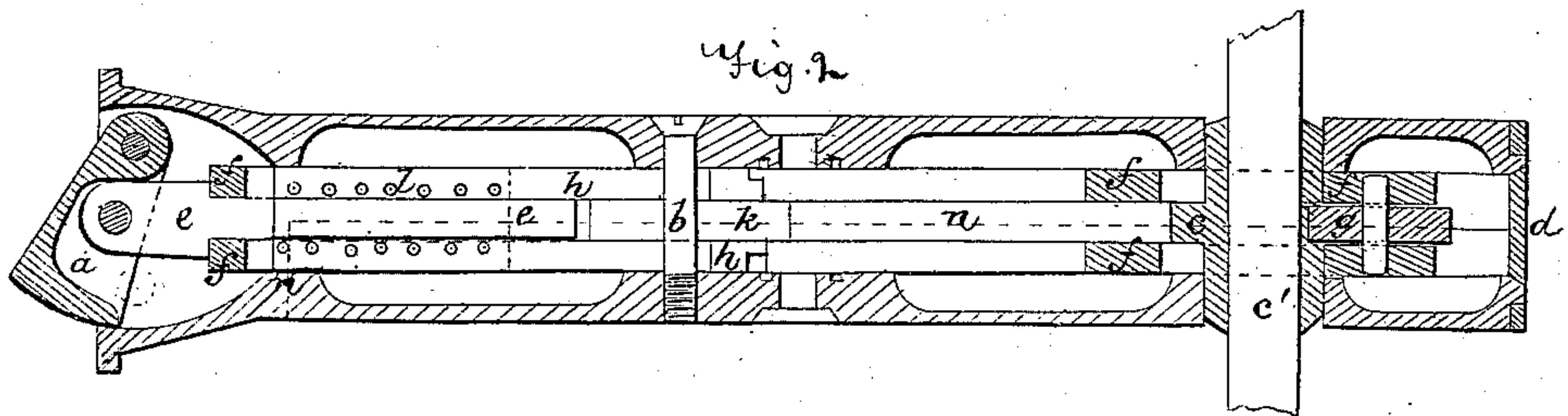
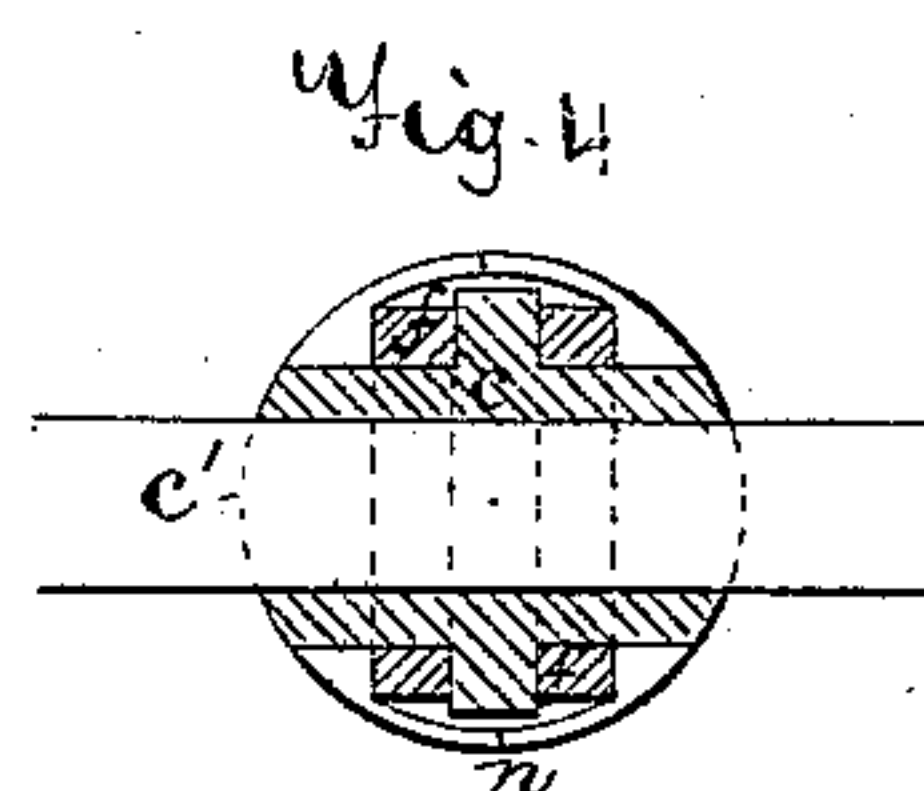
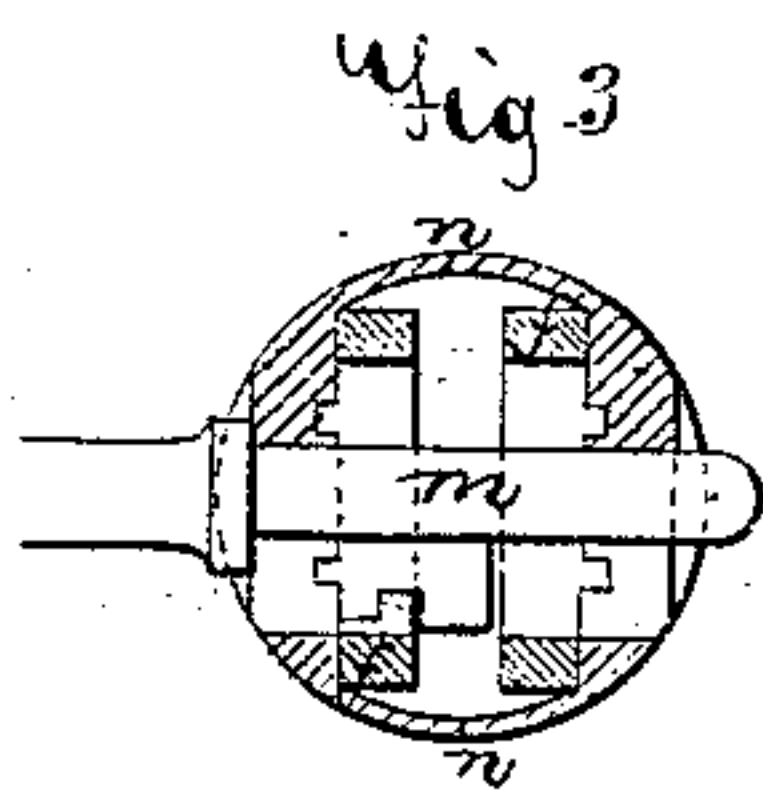
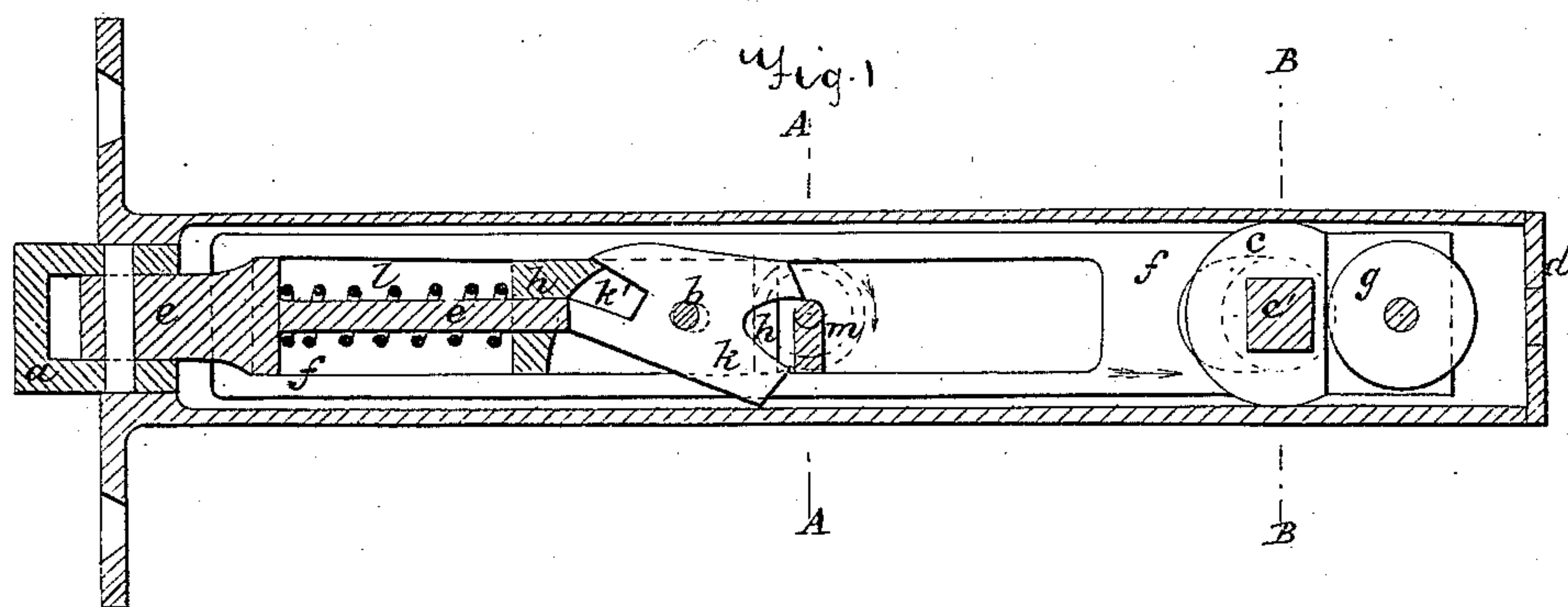


JOHN IMRAY.  
Improvement in Combined Knob, Latch, and Lock.  
No. 125,957. Patented April 23, 1872.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN IMRAY, OF LONDON, ENGLAND.

## IMPROVEMENT IN COMBINED KNOB-LATCHES AND LOCKS.

Specification forming part of Letters Patent No. 125,957, dated April 23, 1872.

I, JOHN IMRAY, of London, England, civil engineer, have invented certain "Improvements in Locks and Latches," of which the following is a specification:

This invention relates to an improvement in the class of locks and latches which are inclosed in tubular casings for insertion into round holes bored in the wood of doors, &c.; and it consists in a novel combination of a pivoted latch, with a sliding, spring-actuated rod, and operated by a cam on the knob-spindle bearing against a friction-roller upon a slide connected with the latch-rod.

Figure 1 represents a longitudinal section, and Fig. 2 a sectional plan of a tubular latch-lock, or a latch combined with a lock inclosed in a tubular casing. Figs. 3 and 4 are transverse sections on the lines A A and B B, respectively, of Fig. 1.

The tubular casing is divided longitudinally, as indicated by the dotted line *n* in Fig. 2, the two parts being secured together by an end cover, *d*, which has two holes receiving dove-tailed studs projecting from the ends of the tubular parts, and by a screw, *b*. On unscrewing *b* the two parts of the casing can, by a slight angular movement, be separated so that the cover *d* can be removed, and then they come apart, giving access to the mechanism within the tube. *c* is a cam, having a square hole for the reception of the knob-spindle *c'*, and this cam has bosses which work in holes in the casing. *a* is the catch, mounted on a pin so that it can be withdrawn from the catch-plate or protruded into it. The catch *a* has a rod, *e*, jointed to it by a pin. *f f* are two slides, which have oval holes inclosing the bosses of the cam *c*, and long rectangular holes for the reception of the locking mechanism. The front ends of the slides *f f* engage in notches in the rod *e*, and at their back ends a roller, *g*, is mounted between them, so as to bear against the periphery of the cam *c*. A forked sliding piece, *h*, has a hole entered by the end of the rod *e*, and a transverse elongated hole through which the pin *b* passes. *l* is a helical spring, bearing at the one end against a collar on the rod *e*, and at the other end against the slide *h*,

which is held in position by the pin *b*. There is a tumbler, *k*, mounted on the pin *b* between the side cheeks of the slide *h*. In one position, as represented in Fig. 1, this tumbler forms a stop for the end of the rod *e*, and prevents it from being moved, so that the latch is then locked. In its other position, to which it is turned by the action of the key, as will hereafter be described, the tumbler *k* presents a notch, *k'*, into which the end of the rod *e* can enter.

In this condition, the latch being then unlocked, the operation of the latch mechanism is as follows: When the cam *c* is turned in either direction by means of the knob-spindle *c'*, by its action on the roller *g*, it causes the slides *f f* to move in the direction of the arrow. The slides move the rod *e*, and thereby cause the catch *a* to be withdrawn from the catch-plate. On the knob-spindle *c'* being released the spring *l* pushes the catch *a* forward, causing the slides *f f* to move, and the cam *c* to turn back to its middle position. With the tumbler *k* in the position represented in Fig. 1, this action is prevented by the end of the rod *e* being stopped by *k*, or the latch is locked. For the purpose of unlocking it the key *m* is turned in the direction of the arrow. In turning, the key first pushes back the sliding piece *h*, so as to disengage it from the point of the tumbler *k* above its notch *k'*, and so to leave the tumbler free to revolve, and then, acting in the back notch of *k*, it turns it so as to present its front notch, *k'*, to the rod *e*.

As a provision against the use of false keys, the ends of the sliding piece *h*, on which the key acts, may be made with projections or hollows of various forms and dimensions, and the key-hole may be made with various wards inside the casing, the key being in each case formed to suit them.

By properly arranging and combining the variations of form, suites of locks may be made, each worked by its own key, and all of the suite subject to a master-key.

### Claims.

1. In combination with each other, the piv-



oted catch *A*, rod *e*, slides *f f*, cam *c*, roller *g*, and knob-spindle *c'*, all constructed and arranged to operate in a tubular casing, substantially as and for the purpose herein set forth.

2. In combination with the subject-matter of the preceding claim, the spring *l*, slide *h*,

pin *b*, notched tumbler *k*, and key *m*, all constructed and arranged to operate substantially as and for the purpose herein set forth.

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