M. C. & S. S. NILES.

KNOB-LATCH.

No. 192,344. Patented June 26, 1877.

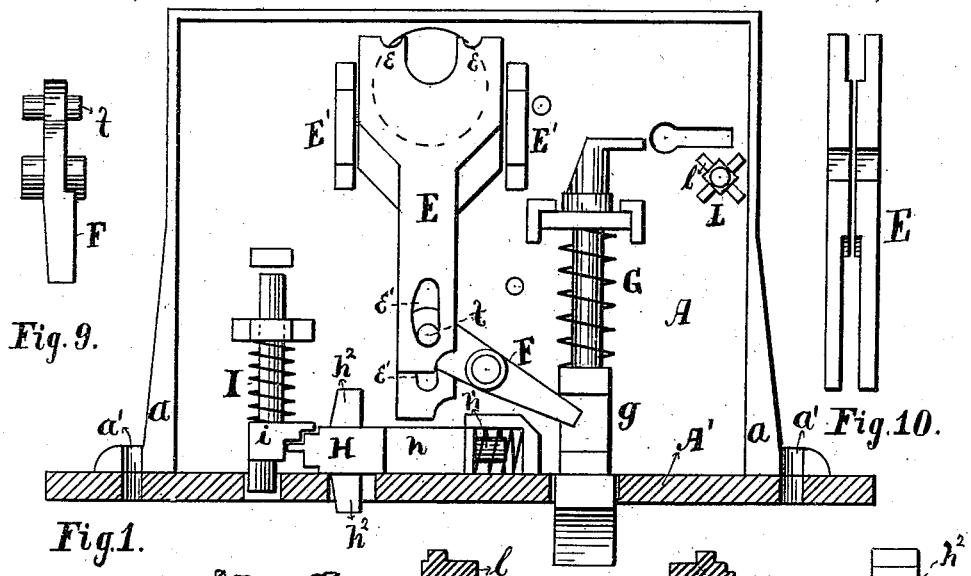


Fig. 9.

Fig. 10.

Fig. 1.

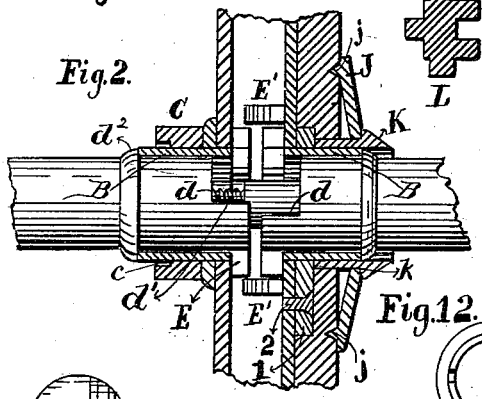


Fig. 2.

Fig. 16.

Fig. 17.

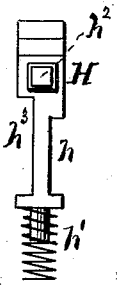
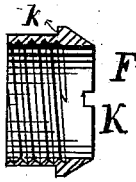


Fig. 14.



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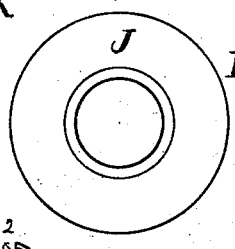

Fig. 11.

Fig. 12.

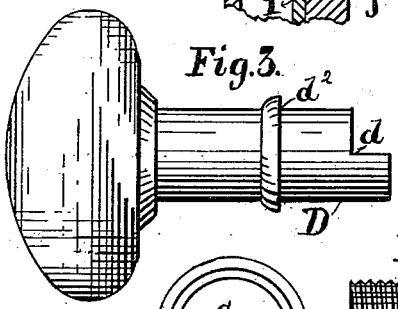

Fig. 3.

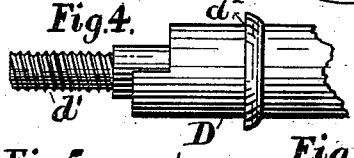

Fig. 4.

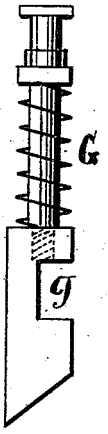

Fig. 13.

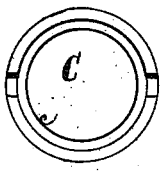

Fig. 6.

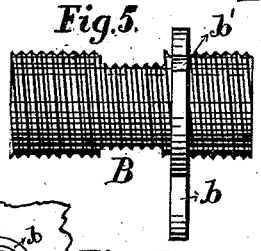

Fig. 5.

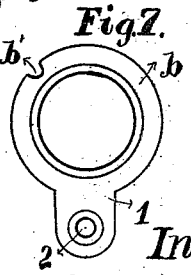

Fig. 7.

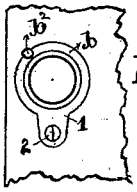

Fig. 15.

Attest

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UNITED STATES PATENT OFFICE.

MILTON C. NILES AND SIDNEY S. NILES, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN KNOB-LATCHES.

Specification forming part of Letters Patent No. **192,344**, dated June 26, 1877; application filed January 18, 1877.

To all whom it may concern:

Be it known that we, MILTON C. NILES and SIDNEY S. 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 plan view of the lock-case, with the back plate removed to expose the inclosed devices; Fig. 2, a transverse section through the lock and door, the knob-shanks being shown in full; Figs. 3 and 4, detail views of the knob-shanks; Fig. 5, a side view of the spindle-tube; Fig. 6, an end view of the ring clamping-nut; Fig. 7, a plan view of a device for holding the tube in place in the lock; Fig. 8, a sectional view of a thimble-screw for holding the rose in place; Fig. 9, an edge view of the vibrating lever for operating the bolt; Fig. 10, an edge view of the reciprocating bars which operate the bolt-lever; Fig. 11, a plan view of the rose; Fig. 12, a plan view of a thimble-screw for holding the tube in place; Fig. 13, a plan view of the bolt; Fig. 14, an edge view of the stop-catch; Fig. 15, a plan view of a section of the lock-plate, showing the method of fastening the device illustrated by Fig. 7; and Figs. 16 and 17, detail views of a safety attachment to prevent the use of keys except with a peculiar construction.

Our invention relates to various devices and combinations of devices, all of which will be hereinafter more fully set forth.

In the drawings, A represents a lock-case of ordinary construction, except that it is provided with lugs *a* at the front end, to which the face-plate A′ is attached by screws passing through the holes *a′*, so that it may be removed at pleasure from the case either before or after the latter has been inserted in the door, the screws being made, if desired, of sufficient length to enter the door to hold the lock in place in its mortise.

The lock-case is perforated to receive a tube, B, which is provided with a screw-thread cut upon its surface, and is cut away at the center, as shown in Fig. 5 of the drawings, to receive the ends of the bars upon which the spindle is to operate. It is also provided with a fixed flange, *b*, on one side of the notch, which is located in such position that when it strikes the lock-plate in passing the tube through the case the latter will be in proper working position. A notch, b^1, is cut in the edge of the flange *b*, which engages with a pin, b^2, on the plate of the lock-case, as shown in Fig. 15 of the drawings, and prevents the tube from turning in the case.

Another method of fastening the tube is to provide a projection, 1, on one side of the flange, as shown in Fig. 7 of the drawings, and pass a screw, 2, through it into the case, as shown in Fig. 2 of the drawings.

A screw-threaded thimble, C, is turned upon the other end of the tube B, and jammed against the opposite plate of the case, as shown in Fig. 2 of the drawings, by means of which, in connection with the flange *b*, the tube is held from moving longitudinally. The interior of the thimble C is cut away somewhat at the outer end, so as to make a shoulder or rabbet, *c*, and leave an annular space between the thimble and the tube, as shown in Fig. 2 of the drawing.

The knob-shanks D are made of a size to fit into the tube B, and are elongated, so as to meet near the center of the latter. The end of each is partially cut away to form a shoulder, *d*, so that when the two shanks are joined, as shown in Fig. 2 of the drawings, and adjusted to bring the shoulders on the same side of the tube, they will together make the cam of a cylinder composed of the two knob-shanks, which performs the functions of the ordinary spindle. On the inner end of one of the knob-shanks is a small threaded projection, d^1, and in the corresponding end of the other shank a hole is made, which is also threaded, so as to receive the end-screw d^1. The shanks are inserted in opposite ends of the tube after it is placed in the lock-case, and screwed together, as shown in Fig. 2 of the drawings, and arranged therein so that the notch in the cylinder will be toward the front end of the case.

If desired, flanges d^2 may be made upon the shanks D, at suitable distances from the ends, to abut against the ends of the tube B, and prevent the shanks from slipping endwise when screwed together within the tube.

Within the case are one or two sliding bars E, the rear ends of which are enlarged and forked, as shown in Fig. 1 of the drawings, each fork having a shallow depression, *e*, in its end. Two blocks, E′, are fastened to the lock-case on each side of the enlarged ends of the bars E, and serve as guides to the latter.

The sliding bars are arranged within the case, so that the enlaged ends will enter the opening cut in the side of the tube B, and rest against the cam produced by the joining of the two shoulders *d* of the knob-shank, the forks embracing the reduced central projection or core d^1, to permit the ends to come back against the cam, the upper and lower edges of which rest in the upper and lower recesses *e*, respectively. Short circular slots *e′* are cut in the other ends of the bars E.

A lever, F, is pivoted within the case near its center, and is provided with a pin, *f*, at its upper end, the ends of which enter the slots *e′*, respectively, of the bars E, the upper end of the lever entering between the latter for this purpose.

The case is provided with an ordinary spring-bolt, G, which has a recess, *g*, cut in one side, within which is fitted the lower end of the pivoted lever F.

It is evident that as the knobs are turned the inner portion of their shanks, which take the place of the ordinary spindle, will push forward the bar or bars E, thereby throwing forward the upper end of the pivoted lever F, which will vibrate the lower end in the opposite direction, and thus throw back the bolt.

A stop-piece or catch, H, is fitted within the lock-case, just in front of the forward ends of the bars E. The lower portion of this plate is cut away on one side to form a recess, *h*, and upon a suitable support below the stop is a spring, h^1, which holds the former up so that this recess is opposite the outside bar E. The upper end of the stop H has a stud, h^2, which projects out through a slot in the end plate, and by means of it the stop may be pushed down until the enlarged upper end comes opposite the bar E, thereby preventing the reciprocation of the latter to push back the bolt.

The upper end of the stop H is constructed with offsets, as shown in Fig. 1 of the drawings, and just above it is arranged a sliding spring-stop or catch, I, which is provided with a head, *i*, with offsets corresponding to those on the upper end of the stop-bar H. When the stop-bar is depressed the lock or catch I springs forward, and holds it in this position, the forward end of the catch projecting through a hole in the face-plate of the case. When it is desired to release the stop-bar the catch I is pushed back, and the bar is forced up by its spring.

It is not necessary to employ more than one sliding bar, E, to secure the operation thus far described; but if it is desired to construct the lock so as to stop the operation of the bolt from the outside, while leaving it free to be reciprocated by the inside knob, two bars, E, are employed, and a second recess, h^3, is cut upon the inside face of the stop-bar H somewhat longer than the recess *h* on the opposite side, so that when the stop H is depressed, as described above, the inside bar E will still be free to slide back and forth in the recess h^3, and the method of fastening the knobs together, heretofore described, permitting the turning of one independently of the other; it is evident that the bolt may be forced back by the inside knob while the outside one is locked.

The roses J are made with a perfectly plain face, and with projections *j* upon the inside, if desired, which are forced into the door to prevent them from turning. They are held in place upon the knob-shanks by means of thimble-screws K, which are made to screw upon the outer ends of the tube B, and are provided with shoulders *k*, which fit over the roses upon the outside when turned up sufficiently, as shown in Figs. 2 and 8 of the drawings.

A small block, L, is placed within the case just opposite the lower part of the key-hole. This block is constructed with flanges *l*, the outer edges of which are cut with different wards to suit keys with differently-shaped bits. The block is adjusted so that the appropriate ward will be in position for its corresponding key to pass through, as shown in Fig. 1 of the drawings, and a lock provided with this block is capable of use with bolt-keys of different construction; but with only the one to which the ward-block is especially adjusted in any one door, thereby making it a safety-lock.

It is evident that not all of the devices described above are absolutely necessary to each other.

The construction of the knob-shanks so as to perform the function of the ordinary spindle, and thereby dispense with the latter as a separate piece, for instance, is adapted to be used with devices for operating the bolt different from those heretofore shown and described, as well as several of the other devices mentioned. But we have shown in this application a combination of the devices which we consider necessary to make a cheap, safe, and durable lock, uniting all the requirements in door-locks at the present time.

With a lock thus constructed the detachable face-plate is an important feature, for some of the devices are inserted in the case after it is put into the door, and with the knob-shanks, constructed as described, the lock cannot be removed from the door without first removing the end plate and pulling forward the sliding bars so that the knob-shanks may be removed. The bolt and actuating devices are also reversible.

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

1. The knob-shanks D, elongated to enter

the lock-case, connected together at their inner ends within the case, and cut away to form a cam at their junction, whereby the bolt is operated, substantially as and for the purpose set forth.

2. The elongated knob-shanks D, provided with shoulders *d* at their inner ends, and connected together by the threaded core *d'*, substantially as described.

3. The case A, in combination with the knob-shanks D, elongated to enter the case within which they are joined at their inner ends and recessed to provide a cam, and an independent tube, B, passing through the case and inclosing the shanks, substantially as and for the purpose set forth.

4. The case A, in combination with the independent tube B, extending through the case and provided with a stop-flange, *b*, arranged to abut against the lock-case within the mortise of the door, and a fastening device, whereby the tube is secured rigidly in position, substantially as and for the purpose set forth.

5. The tube B, in combination with the fixed flange *b*, having a notch, b^1, and the pin b^2 on the lock-plate, substantially as and for the purpose set forth.

6. A knob-spindle, provided with a central cam, *d*, in combination with the two reciprocating bars E, pivoted lever F, and bolt G, substantially as and for the purpose set forth.

7. The knob-shanks D, in combination with the two reciprocating bars E, and the slide-stop H, provided with recesses *h* and h^3, substantially as and for the purpose set forth.

8. The sliding spring-stop H, in combination with the spring-catch I, substantially as described.

9. The threaded tube B, provided with a stop-flange, *b*, abutting against the lock-plate, in combination with the independent roses J and the shouldered screw-rings K, all arranged and operating substantially as described.

10. The adjustable block L, provided with flanges *l*, having wards to accommodate keys with different bits, substantially as and for the purpose set forth.

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Witnesses:
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L. M. HARRIS.