

(Model.)

M. C. NILES.

LATCH.

No. 323,063.

Patented July 28, 1885.

Fig 2

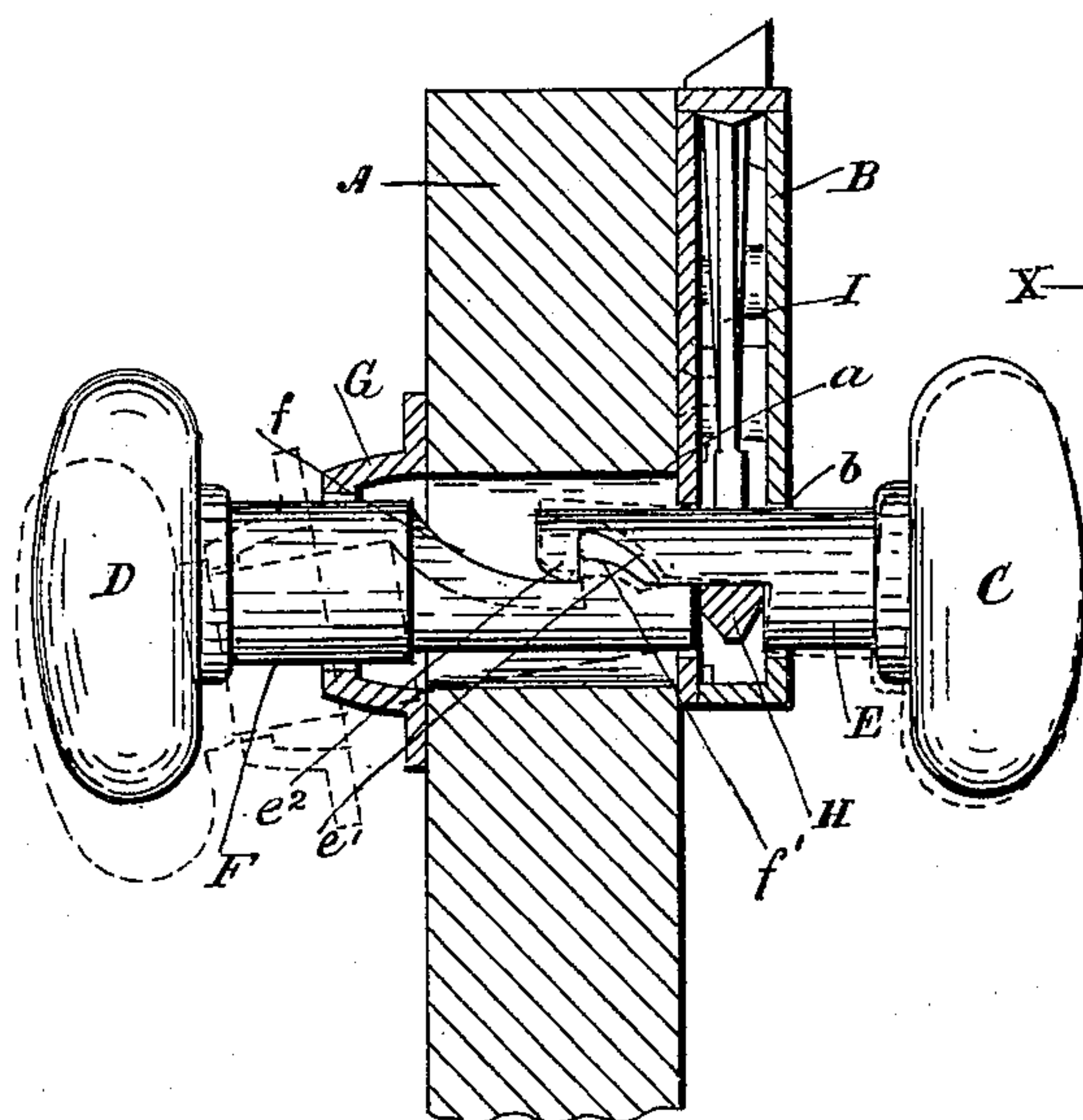


Fig 1

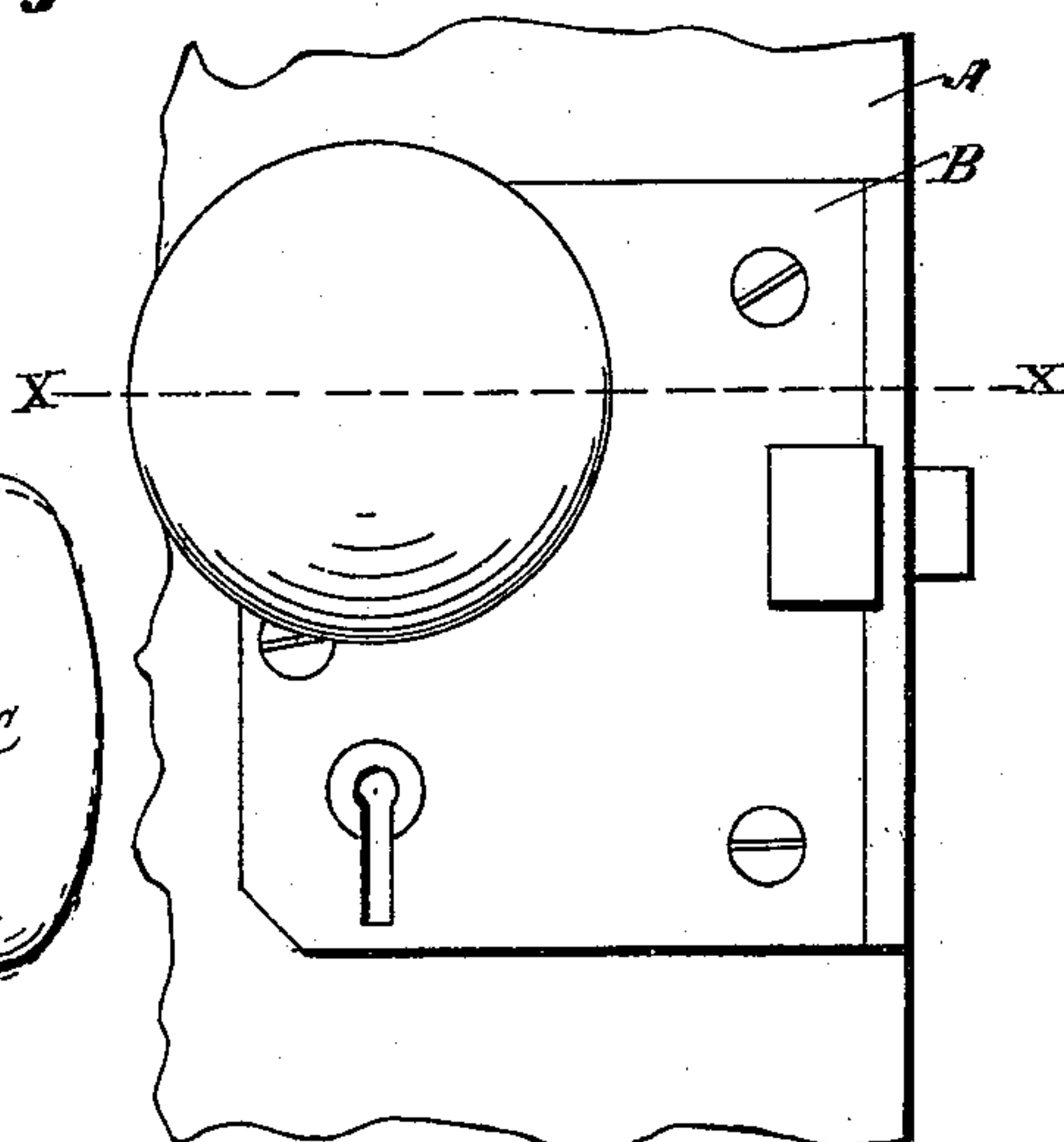


Fig 4

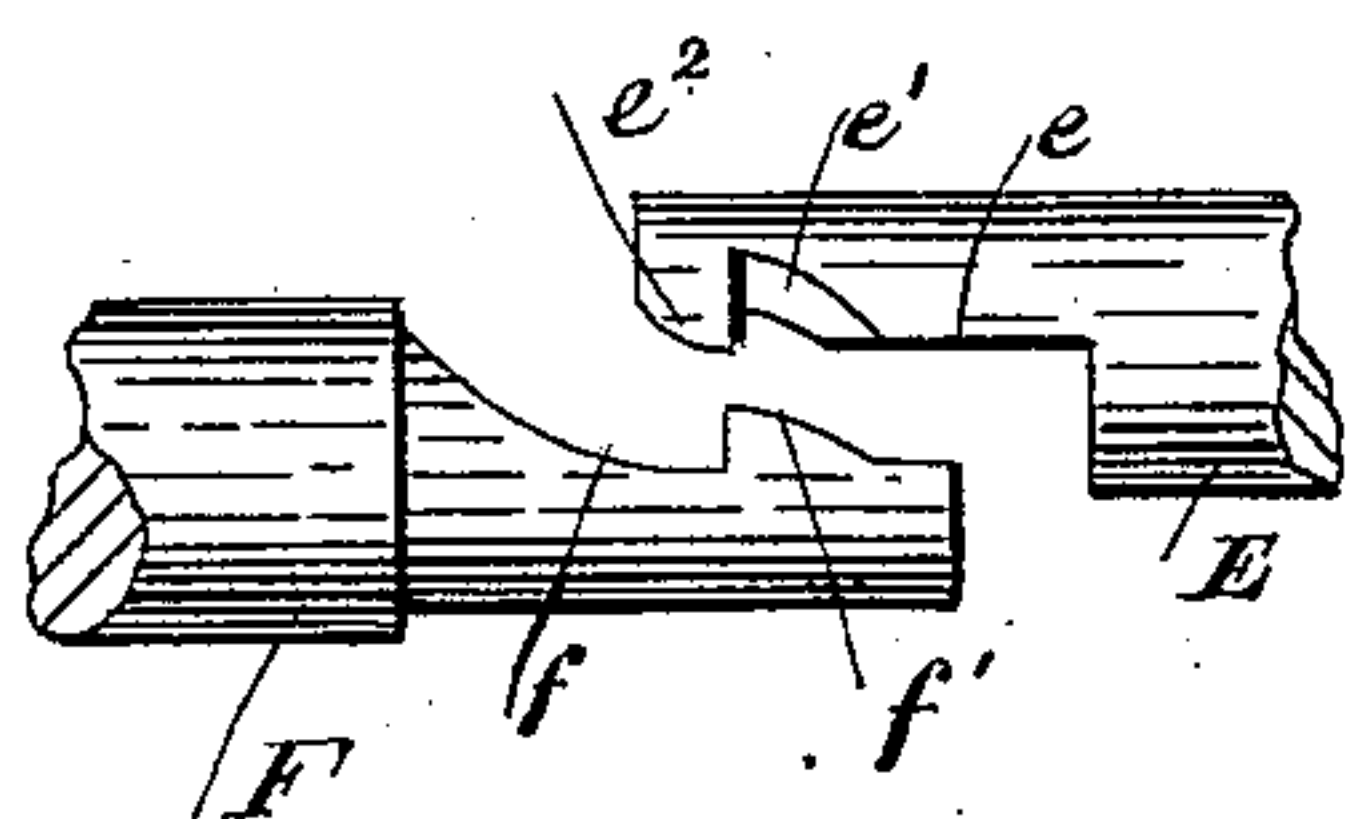


Fig 3

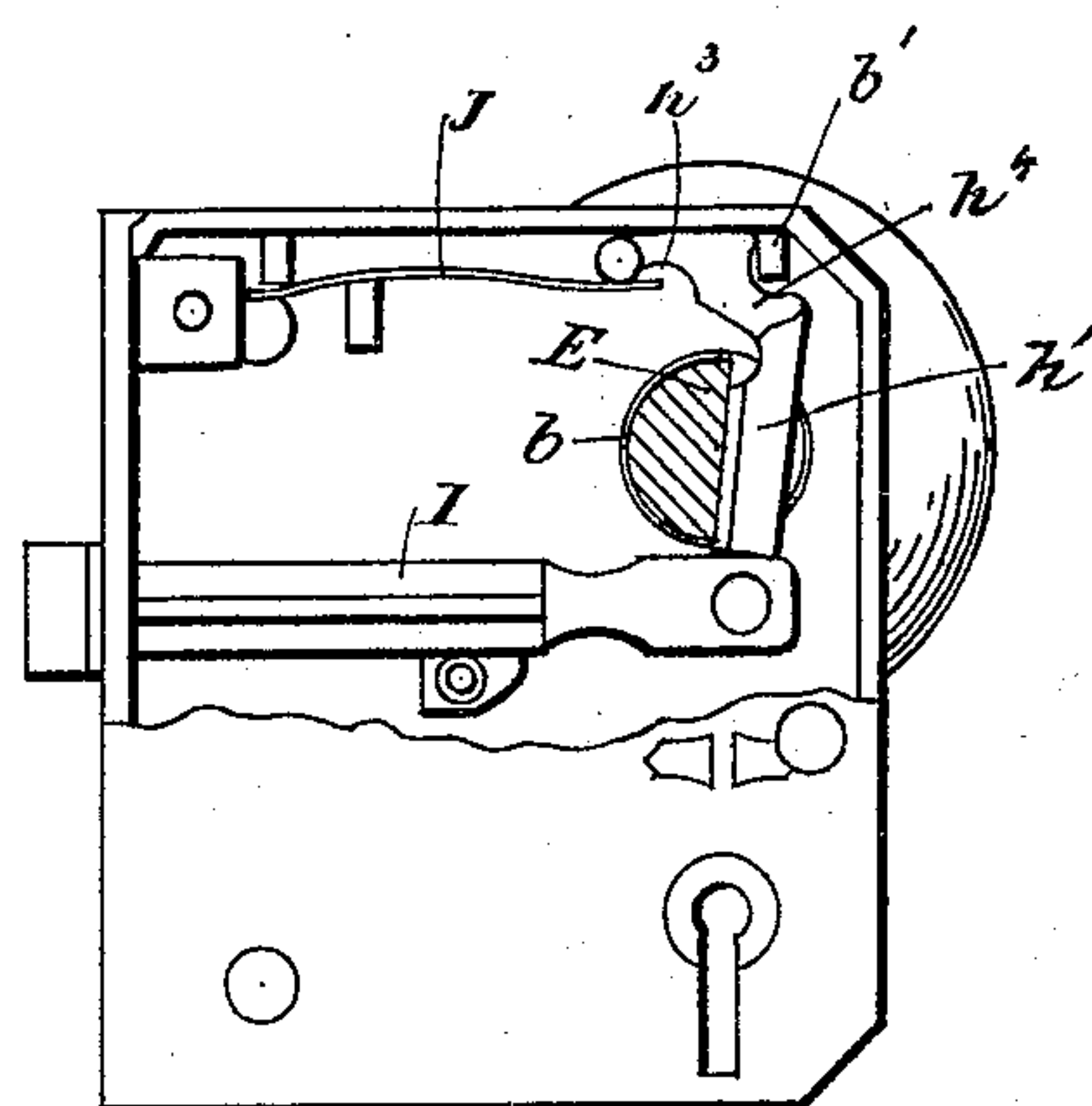


Fig 5

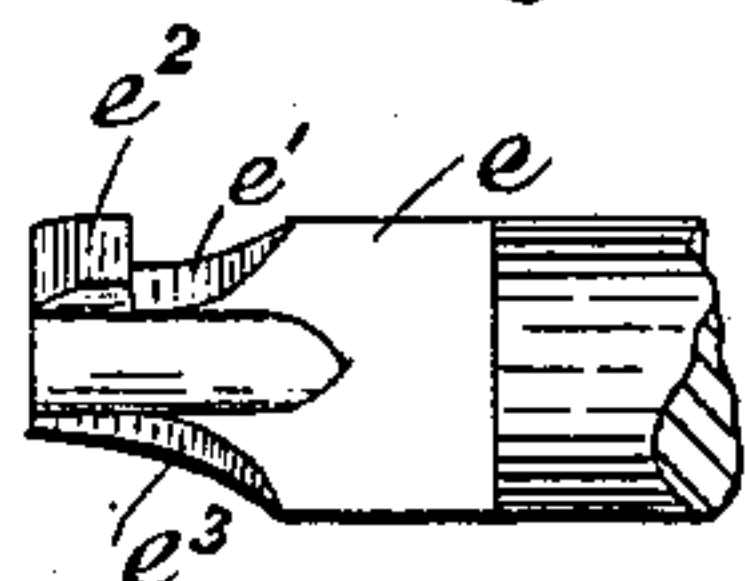


Fig 6

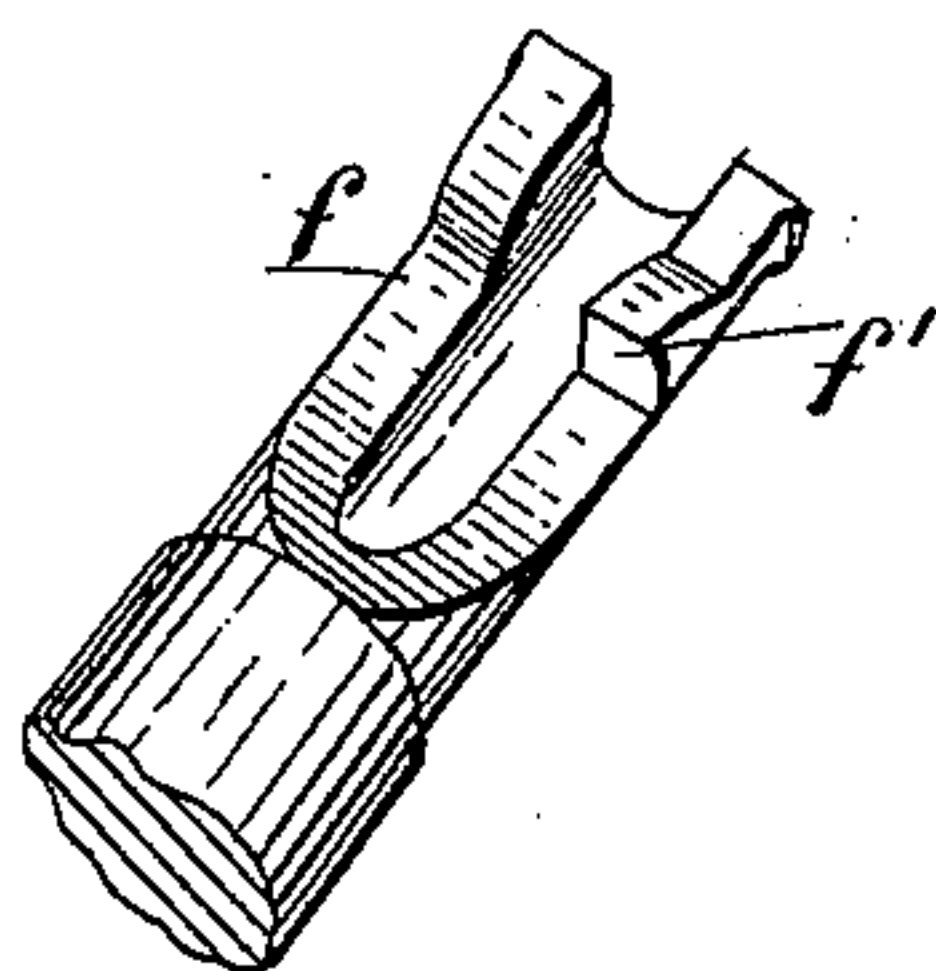
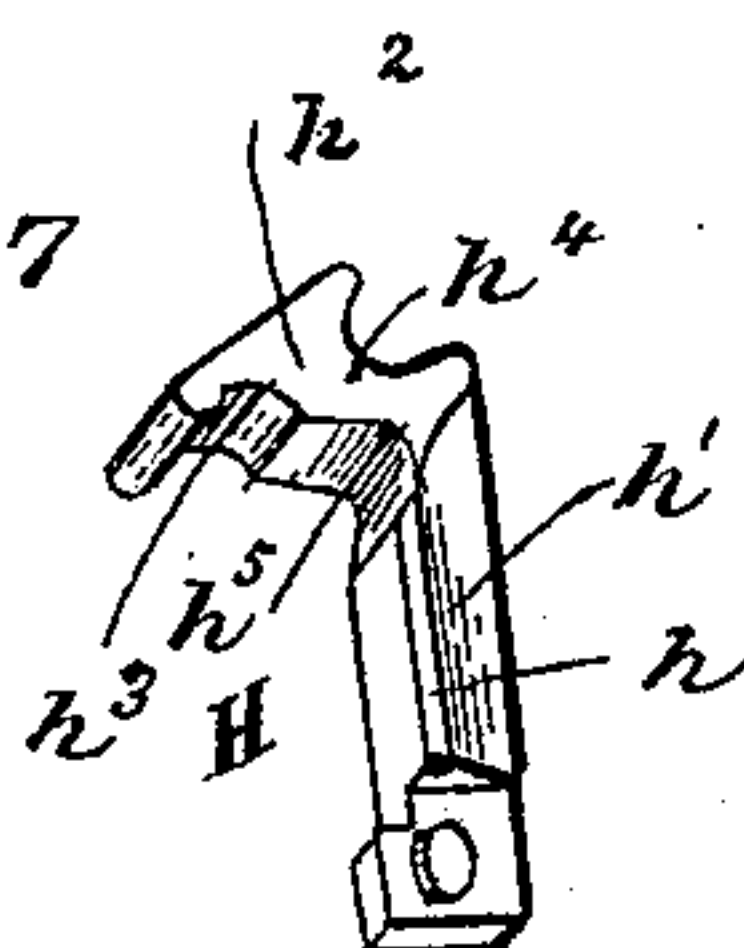


Fig 7



Witnesses

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# UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF OAK PARK, ILLINOIS.

## LATCH.

SPECIFICATION forming part of Letters Patent No. 323,063, dated July 28, 1885.

Application filed March 10, 1884. (Model.)

*To all whom it may concern:*

Be it known that I, MILTON C. NILES, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Knob-Latches for Rim-Locks, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents an elevation of a section of a door with my present improvements applied; Fig. 2, a section of the same, taken on the line  $x x$ , Fig. 1; Fig. 3, a back elevation of the lock detached and a portion of the back plate broken away; Fig. 4, a detail elevation of the inner ends of the knob-spindles; Fig. 5, a detail plan of the inner end of the inside knob-spindle; Fig. 6, a detail perspective view of the inner end of the outside knob-spindle, and Fig. 7 a perspective view of the bolt-lever detached.

My present invention relates, principally, to knob-latches for use with locks, especially rim-locks, the object of the improvement being to provide for readily disconnecting the knobs and removing them from the door and lock, and also applying them thereto and connecting them together in working position, as occasion may require.

30 I will proceed to describe in detail the construction and operation of the different devices by means of which I have in one way carried out my invention in practical form, and will then point out definitely in the claims the special improvements which I believe to be new and wish to protect by Letters Patent.

40 In the drawings, A represents a section of any door, and B a rim-lock, which in general features is of any ordinary construction, and is provided with an opening,  $b$ , for the reception of the spindle of the inner knob, C, there being also an opening,  $a$ , through the door for the insertion of the spindle of the outer knob and the meeting ends of the two spindles. The spindle E of the inner knob is cut down, so as to provide a flat face,  $e$ , within the lock, which is adapted to act upon and operate the bolt-lever, as will be hereinafter described. This cutting at one side is about half the body of the spindle, and is carried out to the end thereof, where at one edge is formed a notch,  $e'$ , which leaves a kind of hook,  $e^2$ , at the ex-

55 tremity of the spindle, having a substantially straight face on the inside and preferably beveled slightly on the outside. The opposite edge of this spindle is cut away at the extremity, as shown at  $e^3$  in Fig. 5 of the drawings.

The spindle F of the outer knob, inside of its bearing-point in the rose G, is correspondingly cut down or halved toward its extremity, and on one edge is formed a lug or projection,  $f'$ , of such shape as to be adapted to engage with the notch on the inner spindle, as shown in Figs. 2 and 4 of the drawings. The opposite edge is raised somewhat, so as to form a cam-surface or enlargement,  $f$ , at the extremity, adapted to fit the cut-away  $e^3$  in the corresponding edge of the opposite spindle, as shown in Fig. 6 of the drawings.

70 It is obvious from the description above that if the end of one of the knob-spindles is slipped past the other they will become engaged by means of the notch and projection, and if held in line with each other this engagement cannot be broken. To provide for this operation, the hole in the door is made somewhat larger than the spindle, so that when the rose G is loose the outer knob may be moved laterally, as shown in dotted lines in Fig. 2 of the drawings. The hole in the door should be large enough to permit the outer spindle to be dropped or turned to one side sufficiently to pass the lug  $f'$  over the hook  $e^2$  on the opposing spindle, and as the ends of the spindles are brought together, the cam  $f$ , striking into the curve or inclined cut-away  $e^3$ , will turn or guide the spindle F into engagement with the spindle E. The rose G is then brought up into position so as to bring the spindles in line with each other, when the rose is fastened to the door. It is obvious that the spindles will be permanently connected, and in such a way that one will turn the other.

95 It will be noticed from this description that both spindles at their inner ends are held by a bearing in the lock-case and against each other, the spindle F extending at its inner end just within the opening in the case when brought into alignment, and the spindle E passing entirely through and projecting somewhat beyond the case. This is necessary in order to have the inner ends of the spindles held in position, so as to prevent side movement or twisting when the knobs are turned. It will



also be noticed that the spindles act mutually upon each other, each being turned by the action of the halved face of the other, but at the same time the connection between the two is a loose one—that is, there is nothing like a rivet, pin, screw, or other like device which would permanently connect the two spindles together even if removed from the door.

The bolt-lever H is made in a substantially angular form, something like a bell-crank. One arm,  $h$ , is pivoted at its extremity to the inner end of the bolt I, and has a flat front face, against which the similar face of the inner knob spindle is arranged to work, as shown in Figs. 2 and 3 of the drawings. The back of this arm is beveled on each side, so as to present an incline,  $h'$ . This is to provide for the inclined position of the knob-spindle when it is inserted to engage with the other spindle, as described above. Obviously, the end of the spindle must be brought nearly or quite up to this lever, and this bevel at the side of the latter permits the end of the spindle to turn inward toward it, as is necessary for the purpose of bringing the two spindles into engagement. The bevel is made on each side of the lever to provide for the application of the lock to either side of the door. The other arm,  $h^2$ , of the lever has a shallow circular recess,  $h^3$ , in its under side, and a similar recess,  $h^4$ , at its back, near the angle, and the extremity of the arm is preferably rounded, as shown in Fig. 7 of the drawings. The lever is arranged inside of the lock, as shown in Fig. 3 of the drawings. The arm  $h^2$  rests against the upper edge or rim of the lock-case, which is provided with a short lug,  $b'$ , against which the back of the lever rests at the angle. This may be on either the edge-rim or one of the plates, as preferred. A spring, J, is secured at one end in any ordinary way in the lock-case, and the other end is arranged to bear on the under side of the free end of the bolt-lever, as shown in Fig. 3 of the drawings, in which this spring is shown held between two lugs on the case, one above and one below the spring. This spring acts to hold the bolt-lever in place in connection with the lug  $b'$  without any further device, so that it will be seen that the lever is loosely mounted and can be placed in position or removed with great facility. Obviously the spring will act to hold the lever on its forward throw, thereby keeping the bolt out, and the turning of the knob-spindle, when in position, as shown in Fig. 3 of the drawings, will vibrate this lever backward to withdraw the bolt, the lever turning at its corner against the lug as a fulcrum, and the circular recesses  $h^3$ , heretofore described, accommodating this vibration of the lever back and forth. The bolt is connected to the lever by means of a pivot onto which it is slipped, and from which it can be removed when the back plate of the case is removed. It will be seen, then, that all these parts are practically loose in the case, and can be readily taken out on removing the back plate without displacing

any other part. The lever H is also cut away on the inner face of the arm  $h'$ , at or near the angle, to produce a recess,  $h^5$ , preferably circular. This is for the purpose of shortening the face against which the spindle acts, as shown in Fig. 3 of the drawings, thereby shortening the leverage at this point, and to a certain extent equalizing the action of the spindle on the lever whichever way it is turned.

In the application of these improvements to practical use the parts within the lock-case are properly arranged and the back plate fastened in position. The lock is then secured to the door in any usual way, and either side out, as required, the bolt being adjusted accordingly in the first place. The knob-spindle E is then slipped in through the lock-case in front of the bolt-lever, which it forces back slightly. The end of this knob-spindle will project through the lock-case into the hole in the door. The knob-spindle F, the rose being first placed thereon, is then inserted in the door from the opposite side thereof, and the inner ends of the spindles brought into engagement, as already described above, and the spindle F is brought into alignment with the spindle E, when the rose is secured to the door, and the parts are all fastened together in proper working position. It will be seen that the spindles are prevented from slipping by the bolt-lever, against which the end of one spindle and an angular face on another abut, as shown in Fig. 2 of the drawings.

Whenever it is desired to detach the knobs and lock, it is only necessary to reverse the steps mentioned above, first loosening the rose, then disconnecting the spindles, and so on.

This mode of connecting the knob-spindles is obviously very cheap and simple. It is a loose connection, doing away with all special devices for fastening the two together, and to this extent simplifies and cheapens the construction of the parts, while at the same time it is satisfactory and effective in operation.

I do not wish to be understood as limiting myself in all respects to the exact features of construction herein described and shown, for some modifications may be made and yet the main plan of my invention retained.

I have described and shown these improvements applied to a rim-lock; but I do not wish to be understood as limiting them to this particular class of locks, for they may be applied in some instances to other locks, and I claim the improvements used in connection with a lock of any description.

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

1. In a door-lock, a bolt-retracting piece, in combination with the spindle E, halved at its inner end and provided with a notch,  $e'$ , and a shoulder at its point of bearing in the side of the lock in which it is entered which abuts against the retracting-piece, and the spindle F, halved at its inner end and pro-



vided with a lug,  $f'$ , and end piece which abuts against the bolt-retracting piece on the other side of the lock, whereby, when the spindles are brought into alignment, they are held from  
5 slipping back and forth through the lock, substantially as described.

2. The knob-spindle E, provided with the notch  $e'$  and the cut-away  $e^3$ , in combination with the knob-spindle F, provided with the lug  
10  $f'$ , and the raised cam  $f$ , substantially as and for the purposes set forth.

3. The knob-spindle E, provided with the notch  $e'$ , in combination with the knob-spindle F, provided with the lug  $f'$ , and the belt-  
15 lever H, beveled backward at its side, and the case B, substantially as and for the purposes set forth.

4. The case B, in combination with the knob-spindle E, cut down to provide a face,  
20  $e$ , for the bolt-lever, the knob-spindle F, cut away on the opposite side to overlap the cut-

away part of the spindle, but not extending quite to the uncut portion of said spindle E, and the bolt-lever H, arranged to abut against the shoulder of the spindle E on one side and  
25 the end of the spindle F on the other, substantially as and for the purposes set forth.

5. The knob-spindle E, extending through the lock-plates into the door and halved at its inner end, in combination with the bolt-lever  
30 arranged in contact with the halved section of said spindle inside of the lock-case, and the opposing knob-spindle F, also halved at its inner end and arranged with its inside bearing against the corresponding side of the spin-  
35 dle E and its opposite or outer side bearing against the lock-plate, substantially as and for the purposes set forth.

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Witnesses:

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