E. FISHER.

VALVE.

APPLICATION FILED AUG. 28, 1912.

1,157,641. Patented Oct. 19, 1915.

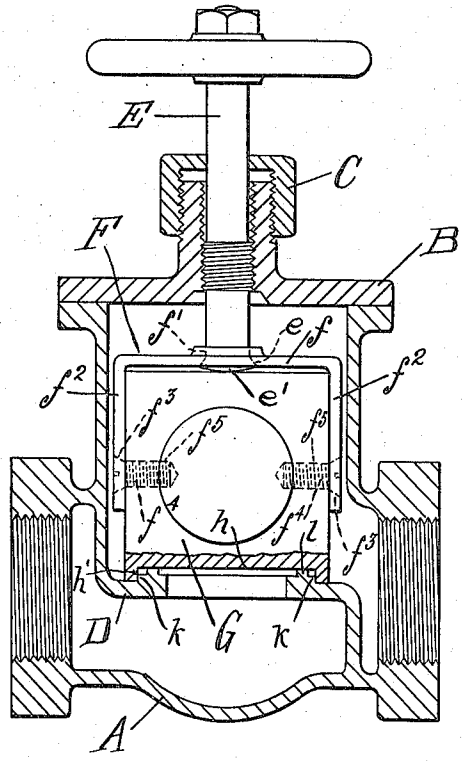


FIG. 1.

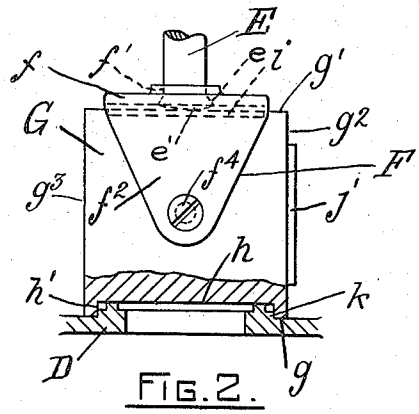


FIG. 2.

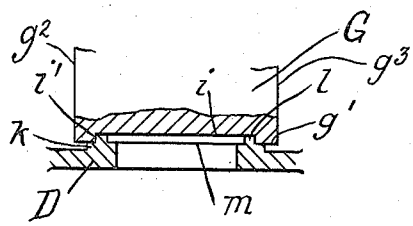


FIG. 3.

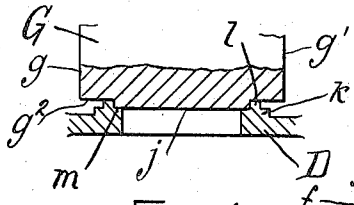


FIG. 4.

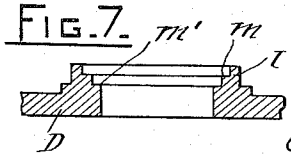
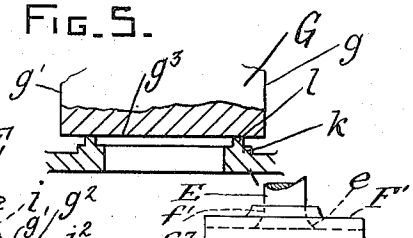


FIG. 7.

FIG. 5.



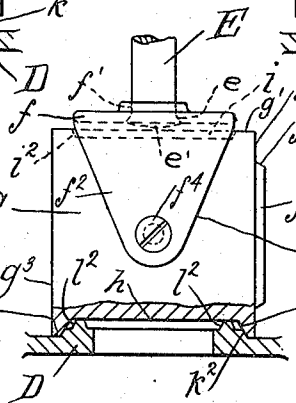


FIG. 6.

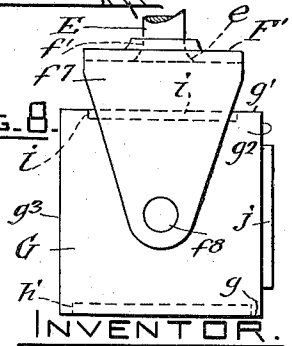


FIG. 8.

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VALVE.

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To all whom it may concern:

Be it known that I, EMANUEL FISHER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to valves, and its essential objects are to provide means for compensating for the wear upon the valve and its seat; to prevent leakage; to afford means for successively presenting a plurality of valve faces to the valve seat; to automatically square the valve upon its seat; and to attain these ends in a simple and inexpensive structure.

To the above ends essentially my invention consists in such parts and such combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification, Figure 1, is a vertical central section of a valve casing showing mounted therein partially in side elevation the novel valve member, Fig. 2, a side elevation, partially in section of my novel valve and seat, Figs. 3, 4, and 5, similar partial elevations of the same showing successive positions of the valve faces, Fig. 6, a similar elevation of a modified form of the same, Fig. 7, a transverse central section of a modified form of my valve seat, and Fig. 8, a side elevation of a modified arrangement of the valve and holder.

Like characters of reference indicate like parts through the views.

In the present instance my invention is shown in connection with a usual valve casing comprising the shell A, head B, cap nut C, partition D.

E is the valve stem. Upon the bottom of the stem E, is mounted a holder or yoke. In the form thereof herein shown the holder F, comprises a horizontal body portion f provided with a central opening f' slightly greater diameter than the diameter of the stem E, which passes therethrough. The holder has downwardly directed ears f^2 upon each end of the portion f, provided with perforations f^3 to receive screws f^4, loosely engaging in threaded openings f^5 in a rectangular or substantially cube shaped valve body G. The lower end of the stem E, is expanded as at e, so as to present to the lower face of the holder F, a support. The body G, is preferably slightly interspaced from the body f, of the holder to permit a limited pivotal movement of the former. It is also advantageous to provide the bottom of the stem E with a convex face e' to contact with the valve body G, which may if desired be provided with a concavity to receive said face. The described construction of stem and holder facilitates the accurate seating of the valve upon its seat.

In detail, the valve body G is provided with four acting faces g, g', g^2, g^3. The face g of the valve body is provided with a comparatively deep, preferably circular, recess h, forming an annular inclosing wall h'. The opposite face g' of the valve is provided with a similar recess i of less depth and diameter than the recess h, forming the wall i'. One face g^2 is provided with a circular flat elevation j; while the opposite face g^3 is perfectly flat.

The partition D is provided with a valve seat comprising external and internal stepped faces adapted to coöperate with the various faces of the valve G. In the present instance the seat comprises an external annular elevated shoulder or step k, and a second annular external shoulder l thereon, of less diameter than the shoulder k. Upon the interior of the seat is an annular shoulder or step m. The diameters of the cavity h and the shoulder k are equal, and the depth of said cavity is equal to or slightly more than the combined height of the shoulders k and l. The diameters of the cavity i and the exterior face of the shoulder or step l, are equal, while the depth of the cavity equals or slightly exceeds the depth of the latter step. The diameter of the elevation j equals the diameter of the inner face of the step l, and is of the same depth as the latter or slightly greater.

The valve G is preferably initially mounted with the parts as shown in Figs. 1 and 2, namely, having the face g in coöperation with the seat. The wall of the cavity h embraces the outer face of the shoulder k, while the face g contacts with face of the partition or seat D. After wear of the contacting parts, the valve G may, by the removal and reinsertion of the screws f^4, be swung around to bring the face g' downwardly, as shown in Fig. 3. The cavity wall embraces the exterior of the step l, and the face g' contacts with the upper face of the step k. After excessive wear of the acting

faces in the described position, the valve is turned to bring the face g^2 downward as shown in Fig. 4. The face of the elevation j rests upon the upper face of the step m, and the side face of the elevation j is adjacent to the inner face of the step l.

Another, and final position of the valve is that shown in Fig. 5 wherein the face g^3 is downward and rests upon the top face of the shoulder l. If desired, the side faces of the steps of the seat may be beveled as at k^2 and l^2, and the side of the elevation j may be beveled as at j^2. The walls of the cavities h' and i' are then also beveled as h^2 and i^2, all as shown in Fig. 6. The number of outside and inside steps constituting the valve seat may be increased to any desired number. In Fig. 7 is shown at m' an additional step.

In Fig. 8, is shown a modified form of holder F^1, whose ears f^7 are of increased length, so as to permit the valve G to be rotated without the necessity of removing any pivot screws f^5, the latter having a permanent pivot member f^8 substituted therefor.

I claim:—

1. In a device of the type set forth, the combination of a valve seat comprising a plurality of steps, and a valve comprising a plurality of operating faces, said valve being rotatably mounted whereby the said faces may be brought successively into position to engage with the corresponding steps.

2. In a device of the type set forth, the combination of a valve seat comprising a plurality of steps, and a valve comprising faces, one of said faces being provided with a cavity adapted to embrace one step, and another face provided with a cavity of less diameter than the first cavity and adapted to embrace another step.

3. In a device of the type set forth, the combination of a valve seat comprising external steps and an internal step, and a valve comprising a plurality of faces, certain of said faces being provided with cavities, and an elevation upon another of said faces, said valve being rotatably mounted whereby the said cavities may be brought successively into position to embrace the external steps, and the elevation may be brought into position to engage the internal step.

4. In a device of the type set forth, the combination of a valve seat comprising two external annular steps of successively less diameter upwardly, and an internal annular step, and a valve comprising four operating faces one of said faces being provided with a cavity adapted to receive as a sliding fit the external step of greater diameter, another of said faces being provided with a cavity of less depth and diameter than the first cavity and adapted to receive as a sliding fit the second external step, and an elevation upon another of said faces of less diameter than the diameter of the second cavity and adapted to register with the internal step.

5. In a device of the type set forth, the combination with the valve casing and valve seat, of a cube valve mounted in the casing above the seat, a yoke attached to opposite sides of the valve, and a valve stem supporting the yoke.

6. In a device of the type set forth, the combination with the valve casing and valve seat, of a cube valve mounted in the casing in alinement with the seat, a yoke pivotally attached to opposite sides of the valve, and a valve stem in the casing loosely engaging the yoke.

7. In a device of the type set forth, the combination with the casing and valve seat, of a cube valve mounted in the casing above the seat, a yoke comprising a horizontal body portion provided with an opening, and ears extending downwardly from the ends of the body portion, pivot members connecting the ears with opposite sides of the valve, and a valve stem mounted in the casing and engaging the yoke through the opening.

8. In a device of the type set forth, the combination with the valve casing of a valve seat comprising a plurality of steps, a cube valve comprising a plurality of operating faces upon its perimeter, a yoke pivotally connected with the opposite sides of the valve, a valve stem engaging the yoke, two of said valve faces being provided with cavities adapted to receive individual steps.

9. In a device of the type set forth, the combination with the valve casing and valve seat, of a cube valve in the casing adjacent the seat, a yoke pivotally connected with the valve, and a valve stem in the casing supporting the yoke.

10. In a device of the type set forth, the combination with the valve casing and a valve seat, of a cube valve in the casing adjacent the seat, a yoke pivotally connected with the valve, and a valve stem in the casing supporting the yoke and movable toward and away from the seat.

11. In a device of the type set forth, the combination with the valve casing and valve seat, of a valve stem in the casing movable toward and away from the seat, a yoke upon the valve stem, and a cube valve rotatably mounted in the yoke.

In testimony whereof I have affixed my signature in presence of two witnesses.

EMANUEL FISHER.

Witnesses:
HORATIO E. BELLOWS,
FRANK STEERE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."