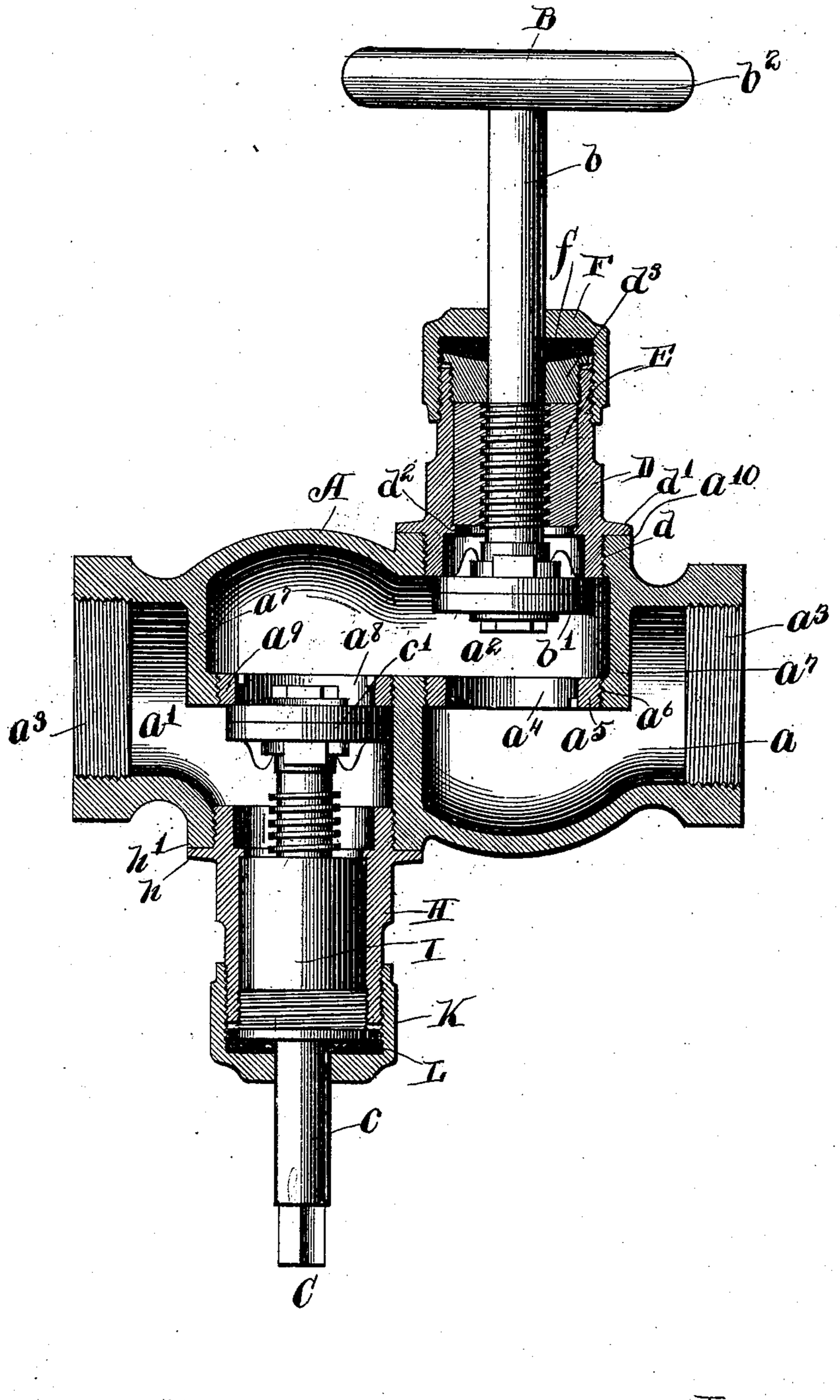
No. 689,618. Patented Dec. 24, 1901.

C. E. HUXLEY.

VALVE.

(Application filed Oct. 19, 1900.)

(No Model.)



Witnesses:-
C. A. Crawford
Clement R. Stinchcomb.

Inventor:-
Charles E. Huxley
by Poole & Brown
his Attorneys

UNITED STATES PATENT OFFICE.

CHARLES E. HUXLEY, OF QUINCY, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO FREDERICK WAHL AND GEORGE E. RICKER, OF QUINCY, ILLINOIS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 689,618, dated December 24, 1901.

Application filed October 19, 1900. Serial No. 33,558. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HUXLEY, a citizen of the United States, and a resident of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which forms a part of this specification.

This invention relates to improvements in that class of valves in which the closure member is carried on an endwise-moving stem having screw-threaded engagement with the valve-casing whereby said closure can be moved to or from its seat.

The invention consists in the matters hereinafter designated, and set forth in the accompanying claims.

In the drawing, the figure is a view in section, taken on the plane of the longitudinal axis of the valve-stem, of a valve embodying the improvements constituting my invention.

Referring to the drawing, A is a valve-casing of any suitable metal or material. B indicates as a whole a main or primary valve closure and C as a whole, a secondary-valve closure. Said casing A, as shown, is a hollow casting having an outlet-chamber a, an inlet-chamber a', and an intermediate chamber a^2, hereinafter designated as the "valve-chamber." Said chambers are separated by a division-wall a^7. Said inlet and outlet chambers are each fitted with circular apertures at their outer ends having interior screw-threads a^8, adapted for making the usual pipe connections. Said outlet-chamber a and valve-chamber a^2 are connected with each other through an opening a^4. Said opening is formed by an aperture in a valve-seat a^5, secured by screw-threads a^6 in said division-wall a^7. Said valve-seat, as shown, is of the pattern described in Patent No. 625,954, issued May 30, 1899, to me and is not claimed in this application. An opening a^8 in a valve-seat a^9, similar to said valve-seat a^5 and likewise secured in the division-wall a^7, connects the valve-chamber a^2 with the outlet-chamber a. D is a hollow cylindric head secured by screw-threaded connections d in the outer wall of the valve-chamber a^2 opposite said valve-seat a^5, with its longitudinal axis perpendicular to the face of the valve-seat at its center. Said screw-threads d are adapted to clamp the lower face of an exterior flange d', formed on said head, against a flange-seat a^{10}, formed on the exterior of the valve-casing A, thereby affording a tight joint between said head and casing. Said head D contains a cylindric sleeve or bushing E. Said bushing is of less length than said head and is fitted to turn freely in said head. A screw-plug d^3, removably secured in the outer end of the head, clamps said bushing against an interior flange d^2, formed on the interior surface of said head opposite said exterior flange d'. Said bushing is interiorly screw-threaded to receive a threaded valve-stem b, operating the valve-closure B. Said screw-plug d^3 is also centrally apertured to allow free passage of said stem. Said stem b, which, as shown, is operated by a hand-wheel b^2 or other suitable means, carries on its inner end a valve-disk b', similar to the valve-disk claimed in Patent No. 625,954, issued to me May 30, 1899, and which is therefore not claimed in this application. Said valve-disk b' is adapted to close on the valve-seat a^5 and cut off communication between the outlet-chamber a and the valve-chamber a^2. A hollow cap F, centrally apertured for the passage of the valve-stem, is removably secured over the outer end of the head D and the plug d^3. By the packing f, inserted in the space within said cap, a tight joint is obtained around said stem. The frictional engagement of the bushing E and the head D prevents injury to the valve-disk b' and the valve-seat a^5 and the stripping of the screw-threads on the valve-stem in case undue force or pressure is applied to the valve-stem in closing the valve. The friction between the ends of said bushing and the flange d^2 and plug d^3 is so graduated by the adjustment of said plug d^3 as to be less than the friction between the screw-surfaces of the valve-stem b and said bushing E when abnormal power is applied to said stem, so that when the stem is turned with force greater than is sufficient to properly close said valve-disk b' on its seat

a^5 the bushing E revolves with the stem b, and injury to or distortion of the valve disk and seat or injury to the stem-threads is avoided.

C is a valve-closure adapted to operate with the valve-seat a^9, and thereby stop the flow between the valve-chamber a^2 and the inlet-chamber a'. Said valve-closure comprises a valve-stem c, adapted at its outer end to be turned by a wrench or other suitable means, and a valve-disk c', similar to the valve-disk b'. Said disk is fitted to close upon the valve-seat a^9. An arrangement similar to the construction of parts of the valve B is used to prevent the stripping of the stem-threads or injury of the valve closure or seat by application of excessive power to the stem c. A head H, containing a frictionally-engaged bushing I, is secured by screw-threads and flange h to a flange-seat h' in the valve-casing A, opposite and perpendicular to the valve-seat a^9. A cap K, apertured for the passage of the stem c, is secured over the end of the said head H, packing L being interposed between said cap and said head to insure a tight joint around the stem c. By the use of the secondary closure C as a cut-off the primary valve B can be taken down, its parts renewed or readjusted, and the whole set up again without removing the valve-casing A from its connection or using a separate valve, and thereby shutting off pressure in the connections at points remote from said valve. It is also manifestly impossible to strip the threads of the valve-stem or injure the closure or seat, as the frictional engagement of the bushing with the casing can be so adjusted by means of its clamping-plug as to allow the bushing to turn with the stem the instant undue pressure is applied to said stem, thereby preventing any injury to the working parts.

A main feature of my invention is embraced in the construction which includes a single valve-casing containing two valve-seats, an intermediate valve-chamber between the seats, and two valve-closures provided with stems which have screw-threaded engagement with the valve-casing, one of said valves thus formed being a primary valve adapted for ordinary use and the other constituting a secondary valve used only as a cut-off valve to enable the primary valve to be taken apart for inspection, cleaning, or repairs. The double valve thus made has the advantage of being capable of use for practically an indefinite period of time without throwing out of use the apparatus with which it is employed or relieving it from pressure of the fluid in the pipe or passage with which it is connected, it being obvious that the life of the cut-off valve is practically unlimited, because the same is brought into use only on the rare occasions when the primary valve needs to be taken apart for repairs, while the said primary valve may be repaired by the renewal of its parts, such as the removable valve-seat or the soft-metal facing of its movable disk or closure, so that its life can be extended indefinitely. The use of a single valve-casing for the primary and secondary valves, arranged as described, has the advantage of lessening the number of joints and fittings with the corresponding lessening of liability of leakage, simplification of construction, and reduction in original cost and expense for repairs.

Another main feature of my invention is embraced in the provisions for frictional engagement of the nut or bushing for the valve-stem with the valve-casing. This is of especial benefit for use in connection with valves provided with soft-metal valve disk or seat facings to insure a tight fit of the disks on the seats. It is a well-known fact that valves of this kind are often injured by the use of excessive and undue force in closing the valve, it being a common experience that a mechanic will thoughtlessly exercise so much muscular force in turning the valve-stem that the soft-metal facings will become in a short period of use pressed out of shape or distorted to such extent as to no longer properly operate. Moreover, when the valve is moved by a wrench or lever instead of by an ordinary hand-wheel such excessive pressure is very often applied. The use of the yielding or frictionally-held bushing prevents the valve-facing from being subjected to pressure much in excess of that required for tightly closing the valve, and thereby greatly prolongs the life of the valve and makes renewal of the facings at frequent intervals unnecessary.

I claim as my invention—

1. A valve comprising a hollow casing, a valve-seat, a valve-closure, a valve-stem, and a bushing having screw-threaded connection with said valve-stem, and adjustable means affording frictional engagement of both end faces of said bushing with said casing.

2. A valve comprising a hollow casing, a valve-closure, a valve-stem operating said closure, a hollow cylindrical head secured to said casing, a bushing having screw-threaded connection with said valve-stem, fitted to revolve in said head, and a screw-plug to frictionally hold said bushing in said head.

3. A valve comprising a hollow casing, a valve-closure, a valve-stem operating said closure, a hollow cylindrical head secured at one end in said casing and interiorly flanged at said end, a bushing in said head fitted to revolve therein, having screw-threaded connection with said valve-stem, and an apertured plug having screw-threaded connection with the outer end of said head.

4. A valve comprising a hollow casing provided with three partial transverse partitions projecting from alternate sides of said casing, and a longitudinal partition joining the inner ends of said transverse partitions, two

valve-seats disposed side by side in said longitudinal partition within the outer transverse partitions and on opposite sides of the inner transverse partition, and valve-closures for said valve-seats on opposite sides of said longitudinal partition.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 29th day of May, A. D. 1900.

CHARLES E. HUXLEY.

Witnesses:

C. CLARENCE POOLE,

GERTRUDE BRYCE.