April 9, 1940. F. O. HORSTMANN 2,196,798

TAP OR VALVE

Filed March 23, 1937

Fig.1.

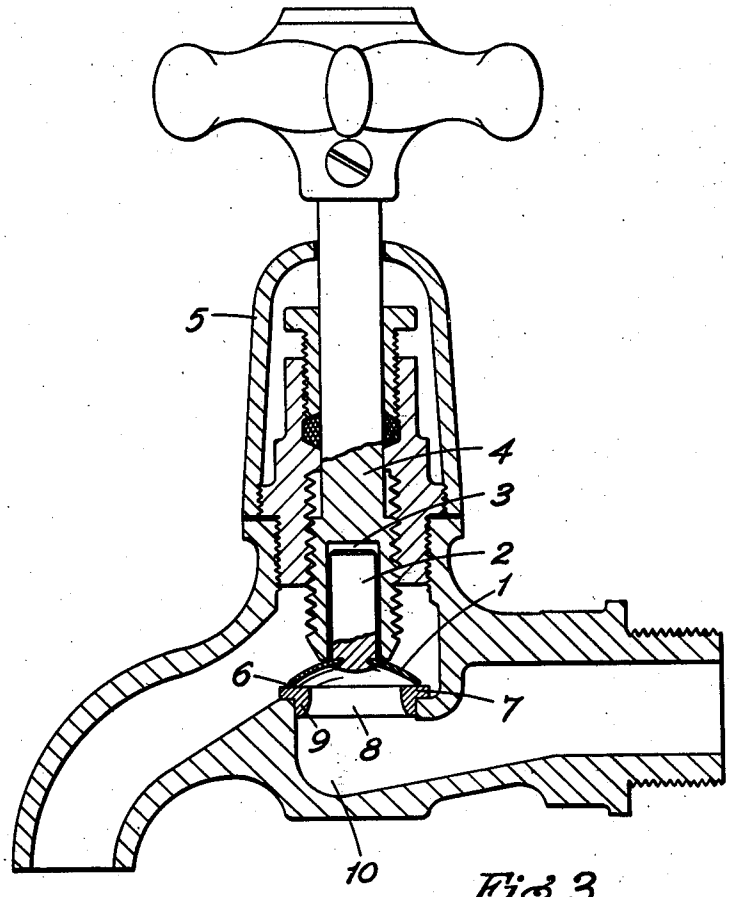


Fig.3.

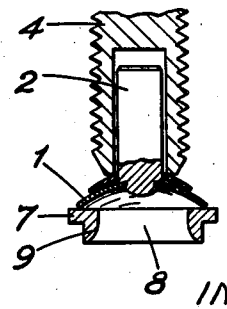
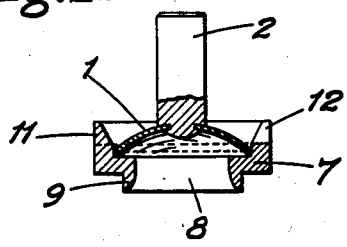


Fig.2.



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TAP OR VALVE

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1 Claim. (Cl. 251—160)

This invention has reference to taps or valve devices wherein the valve is screwed or otherwise positively clamped down to its seating, and it is particularly applicable to water taps.

According to the invention a screw-down or like positively engaged tap or valve device includes a valve and seating made of hardened incorrodible metal, the valve consisting of a dish shape disc having projecting from its convex side a stem which removably fits in a socket of the valve operating barrel, the edge of the valve coacting with the seating to spread radially thereover as pressure is applied to the convex side of the valve by the operating barrel.

Preferably the valve member and the seating are made of stainless steel, the use of similar incorrodible metals for the valve and seating—especially when intended for controlling the flow of hot water supplies—avoiding or reducing the possibility of electrolytic action between the two coacting parts and thus supplementing the cleaning and burnishing action arising from the valve rubbing over its seating.

As designed especially for a screw-down water tap, the seating may consist of a metal disc having a flat face with which the periphery of the dished valve member coacts and on the opposite face thereto a projection which fits in the existing fluid passage of the tap. The valve engaging face of the seating may be surrounded by a shroud in the form of an upstanding flange having parallel or tapering interior sides with or without suitable slots constituting ports which permit the passage of fluid when the valve is raised from its seating to open the main fluid port. The advantage of the shroud is that it enables the 'spread' of the dished springy valve when pressed on to its seating to close the main fluid port, to form an additional radial seal against the escape of fluid. However, for many purposes, the shroud will not be required and efficient port sealing will be obtained by the simple flat disc seating.

As an optional provision, the invention may include a resilient connection between the valve and the tap barrel so as to impart an improved 'feel' to the actuating handle. Thus, for example, in the practical embodiment of the valve above referred to the bottom of the tap barrel may have a springy disc of dish shape the periphery of which presses on the back of the valve.

In order that the construction and the function of the valve member according to the invention and its seating may be clearly understood, reference will now be made to the accompanying drawing which shows the application of the improved valve member and seating to a water tap of the screw-down type.

In the drawing:

Figure 1 is a sectional elevation of the tap incorporating the valve member and seating;

Figure 2 is a sectional detail of the valve member cooperating with a seating having a shroud; and

Figure 3 is a sectional detail of the valve member and its seating with a springy dish shape disc between the tap barrel and the valve.

The valve member consists of a springy metal disc 1 dished as shown and provided at the back with a stem 2 which fits loosely in the existing socket 3 formed in the screw-down barrel 4 of the tap 5. In use the periphery of the dished valve 1 coacts with the flat face 6 of a metal seating 7 which in Figures 1 and 3 is a simple disc having a main fluid port 8 surrounded on the face opposite to that with which the valve coacts by a projection 9. This projection 9 is fitted securely in the existing fluid passage 10 of the tap as shown. The operation of the valve will be clear from the drawing; in the closed position, shown, the periphery of the springy valve is pressed tightly against the seating, the dish shape having been flexed to spread radially across the seating as the barrel is screwed down, thus forming an efficient seal, and maintaining a clean burnished surface of the seating and a bright water-sealing edge to the dish-valve. When the barrel is unscrewed, the dished valve flexes inwardly to its normal shape and under the pressure of water rises with the barrel to open the main fluid port 8.

In Figure 2 the disc seating 7 is surrounded by an upstanding flange 11 forming a shroud, the edge of the dished valve 1 in the closed position pressing tightly against the interior side walls of the seating to constitute an additional radial seal against the escape of fluid. In the example illustrated the upper part of the interior side walls of the shroud tapers from the top so that a wider passage at the top is provided for the flow of water when the valve is open, and in addition auxiliary fluid ports such as 12 are formed in the side walls.

Figure 3 shows one practical and simple method of imparting an improved 'feel' to the barrel. Between the bottom of the barrel 4 and the valve 1, is a springy metal disc of dish shape the periphery of which presses on the back of the valve and spreads radially across the valve as the barrel is screwed down.

I claim:

In a valve, a valve seat, an operating barrel having an end recess, a stem in said recess, a springy dished disk valve carried by said stem for cooperation with said seat, and a dished disk spring interposed between the end of the barrel and said disk valve through which said barrel operates to press said disk valve to said seat.

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