

No. 689,573.

Patented Dec. 24, 1901.

J. BROOKS.  
STOPPER.

(Application filed Aug. 17, 1901.)

(No Model.)

Fig. 1.

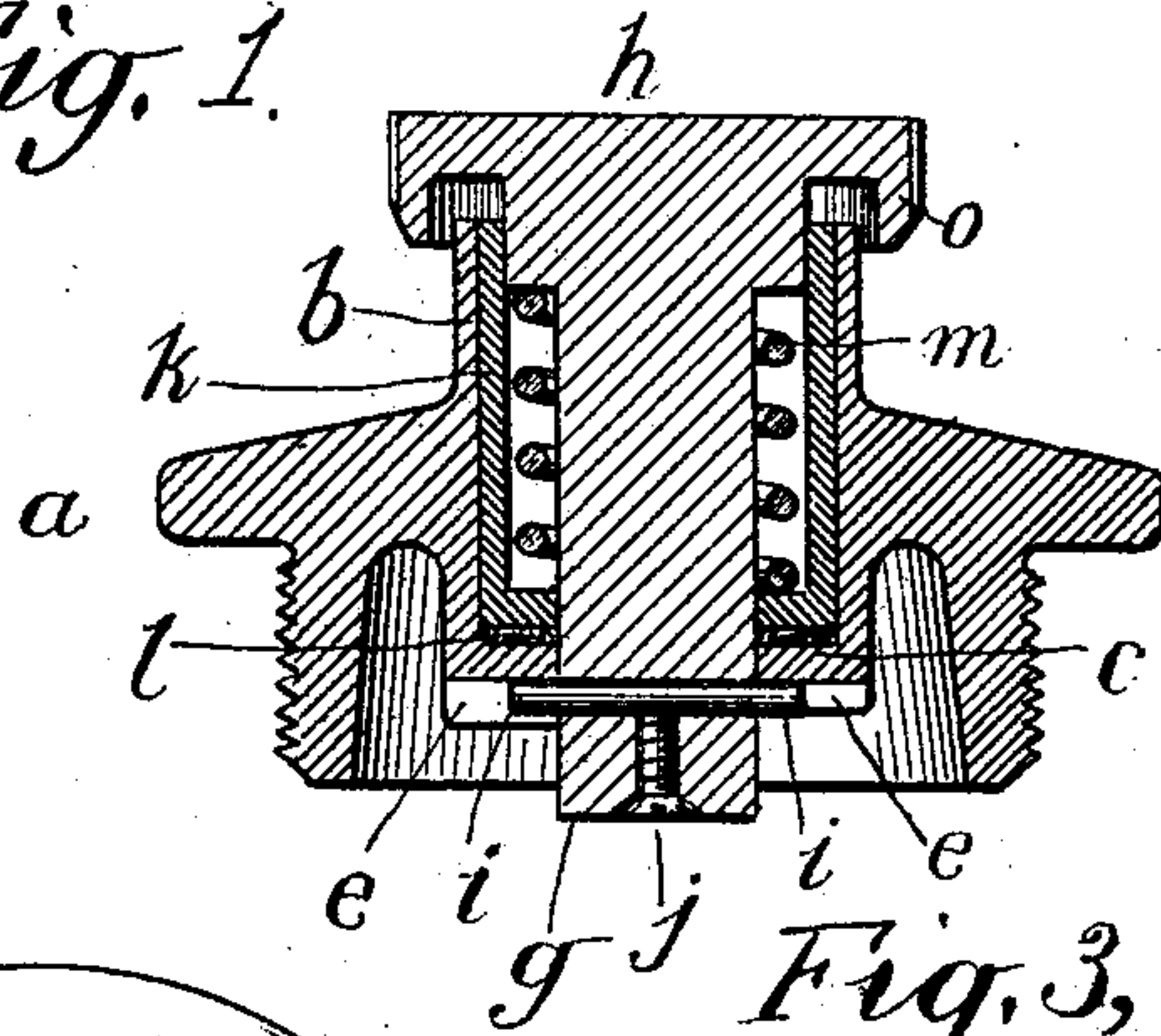


Fig. 2,

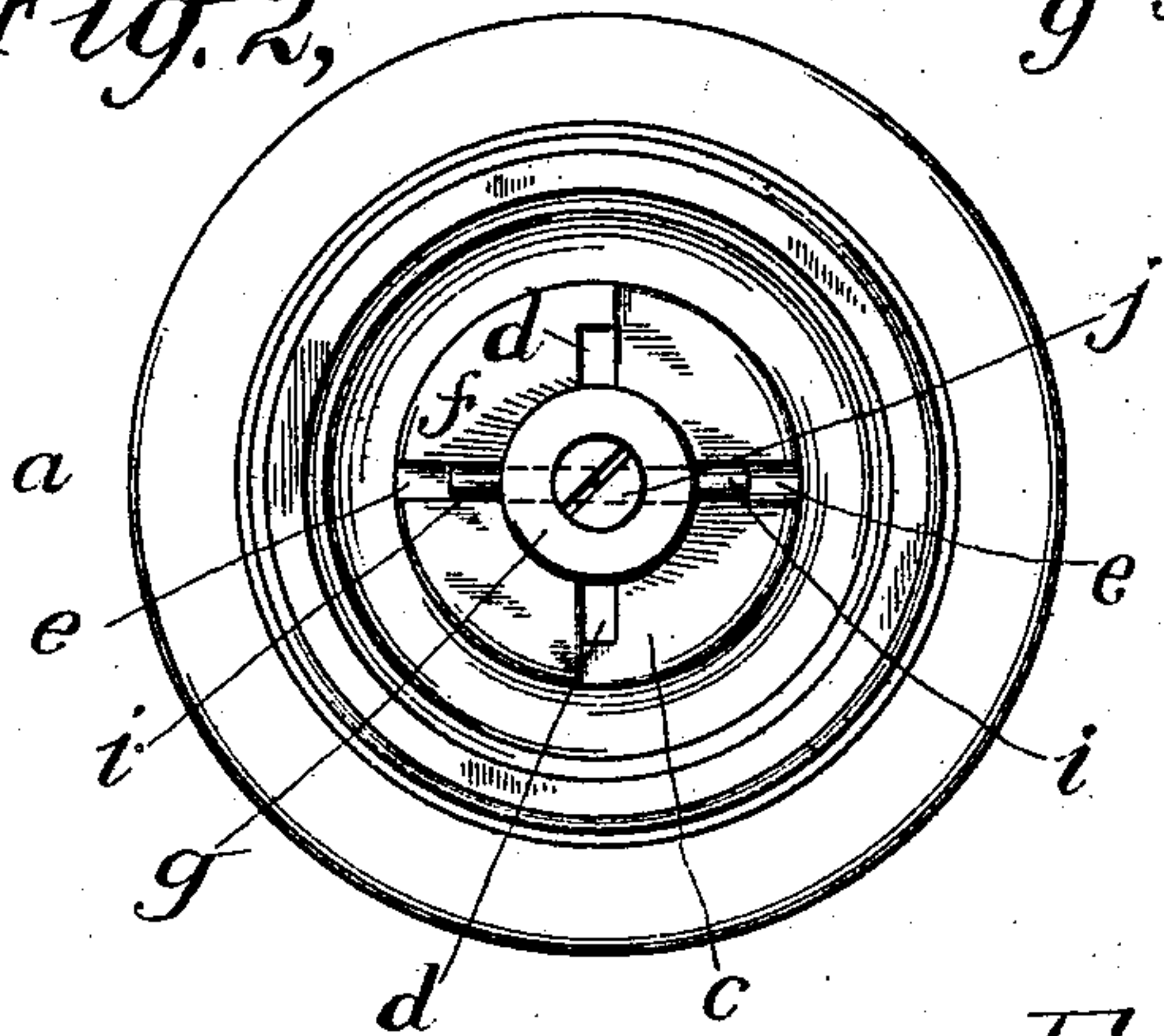


Fig. 3,

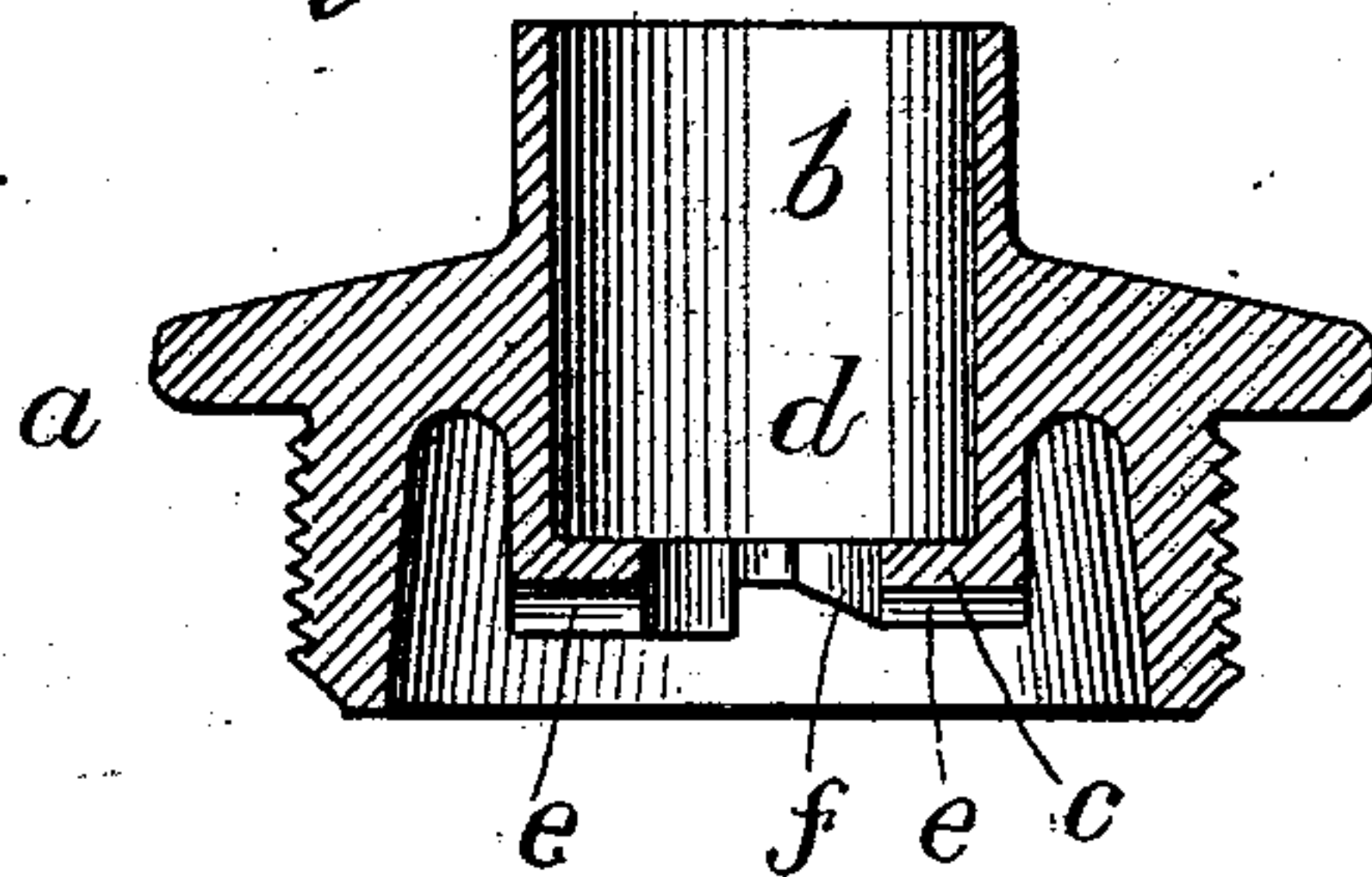
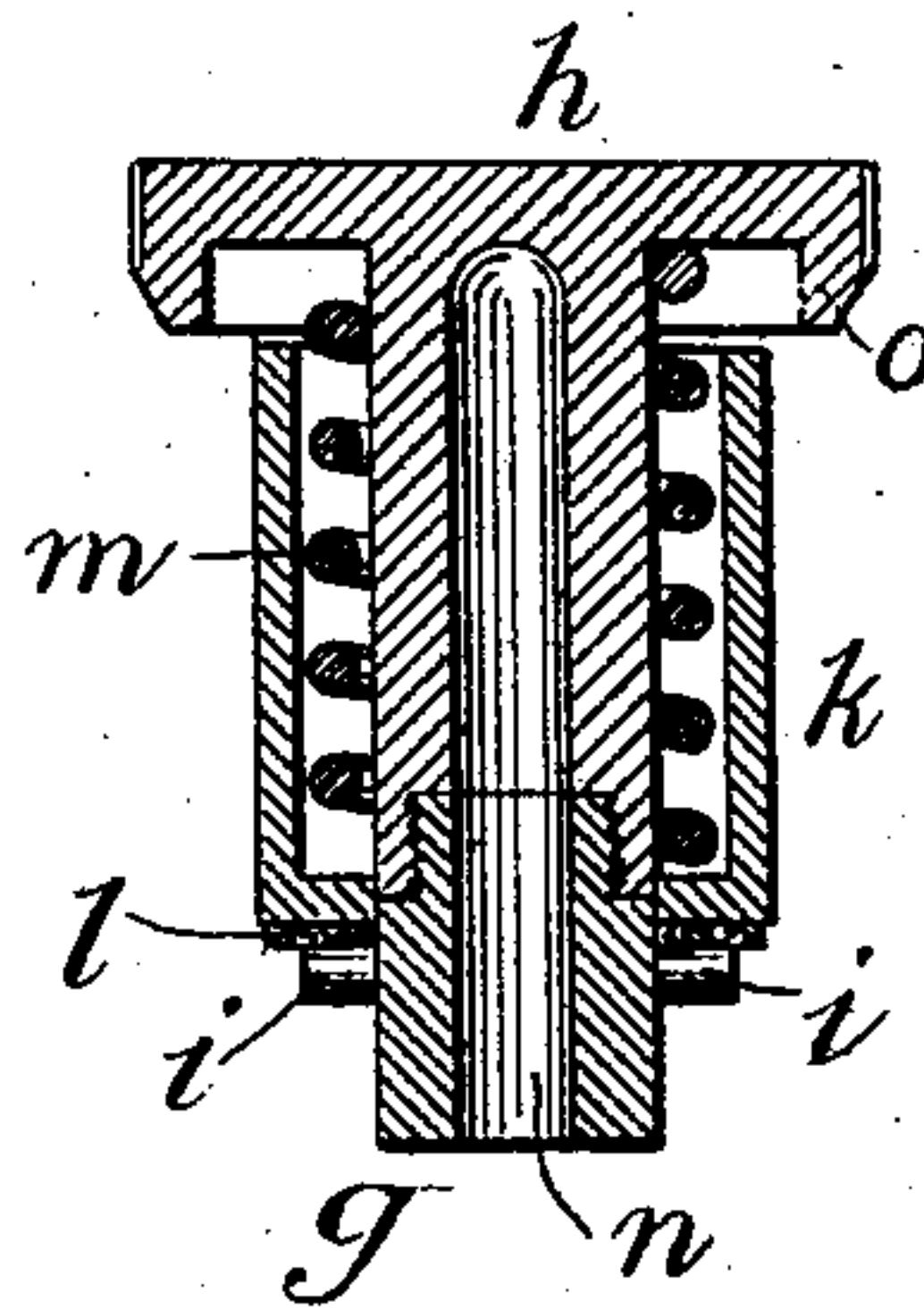


Fig. 4,



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## STOPPER.

SPECIFICATION forming part of Letters Patent No. 689,573, dated December 24, 1901.

Application filed August 17, 1901. Serial No. 72,458. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES BROOKS, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Stoppers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to stoppers, and the embodiments thereof hereinafter described are particularly adapted for employment as stoppers for oil-cups or other lubricating devices.

15 My invention consists in a part hereinafter referred to as a "cap" and shown as a removable cap and which may be any part of the shell or outer covering of a containing vessel, and a part hereinafter referred to as a "stopper," adapted to be inserted within and engaged or locked with the cap, the stopper being removable and the cap and stopper having spring-actuated interlocking parts, and in the provision on one of these parts of locking projections and on the other of these parts of grooves for the insertion of the projections and locking-notches to engage the projections, and in the provision on the stopper of a spring-valve and the provision on the cap of a valve-seat cooperating with the valve when the stopper is locked, and, further, in the provision of cams and locking-notches in the cap.

25 My invention further consists in various details of construction and combinations of parts.

35 I will now describe the constructions illustrated in the accompanying drawings, and will thereafter point out my invention in claims.

40 Figure 1 is a vertical central section of a stopper and cap embodying my invention, showing the stopper engaged with and secured in the cap. Fig. 2 is an underneath plan view of the same. Fig. 3 is a detached vertical section of the cap. Fig. 4 is a detached vertical section of a stopper of modified construction.

50 The accompanying drawings illustrate an oil-cup cap *a*, adapted to be secured upon an oil-cup and having a socket *b* in the body for receiving the stopper, the socket being partly closed at its lower end by an annular rim *c*

and being open at its upper end. The rim *c* has vertical grooves *d d* formed therein for the passage of projections of the stopper, and locking-notches *e e* at its lower face for such projections and cams or inclined faces *ff* joining the grooves and locking-notches. The upper face of the rim *c* constitutes a valve-seat for the spring-valve of the stopper, as hereinafter described. The stopper has a central stem *g*, constructed to freely enter the opening in the rim *c*, and in the construction shown in Figs. 1 and 2 the stem is in one piece and has at its upper end and in one piece therewith the head *h*, which may be milled and which has a countersunk annular groove in its lower face. The stopper is provided with locking projections *i i*, which in the construction shown in Figs. 1 and 2 are formed by a pin extending through the stem and clamped in place by a screw *j*, and in the construction shown in Fig. 4 are in one piece with the lower part of the stem *g*, this lower part of the stem being a separate stud screwed into the upper part of the stem. A spring-thimble *k* is fitted upon the stem *g* and has a lower annular face, against which is fitted a gasket *l*, this lower face and gasket constituting a valve cooperating with the upper face or valve-seat of the rim *c* of the cap. A spring (shown as a spiral spring *m*) is arranged within the thimble *k* and around the stem *g* and works between a shoulder at the upper end of the stem and the inner face of the lower end of the thimble. When the stopper is disengaged from the cap, this spring *m* presses the thimble against the locking projections *i*, as shown in Fig. 4, and when the stopper is within the cap and engaged therewith the spring presses the lower end of the thimble against the upper face of the rim *c*, forming a tightly-closed valve at this point. The gasket *l*, interposed at this place, should be of soft material, as leather, so that it will by inward expansion about the stem *g* tightly close the joint around this stem.

When the stopper is to be inserted, it is entered within the socket and turned so that the projections *i i* will pass freely through the grooves *d d*. Then sufficient pressure is applied to compress the spring *m* and permit the projections *i i* to pass through to the lower face of the rim *c*, and then the stem is rotated,



the projections *ii* engaging the cams *ff* and being forced thereby farther downward until the projections *ii* enter the notches *ee*. The tension of the spring *m* draws the projections sharply into these notches, and the operator is thereby notified that the stopper is locked. A considerable tension is still exerted by the spring to hold the valve tight, as above explained. When the stopper is to be withdrawn, the head *h* is slightly depressed to force the pins *ii* out of the locking-notches *ee* and is rotated until the pins come into line with the grooves *dd*, and then the tension of the spring lifts the pins to normal position into contact with the gasket *l*, and the stopper is unlocked and may be lifted out of the socket.

It will be noted that a stop to the compression of the spring *m* is provided by the contact of the upper end of the thimble *k* and the lower face of the annular groove in the head *h*, and I usually provide, as shown, that when this stop has been encountered in inserting the stopper each of the pins *ii* is still against a vertical wall at one side of its groove *d*, so that it can be rotated only over the cam *f*, and that when this stop has been encountered in removing the stopper each of the pins *i* is still against a vertical wall at one side of its locking-notch *e*, but free to be rotated over the cam *f*. Thus regularity and certainty of action is assured and undue strains upon the spring are prevented. As in the operation of inserting the stopper it is only necessary to compress the spring sufficiently to cause the pins *i* to engage the cams *f*, the further compression being effected by the wedge action of the cams, and in the operation of removing the stopper the pins have to be moved only from their engagement with the notches *ee* to engagement with the cams, it will be seen that only a slight compression is required in each of these movements, the intervening movements being controlled by the cams under the rotative movement applied by the operator.

The annular groove in the lower face of the head *h* provides an overhanging lip *o*, which, as shown, will cover up and conceal the gap above the upper end of the thimble and the upper end of the neck of the socket *b*, and this lip *o* may be of such length as to extend over the neck of the socket *b*, as shown.

In the construction shown in Fig. 4 provision is made for placing the stopper over an oiling wire or pin, so located that its upper end will be exposed when the stopper is removed, by making the stem *g* hollow to receive the wire, an opening *n* being formed centrally in the stem extending from the lower face thereof nearly to the top of the head *h*.

It is evident that many modifications may be made in the constructions above particularly described within the spirit and scope of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a cap of a removable stopper, the stopper having a stem and one or more locking projections on the stem, and a spring-valve arranged annularly about the stem and fitted to slide thereon, and the cap having a socket adapted to receive the stem and valve and having an inner rim forming a valve-seat for the spring-valve, the rim having one or more grooves therein for the insertion of the locking projection or projections and means for locking the same.

2. The combination with a cap of a stopper, the stopper having a stem with a head thereon, the head having an annularly-grooved lower face, and the stem having one or more locking projections and a thimble-valve arranged annularly about the stem and fitted to slide thereon, and a spring between the thimble-valve and stem, and the cap having a neck adapted to enter the groove in the head of the stopper and having a socket adapted to receive the stem and thimble-valve thereon and having an inner rim forming a valve-seat for the inner end of the thimble-valve, the rim having one or more grooves therein for the insertion of the locking projection or projections and means for locking the same.

3. The combination of a stopper having a stem and one or more locking projections thereon, and a spring-valve arranged annularly about the stem and fitted to slide thereon, and a cap adapted to receive the stem and valve and with one or more grooves therein for the insertion of the locking projection or projections and means for locking the same, and a valve-seat cooperating with the valve when the stopper is locked.

4. The combination of a stopper having a stem and one or more locking projections thereon and a spring-valve arranged annularly about the stem and fitted to slide thereon, and a cap adapted to receive the stem and valve and with one or more grooves therein for the insertion of the locking projection or projections and one or more locking notches for the same, and a cam or cams between the groove or grooves and the locking notch or notches and a valve-seat cooperating with the valve when the stopper is locked.

5. The combination of a stopper having a stem *g* with locking projections *i, i*, thereon, the thimble-valve *k* on the stem, a spring between the thimble-valve and stem, and a cap having a socket *b* formed therein with a rim *c* at its inner end, and grooves *d* in the rim, and cams *f* and locking-notches *e* at the inner face of the rim, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

JAMES BROOKS.

Witnesses:

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JAS. H. FITCH.