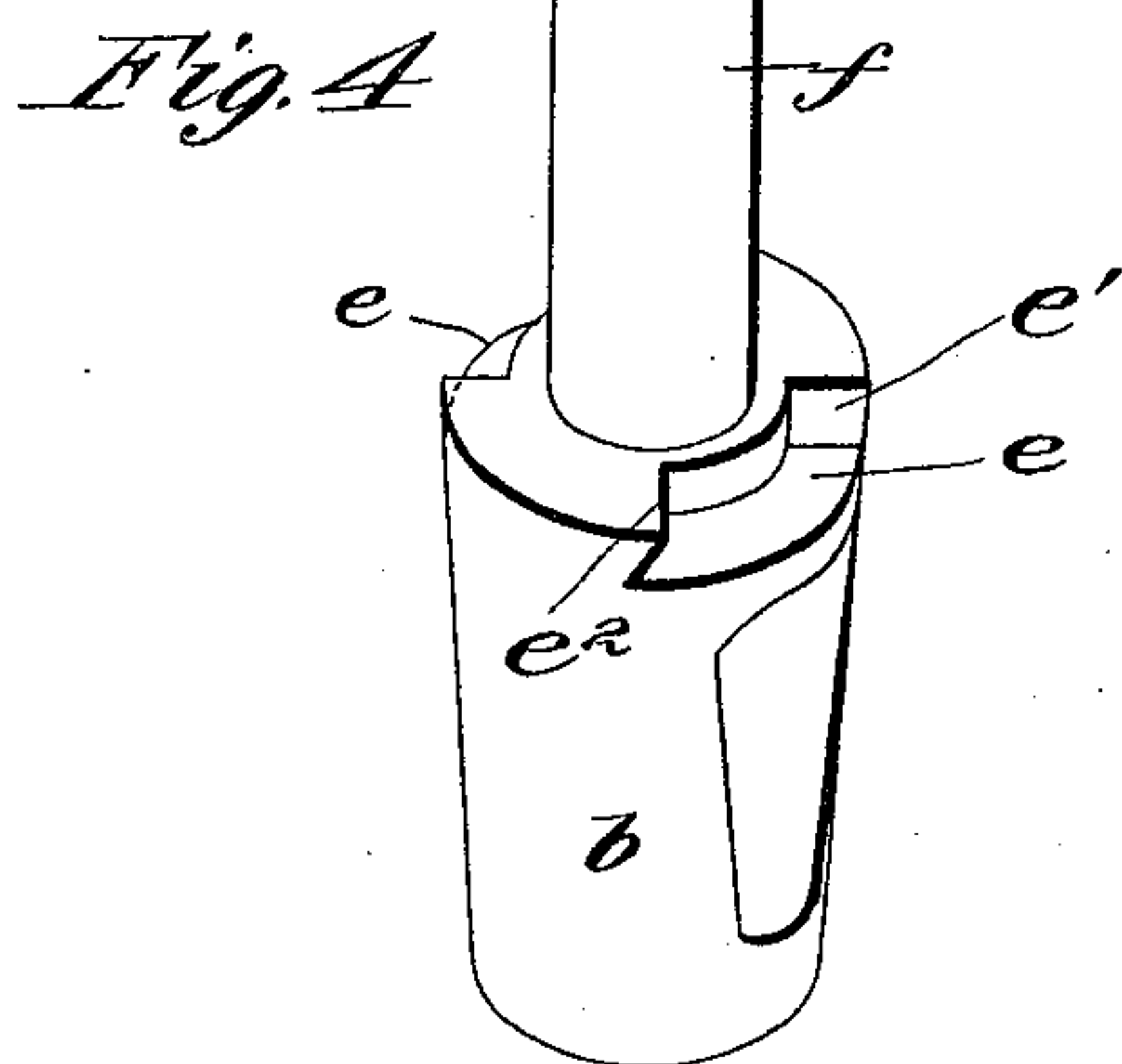
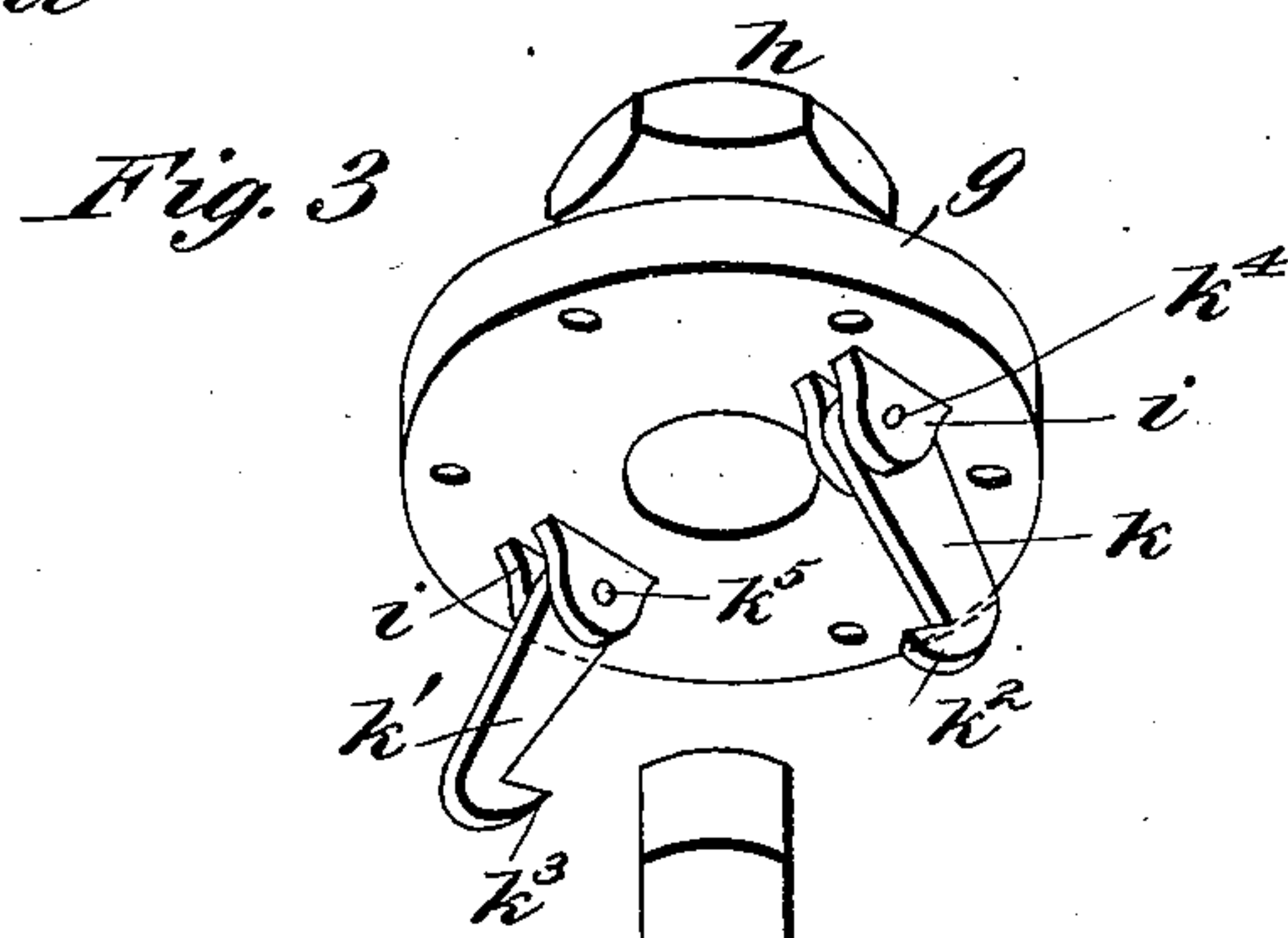
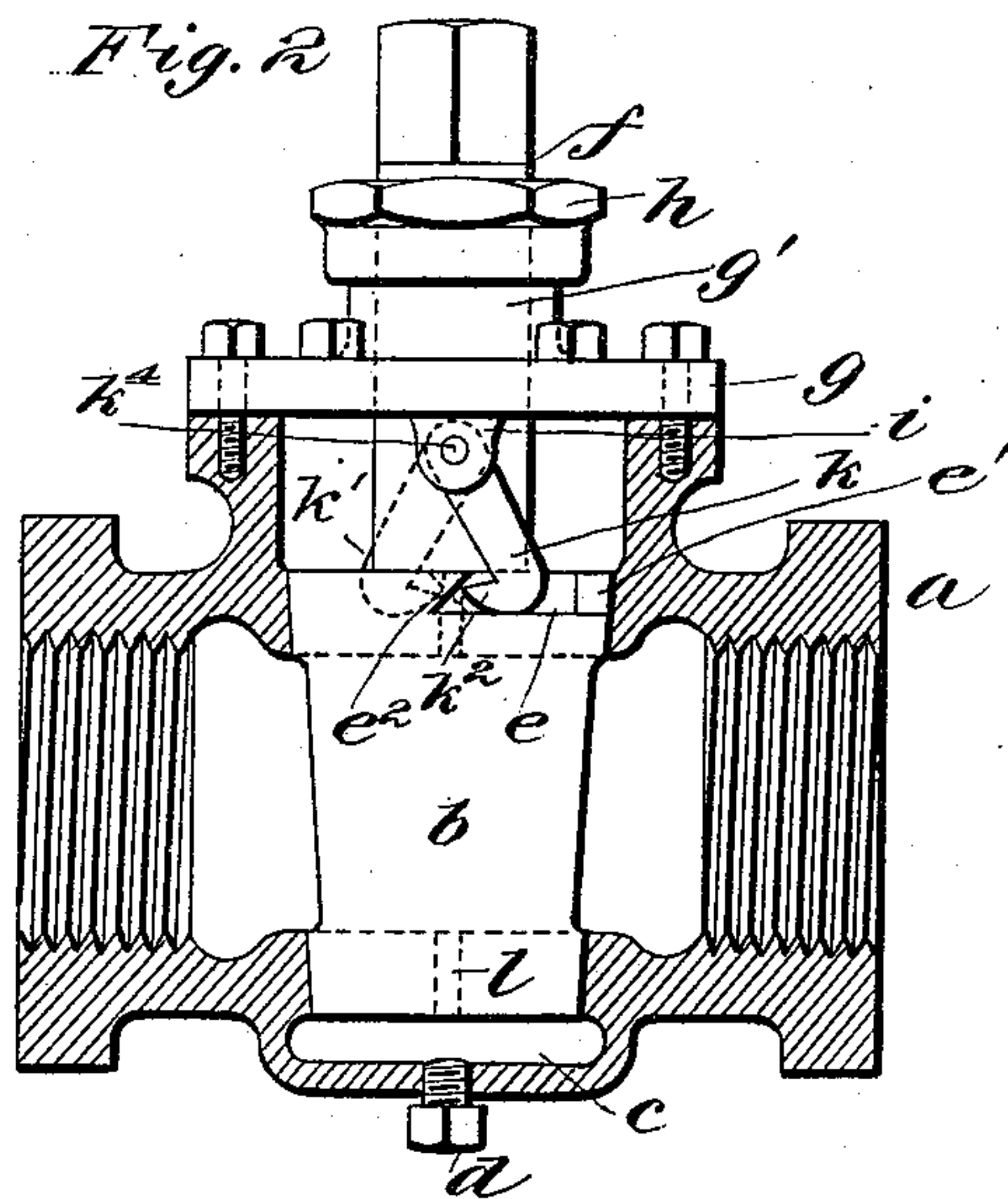
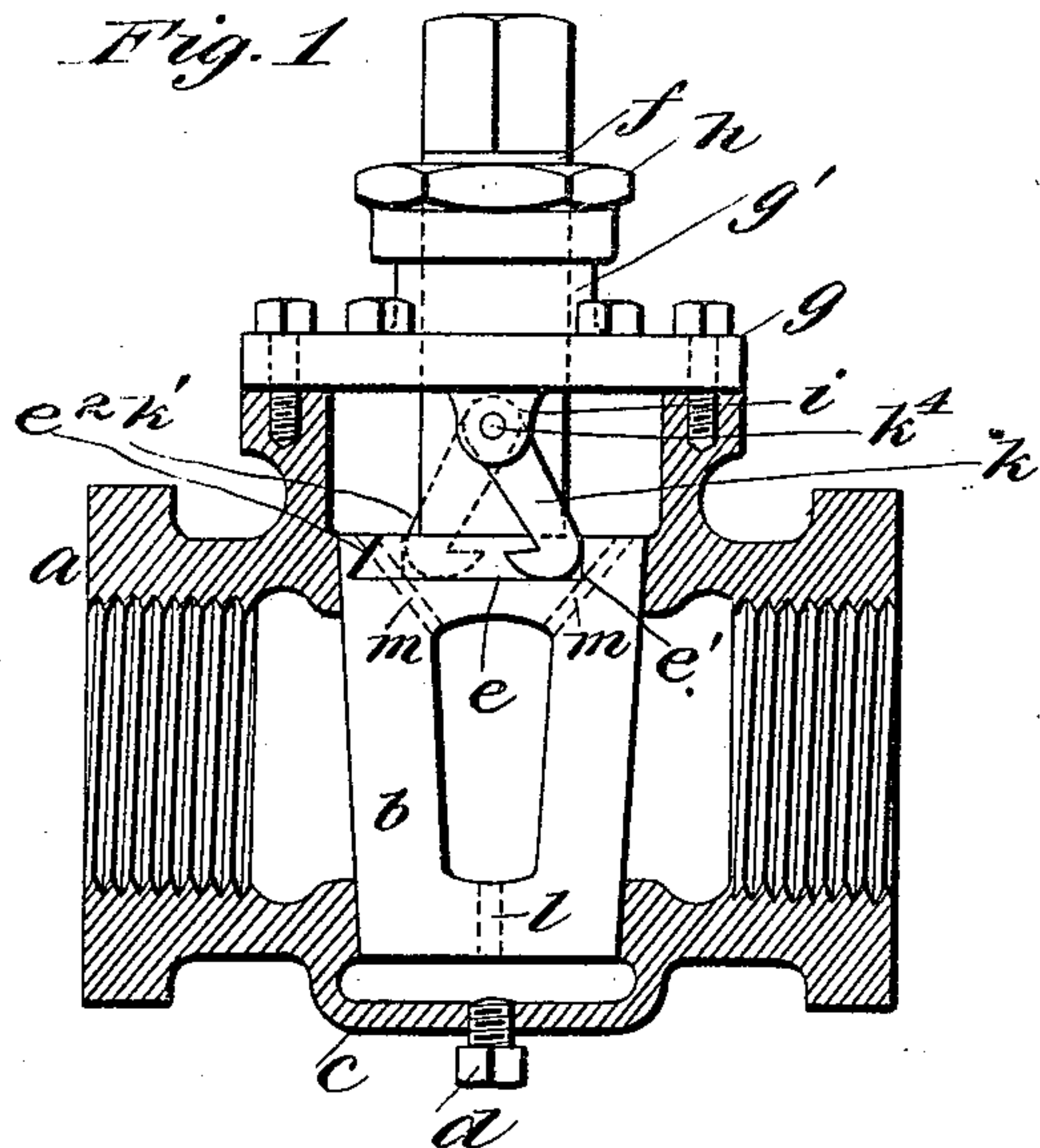


(No Model.)

W. F. HARRISON.  
VALVE.

No. 561,989.

Patented June 16, 1896.



Witnesses  
J. F. Coleman  
C. A. Finckel.

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att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM F. HARRISON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE  
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## VALVE.

SPECIFICATION forming part of Letters Patent No. 561,989, dated June 16, 1896.

Application filed November 27, 1895. Serial No. 570,306. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. HARRISON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Valves, of which the following is a full, clear, and exact description.

This invention relates more especially to plug-cocks or valves of similar or equivalent construction, and the object of the invention is to provide for the positive arrest of the plug or valve proper when it is either opened or closed and to insure the retention of the valve or plug upon its seat at all times.

The invention consists of a dogging device, cam, eccentric, hook, or equivalent vibrating or oscillating device operating as a stop and lever interposed between a fixed portion of the valve-casing and the plug or valve and having a throw or motion in one direction sufficient only to admit of the opening of the valve and having a throw or motion in the opposite direction sufficient only to admit of the closing of the valve, the said device at the end of its throw or motion in either direction serving positively to arrest further movement of the plug or valve and at the same time to insure the seating of the valve, all as I will proceed now more particularly to set forth and finally claim.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a sectional elevation showing the parts with the valve closed. Fig. 2 is a similar view with the valve open. Fig. 3 is a perspective view of the cap detached, and Fig. 4 is a perspective view of the plug detached.

The casing *a* may be of any approved construction and is adapted to receive the plug or valve *b*. Without thereby restricting my invention to the precise construction now about to be described I will set forth my invention as illustrated in the accompanying drawings.

The plug or valve *b* is shown as a turning plug of taper form and arranged in a complementary seat in the casing, the plug having a

straightway port. The casing is provided with a drip-pocket *c*, which may be drained by removal of the screw *d*. The plug in the preferred construction is made with opposite recesses *e*, terminating at one end in the square shoulder *e'* and at the other end in the overhanging or undercut shoulder *e''*, and said plug further is provided with the stem *f*, by which rotary motion may be imparted to it. *g* is a cap bolted or screwed to the casing over the plug-induct, and this cap is provided with a neck *g'*, through which the stem *f* projects, and said neck is supplied with a gland *h*, which may be packed in any usual manner to insure a tight joint around the stem.

The cap *g* is supplied with pairs of depending lugs *i*, preferably arranged at diametrically opposite points, and in these lugs are pivoted or otherwise arranged dogging devices, as cams or hooks *k k'*, of slightly greater length or radius than the distance between the inner face of the cap and the bottoms of the recesses in the plug and having a limited range of movement. The devices *k k'*, as herein shown, are made as hooks, having their beaks *k<sup>2</sup> k<sup>3</sup>* pointing in opposite directions and connected with the lugs by means of pivots *k<sup>4</sup> k<sup>5</sup>* and extending up close enough to the bottom face of the cap to come into contact therewith at times of greatest strain, thereby to take off from the pivots the pressure and apply it directly to the cap.

In order to drain the valve and its casing, and also to pressure-balance the valve, I provide ports or ducts *l* and *m*, communicating, respectively, with the pockets *c* and the space above the plug.

As shown in Fig. 1, when the valve is closed its square shoulders *e'* will come into contact with the bases of the hooks, and any further rotation of the valves in the same direction will tend to straighten out the said hooks into vertical planes, which results not only in the arresting of such further motion of the valve, but also in the exertion of downward pressure by the hooks, thereby to thrust the valve firmly into its seat, and since the length of the hooks is greater than the distance between the under face of the cap and the bot-



toms of the recesses in the valve it follows that a positive limit of motion is obtained which is effective in positively arresting the motion of the valve; and so, also, as the valve is turned to open, the valve, as it were, moves from under the hooks and carries them away from their dead-centers and is thereby released from their closing pressure, but is arrested from undue motion by the beaks of the hooks engaging the undercut shoulders  $e^2$ , as shown in Fig. 2.

The hooks or their equivalent devices operate somewhat after the manner of a toggle.

I esteem as within my invention and as accomplishing the purposes and objects of my invention any device in the nature of or operating as an eccentric when the same is interposed between a fixed portion of the casing and the valve proper or plug, and is vibrated or oscillated by the latter as it is turned positively to limit its motions in opening and closing and to hold it to its seat.

I have shown and prefer to employ two hooks; but one or more may be employed with good results.

Instead of the hooks I may employ, as already indicated, cams, eccentrics, levers, or equivalent devices, which when acted upon by the movement of the plug or valve will serve to arrest such movement of the valve at predetermined points and will serve by its thrust to hold the valve to its seat. I mean to include by the term "dogging device" all these various equivalents for effecting the object of my invention.

What I claim is—

1. A valve comprising a valve proper or plug, a casing in which the valve proper or plug is seated and in which it is adapted to be turned to open and close the valve, and a dogging device pivoted between a fixed portion of the casing and the said valve proper or plug and having a vibrating or oscillating movement imparted to it by the valve proper or plug as the latter is opened and closed, and serving positively to limit the opening and

closing movements of such valve proper or plug, substantially as described.

2. A valve comprising a casing, a plug seated therein and provided with a shouldered recess in its head, a cap rigidly affixed to the casing, and a dogging device movably connected to the cap and projecting into the recess of the plug and of greater length than the distance between the bottom of the recess and the under face of the cap, substantially as described.

3. A valve comprising a casing, a cap therefor, a plug seated in said casing and having one or more recesses in its head, each of said recesses having a square shoulder at one end and an overhanging or undercut shoulder at its other end, and as many hooks as there are recesses, the said hooks being of greater length than the distance between the cap and the bottoms of the recesses and suspended from said cap, and cooperating with the shouldered ends of the recesses to arrest the undue movements of the plug in opening and closing, substantially as described.

4. A valve comprising a valve proper or plug, a casing, and a vibrating or oscillating dogging device, interposed between a fixed portion of the casing and the valve proper or plug, and having a radius of greater length than the greatest distance between its axis of vibration or oscillation and the head of the valve proper or plug, and vibrated or oscillated by contact with the head of the valve proper or plug as the said valve proper or plug is rotated or turned to open and close the valve, and serving positively to limit the movements of the valve proper or plug both in opening and closing the valve, substantially as described.

In testimony whereof I have hereunto set my hand this 25th day of November, A. D. 1895.

WILLIAM F. HARRISON.

Witnesses:

REID KENNEDY,

FREDERICK SCHUCHMAN.