

William N. Hall.

Combination Lock.

Patented Sep. 12, 1871.

No. 118,930.

Figure 1.

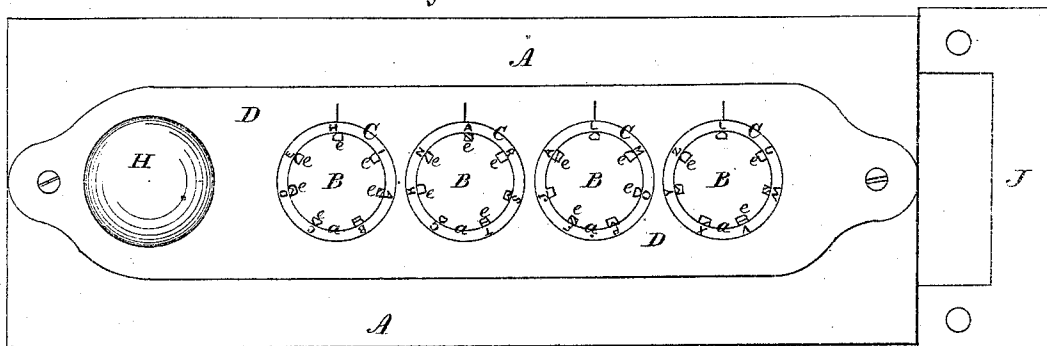


Figure 2.

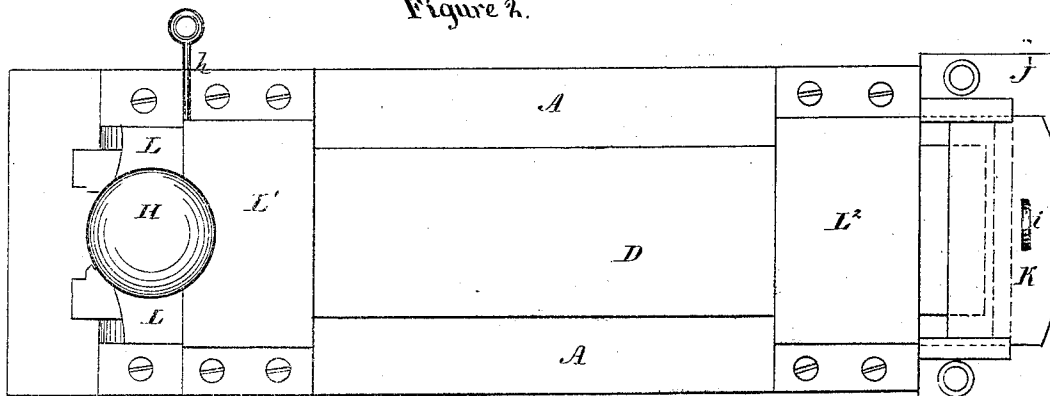


Figure 3.

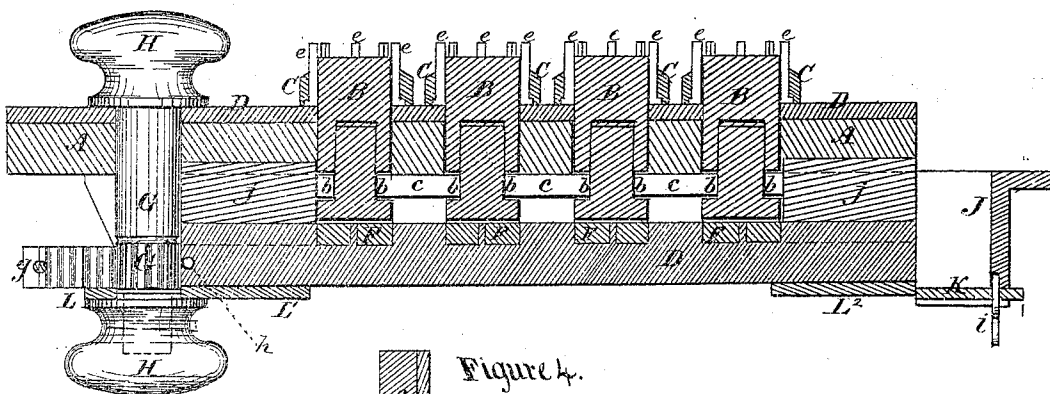
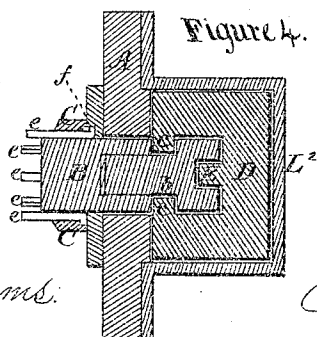


Figure 4.



Witnesses:

J. West Wagner.

Eugene C. Adams.

Inventor:

William N. Hall,

by Johnson, Klauke & Co.
his attorneys.

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Figure 5.

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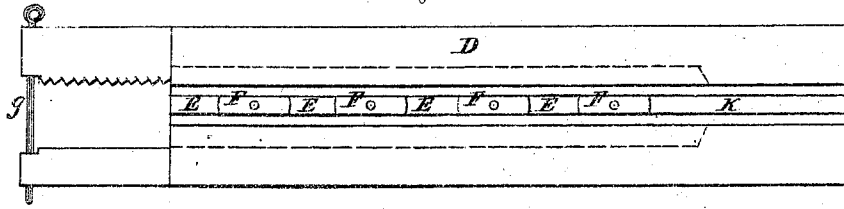


Figure 6.

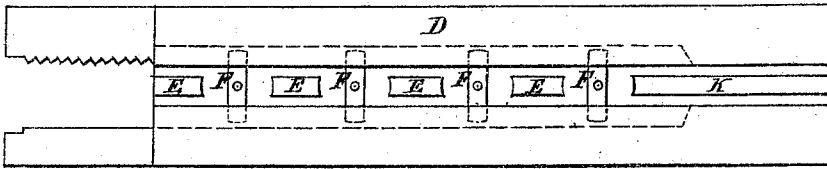


Figure 7.

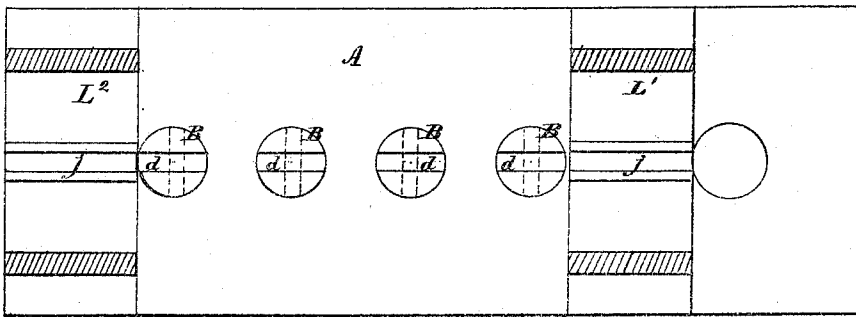


Figure 8.

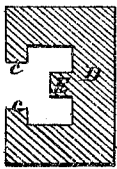


Figure 9.

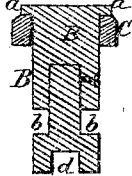


Figure 10.

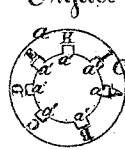


Figure 11.

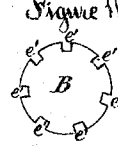
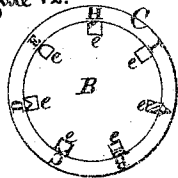


Figure 12.



Witnesses:

J. West Wagner.

Eugene C. Adams.

Inventor:

William N. Hall.

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UNITED STATES PATENT OFFICE.

WILLIAM N. HALL, OF SPRINGFIELD, TEXAS.

IMPROVEMENT IN COMBINATION LOCKS.

Specification forming part of Letters Patent No. 118,930, dated September 12, 1871.

To all whom it may concern:

Be it known that I, WILLIAM N. HALL, of Springfield, in the county of Limestone and State of Texas, have invented certain new and useful Improvements in Combination Locks, of which the following is a specification:

My invention relates to that class of locks in which the bolt is locked and unlocked by a certain combination of letters or numbers; and it consists in combining a series of spindles with a door and a series of pivoted buttons on the inner side of the bolt in such manner that the turning of the spindles will turn the buttons out of the line of a fixed tongue on the inside of the bolt, and by this means lock the bolt and allow it to be unlocked when said buttons are in line with said tongue. My invention also consists in combining the sliding bolt with a series of locking and unlocking-spindles, whereby the latter, while serving as the only means necessary to hold the bolt in place, serves also to lock and unlock the bolt. My invention also consists in combining with each of the locking and unlocking-spindles an annular ring, having letters or numbers and a series of different-shaped pegs arranged and operating so that the bolt can be locked and unlocked by the different-shaped pegs or the combination of letters or figures, or by both jointly.

In the accompanying drawing, Figure 1 represents an outside elevation of the lock, showing the bolt as having been unlocked upon the letters H A L L. Fig. 2 represents an inside elevation of the same, showing also the sliding keeper partly opened and the bolt thrown. Fig. 3 represents a horizontal section through the center line of the bolt. Fig. 4 represents a cross-section through one of the locking and unlocking-spindles and the bolt. Fig. 5 represents an elevation of the inner side of the bolt removed from the door, showing the buttons in line when the bolt is unlocked. Fig. 6 is a similar view, showing the buttons turned at right angles to their tongue when the bolt is locked. Fig. 7 represents an elevation of the inner side of the door, showing also the grooved ends of the locking and unlocking-spindles applied thereto.

In the drawing, A represents a portion of the door to which the lock is applied. A series of cylindrical spindles, B, is fitted in separate openings in the door quite close together in the same horizontal line. Their outer ends are provided with rings C, upon which are made the combina-

tion letters or numbers. These rings C fit against the door or a face-plate, D, and are held in place by collars *a*, Fig. 9, on the ends of the spindles. The inner ends of the spindles B project beyond the door, and are provided with annular grooves *b*, into which fit tongues *c* formed on the inner side of the bolt D, so as to allow the latter to move in the direction of its length, but to secure it to the door. They are also provided with transverse grooves *d* arranged to receive a central tongue, E, formed within the bolt D, by which the spindles B are held from turning when the bolt is unlocked. This tongue is composed of a series of fixed sections, E, and pivoted buttons F, the latter being just equal in length to the diameter of the notched end of the spindle B, so that when embraced exactly within the notch or groove *d* of the spindle it may be turned with the latter crosswise or out of line of the fixed sections E of the tongue, and thus lock the bolt, as shown in Figs. 6 and 7. The bolt D is made with a longitudinal opening extending from end to end, as shown in Figs. 5, 6, and 8, in order to receive and move over and upon the locking and unlocking-spindles; and when the fixed and pivoted sections of the tongue E F are brought in line so as to form a continuous tongue the bolt is free to be so moved, but when the buttons F are turned to cross the line of said tongue the bolt will be locked. The letters or numbers on the combination rings C, shown in Figs. 1 and 12, are sufficient, in connection with any fixed mark on the door, to lock and unlock the bolt. But as such an arrangement does not admit of locking and unlocking the bolt in the dark, I have arranged, in connection with such combination rings C, a series of pegs, *e*, in the notches *e'* in the outer ends of the spindles. These pegs also fit into notches *a'* in the combination rings C, corresponding to those, *e'*, in the collars *a* of the spindles for the purpose of locking the combination rings C with the spindles, and they are prevented from being drawn out by having heads on their inner ends fitting into recesses in the inner faces of said rings, as shown in Figs. 3 and 4. These pegs *e* project from the spindles B, and each has a different-shaped end—that is to say, square, notched, triangular, semicircular, flat, beveled on side, and beveled on corner, for the purpose of distinguishing them from each other in the dark, and thus lock and unlock the bolt by the combination of different-shaped pegs, as

shown more clearly in Fig. 12. In order to bring the pegs *e* at a proper point for this operation the door-plate or door itself is provided with a notch, *f*, (see Fig. 4,) situated so that when the spindle is turned to bring the pivoted button *F* into or out of line with the tongue *E* of the bolt, the proper peg may be pressed into the notch and hold the spindle *B* in the proper position until the bolt is either locked or unlocked. These devices, therefore, are of great convenience in enabling the lock to be managed at night by simply feeling the shape of the pegs, while in the day it may be operated by the letters of the combination rings. Each spindle is made in two parts—one fitting within the other—so as to be lengthened or shortened to suit different thicknesses of doors, and they may be secured together in any suitable manner, as shown in Figs. 3 and 9.

The bolt *D* is operated by a cogged spindle, *G*, provided with knobs *H* in the usual manner. This spindle *G* is held in place by a hasp, *L*, through which the rear end of the bolt passes. This hasp also serves other purposes, viz., to control the throw of the bolt by a pin, *g*, inserted into the rear end of the bolt so as to strike the hasp and thus limit the throw of the bolt. (See Fig. 3.) Another pin, *h*, may be inserted into the bolt at the other side of the hasp, (see Fig. 2,) when the bolt is locked for the purpose of fastening the lock to enable those in the room to exclude others who might know the combination. These pins, however, are only used when the lock is applied to doors of dwellings. In changing the combination for operating the bolt it is only necessary to draw out the bolt from the supporting-spindles *B* and put the latter upon a different combination, so as to receive the tongue of the bolt. The bolt should always be kept at the locking point or locked, in order to prevent persons from finding out the combination on which it is set, and for this purpose I construct the box-staple *J* of the door-frame with a sliding cap-plate,

K, held in place by a pin, *i*, so that when desired the pin *i* can be drawn out, the cap-plate *K* slid back, and the door opened by those on the inside without unlocking the bolt by the spindles. This is a matter of great convenience, and adapts a combination lock to the doors of hotels.

In the drawing I have represented two bolt-hasps, *L*¹ and *L*², secured to the door, but they are not necessarily required except where the bolt might be required to be moved a distance of six inches or more; then the front one would serve to keep the bolt-buttons *F* in line with the notched spindles. The hasps may also be provided with grooved tongues *j* to receive guide-tongues *E* *k* on the inside of the bolt.

The combination in the lock can be increased to any desirable extent by increasing the number of the operating spindles; and it can be adapted to trunks and safes of any kind.

Having described my invention, I claim—

1. The combination, with a sliding bolt, of the locking and unlocking-spindles, when the latter are made to both lock and unlock the bolt, and are the only means required for fastening it to the door, as described.
2. The combination of the series of locking and unlocking-spindles *B* with the pivoted buttons *F* and fixed tongue *E* of the bolt *D*, as described.
3. The combination pegs *e*, having different forms or shapes to distinguish them from one another, as described.
4. The combination pegs *e*, arranged upon the spindles *B* so as to lock the combination rings *C* therewith, in connection with a notch, *f*, in the door arranged to receive the proper peg of each spindle to lock and unlock the bolt upon a combination of different-shaped pegs, as described.

WILLIAM N. HALL.

Witnesses:

WM. A. J. BIGGS,
JAS. LOFLAND.