

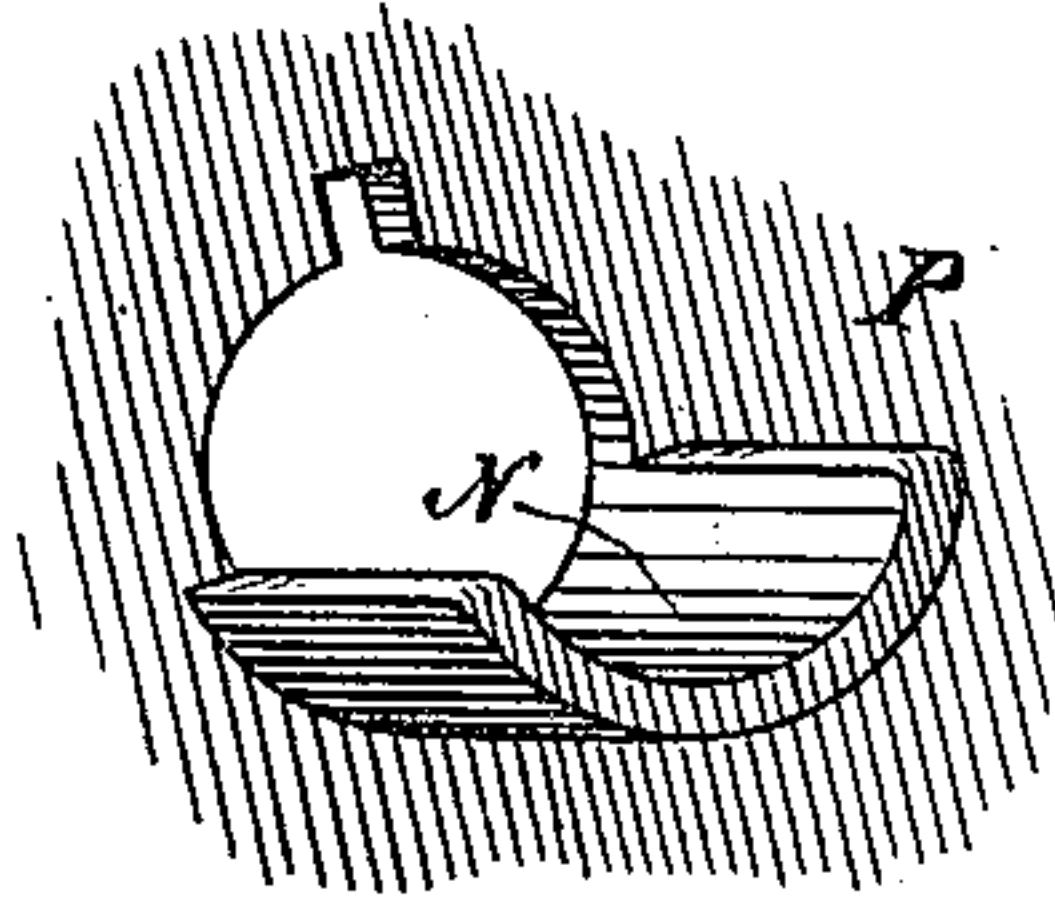
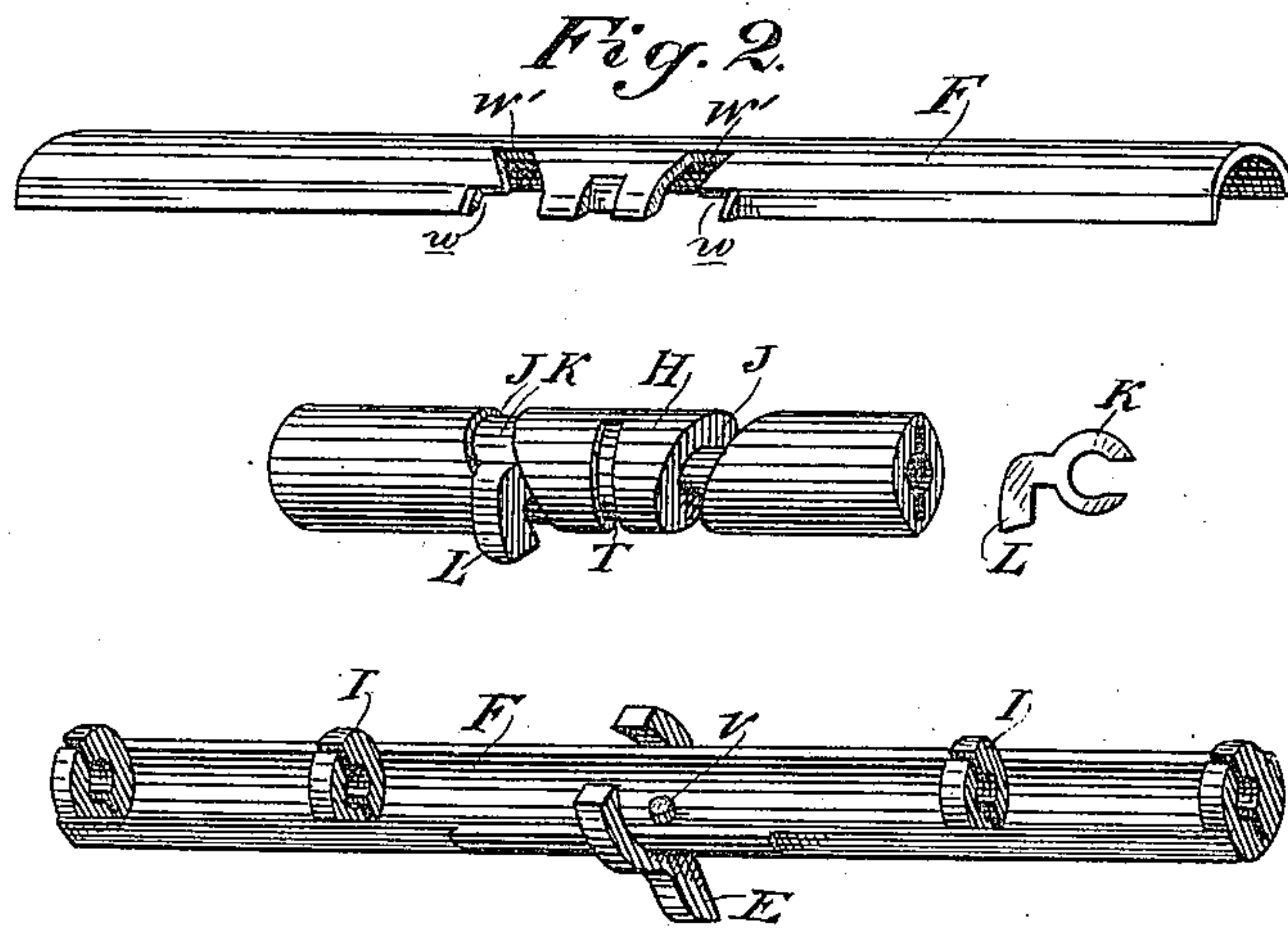
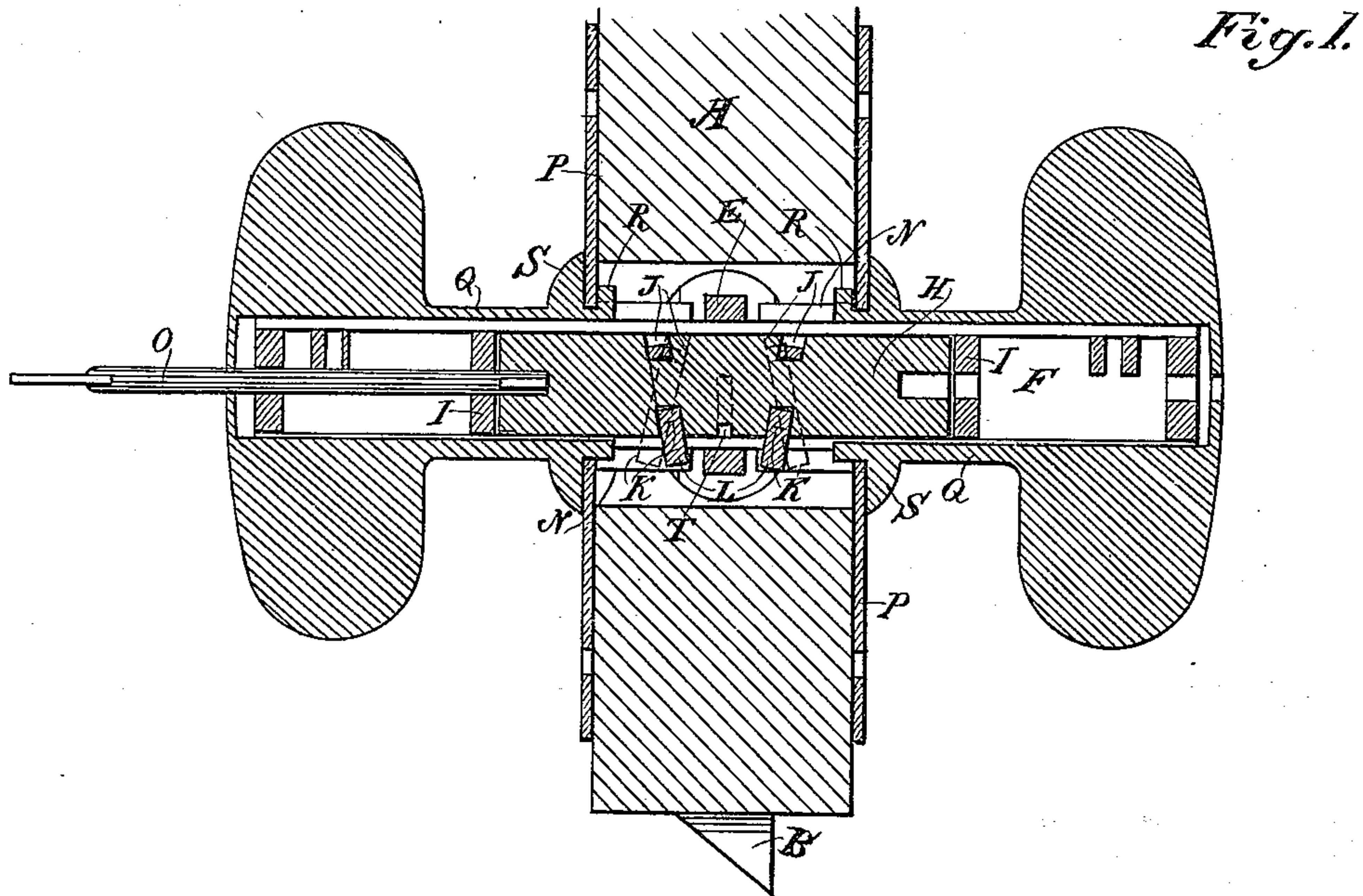
(Model.)

2 Sheets—Sheet 1.

H. O. HOOPER.  
LOCK.

No. 440,846.

Patented Nov. 18, 1890.



Witnesses,  
Geo. H. Strong  
J. Brown

Inventor,  
Henry O. Hooper  
By Devery Co.  
att.



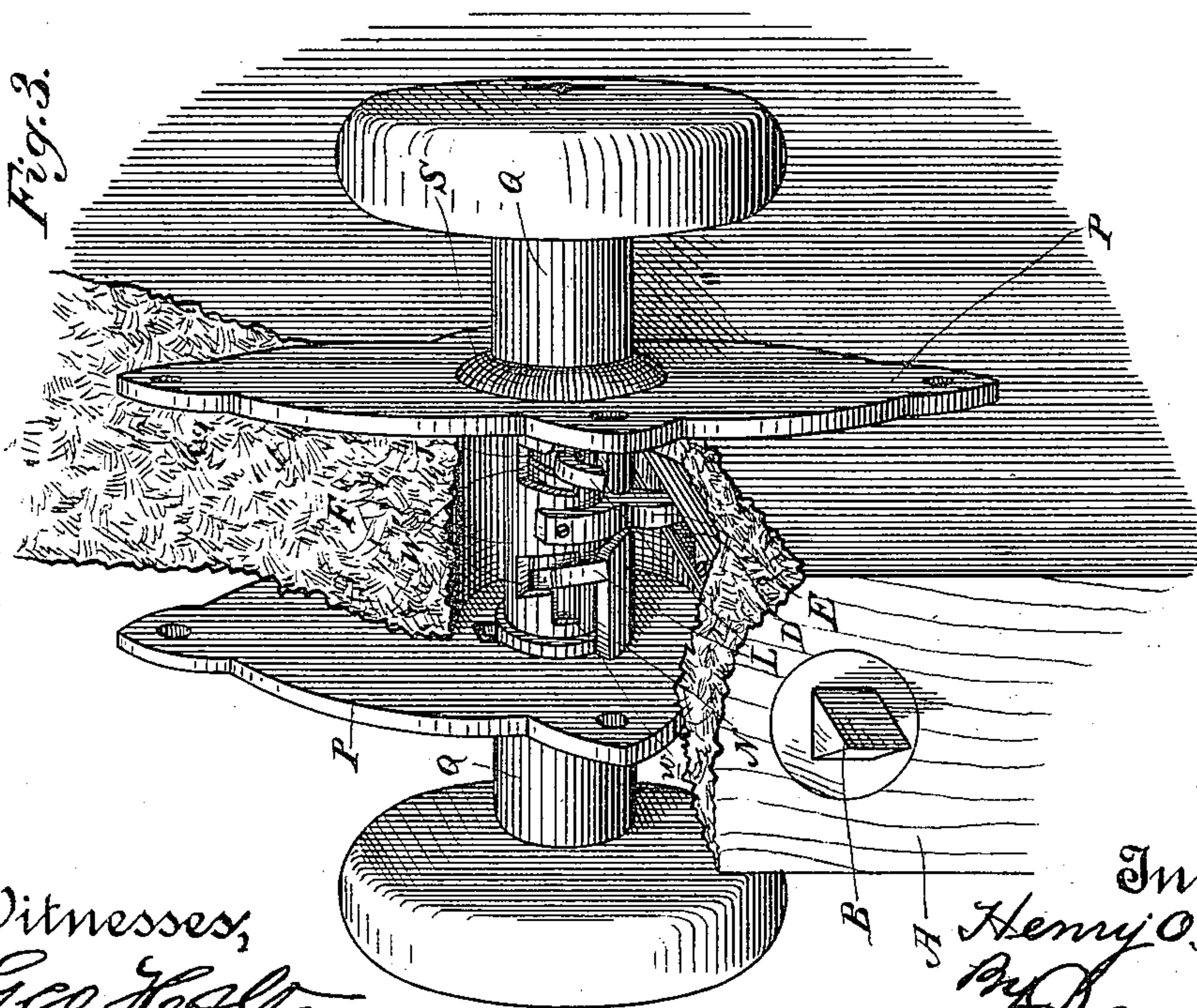
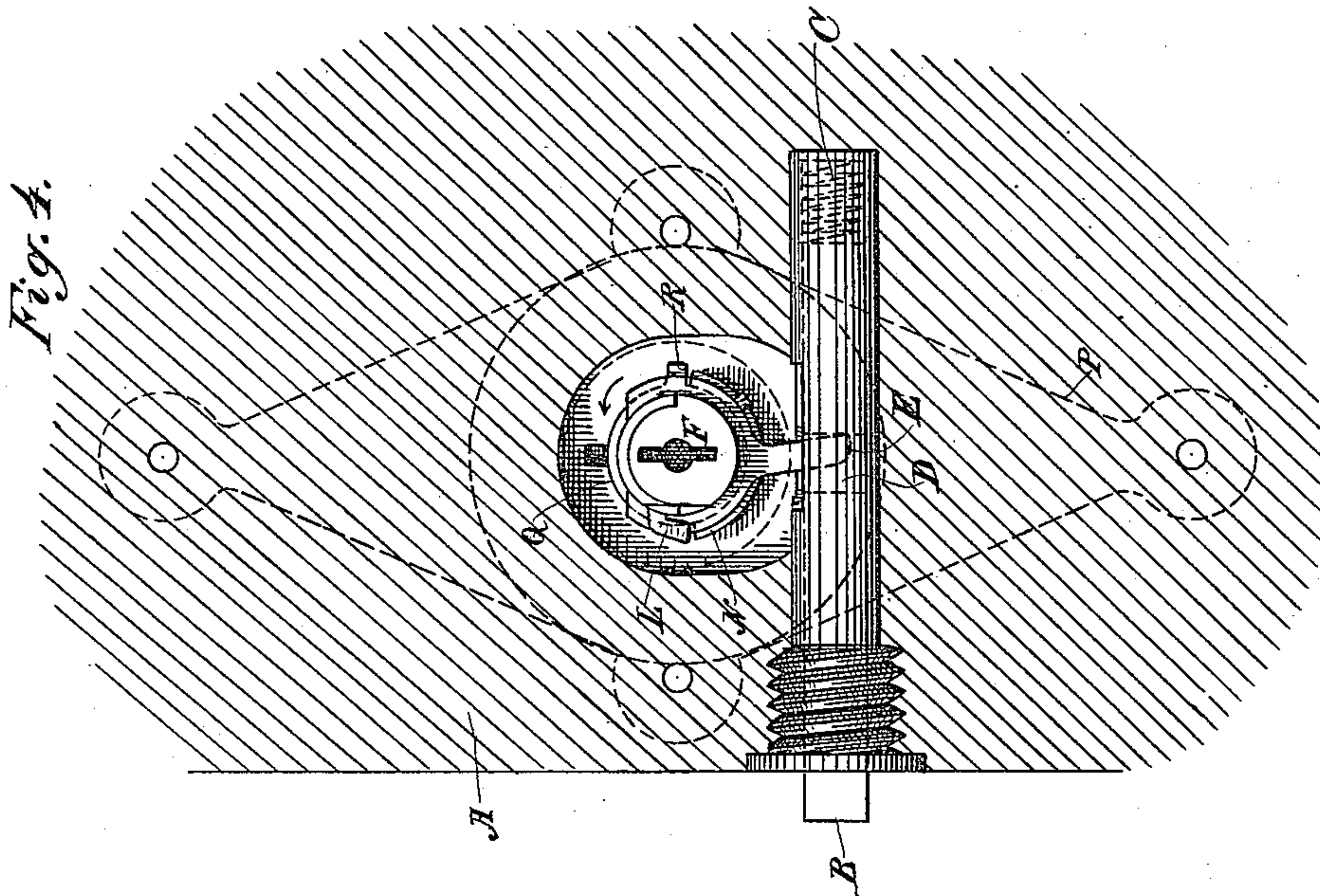
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2 Sheets—Sheet 2.

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LOCK.

No. 440,846.

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Witnesses,  
Geo. H. Strong,  
J. H. House

Inventor,  
Henry O. Hooper  
By Dewey & Co.  
Attys



# UNITED STATES PATENT OFFICE.

HENRY OTIS HOOPER, OF SAN FRANCISCO, CALIFORNIA.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 440,846, dated November 18, 1890.

Application filed April 25, 1890. Serial No. 349,514. (Model.)

*To all whom it may concern:*

Be it known that I, HENRY OTIS HOOPER, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Door-Locks; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in door locks and latches in which the lock and latch are combined in a single article; and my invention consists in the constructions and combinations of devices, which I shall hereinafter fully describe and claim.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a horizontal section taken through the plane of the axis of the spindle. Fig. 2 is a view of the operative parts detached. Fig. 3 is a view of the lock, part of the door being broken away. Fig. 4 is a vertical longitudinal section through the door, the front knob and escutcheon being removed.

A represents a portion of the door mortised in the usual manner to receive the lock, of which B is the latch forced forward to engage the catch in the door-post by means of a spring C.

In the present case I have shown the portion inclosing the latch as in the form of a hollow cylinder, which may be screwed into a correspondingly-shaped hole bored in the edge of the door to receive it, and the top of this cylinder, where it crosses the transverse opening through which the knob-spindle passes, is slotted to expose the bolt at this point. A hole D is made in the bolt, which is engaged by a lug E, projecting from the knob-spindle F. This knob-spindle is made hollow and is of sufficient length to project through the sides of the door for the purpose of receiving the knobs, which are detached and adjusted, as will be more fully described hereinafter. Within this hollow spindle is fitted a cylinder H, lying between two transverse stops or plates I, fixed within the hollow spindle, so that the cylinder may turn loosely in the spindle and be prevented from end motion by these plates. Around the central portion of this cylinder two inclined or cam-shaped slots J are made, within which the rings or segments K are fitted, surrounding the small

shaft portion which forms the center in these slots. From the rings K the pawls L project through slots formed in the sides of the hollow spindle. When the cylinder is turned so that the cam-shaped slots converge toward each other, so as to cause the projecting pawls to stand nearly together, the spindle may be turned by the knob on either side, and through the projecting lug or spur E it will act to withdraw the bolt or latch, the latch being forced forward again by its spring C when the knob is released. When the cylinder is turned so that by the inclination of the cam-grooves the pawls are turned outwardly, or so as to diverge from each other, the ends of the pawls will engage plates or projections N, which extend inwardly from the escutcheons to such a distance as to allow these pawls to engage with them, and when this occurs it will be impossible to turn the knob-spindle or retract the latch-bolt. The rotation of this cylinder H, so as to place these pawls in either of the above positions, is effected from either side by means of a key O, which passes through a slot in the end of the knob, the spindle, and one in the disks or plates I, which forms the end of the chamber within which the cylinder turns. The end of the cylinder itself is correspondingly slotted, so as to admit the key with its projecting wards, and when the key is in this position it may be turned so as to rotate the cylinder and throw the pawls into either of the positions above described.

By making the opening in the end of the cylinder of various depths or different shapes it will be manifest that a variety of different keys may be used for operating the lock.

The escutcheons P, from which the plates N project inwardly, as above described, are secured upon the exterior of the door by screws or other suitable means, and the knobs pass through openings in the center of the escutcheon.

Upon the inner end of the knob-shaft Q is a projecting lug or spur R, and this lug passes through a corresponding slot made in the escutcheon for the purpose of admitting it. When the knob is in place, it is turned so that this lug will stand at some other point and not opposite to the slot through which it was entered.



A collar or flange S is fixed upon the knob-shaft exterior to the escutcheon, the space between the lug R and the collar S being equal to the thickness of the escutcheon, thus  
 5 allowing the knob to be turned easily while the collar covers and closes up the opening and the slot.

The knob-spindle F is fastened upon one or more sides, and the interior of the "knob-shaft" Q, as I have termed it, is made of a similar shape, so that the spindle may enter  
 10 it and slide loosely within it, while the shape is such that it will be turned whenever the knob is turned.

It will be seen from this construction that when the escutcheons are screwed upon the door the spindle will slip into the knob-shanks, and the holes in these knob-shanks, being of sufficient depth, will allow the spindle to slip  
 15 into them a greater or less distance, according to the thickness of the door, thus providing an easy adjustment for any thickness of door. In the center of the outer end of the knob is made a slot corresponding in shape  
 20 with the end of the key and its wards, and its position is the same as that of the slots in the end of the spindle and in the stops or disks I within the spindle, so that the key may be introduced directly into the end of  
 25 the shaft H, which it is to turn.

Around the center of the cam-shaft or cylinder, which is fitted within the spindle, is a groove T, extending about half-way around, or as far as may be desired, and a stop V is  
 30 fixed in the interior of the spindle at such a point that when the cylinder has been turned by the key as far as is necessary the end of the groove will engage the stop, and thus prevent the cylinder being turned farther.  
 35 This stop limits the motion of the cylinder in either direction.

When the escutcheons are screwed upon the door, the knobs being already in their places, with the lugs inside the escutcheons,  
 40 they will slip over the spindle F, and may be screwed upon the door, as before described.

The stop-plates N, which project inwardly from the escutcheons P, approach each other near enough so that when by turning the  
 45 cam-cylinder H within the spindle the projecting pawls L have been moved outwardly, or so as to diverge from each other, they will engage these stops, being then locked in the slots w; but when the cylinder  
 50 is turned so that the pawls converge or approach each other slots W in the spindle will allow the latter to be moved down over the pawls, and this will allow the knobs and spindle to be turned, and through the lug E  
 55 upon the spindle which engages the latch-bolt the latter may be withdrawn, as before described. The side of the spindle which corresponds with the projecting pawls is slotted longitudinally, as shown at w, a sufficient  
 60 distance to allow the pawls to be moved by the cam grooves or slots in the cylinder to the extent of their travel in either direc-

tion, and that portion of these slots W' which corresponds with the position of the pawls when they are nearest together is also extended around the periphery of the spindle  
 65 sufficiently to allow the latter to be turned without moving the pawls.

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

1. The combination, in a lock, of a reciprocating latch-bolt, a hollow spindle having knobs at the end, and a lug upon the spindle which engages and reciprocates the latch-  
 75 bolt, with a rotatable cylinder fitted within the spindle, having inclined cam-grooves formed around it, pawls fitting said grooves and projecting through the side of the spindle, so as to be moved to or from each other, and stops  
 80 which are engaged by said pawls when they are separated from each other, so as to prevent the spindle being turned to reciprocate the latch-bolt, substantially as herein described.

2. In a lock, the reciprocating latch-bolt, the tubular spindle having knobs at either end, the lug engaging the latch-bolt, so as to engage the same when the knobs are turned, a rotatable cylinder fitted loosely within the  
 85 spindle, having inclined or cam grooves formed around its central portion, pawls fitting said grooves and projecting through horizontal slots in the side of the spindle, a slot or opening in the end of the cylinder and corresponding slots formed through the end of the spindle, and the knob for the introduction of a  
 90 key, whereby the cylinder may be turned so as to move the pawl, substantially as herein described.

3. In a lock, the reciprocating latch-bolt, the tubular spindle having the knobs at either end, and a lug engaging the latch-bolt, so as to withdraw the same when the knobs are turned, a rotating cylinder within the spindle having slots in the ends into which the key  
 95 may be introduced for the purpose of turning the cylinder, and inclined or cam-shaped grooves around its periphery, and pawls fitting said grooves and projecting through slots in the side of the spindle, said pawls being drawn toward each other when the cylinder is turned in one direction and separated when it is turned in the opposite direction, in combination with plates or stops projecting inwardly from the escutcheons, so as to be engaged by the pawls when they are separated from each other, and thus prevent the turning of the spindle, substantially as herein described.

4. An improved lock comprising the reciprocating latch-bolt, the tubular spindle, the lug engaging the latch-bolt, knobs having shanks with oval or polygonally-shaped openings in their ends and correspondingly-shaped  
 100 ends to the spindle which fit into said knob-shanks and are turned thereby, escutcheon-plates having slots made through them, and lugs projecting from the inner ends of the



knob-shanks and adapted to pass through the slots in the escutcheon-plates and lock within the plate when the knob is turned, together with collars fixed upon the knob-shanks exterior to and abutting against the escutcheon-plates, substantially as herein described.

5 5. An improved lock comprising the reciprocating latch-bolt fitted within a cylindrical casing, said casing being screw-threaded, so  
10 as to be screwed in a corresponding hole made in the edge of the door, and having a slot made in its upper surface when it crosses the transverse opening for the knob-spindle, a slot made in the top of the latch-bolt, and a lug

projecting from the knob-spindle and engaging said slot, in combination with the knobs adjustably fitted upon the spindle, a mechanism within the spindle, and a key by which said mechanism is operated, whereby the spindle may be allowed to rotate or prevent it  
15 20 from turning so as to lock the door, substantially as herein described.

In witness whereof I have hereunto set my hand.

HENRY OTIS HOOPER.

Witnesses:

N. BULLOCK,  
JAMES LANN.