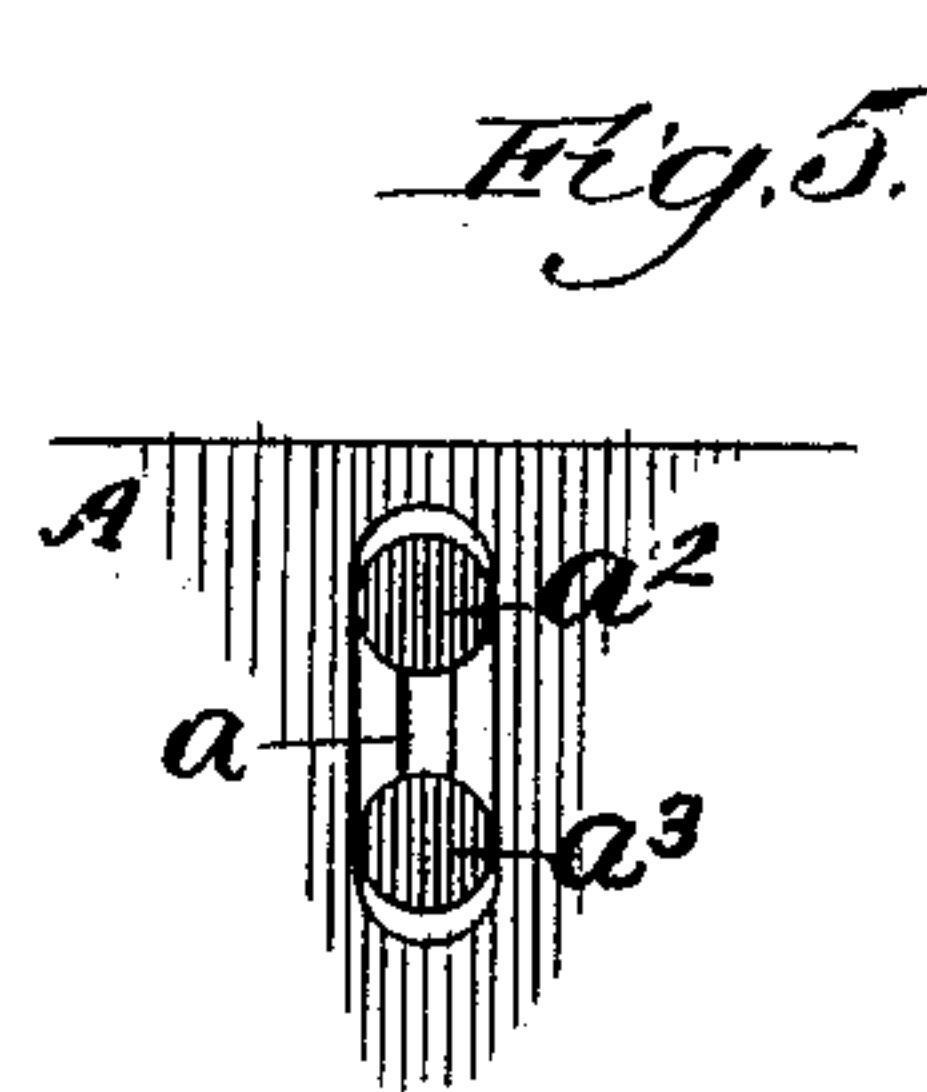
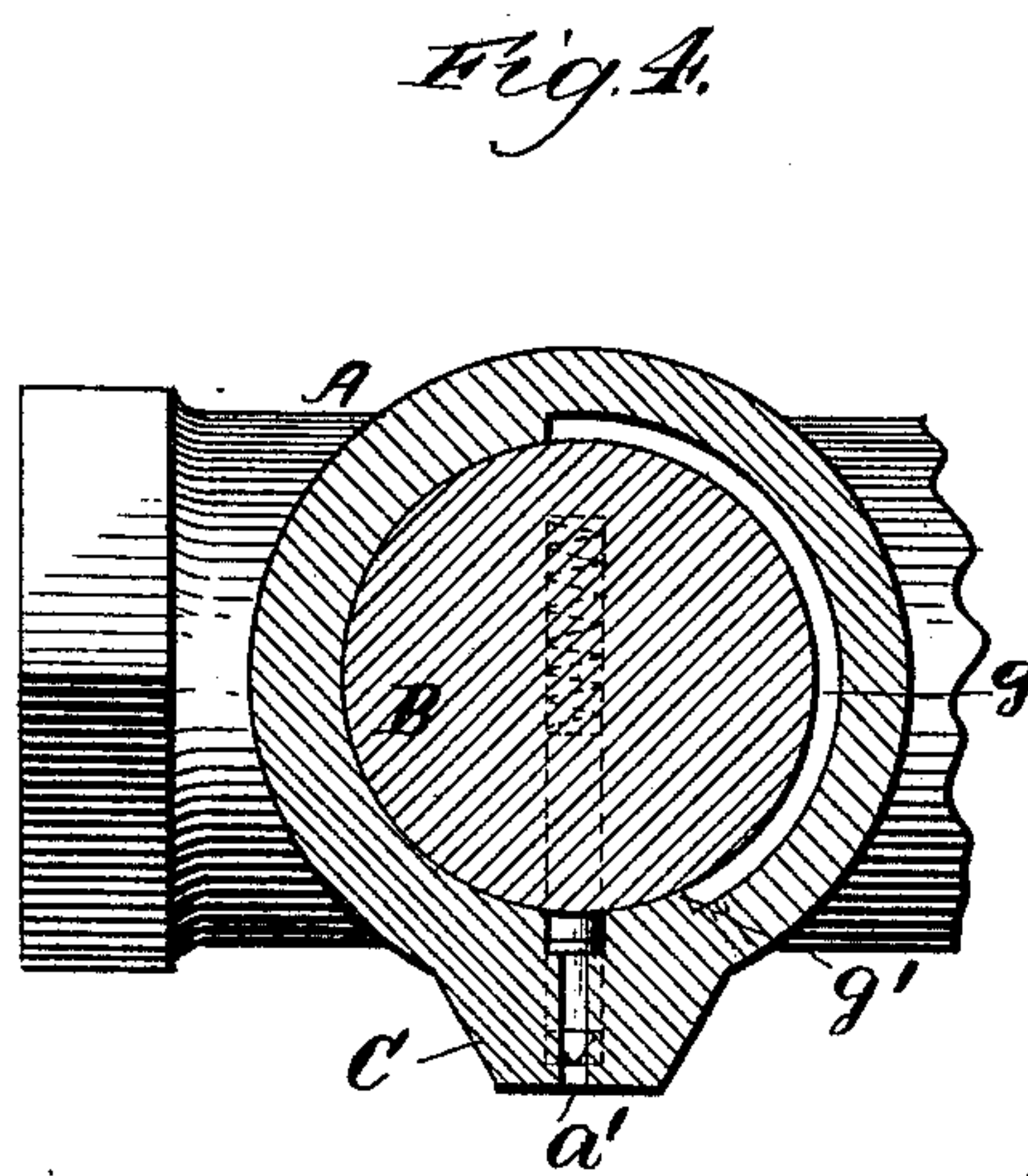
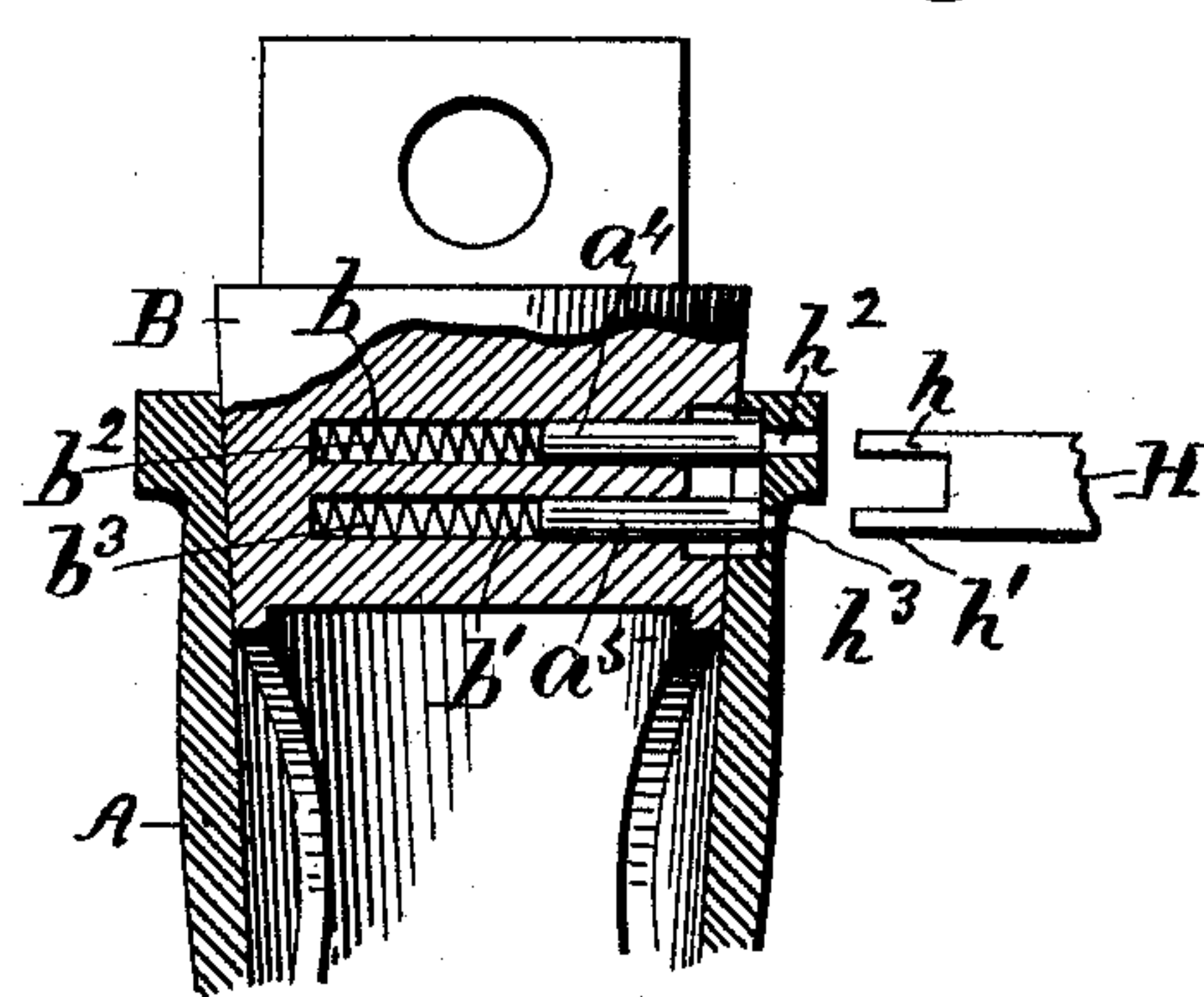
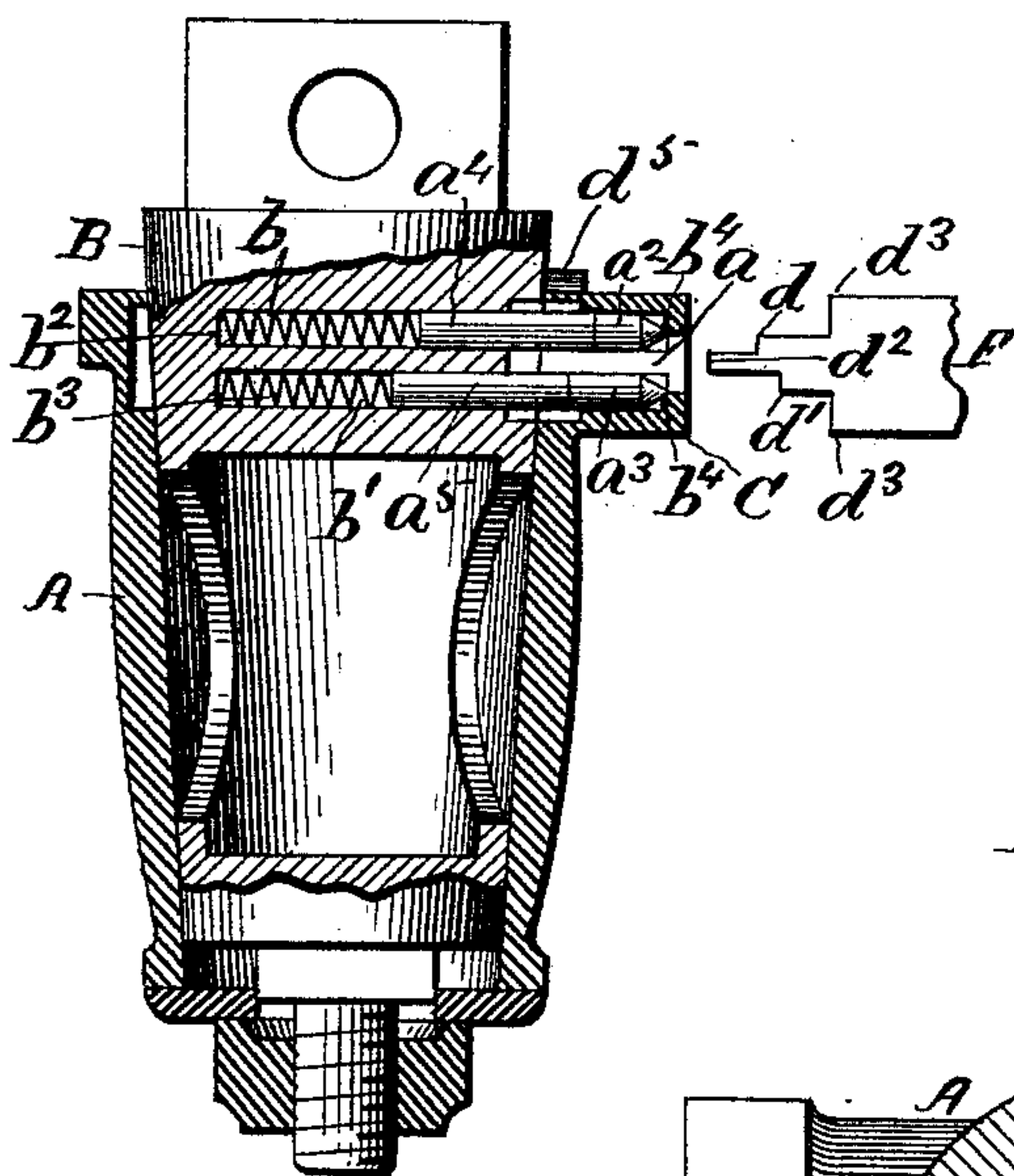
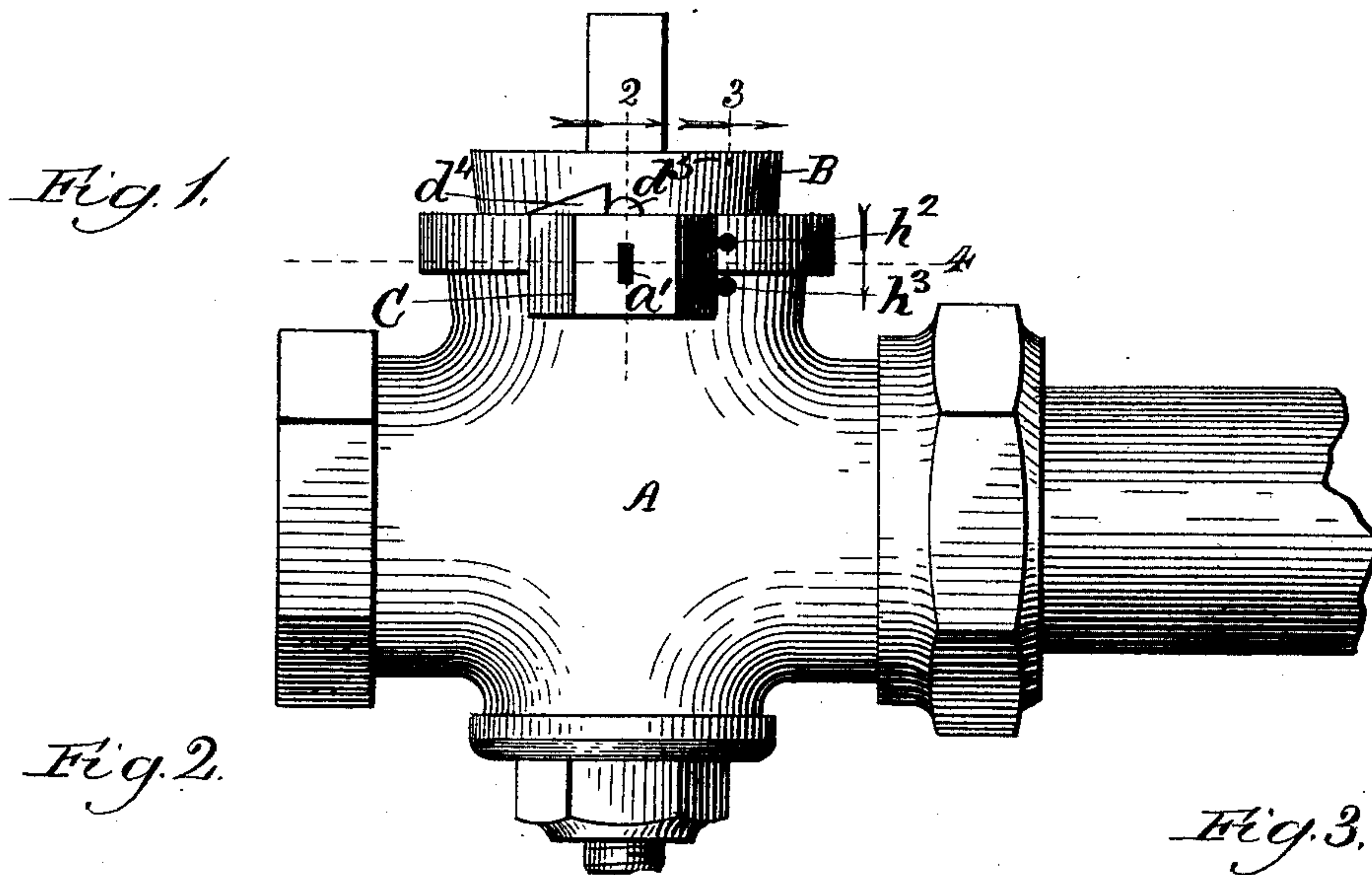


(No Model.)

G. B. HAINES.
LOCK FOR SHUT OFF VALVES.

No. 414,154.

Patented Oct. 29, 1889.



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UNITED STATES PATENT OFFICE.

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EDWIN T. BROOKS, OF SAME PLACE.

LOCK FOR SHUT-OFF VALVES.

SPECIFICATION forming part of Letters Patent No. 414,154, dated October 29, 1889.

Application filed October 23, 1888. Serial No. 288,890. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. HAINES, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Lock for Shut-Off Valves, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of this invention is to provide a locking device for shut-off or plug valves, the valve being locked in two positions, a closed position or positions in which it may be either open or closed, as will be hereinafter set forth.

Figure 1 is a side elevation of an ordinary plug-valve embodying my improved features; Fig. 2, a vertical section in plane 2, Fig. 1, looking in the direction indicated by the arrow; Fig. 3, a vertical section in plane 3, Fig. 1; Fig. 4, a horizontal section in plane 4, Fig. 1; and Fig. 5, a detail looking at the inside of the inclosing-shell or valve-chamber and showing that part in which the locking-bolts are located.

Referring to the drawings, A represents the usual valve-chamber or shell inclosing the tapering plug-valve B inserted therein. The valve-inclosing shell or chamber is of the ordinary form and construction, with the difference of the projection C, formed on one side and top edge, as shown in Figs. 1 and 2. This projection is chambered or recessed, as at a , from the inner side, for the reception of the outer ends of the locking-bolts D D' and provided from the outer side with the rectangular aperture a' , for the insertion of the key F. The locking-bolts are in two distinct parts. The shorter members a^2 a^3 , forming the outer ends, are of an unequal length and are seated in the chambered projection C, as shown in Fig. 2. The outer ends of the longer parts a^4 a^5 of the bolts abut against the shorter parts, the inner ends extending into the apertures b b' , stopping short in the plug B.

b^2 b^3 are spiral springs seated in the bottom of the apertures in the plug and bear against the inner ends of the locking-bolts and hold the same in the normal or locked position, (shown in Fig. 2,) the valve being closed.

When the key is inserted, the springs are compressed by the inward thrust of the bolts.

The shorter parts and outer members of the locking-bolts terminate in the conical ends b^4 , which feature makes it more difficult to move the bolts with any instrument other than the right key.

The bit of the key F is flat and is provided on opposite edges with the shoulders d d' , arranged in different planes to correspond to the unequal or shorter ends of the locking-bolts. When the key is inserted, the projecting end or guide-pin d^2 passes between the bolts, the shoulders coming in contact with the conical ends in their order, the key being pushed in until the shoulder-stop d^3 on the shank has contact with the exterior surface of the valve-chamber, which brings the line dividing the bolts into the same plane, separating the valve and chamber, when the plug may be rotated. By this arrangement it will be observed that it would be a rather difficult matter to open the valves unless the exact key were used, as the line of separation of the bolt and valve must register to a nicety. Thus a slight change in the key or in the locking-bolts would produce a variety of changes and each valve would require its own particular key.

The bolt recesses or passages are somewhat enlarged in the adjacent faces of the plug and the inclosing-shell, as shown in Figs. 2 and 5. This feature provides for the grinding of the plug and still retain the locking-bolts in a working plane. The upper side of the shell (see Fig. 1) or valve-chamber is provided with the stop-lug d^4 and the valve-plug with the stop-pin d^5 , which prevents the plug from being rotated in but one direction and stops the plug at a closed position, when the separated ends of the locking-bolts register and are automatically thrown into a locking position by the springs b^2 b^3 .

The arrangement just described locks the valve in its closed position; but there are many uses to which valves of this character are put, where it is just as essential to lock the same in a position where it may be opened or closed without the use of a key. Means for doing this will now be described. The

inner edge of the top part of the valve-chamber (see Figs. 3 and 4) is grooved out on one side to form the shallow segmental recess *g*. When the valve-plug is rotated to open the same, the shorter members or parts a^2 a^3 of the locking-bolts remain seated in the recessed projection C, while the outer ends of the inner members of the bolts are automatically thrown into the groove or recess *g* by the springs behind the same. The plug may now be rotated to any point within the limit of the recess *g*, but when rotated toward the closing position the ends of the locking-bolts are turned to a position where it would be automatically locked up against the shoulder g' , formed where the recess *g* ends, and thus prevent the valve from being closed without the use of a second key.

This lock-valve is more especially intended for use on gas-meters, and is both a protection and a convenience, as the segmental slot or groove *g* permits of the valve being closed without locking the same by turning the plug to the terminus of the slot *g* at the side opposite to the locking feature. This is a convenience to the consumer, as he is enabled to shut off the meter at any time, either on account of a leak or for any other purpose, without locking the valve. The feature of locking the valve open prevents the plug from being rotated in the wrong direction and accidentally locked when it is only intended to close the valve temporarily.

The key H is provided with pins h h' , which are adapted to enter the apertures h^2 h^3 and force back the bolts from a locking engagement, when the valve may be closed. Thus two different keys are required in opening and closing the valve. It is of course obvious that the locking-bolts may be rectangular or square in cross-section instead of cylindrical, as shown.

Any number of locking-bolts may be used—two or more.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a shut-off valve, the valve-shell, provided with the internal segmental groove *g*, in combination with the valve-plug turning in said shell, and carrying locking-bolts in

line with the passage therethrough adapted to enter the groove, said groove being of sufficient length to permit the valve-plug to be turned from an open to a closed position without unlocking the same, substantially as described.

2. In a shut-off valve, the valve-shell, provided with the internal segmental groove *g*, having key-apertures at one end, in combination with the valve-plug turning in said shell and carrying spring-seated locking-bolts in line with the passage therethrough, adapted to enter the groove, said groove being of sufficient length to permit the valve-plug to be turned from an open to a closed position, whereby the plug may be locked in such position as to be either open or closed, and, by the insertion of a key in the apertures, may be unlocked and given a further movement, substantially as described.

3. In a shut-off valve, the valve-shell, provided with a recessed projection C on one side, carrying bolt-sections of different lengths and having a key-hole therein, the shell being also provided with an internal segmental recess *g* with key-apertures at one end, in combination with the valve-plug, carrying spring-seated locking-bolt sections of equal length in line with the opening therethrough, substantially as and for the purpose set forth.

4. In a shut-off valve, the valve-shell, having the internal segmental groove *g* with key-apertures at one end, and provided with the recessed projection C on one side, having a key-hole therein, in combination with the valve-plug, turning within the shell and carrying spring-seated locking-bolts in line with the opening therethrough, the internal groove being of such length as to permit the plug to be turned from an open to a closed position when the locking-bolts are in engagement therewith, and the recessed projection C being located on the side of the shell, so that when the locking-bolts are in engagement therewith the plug will be locked in a closed position, substantially as described.

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Witnesses:

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