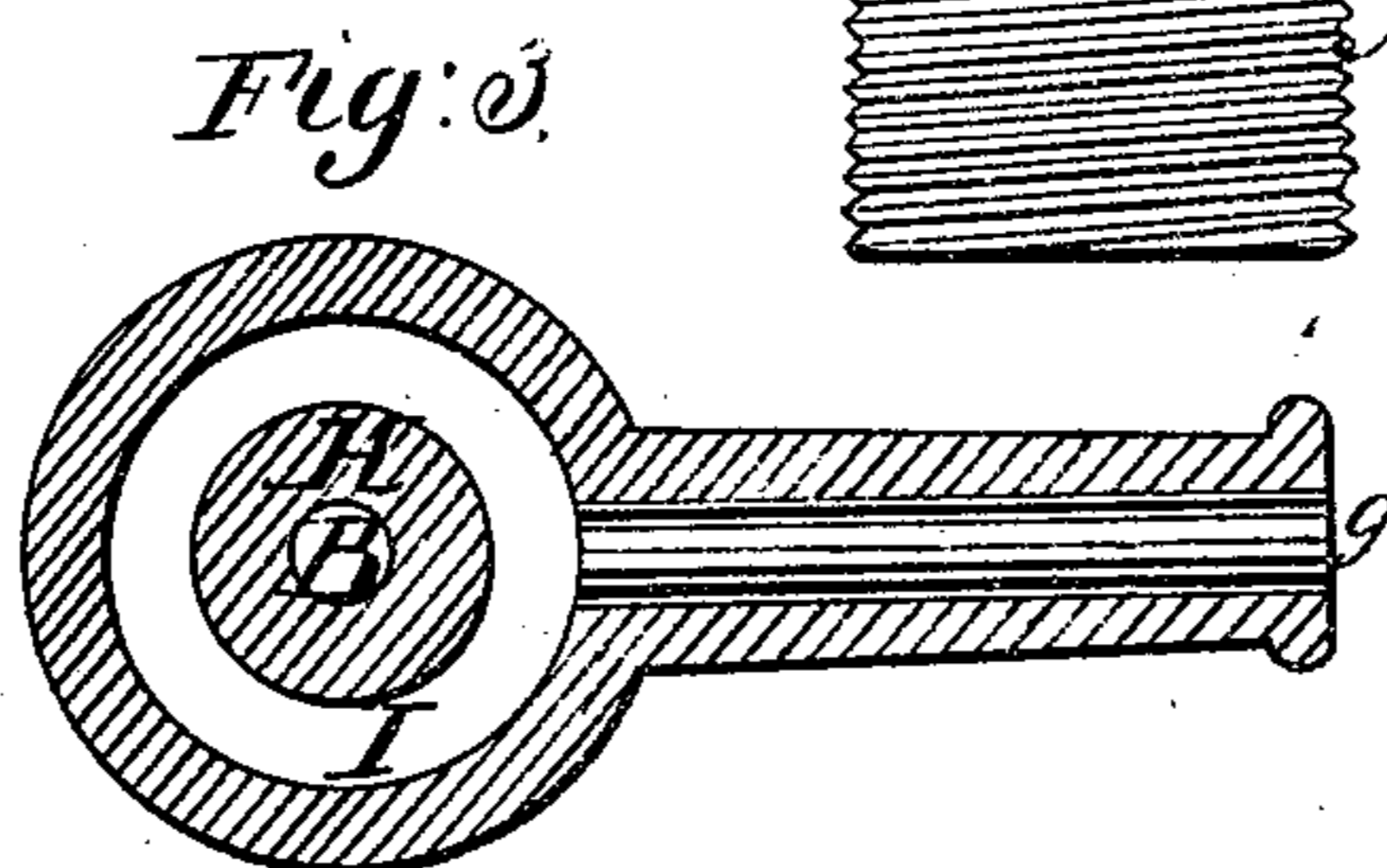
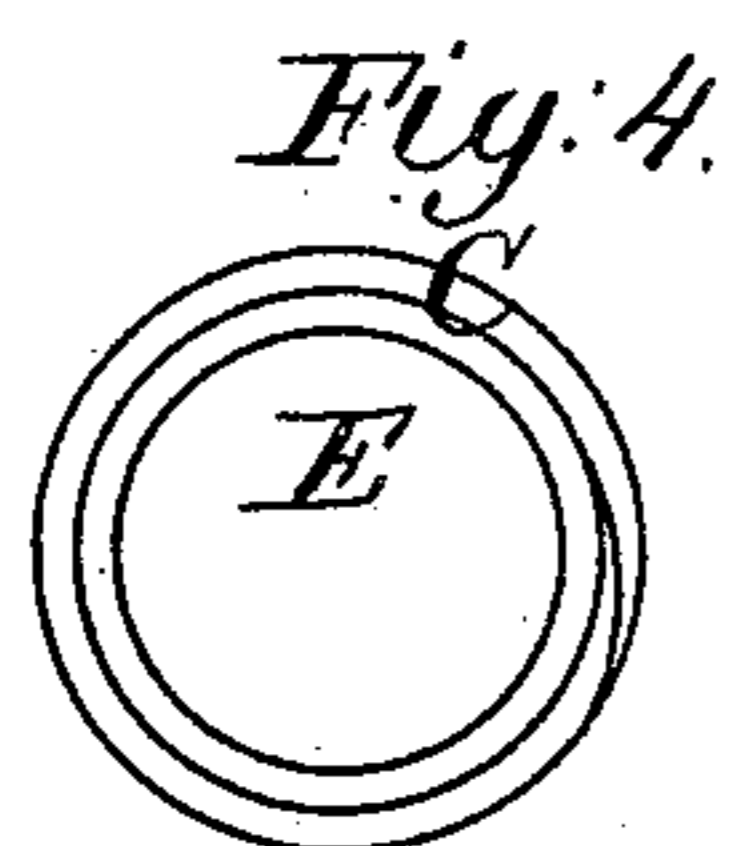
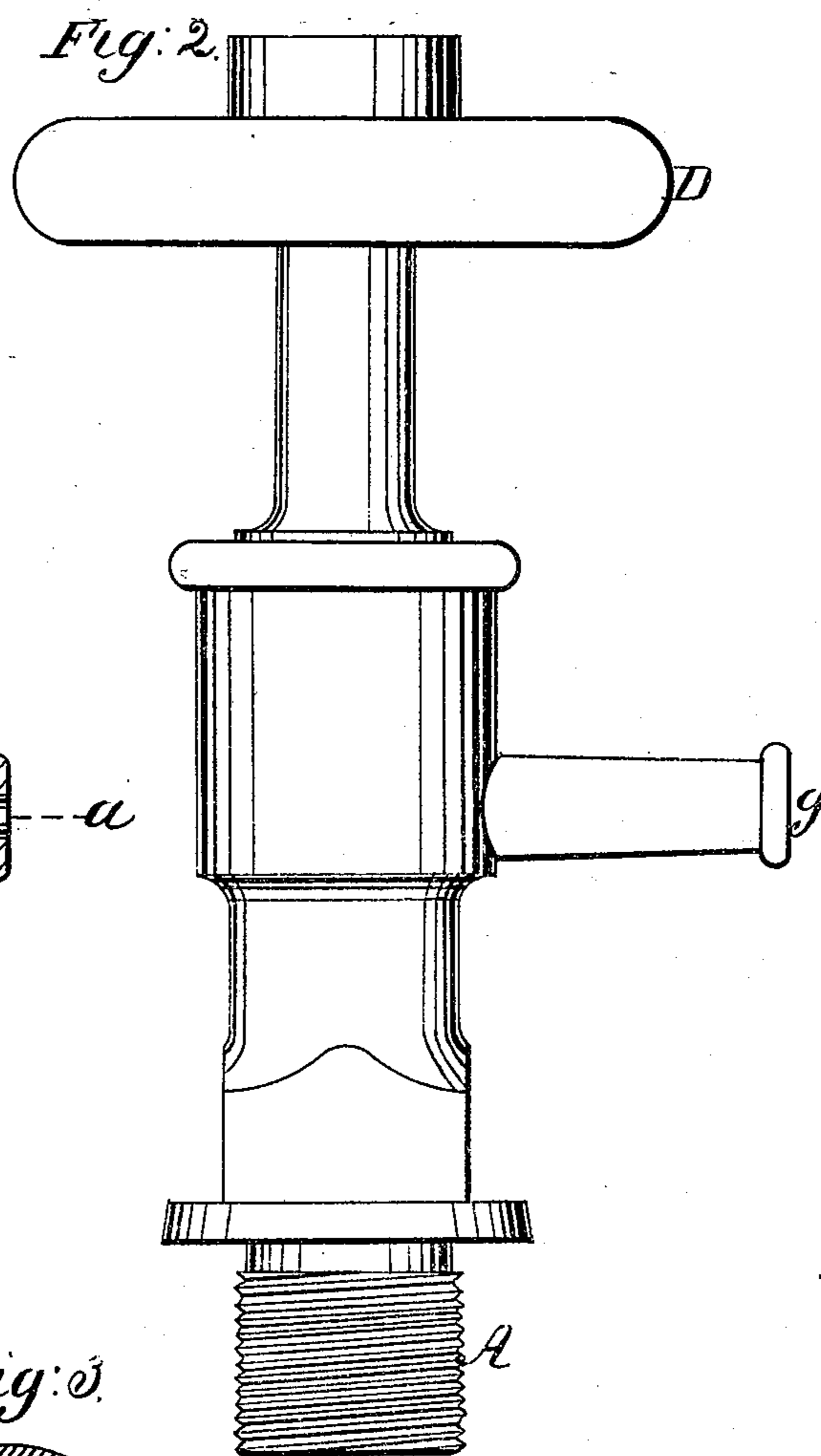
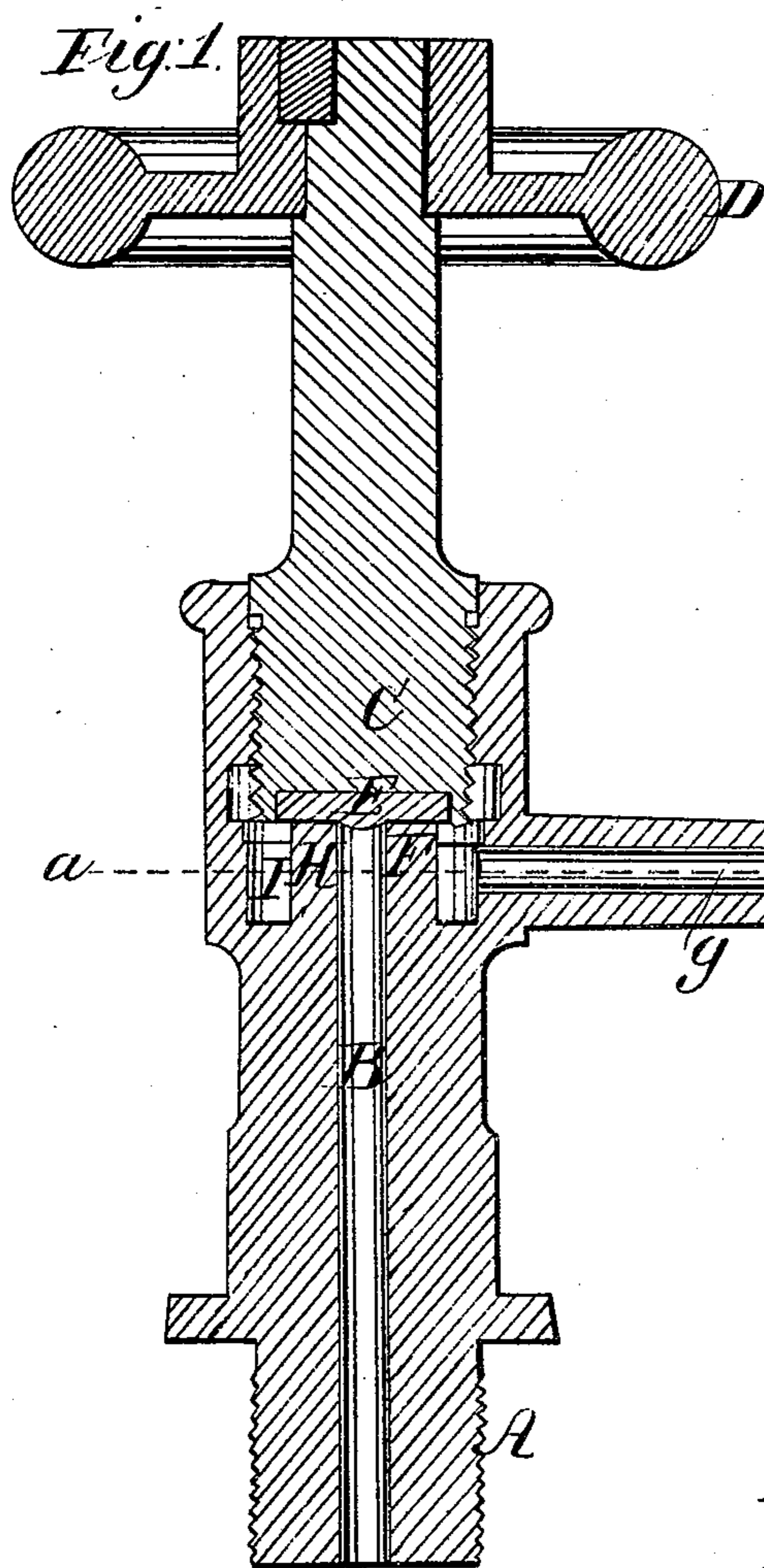


*A. Bisbee.*  
*Steam Gauge Cock.*  
*N<sup>o</sup> 13,563. Patented Sept. 18, 1855.*



# UNITED STATES PATENT OFFICE.

ALBERT BISBEE, OF CHELSEA, MASSACHUSETTS.

## IMPROVEMENT IN STEAM GAGE-COCKS.

Specification forming part of Letters Patent No. 13,563, dated September 18, 1855.

*To all whom it may concern:*

Be it known that I, ALBERT BISBEE, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Steam Gage-Cocks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a longitudinal section of a gage-cock; Fig. 2, a longitudinal exterior view thereof; Fig. 3, a transverse section of the same, taken as indicated by the line *a a* in Fig. 1; and Fig. 4, an interior end view of the screw plug or stopper of the cock.

It is too well known to need long comment that in the ordinary construction of gage-cocks, however accurately they may be fitted at first, it is impossible for any long period to keep them tight or perfect in their action, or even for a short time to prevent all dripping or leakage, except by screwing the plug or stopper so close to its seat as to render its operation one of no little difficulty and subjecting the cock to severe strainage. These defects and objections are incident to all such stop-cock arrangements in which metal and metal form the bearing-surfaces of the stopper and its seat, by reason of various affecting causes, chemical and otherwise, that destroy or interfere with the smooth bearing or close meeting of the surfaces of the two parts which break or form contact; and in steam-boilers especially, where the earthy products held in solution—grit, &c.—invariably present an injurious action, cutting into and destroying the truth of the stopper or stopper-seat in contact and coating or lining these parts, it is a matter of some importance to obviate such injurious effects and remedy the defects before named, and this more especially as regards the gage-cock, which being particularly a safety device, it is desirable not only that it should be in good working order, but easy in operation and perfect in every respect.

To remedy the defects mentioned, the screw-stopper has been secured into or on a wooden end piece or cap, which formed the stopper-surface, coming into contact with the metal seat of the cock, and, again, to insure a still more easy and tight junction or action and prevent injurious chemical effects on the metal, occasioning leakage, as adverted to, a disk of vul-

canized india-rubber or other material having for the most part equivalent properties has been used to form the bearing-surface of one of the parts against which the metal surface of the other part came in contact, and it is to this construction of gage-cock that my improvement relates, and presents in the construction and arrangement of its parts a fuller combination of advantages than has before been attained, as will appear from the following description.

The inner end A of the body or stationary part of the gage-cock is made with a flange and screw-thread, as usual, to secure it to and establish its communication with the boiler. The outer end of the body has a screw-thread cut in it for the male screw of the plug or stopper C to fit and work into. This recessed portion of the body is extended beyond the stopper-seat F, so as to form an annular space I, containing or surrounding an annular projection H, composing the stopper-seat portion of the body, a longitudinal outlet-aperture B running centrally of the body from its inner end to the stopper-seat surface F. A discharge branch *g* is arranged at right angles to the outlet-aperture B and communicates with the annular space I, surrounding the stopper-seat portion H.

The inner or screwed plug end of the stopper C is of larger diameter than the annular stopper-seat projection H, which latter and the outlet-aperture B are concentric to the stopper.

The stopper-seat F is of metal, but the stopper itself, though of metal too, is made to form a tight joint with its seat by a facing of vulcanized india-rubber or other equivalent material, as follows: The inner end of the stopper is made with a concentric recess of depth and diameter sufficient to receive for its whole thickness a disk E of rubber, as aforesaid, that while it presents a flush surface or level continuation with the inner ring extremity of the stopper covers and laps beyond or over the annular projection H of the stopper-seat.

The stopper is entered or removed at pleasure and screwed inwardly or outwardly to open or close the cock by means of a handle-wheel D, serving to turn the stopper in either direction, as required.

The embedding of the india-rubber disk

within the screw-plug flush with the end surface or face of the latter not only prevents the rim and angular edges of the rubber disk from becoming jagged or cut by grit, &c., but binds the disk and restrains it from being spread out into a thin layer that would readily be cut through by the grit under the softening influence of the heat and effect of the pressure to which it is exposed; also prevents the steam from insinuating past the edges to the rear of the disk and loosening it from its seat, gives a firm character to the disk at its edge, where it overlaps the annular seat F, so as to make the junction of the stopper with its seat more perfect, and the disk being flush, as described, presents no angular channel or ridge at its edge for the accumulation of dirt or deposit, but admits of being cleaned from time to time with facility by simply brushing across or wiping the end face of the plug, as it were, and as the screwed portion of the body of the plug is of larger diameter than the disk, and it is otherwise constructed as represented, no impediment exists to the ready removal and entry again of the plug for cleaning the rubber and renewal of the disk, as required, without disturbing any portion of the permanent or stationary part of the cock, the disk being readily picked out and a new one put in, as required. The edges of the disk are effectually prevented, as described, from being cut or ragged by grit by the binding of the annular end of the plug round the whole border of the disk. To give protection from like injury to the face of the disk, the rubber may be covered with cloth or other suitable material, as desired.

When the plug is screwed down, it will be observed by the relative diameter of the rubber disk to the annular stopper-seat and binding of the edge of the disk by the annular stopper projection, giving the edge of the disk a firm character, as described, that the rub-

ber will be forced to overlap or project over both edges, inner and outer, of the stopper-seat, effectually preventing passage of steam past the edges of the disk and insuring the firm bearing of the disk on the stopper-seat face, which a different construction and arrangement and other than rubber or similar flexible material (inclining the formation of a hollow by the pressure of the steam) would not so perfectly effect.

Should the disk be found to stick to the stopper-seat, it may by the arrangement of the parts as described be readily relieved by a suitable implement introduced up the discharge-branch *g* and brought to bear on the edges of the disk overlapping the stopper-seat projection H. The annular space surrounding the stopper-seat projection will relieve the disk and its seat of obstructing sediment, insure the better washing of the parts, and the central position of the outlet B from the boiler will prevent unequal lateral pressure on the disk and hold the loose disk to its place in "blowing off."

So many and important advantages are not to be found in other gage-cocks employing the india-rubber packing.

What I claim as new and useful herein, and desire to secure by Letters Patent, is—

The arrangement, substantially as specified, of the india-rubber disk or facing to the screw plug or stopper, embedded and bound at its edges by an extension of the body of the plug, as described, with the stationary annular stopper-seat of the cock, essentially as set forth.

In testimony whereof I have hereunto subscribed my name.

ALBERT BISBEE.

Witnesses:

J. B. CROSBY,  
M. H. MERRIAM.