

M. C. & S. S. NILES.
Spindle and Fastening for Door-Locks and Latches.

No. 202,574.

Patented April 16, 1878.

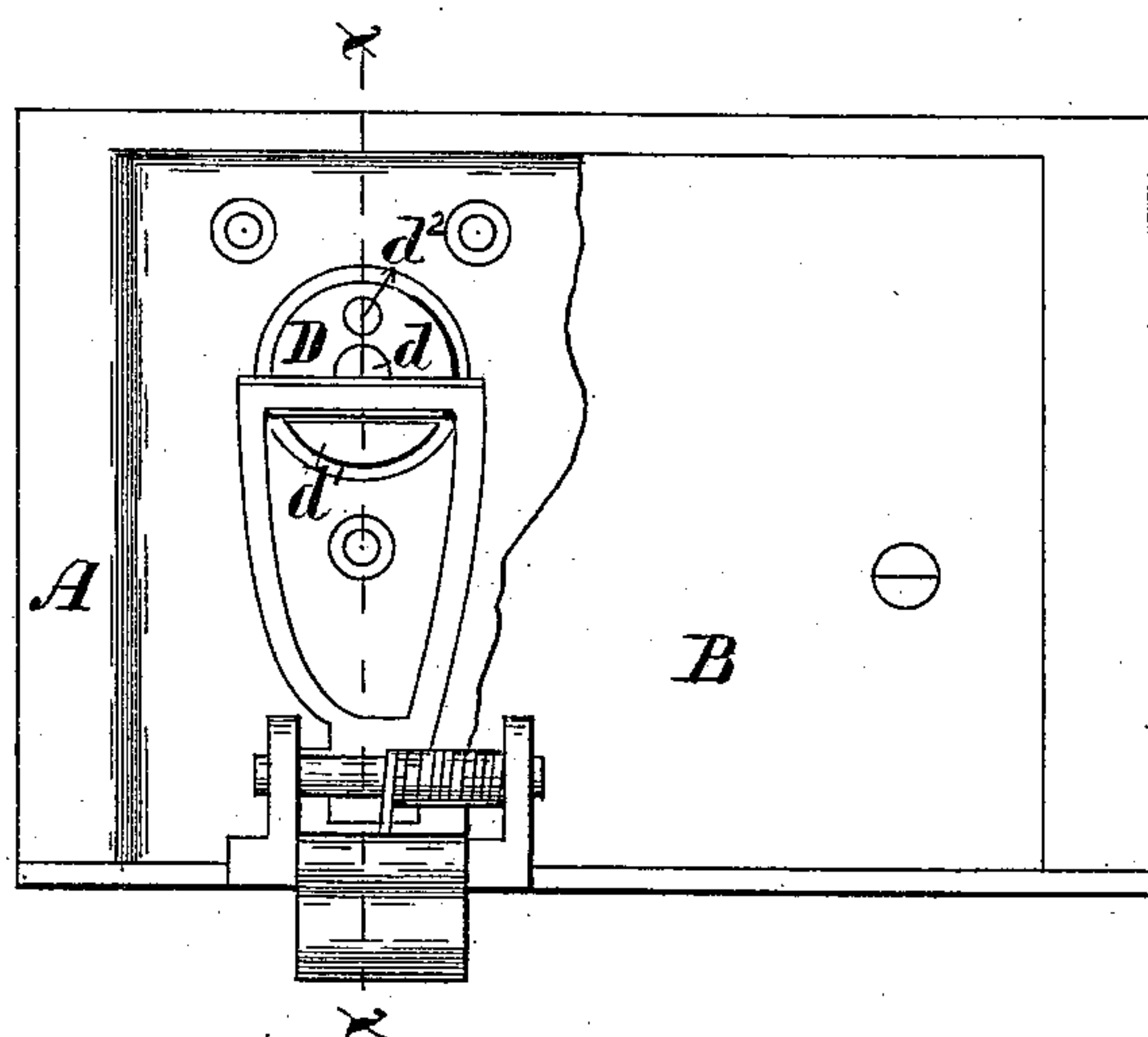


Fig 1

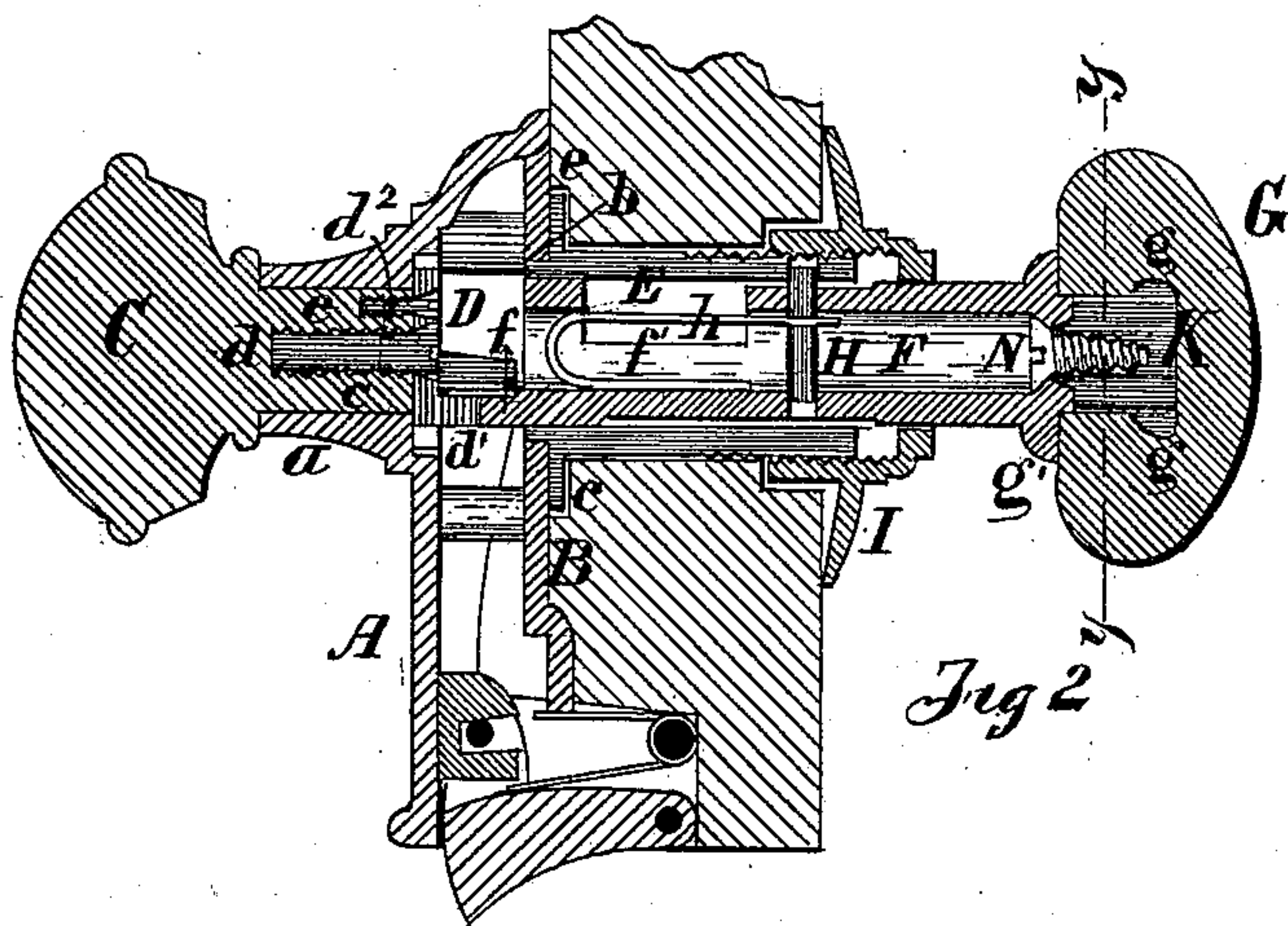


Fig 2

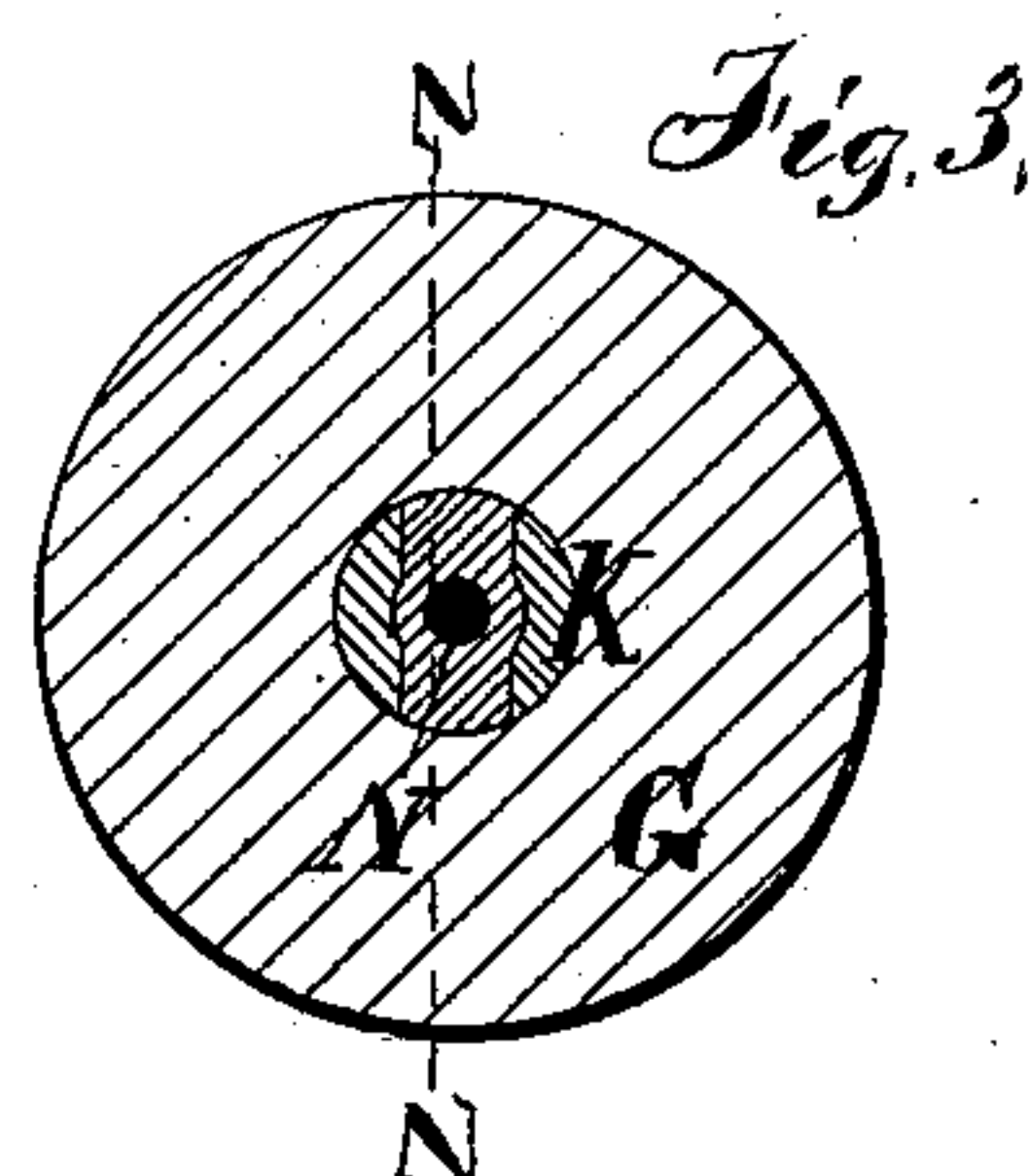


Fig. 3.

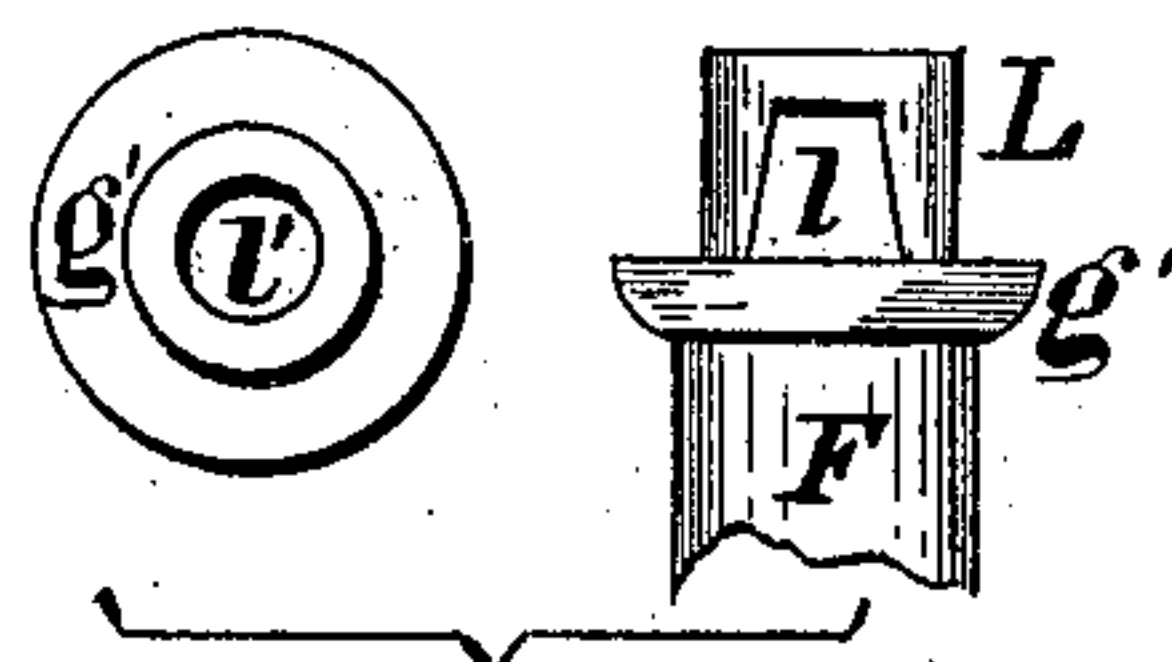


Fig. 4.

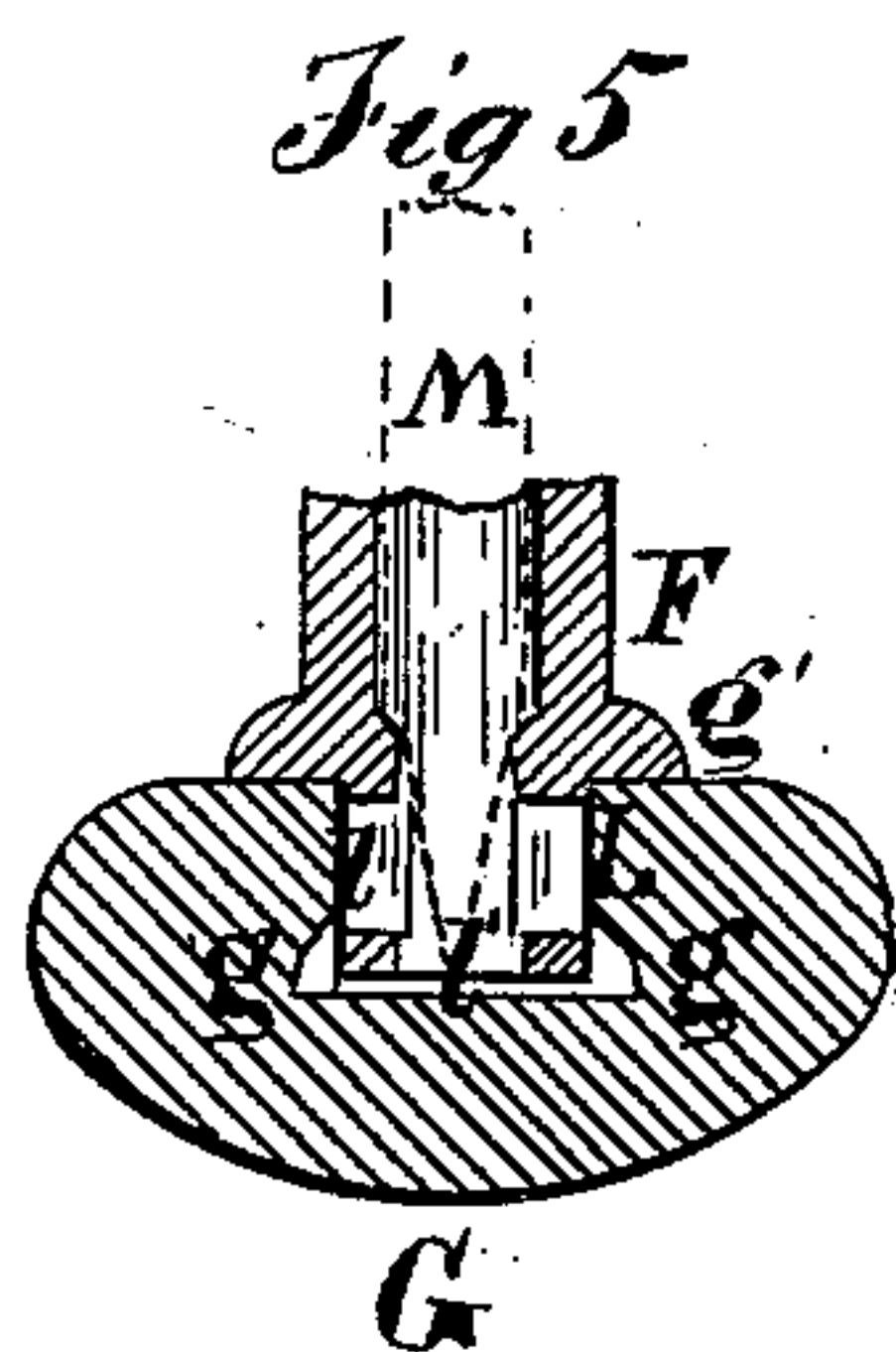


Fig 5

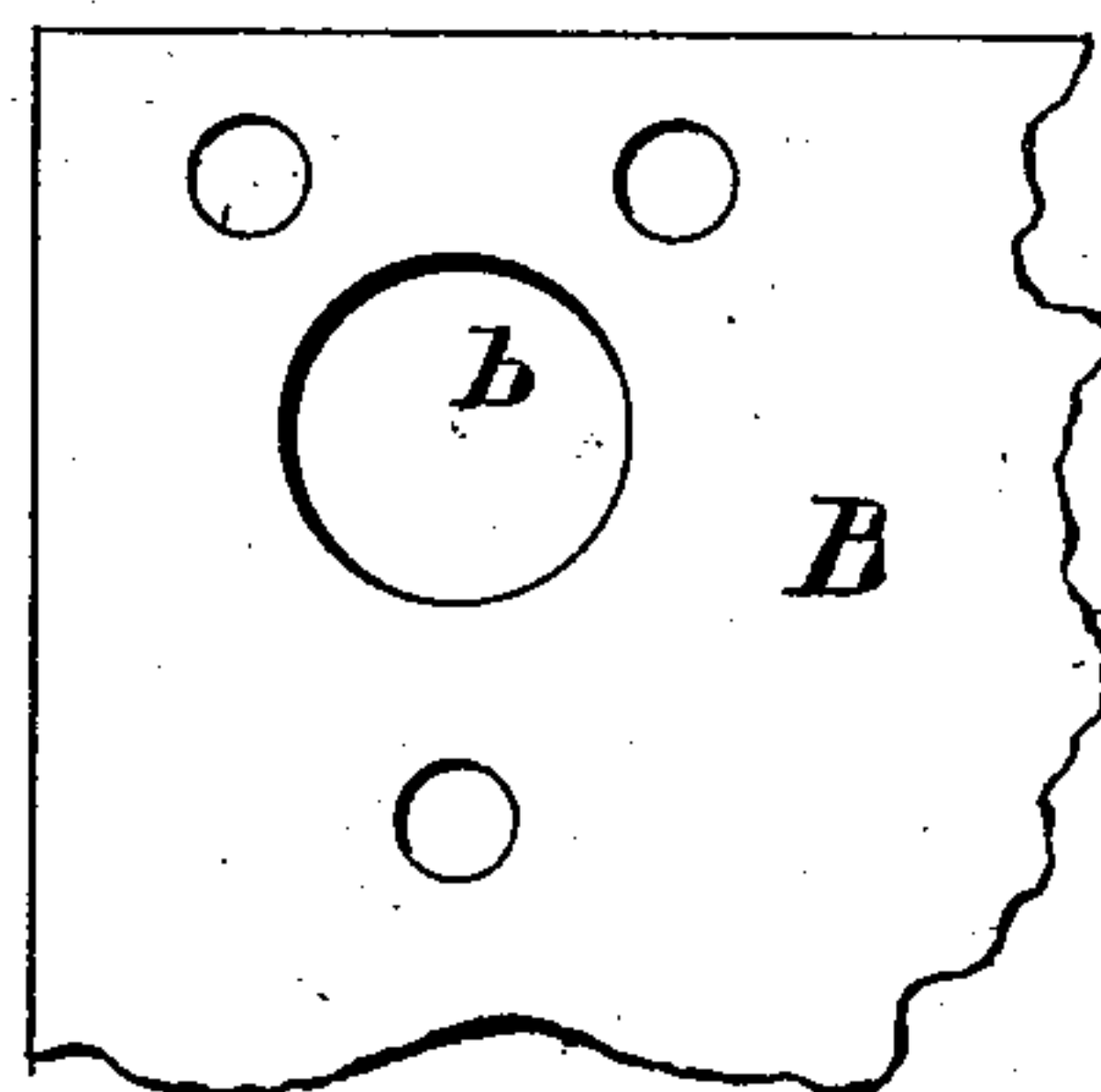


Fig 6. Milton C Niles & Sidney S. Niles

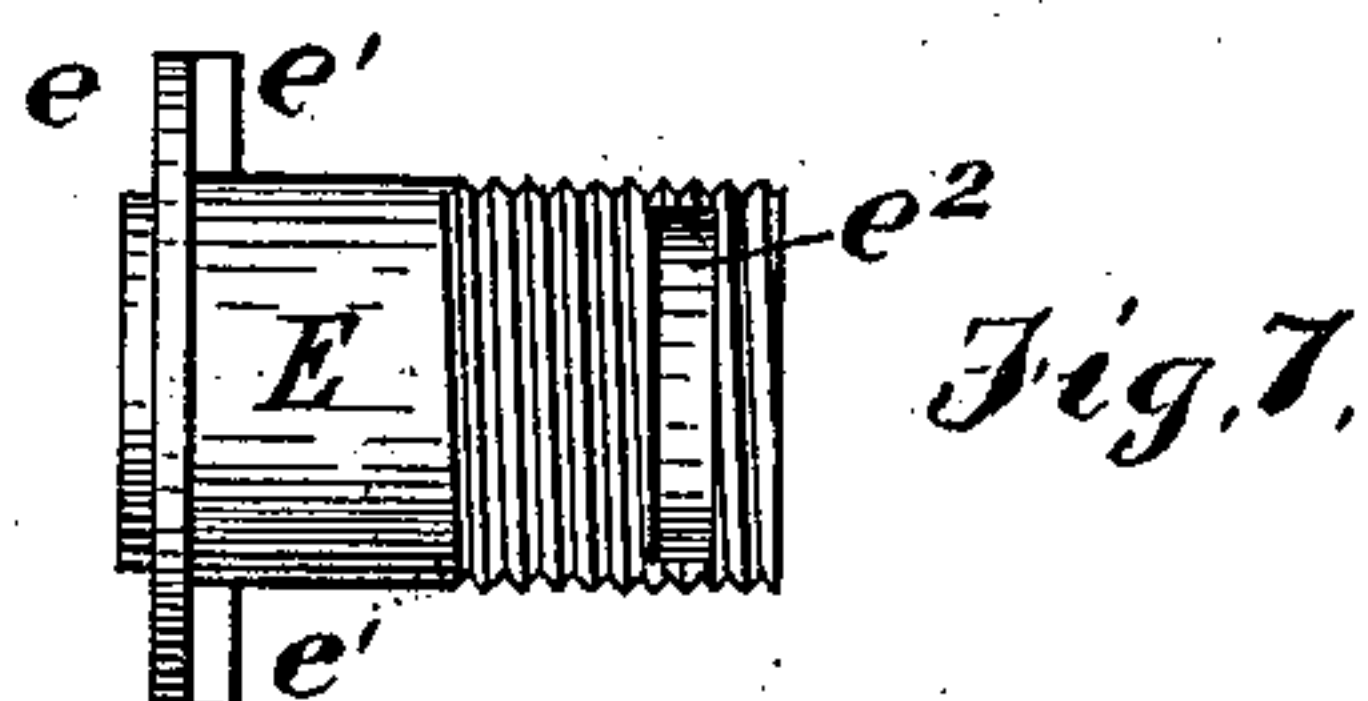


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

MILTON C. NILES AND SIDNEY S. NILES, OF OAK PARK, ILLINOIS.

IMPROVEMENT IN SPINDLES AND FASTENINGS FOR DOOR LOCKS AND LATCHES.

Specification forming part of Letters Patent No. **202,574**, dated April 16, 1878; application filed January 7, 1878.

To all whom it may concern:

Be it known that we, MILTON C. NILES and SIDNEY S. NILES, of Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Spindles and Fastenings for Door Locks and Latches, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a back view of the lock, with a portion of the back plate broken away and the knob on that side removed; Fig. 2, a cross-section of the lock and knobs in place on the door, taken on the line *x x*, Fig. 1; Fig. 3, a plan sectional view of the knob and spindle, taken on the line *y y*, Fig. 2; Fig. 4, side and plan view of the knob end of the spindle; Fig. 5, a sectional view of the knob and spindle, taken on the line *z z*, Fig. 3, and showing the mode of fastening the two parts together; Fig. 6, a detail view of a portion of the back plate, showing the aperture for the tube; and Fig. 7, a side elevation of the tube.

Our invention relates to various improvements in locks, in which a tube is used inclosing a spindle, and which are specially applicable to rim-locks, although several of them may be also used with equal advantage in mortise-locks.

Our invention consists in various devices and combinations of devices whereby the knobs are secured to the spindle and the latter fastened in its place within the inclosing-tube, and all of the parts fastened to the case and to the door, all of which will be hereinafter fully set forth and explained.

In the drawings, A represents the casing of a rim-lock, and B its back plate. In this case are the talons and swinging bolt, with the spring, which has been heretofore shown by us in prior patents, and need not be described here. In this case we make the spindle to which the knobs are attached, and which forms the shanks of the latter, in two separate and independent parts, each one being arranged to operate upon the bolt-talons independently of the other.

The knob C on the lock side of the door is made with a short shank, *c*, extending through the tubular projection *a* on the outside of the

case, and provided with a screw-threaded hole in its end. The case is cut away somewhat around the aperture at the inner end of this knob-shank, and a button, D, is fitted therein, which is secured to the end of the knob by a screw, *d*, entering the hole in the end of the shank, already described. This button, being larger than the end of the knob-shank, will, of course, when fastened to the end thereof, as described, firmly secure the knob and shank to the lock-case. The button and screw *d* may be made in one piece, if desired, or separately, as shown in the drawings. The button is of such thickness as to be flush with the inside of the case, and is provided with a cam-projection, *d'*, on its inner face, which is arranged within the talons, as shown in Figs. 1 and 2 of the drawings, so as to reciprocate the latter in the usual way when the knob C is turned in its bearing.

As an extra precaution against the turning of the button, a second small screw, *d''*, may be passed through it into the shank, being arranged eccentrically to the central fastening-screw.

A tube, E, extends through the door from the back plate B. This tube is constructed with a projection at its inner end to fit neatly an aperture, *b*, in the back plate B, the center of which is in line with the aperture in the projection *a* on the other side of the case, so that when the tube is inserted in the back plate it is in line with the opposite aperture in the lock-case. The tube is also provided with a wide flange, *e*, outside of the portion fitting into the back plate, which flange rests against the wood of the door and prevents the tube from being drawn through the hole by the rose. On the back of the flange *e* are lugs or projections *e'*, which enter the body of the door and prevent the tube from turning. The tube has a screw-thread cut upon its end opposite to the lock, and is also provided with a transverse slot, *e''*, at the same end, as shown in Fig. 7 of the drawings. A spindle, F, is fitted to enter the tube E, and may be either tubular or solid, though we prefer the latter, as it is adapted to the peculiar fastening between the spindle and the tube, hereinafter described. The spindle consti-

tutes the shank of the knob G, extends entirely through the tube E, and is provided with a cam-projection, *f*, at its inner end, which is also arranged within the bolt-talons, so as to operate the latter, as shown in Fig. 2 of the drawings. A loose pin, H, is inserted in the spindle so as to be just within the end of the tube, and in position to enter the slot *e*² therein. This pin is of a length equal to the outer diameter of the spindle, so that the latter may be slipped into the tube after the pin is inserted. The pin is forced up into the slot, and held in position by means of a spring, *h*, which may be of any suitable form, though we prefer a loop-spring, as shown in Fig. 2 of the drawings, the long end of which is inserted in a hole in the pin.

The spring of this form is readily inserted within the spindle, and can be removed therefrom without difficulty when it is desired to take out the pin. It is preferable, also, to cut away a lateral portion of the spindle, so as to make a long opening, *f'*, which facilitates the introduction of the spring, and the position of the latter should be arranged so that the bend will just enter underneath the spindle at the inner end of this opening, for, by this arrangement, the edge of the spindle will act as a shoulder or stop, to prevent the movement of the spring lengthwise.

The rose I is fitted on the spindle F, and screws upon the end of the tube E, as shown in Fig. 2 of the drawings, thereby holding the latter firmly in its place in the door, through which it is passed before the rose is turned upon it and the lock fastened to the other side of the door.

From the above description it is evident that when all the parts are adjusted and secured in position to the door, as shown in Fig. 2 of the drawings, the bolt-talons may be operated by turning either of the knobs, and that the action of each is entirely independent of the other, the cam within the talons being divided and entirely disconnected.

The knob G is secured to the spindle F in a peculiar manner. At the bottom of the recess in the knob are little enlargements or pockets *g*, cut out, as shown in Figs. 2 and 5 of the drawings, for the purpose of holding the nut K, which is cast therein in a well-known way. The end of the spindle F is perforated, the aperture therein being made to flare in both directions, as shown in Fig. 2 of the drawings.

The extreme end of the spindle is made to fit neatly the recess in the knob, and has an enlargement or flange, *g'*, against which the knob rests. The end of the spindle has an extension, L, which is adapted to the recess in the knob and extends nearly to its bottom. This extension has two side apertures, *l*, opposite each other, and an aperture, *l'*, at its end, as shown in Fig. 4, of the drawings.

The knob is fastened to the spindle by first pouring a sufficient quantity of molten soft

metal in its recess to form the nut K. The end of the spindle is then immediately inserted in the liquid metal, and a plunger, M, with a conical point, thrust down through the spindle into the knob, as shown in Fig. 5 of the drawings, thereby forming a socket for the fastening-screw N as the metal cools. After the metal has cooled the plunger M is removed and another similar but larger one introduced and driven down, thereby forcing the cold metal outward, so as to perfectly fill the socket in the knob. The metal, being caused by the pressure to fill all the pockets *g* and the apertures in the end of the spindle, will, when cold, hold the knob firmly upon the spindle, and, as an additional means for this purpose, the screw N is dropped down into the spindle and turned into the nut, as shown in Fig. 2 of the drawings. Without the screw this mode of fastening the knob to the spindle may be employed when the latter is solid; but the tubular form is preferable, and, as heretofore stated, several of the devices which have been described in connection with the tubular spindle may be applied to a solid spindle and to mortise-locks.

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

1. The tube E, provided with a transverse slot, *e*², near the end thereof, in combination with a pin or lug on the spindle, substantially as and for the purpose set forth.

2. The spindle F, provided with a spring-pin, H, in combination with the tube E, having a transverse slot, *e*², substantially as and for the purpose set forth.

3. The tubular spindle F, in combination with the pin H, the tube E, and the loop-spring *h*, substantially as described.

4. The tubular spindle, provided with lateral opening *f*, in combination with the loop-spring *h*, whereby the edge of the spindle at the opening serves as a stop to hold the spring from slipping back, substantially as described.

5. The back plate B, provided with an aperture, *b*, opposite the knob-shank aperture in the opposite case, in combination with the independent tube E, provided with a flange, *e*, and with a projection, as described, entering the back plate, whereby the opening through the tube is held in line with the apertures in the lock, substantially as described.

6. The independent tube E, provided at the lock end with a flange, *e*, outside of the back plate, and a projection, *b*, as shown, to enter the opening in said plate, in combination with the shank-spindle F held thereto and provided at its inner end with a cam-projection for operating the bolt, substantially as described.

7. The back plate having an aperture, in combination with the independent tube E, provided at the lock end with a flange, *e*, and a centering back plate of lock projection, as shown, and having lugs on the back of the

flange, whereby the tube is held from turning in the door, substantially as described.

8. The back plate having an aperture, *b*, in combination with the flange or ring *e* resting against the wood of the door, and provided with a projection entering the back plate, the shank-spindle *F* passing through the ring, and provided at its inner end with a cam-projec-

tion for operating the bolt, substantially as described.

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