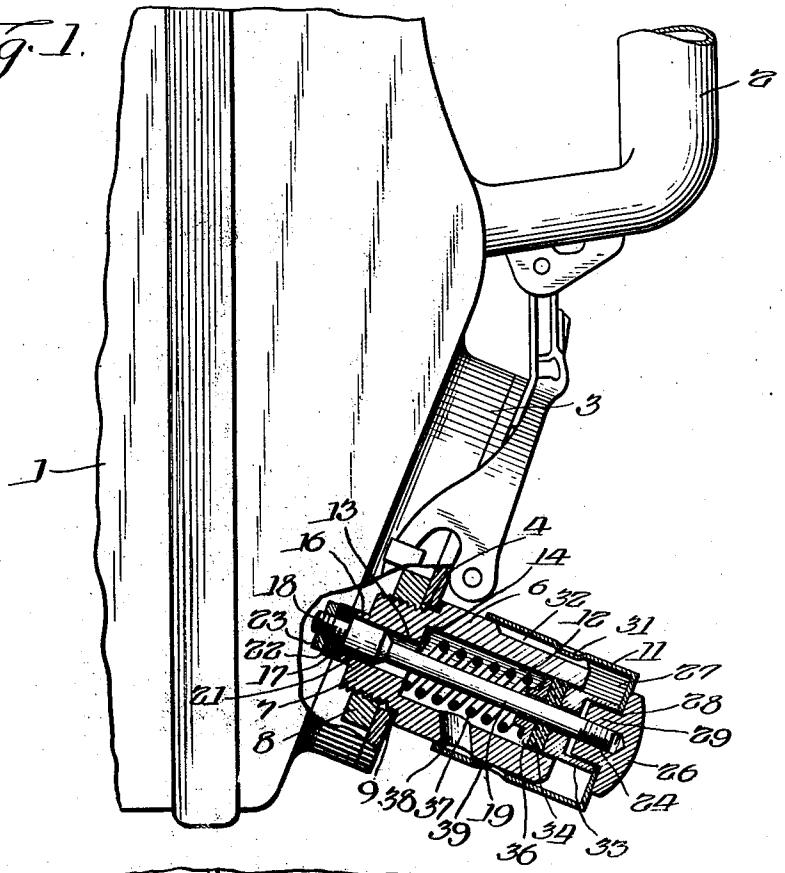
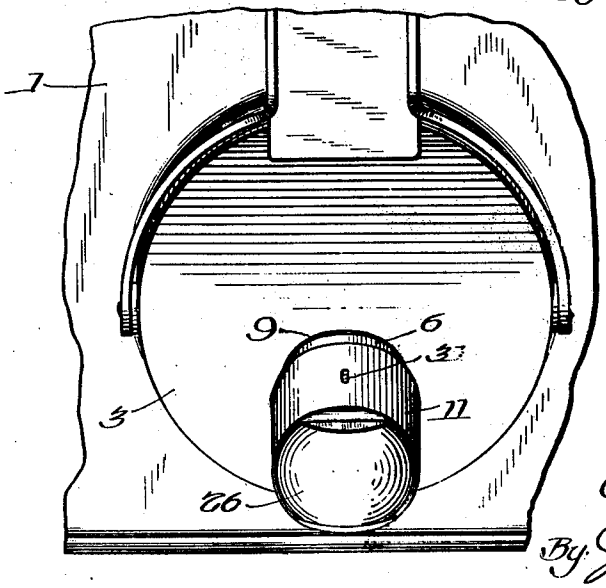


Fig. 2.



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SANITARY SELF-CLOSING FAUCET

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5 Claims. (Cl. 251—137)

This invention relates to a valve and more particularly to a new and improved type of sanitary, self-closing faucet. It has for one of its principal objects the provision of a sleeve type push-button actuator which, in addition to facilitating the actuation of the faucet also serves to enclose the outlet of the valve at all times when the valve is not open. It thereby prevents the accumulation of dust and other foreign matter which normally lodges in and about a faucet spout particularly when the latter is exposed to outdoor conditions.

Another and still further important object of this invention is to provide a positive closing faucet which eliminates objectionable dripping from the spout upon closing of the faucet. It should be readily understood that where such a faucet is used to dispense liquids which are relatively valuable or possibly highly inflammable the elimination of dripping after the faucet has been closed results in a real saving measured from the angle of dollars and cents and also in reducing or preventing damage to life and property.

Another important object of this device lies in the provision of a novel push-button type of compact self-closing faucet for use on dispensing containers which quickly effects full opening thereby allowing for a smooth stream of fluid to flow from the outlet spout with a minimum tendency to splash.

An important object of this invention is to provide a self-closing faucet with a sanitary actuating cover preferably telescopically movable and serving also as a faucet outlet.

A further important object of this invention is to provide in a device of this character a throttling member associated with the closure member whereby substantial flow through the faucet during the initial or cracking portion of the opening movement of the valve is minimized and is also coordinated and aligned with the discharge outlet passage of the actuating means.

A further object is to provide in a device of this type means whereby the actuating means is capable of longitudinal movement, but is maintained non-rotatable relative to the valve body.

Other important objects and advantages of the invention will appear as the description proceeds.

Referring to the drawing:

Fig. 1 shows a sectional assembly view of the self-closing faucet of this invention as applied to a water container or the like.

Fig. 2 shows a front exterior view of the faucet as applied to the container shown in Fig. 1.

Directing attention to Fig. 1, the reference numeral 1 indicates generally a container from which it is desired to dispense liquid, as for example, from a military water canteen or the like. The container shown is equipped with a handle 2 and a preferably inclined surface 3 having an aperture or passage therethrough at 4 within which is mounted the novel valve of this invention. As generally indicated, the push-button self-closing valve comprises a body or casing 6 having a rearwardly extending threaded shank 7 adapted to project within the container 1 through the aperture 4 and is fixedly held in position by means of the locknut 8. A gasket 9 is positioned between the container wall and a shoulder of the valve body, as indicated, to prevent leakage therepast.

A cap or telescoping sleeve member 11 is arranged to snugly engage the body portion 6 of the valve. In order to accommodate the inner valve actuating parts, the body 6 is provided with a central bore or recess 12 which terminates in a passage of smaller diameter within the shank portion 7, as shown at 13. A shoulder or offset portion 14 is thereby formed between the small passage 13 and the recess 12. At the inner end of the shank 7 a raised annular ridge 16 is formed which functions as the valve seat. Acting in cooperative engagement with the said seat or ridge 16 the closure member or disc 17 is provided which is made of any suitable material. The closure member 17 is fixedly mounted upon a threaded end portion 18 of a shaft or stem 19. The disc 17 is preferably shouldered against an enlarged annular portion 21 of the stem 19, forming a close fit within the bore 13. The disc is shouldered against the enlarged annular portion 21 by means of a preferably metal supporting washer 22 with the locknut 23 engaging the threaded shank 18. The forward end of the stem 19 is similarly provided with a threaded portion 24 and has the knob-like member 26 threadedly engaged therewith which serves to hold the cap member 11 in slidable relationship with the body 6. The outer or forward end of the cap 11 is provided with a closed end 27 having a central aperture 28 therethrough beyond which the shank portion 29 of the knob 26 projects. As indicated, the enlarged knob 26 abuts the closed end 27 of the sleeve element 11. An inwardly extending lug or projection 31 of the cap 11 is slidably movable therewith in the longitudinally extending groove 32 formed over the outer portion of the body 6. The latter arrangement permits a telescoping sliding movement of the sleeve 11 over the pe-

ripheral surface of the body 6 but, however, prevents any rotation of the sleeve 11 with respect to the body 6. This provision is important for reasons hereinafter explained.

Intermediate the ends of the shaft 19, a piston element is positioned which piston member comprises a cup-shaped member 33 having an outer recessed portion within which the shank 29 of the knob 26 is received. As shown, the bottom or back of the cup-shaped member 33 serves as a support for the sealing member or packing 34 which engages the circumference of the shaft 19 and the annular wall of the bore 12 of the body 6 in fluid-sealing relationship. The opposite side of the packing 34 is annularly supported by the washer member 35, the latter being resiliently held in place by the compression spring 37. The coil spring 37 extends between the shoulder 14 and the member 35 and, as indicated, thereby normally maintains the closure member 17 in sealing engagement with the seat 16. The body 6 of the valve is equipped with a side outlet port 38 acting as the outlet spout of the faucet. It will be readily apparent that when the valve is in its normal closed position the outlet port 38 is then covered by the cap 11. Thus it will be further understood that in order to provide discharge means therefrom, the cap 11 is provided with an aperture 39 which is arranged to be aligned with the outlet port 38 of the casing when the faucet is opened by pressing the knob 26 together with the sleeve 11 inwardly.

To operate the knob or push-button 26 it is simply pushed inwardly or forwardly to an extent that when it has reached its inward limit of movement the closure member 17 is then wide open. (The inner portion of the cap 11 will then abut against the end surface of the casing 6.) At this point the aperture 39 in the cap 11 is in alignment with and coincides exactly with the outlet port 38 of the casing thereby permitting the passage of liquid from the container 1 past the closure member 17 and thence through the bore 13 to the bore 12 and past the outlet port 38 and the complementary aperture 39 of the sleeve 11. Upon releasing the pressure applied to the knob 26 the faucet immediately closes due to the action of the spring 37 in pulling the closure member 17 to a closed position on the seat 16. As shown in Fig. 1, the valve being seated, a solid portion of the wall of the cap 11 covers the outlet port 38. Since there is a relatively snug fit between the periphery of the casing and the inner diameter of the cap, this arrangement substantially prevents any dripping from the faucet after pressure is released from the knob and, in addition, provides a sanitary cover for the outlet port which in the conventional faucet may become an extremely objectionable source of trouble from a sanitary viewpoint. Obviously the angularity or pitch of the passage 38 may vary depending upon the angle of installation of the valve so as to discharge preferably a vertical stream.

A further feature in combination with the latter described arrangement lies in the provision to throttle the flow of fluid through the faucet until such time as the respective apertures 38 and 39 are properly aligned. Such throttling of the flow is accomplished by use of the enlarged annular portion 21 on the stem or shaft 19. This throttling member 21 engages the wall of the bore 13 relatively snugly, that is, with a minimum clearance therebetween. It thus acts to center or guide the shaft or stem 19 in the faucet body and more importantly enables the disc to be maintained centrally of the seat 13 thereby effecting a tight seal when the disc or closure member engages the seat. Assuming now that the faucet is being opened very gradually. The closure member then is lifted only slightly from its seat 16, and very little if any flow of fluid through the faucet will result for the reason that the throttling member 21 almost fills the passage through which the discharging fluid must necessarily pass. This condition of substantial nonflow therethrough is maintained until the faucet is opened sufficiently to allow the throttle member 21 to project outwardly beyond the seat 16, moving the closure member 17 still further from its seat and thereby permitting greatly increased flow around the stem or shaft 19 through the passages 13 and 12 respectively, thence out through the outlet port 38 and through the now aligned aperture 39 in the wall of the cap 11. Thus the purpose of the throttling member 21 is to prevent any appreciable flow of fluid until the apertures 38 and 39 are in substantial alignment. While the faucet may be operated without the use of the throttle member 21 a pinching of the flow of liquid would result between the then only slightly overlapping apertures 38 and 39 causing a splashing and a fan-like spray of liquid emitting from the faucet rather than a full smooth stream obtained by the arrangement herein described. The throttling member 21 snugly fitted within the inlet port 13 precludes almost all flow of fluid through the faucet until such time as the apertures 38 and 39 are fully aligned.

It is apparent that the numerous details of construction may be varied throughout a wide range of equivalent structures without departing from the principles and purposes of our invention. It is therefore not intended to limit the scope of the appended claims otherwise than as necessitated by the prior art.

We claim:

1. A self-closing faucet comprising a body having an inlet with a central passage and an outlet passage through the side thereof, a seat on an end portion of the said body, a closure member positioned externally of the said body, a stem mounted within the said central passage of the body suitable for actuating the said closure member, resilient means adapted to hold said closure member in seated position, a cap member telescopically positioned over the said body and movable longitudinally with said stem, throttling means substantially filling the inlet of the body when the closure member is seated and for a predetermined period when the closure member is unseated, the said cap member having an aperture therein, whereby when the said stem and the said cap member are pressed forward simultaneously the closure member is lifted from its seat and the aperture in the said cap member is subsequently placed in substantial alignment with the outlet passage in the body, the said cap member serving as a guide in effecting the accurate alignment of the side outlet passage of the body with the aperture of the cap member.

2. A self-closing valve comprising a body, the said body having an inlet and an outlet with a communicating chamber therebetween, a closure member for the said inlet, a seat for the said closure member, a stem for actuating the said closure member and extending through the communicating chamber of the said body, throttling means normally positioned within the inlet of the said body, resilient means positioned within

the said communicating chamber and arranged to maintain the closure member in a seated position, a telescoping cap member positioned over said body, the said cap member having an aperture therein, whereby predetermined forward motion of the stem and cap members simultaneously provides for substantial alignment of the aperture of the said cap member with the outlet from the said communicating chamber, the said throttling means consisting of a cylindrical member normally closely fitting within the said inlet and having an inner tapered reduced portion, the said latter portion being positioned immediately adjacent the said seat upon alignment of the cap member aperture with the outlet of the said body to complete a substantially unbroken passage therefrom.

3. A self-closing dispensing faucet comprising a body having a central passage, the said body having an inlet passage and a side outlet connected by said central passage with said inlet passage, a closure member normally seated at an end portion of the said body, a stem for the said closure member mounted within the said central passage, means on the opposite end of said stem for effecting reciprocal movement of the said stem, resilient means cooperating with said stem and positioned within the central passage of the said body, the said resilient means being adapted to maintain the said closure member in a seated position, a cap member superposed over a portion of the said body to normally cover the side outlet of the body and telescopically movable in relation thereto, the said stem being longitudinally movable simultaneous with a similar movement of the said cap member, the said cap member having a side aperture therein, throttling means on the said stem and normally positioned snugly within the inlet passage of the said body whereby initially flow therethrough will be substantially retarded and whereby when said stem is pressed inwardly a predetermined distance the said cap member is simultaneously caused to move inwardly to provide for the aperture in the said cap member being complementary to the side outlet of the said body.

4. A self-closing faucet or the like comprising a body having an inlet and an outlet, the said body having a passage running centrally thereof one end of which constitutes said inlet and a valve seat, a closure member adapted to engage said seat, a stem for said closure member extending within the said central passage, actuating means at one end of the said stem, resilient means cooperating with said stem and positioned intermediate said actuating means and a shoulder portion within said central passage, the said resilient means serving to normally maintain the said closure member in seated relation to the said valve seat, a throttling member on said stem adjacent said closure member snugly fitted within a portion of the central passage, a cap telescopically fitted over the said body and adapted to move longitudinally and non-rotatably relative to the said body upon similar movement of the said actuating means, the said cap having an aperture therein adapted to be brought into registration with said outlet whereby when the actuating means is moved inwardly initially the closure member is unseated but appreciable flow of fluid therepast is prevented until the actuating means has been moved substantially its maximum distance and whereby the aperture in the said cap and the outlet of the said body form a substantially unbroken passage for the discharge of fluid from the central passage, the length of that portion of the said throttling member snugly fitting within the central passage being substantially equal to the distance between centers of the cap member aperture and the outlet of the body when the closure member is seated.

5. A valve of the character described comprising a body having an inlet and an outlet, the said body having a passage extending centrally thereof one end of which constitutes the said inlet, a disc adapted to reciprocably engage and disengage a portion of the said inlet, a stem for the said disc extending through said central passage, actuating means at the end of said stem opposite said disc, resilient means cooperating with said stem to normally maintain the said disc against said portion of said inlet in seated relationship, substantially cylindrical throttling means on the said stem adjacent said inlet, a cap telescoping the said body and adapted to slide relative to said body upon movement of said actuating means, the said cap having an aperture therein adapted to be brought into registration with said outlet whereby when the actuating means is moved inwardly the disc is lifted from the portion of the said inlet, the said throttling means preventing appreciable flow of fluid within said inlet until the stem actuating means has traveled substantially a maximum distance inwardly at which point the aperture in the said cap coincides with the outlet of the body, means cooperating with the said body and cap whereby rotational movement of the said cap with relation to the said body is prevented.

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