

(No Model.)

C. P. BUSHNELL.
LADDER LOCK.

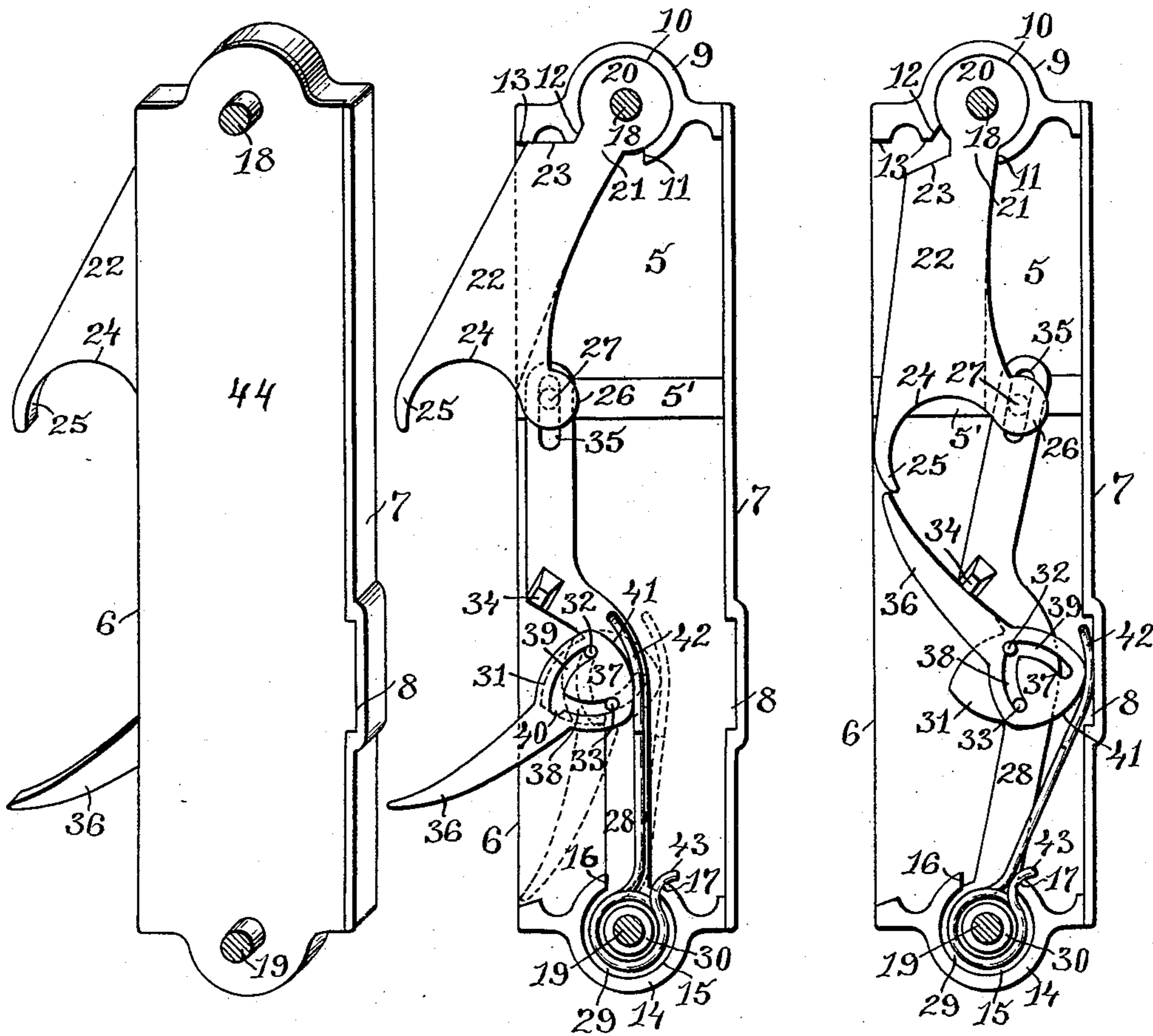
No. 523,848.

Patented July 31, 1894.

Fig. 1.

Fig. 2.

Fig. 3.



WITNESSES:

Henry J. Miller
Chas. H. Luther Jr.

INVENTOR:

Cyrus P. Bushnell,
by Joseph A. Miller & Co.,
Attys.

UNITED STATES PATENT OFFICE.

CYRUS P. BUSHNELL, OF PROVIDENCE, RHODE ISLAND.

LADDER-LOCK.

SPECIFICATION forming part of Letters Patent No. 523,848, dated July 31, 1894.

Application filed March 21, 1894. Serial No. 504,507. (No model.)

To all whom it may concern:

Be it known that I, CYRUS P. BUSHNELL, of Providence, in the county of Providence and State of Rhode Island, have invented certain
5 new and useful Improvements in Ladder-Locks; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.
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This invention has reference to improvements in devices for automatically locking one portion of an extension ladder to the other.

15 One object of the invention is to increase the strength of the ladder-lock.

Another object of the invention is to more completely control the operation of the same.

20 Still another object is to reduce the extreme width of the casing in which the operating parts are mounted.

The invention consists in the peculiar construction of the thrust locking-bolt and in the manner in which it is mounted.

25 The invention also consists in the combination with the locking-bolt, of the novel lever by which it is operated.

30 The invention also consists in the combination with a locking-bolt and a lever for operating the same, of the peculiar pawl for moving the lever.

35 The invention also consists in such other novel features of construction and combination of parts as may hereinafter be more fully described and pointed out in the claims.

40 Figure 1 represents a view of the improved ladder-lock, partially inclosed within the casing, also showing the bolts by which it may be secured to the side piece of a ladder. Fig. 2 represents a view of the same with the cover removed to more clearly show its construction and operation. Fig. 3 represents a similar view showing the parts in the closed or unlocked position.

45 Similar numbers of reference designate corresponding parts throughout.

50 Ladder-locks of this description are generally used for locking one of a pair of ladders to its companion ladder to allow of the extension of the same, the locks being secured to the sides of one ladder and the locking-bolts

engaging the rounds of the other ladder; it is evident that considerable strain is exerted on the locking-mechanism when the same engages with a round of the ladder and the locking-device must be adapted to withstand this strain, the mechanism must be capable of quick operation to readily engage and disengage the rounds of the ladder when so required.
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In the drawings 5 indicates the bottom of the casing having an open edge 6 and a closed back 7 furnished with a slight recess 8, the upper end 9 is furnished with a circular recess 10 the wall of which is cut away between the stops 11 and 12, and extending from the stop 12 to the front 6 is a bearing-shoulder 13. The lower end 14 has also a circular recess 15 open between the stops 16 and 17, and through the bottom 5 in the axial center of the recesses 10 and 15 are formed perforations through which the securing-bolts 18 and 19 extend.
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Movable within the recess 10 is the circular bearing 20 connected by the neck 21 with the locking-bolt 22. The bearing 20 is axially perforated to receive the bolt 18, and the neck 21 is narrower than the space between the stops 11 and 12 which limit the swinging of the bolt. Below the neck 21 is a forwardly-inclined shoulder 23 which, when the bolt swings outward, bears against the shoulder 13. The lower end of the bolt is furnished with a semi-circular jaw 24 having a forward curving finger 25 and a rearwardly-extending thin stud 26 to the under portion of which the pin 27 is secured.
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The operating-lever 28 has a circular bearing 29 movable within the bearing 15 and furnished with a central perforation for the bolt 19 surrounded by the collar 30, the width of the lever being less than the distance from the stop 16 to that marked 17,—in the open position the lever 28 extends upward to a point opposite the recess 8 where it has the plate 31 furnished with the pins 32 and 33, it then curves forward to the stop 34 and then extends in a straight line to slightly beyond the cross-rib 5' on the bottom 5 where it is furnished with a slot 35 in which the pin 27 engages.
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The pawl 36 has a flattened base 37 through

which the slots 38 and 39 are cut, the upper end of the slot 38 being furnished with a recess 40. This base is set on the lever 28 so that the pins 32 and 33 extend through these slots so that the pawl is free to move on these pins when turned downward, but, when it is turned upward, as in Fig. 3, the recess 40 engages the pin 32,—the back 41 of this base 37 serves also as a cam, bearing against the upper end of the spring 42, the lower end 43 being coiled around the collar 30 and turned over the stop 17.

The open top of the case is closed by the cover 44 through which the securing-bolts 18 and 19 extend.

The ladder-lock, thus described, being secured to the side frame of an upper ladder movable over a base ladder and being carried upward with that portion of the ladder to which it is attached, the locking-bolt 22 will be thrown inward as it passes under each round of the base ladder. When the extension is deemed sufficient the movable ladder is allowed to fall back until the jaw 24 engages a round of the lower ladder and the upper ladder will be held in position. When it becomes necessary to lower the extension, it is first raised until the pawl 36 is brought above a round and is then quickly dropped; as the pawl 36 strikes the succeeding rounds it will be thrown upward and inward, and striking against the stop 34 on the lever 28 will throw this lever inward, this lever acting through the pin 27 to draw the locking-bolt 22 also in that direction. If this descent be arrested the spring 42 will act on the base of the pawl to throw the lever 28 and the locking-bolt outward.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. In a ladder-lock, the combination with a casing having a closed upper end furnished with circular recess having an opening in the wall thereof, and a lateral bearing-shoulder, of a locking-bolt having a circular bearing fitting said recesses, a narrow neck, a laterally-inclined shoulder and a lower jaw, and means for automatically operating said locking-bolt.

2. In a ladder-lock, the combination with a case, a lever pivoted at the lower end thereof having a projecting-stop 34, a pawl movably supported on said lever, and a spring for throwing the pawl forward, of a locking-bolt, pivoted at the upper end of the case, having a depending jaw, and means for loosely connecting the lever and locking-bolt.

3. The combination with a casing having the upper end 9 furnished with the recess 10 open at the lower portion and with the shoulder 13, and the lower end 14 having the open sided recess 15, of the locking-bolt 22 having the bearing 20 mounted in the recess 10, the neck 21, the jaw 24 and the pin 27, the lever 28 having the slot 35 engaging the pin 27, the stop 34, the pins 32 and 33, the bearing 29 furnished with the collar 30 movable in the recess 15, the pawl 36 having the slots 38 and 39 engaging the pins 32 and 33, and the spring 42 secured at its lower end, as described, and bearing against the base of the pawl.

In witness whereof I have hereunto set my hand.

CYRUS P. BUSHNELL.

Witnesses:

HENRY J. MILLER,
M. F. BLIGH.