

(Model.)

J. SHARPE.

COMBINED LATCH AND LOCK.

No. 381,435.

Patented Apr. 17, 1888.

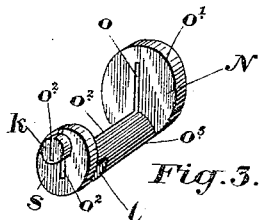
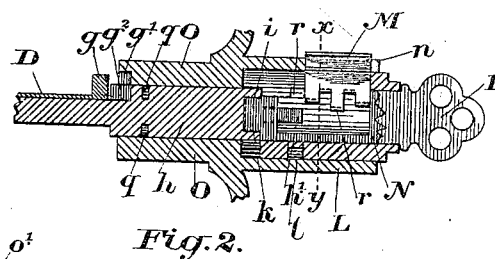
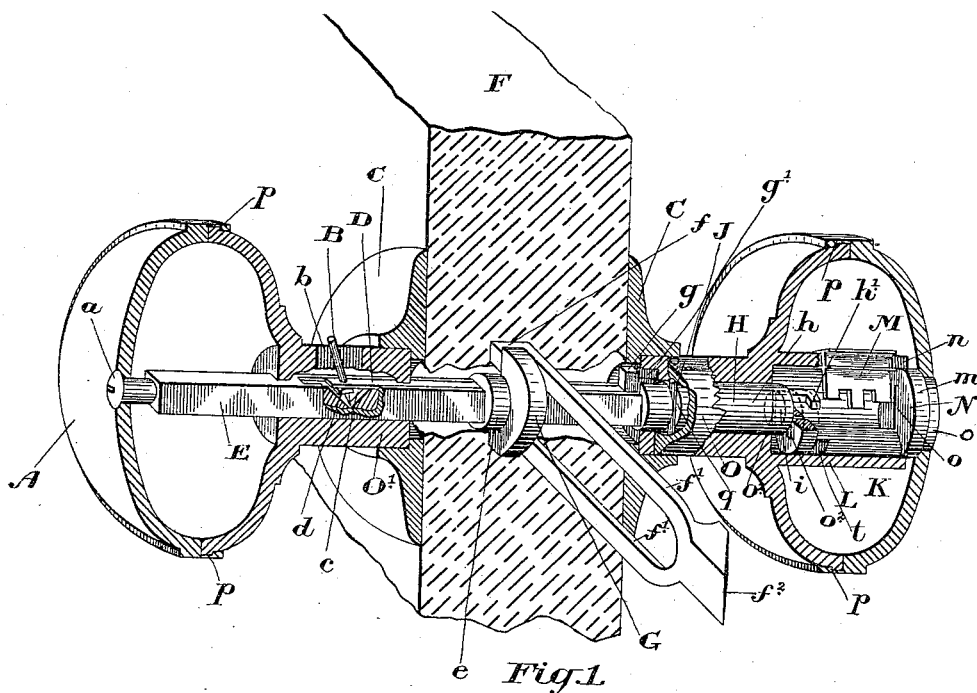


Fig. 2.

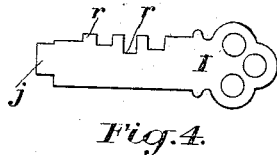


Fig. 4.

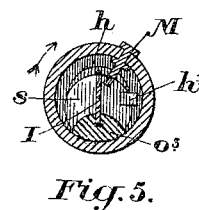


Fig. 5.

Witnesses.

J. M. Jackson,
J. Edw. Mayne.

Inventor.

John Sharpe,
by
Donald C. Redout & Co.
Attys

UNITED STATES PATENT OFFICE.

JOHN SHARPE, OF TORONTO, ONTARIO, CANADA, ASSIGNOR OF ONE-HALF
TO JOSE ALEXANDER BANFIELD, OF SAME PLACE.

COMBINED LATCH AND LOCK.

SPECIFICATION forming part of Letters Patent No. 381,435, dated April 17, 1888.

Application filed August 1, 1887. Serial No. 245,894. (Model.)

To all whom it may concern:

Be it known that I, JOHN SHARPE, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, inventor, have
5 invented a certain new and useful Improved Combined Latch and Lock, of which the following is a specification.

The object of the invention is to provide a combined latch and lock which is capable of
10 being applied to the ordinary door-bolt, and which is readily convertible from an ordinary latch capable of being opened by the knobs, either inside or outside, into one in which the
15 outer door-knob is free to move when turned without unlocking the door, and only rendered capable of acting when a latch-key is inserted therein, so as to engage with a lug
20 formed on a single spindle which connects the door-knobs and actuates the latch, as herein-
after explained.

Figure 1 is a perspective view of my device, partially in section and broken away. Fig. 2
is a section through cylinder-tumbler, cylinder, and end of spindle, showing key inserted.
25 Fig. 3 is a detail of cylinder-tumbler. Fig. 4 is a view of the flat key. Fig. 5 is a section through cylinder and tumbler on line *xy*, shown in Fig. 2.

In the drawings like letters of reference indicate similar parts in the different figures.

In Fig. 1, A is the inside door-knob, with removable top held onto the squared end of the spindle by screw *a*. In the shank of the knob there is a slot, *b*, through which a pin, B, is
35 adapted to work. C is a knob-rose of ordinary make. This pin B is passed through a hole in the slide D, which slide works in a groove formed in the squared portion of the spindle E, said hole being adapted to receive
40 the pin B and to allow for play, so that the pin may work to and fro when actuating the slide. There is a triangular recess, *c*, cut out of the spindle, and the pin B is provided with a collar, *d*, to prevent it being taken out or ac-
45 cidentally removed from the spindle through slot *b* in the shank. F is a section of the door through which the spindle E passes. G is the tumbler for the bolt, of ordinary construction, rigidly fixed to the spindle and to the collar *e*
50 on the spindle. The shoulders on the tumbler

engage with the lugs *f*, formed on the arms *f'* of an ordinary spring-bolt, of which *f''* is the latch. The spring or its bearings, which shoots the bolt forward, is not shown, as I claim no part of the bolt as my invention. The normal
55 condition of the latch or bolt is that of being shot forward into the latch by the spring, and the turning of the spindle compresses the spring and draws back the latch in the usual manner. *g* is a lug formed on the slide D,
60 adapted to engage in a slot, *g'*, formed in the base of the shank of the outer door-knob, and a corresponding slot, *g''*, in the enlarged cylindrical portion *h* of spindle E. The end of
65 this cylindrical portion *h* has a circular recess formed therein (*vide* also Fig. 2) to receive the rounded lug *k*, formed at the end of the cylinder-tumbler N. Projecting beyond the
70 end of the cylindrical part of spindle *h* is a hook-shaped projection, *h'*, which forms a part of the spindle, and stands out beyond it, so as to form a stop to prevent the spindle being
drawn away from the shank O of the outer door-knob, and is also adapted to act as a stop for
75 the key, so as to move the spindle E when unlatching or unlocking the door. This cylindrical part *h* of the spindle has a circular ring cut out of it all around to admit of a pin,
J, passing by the rounded central portion of spindle and holding the outer door-knob, K,
80 on to said spindle, the outer door-knob being free to rotate while lug *g* is disengaged from slot *g'*. The head of this pin J is countersunk in the shank and covered by the knob-rose C,
85 which is immovable, being held in place at the shoulder by the end of the shank O of the outer door-knob, which is held down against
it by the screw *a* on the inside door-knob. L is a cylinder formed on the lower half of the
90 outer door-knob and extending to near the top of the upper half thereof. This cylinder is slotted at *n* to receive the guard M, which has
wards, to which the wards in the key must be adapted, so as to allow only of the introduction
95 of the proper key. This guard M has T-shaped projections—one inside and the other outside the cylinder—to keep the guard in place. N is the cylinder-tumbler, a detail of
which is shown at Fig. 3. The rounded lug, *k*,
100 formed thereon fits into the circular recess at

the end of the cylindrical portion *h* of the spindle, and is grooved to receive the end *j* of flat key I. This lug *k* works freely in this recess. Cylinder-tumbler N is adapted to make about three-fourths of a rotation in the cylinder L. The cylinder-tumbler N has a reduced outer end, which is journaled to rotate in a circular orifice formed in the upper half, P, of outer door-knob, K, having a longitudinal slot or key-hole, *o*, for the reception of the flat key I. This cylinder-tumbler is grooved along its major axis for the reception of this flat key. The inside end of this groove appears at *o'* and extends through the lug *k*, which works in the recess *i*, formed in the spindle. (More particularly shown in Figs. 2 and 3.) The upper halves of the outer and inner knobs are removable, and are lipped at *p*, so that they may be spun together on a lathe.

In Fig. 2, which is a section through the major axis of the spindle-shank of the outer knob, cylinder, and cylinder-tumbler, the various letters indicate the parts shown in Fig. 1. In this view the dotted line *r* indicates the position of the wards of the key referred to in Fig. 4 just before the wards of the key are about to pass through the wards of the guard M. The position of the key with reference to the wards of the guard is indicated in Fig. 5, the key being turned in the direction of the arrow-head, so as to engage with the stop *h'*, which is integral with the main spindle, which, when moved as indicated by arrow-head, unlatches or unlocks the door. In this figure the outer end of the cylinder-tumbler N is shown broken away. *q q* indicate the position of the ring cut out of the cylindrical part *h* of the spindle, through which the pin J is inserted. In this view the lug *g* on slide D is shown, as in Fig. 1, disengaged from the slot *g'* in shank O and slot *g''* in cylindrical portion *h* of the spindle, so that the outer knob, K, is free to rotate axially without moving the main spindle E. *t* is a slot formed in the cylinder-tumbler to allow lug *h'* on the spindle to rotate past the cylinder-tumbler. This slot *t* is also shown in Figs. 1 and 3.

Fig. 3 is the detail of cylinder-tumbler N, which is adapted to move loosely partially around in the knob-cylinder L, which is integral with the lower half of the outer knob, (*vide* Fig. 1,) the lug *k* being journaled in the recess *i* in the spindle, while the portion *o'* forms a collar, the reduced outer end of which is not shown in this view, being journaled in an annular orifice in the upper half, P, of the knob K. (*Vide* Fig. 1.)

Fig. 4 is a view of the special form of flat key, which is suitable for the wards in the guard shown in Figs. 1 and 2. The wards in the key may vary to suit the wards adapted for the guard M.

Fig. 5 is a section through cylinder and tumbler on line *x y*, shown in Fig. 2, M being the guard, showing the T-shaped projections holding it in place after having been inserted through the slot in the cylinder. I is a section

through the key, and *o'* the columnar part of the cylinder-tumbler. (Also shown in Fig. 3.) *h* is the cylindrical end of spindle E, and *h'* the hooked lug or projection integral therewith, against which the key presses when actuating the spindle; and *s* is an inside view of the bottom part of the cylinder-tumbler.

Having described the different parts, I shall now briefly point out the mode of operation. When the pin B is drawn back in the position shown in Fig. 1, the outer door-knob is free to rotate axially, and the door remains locked to those outside until the proper key is inserted in place through the slot in the cylinder-tumbler and turned, as hereinafter more fully explained; but when it is desired to convert it into an ordinary door-latch which may be opened from either side, the door-knob K is placed in position by bringing an index-mark on its shank in line with a similar index on the knob-rose C, and then the pin B, working in the slot *b*, formed on the inside knob-shank, is pushed forward from the position shown in the drawings, rocking on the apex of triangular recess *c* and shooting the lug *g* into the slot *g'*, formed in the shank of the outer knob, and slot *g''* in the spindle, when the turning of the outer knob will cause the spindle E to rotate and unlatch the door, the lug *g* engaging against the side of the slots *g'* and *g''*. When the pin B is pulled back from the inside, as shown in Fig. 1, the door remains locked from the outside, the handle turning without engaging the spindle. To unlock the door from the outside, I insert the key until its small end *j* enters the groove *o'* in the round lug *k* at the end of the cylinder-tumbler, and turn to the right, as indicated by arrow-head in Fig. 5, when the key, after passing the wards in the guard M, engages against the hooked lug *h'*, integral with the main spindle E, and causes it to turn and unlock the door.

By the combination of the parts as herein described I obtain a lock requiring no extra key-hole in the lock-case, while it answers all the purposes of a lock and latch combined.

The same device may be adapted to be used where knob-handles are not employed by fixing the cylinder in a slot in the door, having the cylinder-tumbler N journaled at one end by lug *k* in recess *i* and at the other end in a circular aperture formed in the covering formed on the cylinder L, to receive the reduced outer end of the cylinder-tumbler, so that the key may be inserted through the slot *o* and engage with lug *h'*, integral with spindle E, after passing the wards in the guard M, and unlock the door.

What I claim as my invention is—

1. The combination, with the lock-case and a spring-latch, of the knobs, a spindle connecting said knobs and formed with square portion at one end and cylindrical at the other, a lug on said spindle, and a key inserted into one of said knobs to engage said lug, substantially as and for the purpose specified.

2. The combination, with the door-knob A,

having a slot, *b*, formed in the shank thereof, the square spindle *E*, rigidly secured in said shank, and having a groove and a recess, *c*, formed therein, and a cylindrical portion, *h*, with slot *g*² on the outer end thereof, the slide *D*, provided with the pin *B* for moving the same, and adapted to engage the recess, and having lug *g* on the end thereof, of the outer door-knob, *K*, having shank *O*, provided with slot *g*¹, whereby when the lug on the slide is projected to engage the slots *g*¹ and *g*² the outer knob is locked to the spindle *E*, which actuates a spring-latch, substantially as described.

3. The combination, with the outer door-knob, *K*, the door-knob *A*, having slot *b* formed in its shank, the spindle *E*, formed with slot *g*², recess *c*, and circular recess, and having squared end, to which the door-knob *A* is rigidly secured, and the shank of the outer door-knob having slot *g*¹, of the pin *B* and the slide *D*, having lug *g*, substantially as and for the purpose specified.

4. The combination, with the outer door-knob, *K*, the spindle *E*, having formed integral therewith the lug *h*¹, and the guard *M*, provided with wards, as described, of the knob-cylinder *L*, slotted to receive said guard, the cylinder-tumbler *N*, slotted at *o* and grooved to receive a key, and with slot *t*, and the lug *k* on the cylinder-tumbler and journaled in the recess in the cylindrical end *h* of the spindle, substantially as described.

5. The combination, with the spindle having a recess formed in its cylindrical end, the inner door-knob having a cylinder formed in its lower half, and the outer door-knob having in its upper half a circular aperture, of the cylinder-tumbler grooved axially and formed with key-hole and slotted to receive a guard, a guard with wards which the key is adapted

to pass, a slide formed with a lug, and a lug integral with the spindle, all arranged and operating substantially as and for the purpose specified.

6. The combination of the inner and outer door-knobs, a spindle connecting said inner and outer door-knobs and having a circular groove in its cylindrical end, and a cylinder in the outer knob, of a recessed cylinder-tumbler adapted to receive a key and journaled to move in a cylinder in outer knob, guard with wards, lug integral with spindle, pin working in circular groove in cylindrical end of spindle, knob-rose, slide with lug adapted to engage with and to become disengaged from slot in shank of outer knob, and slot in spindle when actuated by a pin passing through slide and adapted to rock in a recess in spindle, and inner door-knob rigidly attached to squared end of spindle, having slotted shank for the pin which actuates the slide, the whole being arranged and operated to unlatch or unlock a door, substantially as described.

7. The combination, with the spindle *E*, the guard *M*, and knob-cylinder *L*, fixed in a slot in door and slotted to receive guard *M*, with wards formed therein, of cylinder-tumbler *N*, suitably journaled to rotate in said cylinder, and slotted at *o* and grooved to receive a flat key, together with lug *h*¹, integral with spindle *E*, against which lug the key is adapted to engage after passing the wards in guards *M*, substantially as described, and for the purpose specified.

Toronto, July 4, 1887.

JOHN SHARPE.

In presence of—

CHARLES C. BALDWIN,
J. M. JACKSON.