May 13, 1958 W. STELZER 2,834,572

FAUCETS

Filed Aug. 15, 1955

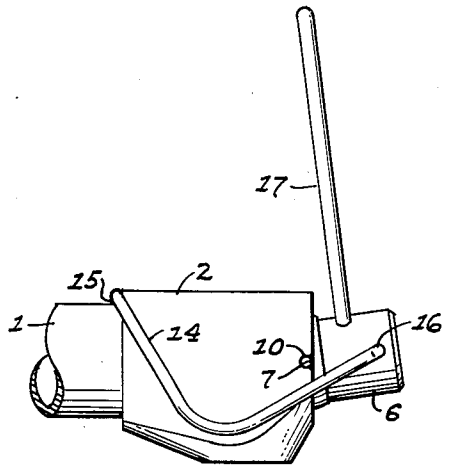


Fig. 1

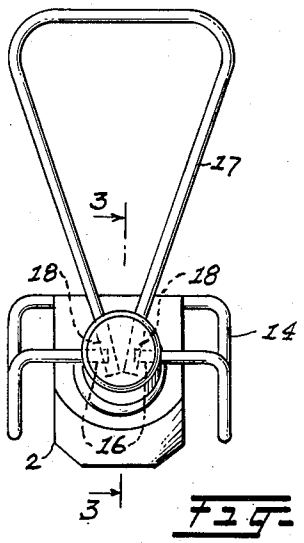


Fig. 2

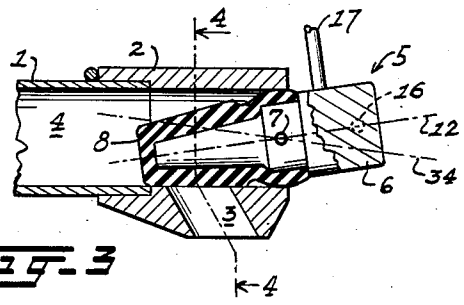


Fig. 3

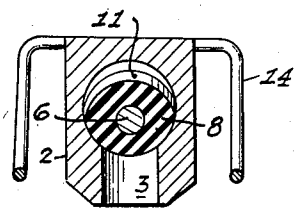


Fig. 4

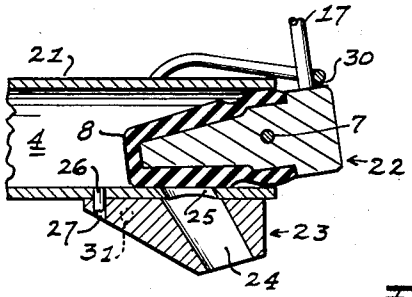


Fig. 5

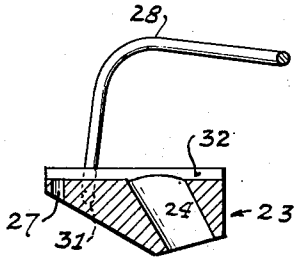


Fig. 6

INVENTOR.

William Stelzer

United States Patent Office 2,834,572 Patented May 13, 1958

2,834,572

FAUCETS

William Stelzer, Summit, N. J., assignor to Walter Eickele, Summit, N. J.

Application August 15, 1955, Serial No. 528,189

17 Claims. (Cl. 251—243)

The invention relates to faucets and more particularly to sanitary dispensing faucets for beverage containers, incorporating a spring-biased pivoted stopper that may be quickly removed or assembled without the use of tools.

Dispensing faucets are usually connected to the container by means of a tubular conduit or shank which may be permanently joined to the container if the inside of the conduit is easily accessible for cleaning after removal of the faucet. If the removal and disassembly of the faucet is too complicated or requires too much effort, there is always the tendency that cleaning of the faucet will be neglected. Such a faucet could not truly be termed a sanitary faucet.

The object of this invention is to produce a novel sanitary faucet having a pivoted stopper inserted in the end of the conduit leading from the container and closing off a discharge opening, and quick removable resilient means to bias the stopper into a closing position as well as to retain it in the assembled position.

Another object is to pivot the stopper of the faucet to the faucet body or conduit in a manner that permits the easy removal of the stopper.

Another object is to arrange the bias means in such a manner that in a partly open position the resilient means tend to urge the stopper into a closing position, and in the extreme open position the faucet remains open.

Another object is to make the faucet body and conduit integral and having a straight and accessible passage for easy cleaning.

Another object is to make the spout of the faucet removable and to construct the resilient means in such a manner that it serves to bias the stopper as well as to retain the stopper and the spout in the assembled position.

A further object is to provide a simple and inexpensive handle for manual operation of the stopper, and in general to provide a simplified faucet having only a few parts that can be manufactured cheaply.

Other objects and advantages of this invention will be apparent from the following description considered in connection with the accompanying drawing submitted for the purpose of illustration and not to define the scope of the invention, reference being had for that purpose to the subjoined claims. In the drawing, wherein similar reference characters refer to similar parts throughout the several views:

Fig. 1 is a side elevation of the novel faucet, the conduit leading to the container being broken off;

Fig. 2, a front elevation thereof;

Fig. 3, a section taken on lines 3—3 of Fig. 2;

Fig. 4, a section taken on lines 4—4 of Fig. 3;

Fig. 5, a sectional side elevation similar to Fig. 3 but showing a removable spout; and

Fig. 6, a sectional side elevation of the removable spout and resilient means to retain the spout.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of elements illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practised or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not limitation.

Referring now to Figs. 1–4, a tubular conduit or shank 1 is permanently and rigidly secured to a faucet body 2 having a spout or outlet port or opening 3. Conduit 1 may be secured to the container either permanently or by means of a coupling. The means for securing and the container are conventional, forming no part of this invention, and therefore are not shown. Conduit 1 and body 2 can be considered as one piece, having a cylindrical passage 4 whose one end communicates with the container and the other end is closed off by a stopper indicated in general by numeral 5 and consisting of a toggle lever 6 having a pivot pin 7 and a boot or seal 8 of rubber or other similar material. The surface of the boot near pivot pin 7 is spherical, equal in diameter to passage 4 to serve as a seal. The center of the spherical surface is at the intersection of the axes of passage 4 and pin 7, so that the seal is effective while stopper 5 is rocked about pin 7. The latter extends through toggle lever 6 and sticks out, trunnion fashion, at both sides to rest in an open groove 10 in the front face of faucet body 2. This groove serves as a bearing for the trunnion ends of pin 7 and to relieve the spherical surface of boot 8 of any bearing loads against the wall of passage 4, yet permits the quick removal of stopper 5 from passage 4. The portion of the boot covering outlet opening 3 is cylindrical to conform to the wall surface of passage 4 around outlet 3, and the opposite side, indicated by numeral 11 in Fig. 4, is also cylindrical to conform to the wall surface of passage 4 when the faucet is open. The loci of these cylindrical surfaces of boot 8 are not concentric and not in alignment or parallel with axis 12 of stopper 5, since in the closed position of the faucet axis 12 of stopper 5 forms an angle with the axis of passage 4. Boot 8 may be bonded to toggle lever 6 or it may be removable, in which case it is held and properly positioned by pin 7 which extends through the spherical part of the boot. Resilient means in the form of an externally positioned tension spring 14 pivotally seated at 15 and pivotally engaging diametrically opposite holes 16 in toggle lever 5 hold the stopper in the assembled position shown, where the faucet is closed. The protuberance of body 2 relative to conduit 1 furnishes the seat 15 for spring 14. The spring consists of a single piece whose free ends are co-axial and point towards each other to fit into holes 16 of lever 5. The depth of these holes and the wire ends fitting into them are shown in dotted lines in Fig. 2. Since the wire ends bottom in holes 16, the wire is always properly positioned sidewise and remains with the stopper when the latter is removed for cleaning. However, removal from the stopper is very easy, the free ends of spring 14 merely have to be pulled apart and the spring is removed. In the assembled position of the faucet spring 14 is stressed where the free ends tend to move in a direction towards seat 15, thereby pressing pin 7 in groove 10 and biasing stopper 5 to be seated where spout 3 is closed off. Stopper 5 has a handle 17 preferably consisting of a wire or spring wire coated with a thin layer of plastic material. The ends of the wire of handle 17 are pressed into holes 18 drilled at an angle to each other into lever 6, as indicated by dotted lines in Fig. 2, whereby the handle is rigidly secured even if the holes 18 are somewhat larger than the wire. To assemble the handle of the stopper, the wire, which is resilient, must be pulled apart to start the ends in holes 18, and is then pressed completely in, which is only possible through distortion of the wire. The

resistance of the wire against this distortion or bending is also what keeps the handle securely in the assembled position. It is obvious that such a construction is extremely cheap to make and easy to assemble.

In the modified embodiment shown in Figs. 5 and 6 the conduit or body **21** has the passage **4** which is closed off by a stopper **22** differing from stopper **5** only in that holes **16** are omitted. A groove, not shown, but similar to groove **10** of Fig. 1 is in the end face of body **21**, and pin **7** pivots in it. A removable spout **23** having an opening **24** concentric with an outlet aperture **25** in body **21** is located by a locating pin **26** secured to body **21** and fitting loosely in a hole **27** of spout **23**, and a wire spring **28** seated at **30** and pivoted in opposed and axially aligned holes **31** of spout **23** holds the spout firmly in the assembled position. The upper face **32** of spout **23** conforms with the cylindrical surface of body **21**. It is of course obvious that the outside surface of body **21** is not necessarily cylindrical, it could also have flat portions, being square or hexagonal in cross-section, whereby surface **32** would be flat. Outlet aperture **25** is slightly smaller than opening **24**, so that a slight suction is produced where surface **32** joins body **21** when liquid is dispensed, whereby the need for a liquid-tight seal on surface **32** is obviated. Holes **31** extend only a certain distance towards each other, and wire **28** is pivoted in the same manner as spring **14** in holes **16** of Figs. 1–3. Spring **28** is stressed where it tends to contract between holes **31** and seat **30** to thereby retain spout **23** by pressing it against body **21**, retaining stopper **22** in body **21**, and pressing boot **8** against the wall of passage **4** to close off outlet **25**.

In operation, stopper **5** is held in the closed position by spring **14**, but when hand lever **17** is pulled forward, the stopper is rocked about pivot pin **7** to uncover outlet opening **3**. In the extreme open position of the faucet the axis **12** of stopper **5** assumes a position indicated by numeral **34** in Fig. 3. In this position the upper wall of passage **4** serves as a stop against which boot **8** abuts. Holes **16** have moved to be nearer dead center so that the force which biases the stopper into a closed position is reduced, whereby due to the friction of pin **7** and the ball shaped seal of boot **8** the faucet remains open. When the handle is pushed slightly away from the extreme open position in a closing direction, the faucet continues the closing movement by virtue of the force of spring **14** until boot **8** is again seated over outlet **3**. The operation of the modified faucet shown in Fig. 5 is the same as described, though the spring **28** is pivoted at different positions. If a line is projected through pivot points **31** and **7**, then the seat **30** is located above the line when the stopper **22** is in the closed position and below such line when the stopper is in the opened position. Accordingly, the spring **28** tends to return the stopper to the closed position but not when it has been placed in the extreme open position.

The removal of the stopper shown in Figs. 1–4 is effected by pushing spring **14** upwardly at its seat **15** to snap over the edge of body **2**. Thus there is only a single, easily washable piece or unit to be removed. This unit consists of the stopper **5**, handle **17**, and spring **14**. Passage **4** is fully open, permitting easy access for cleaning and inspection, also of outlet **3**.

To remove stopper **22** from body **21**, the spout **23** is pulled down to disengage pin **26**, whereby two separate units are removed from the body, one unit consisting of spout **23** with its spring **28** as shown in Fig. 6, and the other stopper **22** with its handle **17**. These elements could also be removed by first pulling spring **28** towards the right and down from its seat **30** to release spout **23**, and afterwards lifting stopper **22** from passage **4**. The latter procedure in reverse is the most practical in assembling the faucet, the stopper is first placed into the body, then the spout is positioned where pin **26** fits into hole **27**, and then spring **28** is snapped onto seat **30**.

Having thus described my invention, I claim:

1. A faucet comprising a body, a liquid passage extending through said body and having an open end, an outlet port in said body branching from said passage, a pivotally movable stopper fitted into said open end to seal said open end and to close off said outlet port from said passage, an external spring supported by said body and pivotally engaging said stopper to releasably hold said stopper in an assembled position relative to said body and to bias said stopper in a position to close off said outlet port, and a handle to manually operate said stopper.

2. A faucet comprising a body, a liquid passage in said body, an outlet opening from said passage, a stopper adapted to close said opening, a wire spring external of said body, and a protuberance in fixed relation to said body, said wire spring having a portion releasably seated behind said protuberance and being operatively connected with said stopper to bias said stopper into a closed position to close said opening and to further bias said stopper to remain in an assembled position, whereby release of said spring from said protuberance releases said stopper from said body for quick disassembly of said faucet, said stopper having a handle for manual operation.

3. A faucet comprsing a body, a liquid passage in said body, an outlet opening from said passage, a stopper adapted to close said opening, a tension spring external of said body, a protuberance in fixed relation to said body, said protuberance serving as a seat for said spring on which said spring can pivot, whereby said spring can be snapped from said seat to be released from said body, said stopper having a pivot to pivot relative to said body to close off said opening, said tension spring engaging said stopper to urge said stopper in a position to pivot on said body and to bias said stopper into a closed position where said outlet opening is closed, and manual means to operate said stopper.

4. A faucet comprising a body, a liquid passage in said body, an outlet opening from said passage, a stopper adapted to close said opening, a tension spring external of said body, a protuberance in fixed relation to said body, said protuberance serving as a seat for said spring on which said spring can pivot, whereby said tension spring can be snapped from said seat to be released from said body, and an open pivot bearing in said body, said stopper having a pivot to rest on said pivot bearing, said tension spring engaging said stopper to urge said stopper in a position to pivot on said pivot bearing and to bias said stopper into a closed position where said outlet opening is closed, said stopper having a handle for manual operation.

5. A faucet comprising a body, a liquid passage in said body, an outlet opening from said passage, a stopper adapted to close said opening, a tension spring external of said body and having one end engaging said body and another end engaging said stopper to bias said stopper into a closed position, a pivot on said stopper, and open pivot bearing on said body, said spring urging said stopper into a position where said pivot rests on said pivot bearing, and manual means to operate said stopper.

6. A faucet comprising a body, a liquid passage in said body having an open end, an outlet opening from said passage, a manually operable stopper having a seal extending into said passage to seal said open end and to open or close said outlet opening, a pivot bearing on said body, means projecting from said stopper to abut against said pivot bearing to thereby pivot said stopper on said pivot bearing, and a tension spring having one end releasably seated on said body and another end seated on said stopper to urge said stopper toward said body where said means projecting from said stopper is pressed against said bearing to pivot thereon and to bias said stopper into a closed position where said outlet opening is closed.

7. The construction as claimed in claim 6, where said stopper consists of a toggle lever including said means

projecting from said stopper, and said seal being in the form of a boot of rubberlike material fitting over a part of said toggle lever extending into said opening, said boot having a sealing surface conforming to the inside surface of said passage to seal said outlet opening.

8. The construction as claimed in claim 6, said liquid passage being cylindrical and said seal of said stopper having a spherical portion to seal off said open end and another portion swingable about the pivot point of said pivot bearing to close off said outlet opening, said swingable portion having a sealing surface conforming to the cylindrical surface of said passage adjacent said outlet opening.

9. The construction as claimed in claim 6, where said means to operate said stopper is in the form of a looped wire handle consisting of a single piece of resilient wire whose ends are convergingly brought together, said stopper having a pair of holes converging from the outside and spaced to receive said ends of said wire handle.

10. The construction as claimed in claim 6, where said means to operate said stopper is in the form of a looped wire handle consisting of a single piece of resilient wire whose ends are brought close together but are at an angle with each other, holes in said stopper at an angle with each other to receive said ends of said wire, to prevent removal of said handle from said stopper without distortion of said wire.

11. A faucet comprising a body, a liquid passage in said body, an outlet opening from said passage, a stopper adapted to close said opening, said stopper having means to pivotally bear against said body, a removable spout, means to locate said spout to be in alignment with said outlet opening, and a tension spring pivotally secured to said spout and engaging said stopper to retain said spout and stopper relative to said body wherein said stopper pivotally bears against said body through said means.

12. A faucet comprising a body, a liquid passage in said body, an outlet opening from said passage, a stopper adapted to close said opening, a removable spout, means to locate said spout to be in alignment with said outlet

opening, and a tension spring pivotally secured to said spout and engaging said stopper to retain said spout relative to said body, to pivotally engage said stopper with said body and to bias said stopper into a closed position where said outlet opening is closed.

13. The construction as claimed in claim 12, where said spout has an opening larger than said outlet opening.

14. The construction as claimed in claim 12, where said spout has a surface in contact with said body closely conforming to the outside surface of said body.

15. The construction as claimed in claim 6, where said tension spring consists of a single piece of wire whose ends are bent coaxially towards each other, said stopper having a pair of axially aligned holes parallel with the line on said pivot bearing on which said projecting means pivot, said ends of said wire being pivotally seated in said axially aligned holes.

16. The construction as claimed is claim 6, where in the extreme open position of said faucet the force of said spring to bias said stopper into the closed position is reduced to be insufficient to return said stopper to the closed position.

17. The construction as claimed in claim 6, where said pivot bearing on said body is in the form of an open groove to receive and guide said means projecting from said stopper.

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