July 20, 1965 R. T. CORNELIUS 3,195,566

READILY DISASSEMBLED VALVE

Filed March 8, 1962

FIG. 1

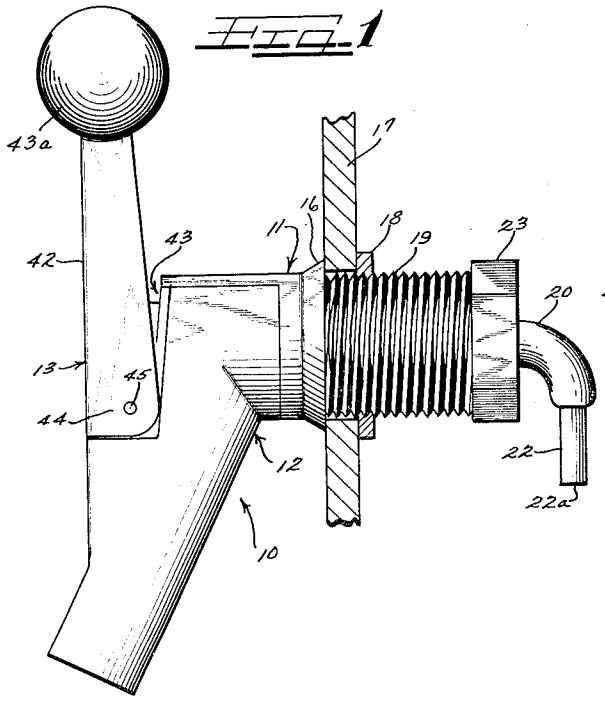


FIG. 4

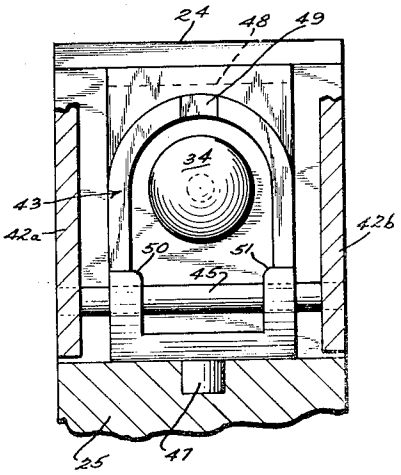


FIG. 2

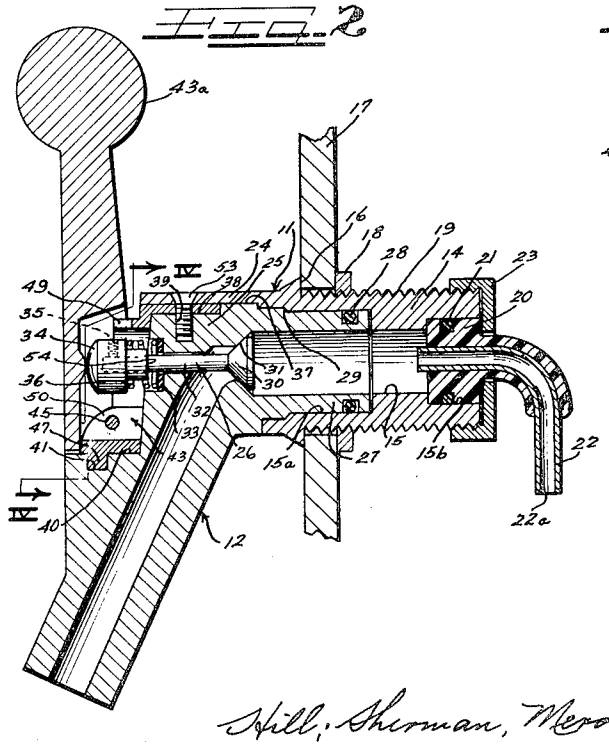
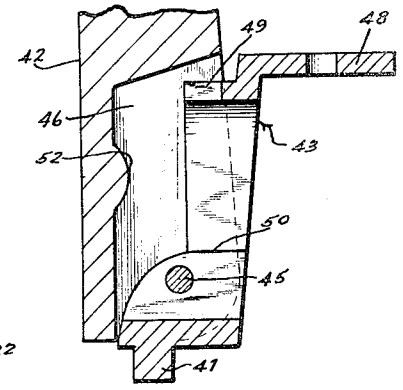


FIG. 3



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United States Patent Office 3,195,566 Patented July 20, 1965

3,195,566

READILY DISASSEMBLED VALVE

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Filed Mar. 8, 1962, Ser. No. 178,314
7 Claims. (Cl. 137—454.2)

This invention relates generally to liquid dispensing devices, and more specifically to an improved faucet incorporating a novel actuator mechanism and body structure.

Although the principles of the present invention may be included in various dispensing devices or faucets, a particularly useful application is made in faucets of the type that are employed to dispense carbonated beverages such as beer and soft drinks. In particular, when such faucets are employed, it becomes necessary to disassemble the same periodically for cleaning purposes. Further, faucets of this type frequently employ a lever or push-type actuator to draw liquid.

The present invention contemplates the utilization of a structure by which the device may be readily disassembled for cleaning without dismounting the same from the cabinet or other support. Such disassembly is accomplished in this invention by the release or removal of a single securing means, whereby the device breaks down into a number of major components which are individually readily cleanable, one of which components comprises a novel actuating mechanism.

Accordingly, it is an object of the present invention to provide an improved liquid dispensing faucet.

Another object of the present invention is to provide a faucet which may be readily disassambled in a facile manner.

Yet another object of the present invention is to provide a liquid dispensing faucet having a novel actuator of the push-type.

Many other advantages, features and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheet of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

On the drawings:

FIGURE 1 is a side elevational view of a liquid dispensing faucet constructed in accordance with the principles of the present invention;

FIGURE 2 is a cross-sectional view of the liquid dispensing faucet of FIGURE 1, the same being partially in elevation;

FIGURE 3 is an enlarged fragmentary view of a portion of FIGURE 2 with certain parts omitted for clarity of illustration; and

FIGURE 4 is an enlarged fragmentary cross-sectional view taken along line IV—IV of FIGURE 2.

As shown on the drawings:

The principles of this invention are particularly useful when embodied in a liquid dispensing device or faucet such as illustrated in FIGURE 1, generally indicated by the numeral 10. The dispensing device 10 includes a housing generally indicated at 11, a valve assembly generally indicated at 12, and a valve element actuator assembly generally indicated at 13.

As best seen in FIGURE 2, the housing 11 comprises a cylindrical portion 14 having a stepped cylindrical passage 15 therein, including cylindrical recesses 15*a* and 15*b*. The housing 11 is provided with a rearwardly directed face or shoulder 16 which is abuttable against a mounting panel 17 forming a part of a cabinet or the like, a mounting nut 18 carried by a set of external threads 19 thereby acting to hold the housing 11 in a securely

mounted and oriented manner. Within the recess 15*b*, there is disposed a swivel block 20 having a peripheral fluid-tight connection with the housing 11, as by means of an O-ring 21. The swivel block 20 includes an embedded elbow piece of tubing 22 having a free end 22*a* which may be directed in any angular direction about the axis of the passage 15. The end 22*a* of the tubing 22 is adapted to be connected to a supply of fluid to be dispensed by the device 10. Once the swivel block 20 has been directed in a desired angular position or orientation, a clamping nut or means 23 carried by the threads 19 may be tightened to securely lock the same in such selected angular orientation or position. The housing 11 also includes a flange 24, and where the flange 24 is integral with the cylindrical portion 14, the housing 11 preferably is a die casting. The flange 24 extends adjacent and parallel to a portion of the valve assembly 12, the flange 24 being offset from the axis of the passage 15, and being disposed at the end thereof which is remote from the swivel block 20.

The valve assembly 12 includes primarily a body 25 which may also comprise a die casting, and a movable valve element 26. The body 25 has a cylindrical portion 27 which extends into the recess 15*a* in the passage 15, the cylindrical portion 27 being thereby slidably telescopically received therein. The cylindrical portion 27 has a fluid-tight connection with the housing 11, and to this end an O-ring 28 is provided. A cam surface 29 facilitates the re-entry and slight radial compression of the O-ring 28 during assembly or reassembly. The movable valve element 26 is reciprocably supported by the body 25, and includes a valve face 30 engageable with a valve seat 31 on the body 25. The valve element 26 includes a stem portion 32 which extends through a loose fitting gasket 33 and terminates in an enlarged outwardly projecting portion 34 held on the stem 32 by a setscrew 35. A spring 36 of the compression type acts between the outwardly projecting portion 34 and the gasket 33 to maintain the valve face 30 normally closed or in engagement with the valve seat 31. It is evident that if the outwardly projecting portion 34 were reciprocated, the valve assembly 12 would be successively opened and closed. The valve body 25 has an upper upwardly directed outer face 37 which is disposed against the lower face of the housing flange 24, and which is recessed as at 38 and tapped as at 39. The body 25 also has a lower upwardly directed outer face 40 which is recessed as at 41.

The valve element actuator assembly 13 includes primarily an actuator lever 42 and a support member generally indicated at 43. The actuator lever 42 is adapted to be manually manipulated at one end 43*a* and to be hinged at the other end 44 as by a hinge pin 45 which may comprise a part of the support member 43, and is coactive therewith. As best seen in FIGURES 2 and 3, the actuator lever 42 has a recess 46 so that the lower end 44 thereof is hollow. The support member 43 is disposed nearly entirely or primarily in the recess 46, and includes a key 47 which is slidably received in the body recess 41 and a flange 48 which is disposed remotely from the key 47 and which extends out of the lever recess 46 and is slidably received in the recess 38 in the upper face 37 of the body. The flange 48 thus extends adjacent to the body 25 and the flange 24. By virtue of the key 47 which slidably interlocks with the body 25, and the flange 48, the support member 13 is rigidly secured to the body 25. As best seen in FIGURE 4, the support member 43 extends about the outwardly projecting portion 34 of the valve element 26 in radially spaced relation thereto, whereby the same defines an aperture through which the outer end of the valve element 26 may project. The support member 43 includes a notch or groove 49 through which a tool may gain access to the setscrew 35 if de-

sired. The support member **43** includes a pair of thickened portions **50** and **51** which provide support for the hinge pin **45**. The hinge pin **45** preferably has a press fit with at least one of the thickened portions **50**, **51**, and a wall **42***a*, **42***b* of the actuator lever **42** so that the pin **45** is retained and so that the actuator lever **42** remains substantially centered. Such a fit does not prevent pivoting of the actuator lever **42** by hand, or return thereof to the position illustrated in FIGURE 2 by the spring **36**. Within the recess **46**, the lever **42** is provided with an arcuate engagement pad **52** intermediate its ends which directly engages the outwardly projecting portion **34** as shown in FIGURE 2.

Removable securing means such as a screw **53** extends through the flanges **24**, **48**, into the threaded aperture **39** of the body **25** to hold the housing **11**, the valve assembly **12**, and the valve element actuator assembly **13** securely together as a unit. The securing means **53** thus preferably is removable, and once the same has been removed, the valve assembly **12** and valve element actuator assembly **13** may jointly be moved to the left as illustrated in FIGURE 2 with respect to the housing **11** to be completely disengaged therefrom, after which the valve element actuator assembly **13** may be moved slightly upwardly and further to the left to disengage the same from the valve assembly **12**. Once so disengaged, these assemblies **11–13** may be readily cleaned without dismounting the housing **11**. Upon completion of such cleaning, the described assemblies **11–13** may be freely reassembled and secured together by means of the screw **53** by reversing the sequence described.

When the device **10** is to be put into service, the tubing end **22***a* is connected to a source of fluid to be dispensed. Thereafter, pivoting of the actuator lever **42** in a clockwise direction as illustrated in FIGURES 1–3 shifts the movable valve element **26** to the right in an opening direction. The amount of such movement is limited by an inwardly directed face **54** on the outwardly projecting portion **34** which engages with the gasket **32**, not only to limit inward movement of the valve face **30**, but also to form a fluid-tight connection at the gasket **33** about the stem or stem section **32**. When the requisite amount of liquid has been drawn, the actuator lever **42** is returned to the illustrated position and the spring **36** returns the movable valve element **26** also to the illustrated position. In response to such movement, the seal created between the face **54** and the gasket **33** is broken, thereby admitting air about the stem **32** into the fluid passage within the valve assembly **12**, thereby enabling complete draining of the same.

Although various minor modifications might be suggested by those versed in the art, it should be understood that I wish to embody within the scope of the patent warranted hereon all such embodiments as reasonably and properly come within the scope of my contribution to the art.

I claim as my invention:

1. A valve device comprising, in combination:

(a) a housing having a passage adapted to be connected to a supply of fluid;

(b) a valve assembly including a body supporting a movable valve element in fluid communication with said passage;

(c) a valve element actuator assembly separate from said valve assembly and operable on said valve element for moving it; and

(d) a single means securing said housing, said valve assembly, and said actuator assembly together as a unit, upon release of which means, each of said housing, said valve assembly, and said actuator assembly is rendered freely separable from the others.

2. A valve device comprising, in combination:

(a) a housing having a passage adapted at one end to be connected to a supply of fluid;

(b) a valve assembly including a body having means precluding rotation thereof while enabling said body to be slidably received into the other end of said passage and having a fluid-tight connection with said housing, said body supporting a movable valve element in fluid communication with said passage;

(c) a valve element actuator assembly operable on said valve element for moving it; and

(d) a member applying a force to said housing, to said valve assembly, and to said actuator assembly and securing said housing, said valve assembly, and said actuator assembly together as a unit, upon release of which member, each of said housing, said valve assembly, and said actuator assembly is slidably separable from the others by means of only linear relative movement.

3. A valve device comprising, in combination:

(a) a valve assembly including a body supporting a movable valve element;

(b) a housing having a passage adapted to connect said valve element with a supply of fluid, and having a sheet-like flange extending adjacent to said body;

(c) a separate valve element actuator assembly operable on said valve element for moving it and having a sheet-like flange extending adjacent to said body and to said housing flange; and

(d) removable means acting in common on said flanges and said body and securing said flanges and said body together, upon removal of which common means, each of said valve assembly, said housing, and said separate valve element actuator is slidably separable from the others.

4. A valve device comprising, in combination:

(a) a housing having a passage adapted at one end to be connected to a supply of fluid, said housing having a substantially flat flange projecting from near the other end of said passage in a direction parallel to the axis of said passage and offset therefrom;

(b) a valve assembly including a body slidably received in said other end of said passage adjacent to said housing flange and including a movable valve element in fluid communication with said passage;

(c) a valve element actuator assembly separate from said valve assembly and operable on said valve element for moving it and including a substantially flat flange extending adjacent to and parallel to said housing flange; and

(d) removable means, common to said body and to both of said flanges, and securing said flanges and said body together, upon removal of which common means, each of said valve assembly, said housing, and said valve element actuator is slidably separable from the others.

5. A valve device comprising, in combination:

(a) a valve assembly including a body slidably supporting a movable valve element, and adapted to be connected to a supply of fluid;

(b) an actuator lever operable on said valve element for moving it;

(c) a separate support member having a projecting portion fixed thereto and slidably received in a body recess to provide an interlock with said body, said support member supporting said actuator lever in a manner enabling pivoting thereof about an axis having a locked relationship with said body; and

(d) means removably securing said support member to said body remotely from said interlock.

6. A valve device comprising, in combination:

(a) a valve assembly including a body having a pair of upwardly directed outer faces vertically and laterally offset from each other, each of said faces having an upwardly opening recess, said body supporting a reciprocable valve element, and adapted to be connected to a supply of fluid;

(b) an actuator lever operable on said valve element for moving it;

(c) a support member having a key slidably non-rotatably received in said recess of the lower of said faces, and said member having a substantially flat flange disposed against the upper of said body faces, said support member pivotally supporting said actuator lever; and

(d) removable fastening means extending through said flange into the upper of said recesses, and securing said flange to said body.

7. A valve device comprising, in combination:

(a) a valve assembly including a body having a pair of upwardly directed outer faces vertically and laterally offset from each other, each of said faces having an upwardly opening recess, said body supporting a reciprocable valve element;

(b) a housing having a passage adapted at one end to be connected to a supply of fluid, said housing having a substantially flat flange extending adjacent to a portion of said body from near the other end of said passage in a direction parallel to the axis of said passage and offset therefrom, said other end being non-rotably slidably receptive of another portion of said valve body and forming a fluid-tight connection therewith;

(c) an actuator lever operable on and engageable with said valve element for reciprocating it;

(d) a support member having a key slidably non-rotatably received in said recess of the lower of said faces, and said member having a susbstantially flat flange disposed adjacent the upper of said body faces and against said housing flange, said support member pivotally supporting said actuator lever; and

(e) removable fastening means extending through both of said flanges into the upper of said recesses and securing said flanges to said body, whereby upon release of said fastening means, each of said housing, said valve assembly, and said support member is slidably separable from the others.

References Cited by the Examiner

UNITED STATES PATENTS

892,994	7/08	Johnston	137—454.2 X
2,097,063	10/37	Heller	251—155 X
2,535,835	12/50	Burgess	251—155 X
2,756,775	7/56	Hyde	137—454.2 X
2,991,795	7/61	Fraser et al.	251—245 X

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