

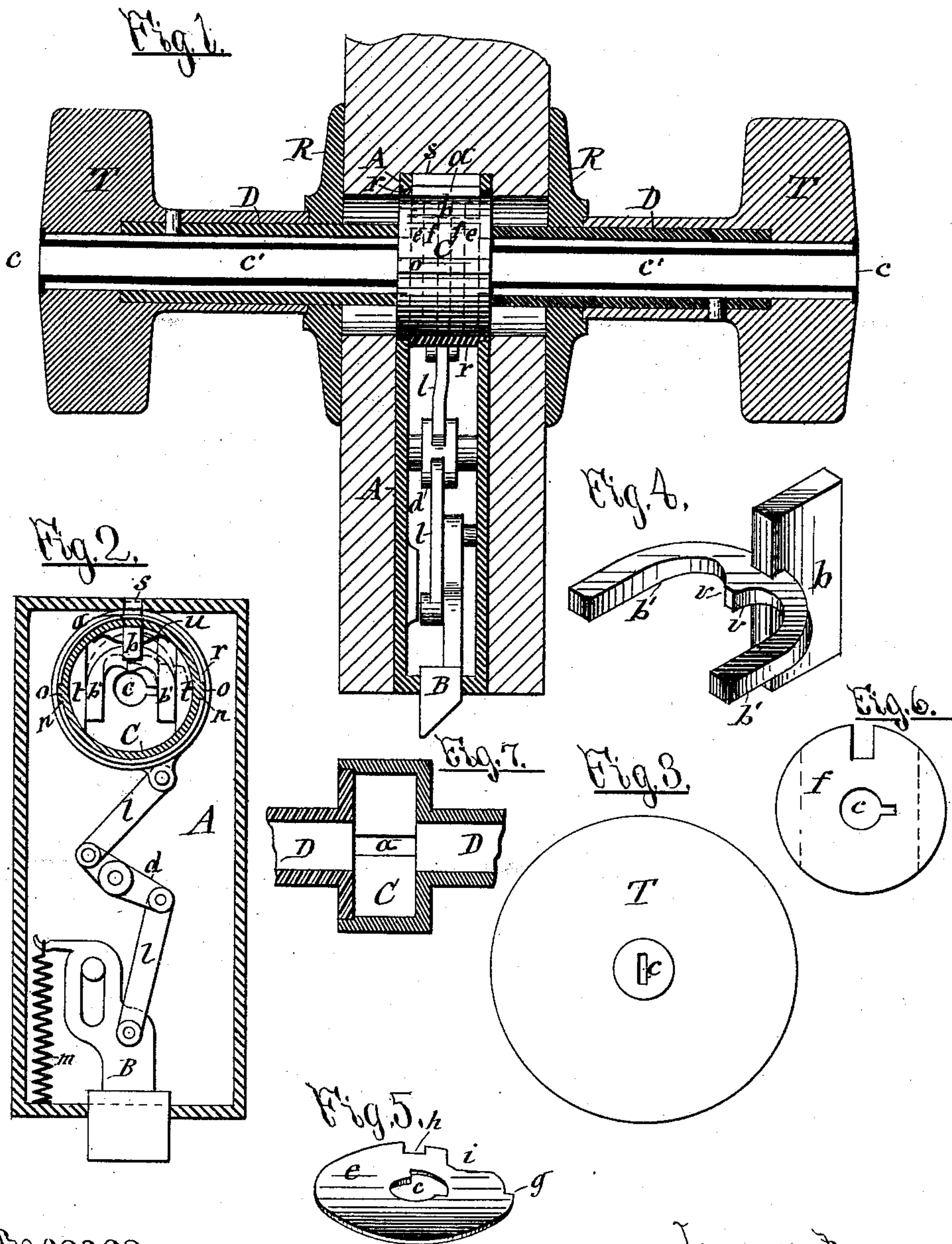
(Model.)

W. H. ACKER.

COMBINED LATCH AND LOCK.

No. 349,195.

Patented Sept. 14, 1886.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLITT H. ACKER, OF SYRACUSE, NEW YORK.

COMBINED LATCH AND LOCK.

SPECIFICATION forming part of Letters Patent No. 349,195, dated September 14, 1886.

Application filed January 23, 1886. Serial No. 189,481. (Model.)

To all whom it may concern:

Be it known that I, WILLITT H. ACKER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in a Combined Latch and Lock, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of latches and locks which have the key-hole in the end of the knob and the lock mechanism in range with the axis of the knobs to be operated by the key inserted in the knob; and the invention consists in a novel construction and combination of the component parts of the combined latch and lock, as hereinafter fully described, and specifically set forth in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of a lock embodying my invention. Fig. 2 is a longitudinal section of the lock, taken in a plane at right angles to that in which Fig. 1 is taken. Fig. 3 is a face view of the knob. Fig. 4 is an enlarged isometric view of the supplemental bolt, by which the main bolt is locked. Fig. 5 is an isometric view of one of the tumblers of the lock. Fig. 6 is a detached plan view of one of the fixed collars which are interposed between the bolt and tumblers; and Fig. 7 is a longitudinal section of the central portion of the spindle, taken in a plane at right angles to that shown in Fig. 1.

Similar letters of reference indicate corresponding parts.

A represents the case of a mortise-lock, in which case the main bolt B is arranged, as hereinafter more fully described.

In the inner or rear end of the case A is arranged a ring, *r*, which is rabbeted externally at its ends and seated with said ends in circular openings in opposite sides of the case A, and fitted to allow it to rotate on its axis. Within said ring is fitted to slide endwise a cylindrical supplemental case, C, which is provided externally with transverse lugs or splines *o o*, entering corresponding grooves, *n n*, in the inner side of the ring *r*, said case and ring being thus compelled to rotate conjointly.

To the ring *r* is connected the bolt B by means of a two-armed lever, *d*, pivoted on the case A, and straps or links *l l*, connecting op-

posite ends of said lever, respectively, with the bolt B and ring *r*. A spring, *m*, is arranged in any suitable and well-known manner to force the bolt toward its outward projecting position. The supplemental case C and its inclosing-ring *r* are provided with coinciding longitudinal slots *a*, and the case A is provided with a similar slot, *s*, arranged in such a position in relation to the slots *a* that when the case C is in its normal position and the bolt B in its outward projecting position the aforesaid slots *a* coincide with the slot *s*.

Inside of the case C is arranged the lock mechanism, which is susceptible of various modifications, and I therefore do not limit myself to any particular construction of said mechanism. The essential feature of said lock mechanism is the supplemental bolt *b*, arranged to lock the case C, so as to prevent its rotation, and thus also prevent the retraction of the main bolt B into the case A.

In the lock mechanism here selected for the purpose of more clearly describing the operation of my invention the bolt *b* projects through the slots *a* of the case C and ring *r*, and has affixed to it a yoke, *b'*, which is extended across the center of the case C at right angles to the axis thereof and slides in guides *t t*, attached to the case, as illustrated in Fig. 2 of the drawings. The bolt *b* is held yieldingly in its retracted position in the case C by a spring, *u*, bearing on the inner side of the case C, at opposite sides of the slot *a* and against the adjacent end of the yoke *b'*. This yoke is formed with cam-faces *v v*, arranged to be impinged by the key, and thus force the bolt *b* outward from the case C sufficiently to enter the slot *s* of the case A. At opposite sides of the yoke *b* are tumblers *e e*, but separated from the said yoke by intervening rigid collars or washers *f f*, which are provided with a central key-hole, *c*, as represented in Fig. 6 of the drawings. The tumblers are of the form of mutilated disks having in their peripheries a notch, *h*, of a size to receive and hold closely the inner end of the bolt *b*, and at a short distance from said notch the periphery of each tumbler has an elongated excision, *i*, which is at the end adjacent to the notch *h* of the same depth as said notch, and from thence carried outward to reduce the depth of the excision sufficiently to cause the tumbler, when

turned toward the bolt *b*, to hold the latter in its outward projecting position. The excision terminates with an abrupt offset or shoulder, *g*, which by its encounter with the bolt *b* arrests the rotation of the tumbler after it is brought into position for holding the bolt *b* in its outward projecting position. The center of the tumbler is provided with a key-hole, *e*, which is enlarged sufficiently to allow the key to turn independently of the tumbler until the key has forced the bolt *b* outward from the case C. By this time the key strikes the edge of the key-hole in the tumbler and turns the tumbler so as to bring the shallow portion of the excision *i* against the back of the bolt, and thereby retain the bolt in its projected position, as before stated.

D represents the spindle, to which the door-knob is attached in any usual and well-known manner. This spindle is attached to opposite sides of the case C or formed integral therewith, as represented in Fig. 7 of the drawings, and longitudinally through the spindle and knob and into the case C is extended a key-hole, *e*. That portion of the key-hole which is in the spindle and knob has a metallic tube, *e'*, extending the length thereof, and adapted to be turned therein, said tube being of a size to receive the key and guide the same into the case C, to operate the lock mechanism arranged therein, as hereinbefore described.

In applying my lock to a door I cut in the edge of the door a mortise to contain the case A in the usual manner, and transversely through the door I bore a hole coinciding with the ring *r* in the case A in size and position, and through this transverse hole I introduce the supplemental case C into the ring *r*, the spindle D projecting rigidly from the case C and protruding at opposite sides of the door. The usual rosettes, R R, being firmly secured to the sides of the door, and the knobs T T being attached to the spindle and abutting with their shanks against the rosettes, serve to confine the case longitudinally in the ring *r*.

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

1. In combination with the bolt B and its case A, the supplemental case C, adapted to rotate in the case A, and adapted to operate

the bolt B, and provided with a slot, *a*, the bolt *b*, arranged in the case C and projecting through the slot *a*, and adapted to engage the case A, and the spindle D, attached to the case C, and having the key-hole *e* extending longitudinally through it and into the case C, substantially as described and shown. 55

2. In combination with the bolt B, the case A, provided with the slot *s*, the supplemental case C, adapted to rotate in the case A, and adapted to operate the bolt B, and provided with the slot *a*, the bolt *b*, having the yoke *b'* with cam-faces *v v*, arranged in the center of the case C, tumblers *e e* at opposite sides of the bolt *b*, and the spindle D, attached to the case C, and having the key-hole *e* extending longitudinally through it and into the case C, substantially as described and shown. 60 65

3. In combination with the case A and spindle D, the case C, adapted to rotate in the case A and attached to the spindle, the bolt B, two-armed lever *l*, and the links *l l*, connecting opposite ends of said lever, respectively, with the bolt and spindle, substantially as described and shown. 70 75

4. The combination, with the case A and bolt B, of the ring *r*, pivoted in the case, and connected with the bolt, and provided with the slots *n n*, the cylindrical case C, arranged inside of the ring *r* and provided with lugs *o o*, and the spindle D, attached to the case C, substantially as described and shown. 80

5. The combination of the cylindrical case C, provided with the slot *a*, the bolt *b*, projecting through said slot and formed with the yoke *b'* at right angles to the axis of the case, and having cam-faces *v v* on said yoke, the spring *u*, the tumblers *e e*, consisting of circular disks with mutilated peripheries and enlarged central key-holes, and the spindle D, attached to the case C, and provided with the longitudinal key-hole *e*, substantially as described and shown. 85 90

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York. 95

WILLITT H. ACKER. [L. S.]

Witnesses:

C. BENDIXON,
C. H. DUELL.