

(Model.)

F. V. PHILLIPS.
SLIDING DOOR LATCH.

No. 368,684.

Patented Aug. 23, 1887.

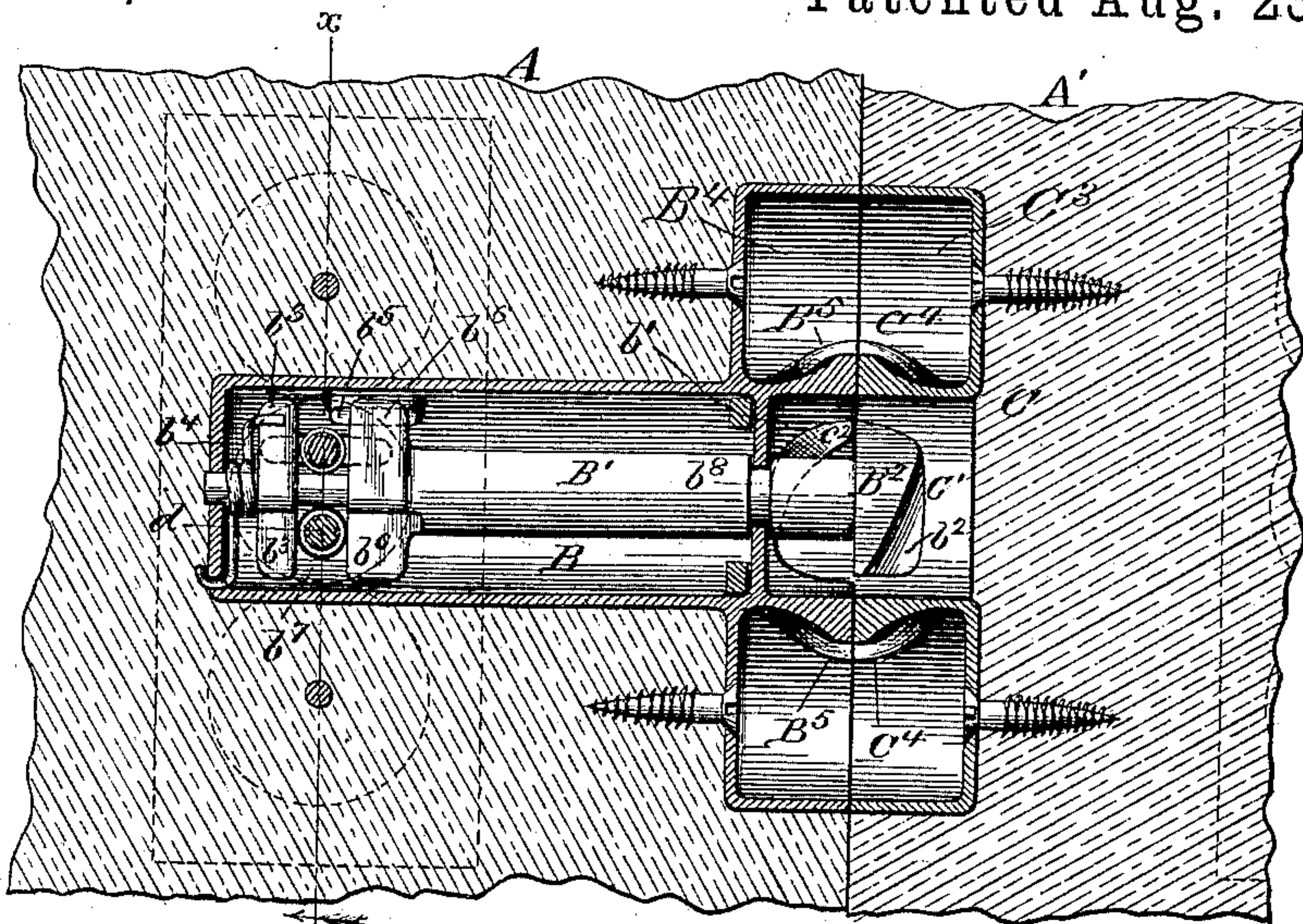


Fig. 1.

Fig. 2.

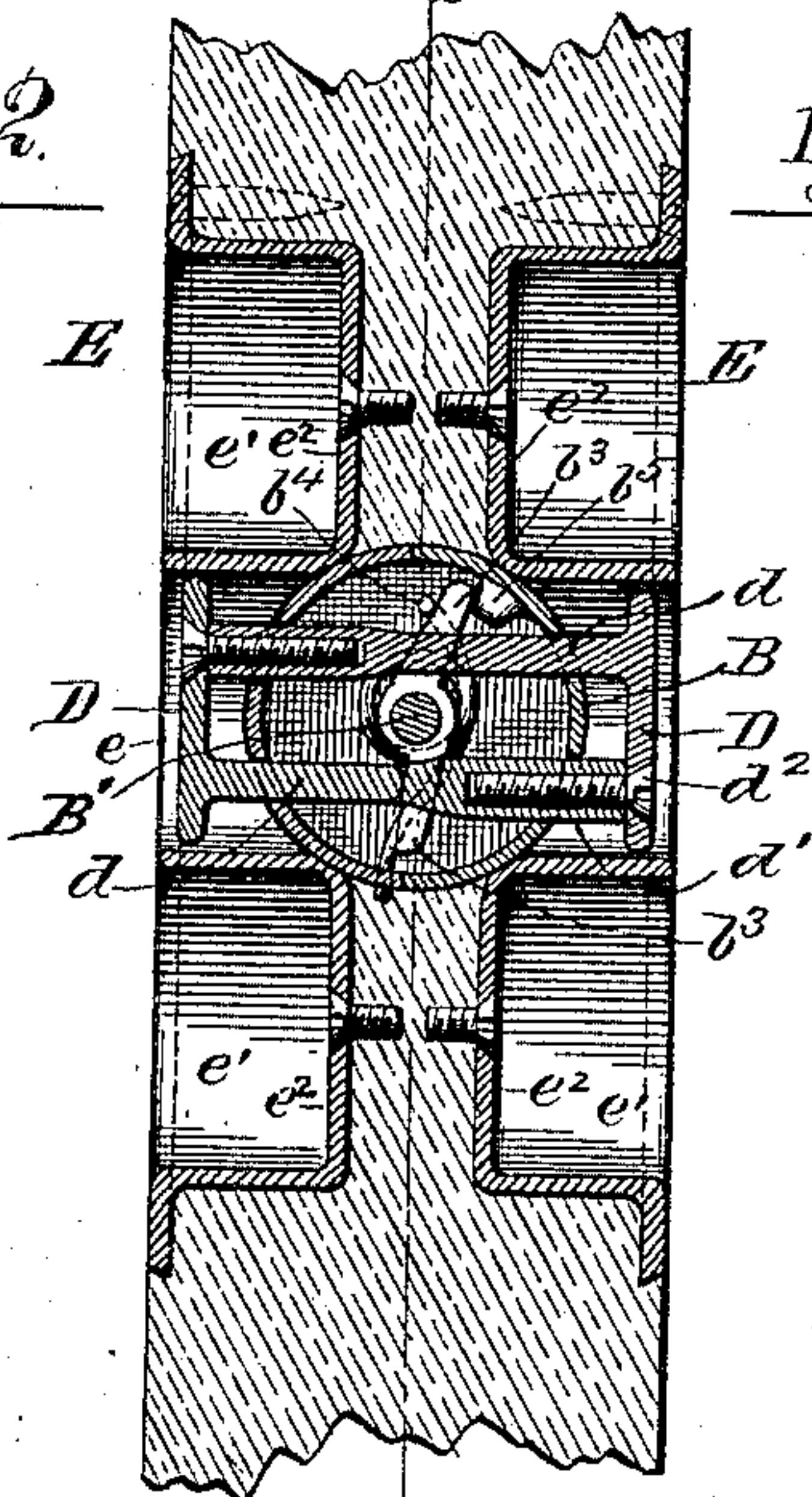


Fig. 3.

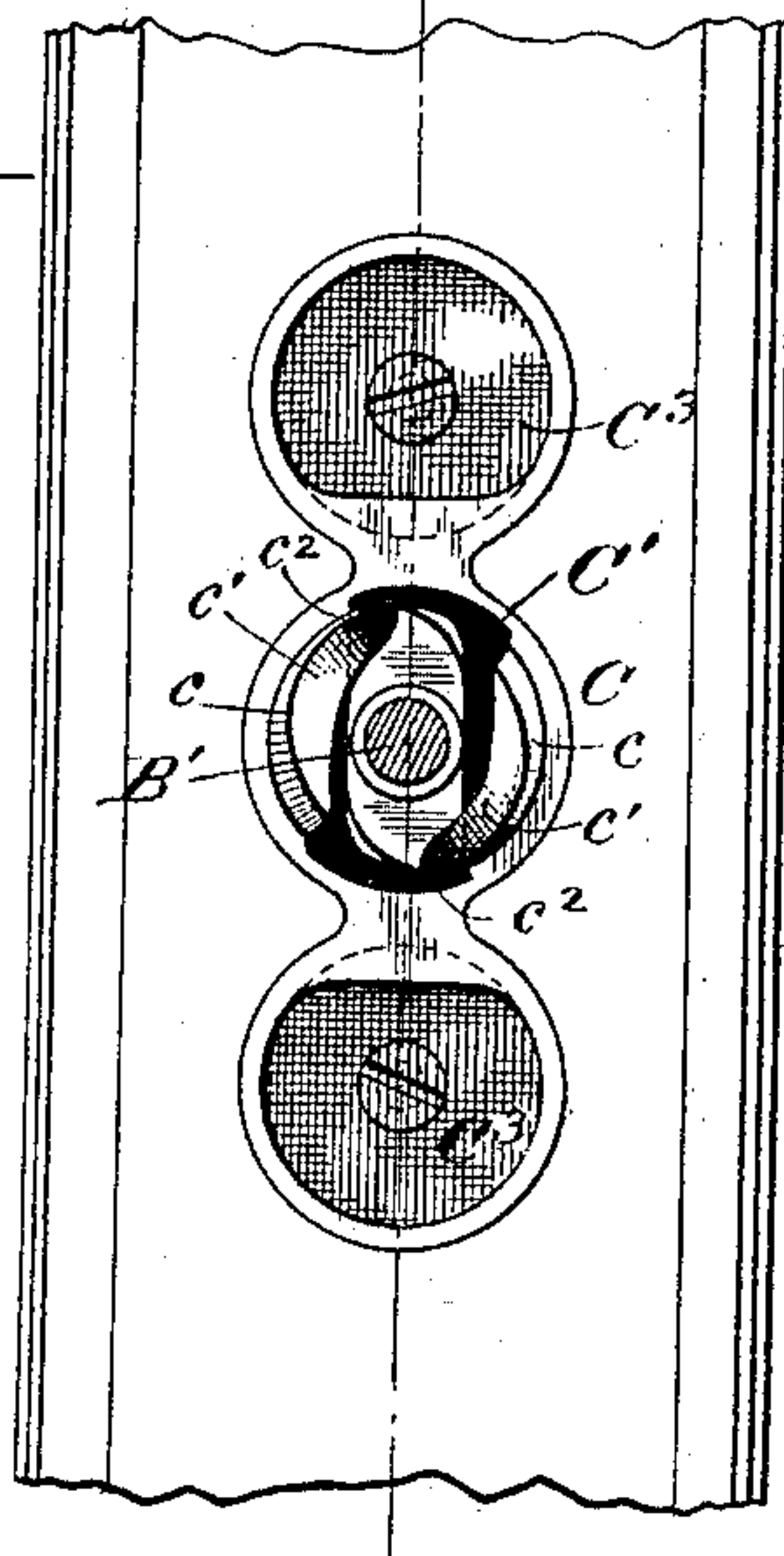


Fig. 4.

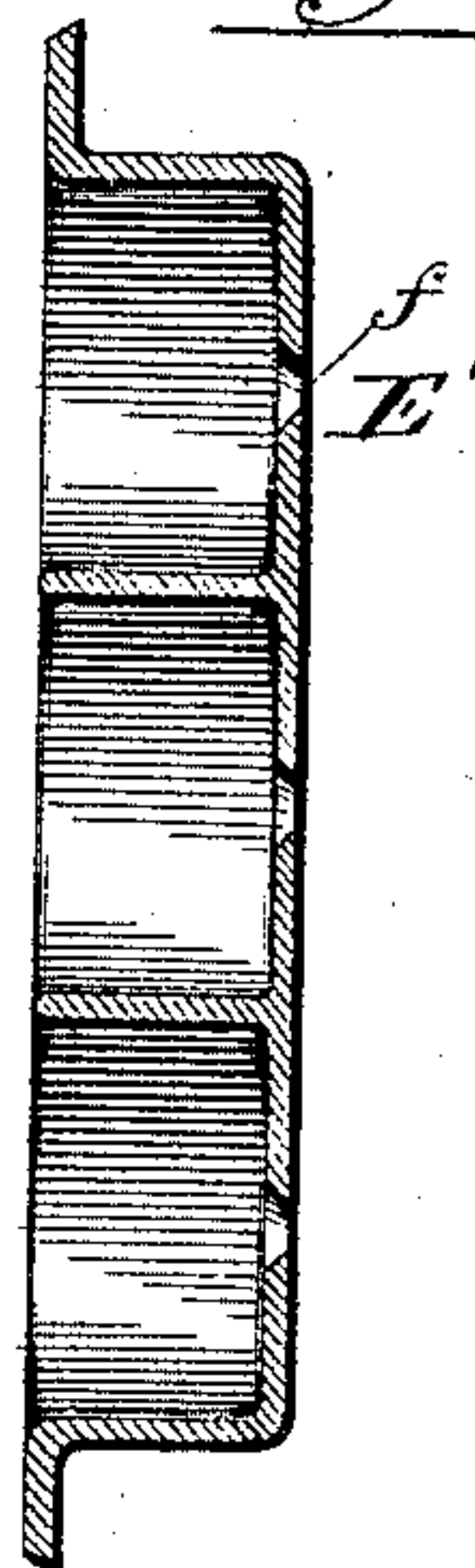
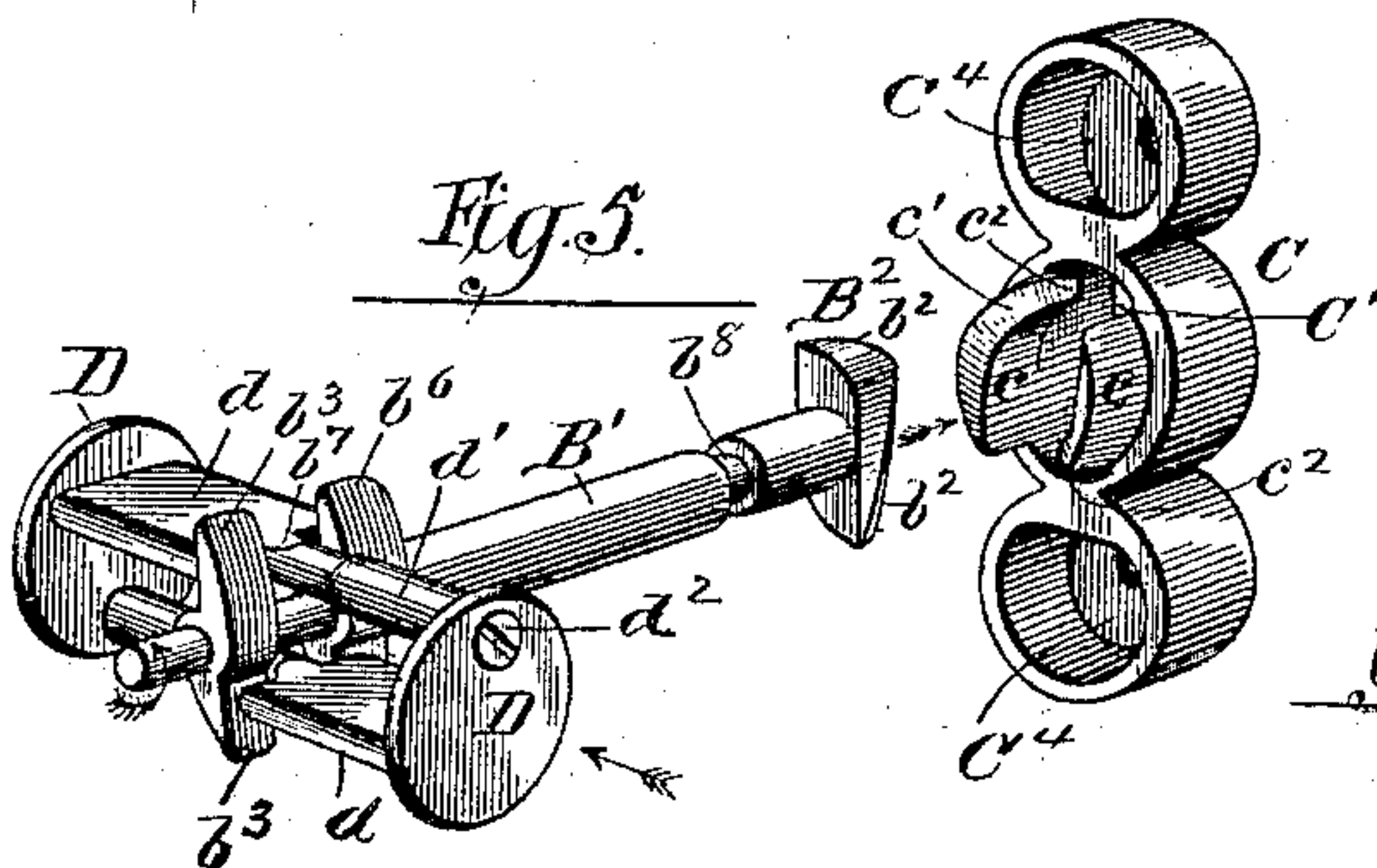


Fig. 5.



Witnesses:-

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UNITED STATES PATENT OFFICE.

FRANCIS V. PHILLIPS, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES H. SMITH AND JOHN HEWITT, OF SAME PLACE.

SLIDING-DOOR LATCH.

SPECIFICATION forming part of Letters Patent No. 368,684, dated August 23, 1887.

Application filed February 13, 1886. Serial No. 191,813. (Model.)

To all whom it may concern:

Be it known that I, FRANCIS V. PHILLIPS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sliding-Door Latches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention has for its primary object to provide a construction in sliding-door latches wherein the bolt or latch has a rotary movement, as distinguished from a vibrating or lateral motion.

A second object of the invention is to provide such a construction as will allow the shell of the bolt to be made cylindric and inserted in a correspondingly-shaped hole that may be bored in the door by means of an auger or bit.

The invention has further for its object to provide such a construction in the various fittings as will enable the recesses therefor to be formed by means of a single bit or auger.

The invention has other subordinate objects, which will appear in course of the following description and from the accompanying drawings, and the nature and scope of the invention is set out in the appended claims, taken in connection with the said drawings and description.

In said drawings, Figure 1 is a vertical section of two abutting sliding doors taken in the central plane of said doors. Fig. 2 is a vertical section through $x x$ of Fig. 1, or transversely through the door carrying the rotatable bolt, and showing the devices by which said bolt is rotated, as the same appear when looking in the direction of the arrow applied to said line $x x$ of Fig. 1. Fig. 3 is a view of the edge of the door which carries the catch, showing the rotatable bolt in cross-section at its neck or bearing in the diaphragm of its shell, as seen in Fig. 1. Fig. 4 is a central vertical section of the "pull" which is applied to that one of the sliding doors which carries the catch, and is shown in Fig. 3. Fig. 5 is a perspective view of the rotatable bolt, the devices by which it is rotated, and the casting which forms the catch

on the opposite door or jamb, all detached from the parts to which in practice they are applied.

The latch or lock is adapted to be applied either to two sliding doors which meet each other or to a sliding door and its stationary jamb.

A represents the door which carries the rotatable bolt, and A' the opposite door or stationary jamb, to which the catch is applied; B, a cylindric shell for the bolt, and B' is the bolt which is mounted to rotate centrally in said shell. The shell and the parts cast therewith will commonly be made in two longitudinal halves divided vertically, though in Fig. 1 the said shell and its adjuncts are shown cross-lined at their edges for greater distinctness, as though the entire shell were cast in one piece, or as though the parting-line were at one side of the central plane, as indicated in Fig. 2. At a short distance from the outer end of the bolt-shell is a diaphragm, b , for the support of the adjacent end of the bolt, leaving an outer recess, b' , which admits projections on the keeper, which is attached to the opposing door or jamb, as will further or more plainly appear.

The bolt B' is provided with a T-head, B², having its outer face oppositely beveled backward and away from its axis, so as to favor its rotation by a forward thrust of the bolt against striking parts of the keeper. C is the keeper or striker, having a nearly rectangular recess, C', (best seen in Fig. 3,) to admit the T-head of the bolt, and at opposite sides of said recess projections $c c$, the forward or striking faces c' of which are retreated in an inclined direction to co-operate in an obvious manner with the correspondingly-shaped faces b^2 of the bolt to favor the rotation of the latter when the bolt-head and keeper meet. The inner points, c^2 , of the projections c overhang the space C', so that when the bolt-head has passed them it may, under the action of a spring applied thereto, rotate back to its original position behind said projecting points c^2 , which thus serve as catches for the bolt, and with it hold the doors or the door and jamb together.

By reference to Figs. 1 and 2 it will be seen that the bolt B' is provided near its inner end with laterally-projecting opposite arms, $b^3 b^3$,

with one of which an end of the spring b^4 is engaged to rotate and hold the bolt in its normal position. Said spring is centrally coiled about the bolt B' in a familiar manner, and has its fixed end secured (as a convenient way) by passing it out between the halves of the shell B. A stop, b^5 , cast on the inner surface of the shell limits the rotative throw of the bolt under the action of the spring b^4 by engagement either with one of the arms b^3 or with any other projection present on the bolt. In the present case the arms b^3 are duplicated, the fellows of b^3 being lettered b^6 , and being so placed as to afford narrow spaces b^7 between them and the arms b^3 . The stop b^5 is in this instance located to engage one of the arms b^6 , and is arranged with reference to the T-bolt head B^2 , so as to normally hold the latter in such direction to properly strike the projections $c c$ of the keeper, and to allow the said bolt-head to rotate into engagement with the catches c^2 when it shall have passed them, as shown in Figs. 1 and 3.

For the purpose of rotating the bolt-head out of engagement with the keeper preparatory to opening the door and to permit this to be done from either side of the door, two pressers or buttons, D D, are provided which have movement in the body of the door at right angles to the direction of the bolt. Each of these buttons has an inwardly-directed projection, d , which bears upon that one of the opposite arms b^3 , (or b^6 , or both, as shown,) by pushing inward upon which the bolt will be turned on its axis in opposition to the spring b^4 . The limit of this backward rotative movement of the bolt is better provided for in the relative shape of the bolt-head and the recess C' of the keeper, since it should operate with reference to the clearing of said head from the catches c^2 , and therefore, in the present case, no back-stop is provided other than in the adjustment of the size of the bolt-head to strike the side walls of said recess when its opposite sides shall have swung clear of the said catches; but obviously another stop similar to b^5 may be introduced for this purpose, or the buttons D may be arranged to strike the shell B to arrest the throw of the bolt.

As a desirable construction the several projections d of the buttons D are prolonged in the form of shanks d' , which pass through the spaces b^7 (between the arms b^3 and b^6) and abut at their ends against the opposite buttons, being tapped lengthwise to receive screws d^2 , which thereby permanently connect the buttons to each other. The object of this connection has no reference to the operation of the buttons as pushes for the bolt, but only to the guiding and retention in place of the said buttons, which may be provided for by other obvious means without departure from my invention.

E E are recessed castings or pulls, in which the buttons D are fitted, and which afford a hold for the fingers by which to pull upon the door to open it. In the act of insert-

ing the finger or fingers into the recess of this pull E the adjacent button D will be pushed inward with the effect of rotating the bolt out of engagement with the keeper, after which the door may be drawn open by the hold thus gained for the finger upon the pull. When the opposite buttons D are connected, as described, they will, unless their connections are varied in length, set at different depths in the recesses of the pulls E in doors of different thicknesses. The opposite recessed castings or pulls E are desirably constructed with three equal recesses in each to give entrance for the ends of three fingers. The central recess, e , of the several pulls which are applied to the door A, carrying the bolt, is bottomless, and the side walls are cut away to conform with the curve of the bolt-shell and to fit thereon in the case of the thinnest door for which the castings are intended. The outer recesses, $e'e'$, have bottoms E^2 for better appearance.

The bolt-shell has two recesses, $B^4 B^4$, one above and one below the shell, as also has the keeper at $C^3 C^3$, above and below the catches or central recess, C' . The metal at the adjacent sides of these upper and lower recesses, $B^4 C^3$, is desirably thickened at $B^5 C^4$, so as to afford a better hold behind them for a thumb and finger which will be thrust into said recesses to draw the door when the latter is fully open.

The side pulls, E' , for the door A' has three recesses, all having bottoms, and in each of these bottoms, as preferably in the case of each other recess having a bottom, is cast a hole, f , for a screw. Externally each of the several castings consists of three connected hollow or recessed cylinders, as shown in Figs. 3 and 5, and by making all of these cylinders of the same external diameter the pull for the door A' may serve as a templet for boring the door to receive either one of these castings, and both doors may be prepared to receive the entire set of fittings by means of a single bit. The only difference in the dimensions of the several holes will be in their depth, that for the buttons being obviously cut entirely through the door and intersecting the deep hole cut for the bolt-shell.

Of course, the several fittings may be rectangular to the depth of the finger-holes, or may have parallel sides and semicircular ends with the same advantages from equal dimensions and the employment of the pull E' as a templet, for in that case the cuts first made will be made by a bit preparatory to mortising, or a rectangular or parallel-sided face-plate may be employed with the connected cylinders with the same benefits from equal dimensions.

Manifestly the several pulls E E' and the keeper C do not require to be made in halves, for the reason that they are so shallow as to draw from the sand in the direction of the axes of their cylindric parts. By making the bolt-shell B open at its inner end and providing a separate head or cap therefor said shell, with

its adjunctive recessed parts B^4 , may also be drawn from the sand in the same direction; but generally the construction of this particular casting in two parts or halves will be more convenient. When the shell B is thus made in halves, the bolt B' may be conveniently held from end motion by reducing its diameter at b^3 , where it has a bearing in the diaphragm b , as shown clearly in Fig. 1.

It is also manifestly practicable, though not believed to be in any case desirable, to reverse the relative position of the two general members of the latch or lock when applied to a single sliding door which is latched with its jamb, or, in other words, to mount the rotatable bolt in the frame or jamb of a doorway and the keeper in the sliding door. It will also be practicable to provide a stationary head having lateral projection or projections corresponding with the oscillating T-head here shown as being on the oscillating bolt B' , and to give an oscillating motion to the catch or catches with which said head engages.

This invention may be applied to window-sashes, to sliding doors of closets, to bookcases, and to many other situations where the latch will be operated from only one side, so that there will be only one presser, D , employed, and but one projection, b^3 or b^6 , will be needed.

I do not restrict myself to the details of construction here shown, and reserve the right to make future applications for patent upon any feature of the device here shown but not herein claimed.

I claim as my invention—

1. A latch or lock for a sliding door or doors, composed of two engaging members applied one to each of the relatively-movable parts of the door, one of said members being stationary and the other rotatable, and both being mutually constructed to engage and disengage each other by a rotative movement of the said rotatable member, substantially as described.

2. A rotatable bolt or shaft of a sliding-door latch, constructed to engage a keeper on the opposite door or jamb, means accessible when the door is closed for rotating said bolt out of engagement with the keeper, a spring adapted to throw the bolt in the opposite direction, and a stop which arrests the bolt in opposition to the spring, substantially as described.

3. The combination, with a suitable keeper, of a shell having a stop, b^5 , therein, a rotatable bolt mounted in bearings in said shell, constructed to engage the keeper by a rotative movement, an arm on said bolt which strikes said stop, a spring adapted to throw the arm against said stop, and a presser exposed at the lateral face of the door engaged with a lateral projection or projections on the bolt, substantially as described.

4. The combination, with a recessed keeper

provided with an inclined catch or catches, of an opposing rotatable bolt provided with a laterally-projecting head constructed to engage the catch or catches of the keeper by a rotative movement, a shell having bearings for the support of the bolt, opposing arms on the bolt within the shell, a stop on the shell arranged to arrest the bolt in position to strike the catch that it may pass the same by a rotative movement of said bolt, a spring applied to the bolt operating to throw it rotatively against the stop, and two pressers exposed at opposite sides of the door and engaged severally with the several arms on the bolt, whereby the bolt may be rotated out of engagement with the catch or catches from either side of the door, substantially as described.

5. The combination, with a rotatable bolt for a sliding door, of oppositely-arranged arms on the bolt, and oppositely-arranged pressers engaged one with each arm and connected with each other, substantially as described.

6. In a sliding-door latch, a keeper provided with a recess to admit the bolt-head, and a lateral catch projecting over the recess, in combination with a rotatable bolt provided with a lateral projection adapted to engage said catch, substantially as described.

7. The combination, with a rotatable bolt let into a sliding door, of a casting which comprises a cylindric shell having axial bearings for said bolt, and two cylindric recesses, one above and the other below the bolt-shell, and both together affording a hold for the thumb and finger for drawing the door forward, substantially as described.

8. In combination with a sliding door provided with a rotatable bolt, an opposing sliding door provided with a keeper connected to engage the bolt in the central part of the keeper, and having cast integral therewith two recessed extensions, one above and the other below the central point of engagement with the bolt to afford admission for the thumb and finger, substantially as described.

9. In a sliding-door latch of the general character described, containing a cylindric bolt-shell, B , having upper and lower recessed extensions, a keeper, C , having corresponding extensions, and side pulls, E and E' , for the several doors, all requiring the same form and lateral dimensions of cut to admit them into the wood, the pull E' being provided with holes f , by which the center points may be marked for the boring-bit for each of the several fittings, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

FRANCIS V. PHILLIPS.

Witnesses:

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C. CLARENCE POOLE.