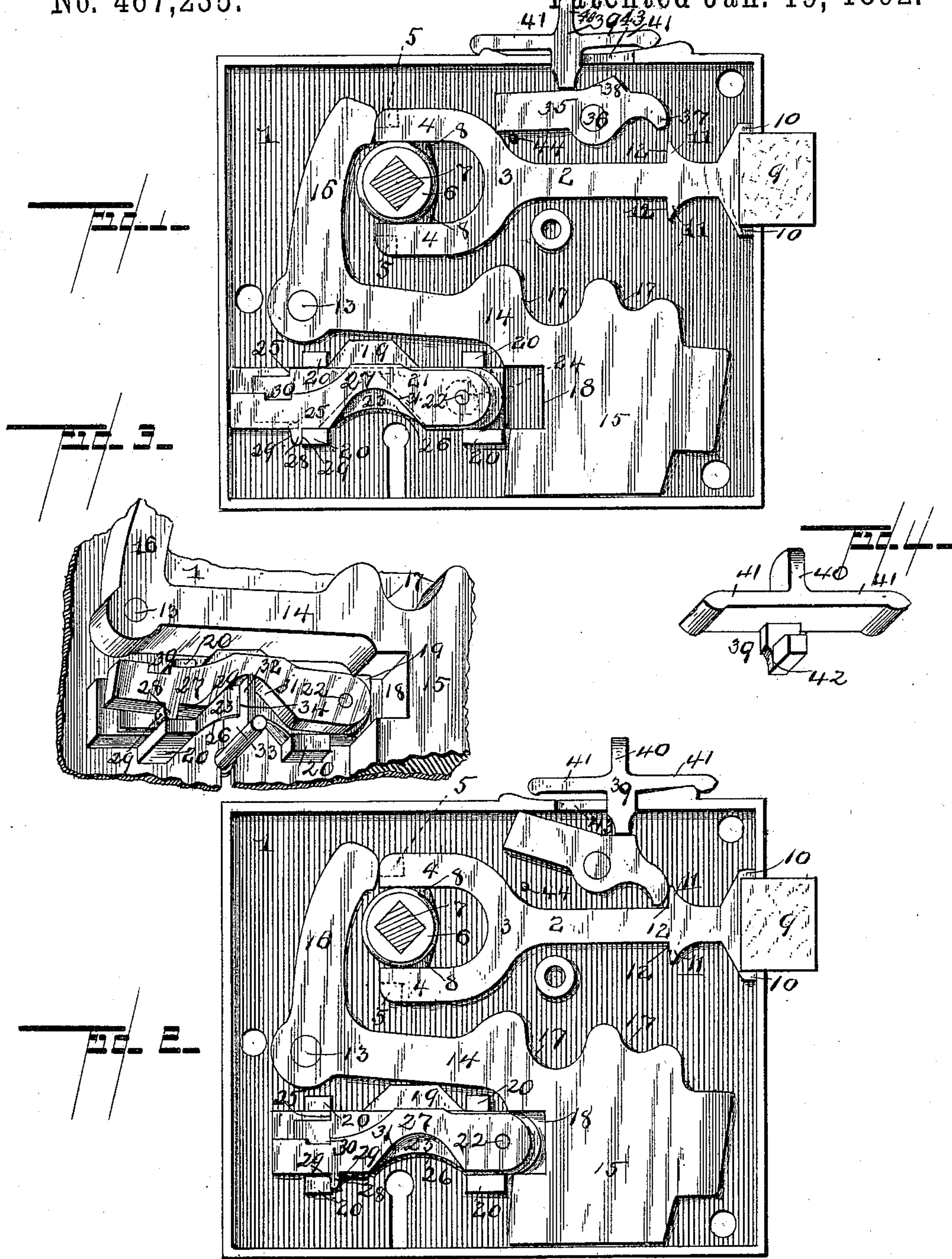


(No Model.)

R. G. PING & H. MENDENHALL.  
LOCK.

No. 467,235.

Patented Jan. 19, 1892.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## LOCK.

SPECIFICATION forming part of Letters Patent No. 467,235, dated January 19, 1892.

Application filed August 1, 1891. Serial No. 401,397. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT G. PING and HIRAM MENDENHALL, citizens of the United States, residing at Audubon, in the county of Audubon and State of Iowa, have invented a new and useful Lock, of which the following is a specification.

This invention relates to combined locks and latches, and is an improvement on Letters Patent No. 431,674, granted to us July 8, 1890, and has for its object to provide a combined lock and latch in which the use of springs is entirely omitted and the disadvantages thereof dispensed with, while at the same time the parts of the lock are so adjusted that the same effectively operates as an automatic latch and at the same time can be easily and readily locked; and with these objects in view the invention consists of a gravity-operated latch and locking devices combined therewith in a novel manner, hereinafter more fully described, illustrated in the accompanying drawings, and specifically pointed out in the appended claims.

In the accompanying drawings, Figure 1 represents a side elevation of our improvement with one plate of the casing removed, showing the various parts. Fig. 2 is a similar view showing the invention in its locked position. Fig. 3 is a detail view in perspective of the sliding lock and the key about operating the same to lock the latch, the other parts of the lock being broken away. Fig. 4 is a detail in perspective of the night-latch-locking slide.

Referring to the accompanying drawings, 1 represents a casing of ordinary construction, within which are located the various parts of the lock.

2 indicates the sliding latch and bolt, which is provided at its inner end within the casing with the bifurcations 3, the opposite arms 4, forming the same, being further provided with the inward projections or posts 5, and within said bifurcation 3 the ordinary hub 6 is designed to work, the said hub being operated by the ordinary knob-spindle 7, and is provided with the opposite wings 8, which are designed to bear against said inwardly-projecting posts or lugs and withdraw the bolt within the casing, according as said hub is turned in either direction. The said bolt is provided at the terminal of the ordinary latch

end 9 within the casing with the oppositely-extending projections 10, which abut against the sides of the ordinary opening in the lock-casing, through which the bolt extends to limit its outward movement, said bolt being also further provided on its shank within the casing with the supplemental projections 11, which form the opposite shoulders 12, the purposes of which will be directly described. Eccentrically pivoted upon the spindle 13 is the bell-crank-shaped lever 14, one arm of which is enlarged, as at 15, to form a weighted end, while the other arm 16, forming the angular weighted lever, is designed to normally bear against the inner bifurcated end of said sliding bolt and normally bear the same outward, so that when the hub is turned to withdraw the latch within the casing the same is immediately forced without by the weighted lever referred to. The said lever is provided on its upper edge, at its enlarged end 15, with a series of notches or recesses 17, which are adapted when the bolt is withdrawn within the casing to clear and fit over the shoulders and projections on the underside thereof and so that the same may have sufficient play upward and yet clear the obstructions within its path to allow the bolt to be entirely withdrawn.

One side of the weighted end 15 of the bell-crank lever referred to is further provided with a squared notch or recess 18, which is designed to be engaged by the locking-bolt 19, which is operated upon by a key and thrown within said notch or recess when the latch is in its normal position without the casing, and thus prevents the same from being turned back within the casing by the knob on account of the lever being immovably locked within the casing. The said locking-bolt 19 is adapted to slide within the ways formed by the inwardly-projecting lugs 20, integrally cast with the outer casing. Said bolt is further provided with an angular notch or recess 21, which receives the wing of the key and is operated thereby, as will be described, the bolt being further provided at one end thereof with the projecting pin 22. A locking-plate 23 is provided at one end with an enlarged perforation 24, is loosely mounted over said pin and directly upon said sliding bolt, and is provided at its opposite



end with the locking-shoulders 25, which, when the bolt is in engagement with the squared notch or recess in the weighted end of said lever, falls behind one of the inwardly-projecting lugs forming guides for the locking-bolt, and thus prevents the lever from being unlocked by accidental withdrawal or the use of a wrong key, said plate being further provided with a circular recess 26, within which and over which the key operating the lock works. A tumbler 27 is also pivoted upon said projecting pin and over said locking-plate and is provided at its free end with the tongue or lug 28, which forms on either side thereof shoulders 29, which, when the sliding bolt is either in its locked or unlocked position, are adapted to drop over the inwardly-projecting guide-lug located adjacent to the free end of said tumbler and thus lock the sliding bolt and prevent the same from being moved in either direction, unless operated upon by the key. To prevent keys having wings that are not the exact length to operate this lock, the said tumbler is further provided on its upper edge with the squared notch or recess 30, which, when the tumbler is thrown too far upward by the wing of the key working in the circular recess 31 therein, is adapted to engage one of said guide-lugs in the casing and thus prevent the bolt being operated upon. This is also effected and the unlocking of the lock avoided by means of the uppermost shoulder upon the free end of said superposed locking-plate engaging the same guide post or lug when the slot in the wing of the key which takes over said plate is too short, and thus throws the plate up against said lug, even if the tumbler is thrown back the requisite distance.

The key 32, operating the lock, is provided with an ordinary wing 33, having the central slot 34, the said key being designed to be inserted in the ordinary key-hole of the lock-casing, the said slot in the wing being designed to straddle the locking-plate interposed between the tumbler and the sliding locking-bolt, while the portion of the wing below the slot is designed to work within the angular notch or recess in the bolt, and the uppermost portion of the wing above the said slot being adapted to work within the recess of the superposed tumbler. In turning around, the uppermost portion of the wing first throws up the pivoted tumbler out of engagement with the guide-lug. Then the bottom of the slot throws up the locking-plate thereunder while at this stage or point. The lowermost part of the wing beneath the slot bears against one side of the angular recess within the locking-bolt and throws the same forward into engagement with the weighted end of the bell-crank lever, the withdrawal of the key allowing both tumbler and interposed locking-plate to drop by the force of gravity into engagement with one of said guide posts or lugs, as stated. In unlocking the lock the operation is reversed—that is, the key being turned in a reverse di-

rection, but operating in substantially the same manner. First, the tumbler is thrown out of engagement with the guide-lug, then the locking-plate thereunder is thrown out of engagement with the same lug on account of the bottom of the slot in the wing of the key having reached the highest point of the circular recess therein, and, finally, the sliding-bolt is withdrawn out of engagement with said lever.

The combined lock and latch is further provided with the night-catch 35, which is pivoted at 36 directly above the shank of the sliding bolt 2 and is provided with a locking-tongue 37 and an upper curved face 38, upon which the slide 39 is designed to bear and operate said catch, the tongue 37 of which is designed to take behind the upper shoulder 12 upon the shank of said bolt, and thus effectually prevents its being withdrawn within the casing in the ordinary manner. The slide 39 is provided with a thumb-piece 40 and laterally-extending wings 41, which travel across the top edge of the lock-casing, and the depending L-shaped projection 42, which works within the slot 43 in the top of the lock-casing, and the lower edge thereof bears upon the top edge of said pivoted catch and operates the same substantially as described, the backward movement of said catch or dog being limited by the inwardly-projecting stop 44.

The construction and operation of our improved latch and lock are now thought to be apparent without further description.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a combined latch and lock, a sliding bolt, a gravity bell-crank lever bearing against the inner end of said bolt and provided with a squared notch or recess located in the weighted end thereof, and a sliding lock adapted to engage said notch or recess, the same comprising a sliding bolt working within guide posts or lugs and provided with a central angular recess and an inwardly-projecting pin, a tumbler mounted upon said bolt and over said pin and provided with a central cylindrical recess and a locking tongue and notch located on opposite sides of the free end thereof, and an interposed plate also mounted upon said projecting pin and provided with a central circular recess and oppositely-disposed shoulders at the free end thereof, substantially as described.

2. In a combined latch and lock, the combination, with a sliding bolt and means for operating and controlling the same, of the sliding lock comprising a sliding bolt working within guide posts or lugs and provided with a central angular recess and an inwardly-projecting pin, a tumbler mounted upon said bolt and over said pin and provided with a central cylindrical recess and a locking tongue and notch located on opposite sides of the free end thereof, and a plate interposed between said tumbler and bolt, also mounted



upon said projecting pin and provided with a central circular recess and oppositely-disposed shoulders at the free ends thereof, substantially as described.

5 3. The combination, with a sliding bolt provided with oppositely-disposed shoulders and oppositely-disposed projections to limit its outward movement, of a pivoted bell-crank lever, one arm of which bears against the inner end of said sliding bolt and the other arm  
10 being provided with an enlarged weighted end having a lateral notch or recess, a sliding lock adapted to engage said notch or recess, and a pivoted night-catch adapted to engage  
15 the shoulders of said sliding bolt, substantially as set forth.

4. The combination, with a sliding bolt having oppositely-disposed shoulders and means for controlling and operating the same, of  
20 the catch or lock comprising the pivoted dog

located above the shank of said sliding bolt and provided with a locking-tongue adapted to engage said shoulder, and an upper curved bearing-face, and an operating-slide having a thumb-piece, oppositely-extending wings 25 adapted to travel over the top of the casing, and an inwardly-extending L-shaped lug or projection working within a slot in the top of said casing and adapted to bear upon the upper curved surface of said pivoted dog, substantially as set forth. 30

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

ROBERT G. PING.  
HIRAM MENDENHALL.

Witnesses:

A. F. ARMSTRONG,  
L. J. YAGGY.