

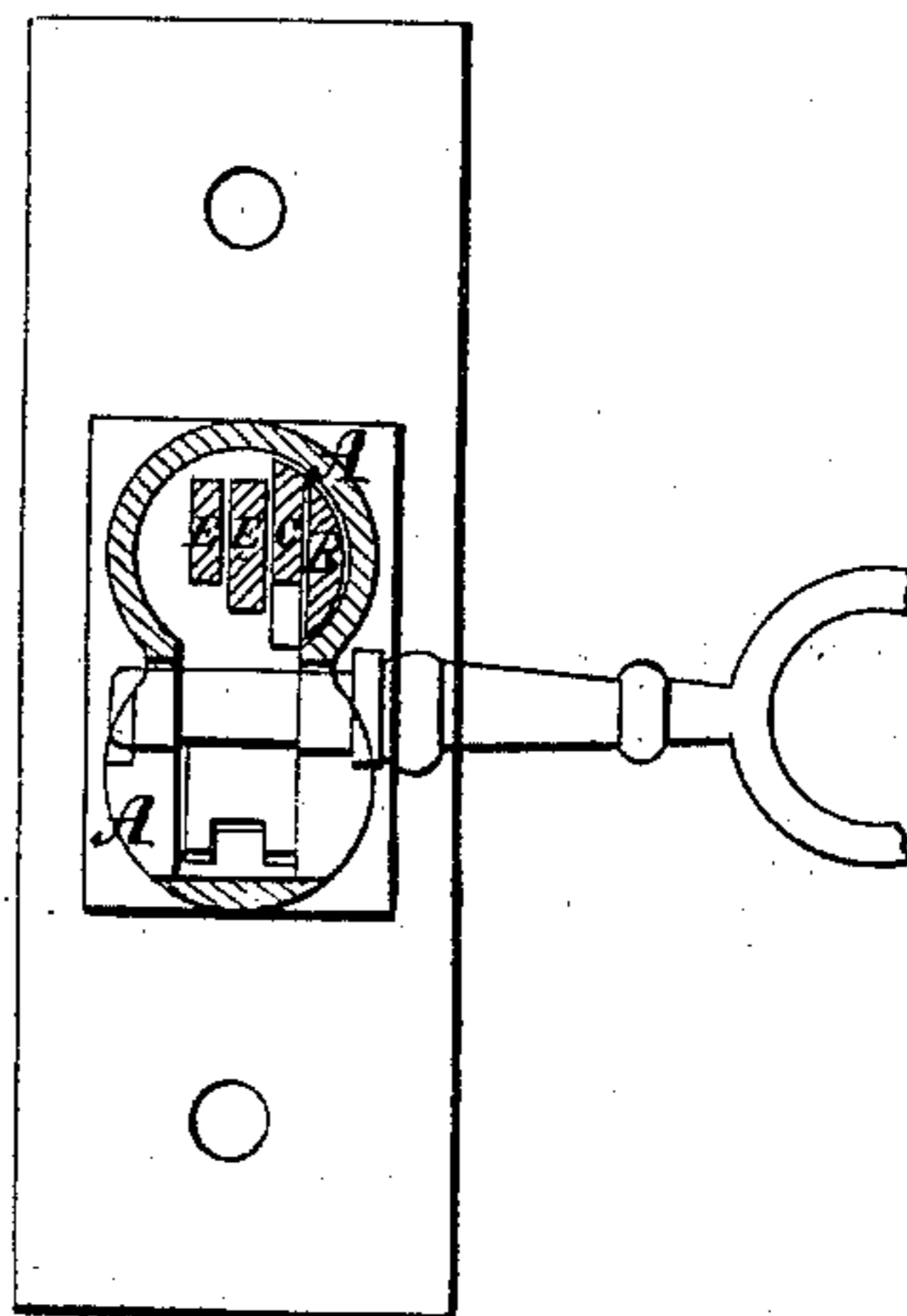
*F. Raymond.*

*Combined Lock and Latch.*

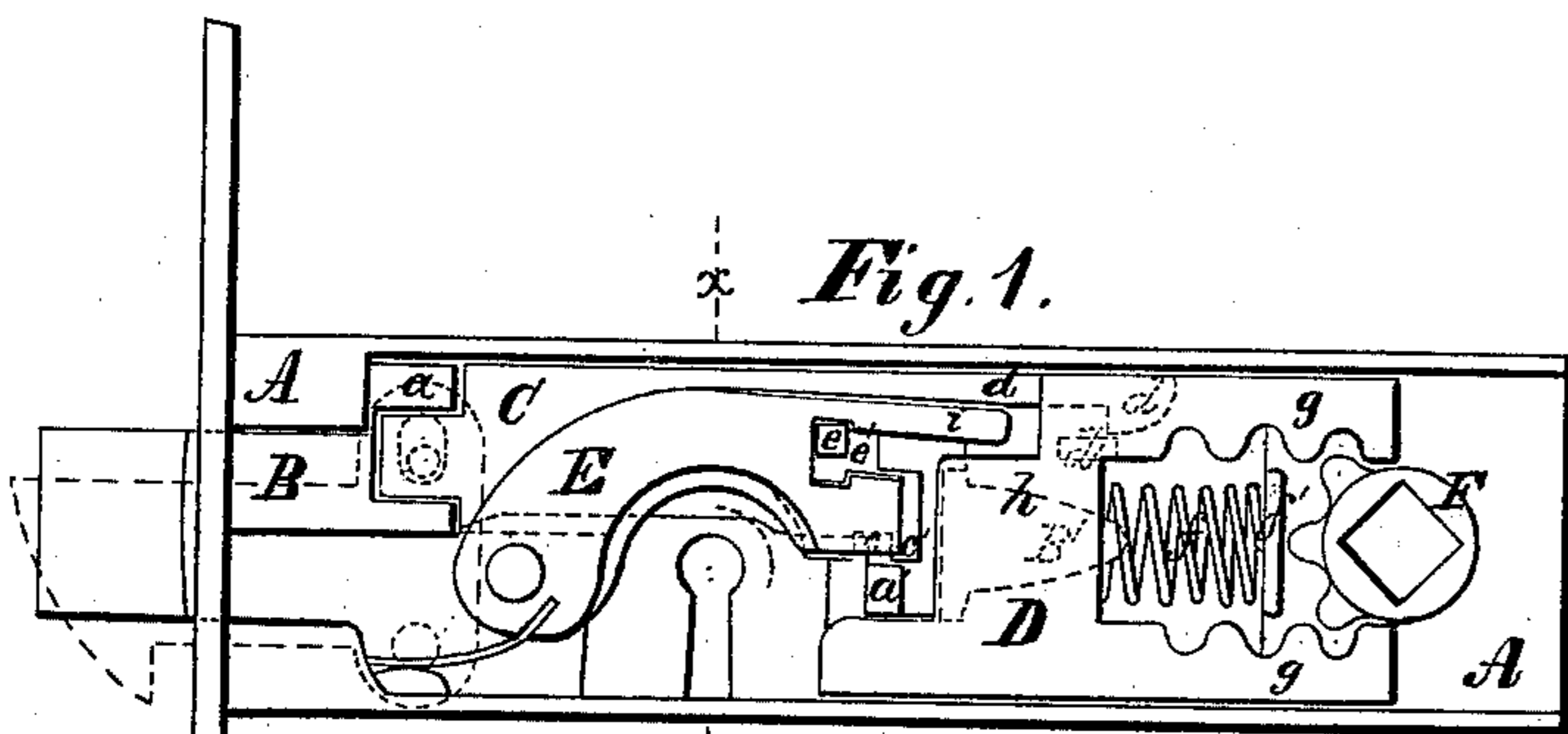
*N<sup>o</sup> 88,737.*

*Patented Apr. 6, 1869.*

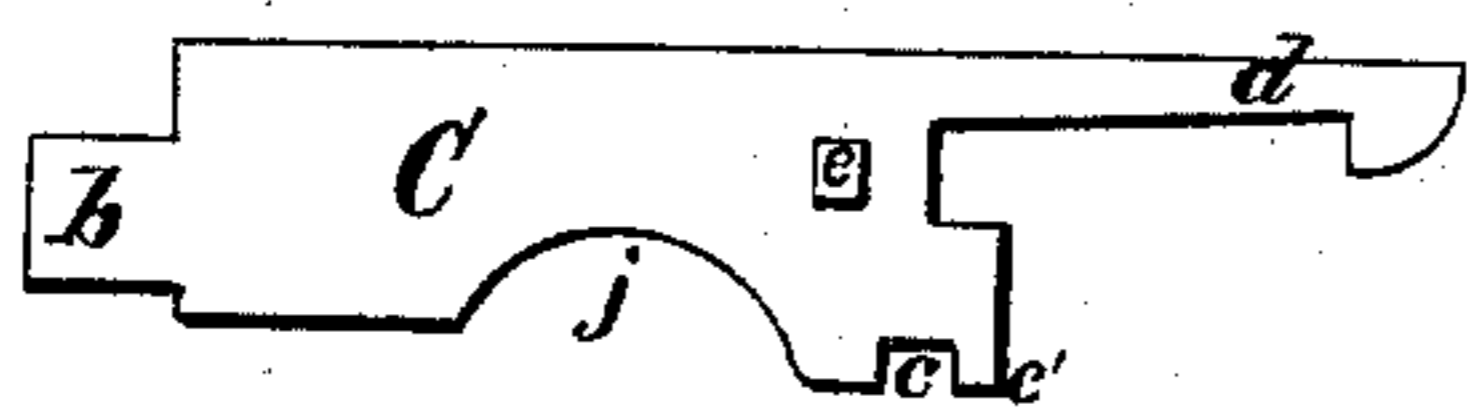
*Fig. 4.*



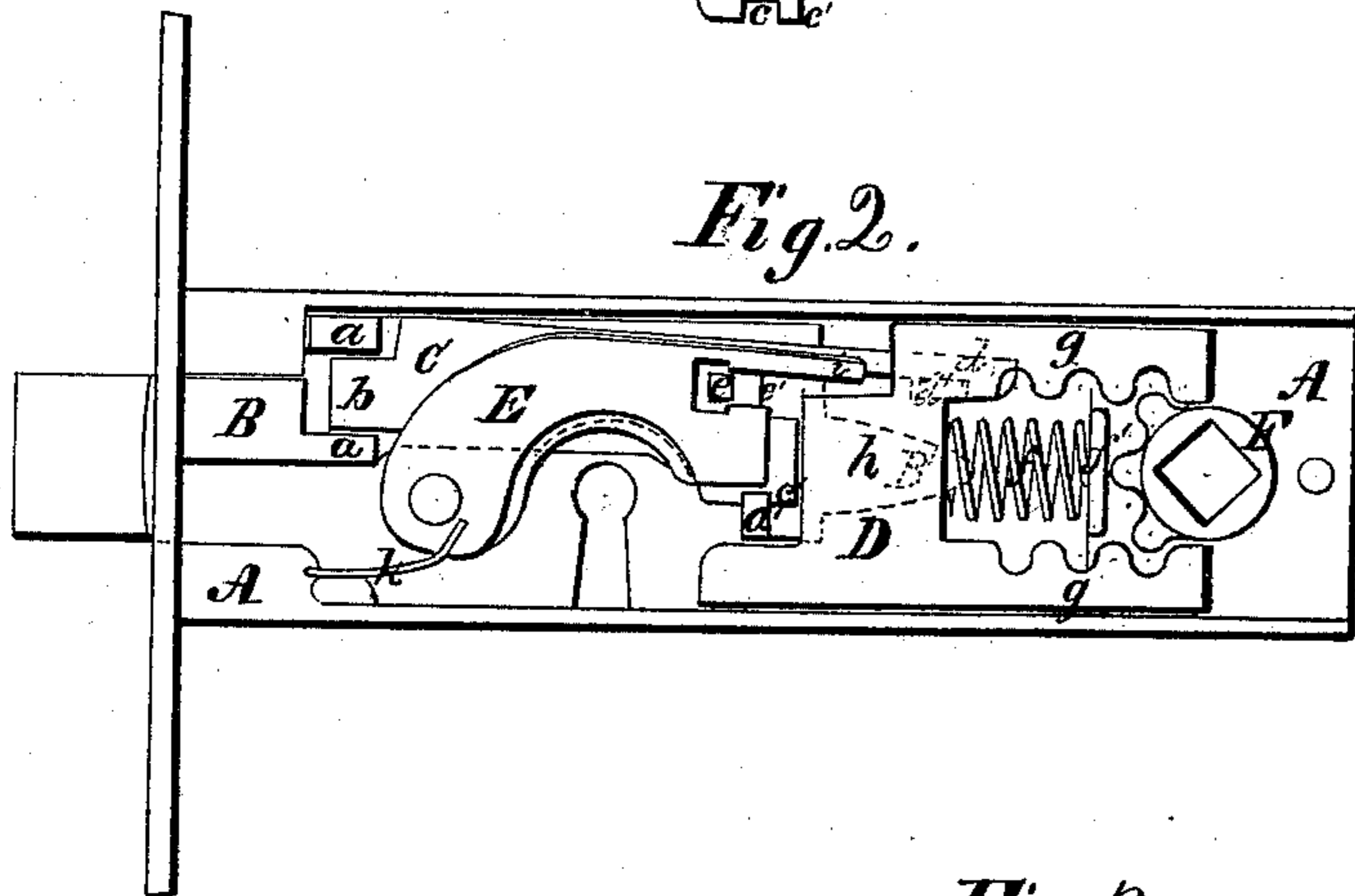
*Fig. 1.*



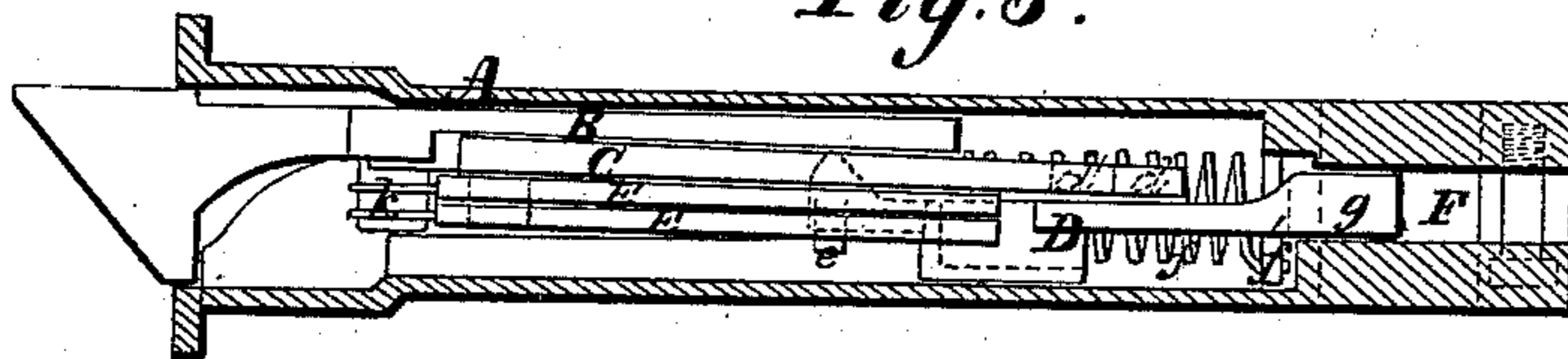
*Fig. 5.*



*Fig. 2.*



*Fig. 3.*



*Witnesses.*

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# United States Patent Office.

FRANCOIS RAYMOND, OF WOODHAVEN, NEW YORK.

Letters Patent No. 88,737, dated April 6, 1869.

## IMPROVEMENT IN COMBINED KNOB-LATCH AND LOCK

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FRANÇOIS RAYMOND, of Woodhaven, in the county of Queens, and State of New York, have invented a new and improved Lock; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to that class of locks in which the bolt is made to serve both purposes of latching and locking; and

It consists in the novel construction of a lock with cogged sector, double sliding-rack, shooting-tumbler, and notched lifting-tumblers, arranged for operating in connection with each other and the bolt, whereby the bolt may be withdrawn alike by the forward or backward turning of the knob, and whereby the bolt may be locked or unlocked by the turning of the key, and whereby the knob is left free to turn while the bolt is locked, and all so constructed and arranged as to produce a lock of compact form, and one that, when inserted into the edge of a door, will necessitate the removal of the least amount of substance from the door.

Referring to the accompanying drawing—

Figure 1 represents a longitudinal view of a lock, constructed according to my invention, with its intervening plate removed, showing the arrangement of the parts, in relation to each other, and to the bolt, while the same is locked;

Figure 2 represents a similar view of the lock, showing the arrangement of the parts while the bolt is unlocked;

Figure 3 represents a horizontal section of the same;

Figure 4, a transverse section of the same, taken through the line *x x* in fig. 1; and

Figure 5 represents a detached portion of its working-parts, which are otherwise not clearly shown.

Similar letters of reference indicate corresponding parts in the several figures.

A is a lock-frame, of a double-cylindrical formation in its transverse section, or other suitable form for end-wise insertion, and for the removal of the least substance from the door or other place to which it may be applied.

B is a sliding bolt, with the ordinary projecting bevelled end, and having provided upon one of its sides, projections *a*, *a*, and *a'*, for reception between them of a shooting-tumbler, C.

Said tumbler C is arranged against the side of the bolt B, and between the said projections, as described, and is of a formation as represented in fig. 5, having at its forward end a reduced portion, *b*, for reception thereof between the said projections *a a*, thereby to prevent its vertical displacement, while it prevents the backward sliding of the bolt when the same is locked.

Said tumbler C is also provided with a notch, *c*, in

the under side of its rear portion, for reception of the projection *a'* of the bolt, thereby to effect the engagement of said tumbler and bolt while the bolt is unlocked.

It is also provided with a rearwardly-extending hooked arm, *d*, for engaging with a projection, *d'*, upon the back surface of a double sliding rack, D, for effecting the backward or inward sliding of the said tumbler and bolt while the bolt is unlocked.

It is also provided, near its rear extremity, with a laterally projecting stud, *e*, for engagement within a T-shaped slot, *e'*, cut in the rear extremity of one or more pivoted or lifting-tumblers E, thereby to lock into said slot *e'*, when the key is turned in a certain direction, and to unlock therefrom when the turning of the key is reversed.

*f* is a spiral spring, coiled around a rearward projection, B', of the bolt, and acting against a projection, *f'*, of the frame A in such manner as to exert a constant pressure upon the said bolt in a forward or outward direction.

The double rack D, is preferably of a formation as represented in those parts of the drawing indicated by said letter D, and consists of a semi-cylindrical hollow neck, *h*, with closed front end, and loosely fitting upon, or encasing one side of the front portion of the spring *f*, and with rearwardly-projecting upper and lower parallel arms *g g*, with corrugated inner surfaces.

Said corrugated arms *g g* are acted upon by the spurs of a cogged sector F, which is operated by the spindle of the knob, so that the forward or backward turning of the knob will cause the engagement of the said cogged sector F with one or the other of the said corrugated arms, thereby causing the backward sliding of the rack.

Said backward sliding of the rack D causes the compression of the spring *f*, by means of the engagement of the closed forward end of the hollow neck *h* with the forward extremity of said spring, so that, upon the releasement of the knob, the said rack is carried forward to its place again by the force of said spring.

By turning the knob in either direction, reference being had to fig. 2, the cogged sector F will engage with the double rack D, so as to draw the same in a backward direction.

The shooting-tumbler C, by means of the engagement of its hooked arm *d* with the projection *d'* of the rack D, will also be carried backward with said rack, its lateral projection, or stud *e*, at the same time, sliding within the straight portion of the slot *e'* of the pivoted or lifting-tumblers E, and under a continuation, or arm *i* of said tumblers, thereby supporting them during its entire sliding-distance.

By means of the engagement of the notch *c* of said tumbler C with the projection *a'* of the bolt, and fur-

thermore, by the butting of the rear extremity of the lower portion of said shooting-tumbler against a projecting formation of the forward portion of the rearward extension B' of the bolt B, said bolt is carried backward with the tumbler C, drawing its projecting bevelled end into the frame.

Upon the releasement of the knob, the spring *f*, acting upon the double rack, as already described, and against the end of the bolt B, forces the said parts, together with the shooting-tumbler, to their original forward position.

By the turning of the key in the direction as indicated by the arrow, the shooting-tumbler C will at first be elevated to a sufficient height to clear the notch *c* from the projection *a'*; also, to disengage the hooked arm *d* from the projection *d'*.

By the onward movement of the key and its action within the curved notch *j*, the said tumbler C will be carried forward substantially after the manner of the locking-bolt of an ordinary lock, and to a sufficient distance to cause the lateral projection *e* to enter the enlarged portion of the T-shaped slot *e'* of the lifting-tumblers E, and be locked in the upper notch thereof by the dropping of said tumblers E, assisted, it may be, by springs *k*.

This forward sliding, or shooting of the tumbler C, causes its lower projection *c'* to be passed to the top of the projection *a'*, thereby retaining said tumbler in its elevated position, and thereby not only locks the bolt B, but also maintains the separation of the hook *d* and projection *d'*.

In this position of the said parts, and which is represented in fig. 1, the shooting-tumbler C is prevented from backward-sliding by the locked condition of its lateral stud *e*, within the upper notch of the T-shaped slot *e'*; and the bolt B is prevented from backward-

sliding by the locked condition of its projections *a a* with the front end of said shooting-tumbler C.

By the disengaged or unlocked condition of the hook *d*, and projection *d'*, the knob is left free to turn while the bolt is locked, thereby preventing the liability of the lock to damage by the unnecessary wrenching of the knob in the hand of a strong person, to which other locks of this kind not having this improvement are constantly exposed.

By turning the key in the opposite direction, the tumblers E are raised so as to release the lateral stud *e* of the shooting-tumbler from lock with the upper notch of their T-shaped slot *e'*, whereupon said tumbler is carried back to its first position, the notch *c* dropping over the projection *a'*, and the hook *d* locking with the projection *d'*.

The under notch of the T-shaped slot *e'* of the lifting-tumblers E, is designed to increase the difficulty of unlocking the bolt with other keys, which do not exactly fit, and whereby, when a key is inserted which is a little too long, and by which the lifting-tumblers are raised higher than necessary, the lateral stud *e* is locked in the said under-notch, and the tumbler C remains as securely locked as before.

This lock is also applicable to sliding doors, and other sliding shutters, by altering the construction of the bolt, as indicated by red outline in fig. 1.

What I claim as my invention, and desire to have secured by Letters Patent, is—

The combination, with the knob-shank and bolt of a lock, of the cogged sector F, double rack D, shooting-tumbler C, and slotted lifting-tumblers E, arranged for operation substantially as herein described.

Witnesses: FRANCOIS RAYMOND.  
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