M. C. NILES.

KNOB-LATCH.

No. 187,889. Patented Feb. 27, 1877.

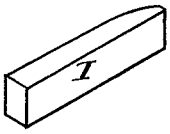


Fig.5

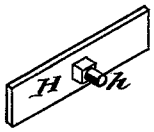


Fig.4

Fig.1

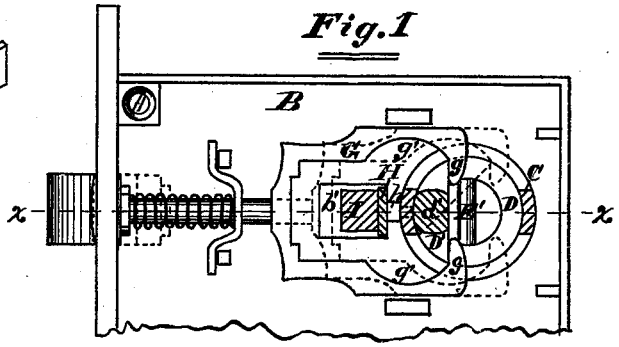


Fig.6

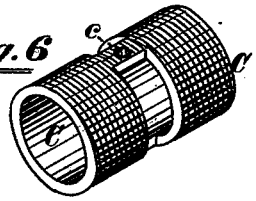


Fig.3

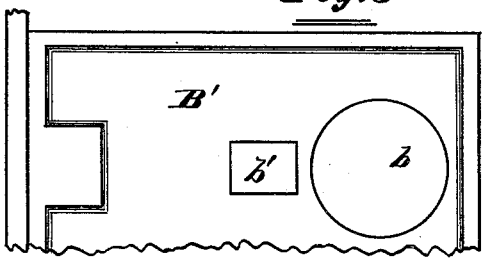
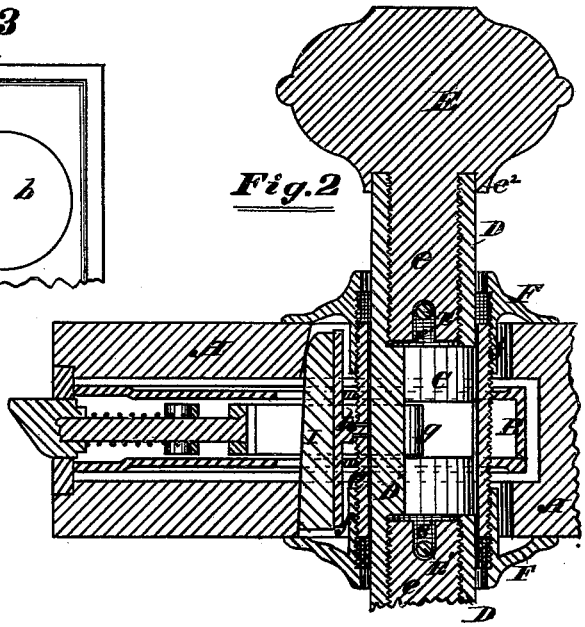


Fig.2



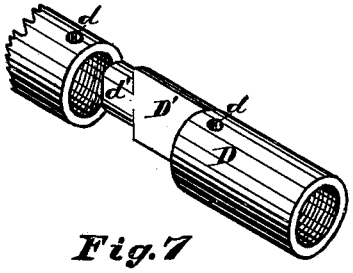


Fig.7

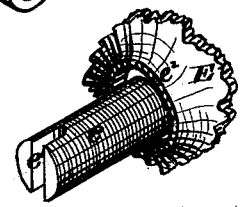


Fig.8

Attest

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UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN KNOB-LATCHES.

Specification forming part of Letters Patent No. **187,889**, dated February 27, 1877; application filed November 18, 1876.

To all whom it may concern:

Be it known that I, MILTON C. NILES, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Door Locks and Knobs, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side view of the interior of the lock, the back plate being removed, and the lower portion broken away; Fig. 2, a longitudinal section through the lock, knob, and door; Fig. 3, a side view of the upper portion of the back plate; Figs. 4 and 5, perspective views of the locking devices, by means of which the tube and lock-case are secured in place; Fig. 6 is a perspective view of the inclosing tube; Fig. 7, a perspective view of the hollow spindle; and Fig. 8, a detail view of the knob-shank and a portion of the knob.

My invention relates to mortise-locks, and is designed to obtain simplicity, security, and cheapness of construction.

The invention consists in fastening the tube which passes through the lock-case by means of a screw-thread cut the entire length of the tube, and a corresponding thread cut in the edges of the case around the orifices through which the tube is inserted; also, in a stop and key for preventing the tube from turning in the case, and also fastening the lock-case within the mortise in the door; also, in a hollow spindle, which is inserted within the tube, and is provided with a suitable cam for engaging directly with and acting upon the talons of the bolt; also, in the construction of the talons with circular recesses immediately behind the hooks, which receive the circular portion of the cam as it is turned to operate the talons; and also in various combinations of devices, all as will be hereinafter fully set forth.

In the drawings, A represents a portion of the door, in which the ordinary mortise is made to receive a lock-case, B, which is provided with the usual back plate B′, and in its general features is of ordinary construction. In the side plates of the lock-case, however, two large round holes, *b*, are cut, and the surrounding edges of the plates have screw-threads cut upon them. A tube, C, is constructed of suitable size to fit the orifices *b*, and a screw-thread is cut upon its exterior surface its entire length. The length of this tube is about the same as the thickness of the door, and it is secured to the lock-case by screwing it into the plates through the orifices *b*. On two sides its central portion is cut away, as shown in Fig. 6 of the drawings, and in one of the bridges a small aperture, *c*, is made.

The spindle D is made hollow and of a size to fit the interior of the tube C. The central portion of this tubular cylinder is cut away on one side, as shown in Fig. 7 of the drawings, and the thickness of the other side is somewhat increased, so as to form a circular cam, D′. The edges of this cam are also cut away at one end, so as to leave a small neck, *d′*, not wider than the opening between the hooks of the talons, and small holes *d* are drilled through the tubular spindle on each side of the cam.

The spindle D is made of such length as to project through the door some distance on each side, and an internal screw-thread is cut upon the interior of the tube at each end.

The knob E is constructed with a shank, *e*, of such size as to fit into the end of the tubular spindle D, and upon it is cut a screw-thread, so that the knob is fastened to the spindle by screwing the shank into the end of the latter, and it is held from turning by means of a pin, E′, which is inserted through the hole *d* in the spindle and passes through a slot or recess, e^1, in the end of the knob-shank. The knob is made with a flange, e^2, which fits over the end of the spindle, as shown in Fig. 2 of the drawings.

The roses F are provided with an inside flange, *f*, of such size as to fit the exterior of the tube C, and an internal screw-thread is cut upon them, by means of which they are fastened to the tube C, by screwing them upon the ends thereof. The orifice in the roses is a little larger than the tubular spindle, so that the latter has no bearing in them when the different parts are placed in position, as shown in Fig. 2 of the drawings.

The talons G are constructed of the usual yoke form, and are attached to the spring-bolt

in the ordinary way. They are provided with hooks *g*, bent down at right angles, so that the cam D′ will engage with them when passed behind them.

The hook ends of the talons are slightly enlarged, and are cut away just behind the hook, so as to form circular recesses *g′*, as shown in Fig. 1 of the drawings. The talons have a slight vertical play, so that when they are drawn back by the action of the cam D′ there is no movement of the cam upon the hooks, but the former turns back into one of the circular recesses *g′*, as shown in dotted lines in Fig. 1, thereby avoiding all friction by the sliding of the hooks on the cam D′, which would occur if the inside faces of the talons were straight.

The tube C is held from turning in the lock-case by a small stop-plate, H, which is provided with a small stud, *h*, on one side. This plate is passed through holes *b′* cut in the plates of the lock-case by the side of the orifices *b*, and the stud is inserted in the hole *c* in one of the bridges of the tube C, the latter being turned into the proper position to permit of this adjustment. A wedging wooden key, I, is then inserted back of the plate H and forced tightly into position. This wooden wedge is made nearly as long as the thickness of the door, which is recessed to receive the holding-plate and wedge, as shown in Fig. 2 of the drawings, one edge of the recess being inclined, to secure the wedging effect of the key.

The key I not only holds the plate H in position, so as to prevent the tube C from turning, but also fastens the lock securely into its mortise in the door, thereby avoiding all necessity for the use of the holding-screws, which are ordinarily employed to fasten the lock-case to the door.

The devices described above are placed in working position, as follows: The lock-case is first inserted in the mortise, and the tube C is screwed into it, the bolt-talons being drawn forward so as not to obstruct the passage of the tube through the case. The tube is turned into the position shown in Figs. 1 and 2 of the drawings, and the stop H and wedge I are inserted in proper position to secure the lock in the door and prevent the tube from turning, as above described.

The tubular spindle is then inserted in the tube C, the knob and rose having been first placed upon one end thereof, as described. In passing the spindle through the tube the bolt-talons should first be drawn forward out of the tube, so as to admit the passage of the spindle so far as the neck *d′*. The talons should then be forced back into the tube, and the spindle passed through until the ends of the pin E′ strike against the end of the tube C, the cam D′ passing into position in front of the hooks on the talons. The other knob is then secured to the other end of the spindle in the manner described, the rose being first slipped over the end of the latter, and the roses are screwed upon the respective ends of the tube C, being turned down into position upon the sides of the door.

It will be noticed that when both pins E′ are inserted in the spindle they are just outside of the tube C, and consequently hold the spindle from slipping in the tube.

It is also evident that when the roses are turned down into position they cover the loose pins E′, keeping them in place, and also cover all other parts, so as to present a neat finish; and also that the spindle has its bearing-surface entirely in the tube C, so as to occasion as little friction as possible, which is also avoided by preventing the slipping of the talons upon the operating-cam, as above described.

It will also be further observed that when the pin E′ is inserted in the spindle D, it performs a double function—that of holding the spindle in the tube, and preventing the knob from turning; also, that no screws are used in the whole device, and that the same is adapted to different thicknesses of doors.

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

1. The combination of a tube, C, passing through the lock-case, a tubular spindle, D, having its bearing within the tube C, and holding-pins E′, substantially as and for the purpose set forth.

2. The tube C, passing through the lock-case, and cut away at its center, as described, in combination with the hollow spindle D, having one side cut away near its center, and provided with a cam, D′, and the bolt-talons G, substantially as and for the purpose set forth.

3. The spindle D, constructed with a cam, D′, near its center, and a narrow neck, *d′*, adjacent to the cam, substantially as and for the purpose set forth.

4. The spindle D, provided with a cam, D′, constructed as shown, in combination with the bolt-talons G, having hooks *g*, and cut away so as to form circular recesses *g′* just behind the hooks, substantially as and for the purpose set forth.

5. The lock-case B, provided with screw-threaded orifices *b*, in combination with the tube C, having a screw-thread cut upon its surface, substantially as and for the purpose set forth.

6. The lock-case B, having screw-threaded orifices *b*, in combination with the threaded tube C, provided with a small aperture, *c*, near its center, and the stop-plate H, provided with a small stud, *h*, substantially as and for the purpose set forth.

7. The lock-case B, provided with holes *b* and *b′*, in combination with the threaded tube C, stop-plate H, and key I, arranged in the lock-case and door so as to hold the tube from turning, and at the same time fasten the case securely within its mortise, substantially as described.

8. The hollow spindle D, having internal screw-threads cut in its ends, in combination with the knobs E, having external screw-threads cut upon their shanks *e*, and recesses *e'* in their ends, the tube C and the holding-pin E', arranged to hold the knobs from turning in the spindle, and the spindle from slipping back and forth in the tube, substantially as described.

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Witnesses:
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L. A. BUNTING.