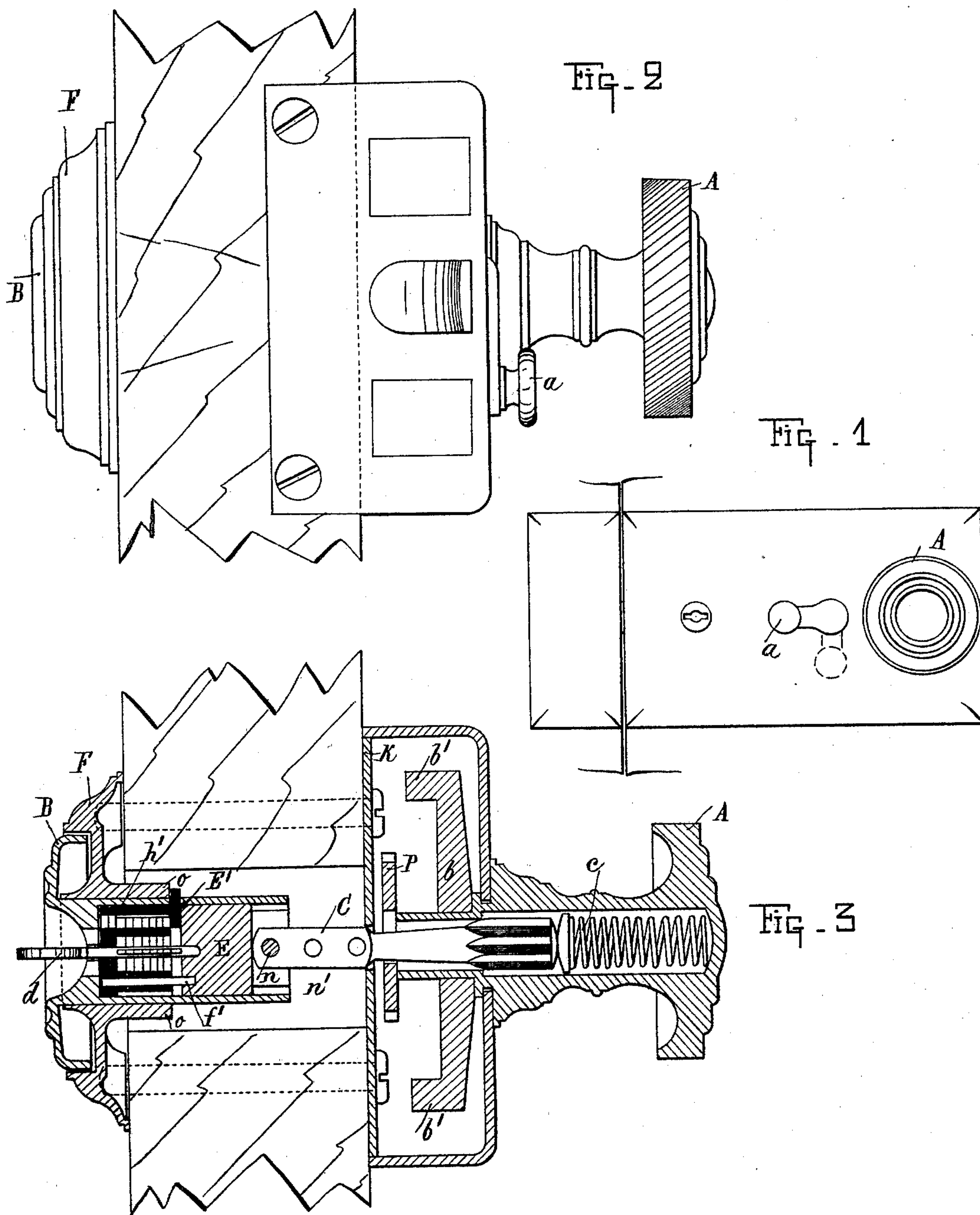


5 Sheets—Sheet 1.

No. 592,606.

Patented Oct. 26, 1897.



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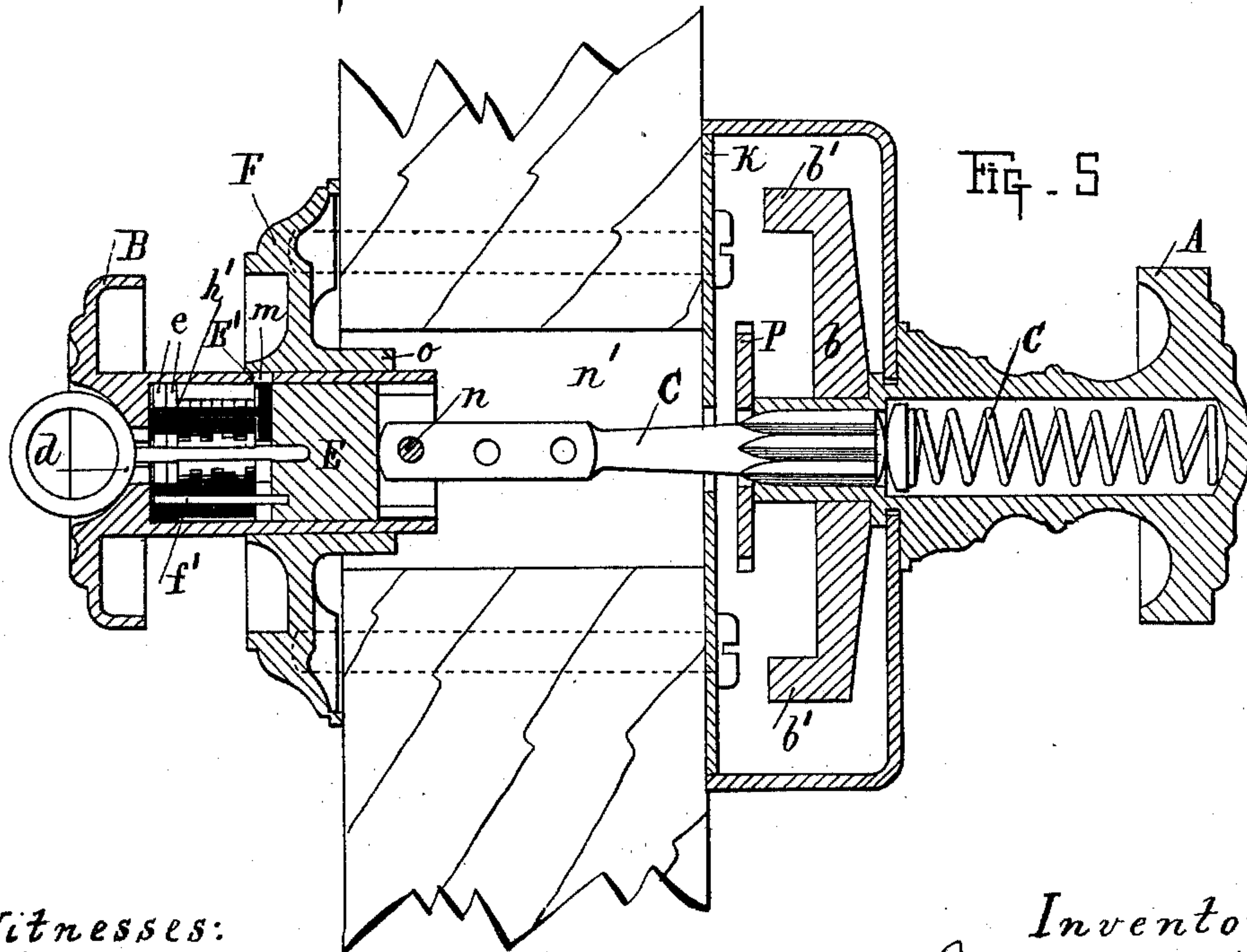
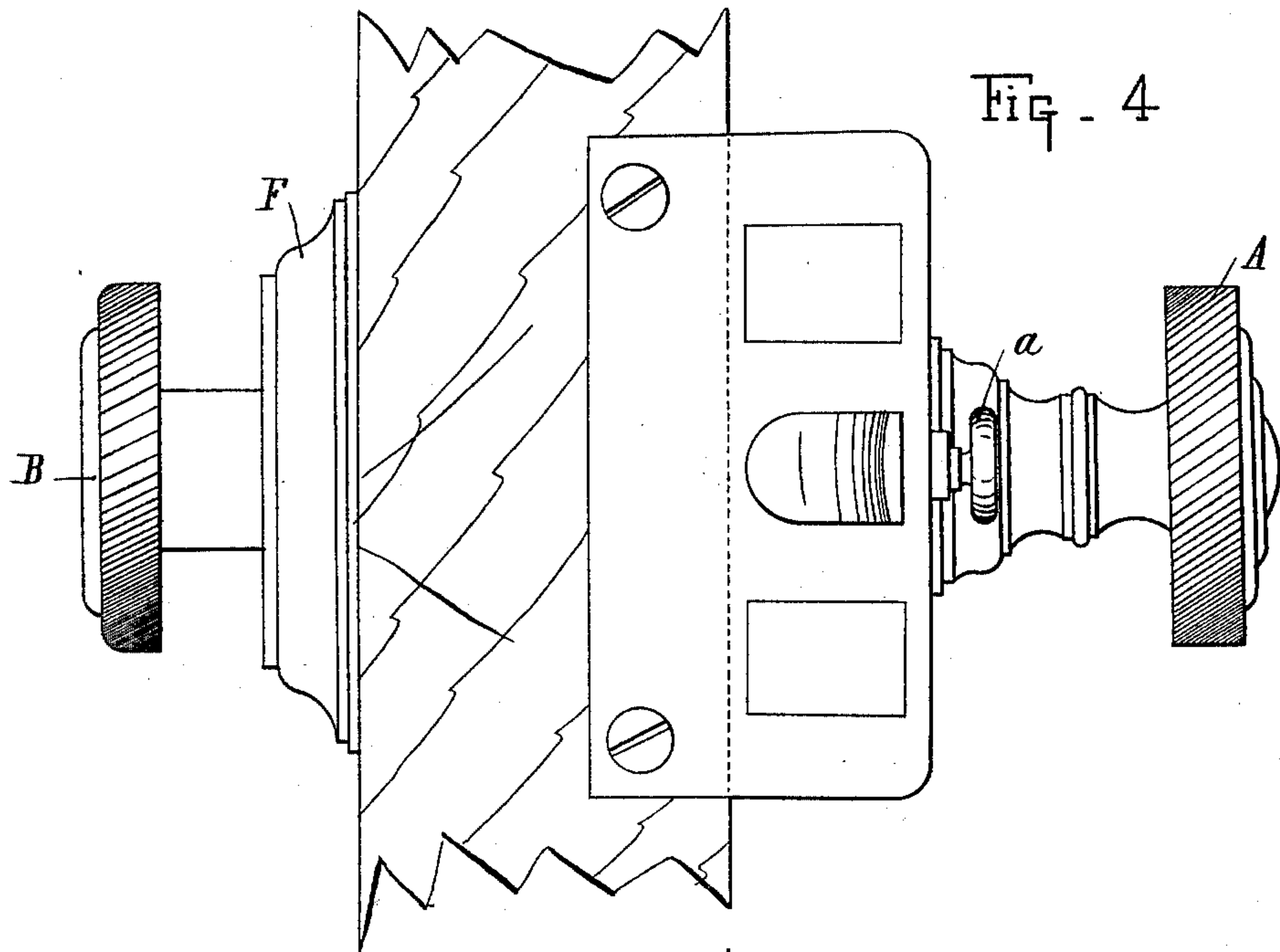
(No Model.)

5 Sheets—Sheet 2.

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5 Sheets—Sheet 3.

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Fig. 6.

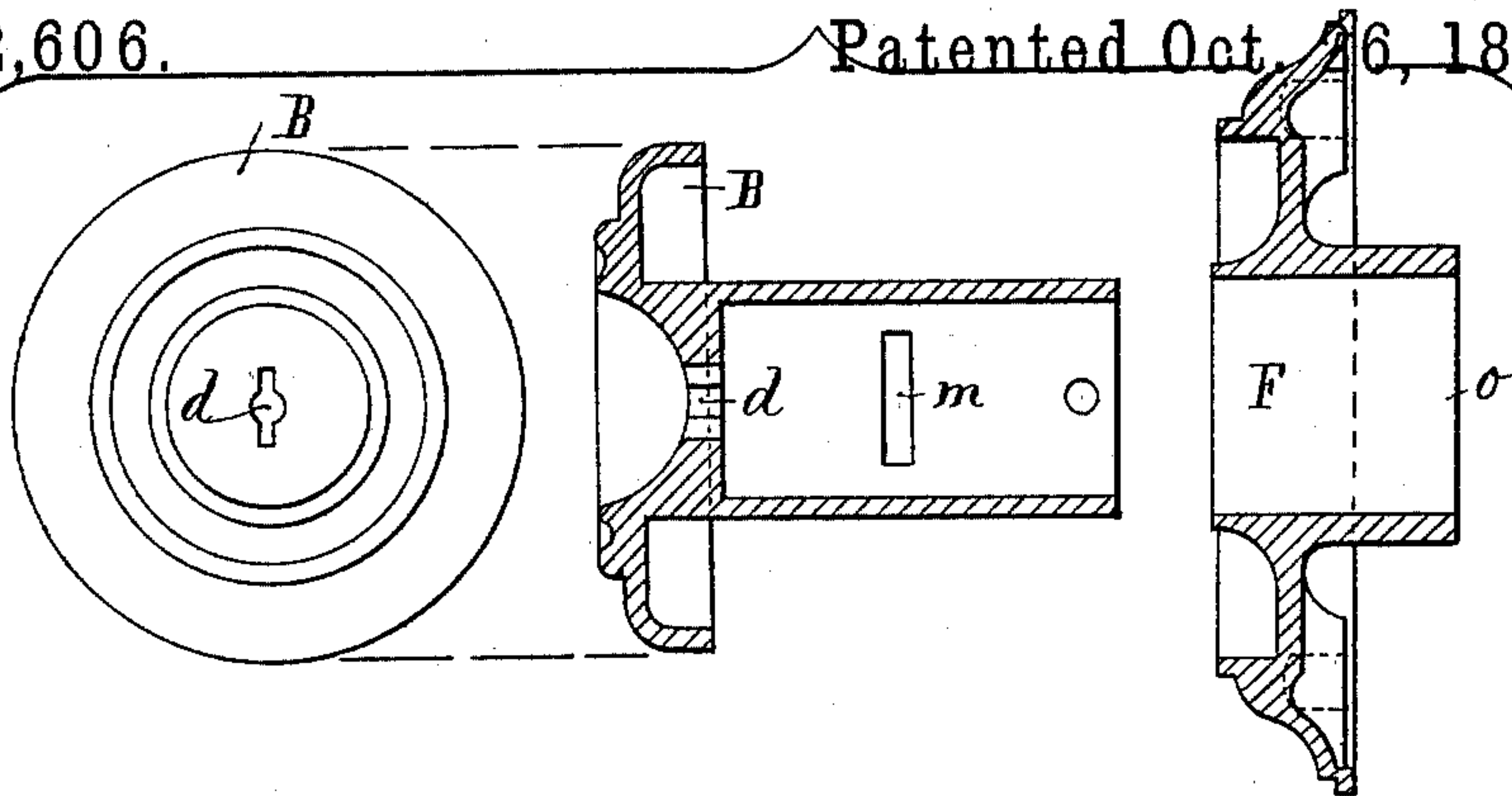


Fig. 7.

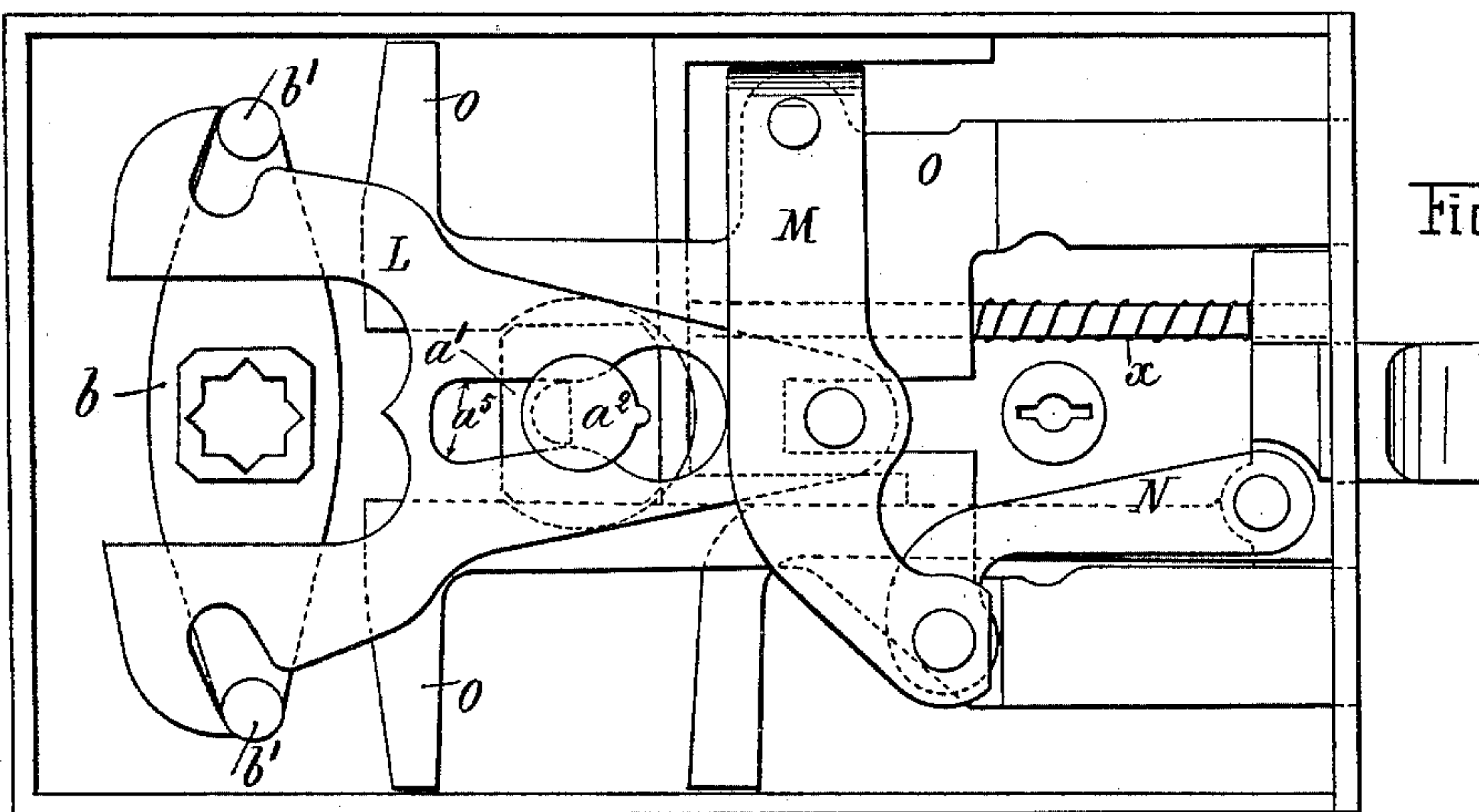
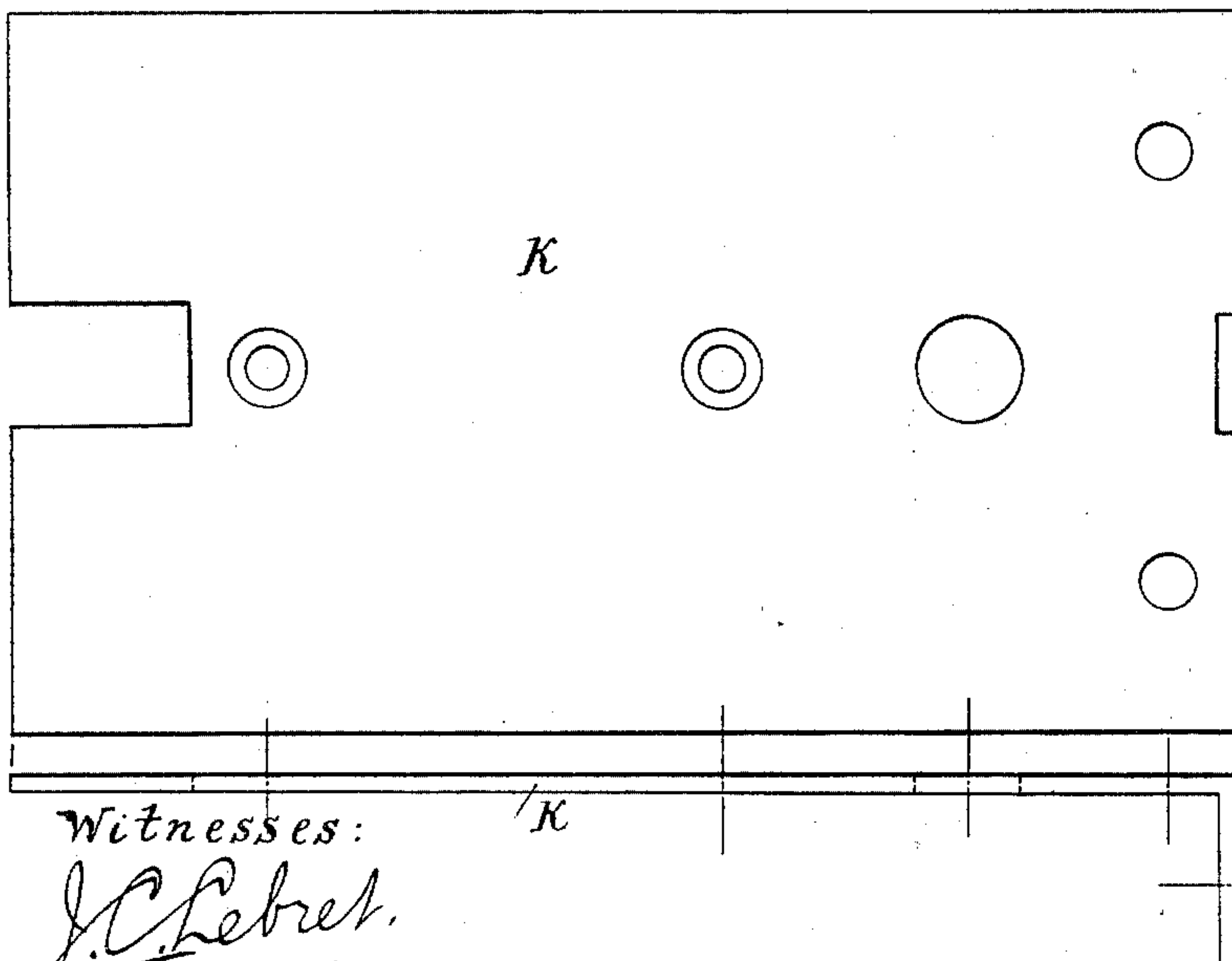


Fig. 8.



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5 Sheets—Sheet 4.

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LOCK.

No. 592,606.

Fig. 9.

Patented Oct. 26, 1897.

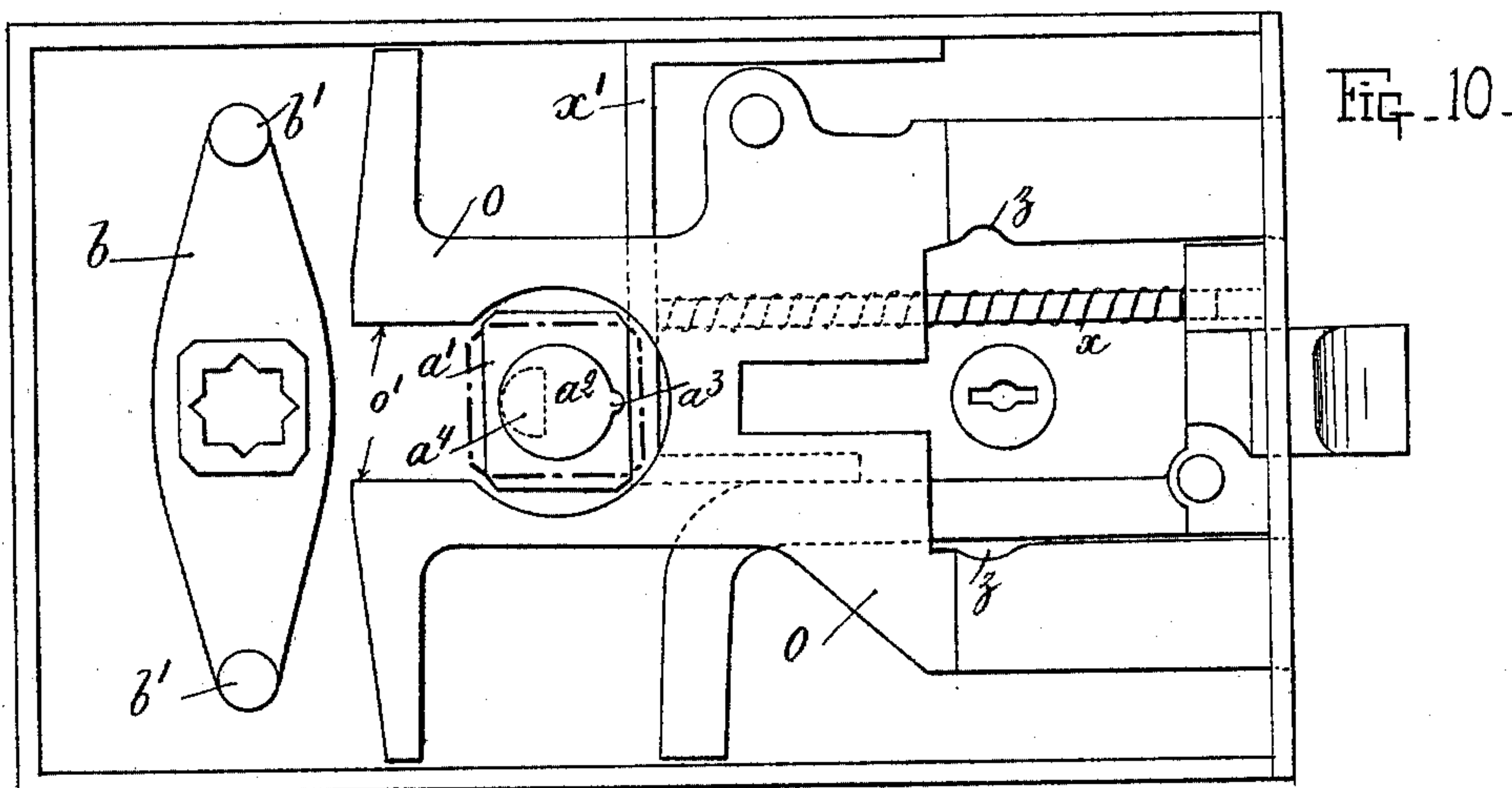
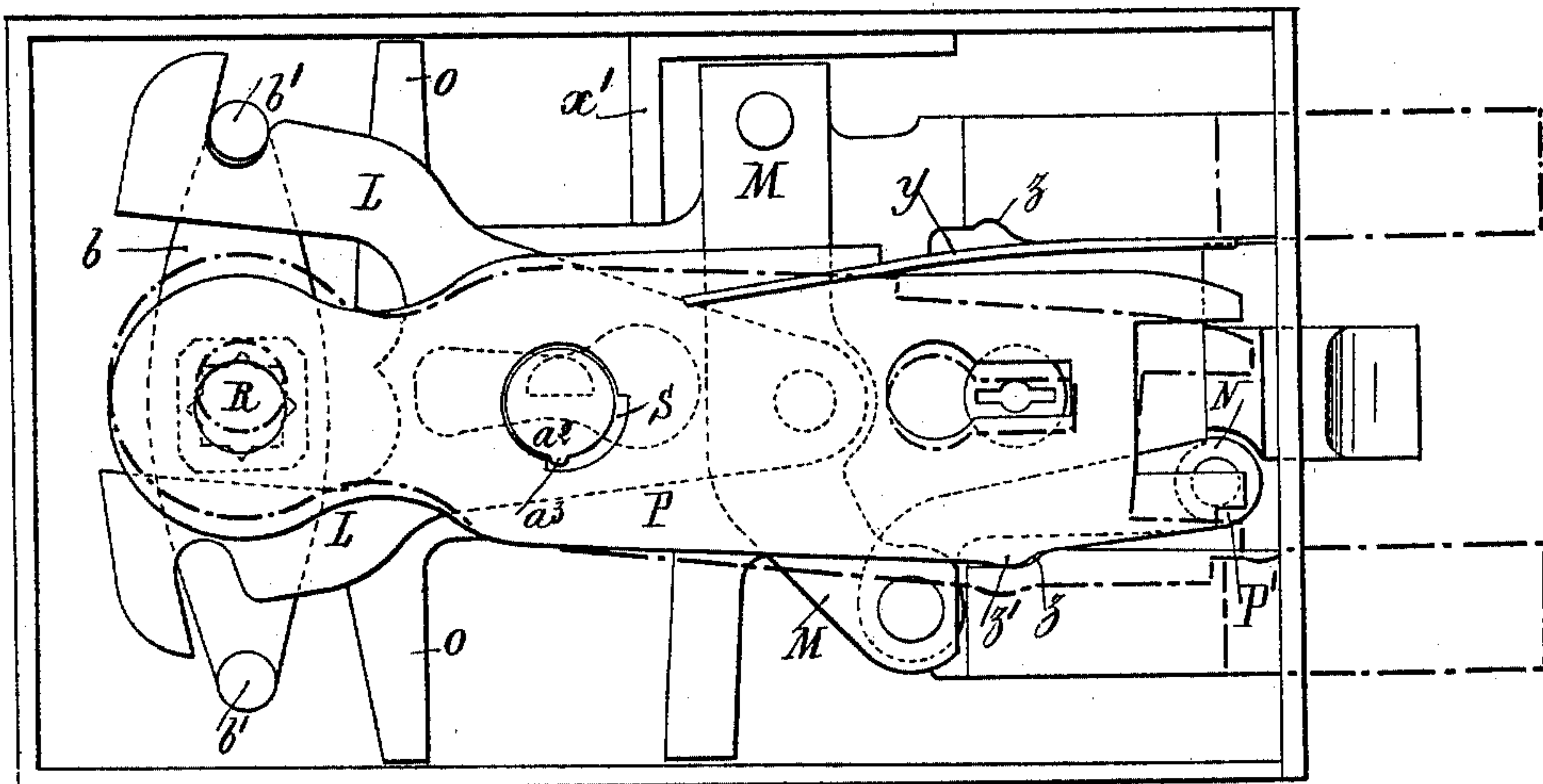
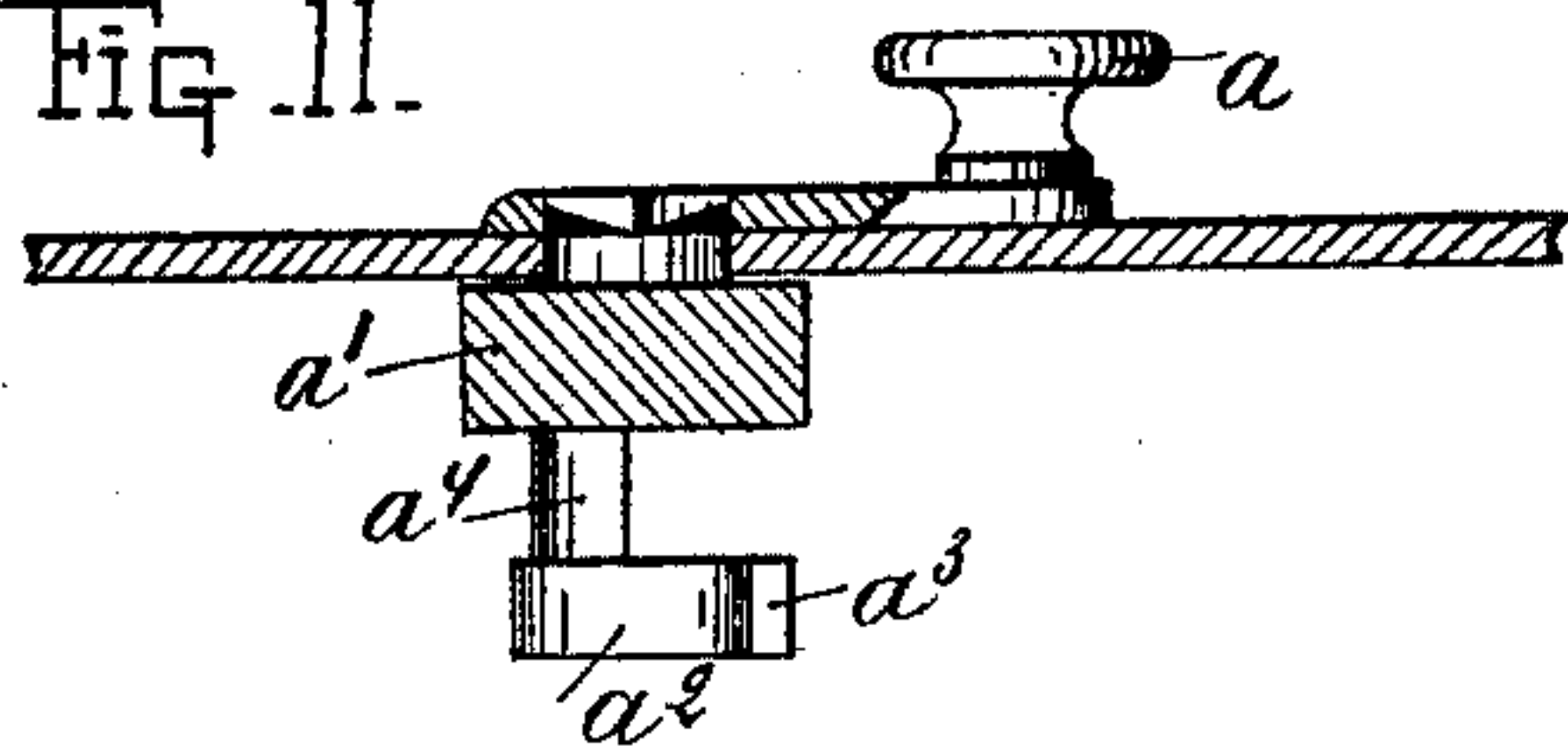


Fig. 11.



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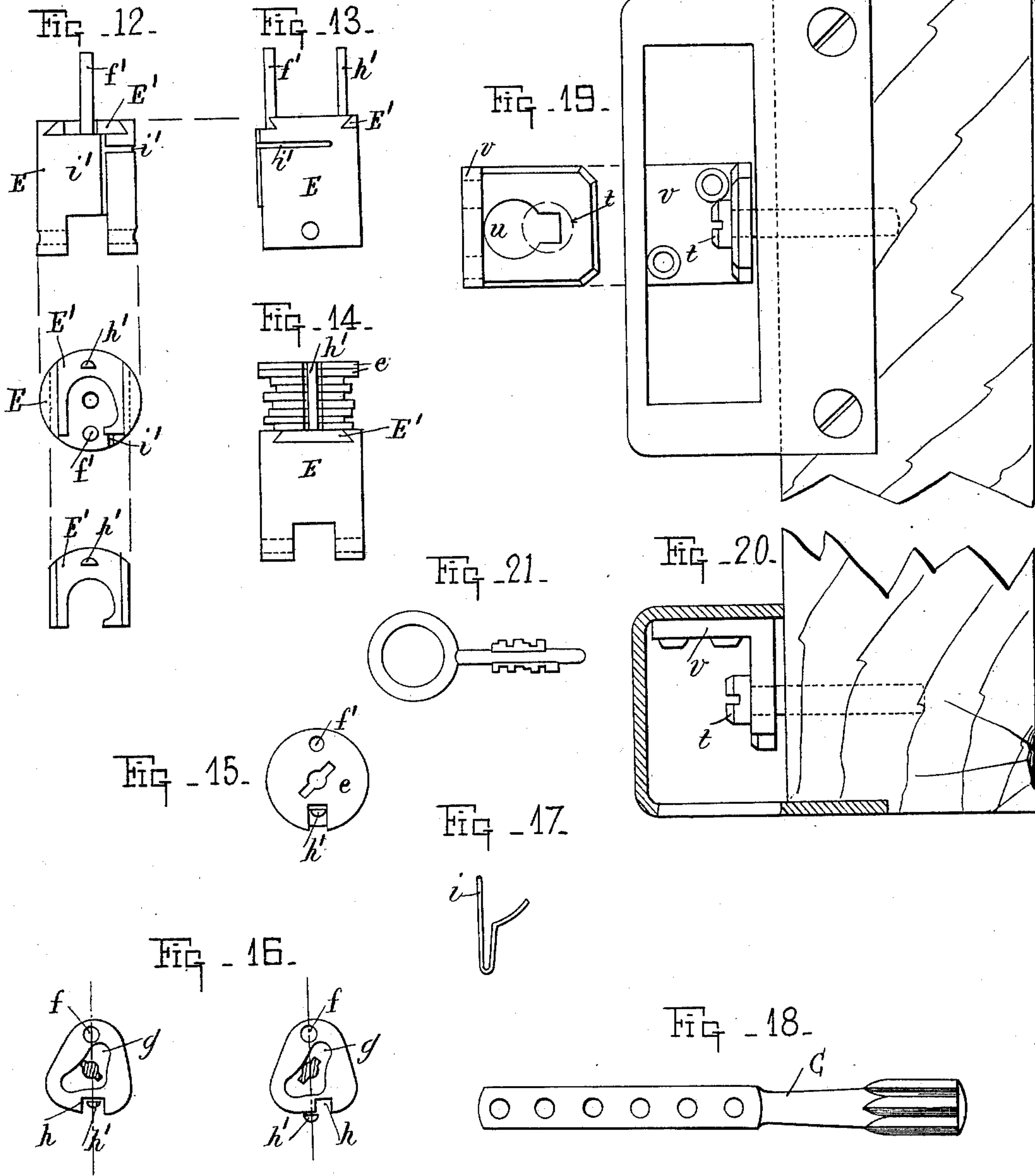
(No Model.)

5 Sheets—Sheet 5.

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# UNITED STATES PATENT OFFICE.

EDMOND DRAULLETTE AND ERNEST CATOIS, OF PARIS, FRANCE.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 592,606, dated October 26, 1897.

Application filed July 6, 1896. Serial No. 598,080. (No model.) Patented in France May 19, 1896, No. 243,885.

*To all whom it may concern:*

Be it known that we, EDMOND DRAULLETTE and ERNEST CATOIS, citizens of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Safety-Locks, (for which we have made application for Letters Patent in France on the 19th of May, 1896, under No. 243,885,) of which the following is a specification.

In locks of the form known as "night-locks" as heretofore constructed the parts have always been operated from the outside of the door by means of a removable key, the ring of which forms a very short lever, and to move the lock from the outside therefore requires considerable force, while from the inside the same are usually moved by means of a knob or handle of larger diameter than the length of the double lever formed by the key-handle, and the force required to operate the lock from the inside is consequently much less than that required to operate it from the outside.

The objects of our invention are, first, to provide a night-lock which is operated from the interior by a handle of ordinary form and from the exterior by a handle which until the key is inserted is sunk in a socket and incapable of being grasped, but which upon the insertion of the key is automatically projected within reach of the hand; second, to provide a spring-lock and a double-bolt lock of a new and improved form of construction which may be locked so as to be incapable of operation either from the exterior or the interior, as desired.

To these ends our invention consists of the construction, combination, and arrangement of the several parts thereof shown and described in the following specification, of which the accompanying drawings form a part, wherein similar letters of reference designate like or equivalent parts wherever found throughout the several views, and in which—

Figure 1 is a front view of the lock and its cover-plate. Fig. 2 is an end view of such lock as the same appears in position upon the door. Fig. 3 is a view thereof in vertical cross-section on a line drawn through the axis of the operating-handles. Fig. 4 is an end view representing the projecting, reciprocating, or movable handle projected outward

and in position for actuation. Fig. 5 is a section of such Fig. 4 on a line passing through the axis of the two handles, being similar to Fig. 3, except that the reciprocating or movable handle is shown in position for actuation. Fig. 6 shows in plan and in section and detached one from the other the movable or reciprocating handle and the outside rosette or escutcheon which receives the same. Fig. 7 is a front plan view of the lock with certain portions of the mechanism omitted. Fig. 8 is a top plan and also an edge view of the cover. Fig. 9 is a front plan view of the lock with the cover removed, similar to Fig. 7, except that certain parts omitted in Fig. 7 are added. Fig. 10 is a view similar to Figs. 7 and 9, except that certain of the parts shown in Figs. 7 and 9 are in Fig. 10 removed in order to better show the construction of the other parts. Fig. 11 is a top view, partially in section, of the locking-change handle by which various portions of the lock are locked against movement. Fig. 12 shows top and end views of the cylinder of the lock and also the stop-tappet of the outside reciprocating or movable handle. Fig. 13 shows a side view of the same. Fig. 14 is a side view of such cylinder with the tumblers in position thereon. Fig. 15 is an end view of the cylinder, showing the key-guard thereon. Fig. 16 represents two end views in perspective of the tumblers, and also end views in section of the key, showing the positions assumed by the tumblers when the key is in different positions. Fig. 17 is a view of the spring which forces the stop-tappet to pass from its cavity or place. Fig. 18 shows a star-rod which connects the outside or reciprocating knob with the moving mechanism of the lock. Fig. 19 shows the interior of the keeper and the means for fixing it. Fig. 20 is a transverse section of the keeper shown in Fig. 19, and Fig. 21 shows full size the key for releasing the reciprocating handle.

By the particular arrangement of this lock and the employment of a stop-handle for the lock-bolts we can obtain several combinations for the opening and closing operations: First, the operation of the spring-bolt alone by optionally turning the handle from right to left or from left to right; second, the operation of the spring-bolt and of the lock-bolts, and, third, blocking all the bolts in the



closed position, so that they can be disengaged from the inside or outside only by the use of a key.

As shown in Figs. 1 to 10, the lock is actuated from the interior of the room by the handle A, which is connected with the lever *b*, which actuates the spring-bolt and the lock-bolt or bolts, unless the movement of the latter is opposed by means of an exterior handle *a*, connected with a rectangular piece *a'*. The exterior knob or handle B is arranged and constructed so as to reciprocate in and out, being upon the insertion in the center thereof of a suitable key automatically projected outward into position for actuation by the action of a spring *c*, arranged in the interior of the knob or handle A, which exerts a constant pressure upon such handle B through the intervention of a star-rod C, Figs. 3, 5, and 18. In the closed position the head of the reciprocating handle B is sunk into an annular recess formed in the boss, rosette, or escutcheon F, fixed to the door, and is not adapted for operation, as the same cannot be securely grasped. At the center of the handle is arranged the aperture for the key *d* with a double bit, which actuates the tumblers or safety-strips. Behind the apertures for the insertion of the key and in the cylindrical body of the handle we arrange two plates *e*, Fig. 15, serving as guides for the key. These plates are placed by the side of the safety-strips or tumblers, which are perforated and notched as follows: A hole *f*, Fig. 16, serves as a passage for the pivot *f'* of the cylinder E, Figs. 12, 13, and 14; a hole *g*, of appropriate form, for the passage and operation of the key, and, lastly, a notch *h*, Fig. 16, with which engages a pin *h'*, fixed to the tappet E' of the cylinder E.

That portion of the tappet E' which is normally forced up through the cylinder E behind the rear edge of the escutcheon, as shown in Fig. 3, so as to hold the reciprocating handle B in the non-working rearward position shown in said Fig. 3, is preferably of the dovetail form shown in Fig. 14. Such tappet is kept normally pressed out through the cylinder E into the locking position shown in said Fig. 3 by the action of the spring *i*, such spring *i* being, Fig. 17, arranged in the grooves *i'*, provided in the cylinder E, Figs. 12 and 13, and is held in place by the body or rear portion of the handle B, Figs. 3, 5, and 6, which surrounds it.

A notch *m*, Fig. 6, formed in the body of the movable handle, serves for the passage of the tappet E', which may extend from the same about two millimeters and keep the knob sunk in the rosette F by bearing against the inner edge *o* of this rosette. For returning into the notch *m* the pin *h'*, connected with the tappet E', passes again into the notches *h*, Fig. 16, in the safety-strips or tumblers, which being supported by the pivot *f'* are never in a position favorable to this admission, and the key alone can place the tum-

blers or strips and their notches in this position, Figs. 14 and 16.

It will be easily understood that in order to cause the movable handle to pass out it will be necessary to have a key suitable for the lock, (the combination being capable of varying infinitely,) the receding movement of the tappet being effected by the extreme bit of the key. This receding movement being obtained the handle leaves of itself, pushed, as it is, by the spring *c* and the star-rod C, its outward movement being limited by a pin *n*, which abuts against the edge *o* of the cap, Figs. 3 and 5, when the handle is pushed fully out.

The before-mentioned rod C is maintained at one extremity of the cylinder E by the pin *n*, then becomes cylindrico conical and terminates in a star, and this star penetrating into the lever *b* renders possible the actuation of the bolts. On the other hand, when the button B is sunk into the escutcheon or rosette F the cylindrical part of the rod C is in the lever *b* and of course has no influence upon the part.

On reference to Figs. 3 and 18 it will be understood that the thickness of the door may be optional. It is sufficient to make the rod C of a suitable length according to the thickness of the wood. For this purpose we pierce holes at intervals in this rod.

Referring to Figs. 1, 9, 10, and 11 it will be understood that besides the part *a'* the handle *a* also operates in the interior of the lock a button *a<sup>2</sup>*, which carries upon its periphery a stud *a<sup>3</sup>*, limiting the movement of the handle. This button is connected with the part *a* by a rod *a<sup>4</sup>*, which is eccentric with respect to the center of the pivot. This rod has for its object to keep the operative part or lever L engaged with the two tenons *b'* for the operation of the spring-bolt alone, or, owing to the eccentricity of rod *a<sup>4</sup>* obtained by turning the crank *a*, to raise the part or lever L and to engage it only with one or the other of these tenons, according as the lock is arranged on the right or left of the door. The operation of the part L by the rod *a<sup>4</sup>* takes place by a recess *a<sup>5</sup>*, Fig. 7, against the edges of which it acts. The handle *a* being turned to the proper position so that the rectangular lug or cam *a'* is in the position shown in full lines in Fig. 10, and inasmuch as when in this position the inner edges of the slot *o'* will impinge against such lug *a'* upon the first outward movement of the bolt or bolts O, such bolt or bolts O will be locked firmly in position, and the only bolt capable of actuation will be the spring-bolt. The eccentric-rod *a<sup>4</sup>* being upon the horizontal axis we obtain the movement of the spring-bolt by one or the other of the tenons *b'* of the lever *b*, according as we turn the handles A or B from left to right, or vice versa. The lever *b* in any one of its movements operates the parts L, M, and N. Part N actuates in its turn the spring-bolt, which constantly tends to pass to the closed



position by reason of a spring  $x$ , which serves, on the other hand, to keep the part  $a'$  normally in one of its positions through the intervention of the armature  $x'$ , which armature is kept pressed against the rectangular piece  $a'$ , as shown in Fig. 10, by the spring  $x$ , which is pressed back by the corners of the piece  $a'$  upon rotation thereof, such armature  $x'$  serving the same purpose as does a spring when pressed against a rotating square body to hold the same against rotation.

What has just been described corresponds to the first combination. We will now describe the second, which comprises the operation of the spring-bolt and of the bolts. For this operation we place the handle  $a$  vertically, thus bringing the narrowest side of the rectangular part  $a'$  to the horizontal position, which thus enables the plate  $O$ , connected with the bolts, to pass to and fro in the direction parallel to the part  $a'$ . This arrangement being given to the mechanism and the lock being supposed to occupy the closed position, it will be sufficient to give to one of the handles  $A$  or  $B$  a movement of about one-eighth of a turn for causing the lock-bolts and spring-bolt to enter again.

Of course for obtaining the withdrawal of the bolts a movement of an eighth of a turn in the opposite direction will be sufficient, the spring-bolt being continually, under the action of the spring  $x$ , pressing from the interior to the exterior.

The third combination also comprises the operation of the bolts and of the spring-bolt, which are blocked in the closed position. For this operation the handle  $a$  is likewise in the vertical position, which position permits the movement of the bolts. The blocking is obtained by an oscillating plate  $P$ , forming a stop  $P'$ , and turning about the button  $a^3$ . This plate  $P$  also serves as a stop for the stud  $a^3$  by its recess  $S$ , thus limiting the movement by a quarter of a circle of the handle  $a$ . The oscillating plate  $P$  being stopped, as shown in Figs. 3 and 9, is placed eccentrically with regard to the center of the rod  $C$ , when the exterior handle  $B$  is sunk into its cap and when the small diameter of the rod enables it to oscillate. As in this position the rectangular part  $a'$  is held with little friction in the guide  $o'$ , formed by the plate  $O$ , it is impossible to turn the handle  $a$  to disengage the bolts. It is therefore necessary to have the key for opening from the inside as from the outside. If we introduce the key from the inside and cause it to make a quarter of a turn, we raise the oscillating part  $P$ , which then liberates the bolts. On the outside, with the aid of the key, we cause the movable handle to project. The rod  $C$  then causes the part  $P$  to oscillate, when its movement having terminated the star thereof at its end enters the round hole  $R$  of the said oscillatory plate, Fig. 5. With one or the other of the handles we can then act upon the bolts, the part  $P$  being constantly pushed against one of the bolts by a spring  $y$ ,

Fig. 9. For keeping the bolts in the open position a small depression  $z$  is formed in the metal near the rear end of each bolt, such depression receiving a thickened part  $z'$  on the part  $P$ .

In the accompanying drawings we have shown a right-handed lock, but for obtaining instantly a left-handed lock it is sufficient to reverse the oscillating part  $P$ . Its opening  $S$ , which serves as a chamber and stop for the stud  $a^3$ , is also turned around. The movement of the handle  $a$ , owing to this reversal, is always obtained in the direction of the fall of the bodies. For putting on this lock we provide a hole  $n'$  in the door, then the holes for the screws designed to fix the cap and the cover-plate to the door. The keeper shown in Figs. 19 and 20 is fixed to the upright of the door by a screw  $t$ , placed beforehand at a predetermined distance from the edge in such a manner that its head having passed into the round hole  $u$  of a square  $v$ , connected with and in the interior of the keeper, if we move back the keeper to make it flush the shaft of the screw is in the narrow part and forms a bayonet-joint. After this the keeper is fixed to the upright by two screws.

We do not intend to limit ourselves to a lock of the exact construction shown nor to any part of the construction, combination, or arrangement of any of the several parts thereof, as we consider that many variations in such construction, combination, and arrangement of the whole or any part thereof may easily be made by a skilled mechanic without departing from the scope of our invention.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, what we claim, and desire to secure by Letters Patent, is—

1. In a lock, the combination with the bolt or bolts, of a reciprocating handle normally out of operative connection with the bolt or bolts, and means for automatically bringing the handle into operative connection with the bolt or bolts and forcing the handle outward to be grasped, upon the insertion of a suitable key, substantially as shown and described.

2. In a lock, an interior handle  $A$ , an exterior escutcheon  $F$ , a reciprocating handle  $B$  located in the escutcheon  $F$ , mechanism located in the interior of the handle  $B$  for locking the handle  $B$  in a retracted position in the rosette  $F$ , and means for releasing the handle  $B$  upon the insertion of a key having wards adapted to register with the wards of the locking mechanism so as to permit of the projection of the handle  $B$ , substantially as shown and described.

3. In a lock of the class described, a reciprocating handle  $B$  out of operative connection with the lock mechanism when in retracted position, means or mechanism for releasing such handle so as to permit of outward projection thereof upon the insertion



of a suitable key in the handle B, and means for automatically projecting the handle and bringing the same into operative connection with the lock mechanism upon the insertion  
5 of the key, substantially as shown and described.

4. In a lock of the class described, the combination with the spring-bolt of the pivoted plate or part P, the double lever *b* having the  
10 studs or projections *b'*, and means for raising and lowering the part P, substantially as shown and described and for the purposes set forth.

5. In a lock, the combination with a lock-  
15 bolt and spring bolt or bolts, of a handle or handles for operating the bolts, and an oscillating plate P pivoted at one end upon the axis of the handle or handles, and suitable stops or recesses in one or more of the bolts  
20 to receive the forward end of the oscillating plate when the same is allowed to fall by gravity therein so as to lock such bolt or bolts in the outward or locked position, substantially as shown and described and for  
25 the purposes set forth.

6. In a lock, the combination with a lock bolt or bolts of the oscillating plate P pivoted loosely at one end in the axial operating-rod of the handle or handles of the lock so con-

structed as to be capable of being brought 30 into and out of operative connection with such axial handle-rod, and means for raising and lowering the free end of the oscillating plate P and locking the same in such posi-  
35 tions, the oscillating plate P having a hole S adapted to receive the eccentrically-mounted cam  $a^2$ , substantially as shown and described and for the purposes set forth.

7. In a lock of the class described, the combination with the lock bolt or bolts and the  
40 moving mechanism, of a handle *a*, a rod rotated by the handle *a*, a rectangular piece *a'* secured to the rod of the handle *a* and rotated thereby, a semicircular rod or piece  $a^4$  eccen-  
45 trically secured to the rectangular piece *a'*, and the cam  $a^2$  eccentrically secured to the semicircular rod or piece  $a^4$ , substantially as shown and described and for the purposes set forth.

In testimony that we claim the foregoing 50 we have hereunto set our hands this 29th day of May, 1896.

EDMOND DRAULLETTE.  
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