No. 649,457. Patented May 15, 1900.

J. HOWES.

FAUCET.

(No Model.) (Application filed June 28, 1897.)

Fig. 1.

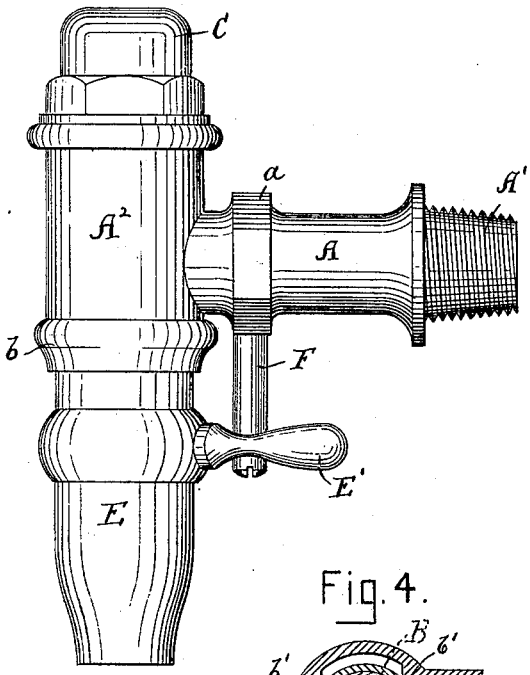

Fig. 3.

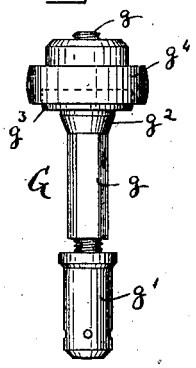

Fig. 4.

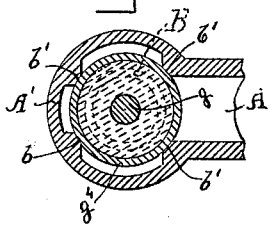

Fig. 2.

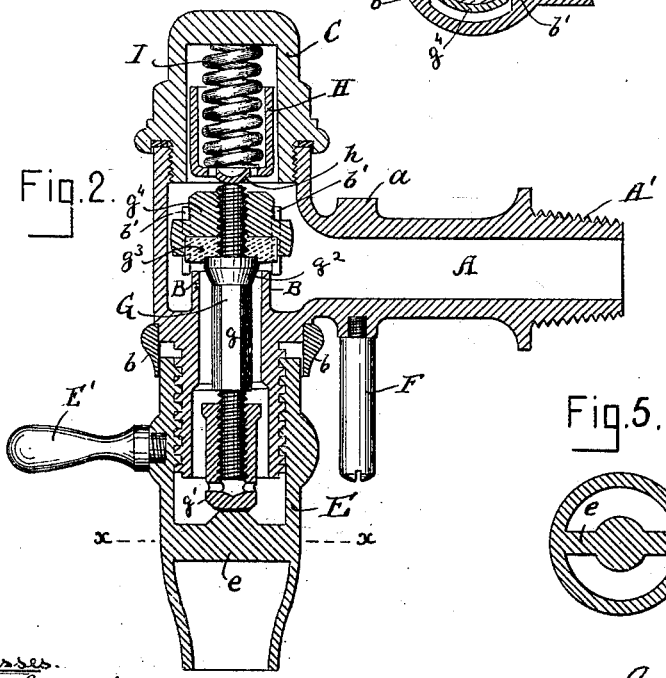

Fig. 6.

Fig. 5.

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JOHN HOWES, OF BOSTON, MASSACHUSETTS.

FAUCET.

SPECIFICATION forming part of Letters Patent No. 649,457, dated May 15, 1900.

Application filed June 28, 1897. Serial No. 642,568. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOWES, of Boston, (Dorchester,) in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Faucets, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to make and use the same.

This invention has relation to faucets adapted for use to control the flow of water or other liquid from pipes or conduits, and particularly where the water is under pressure.

It is the object of the invention to procure such improvements as will allow the valve to be readily opened and when closed to instantly find its true seat, avoiding leakage, cutting, or wear of the valve-seat and all hammer, rattle, and other annoying noises.

It is also the object of the invention to provide other improvements in the direction of efficiency, simplicity, and durability and convenience in operation of faucets to the end that they may perfectly subserve the purposes for which they are intended.

The invention consists of an improvement in faucets in which in the operation of the valve it is held practically rigidly axially between two points at its ends or top and bottom and left substantially free laterally, so that it may not become appreciably bound in its movements and so that in closing it may instantly find its true seat.

The invention also consists of improvements incidental to the forging and to the production of a perfect faucet, all as is hereinafter fully and clearly set forth.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 represents a side view of a faucet complete embodying my invention. Fig. 2 is a vertical horizontal sectional view of the same. Fig. 3 is a side view of the valve and its equipments. Fig. 4 is a horizontal sectional view through head and valve, showing guides for the latter. Fig. 5 is a transverse section taken on the line $x\,x$ of Fig. 2. Fig. 6 is a vertical sectional view of a modified form of thimble-follower.

In the drawings, A represents the body of the faucet, having at its rear end a suitable connecting-nipple A′, which may be screw-threaded, as shown, or plain, and formed at its forward end with a vertical chambered head A^2, which is provided with a tubular projection B, raised to a height of, say, the center of (or a little above) the body A. The upper portion or edge of this raised part forms the seat of the valve. The object of thus raising the seat is to permit of full access of water to place below the face of the valve, whereby tendency to shock is avoided, and to prevent loose pieces of solder, dirt, or other foreign matter from lodging upon the valve-seat and preventing the valve from closing tightly.

The upper portion of the head A^2 is closed by a cap C, and the lower or depending portion of the head A^2 is formed on its outer surface with a screw-thread, (in this case of a left-hand character,) onto which screw-threaded part is fitted the nozzle E, which is formed with a bridge-bar *e*, located a short distance below the end of the part A^2 when the nozzle is screwed up to its operative or working limit.

A ring *b* is shrunk or soldered onto or it may be made integral with the head A^2 in order to cover the upper end of the nozzle E and the top of the screw-thread on which it is turned, so that they will not be exposed to view and to the lodgment of dirt thereon when the nozzle E is turned down to its lowest practical working limit.

The nozzle E is fitted with a handle E′, by which it can be turned, and the body A, near the head A^2, is formed with a projecting flange or nut *a*, into which is screwed a pin F to form a stop for the handle E′, so that it cannot be turned to unscrew and dislocate the nozzle when the faucet is in ordinary use.

G is the valve, and *g* is the valve-stem, the lower end of which is screw-threaded and fitted with an adjusting-sleeve *g*′, its bottom being slightly rounded at the point against which the bridge-bar *e* comes when the nozzle E is turned to raise the valve and open the faucet. The valve-stem near its upper end

is formed with a flange g^2, and the portion of the stem above the said flange is screw-threaded and the end made flat and smooth. Upon this screw-threaded portion is placed a washer g^3, of suitable material to constitute a valve-packing, that is held in a chamber formed in the cap of a nut g^4, which is screwed upon the upper portion of the valve-stem g, the stem, washer, and the nut-cap thus forming the valve, with the adjusting-sleeve g' upon the lower end of the valve-stem. The said valve-cap g^4 is slightly rounded on the edge where it meets the ribs or lugs b' b', (see Figs. 3 and 4,) formed on the inner wall of the head A', by which means the cap g^4 is held in proper position laterally with a necessary degree of freedom to tilt, while the valve-stem g will be held vertically and centrally within but not in contact with the head A' and at the same time with ample room for lateral movement when relieved from contact with the bridge-bar e to permit the packing or washer g^3 to adjust itself to the valve-seat B. Said valve-cap g^4, if desired, may be made solid and flat on the top, the stem g not passing through the cap g^4; but it is thought that it may be more convenient and expedient in manufacture to construct the stem g and cap g^4 as shown.

Within the cap C is arranged a thimble-follower H, which is preferably formed with a small rounded projecting boss h on its bottom, as shown in Fig. 2, that rests upon the center of the upper end of the valve-stem g.

A spring I is placed within the follower H and arranged to bear against the inner side of the top of the cap C and the bottom of the follower H and under slight tension, so that when the valve is closed, pressure being exerted upon the top and center of the valve-stem g, the lower end of the stem being free to move laterally when the valve is closed, the valve will be readily and properly adjusted upon the valve-seat, thus preventing the escape of water. The arrangement of the spring and follower and the valve and valve-seat are the important elements in this invention, securing, as they do, convenience in adjustment and certainty of desired results in a faucet closing in the direction of the water-pressure not heretofore attained. Other devices that have been employed for holding and guiding the valve in this class of faucets have not been satisfactory.

In the application and use of the invention the nozzle E will first be so adjusted in its place on the head A' that its top will be just covered or overlapped by the ring or depending flange b when the handle E is turned to the right, so as to nearly touch the stop-pin F, and there should then be sufficient space above the top of the nozzle under the said ring or flange to permit the nozzle to be screwed up to raise the valve and open the faucet. The sleeve g' must be so adjusted upon the valve-stem g that when the valve is resting upon the seat and the nozzle is in its working position, with handle E turned to the right against the pin F, the bottom end of said sleeve will be just above and clear of the bridge-bar e. The adjusting-sleeve g' and the thimble-follower H are both formed with holes in their bottom portion to allow any chance water therein to escape therefrom. If desired, the thimble-follower H may be made with a flat bottom, as shown in Fig. 6, in which case the top end of the valve-stem or the top of the valve-cap g when made solid will be formed with a rounded point or boss on the top and in the center. It will be seen that by this construction the valve may be raised off its seat by turning the handle E' from near the pin F on the right toward the left as the invention is shown in the drawings, which causes the nozzle E to ride upon the screw on the head, and as said nozzle rises the bridge-bar e comes into contact with the bottom end of the adjusting-sleeve g' and forces the valve-stem up, thus raising the valve from its seat, so that water can flow from the body A through the head A' and out of the nozzle E. Now when the handle E' is turned back toward the right to close the faucet the nozzle E is lowered, so that the bridge-bar e will be just below and clear of the bottom end of the said adjusting-sleeve g'. The spring I at the same time exerts pressure upon the thimble-follower H and, together with the water-pressure, forces the valve down to the seat, and as at the same instant the valve-stem is relieved from connection with the bridge-bar e and not being in contact with the head or guided by the head it is left free to oscillate, and the valve is then allowed all necessary movement to properly adjust itself upon or find its true seat. By this construction when the valve is operated it is held at its top and bottom between two points, each practically rigid, so that all lateral and propulsive vibration which causes hammer and rattle, heretofore so annoying and troublesome, is avoided, and by reason of pressure being applied to the top and center of the valve as it returns to and rests upon the seat, the valve-stem being left free to move laterally, the valve readily and perfectly adapts itself to its seat and all liability to leakage is overcome.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. A faucet comprising in its construction a valve and valve-seat, means for raising the valve, and a spring-pressed follower separate from the valve-bearing upon a limited surface of the valve in an axial line with a tendency to seat it, as set forth.

2. In a faucet, the combination, with the valve-seat and the valve and its stem, of means acting upon the stem to raise the valve, and a thimble-follower separate from the valve and spring also acting upon the

valve to assist in maintaining it in position, and tending to close the valve upon its seat, as set forth.

3. In a faucet, the combination, with the valve-seat and operative nozzle, of the valve and its laterally-free depending stem, the latter being constructed and arranged to be acted upon by the nozzle to raise the valve, and an independent follower and a spring acting upon the same constructed and arranged to bear upon the valve and operate with a tendency to maintain it in position and to close the valve upon its seat, as set forth.

4. In a faucet, the combination, with the head provided with inwardly-projecting valve-guiding ribs, a valve-seat and a valve arranged within the lines of the ribs, as described, means for raising the valve, and independent means, as a follower and a spring acting thereon, bearing upon the valve with a tendency to seat it, the said means acting on the axial line of the valve, as set forth.

5. The combination, with the valve, of the independent follower H and the spring I, operative and arranged, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of March, A. D. 1897.

JOHN HOWES.

Witnesses:
T. H. WOODWORTH,
WM. HYLAND.