

(Model.)

R. D. CRAIN.

COMBINED LOCK AND LATCH.

No. 309,822.

Patented Dec. 30, 1884.

Fig. 1.

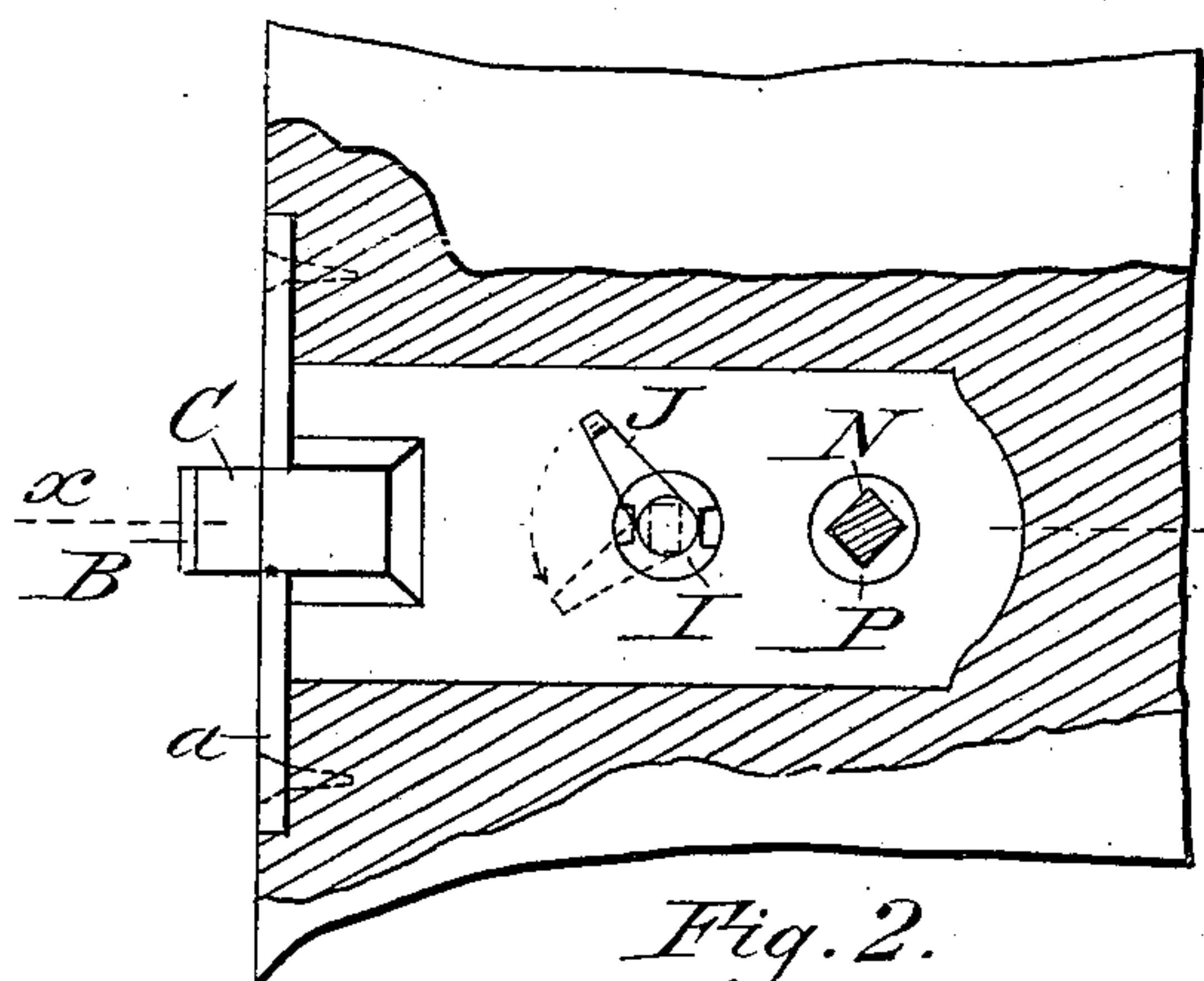


Fig. 3.

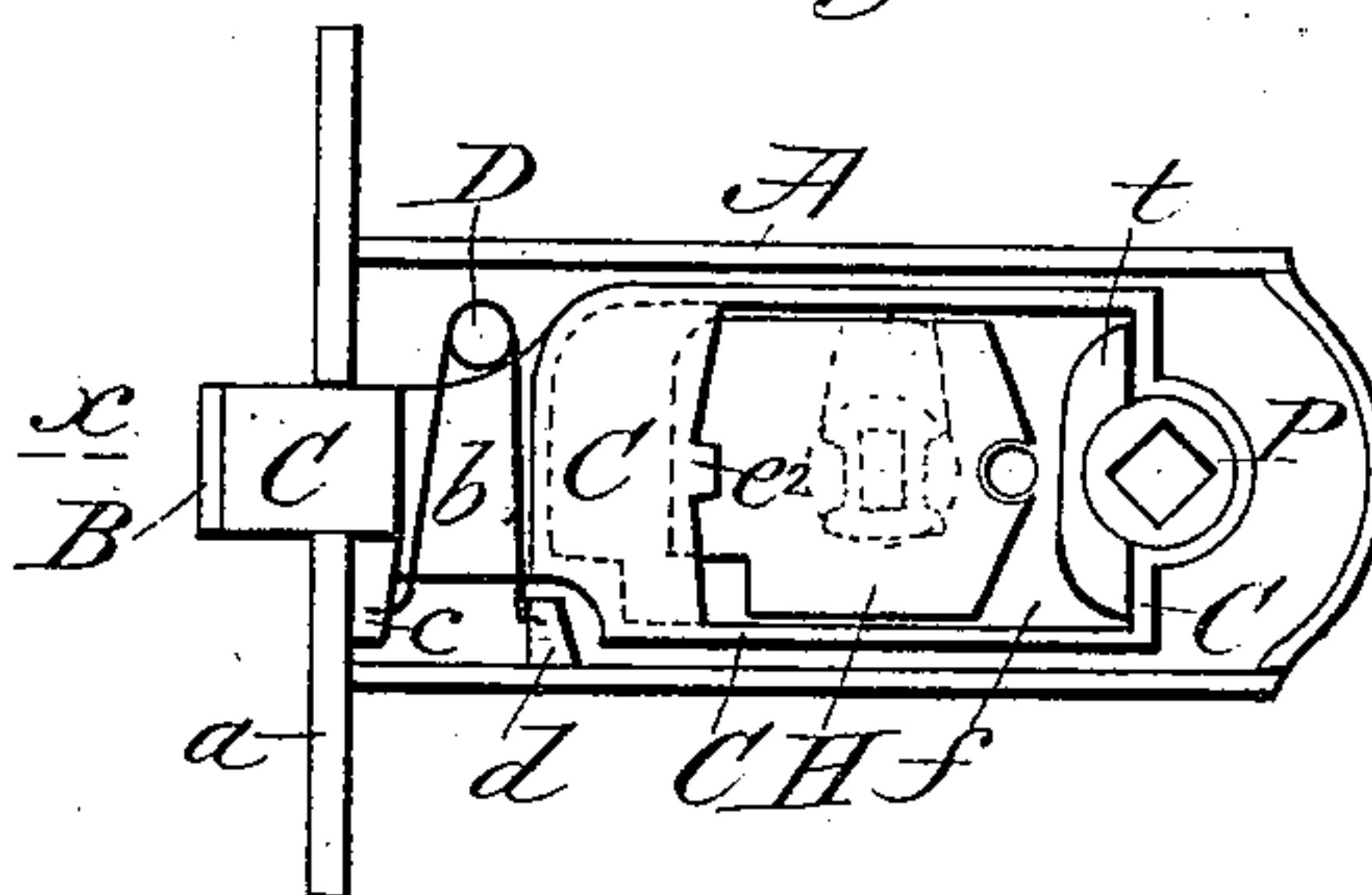


Fig. 2.

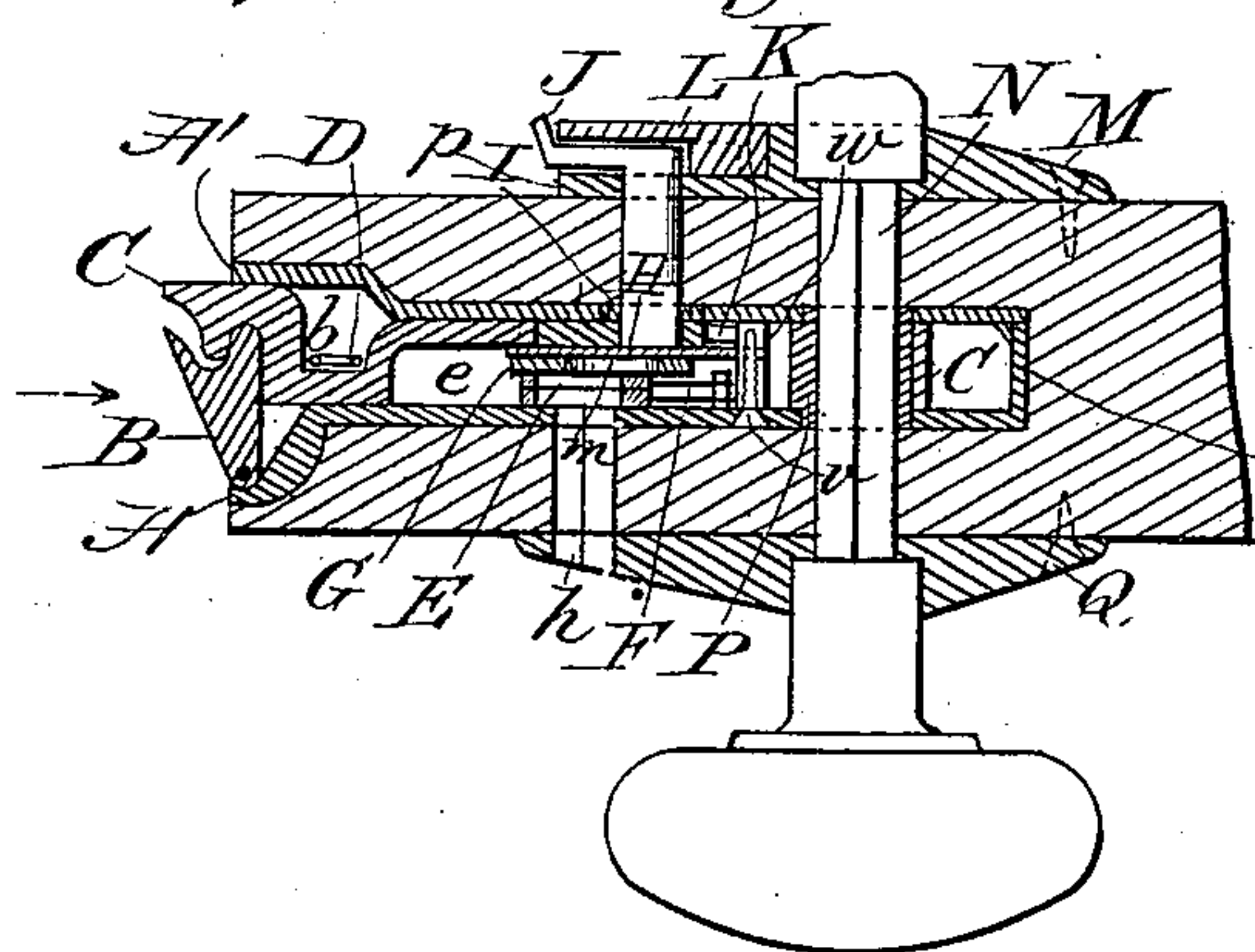


Fig. 4.

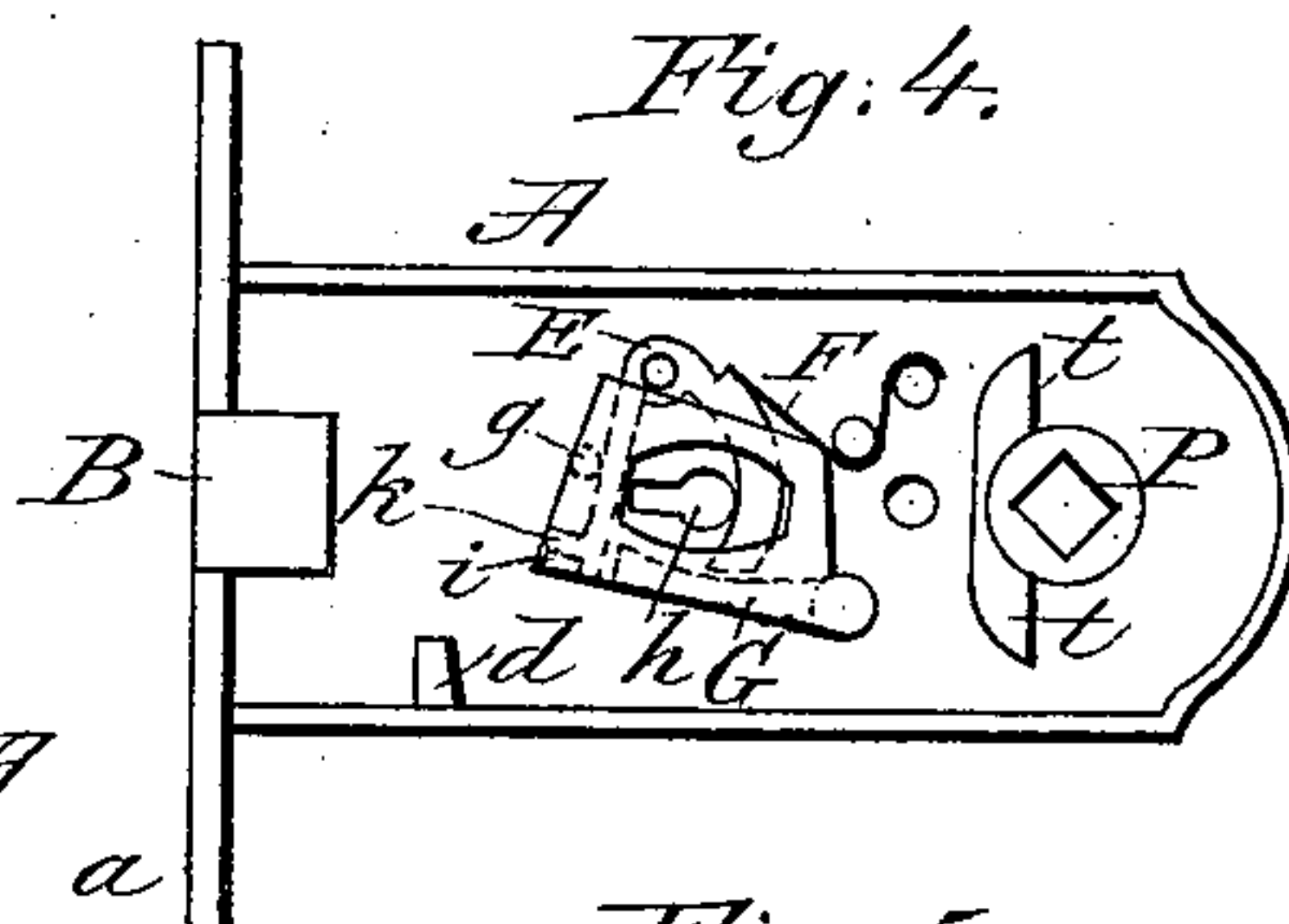


Fig. 5.

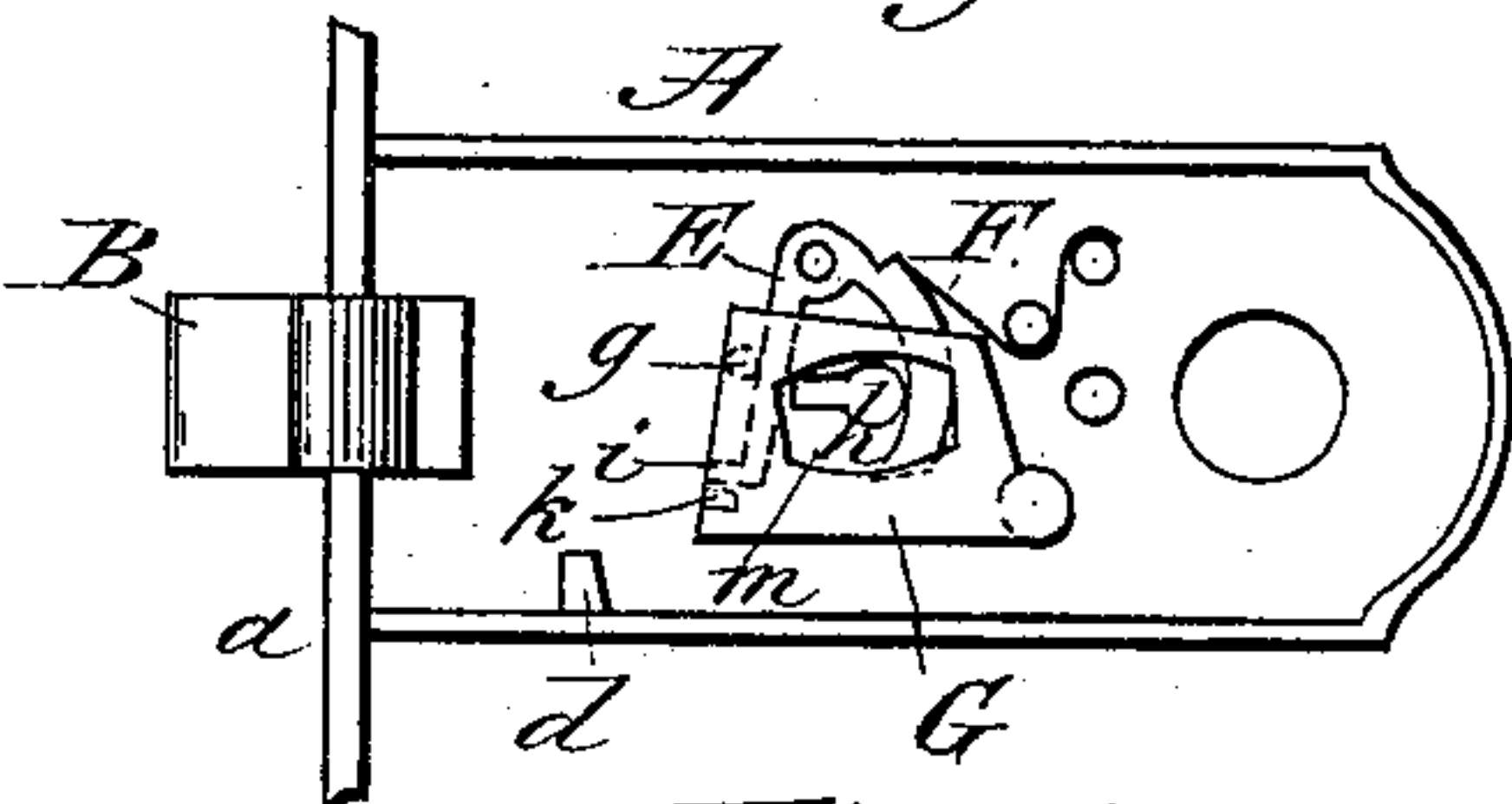


Fig. 8.

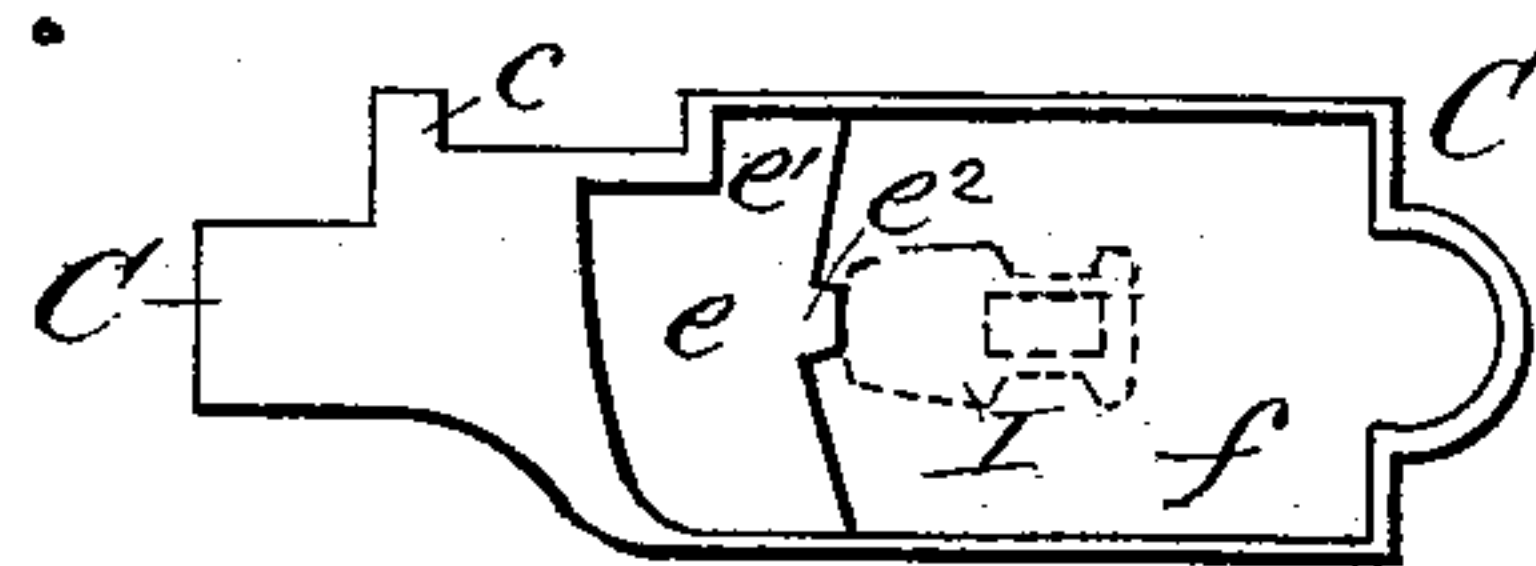


Fig. 10.

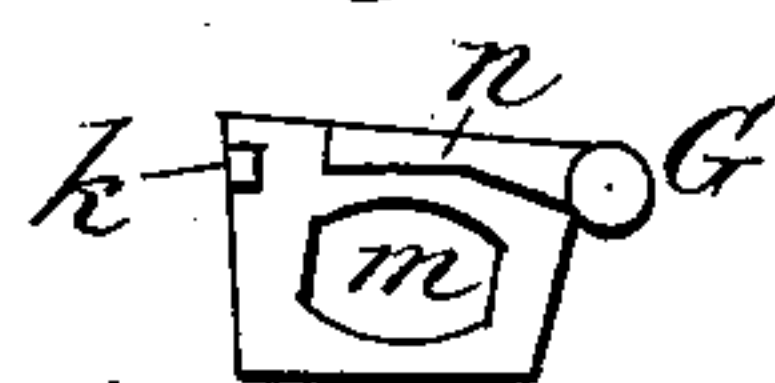


Fig. 11.

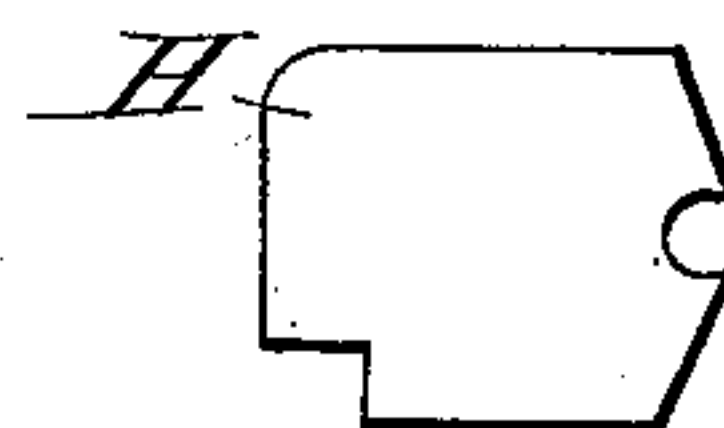


Fig. 7.

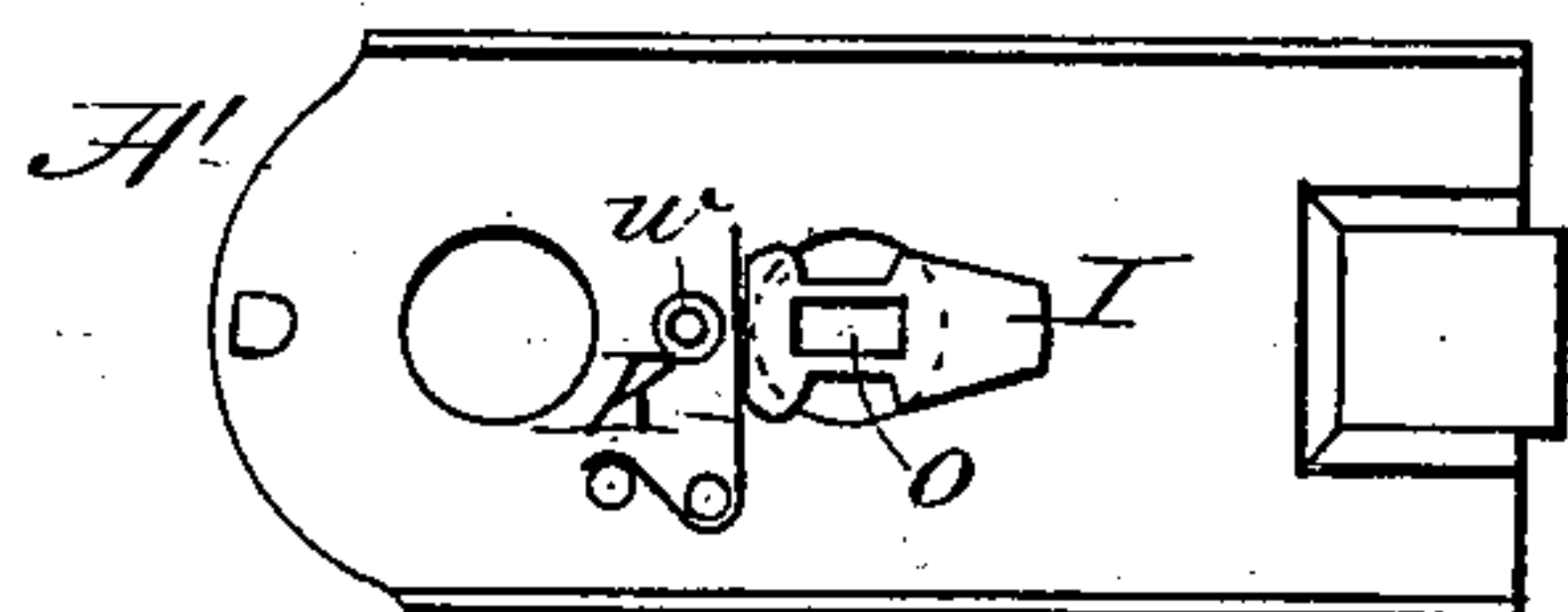


Fig. 6.

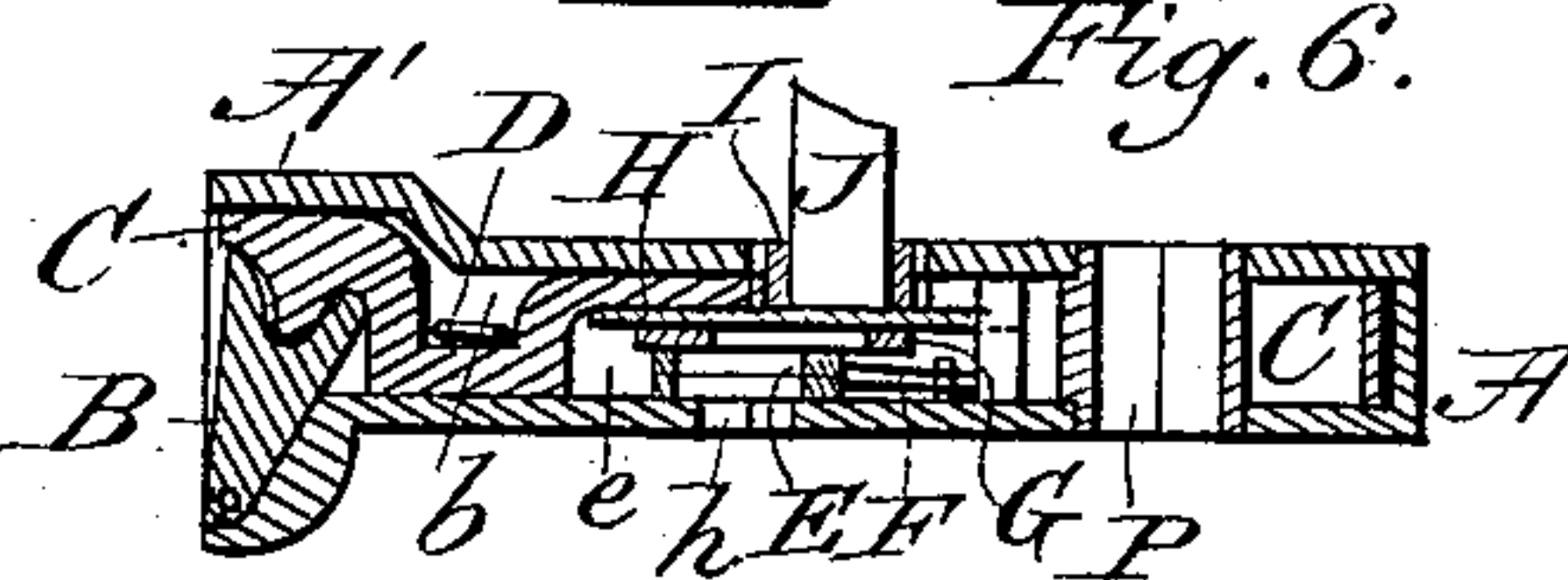
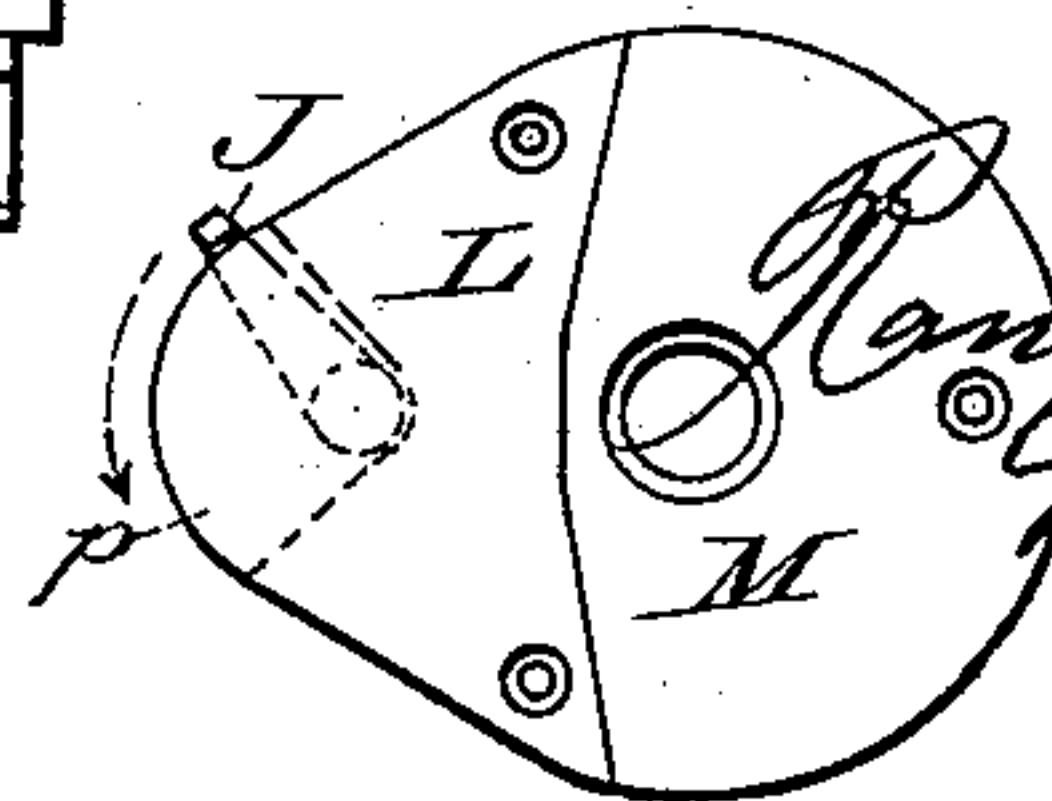


Fig. 9.



Inventor:
Ransom D. Crain
J. C. Parker
att'y

Attest:

H. H. Schott
A. R. Brown.

UNITED STATES PATENT OFFICE.

RANSOM DUNN CRAIN, OF WINCHENDON, MASSACHUSETTS.

COMBINED LOCK AND LATCH.

SPECIFICATION forming part of Letters Patent No. 309,822, dated December 30, 1884.

Application filed September 29, 1883. (Model.)

To all whom it may concern:

Be it known that I, RANSOM D. CRAIN, a citizen of the United States, residing at Winchendon, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Combined Locks and Latches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a burglar-proof lock for doors; and it consists in certain novel features in the construction of a combined latch and lock embracing a single bolt with two independent locking mechanisms, as hereinafter more fully described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a side view of the lock-casing, which is shown as mortised into a door. Fig. 2 is a horizontal section on the line *xx* of Fig. 1, showing the bolt locked by a pivoted button. Fig. 3 is a view of the interior of the lock, one side of the casing being removed, showing the slotted bolt and its spring. Fig. 4 is an inner view of the lock-case with bolt removed, showing the tumblers with springs and pivoted dog, one end of said dog being held by the tumblers in an elevated position, so as not to obstruct the back and forth movements of the bolt, until the dog is released by a proper key acting upon the tumblers. Fig. 5 is a similar view showing the pivoted dog depressed in position to lock the bolt. Fig. 6 is a sectional view of the lock, showing the bolt retracted. Fig. 7 is an inner view of the casing-cover, showing the pivoted button and its spring. Fig. 8 is a side view of the slotted bolt. Fig. 9 is a side view of a combined rose and cap, with lever that is attached to one side of the door. Fig. 10 is a side view of the pivoted dog, and Fig. 11 is a view of the division-plate that separates the tumbler mechanism from the pivoted button in the opposite side of the lock.

Like letters of reference designate like parts in the several views.

A is an elongated lock-casing, one side of which, as shown in Figs. 3, 4, and 5, is pro-

vided at its end with a flanged plate, *a*, having an opening for the passage of the bolt. In one side of this opening is pivoted a beveled or wedge-shaped lever, *B*, having a grooved or cogged end, that is adapted to engage the correspondingly-formed end of the bolt *C*, and so force it directly back into the casing against the pressure of the spring *D*, and without friction or lateral pressure of the bolt against the adjacent parts of the lock, thereby permitting the door to close easily without turning the knob or handle. The bolt *C* is provided on one side, near its outer end, with a vertical recess, *b*, for the reception of the spring *D*, one end of which bears against a lug or projection, *c*, that is formed on said bolt, while the other end rests against a lug, *d*, in the side of the lock-casing. The body of this bolt is expanded, as shown, to correspond with the width of the casing *A*, and on the side opposite to the recess *b* it is chambered or recessed, as shown at *e*, to afford space for the tumbler mechanism, the greater part of the chambered portion being, however, entirely cut through to form a slot or opening, *f*, as shown in Figs. 3 and 8.

In one side of the lock-casing, and arranged within the chambered portion *e* of the bolt *C*, are pivoted upon a common center two or more tumblers, *E E*, having springs *F F* bearing on one side, a stop-pin, *g*, Figs. 4 and 5, being arranged on the other side. These tumblers are arranged with convenient relation to a key-hole, *h*, that is formed in one side of the casing, and each tumbler is provided with a lug or catch, *i*, that fits beneath a lug, *k*, on a pivoted dog, *G*, which is thus held out of the path of the bolt *C*, so as not to interfere with the movements thereof while the door is unlocked.

If it is desired to lock the door by means of the tumbler mechanism, a proper key will be inserted through the key-hole *h*, and turned in contact with the tumblers *E E*, so as to force them back against the pressure of the springs *F F*, the lugs *i i* on said tumblers being thereby withdrawn from beneath the lug *k* of the dog *G*, so as to permit the forward end of said dog to drop, as shown in Fig. 5, to the lower part of the recess or chamber *e* of the bolt *C*, opposite the offset or projection *e'*, against which it lies, in close contact therewith, so as

to effectually block the bolt. When the pivoted dog G is thus disengaged from the tumblers, the latter return to their normal position under the pressure of the springs F F, and bear against the stop-pin *g*, as before. In order to unlock the bolt, the key is again inserted and turned in the opposite direction, its action being first directed against the tumblers E E, thereby turning them back, and then by continued rotation it comes in contact with the upper edge of an opening or slot, *m*, that is formed in the pivoted dog G, and so raises the free end of said dog until its lug *k* is above the line of the lugs *i i* on the tumblers E E which, at this moment being relieved of the pressure of the key, again fly into place in time to catch and hold the dog G away from contact with the bolt.

It will be seen that when the dog G is elevated, as shown in Fig. 4, it is held by the tumblers E E in the longer side of the recessed portion *e* of the bolt C, and so offers no obstruction to the movements of the bolt; but when the dog is disengaged from the tumblers, as before described, and permitted to drop into the shorter side of the recess *e*, opposite to and in contact with the projection *e'*, it securely holds the bolt and prevents its movement. The lower side or edge of the pivoted dog G is thickened, as shown at *n*, Fig. 10, so as to have a firm bearing against the side of the casing while the reduced or thinner portion of the dog is in contact with the side of the adjacent tumbler.

On the opposite side of the lock, and separated from the tumbler mechanism by a partition or division plate, H, of steel or other suitable material, is an independent locking mechanism, consisting of an elongated button, I, that is pivoted in the cover or detachable side A' of the lock-casing. This button may be formed as shown in Fig. 7, and is provided with a slot, *o*, for the reception of a key or cranked lever, J, that is permanently attached to the door, as hereinafter described. The button I is inclosed in a recess formed by the slotted portion *f* of the bolt C, the division-plate H, and the detachable side A' of the lock-casing. It will be seen that when the button I is turned to the position shown in Figs. 2, 7, and 8, with its long diameter corresponding with the long diameter of the slotted portion *f* of the bolt C, it will abut against a projection, *e''*, formed on the recessed part *e* of said bolt and so obstruct its movement. If, however, the button I is turned a quarter-revolution by means of its crank-lever J to the position shown in Figs. 3 and 6, it will offer no obstruction to the movements of the bolt. The button I is arranged in contact with a spring, K, Fig. 7, that holds it firmly in the position to which it may have been turned. The crank-lever J, by which the button I is actuated, passes partly through the door and is held by a detachable cap, L, which forms part of the rose M on one side of the door, the cap L being formed with a segmental recess,

p, as shown by dotted lines in Fig. 9, which permits the necessary quarter-revolution of the lever J in turning the button I into or from engagement with the bolt.

It will be observed that the bolt or latch C is thus provided with two independent locking mechanisms, each being capable of effectually securing the bolt.

It is obvious that the form of the tumbler mechanism can be varied, if desired; or said mechanism can be entirely dispensed with and be replaced by the button and crank device, it being convenient to apply said button and crank device to both sides of an inside door or doors separating apartments in dwellings, for the reason that the key or crank-lever J is permanently attached to the door and cannot be removed or mislaid by children.

For outside doors the tumbler mechanism will be most desirable when connected to the outer side of the lock, so that the door can be secured and the key removed as usual before leaving the building, while the button and crank mechanism is more conveniently applied to the inner side of such doors.

It will be seen that the construction of the button and crank fastening is such that while the button is easily turned by a slight pressure of the finger or thumb upon the end of the small lever J the device cannot be reached or tampered with from the outside, the metallic division-plate H separating it entirely from all connection with the outer key-hole. It thus forms a simple but effectual burglar-proof lock.

When the door is unlocked, the bolt C is drawn by turning the knob or handle in the usual manner, the shank or stem N, connecting the knobs on the opposite sides of the door, being passed through a sleeve, P, that is journaled in the opposite sides of the lock-casing, and provided on each side with a lug, *t*, that rests within the rear slotted end of the bolt, as shown in Fig. 3, so that as the knob is turned in either direction one of these lugs *t*, by turning within the rear end of the slot *f*, will act as a lever to carry the bolt back within the lock-case.

The door is readily closed and latched without the usual necessity of turning the knob by means of the wedge-shaped lever B, that is pivoted, as hereinbefore described, in the front end of the lock-casing and in contact with the end of the spring-bolt. By means of this wedge-shaped lever coming in contact with the catch upon the door-frame the spring bolt or latch C is forced directly back without lateral pressure or friction until, under the pressure of its spring D, it engages fully with the catch or recess arranged in the door-frame for its reception. The opposing surface of the lever B and bolt C being cogged or grooved, as shown in Figs. 2 and 6, it will be seen that they always move together, the lever being thus prevented from dropping outward while the bolt is drawn.

The two sides A and A' of the lock-casing

are connected by a screw, *v*, that is passed through one side of the casing into a barrel or hollow stem, *w*, on the other side, as shown in Fig. 2, and the lock-case, with its contained mechanism, is then inserted into a mortise formed in the door, as shown in Fig. 1.

It will be observed that owing to the construction and compact arrangement of the various parts of the lock, embracing, as it does, but a single latch or bolt, the mortise required for its reception is comparatively small, thereby avoiding the ordinary liability of weakening the door by making a large mortise therein. This construction also enables the key-hole *h* of the tumbler mechanism when employed to be formed in the outer rose, *Q*, as shown in Fig. 2, thereby avoiding the unsightly appearance of an ordinary key-hole.

What I claim as my invention is—

1. In combination with the bolt *C* and a key mechanism arranged on one side thereof, the button *I* and its actuating mechanism placed on the opposite side of said bolt, and the metallic division-plate *H*, separating the button and key mechanism, substantially as described.

2. The combination, with the recessed and slotted spring-bolt *C*, having a tumbler mechanism arranged on one side, of the button *I*, lever *J*, and spring *K*, placed on the opposite side, and a metallic division-plate, *H*, for separating the button and tumbler mechanism, substantially as described.

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

RANSOM DUNN CRAIN.

Witnesses:

C. L. BEALS,

GEO. M. WHITNEY.