

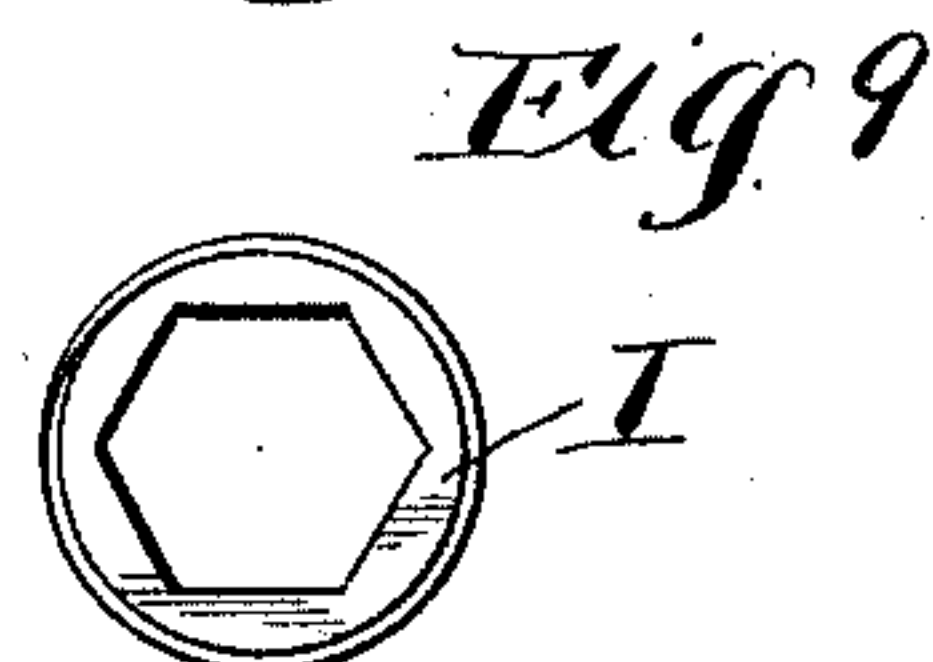
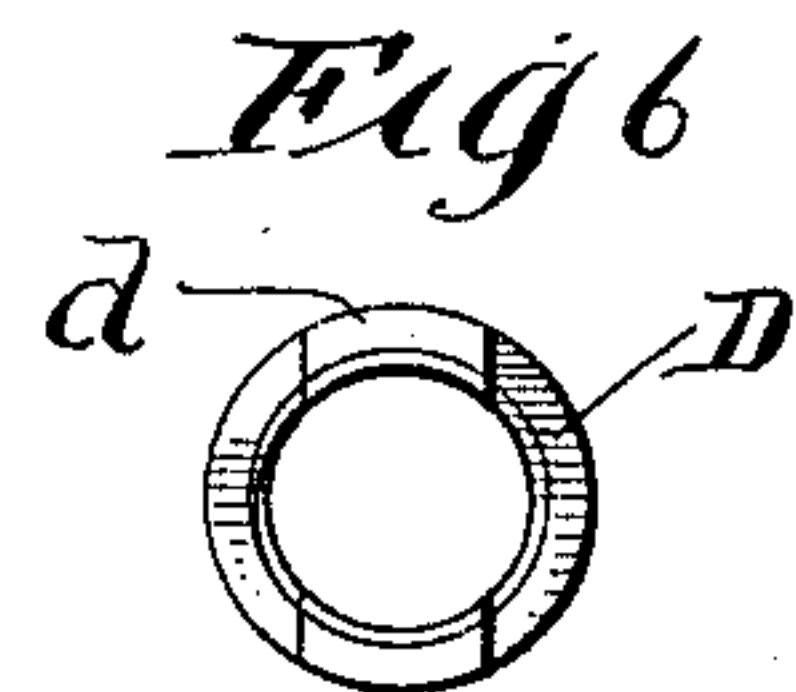
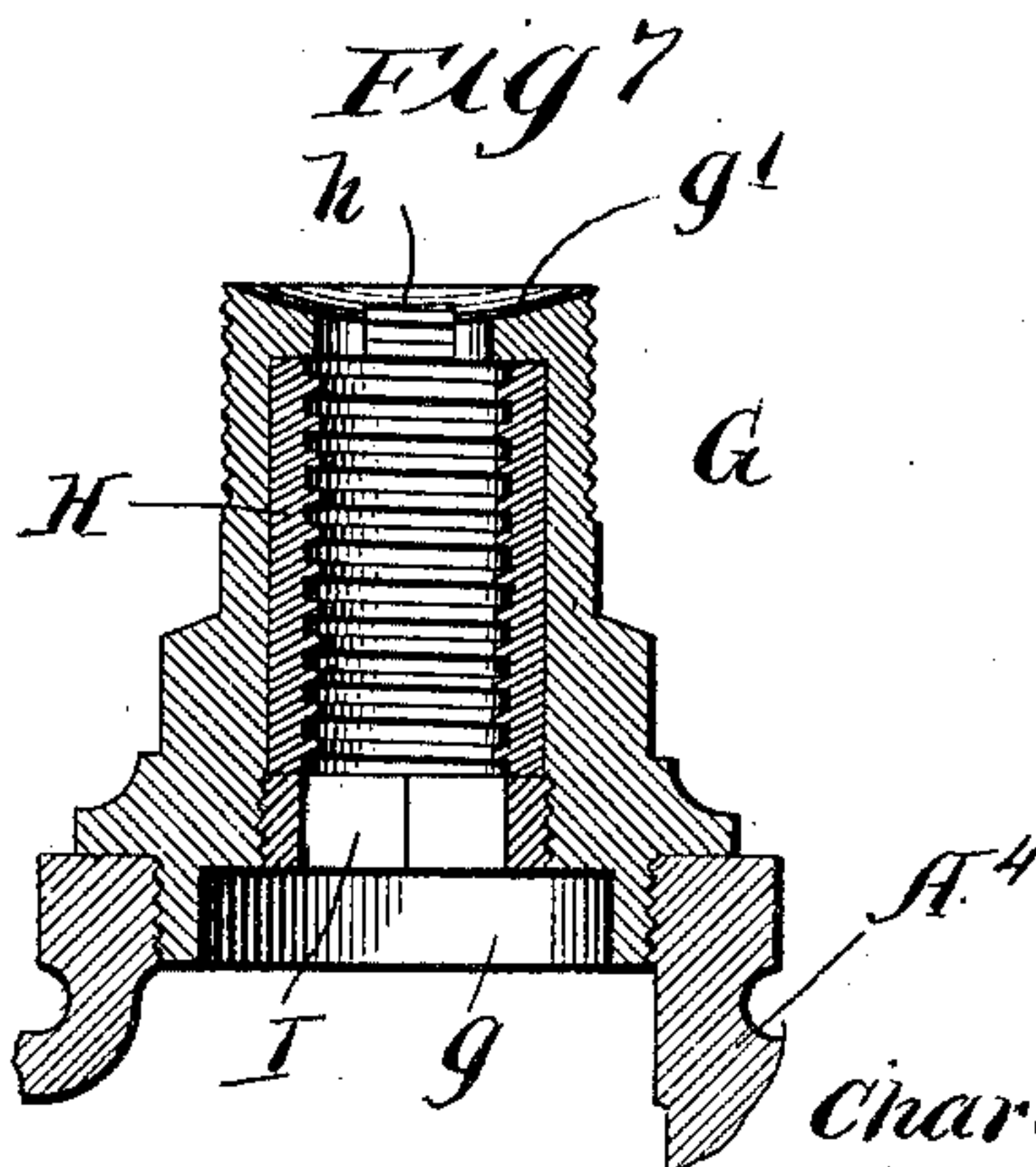
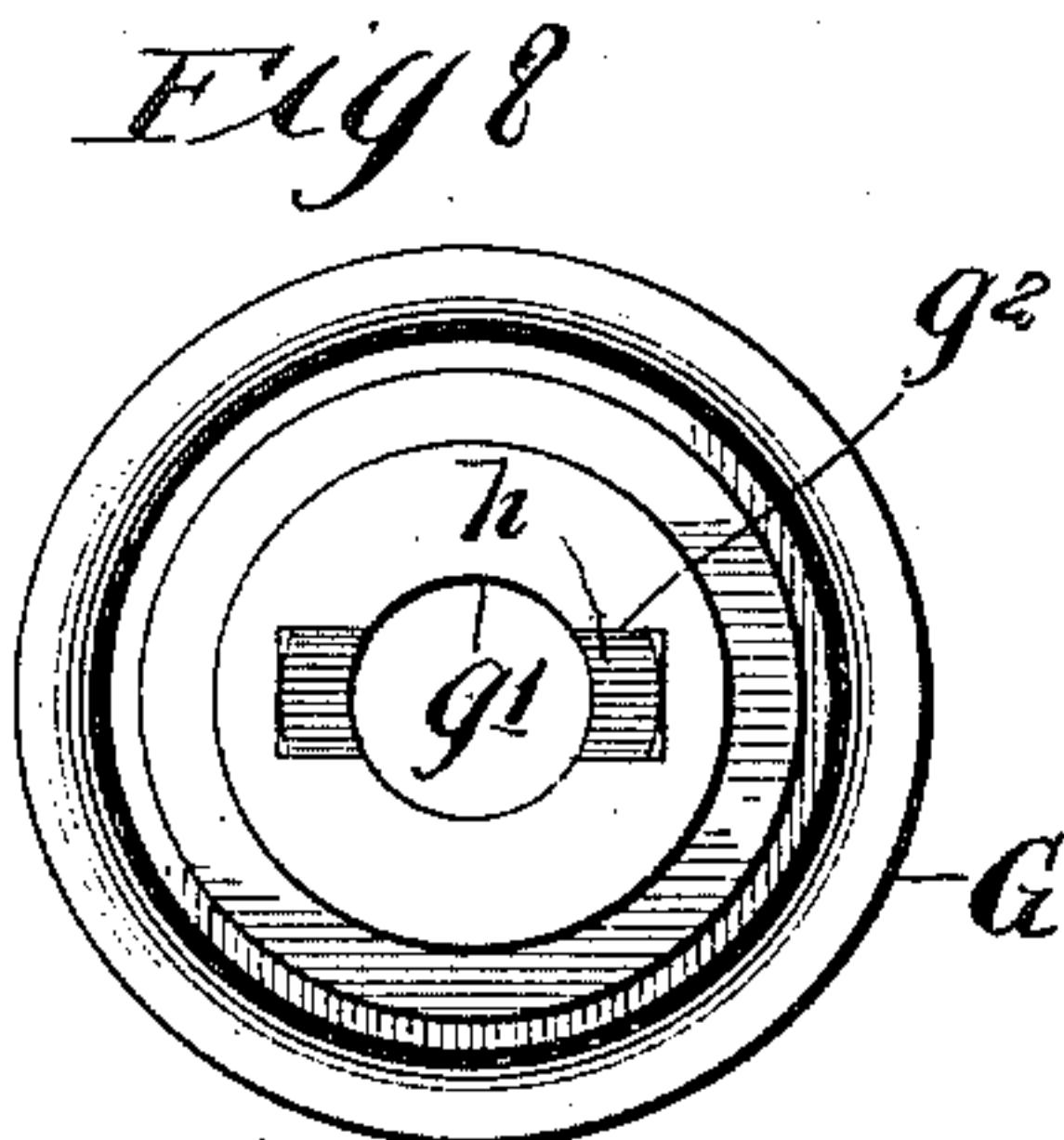
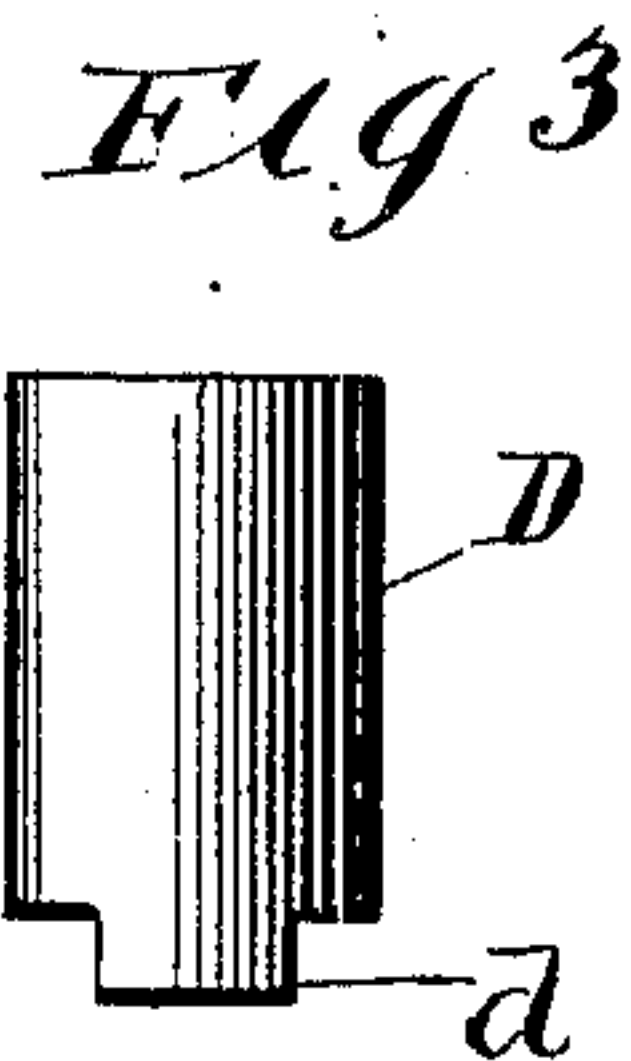
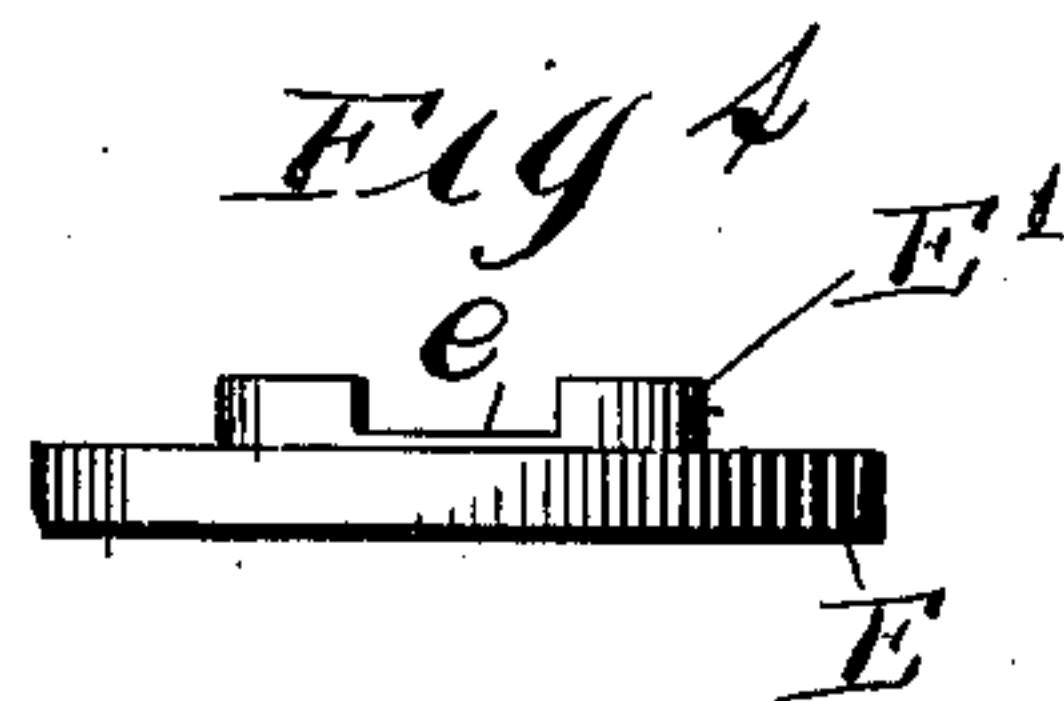
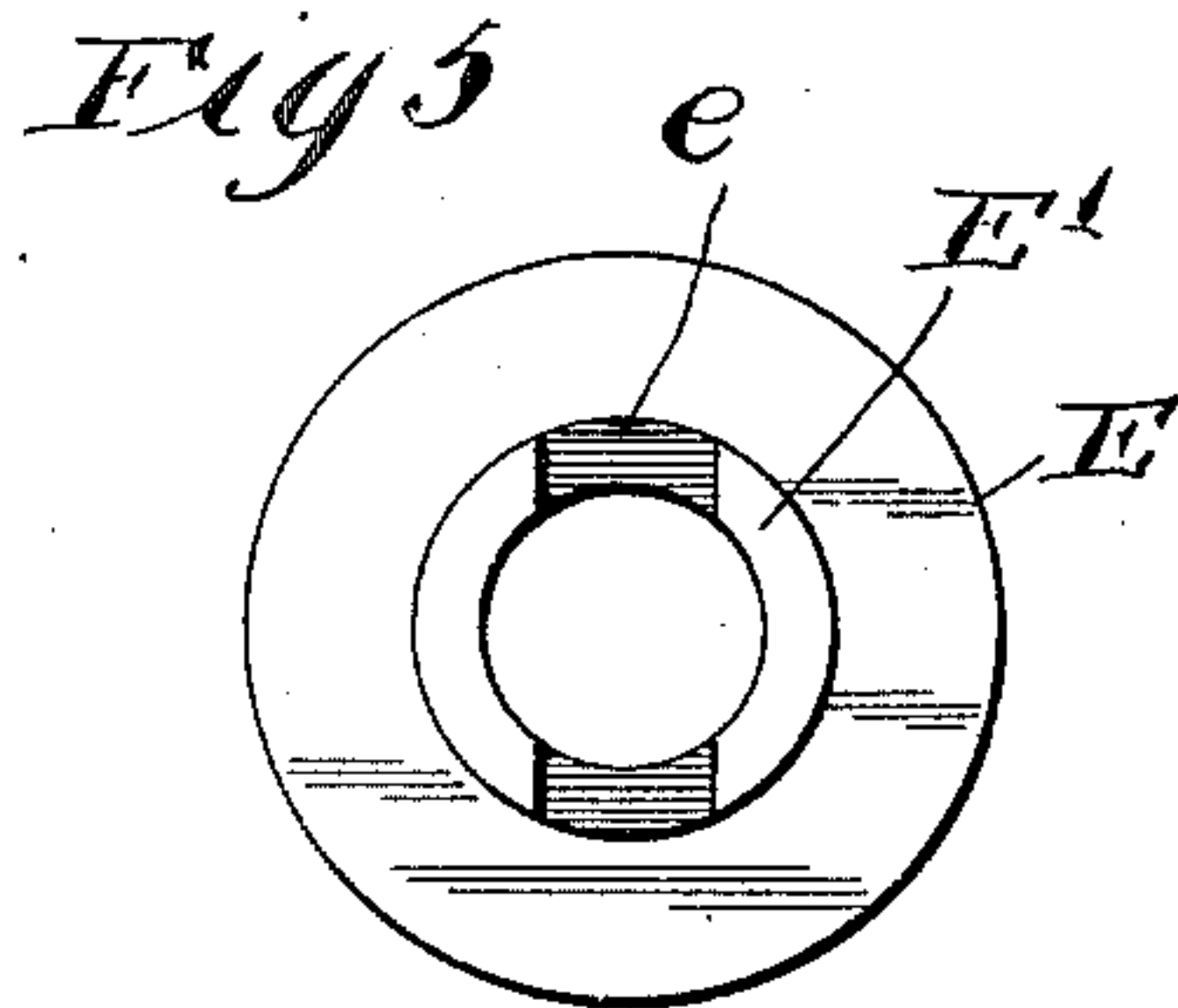
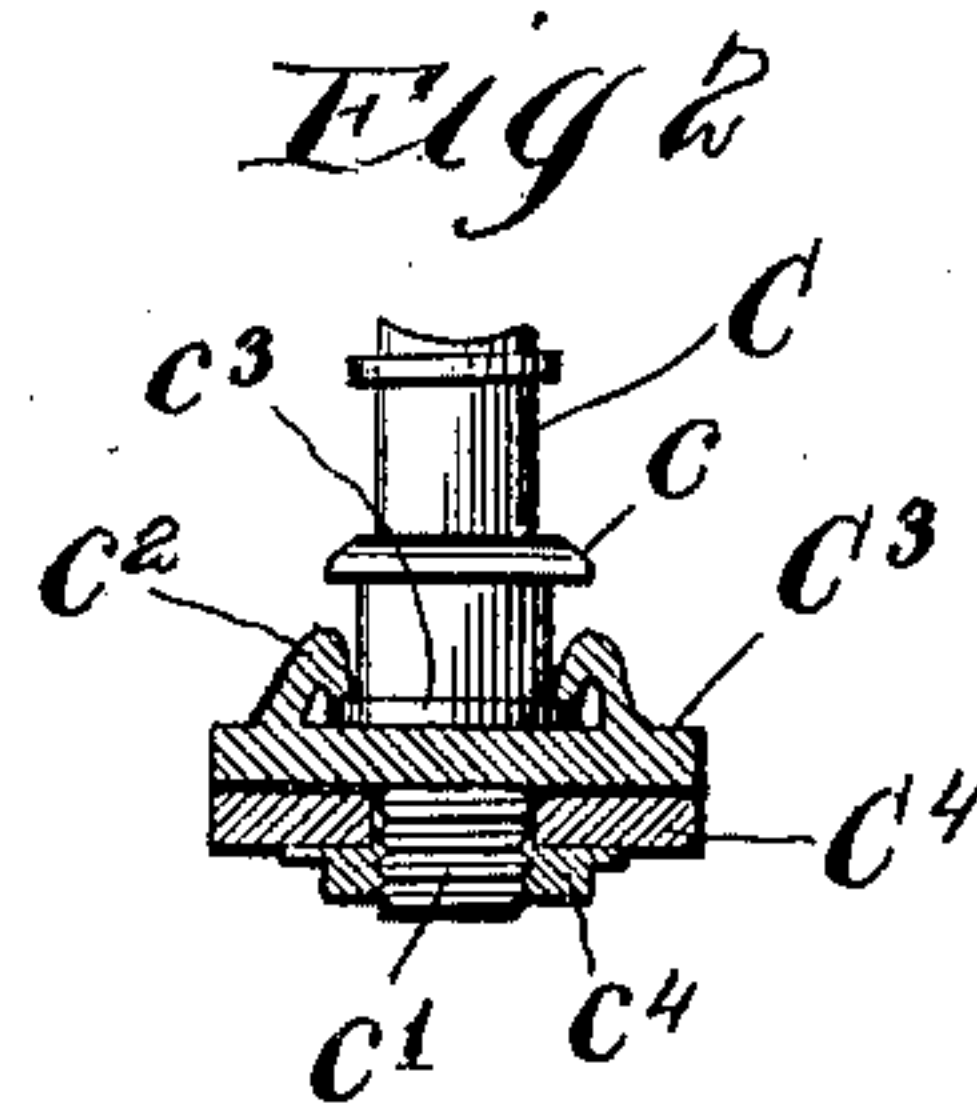
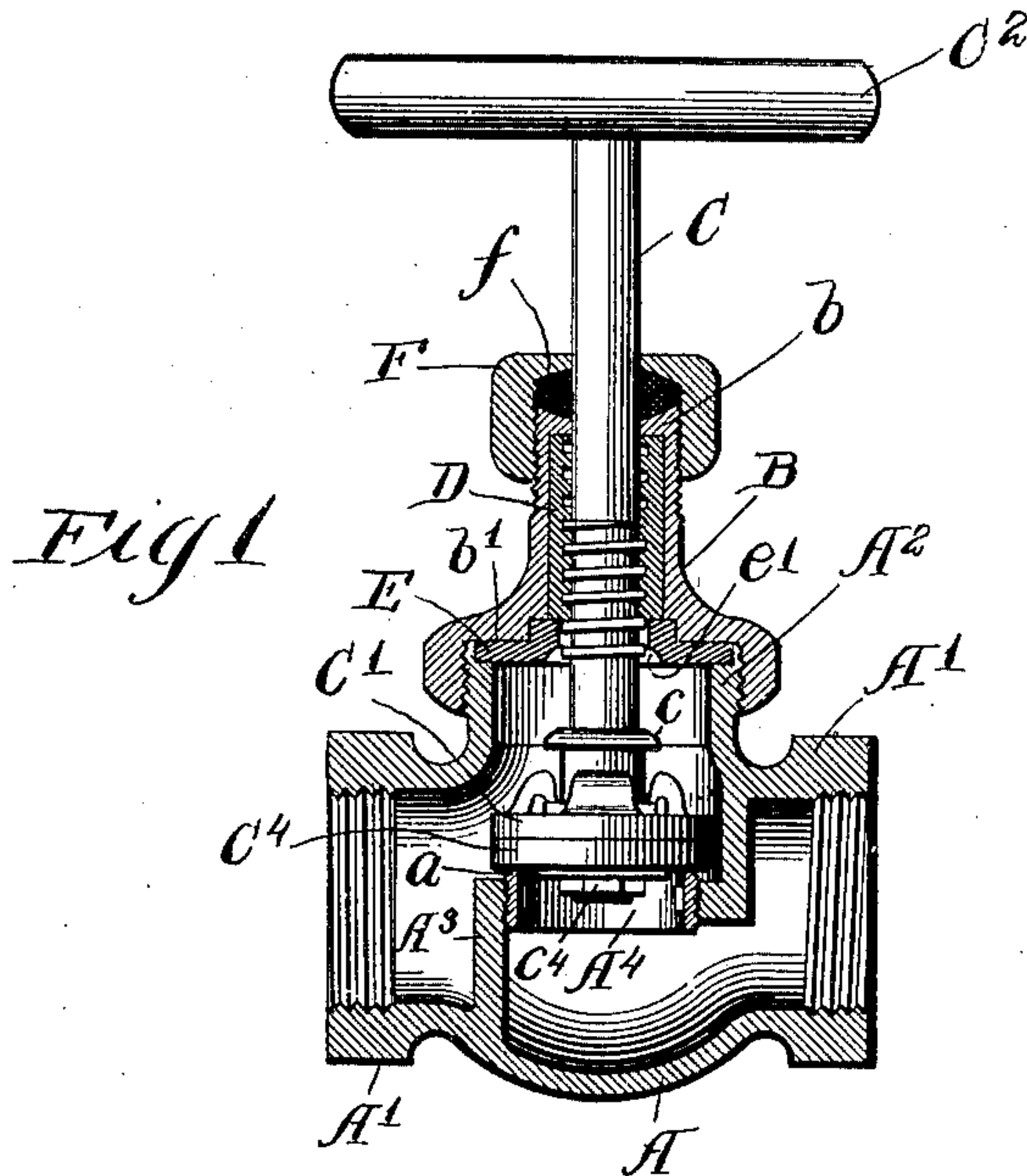
No. 686,854.

Patented Nov. 19, 1901.

C. E. HUXLEY.
VALVE.

(Application filed Feb. 20, 1901.)

(No Model.)



Witnesses:-
Carl H. Crawford
William Hall

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

UNITED STATES PATENT OFFICE.

CHARLES E. HUXLEY, OF CHICAGO, ILLINOIS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 686,854, dated November 19, 1901.

Application filed February 20, 1901. Serial No. 48,063. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HUXLEY, of Chicago, in the county of Cook 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 drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in valves of that class in which the valve-closure is attached to an endwise-movable stem having screw-threaded engagement with the valve-casing and by means of which the closure may be moved toward and from its seat.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a central vertical section of a globe-valve containing my improvements. Fig. 2 is an axial section of the valve-closure shown in Fig. 1. Fig. 3 is a side elevation of a bushing forming part of the casing and with which the valve-stem has screw-threaded engagement. Figs. 4 and 5 are side and top plan views, respectively, of a bushing-attaching device forming part of the construction shown in Fig. 1. Fig. 6 is an end view of said bushing. Fig. 7 is an axial section of a modified form of head through which the valve-stem passes, showing another form of attaching means for the bushing for engagement with the valve-stem. Fig. 8 is a top plan view of the parts shown in Fig. 7. Fig. 9 is a plan view of a retaining-ring by which the bushing shown in Fig. 7 is held in place.

As shown in said drawings, A designates a valve-casing of an ordinary globe-valve provided on two sides thereof with tubular extensions A', which are interiorly screw-threaded for connection with pipes. Said casing is also provided at one side with a short neck A², through which the valve-stem passes. The casing is provided interiorly with an angular partition A³, in the horizontal part of which is formed a valve-seat *a*, said seat being herein shown as formed on the margin of a ring A⁴, which has screw-threaded engagement with said partition.

B designates a tubular head which fits out-

side of and has screw-threaded engagement with the neck A².

C designates a valve-stem which passes axially through said head and carries at its inner end a valve-closure C', engaging the seat *a* within the casing. Said stem is provided at its outer end with a hand-wheel C², by which it is rotated to move the valve toward and from its seat.

Within the head B is located a removable cylindric bushing D, which is made of a metal softer than that of the valve-stem and which is interiorly screw-threaded to engage exterior screw-threads on the valve-stem. Said bushing is normally non-rotative in said head, but may be removed endwise therefrom and is capable of rotating in the head when excessive pressure is applied to seat the closure, as will appear more fully hereinafter. The bushing engages at its outer end an inturned flange *b* at the outer end of said head, and at its inner end has non-rotative interlocking engagement with an apertured disk E, which latter is clamped between a seat on the outer end of the neck A² of the casing and an internal shoulder *b'*, formed in said head. Said disk is centrally apertured for the passage of the valve-stem therethrough. The interlocking connection between the bushing and disk consists in this instance of oppositely-located lugs *d* on the lower end of the bushing, which engage correspondingly-located recesses or notches *e*, formed in the upper margin of an annular flange E', which surrounds the central aperture in said disk. A hollow cap F, centrally apertured for the passage of the valve-stem therethrough, is fitted over the outer end of the head and has screw-threaded engagement therewith, and between said cap and the outer end of the head, which latter is depressed, is inserted a mass of packing material *f*, the whole constituting a stuffing-box to prevent the escape of steam or fluid between the same and the stem. The frictional engagement of the disk E with the outer margin of the neck A² on one side and the shoulder *b'* of the head on the other side is so graduated by the adjustment of the head upon the casing as to be less than the friction between the screw-threaded surfaces of the valve-stem C and the bushing D when abnormal power is applied to said stem to seat the

closure. When the stem is turned, therefore, with a force greater than that sufficient to properly seat the valve-closure, the bushing D and disk E rotate with the stem after the closure is properly seated, and injury or distortion of the valve closure or seat or injury to the screw-threads of the stem is avoided. Said bushing being non-rotatively interlocked to the disk E and said disk having a relatively large bearing-surface with the head and casing near the margin of the disk, said parts may obviously be so adjusted as to produce a friction between said disk and coacting parts sufficient to prevent rotation of the bushing and disk before the valve-closure is properly seated and at the same time permit said parts to rotate when excessive force is applied to the stem before such force is sufficient to distort the valve closure or seat or the screw-threads of the stem.

As a further and separate improvement the valve-stem is provided between the valve-closure C' and the disk E with a secondary valve-closure, herein shown as formed on a radial flange c, which is rounded on its face adjacent to the disk and which engages a seat e', formed on the under face of the disk E. With this construction when the valve-stem is turned outwardly to bring the secondary valve-closure c in engagement with the seat e' leakage of steam or other fluid past the disk is effectually prevented. Moreover, with this construction when the packing f is to be renewed it is not necessary to close the valve against the passage of steam or other fluid therethrough; but said valve-closure c may be moved up tightly against its seat e', at which time the cap F and packing f may be removed and new packing substituted without any danger of steam escaping through the head.

In Figs. 7, 8, and 9 is shown a construction wherein the removable bushing which engages the valve-stem is non-rotatively fixed with respect to the head. As shown in said figures, G designates a tubular head corresponding to the head B and provided at its inner end with an annular flange g, exteriorly screw-threaded to fit within an interiorly-screw-threaded seat in the casing A⁴. Said head is provided at its upper end with a radial flange g', surrounding the bore of the head and formed to permit the passage of the valve-stem therethrough. H designates a cylindric bushing located within said head. Said bushing abuts at its outer end against the flange g' and is held in place by engagement at its lower end with an exteriorly-screw-threaded ring I, which engages interior screw-threads in the lower end of the bore of said head. Said bushing is provided at its upper end with oppositely-located lugs h, which engage correspondingly-located recesses or sockets g² in the flange g' and which holds said bushing non-rotative in said head.

In Fig. 2 is shown an approved form of valve-closure, said closure being provided with a removable face which may be renewed

when it has become worn or otherwise distorted. Said closure consists principally of two disks C³ C⁴, which are apertured to fit over a reduced screw-threaded portion c' of the stem. The inner disk is provided on its upper face with a plurality of lugs c², which are adapted to be bent inwardly to engage a shallow annular shoulder c³ on the valve-stem, said lugs fitting loosely on said stem to permit the disk C³ to revolve freely thereon. The other or wearing disk C⁴ is held in engagement with the disk C³ by means of a nut c⁴, which engages the screw-threaded reduced lower end c' of the stem. With this construction the disk C⁴ may be readily removed when such removal is desired by reason of wear or distortion and there being no appreciable wear on the disk C³ said disk will under ordinary circumstances remain intact during the life of the valve.

I do not wish to be restricted to the particular forms of my improvement herein shown, except as hereinafter specifically claimed, as it is obvious that some of the details thereof may be varied without departing from the spirit of my invention.

I claim as my invention—

1. A valve comprising a hollow casing, a valve-seat, a valve-closure, a stem for actuating said closure, and a cylindric bushing which fits within a cylindric recess in the casing and which has screw-threaded connection with said valve-stem, said bushing having non-rotative interlocking connection by means of endwise-projecting lugs at one of its ends with a part which is normally stationary with respect to the casing, and an annular detachable part engaging the casing and bearing on one end of the bushing to hold the same in place in said recess.

2. A valve comprising a hollow casing, a valve-seat, a valve-closure, a stem for actuating said closure, a bushing having screw-threaded connection with said valve, a disk which has adjustable frictional engagement at its margin with the casing and which is normally fixed with respect to said casing, and interlocking connections between said disk and bushing.

3. A valve comprising a hollow casing, a valve-seat, a valve-closure, a stem for actuating said closure, a tubular head secured to said casing, a cylindric bushing in said head having screw-threaded connection with said valve-stem, a disk clamped between the casing and a shoulder on said head, and non-rotative, interlocking connections between the bushing and disk.

4. A valve comprising a casing, a valve-seat, a valve-closure, a stem for actuating said closure, a head which has screw-threaded engagement with said casing, a cylindric bushing in the casing having screw-threaded connection with said valve-stem, a disk clamped between an internal shoulder in said head and the casing, said disk being apertured for the passage of the stem there-

through, non-rotative interlocking connections between said disk and one end of the bushing and a part on the head engaging the other end of the bushing.

- 5 5. A valve comprising a casing, a valve-seat, a valve-closure, a stem for actuating said closure, a bushing which has screw-threaded engagement with the stem, a disk which covers the opening in the casing through
10 which said stem passes and is apertured for the passage of the stem therethrough, said disk having frictional engagement with the casing, and non-rotatively interlocked with the bushing, a packing surrounding said stem
15 outside of said disk, and a secondary valve-closure on said stem inside of the disk adapted to engage a seat on the adjacent face of the disk when the principal closure is moved away from its seat.
- 20 6. A valve-closure comprising a casing, a

valve-seat, a valve-closure, a stem for actuating said closure, a head which is detachably fitted to said casing, a cylindric bushing in said head which has screw-threaded engagement with the stem, a disk clamped between the said casing and an interior shoulder in said head, and non-rotatively interlocked with said bushing, and a secondary valve-closure on said stem inside of the disk adapted to engage a seat on the adjacent face
25 of the disk when the principal closure is moved away from its seat.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 18th day of February, 35
A. D. 1901.

CHARLES E. HUXLEY.

Witnesses:

C. CLARENCE POOLE,
WILLIAM L. HALL.