

(No Model.)

R. R. BALL.
LOCK.

2 Sheets—Sheet 1.

No. 535,525.

Patented Mar. 12, 1895.

Fig. 1.

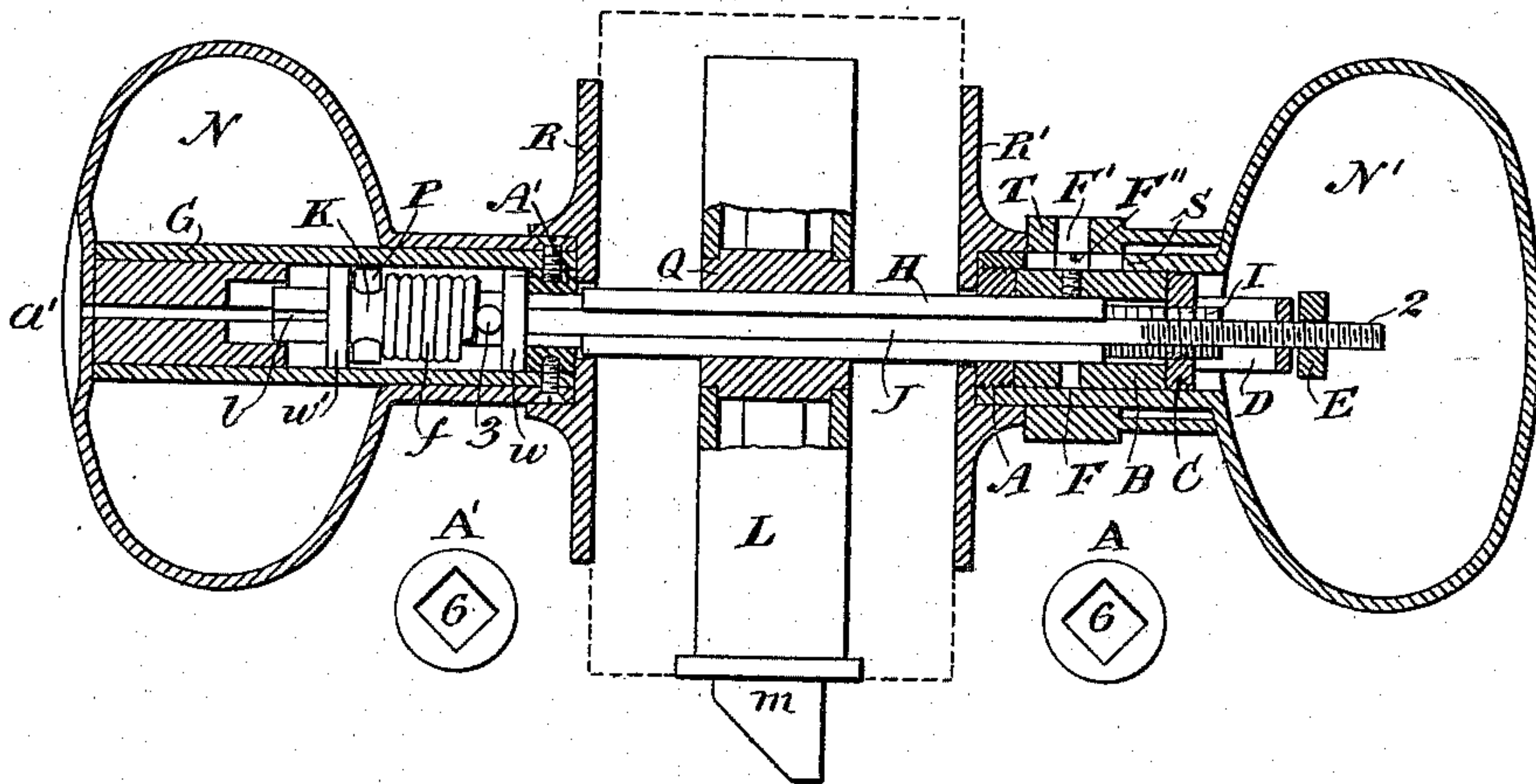


Fig. 2.

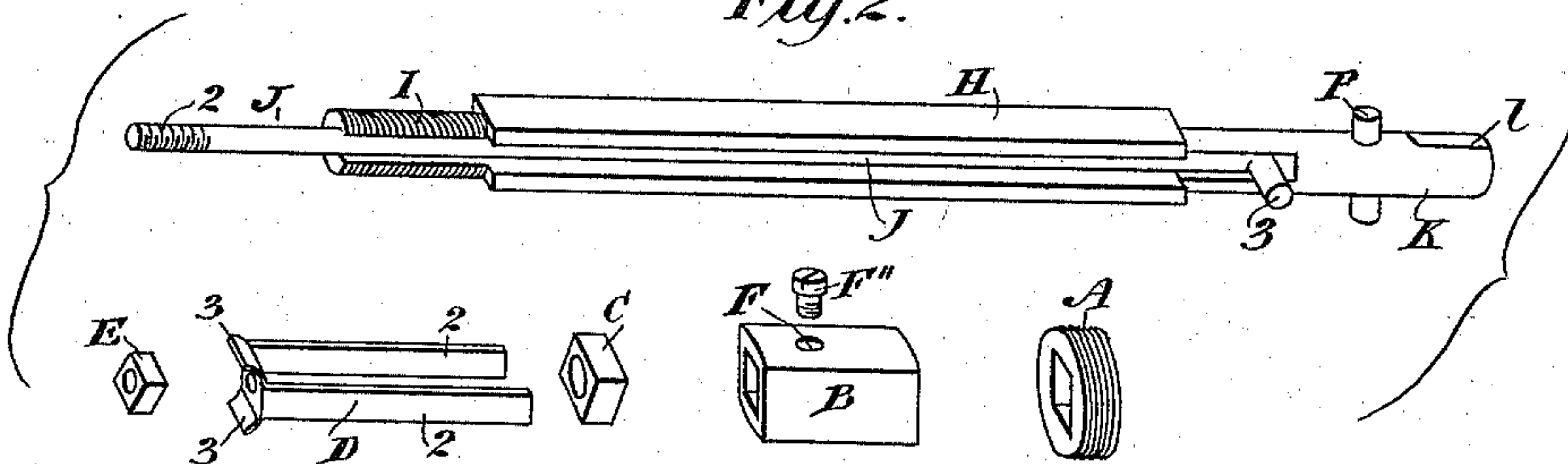
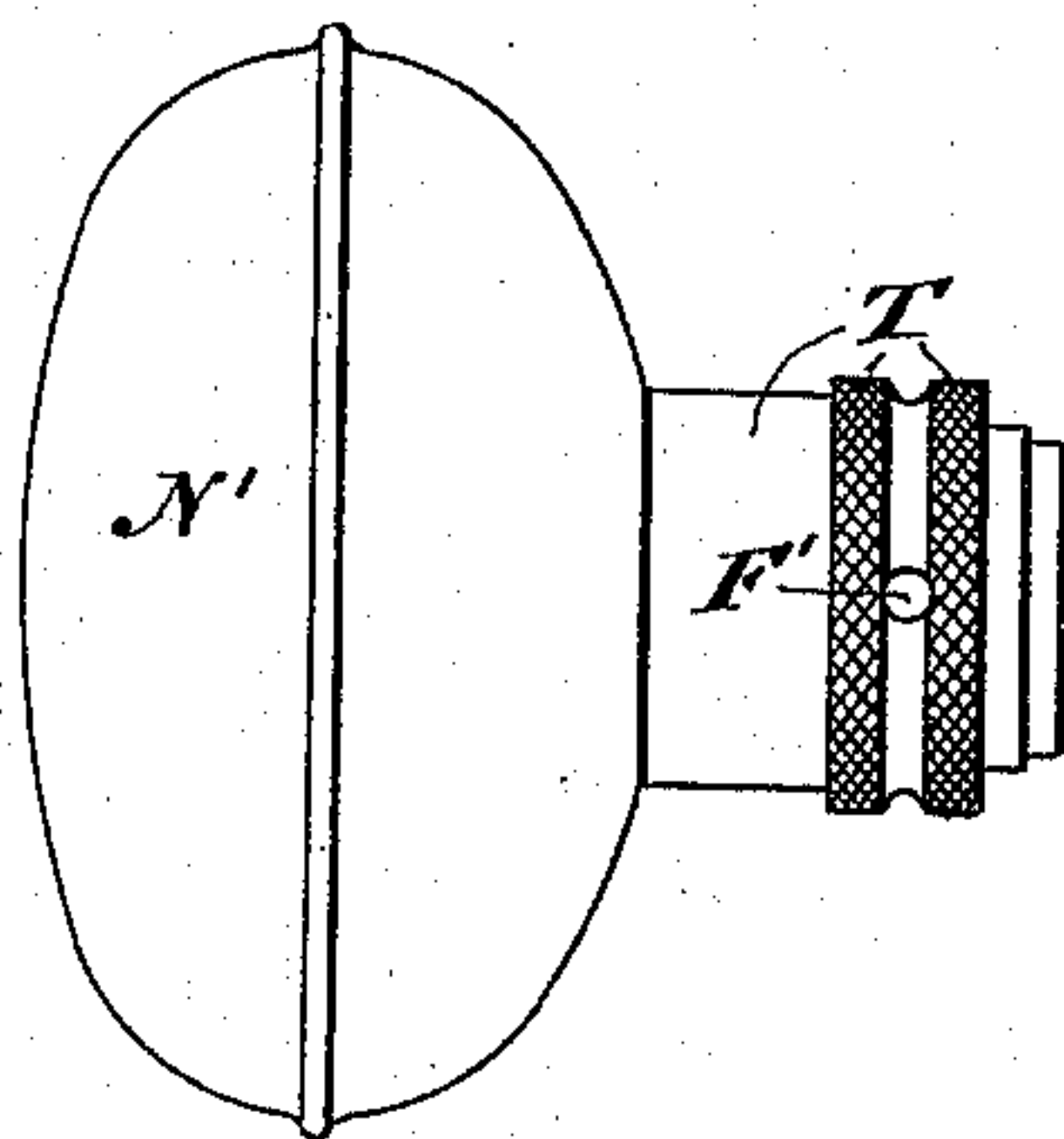


Fig. 3.



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By his Attorney
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2 Sheets—Sheet 2.

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Fig. 4.

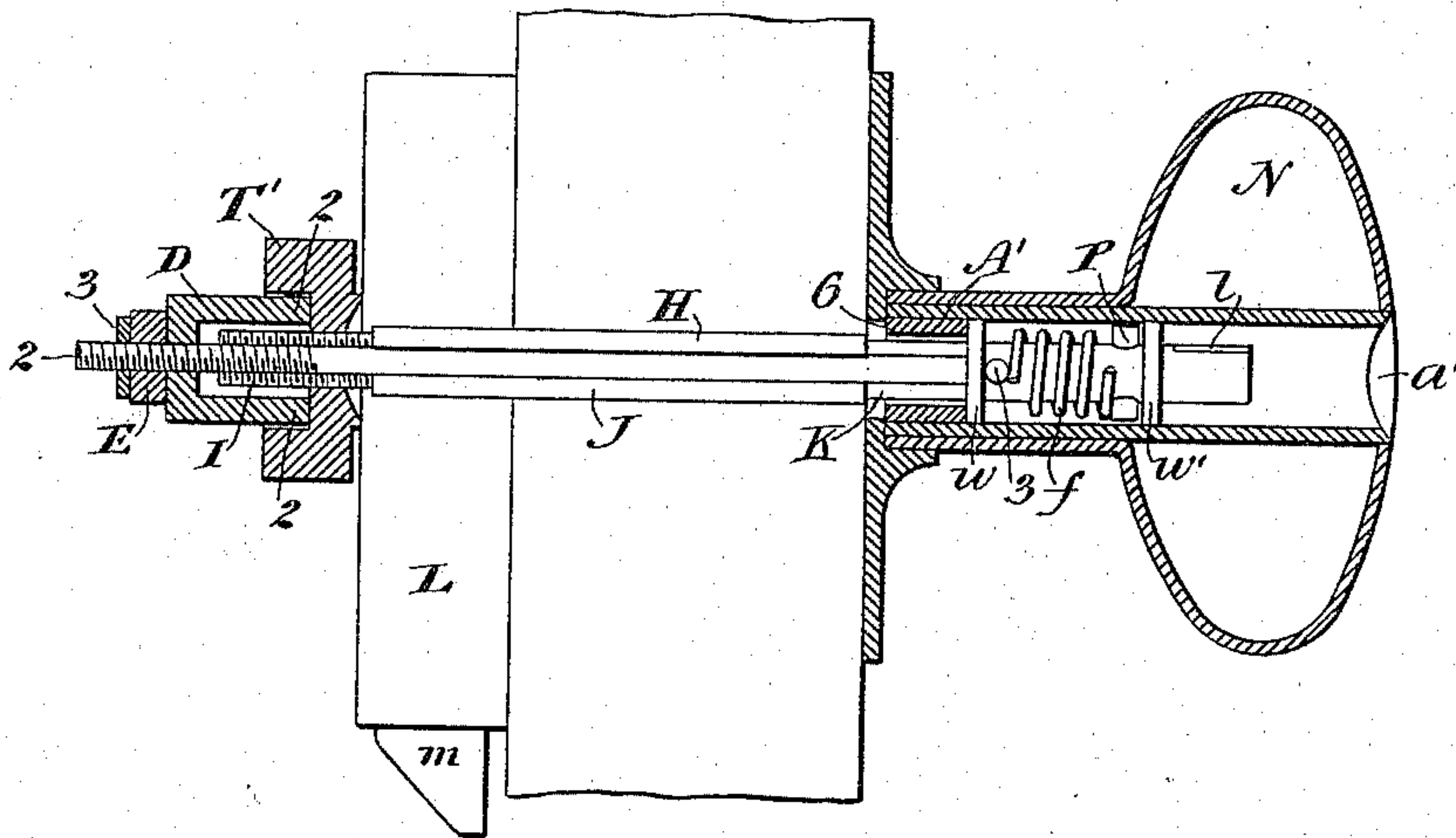


Fig. 5.

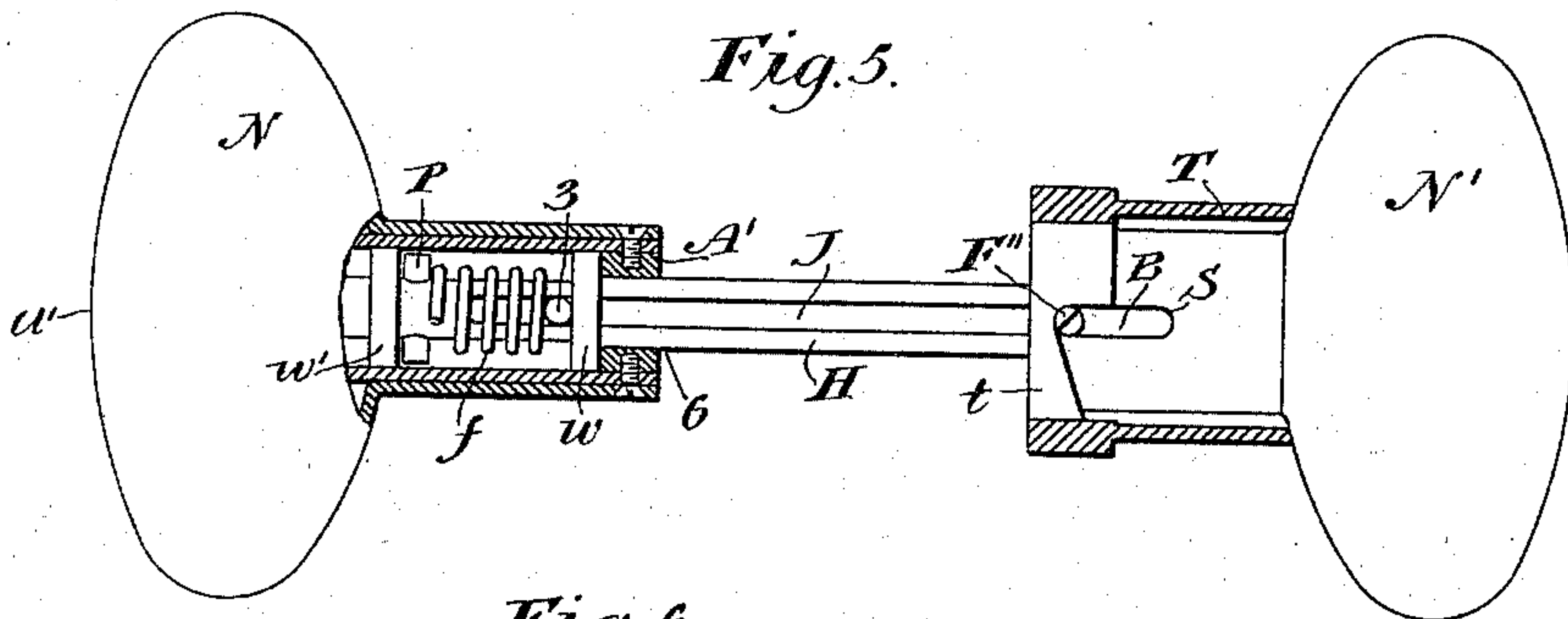


Fig. 6.

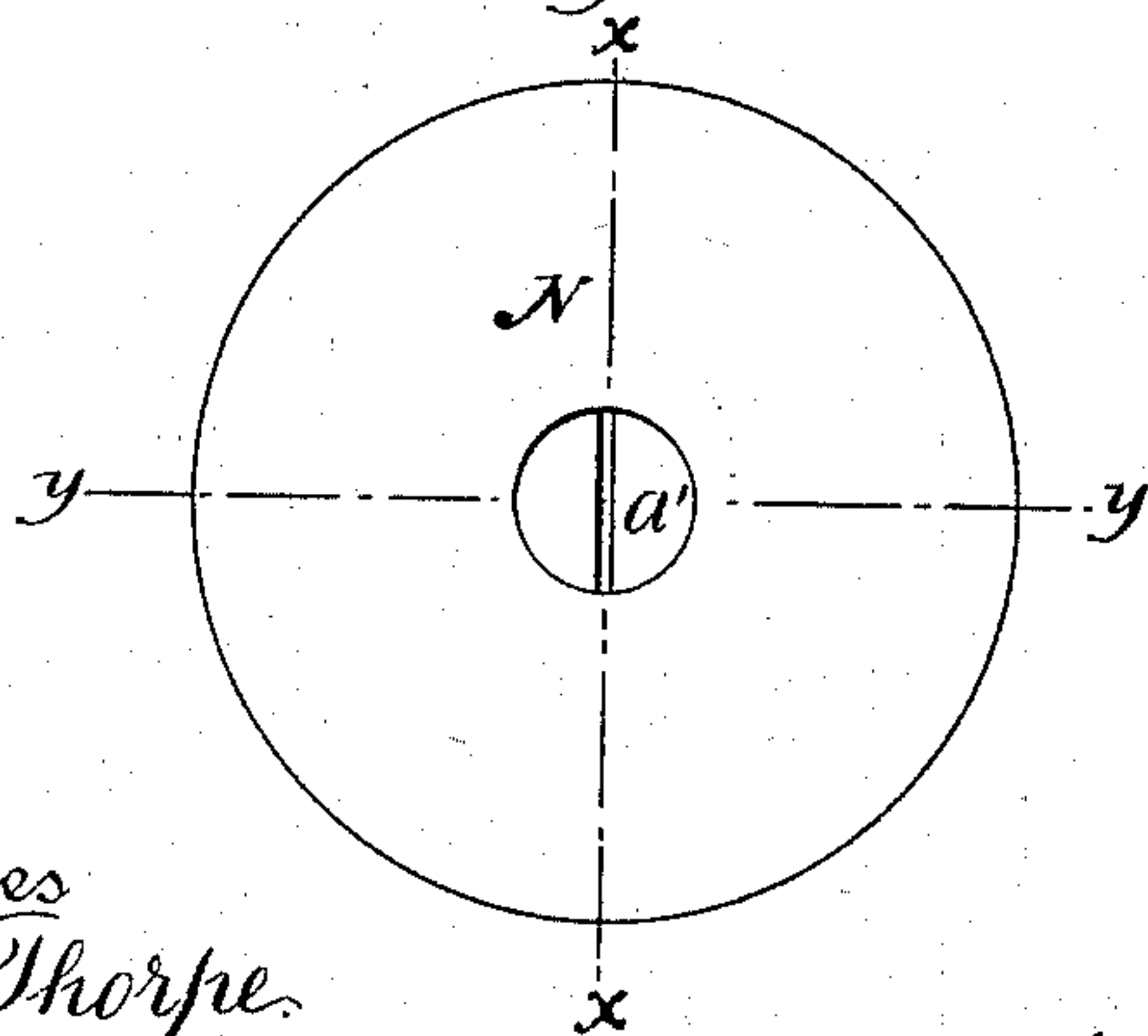
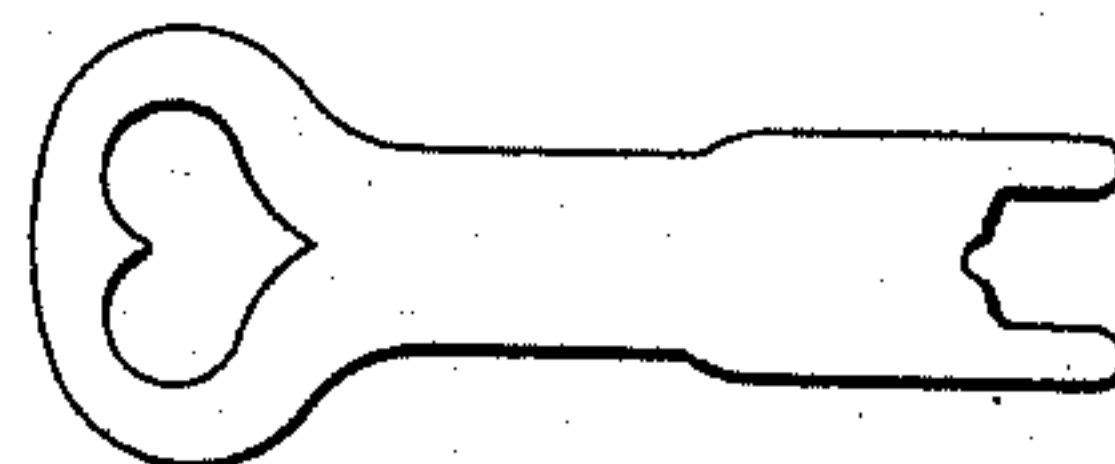


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT R. BALL, OF NEW YORK, N. Y.

LOCK.

SPECIFICATION forming part of Letters Patent No. 535,525, dated March 12, 1895.

Application filed March 6, 1894. Serial No. 502,559. (No model.)

To all whom it may concern:

Be it known that I, ROBERT R. BALL, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented a new and useful Locking Device, of which the following is a specification.

My object is to provide a locking device that can be substituted for ordinary door knobs, and which performs the functions of a door knob and lock at will, and which can be used with any standard lock where a rectangular spindle is used to retract the latch bolt.

In the accompanying drawings, Figure 1. is a sectional exhibit of the device divided on the line of, *y*, Fig. 6, end views of the nuts, A, A', and a mortise lock broken to show a hub, Q. Fig. 2. is a grooved spindle, H, separate from the knob, a rod, J, in the groove, and a sleeve nut, A, jacket, B, nut, C, yoke, D, and nut E, arranged consecutively as they are assembled upon the spindle, H. Fig. 3. is the knob, N', with the sleeve, T, mounted on the shank. Fig. 4. is a sectional exhibit of one knob divided on the line of, *x*, Fig. 6, and a rim lock; Fig. 5, a pair of knobs, the shank of the knob, N, divided in central section and the cam sleeve, T, divided in central section and mounted upon the shank of the knob, N'; Fig. 6, a face view of the lock knob, N, showing the key hole, *a'*; Fig. 7, the key.

Referring to the drawings, the broken lines represent a part of a door stile. L, is an edge view of a common mortise latch broken to show the hub or follower, Q, with the spindle passing through it. The knobs, N, N', are hollow. The axial hole, 6, in the sleeve nuts, A, A', is angular corresponding to the rectangular spindle, H, and their exterior surfaces are threaded. The roses, R, R', are of the ordinary style of construction.

Through the face of the lock-knob, N, is a key-hole, *a'*, and the key when inserted connects with the spindle at *l*, to operate the latch-bolt. A tube, G, extends through the knob, N, and its shank, and is internally threaded at its point of contact with the rose plate to accommodate the sleeve nut, A', and its exterior surface accurately fits the knob-shank.

The spindle, H, is constructed with a cylindrical end, K, with a pin, P, through it, a

threaded end, I, to accommodate the nut, C, and is grooved longitudinally to accommodate an associate rod, J, which is preferably made of wire. The end, 2, of the rod, J, is threaded to enable the nut, E, to engage it and the end, 3, is hooked or bent so as to be at a right angle to the main length of the rod. In assembly, the rod, J, is housed within the groove its end, 3, projecting at right angles to the spindle. This spindle, H, is capable of a sliding movement when the parts are assembled and the cylindrical part, K, is flattened or grooved at, 1, so as to enable a key to engage it.

The washers, *w*, *w'*, are pierced axially with a round hole, and accurately fit the interior of the tube, G, and in use are mounted upon the cylindrical part, K, of the spindle and serve to center it.

The spiral spring, *f*, encircles the cylindrical part, *k*, of the spindle and when the parts are all assembled, at one end engages the hooked end, 3, of the rod, J, pressing it against the washer, *w*, which in turn is in contact with and bears against the inner surface of the nut, A', and at the other end engages the pin, P, through the spindle.

In assembling the parts above described the sleeve nut, A', washer, *w*, and spring, *f*, are mounted upon the spindle, H, in the order mentioned. The pin is inserted and the washer, *w'*, then mounted upon the spindle. The rod, J, is now placed within the groove with its end, 3, projecting between the washer, *w*, and spring, *f*. As thus assembled the cylindrical end, K, of the spindle is introduced into the tube, G, and the threaded nut, A', engaged with the threaded end, of the tube, provided for it. The tube, G, is now placed into the knob, N, the tube extending the entire length of the knob and its shank, and fastened by machine screws passing through holes in the knob shank and tube, G, into the nut, A'. The nut is thus fastened rigidly to the knob shank. The spindle is not rigidly fast to the knob, N. The spring, *f*, having bearings as above described keeps the rectangular part in engagement with the square axial hole, 6, in the nut, A'. When desired the angular part of the spindle is withdrawn from its engagement with the angular hole, 6, permitting the knob, N, to freely revolve upon the cylindrical part, K, (shown in Figs. 1 and 5.)

The office of the rod, J, is to couple the knob, N, with the fastenings at the opposite end of the spindle.

The hooked end, 3, has a bearing against the washer, *w*, and in sequence with the rigidly fastened nut, A', and holds the knob, N, firmly in contact with the rose plate, R, when fastened at the end 2.

The knob, N', is designed to be affixed to the actuating spindle, H, upon the inside of the door and its shank is pierced with a longitudinal slot, S, and a round axial hole which is threaded at the part that comes in contact with the rose plate, to correspond and engage with the exterior screw threads of the sleeve nut, A.

The sleeve, T, mounted upon the shank of the knob, N', is constructed with an incline or cam, *t*, also with the hole, F', to provide for the passage of a set screw, F''. This sleeve T, in operation has a bearing against either the rose plate, R' as shown in Fig. 1, or against a flange on the end of the shank of the knob, N', as seen in Fig. 3.

The jacket, B, (Fig. 2) is constructed with an axial angular hole to fit the rectangular spindle upon which it is mounted when in use. It is also flattened upon two opposite sides to provide for the adjustment of the yoke, D, and is pierced with a threaded hole, F, to engage a set-screw F''. The sleeve nut, A, and jacket, B, are adjuncts to the spindle, H, and are adjustable to different thickness by sliding upon it. The nut C, run upon the threaded part, I, of the spindle adjusts both in place.

The fork yoke, D, is adapted to and applied to the rod, J, for the purpose of fastening it and preventing a longitudinal movement. In use, the fork, 2, 2, straddles the flattened sides of the jacket, B, and the square nut, C, the points touching the sleeve nut, A. A hole is punched through the end of the yoke through which the threaded end, 2, of the rod, J, projects, and the nut, E, when run upon the rod, adjusts the yoke and keeps it in place.

Tightening the nut, E, draws the knob, N, by means of the coupling rod, J, firmly against the rose plate, R'; but the rectangular spindle, H, with the jacket, B, and nut, C, mounted upon it is permitted a reciprocating movement. The yoke, D, is provided with lugs, 3, 3, which in use clutch the square sides of the nut, E, by being squeezed upon it and act as a nut lock. In turn the forked yoke, D, locks the nut, C, by straddling it and the jacket, B.

To attach the knob, N, or the two knobs, N, and N', to doors, the spindle, H, with the coupling rod, J, housed in the groove is thrust through the hub of the lock after the manner of common handles. The sleeve nut, A, is placed upon the spindle so as to touch the rose plate, R'. The jacket, B, is then placed upon the spindle just touching the sleeve nut, A, and the nut, C, is run upon the spindle to hold both in place. The fork yoke, D, is then

adjusted by the fork, 2, 2, straddling the flattened sides of the jacket, B, and just touching the sleeve nut, A. The end of the rod, J, projects through the hole in the yoke and the nut, E, run upon the rod tightens the yoke against the sleeve nut, A, perfectly adjusting the knob, N, and holding it firmly to the door. The lugs, 3, 3, upon the yoke, D, are now squeezed down upon the nut, E, to lock it. The inside knob, N', is mounted upon the jacket, B, and is then screwed upon the sleeve nut, A. When the shank touches the rose plate, R', the hole, F', in the cam sleeve, T, is on line with the threaded hole, F, in the jacket, B, and the set screw, F'', through the hole, F', and slot, S, is screwed in place. The set screw, F'', as finally adjusted projects through the slot, S, and engages the cam or incline, *t*, (as shown in Fig. 5.) This prevents the unscrewing of the knob, N', and makes a working connection between the manipulating sleeve, T, and the rectangular spindle, H, by means of the jacket, B, which as previously set forth is an adjunct to the spindle. The spindle, H, is continuous, from the knob, N, through the hub, Q, of the latch bolt to the knob, N', and is not affixed to either knob, but is permitted a reciprocal movement in entirety. By turning the sleeve, T, to the right the incline, *t*, engages the set screw, F'', and moves the spindle, H, so as to disengage the rectangular part from the square hole, 6, in the nut, A', which is rigidly affixed to the knob, N. The knob, N, is now free to revolve upon the cylindrical part, K, of the spindle, and is useless for the purpose of retracting the latch bolt, *m*. The insertion of the key through the key hole, *a'*, re-establishes the connection by the key engaging the spindle at, 1, and the latch bolt can be retracted and the door opened. The reverse movement of the sleeve, T, releases the spindle from the pressure of the incline, *t*, and the tension of the spring, *f*, draws the spindle into the knob, N, causing the re-engagement of the spindle with the knob, by means of the rectangular part and the angular hole, 6, (see Fig. 5) and the knobs can be used after the manner of handles in common use without the intervention of the key.

As illustrated in Fig. 4, the manipulating nut, T', is threaded to correspond to the threaded end, I, of the spindle, H, and is directly run upon it. When the knob is mounted for service this nut has a bearing against the rim lock or rose plate, as the case may be. The fork yoke, D, is adjusted to the rod, J, the fork, 2, 2, in easy contact with the nut and is held and locked in place, after the manner heretofore set forth. The manipulating nut, T', is held firmly against the rim lock by the yoke, D, bearing directly against it. The rod, J, having no longitudinal movement the nut, T', is confined in such manner as to prevent its running upon the threaded spindle, H, but the spindle being free as described must move

longitudinally through the nut when the nut is screwed either to the right or to the left. By this movement the rectangular part of the spindle, H, and the revoluble knob, N', are interlocked or disconnected. This arrangement of the device is particularly applicable to closets or where only one knob or a lock knob is required.

It will be observed that the means set forth for interlocking and disconnecting the revoluble knob and spindle enables the locking or unlocking the door from the inside independent of a key which is very desirable for inside doors.

What I desire to secure by Letters Patent is—

1. In a locking device of the character described an axially turning grooved rectangular spindle with an associate rod housed within the groove, a knob handle mounted on said spindle and revoluble thereon, and a key to connect the said knob and spindle and operate them in order to retract a latch bolt substantially as set forth.

2. A reciprocating grooved spindle with a rod housed within the groove a knob handle mounted upon and revoluble thereon and means between them for interlocking the revoluble knob and said reciprocating spindle, so that a latch bolt may be retracted, substantially as set forth.

3. In a locking device of the character described the combination of a reciprocating grooved spindle with an associate rod housed within the groove, a revoluble knob mounted upon said spindle, means for interlocking the revoluble knob, and said spindle, in order to retract a latch bolt; and means for controlling the reciprocal motion of the said spindle from the end opposite the said revoluble knob, all operatively assembled, substantially as set forth.

4. In a locking device of the character described a reciprocating grooved and axially turning spindle with an associate rod housed within the groove; a revoluble knob mounted on said spindle; a knob handle connected with the said spindle at the end opposite the revoluble knob with a manipulating sleeve thereon, the said sleeve to control the reciprocal movement of the said spindle, and means to interlock the revoluble knob and said spindle, so that a latch bolt may be retracted, substantially as set forth.

5. In a locking device of the character described, the combination of a reciprocating grooved spindle with an associate rod, housed within the groove; a revoluble knob mounted on said spindle; means to manipulate the reciprocating spindle from the end opposite the revoluble knob; means to interlock the said

knob and spindle in order that a latch bolt may be retracted and a sliding jacket adjusted to the said spindle all for the purpose substantially as set forth.

6. In a locking device of the character described a reciprocating grooved spindle with an associate rod housed therein combined with a latch bolt, a revoluble knob mounted upon an end of said spindle; means to interlock the said spindle and knob, in order to retract the said latch bolt, and means whereby the spindle and associate rod are adjusted to variant thickness, substantially as set forth.

7. In combination for a locking device of the character described a revoluble knob, a reciprocating grooved spindle with an associate rod, housed within the groove, a sliding jacket upon the said spindle and a yoke adjusted to the said rod associate therewith, as adjuncts thereto; an operating knob opposite the revoluble knob and means to interlock the revoluble knob and said spindle, all operatively assembled, substantially as set forth.

8. In combination for a locking device, a revoluble knob, a reciprocating grooved spindle with a sliding sleeve nut fitted thereto, and a sliding jacket as adjuncts to the spindle, with a knob handle mounted upon the said jacket and fastened to the said sleeve nut all operatively assembled substantially as set forth.

9. In a locking device of the character set forth the combination of the yoke, D, with the locking lugs, 3, 3, said lugs locking the nut, E, with the rod, J, and in sequence the nut, C, with the spindle, H.

10. In a locking device a grooved spindle, H, with an associate rod, J, housed therein, a revoluble knob, N, mounted upon an end of the said spindle, interlocking means with the said revoluble handle and spindle; a sliding sleeve nut, A, and jacket, B, upon the opposite end of the said spindle; a yoke, D, adjusted to the associate rod; the knob N', opposite the revoluble knob; and a cam sleeve, T, upon the said knob, N', all operatively assembled, substantially as set forth.

11. In a locking device of the character described the revoluble knob, N, the reciprocating grooved spindle, H, associate rod, J, and nut, A', having the axial aperture, 6, and with the said spindle at the end opposite the said revoluble knob, the sleeve nut, T', fork yoke, D, and nut, E, all operatively assembled, substantially as set forth.

Signed at 65 Wall street, New York city, in the county of New York and State of New York, this 18th day of September, A. D. 1893.

ROBERT R. BALL.

Witnesses:

ERNEST H. BALL,
FRANK GRADY.