

(No Model.)

A. HETU.
LATCH.

No. 362,079.

Patented May 3, 1887.

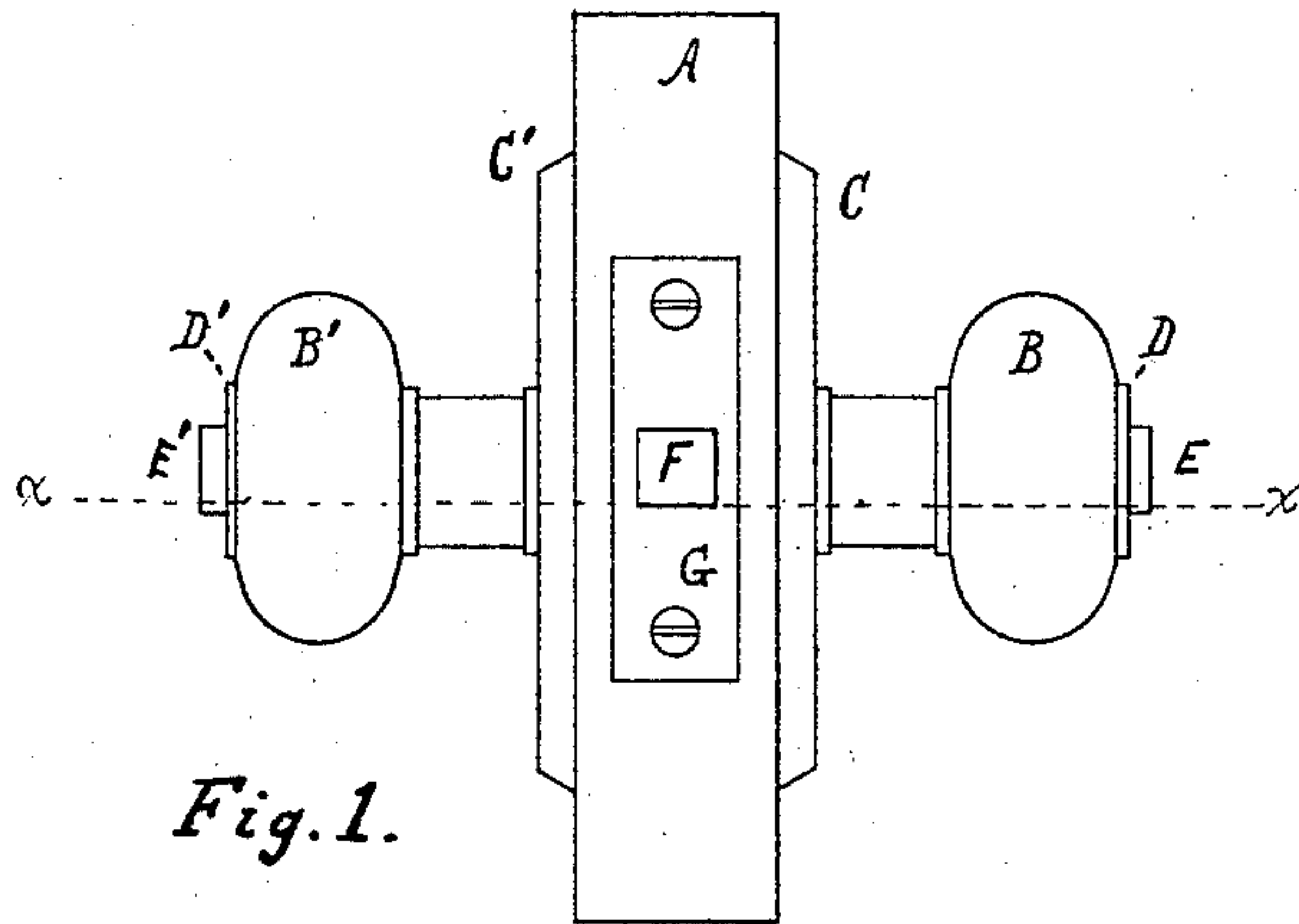


Fig. 1.

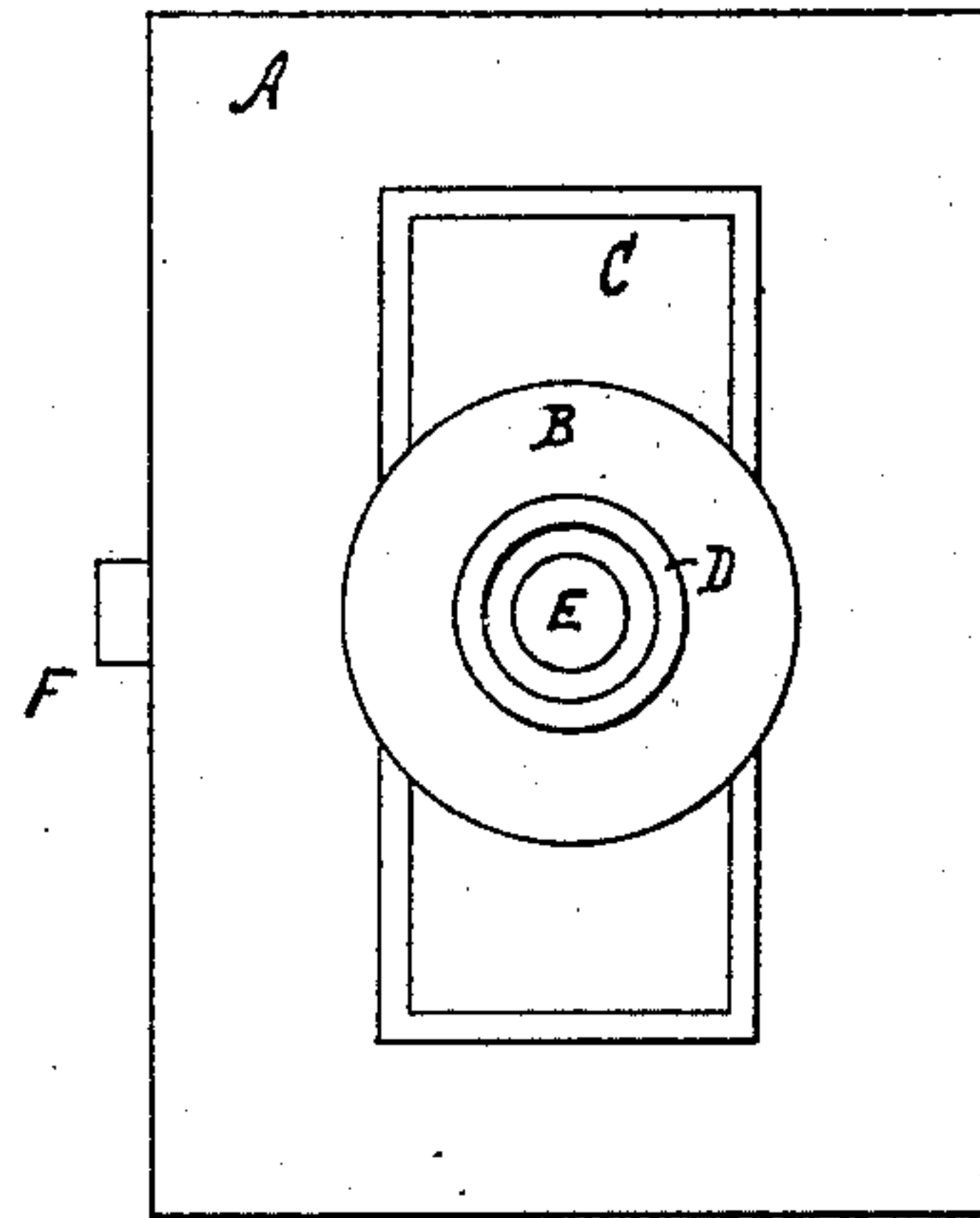


Fig. 2.

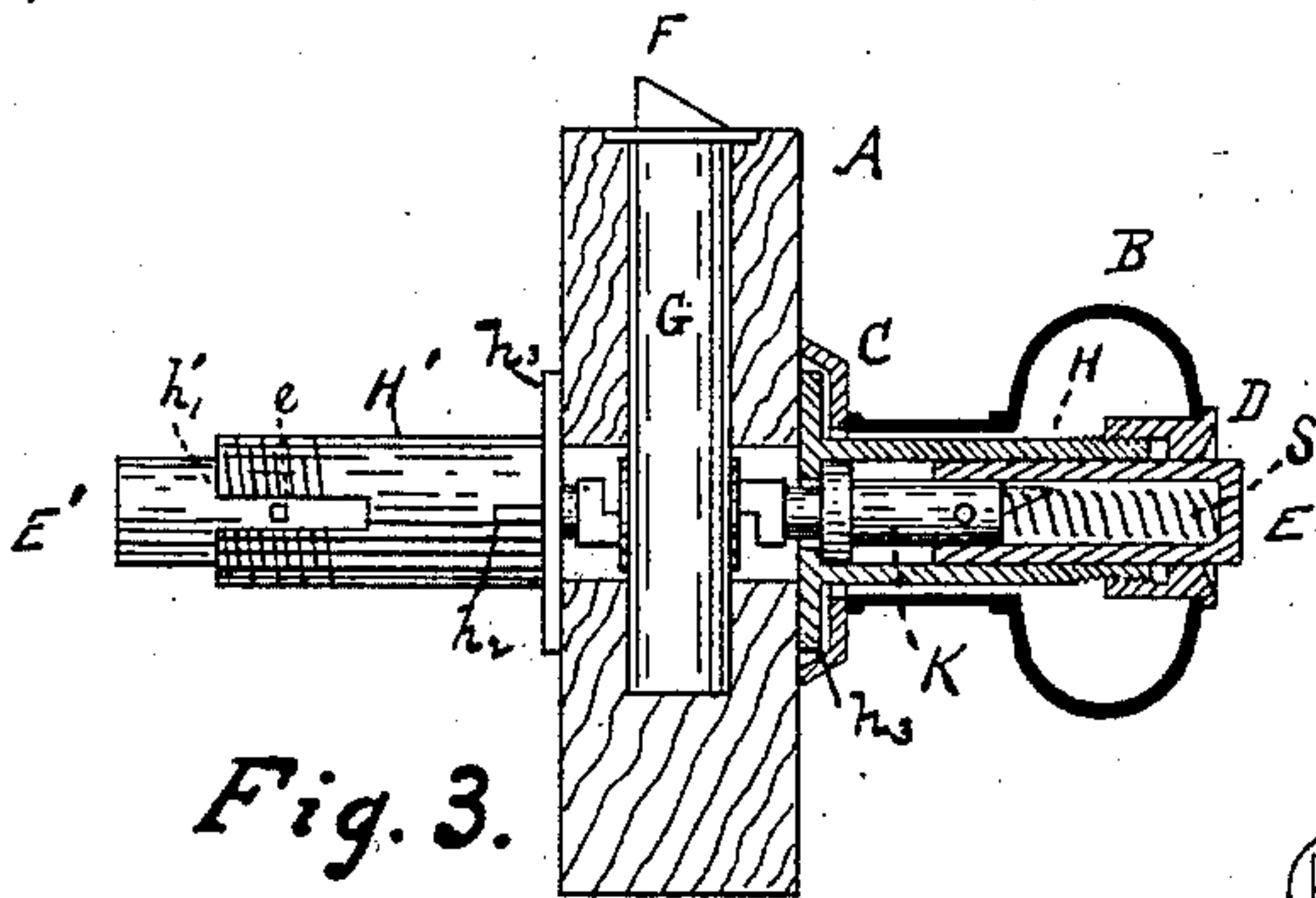


Fig. 3.

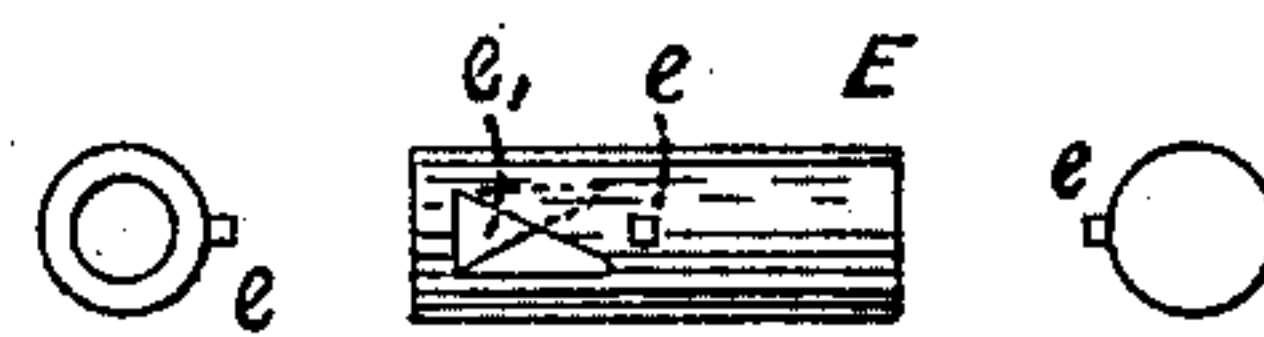


Fig. 4.

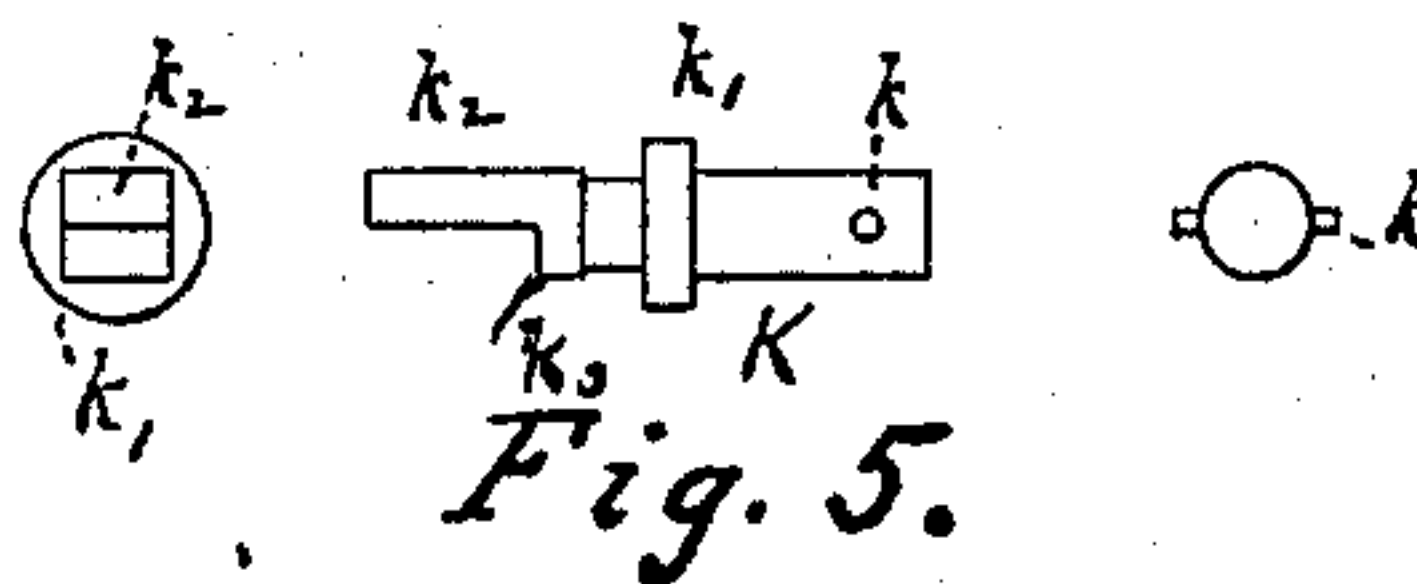


Fig. 5.

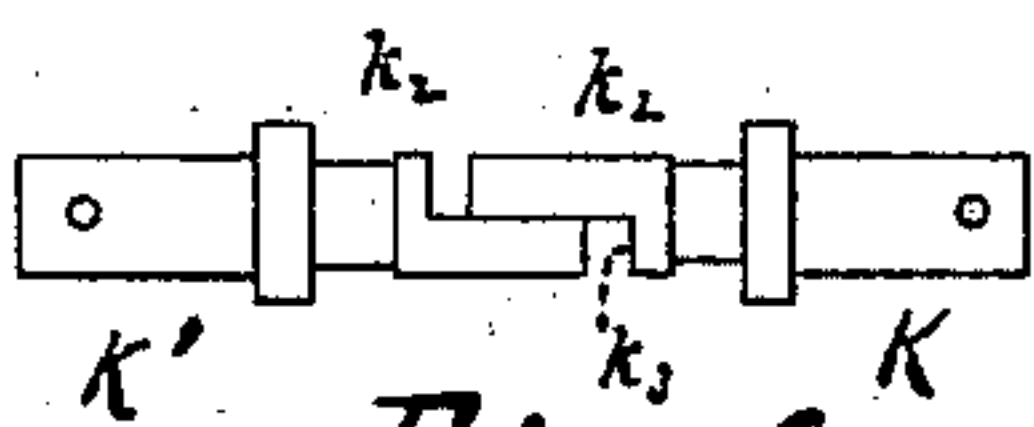


Fig. 6.

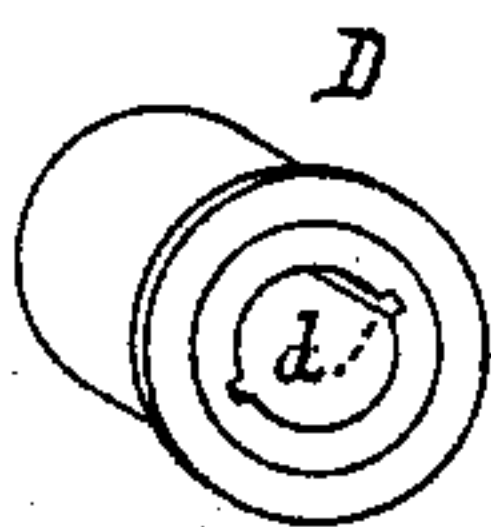


Fig. 7.

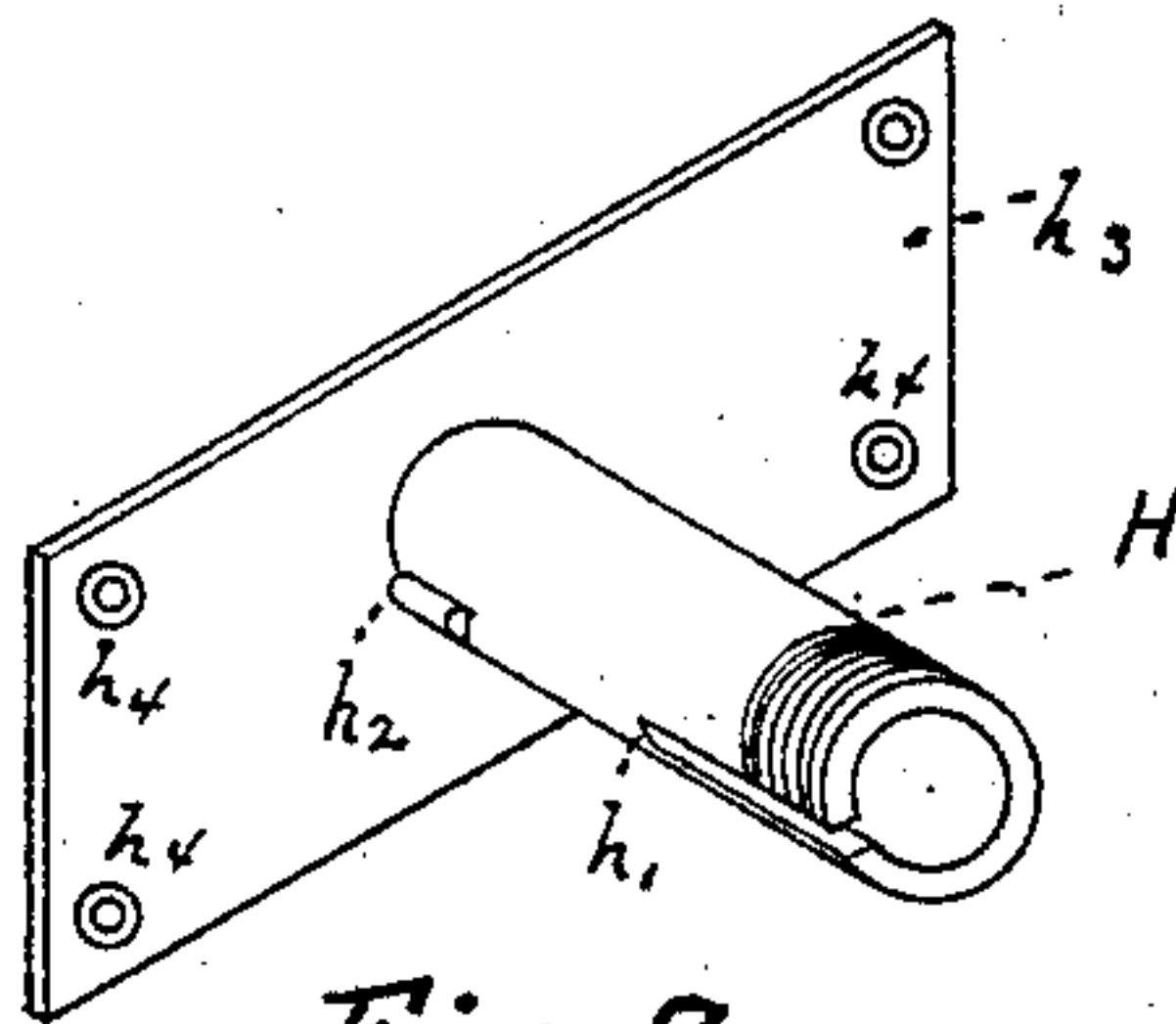


Fig. 8.

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UNITED STATES PATENT OFFICE.

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LATCH.

SPECIFICATION forming part of Letters Patent No. 362,079, dated May 3, 1887.

Application filed August 26, 1886. Serial No. 211,908. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR HETU, a citizen of the United States, residing at Holyoke, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful Improvement in Latches, of which the following is a specification, taken in connection with the accompanying drawings, forming part thereof.

In the drawings, Figure 1 is a front and Fig. 2 is a side view in elevation of a portion of a door provided with my improved latch. Fig. 3 is a cross-section taken at the line xx of Fig. 1. Fig. 4, in a side and two end views, shows one of the operating-buttons, hereinafter described. Fig. 5, in similar views, illustrates one of the latch-spindles, hereinafter described. Fig. 6 is a side view of the two latch-spindles, showing their relative positions when the parts are assembled. Fig. 7 is a perspective view of the set-nut; and Fig. 8 is a perspective view of one of the side plates with its attached hub, all hereinafter fully described.

My invention relates more particularly to that class of latches known as "mortise-latches," and I have illustrated it in connection with such a latch; but it is obvious that certain features thereof are applicable to other styles of latches.

My invention consists of novel means for reciprocating the ordinary latch-bolt within its seat, said means comprising a spindle adapted at its inner end to be operatively connected with said bolt, and a tubular push-button centered in a fixed door-knob and embracing the outer end of said spindle, and so connected therewith that lateral movement imparted to the button will rotate the spindle about its axis.

My invention consists, further, in the details of construction by which this result is secured, as hereinafter clearly described, and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in all of the figures, A indicates a section of a door in a mortise, within which is secured a spring-latch, G, of any ordinary construction. These latches, as usually made, have a bolt, F, and a hub formed with a square opening or socket, through which passes the knob-spindle, the hub being so connected with the bolt that when rotated

in either direction by turning the knob the bolt is reciprocated to withdraw it from the socket in the door-frame, a spring being employed to return the bolt to its normal position. I have devised means for securing this rotation of the spindle and latch-hub independently of the knob, thus doing away with the often troublesome necessity of turning the knob to open the door. In the drawings I have shown these means applied to both sides of the door; but as the two sets of means are duplicates and act wholly independently of each other, it will be obvious that either may be dispensed with, and that thus the door can be adapted to be opened from both sides, as shown, or from either side, as may be desired. These means, in detail, are as follows: Attached to the sides of the door in such a manner as to cover the usual orifice leading to the latch-hub are side plates, h^3 , said plates being secured to the door by screws passing through holes h^4 , (see Fig. 8,) or in any other suitable manner. These side plates have formed integrally therewith or attached thereto hubs H H', extending outwardly at a right angle thereto a sufficient distance to support the knobs, in the manner hereinafter described.

The side plates, h^3 , are each provided with an orifice concentric with the opening in the door, and also concentric with the bore of the hubs H H', but of less diameter than the latter.

The hubs H H' are peripherally screw-threaded at their outer ends, and are provided with a longitudinal slot or slots, h^1 , and a lug, h^2 , for a purpose presently to be described.

Mounted within the hubs, and adapted to turn freely therein, are the spindles K K'. The said spindles pass through the orifices in the side plates, and are preferably provided with flanges k^1 , of the diameter of the bore of the hubs, as shown, to limit their movement in that direction. At their outer ends these spindles are provided with a shoulder, k^3 , and a projecting offset portion, k^2 , forming a crank, the ends of the offset portions being adapted to enter the opening in the latch-hub. Axial rotation of either spindle, therefore, will effect the rotation of the latch-hub, and through the latter will cause the bolt F to be reciprocated in its seat in the usual manner. The spindles are provided at their inner ends with pins or lugs k , for a purpose presently to be described.

Within the hubs H H' are inserted the buttons or plungers E E'. These buttons are tubular in form and closed at their outer ends, their outer diameter being substantially that of the bore of the hubs H H', and their interior diameter substantially that of the spindles K K', so that said buttons work freely within the bore of the hubs, and over the ends of the spindles. To prevent axial movement of the buttons, any of the well-known means may be used; but I prefer to use that shown in the drawings, consisting of the slots h' in the hubs before mentioned, and the lugs e upon the periphery of the buttons traveling within said slots. Near their inner ends these buttons are provided with cam slots e', preferably located at diametrically-opposite points in their peripheries. I have shown these cam-slots as being approximately triangular in outline, two sides of which are substantially parallel with the ends and sides of the buttons, and the third side extending at an acute angle thereto. The pins or lugs k on the spindles project into these cam-slots, and the buttons being prevented from axial movement, as stated, by the lugs e and slots h', it follows that by forcing either of said buttons inward the inclined sides of the slots, by engaging with the pins k, will rotate one of the spindles upon its axis, and, as before described, will cause the bolt F to be withdrawn from engagement with the door-frame.

Springs S are inserted within the buttons, bearing against the ends of the spindles, as shown, or may be inserted between the inner ends of the buttons and the flanges upon the spindles, their function being to restore the buttons to their normal positions after being forced inward to withdraw the bolt, as just described.

I have shown the buttons as being provided with two cam-slots and the spindles with two engaging-pins, and I prefer such construction; but it is obvious that one slot and one pin would operate successfully in the same manner, and it is also obvious that the outline of the said slots could be modified without departing from the spirit of my invention.

My novel means for operating the latch-bolt, as above described, are designed to be used in connection with a door-knob so located with respect to the button that the knob can be grasped by the hand and the thumb utilized to press upon the button. I consider the construction shown in the drawings to be the best means for securing this result, the same being as follows:

B B' are hollow sleeves, of metal or any suitable material, enlarged at their outer ends to the usual conformation of a door-knob.

C C' represent the usual ornamental covering-plates, known as "knob-roses," these plates being ordinarily secured to the door by means of screws. I avoid the use of such screws by the means about to be described, and to prevent said plates from axial movement about the hubs H H' when placed thereon

I provide said hubs with the lugs h², before mentioned, which enter a recess in the circular openings in said plates.

D D' are set-nuts of a proper size to fit the screw-threaded ends of the hubs H H'. These nuts have a central bore to receive the outer ends of the buttons, and are preferably concaved on their outer faces, as shown, to facilitate the action of the thumb against the ends of the buttons. The nuts are also provided with a flange at their outer ends, said flange projecting beyond the adjacent edge of the bore in the knob-sleeve, as shown in Fig. 3, when the parts are assembled, and said nuts may also be provided with nicks, as shown in Fig. 7, to receive a screw-driver, or other well known means may be provided for manually turning them.

It will be observed from the construction just described that when the side plates, C C', and the knob-sleeves B B' are placed in position upon the hubs H H', and the set-nuts D D' are tightened upon the ends of said hubs, the parts are all firmly secured in place, making a neat and compact structure.

It will be observed, further, that the spindles K K' occupy the position and have the axial movement of the ordinary knob-spindle, and that their overlapping ends occupy the usual rectangular orifice in the latch-hub. Consequently no change of the ordinary mortise-latch is required in applying my invention thereto, and it need not be removed from the door for that purpose. To apply my device to a door containing the usual mortise-latch, therefore, it is necessary merely to remove the old knobs and withdraw the knob-spindle and secure my improved mechanism to the door, as hereinbefore described.

The advantages of a stationary knob over one which it is necessary to turn in opening the door are many and obvious, and all such advantages are secured by my invention, in addition to which a simple but effective means for operating the latch-bolt by a slight pressure of the thumb is combined therewith.

As I have hereinbefore intimated, various modifications of the construction shown in the drawings may be made within the scope of my invention. For instance, it will be observed that by making the slots e' in the buttons E E' of the outline shown in the drawings, and wholly within the surface of the periphery of the buttons, the engagement of the pins k with the bottom of the slots prevents the entire withdrawal of the buttons from the bore of the hubs; but the slots might be continued to the ends of the buttons, in which case other means for preventing the removal of the buttons could be utilized—such as, for instance, inserting a stop in the open end of the slots h' in the hubs to contact with the lugs e on the buttons. It will also be observed that in the use of slots e' of the particular outline shown I depend upon the usual spring in the latch G to return the bolt F to its normal position, and to return the pins k to a position to be again acted upon by the inclined sides of the

slots; but I am aware that the slots e' might have two parallel inclined sides, whereby the action of the springs S alone would positively return the spindles K K' and the latch-bolt to their normal positions, and I regard such modifications as coming within the scope of my invention.

I claim—

1. In a door-latch, the combination, with the bolt F, of hub H, spindle K, having the crank k^2 and pin k , button E, having a cam-slot engaging said pin, spring S, and knob B, substantially as shown and described.

2. In a door-latch, the combination, with the sliding bolt thereof, of a spindle arranged at a right angle to and having its inner end operatively connected with said bolt, a fixed door-knob having a central bore, a tubular button located within the bore of the knob and embracing the outer end of said spindle, connecting means between the button and spindle, whereby lateral movement of the former will impart axial rotation to the latter, and a spring to move the button in one direction, all arranged and operating substantially in the manner set forth.

3. In a door-latch, the combination, with bolt F, of the hub H, having the slot h' , crank-spindle K, having the pin k , button E, having

the cam-slot e' and lug e , and knob B, arranged and operating substantially in the manner described.

4. In a door-latch, the combination of hub H, spindle K, adapted to have axial rotation within said hub, button E, adapted to have lengthwise reciprocation within said hub, suitable connecting means between said spindle and button, spring S, set-nut D, and knob B, arranged and operating substantially as set forth.

5. In a door-latch, the combination of plate h^3 , hub H, having lug h^2 , knob-rose C, having a recessed circular opening adapted to receive said hub and lug, knob B, set-nut D, spindle K, button E, and spring S, all arranged and operating substantially as set forth.

6. The combination, with latch-bolt F, of hub H, knob B, set-nut D, having a concave face, spindle K, button E, spring S, adapted to normally project the end of the button within the concavity of the set-nut, and suitable intermediate connecting devices, substantially as set forth.

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Witnesses:

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