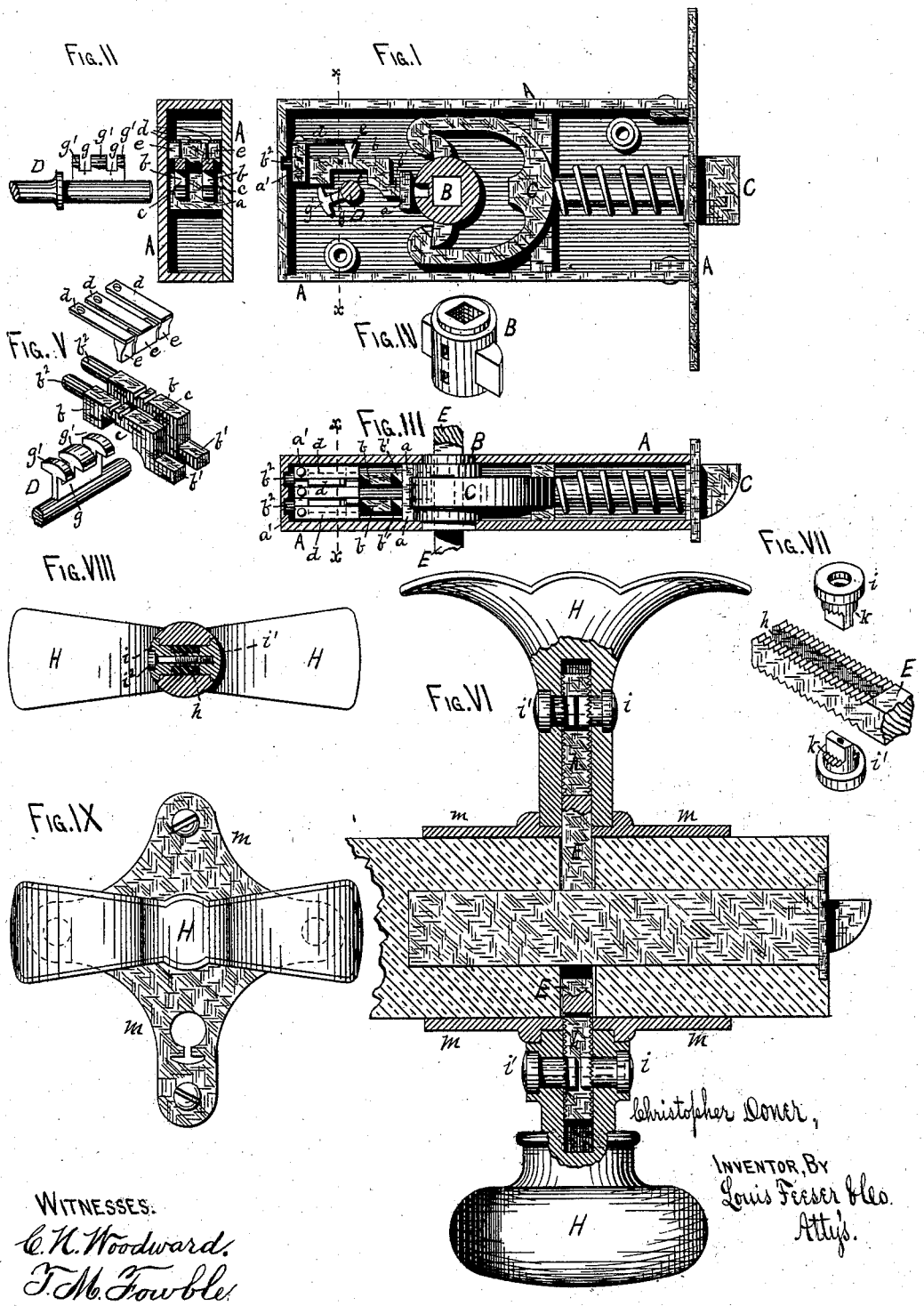
C. DONER.
Latch.

No. 219,077. Patented Sept. 2, 1879.



UNITED STATES PATENT OFFICE.

CHRISTOPHER DONER, OF CANNON FALLS, MINNESOTA.

IMPROVEMENT IN LATCHES.

Specification forming part of Letters Patent No. **219,077**, dated September 2, 1879; application filed May 31, 1879.

To all whom it may concern:

Be it known that I, CHRISTOPHER DONER, of Cannon Falls, in the county of Goodhue and State of Minnesota, have made certain new and useful Improvements in Combined Locks and Knob-Latches, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation with the cover removed. Fig. 2 is a cross-section on the line *x x* of Figs. 1 and 3; Fig. 3, a plan view with the top of the case removed; Fig. 4, detached perspective view of the hub; Fig. 5, detached perspective views of the locking-bolts, their springs or catches, and the key; Fig. 6, a sectional view through a door and the knobs, showing the method of attaching the latter to the shaft; Fig. 7, detached perspective views of the shaft-locking device; Figs. 8 and 9, detail views of the knob and escutcheon detached.

This invention relates to that class of door-fastenings known as "knob-latches;" and consists in the arrangement within the same casing as the latch of a locking device operated by a key to lock the hub through which the knob-shaft passes and prevent its being turned, thereby combining a lock and knob-latch in one casing.

The invention further consists in the method of securing the knobs to the shaft, as hereinafter described.

A is the casing, B the hub, and C the spring-bolt, all made in the usual manner.

At the rear of the hub B a post, *a*, is set, through which the ends b^1 of a number of small bolts, *b*, pass, while their opposite ends, b^2, pass through a similar post, *a'*, at there ar of the casing A. One or both sets of the ends b^1 b^2 and the holes in the posts are oblong or square to prevent the bolts turning. The lower sides of the bolts are provided with a square notch, *c*, in which the key fits to throw them back and forth, as hereinafter described.

Above the bolts *b* a series of springs, *d*, are arranged, (the number of springs being one in excess of the bolts,) with their rear ends secured rigidly to the post *a'* or casing A, while the forward ends are bent down or provided with feet *e*, to fit into notches in the upper sides of the bolts *b*, as shown.

As before mentioned, the number of springs *d* and feet *e* exceed the number of bolts *b*. This is to enable them to be arranged so that the inside or middle feet will lap over and catch into the notches in two of the bolts, so that each bolt will have two springs and feet in contact with it, thus preventing one single bolt from being thrown without disengaging two springs.

The side of the hub B is provided with sockets corresponding with and set opposite to the ends b^1 of the bolts *b*, (see Figs. 1 and 3,) so that when the latter are thrown forward their ends will enter these sockets, and thus lock the hub and prevent its being turned.

The key D will be arranged with short wards *g*, to enter the notches *c* and throw the bolts *b*, while at the same time (or a little ahead of them) long wards *g'* will enter between and outside the bolts and lift the feet *e* out of the notches in the tops of the bolts, to enable them to be thrown forward.

The long wards *g'* will be arranged, as shown, of a T shape, with the upper part curved, so that they will lift the feet *e* out of the notches, and hold them out by means of the curve until the bolt has been moved forward enough to remove the notch from beneath the foot, when it will be released to allow it to fall into the next notch.

To unlock the device the key is simply turned in the opposite direction.

It will thus be necessary to use a key made on purpose for the lock, as it will be necessary to raise all the feet and throw all the bolts at the same time in order to release the hub; hence no ordinary key will unlock it.

By varying the forms and sizes of the bolts and keys any desired number of the locks may be made without duplicating them. Any desired number of the bolts *b* may be employed.

The ends of the square shaft E are provided with slots *h*, (see Fig. 7,) with serrated teeth upon the four edges thus left, said slots being adapted to receive the lower ends of two metal clamps, *i* i^1, having shoulders *k*, also provided with serrated teeth to correspond with those on the shaft E, and upon which they set. One of these clamps, *i*, is provided with a hole through its length, while the other one, i^1, is provided

with a screw-hole, into which a bolt, i^2, (passing through the hole in the clamp i^1,) runs, to bind them fast upon the shaft E.

It will be obvious that if the shaft E is first run into the knob H, and then the two clamps $i\ i^1$ run through the shank, or the knob itself, until they come in contact with and assume their proper position upon the shaft, and the bolt i^2 screwed into place, the shaft will be very rigidly secured in the knob at any required distance from the lock, as by simply loosening the bolt i^2 until the serrated teeth of the shaft and clamps are disconnected the shaft may be adjusted to any desired point. By this means the shank and escutcheon m may be set closely together, no matter how thick the door is, and thus all rattling or unpleasant looseness avoided. The shaft E may be round where it enters the knob, if desired.

The knobs H are made flat or oblong, as shown in Figs. 8 and 9, so that the key may be inserted into the lock close up to the shank, thereby enabling the locking device to be arranged in a casing but little longer than those now in use. This is a great advantage, as it saves the cutting of a deep slot or mortise in the door.

The escutcheon m is made, as shown, with the key-hole through one of its ends, thereby dispensing with the necessity for an extra key-hole plate.

Another advantage gained by this form of escutcheon is, that the upper and lower points may be extended far enough to enable the screws by which it is secured to the door to come beyond the lock, so that long screws may be used to hold it more firmly.

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

1. The combination, with the hub B of a knob-latch, of one or more bolts, b, each being provided with two or more springs or catches, $d\ e$, whereby each bolt will be held in contact with the hub by two springs, substantially as set forth.

2. In combination with the hub B, bolts b, and spring-detents $d\ e$, as shown, the key D, formed with short wards g, to operate the bolts, and long wards g', extended laterally and curved on top, so as to operate upon and lift the springs, substantially as shown and described.

3. The slotted and serrated spindle E, serrated metal clamps $i\ i^1$, provided with central plain portion extending into the slot in the spindle, and the bolt i^2, in combination with the knob H, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHRISTOPHER DONER.

Witnesses:
J. T. GRAVES,
W. E. ZIMMERMAN.