May 3, 1932. J. F. BENTLEY 1,856,458

FAUCET

Filed Aug. 12, 1929 2 Sheets-Sheet 1

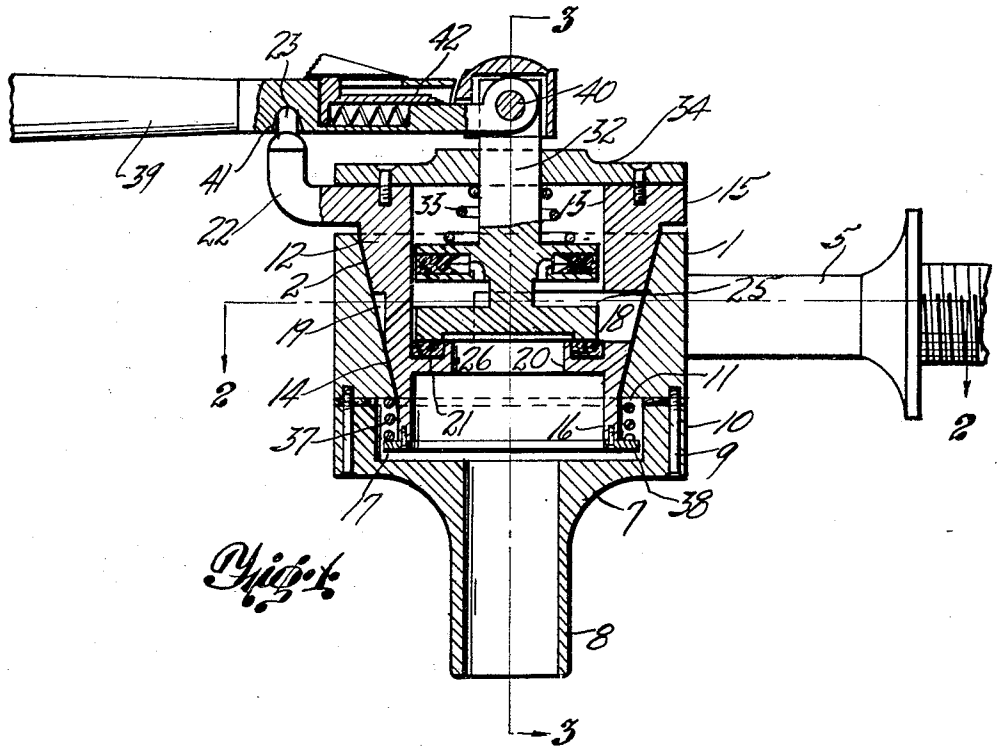


Fig. 1.

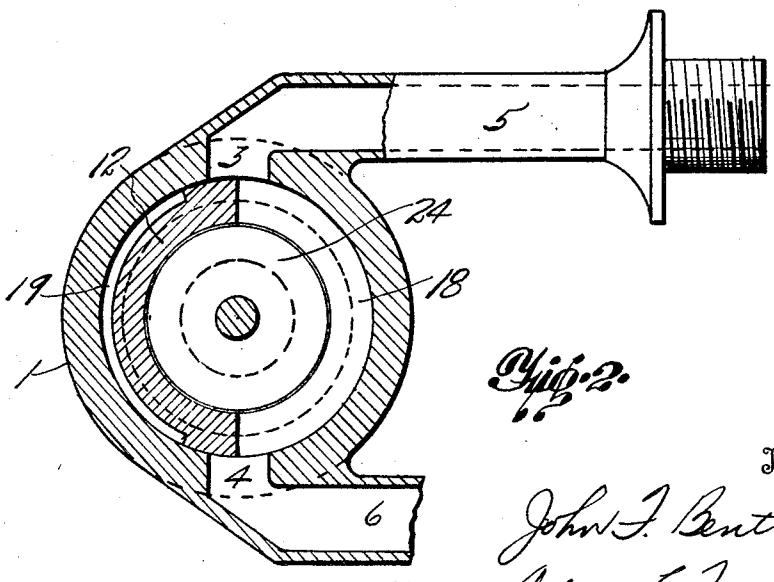


Fig. 2.

Inventor

John F. Bentley

Adam E. Fisher

By

Attorney

May 3, 1932. J. F. BENTLEY 1,856,458

FAUCET

Filed Aug. 12, 1929 2 Sheets-Sheet 2

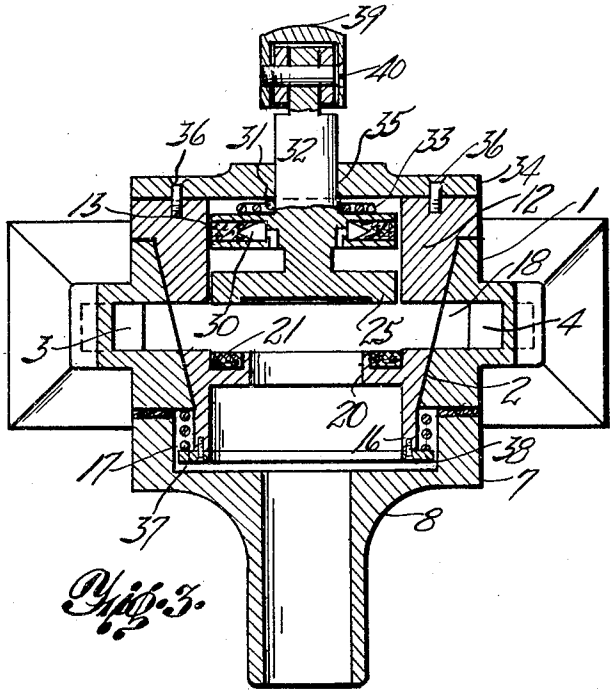


Fig. 3.

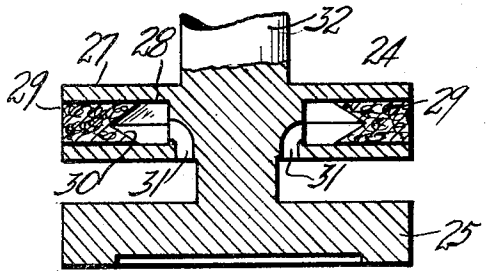


Fig. 4.

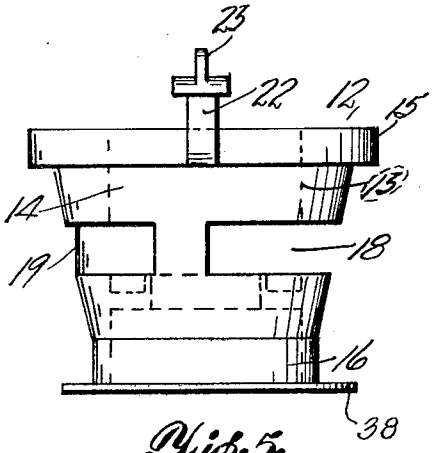


Fig. 5.

Inventor

John F. Bentley

By Adam E. Fisher

Attorney

Patented May 3, 1932 1,856,458

UNITED STATES PATENT OFFICE

JOHN F. BENTLEY, OF DETROIT, MICHIGAN

FAUCET

Application filed August 12, 1929. Serial No. 385,402.

This invention is a water faucet of the kind commonly designated as combination faucets adapted to be operated by a single handle for the delivery of either hot, cold or warm water through the one common nozzle.

The principal object of the invention is to provide a relatively simple, durable and cheap structure of the kind indicated.

Another object is to provide an assembly of an outer casing with beveled inner walls, hot and cold water ports leading thereinto, and having a beveled core rotatably seated within the said casing with a semi-circumferential water passage or port cut through the wall upon one side and adapted to connect the two said water ports upon the appropriate lateral movement of the said core, the beveled coacting faces of the casing and core serving to compensate for wear.

A further object is to provide a structure as indicated, having a central valve to control the flow of water through the device, the said valve being adapted for vertical movement for opening and closing the water channels, and being sealed against water leakage by a washer having a V-shaped inner margin adapted to spread in several directions under water pressure.

Another object is to provide means in the said core upon the side opposite to the said semi-circumferential water passage for offsetting the water pressure against the core due to water flowing into said passage.

Another object is to provide means for holding the said core to its seat against the upward tendency resulting from water pressure.

With the foregoing and other objects in view, attention is called to the following specification and the accompanying drawings constituting a part thereof, and wherein

Figure 1 is a vertical section through the casing and interior assembled elements;

Figure 2 is a horizontal section on the line 2—2 of Figure 1;

Figure 3 is a vertical section on the line 3—3 of Figure 1;

Figure 4 is an enlarged sectional detail of the central valve;

Figure 5 is an enlarged detail view of the core.

This invention comprises an outer circular casing 1, having its inner wall faces or periphery beveled or tapered inwardly from top to bottom or from one end to the other as shown at 2 and having the diametrically opposite hot and cold water ports 3 and 4 connected with the water leads 5 and 6. A lower nozzle plate 7 having the integrally formed nozzle 8 is mounted at the lower side of the casing 1 by means of set screws 9 passed through the upstanding flange 10. The flange 10 is relatively thin so as to provide an annular shoulder 11 at the bottom of the casing for a purpose later to be referred to. A hollow core 12 is rotatably seated within the casing 1, the inner face or periphery thereof being cylindrical or straight as shown at 13, and the outer face or periphery being conical or bevelled or tapered as shown at 14, complementarily of the beveled inner faces 2 of the casing. This core is formed with an upper lip 15 adapted to outwardly overlap the upper edge of the casing 1, with a straight lower flange 16 depending into the nozzle plate 7, thus leaving the spring recess 17 between the flanges 16 and 10. The core 12 is formed with a semi-circumferential water channel or port 18 cut through one side sufficiently to partially span the two ports 3 and 4 as shown in Figure 2, and with a pressure balancing recess 19 cut semi-circumferentially upon the opposite side. An annular valve seat 20 extends inwardly around the lower wall of the core 12, the same being recessed upon its upper side to receive a packing washer 21. A handle rest 22, having an upstanding lug 23, extends laterally from one side of the core 12.

A central valve 24 is seated upon the valve seat 20 of the core 12 upon the washer 21. This valve is provided with a lower web 25 adapted to fully close the opening 26 through the center of the core 12, and a spaced upper web 27 which is recessed upon its periphery as shown at 28 for the reception of the washer 29 which is nicely fitted thereinto. The washer 29 is provided with a V-shaped groove upon its inner periphery as shown at 30 for a purpose which will be later explained.

Water ducts 31 open from the recess 28 downwardly. A valve stem 32 extends upwardly from the valve 24 above the top of the casing 1. A coil spring 33 is seated over the stem 32 and bears upon the valve 24. A core cover 34 having a central aperture 35 for the passing of the stem 32, is fastened atop the core 12 and spring 33 by screws 36. Thus the spring 33 normally closes the valve 24 to its seat. Another and larger coil spring 37 is seated within the spring recess 17 and has its lower end braced against a ring 38 secured to the lower face of the flange 16 of the core 12 and projecting therefrom as shown. The upper end of the spring 37 is braced against the shoulder 11 of the casing 1. Thus the action of the spring 37 is to normally hold the core 12 downwardly to its seat, and counteracts the tendency of the water pressure to force the said core upward. The water entering and flowing through the device exerts a pressure also within the recess 28 of the web 27 which results in the straining of the washer 28 diametrically to seal it against the inner face of the core 12 and also in flexing the inner feather edges of the inner periphery of the washer outwardly to seal it against the possibility of water working past the sides of the washer. A handle 39 has an end pivoted at 40 to the upper end of the valve stem 32, and a slot 41 is cut in the lower side of the handle for engagement with the flat lug 23 of the handle rest 22. A sliding latch 42 upon the handle serves to hold the handle locked horizontally upon the rest 22 from which position it may be released by a simple manipulation of the latch. The latch here shown generally is the subject of a co-pending application, so it is not particularly described here and is not here claimed as part of this invention.

It is thought that the use and operation of the faucet will be fully understood from the foregoing description. With the handle in the horizontal position shown in Figure 1, the valve 24 is closed to its seat and no water can flow through. Upon releasing and depressing the handle, the valve 24 is raised, thereby admitting water from the ports 3 and 4 into the channel 18 of the core 12 whence it flows down through the core and out through the nozzle 8. By simultaneously moving the handle to one side or the other, the core 12 is rotated through the engagement of the handle with the rest 22 and thus either of the said ports may be entirely or partially closed by the core 12, whereby the temperature of the water may be easily regulated. Water under pressure also flows into the recess 19, whereby the water pressure is substantially balanced upon all sides of the core 12 and reduces friction and facilitates operation of the valve. The beveled formation of the casing and core provides a perfect water-tight joint and provides for the wear of the mating surfaces.

While I have herein described a certain specific manner and method of constructing and assembling the elements of my invention, it is understood that I may vary from the same in minor details, not departing from the spirit of my invention, so as best to construct a practical device for the purpose intended, as defined in the appended claims.

I claim:

1. A combination water faucet, comprising a circular casing having its inner wall face tapered from end to end, having diametrically opposite hot and cold water ports and a depending nozzle, there being a spring recess formed in the lower portion of the casing immediately above the nozzle, a hollow core rotatably seated within the casing, the inner face thereof being cylindrical and the outer face being tapered complementarily to the tapered inner wall face of the casing, the said core having a semi-circumferential water channel cut through one side for partially spanning the said water ports of the casing, and an offsetting pressure balancing recess in the other side, and having an upper lip adapted to outwardly overlap the upper edge of the casing, a coil spring mounted around the lower end of the core within the said spring recess of the casing and braced between the core and the casing for holding the core to its seat within the casing, a valve seated within the core to control the flow of water therethrough, the said valve having a lower web for closing the water channel and a spaced upper web recessed peripherally for the washer, the said recess opening downwardly through water ducts at its inner margin, a washer mounted within the said recess, the same being formed with a V-shaped groove upon its inner periphery at the mouths of the said water ducts, a closure for the open top of the core, means for holding the said valve to its seat, means for rotating the said core and means for raising and lowering the said valve.

2. In a device of the kind described, a casing having two spaced inlet ports and a nozzle opening at its lower side, the said casing having its inner wall face tapered from the intended top end to the intended bottom end, a complemental hollow core rotatably seated within the casing and having a water channel cut away at one side for partially spanning the said inlet ports, a valve seated within the said core for controlling the flow of water therethrough to the said nozzle opening, resilient means in the lower part of the casing for holding the said hollow core to its seat within the casing, and resilient means for holding the said valve to its seat within the said hollow core.

In testimony whereof I affix my signature.

JOHN F. BENTLEY.