No. 715,266. Patented Dec. 9, 1902.

W. HESTON.

VALVE.

(Application filed Apr. 4, 1902.)

(No Model.)

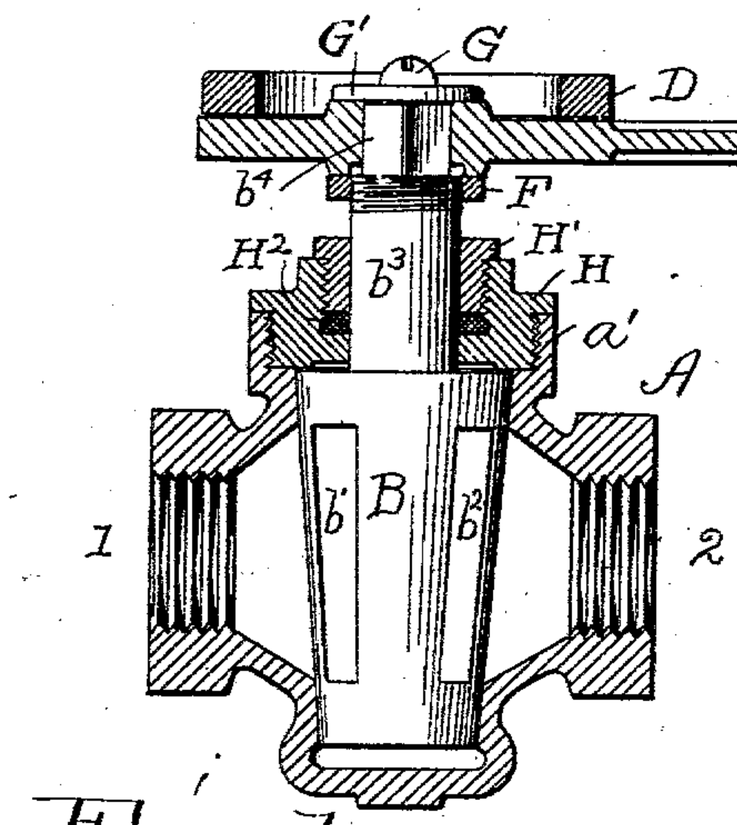

Fig. 1.

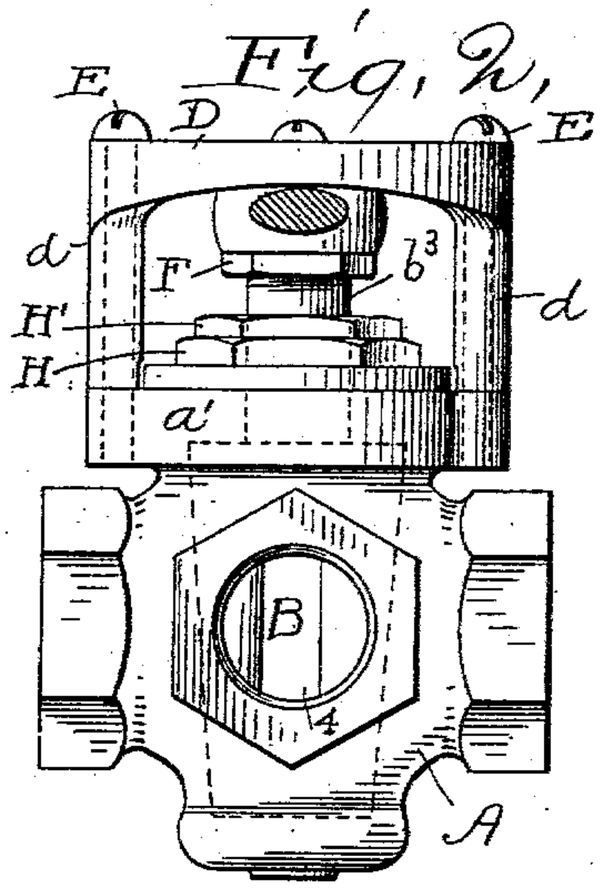

Fig. 2.

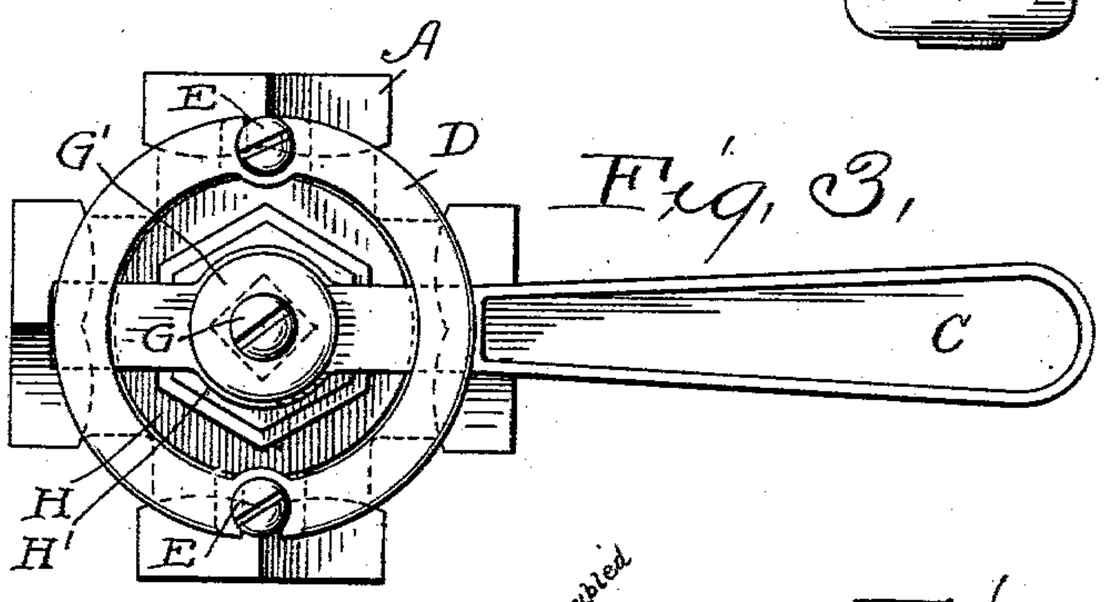

Fig. 3.

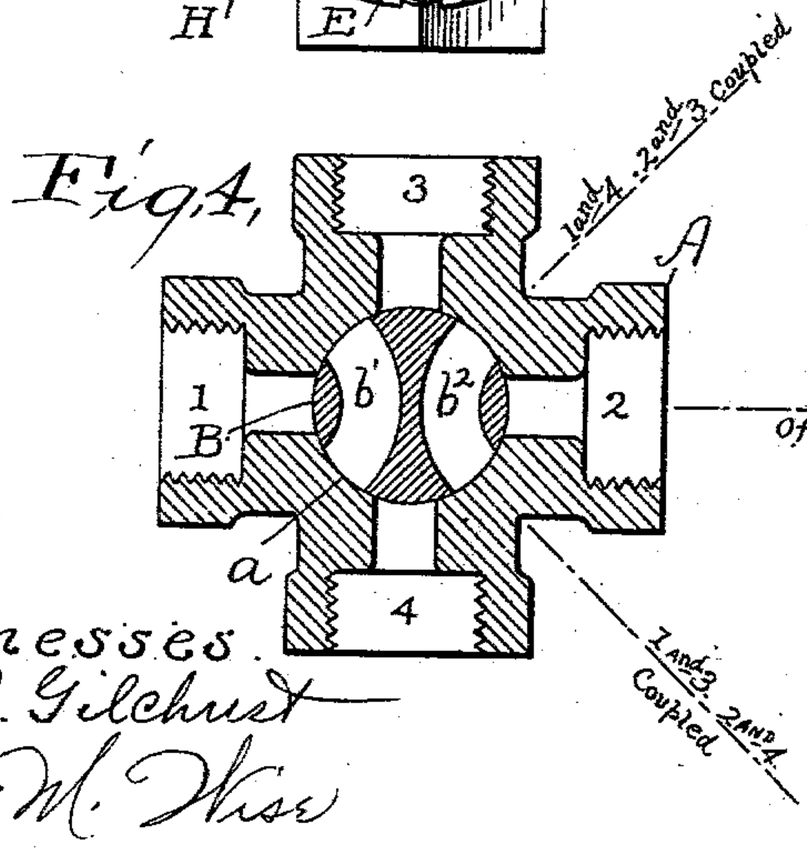

Fig. 4.

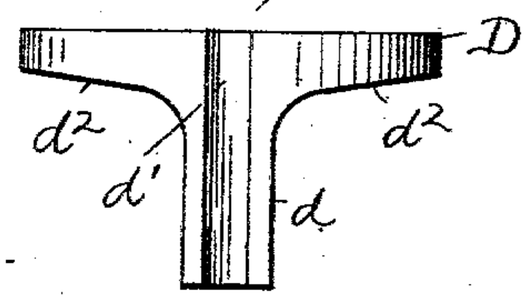

Fig. 5.

Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM HESTON, OF HOMESTEAD, PENNSYLVANIA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 715,266, dated December 9, 1902.

Application filed April 4, 1902. Serial No. 101,366. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HESTON, a citizen of the United States, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a multiple-way valve with very simple and efficient means for firmly seating the plug in the casing at each of its active positions. In accomplishing this I have provided a valve with a casing and plug and exterior cam-surfaces for seating the plug, combined with a very simple means for taking up the wear to insure proper seating at all times.

The invention may be best summarized as consisting of the combination of parts to the above end herein shown, described, and claimed.

The drawings clearly show my invention as applied to a four-way cock.

Figure 1 is a vertical central section through the same. Fig. 2 is a side elevation at right angles to Fig. 1. Fig. 3 is a plan. Fig. 4 is a horizontal section through the passages of the casing, and Fig. 5 is a side elevation of the cam-yoke.

Referring to the parts by letters, A represents the casing, which in the form shown has four passage-ways (designated 1, 2, 3, and 4) threaded to receive pipes and leading to the inner conical cavity *a*. In this cavity seats the plug B, which has passage-ways b' and b^2 through it for the purpose of connecting the passage-ways in the casing.

C represents the operating-handle, engaging a square portion b^4 of the shank b^3 of the plug. Fig. 4 indicates by broken lines the position of the operating-handle. When it is in line with the passage-ways 1 and 2, the valve is shut off. When it is between the passage-ways 2 and 3, these passage-ways are connected together by the passage b^2, and likewise the passage-ways 1 and 4 are connected by the passage b'. When the handle is between the passage-ways 2 and 4, these passage-ways are connected and also the passage-ways 1 and 3.

The valve shown herein is adapted for the various purposes for which the four-way cock may be employed—as, for example, in the operation of hydraulic elevators. In such application and in many others it is essential that there be no leakage around the plug when it is in either active position. The most satisfactory way to accomplish this is to force the plug endwise more snugly into its seat by means of the cam-surfaces as it comes into the final positions. Now these cam-surfaces have heretofore been provided within the valve-casing; but in such cases it is very inconvenient to take up the wear, nor are the wearing-surfaces visible for correction. In the present invention I have provided an arrangement of cam-surfaces outside of the valve-casing, so that the operator may always be able to see what service the cams are giving and may very conveniently take up the wear as required. This is provided by the following-described mechanism: On the upper side of the valve-casing is secured the yoke D. This consists of a ring secured at diametrically opposite points and having its under surface inclined upward from these points to meet midway between them, which is in the vertical plane corresponding to the off position of the lever C. This lever projects in each direction from the shank b^3 of the plug and engages the under surfaces of the ring D at diametrically opposite points. The ring D is firmly held onto the casing by screw-bolts E, lying within vertical recesses d' in the posts *d*, preferably formed integral with the ring. A nut F, screwing onto the shank b^3, adjusts the position of the lever C, and thereafter the nut is jammed by turning down the screw G, screwing into the upper end of the shank b^3 and having a washer G′ bearing on the upper surfaces of the lever C.

From the above-described construction it follows that whenever the lever C is turned from the off position in either direction the plug B is formed into the casing, firmly seating itself. As the plug wears the screw G may be loosened and the nut F turned upward to take up the space between the lever and the yoke-ring, so that the plug will always come into its snuggest position with the passage-ways b' b^2, properly alined with the ports of the casing.

In the upper portion of the casing is a flange

a', screw-threaded internally, and into this screws the member H of the stuffing-box, this member being also internally threaded and receiving the threaded thimble H', which compresses the packing H^2 between the two members. This arrangement of the stuffing-box is not only very efficient in properly packing the shank b^3, but it obviates the necessity of having a ground joint-head to the casing secured by numerous bolts, as has formerly been done. Moreover, the packing-box may be removed entirely and the yoke-frame D replaced and the performance of the valve observed while in operation. This is a matter of importance in testing the valves.

I claim—

1. The combination of a valve-casing, a plug occupying the same and having a stem extending upward therefrom, a ring carried by the casing, a lever on said stem beneath the ring, said lever engaging said ring at points on both sides of the stem, said ring being inclined on its under surface, substantially as described.

2. The combination of a four-way valve-casing, a tapered plug occupying the same and having passage-ways through it, a ring carried by the casing, a lever secured to the stem of said plug and engaging the under side of the ring, said ring inclining downward on the under surface of each side in each direction from the off position of the lever, substantially as described.

3. The combination of a valve-casing, a tapered plug occupying the same, a stem extending upward from said plug, a ring, a pair of diametrically opposite posts for supporting the same above said casing, a lever on the stem of the valve engaging the under side of said ring at diametrically opposite points, said under side being inclined, substantially as described.

4. The combination of a valve-casing, a plug occupying the same, a stem extending upward from said plug, a ring supported above said casing, a lever on the stem of the valve engaging the under side of said ring, said under side being inclined, and means for adjusting the position of said lever, substantially as described.

5. The combination of a valve-casing, a tapered plug occupying the same, a stem extending upward from said plug, a ring, posts for supporting the same above said casing, a lever on the stem of the valve engaging the under side of said ring, said under side being inclined, and a nut screwing onto the stem of the valve for adjusting the position of said lever, substantially as described.

6. The combination of a valve-casing, a tapered plug occupying the same, a stem extending upward from said plug, a ring, a pair of diametrically opposite posts for supporting the same above said casing, a lever on the stem of the valve engaging the under side of said ring, said under side being inclined, said posts being formed integral with the ring and having vertical recesses in them, and screw-bolts occupying said recesses and taking into said casing, substantially as described.

7. The combination of a valve-casing, a plug within the same, a stem for the plug, a stuffing-box for the stem consisting of two members, one screwing into the other, the valve-casing having a flange internally threaded, in which the outer member of the stuffing-box screws, a yoke secured to the casing outside of the stuffing-box, and a cam arrangement on the under side of said yoke for forcing the plug to its seat, substantially as described.

8. The combination of a valve-casing, a plug within the same, a stem for the plug, a stuffing-box for the stem consisting of two members, one screwing into the other, the valve-casing having a flange internally threaded, in which the outer member of the stuffing-box screws, a yoke secured to the casing outside of the stuffing-box, said yoke being in the form of an annular ring inclined on its under surface, and a lever engaging the stem of the plug and engaging the under surface of said ring on opposite sides of the stem, substantially as described.

9. The combination of a valve-casing, a plug within the same, a stem for the plug, a stuffing-box for the stem consisting of two members, one screwing into the other, a yoke secured to the casing outside of the stuffing-box, said yoke being in the form of an annular ring inclined on its under surface and having supporting-posts and a lever engaging the stem of the plug and engaging the under surface of said ring on opposite sides of the stem, and a nut screw-threaded onto the stem and engaging the under surface of the lever to adjust it to take up wear, substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM HESTON.

Witnesses:
ADAM WOLTFARTH,
M. E. BALDWIN.