(Model.)

J. W. HARD.

COMBINATION LOCK.

No. 370,254. Patented Sept. 20, 1887.

Fig. 1.

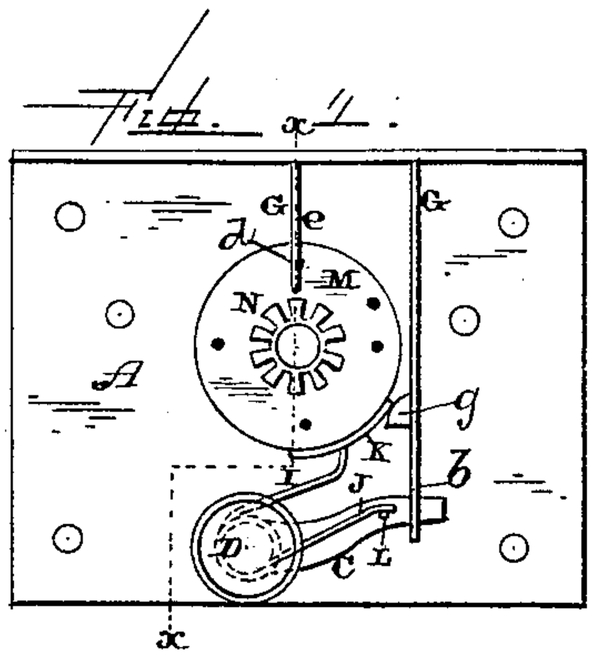


Fig. 2.

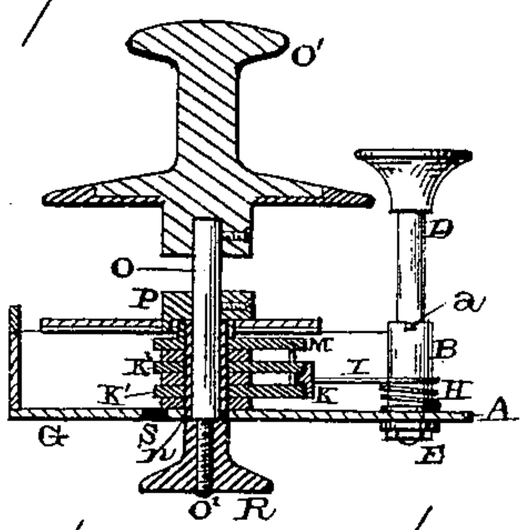


Fig. 3.

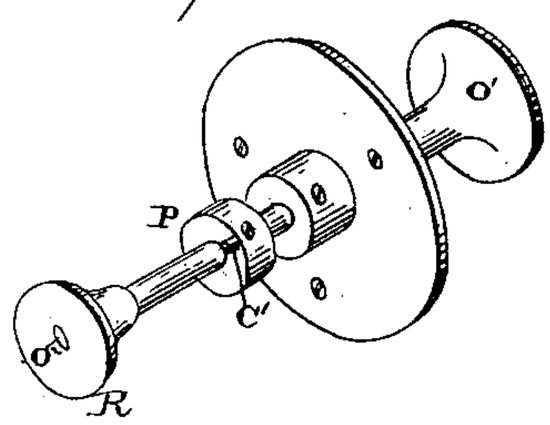


Fig. 4.

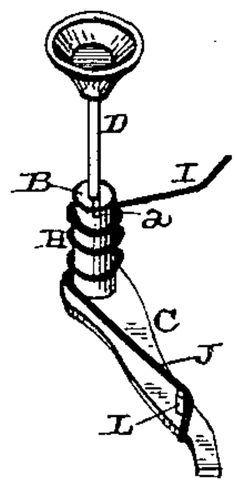


Fig. 5.

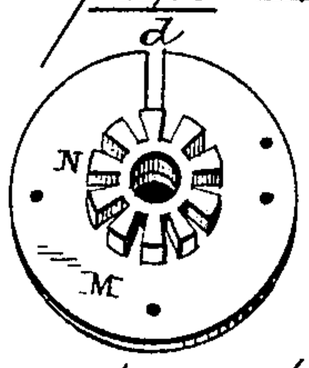


Fig. 6.

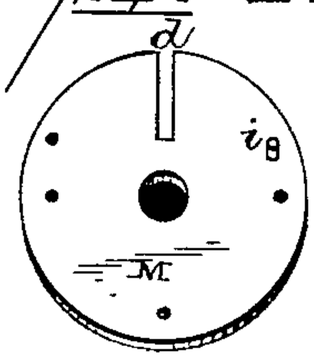


Fig. 7.

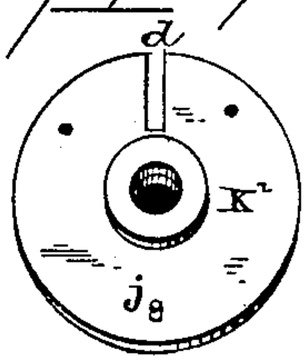


Fig. 8.

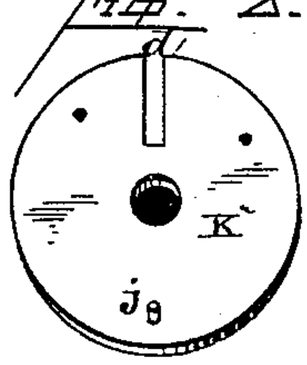
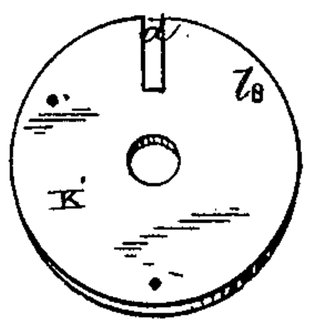


Fig. 9.



Witnesses.
R. F. Gardner
R. T. Campbell

Inventor.
John W. Hard,
per F. A. Lehmann, atty.

UNITED STATES PATENT OFFICE.

JOHN W. HARD, OF CHICAGO, ILLINOIS.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 370,254, dated September 20, 1887.

Application filed November 19, 1885. Serial No. 183,325. (Model.)

To all whom it may concern:

Be it known that I, JOHN W. HARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Combination-Locks, of which the following is a specification.

In order that those skilled in the art to which my invention appertains may know how to make and use the same, I will now proceed to describe it in connection with the accompanying drawings, in which—

Figure 1 is a front view of the lock with the casing and operating-spindle removed. Fig. 2 is a vertical sectional view taken on the dotted lines *x x* of Fig. 1. Fig. 3 is a perspective view of the operating-spindle detached from the lock. Fig. 4 is a perspective of the spindle, arm, and spring. Figs. 5, 6 are perspectives of the upper tumbler, taken from opposite sides. Figs. 7 and 8 are perspectives of the central tumbler, taken from opposite sides. Fig. 9 is a perspective of the lower tumbler.

In these drawings, A represents the rear casing of the lock, to the lower edge of which is attached the socket B, bearing the operating-arm C. The manner of attaching this socket to the casing is by means of the spindle D, which is provided with pins *a*, which enter slots in the socket, as clearly shown in Fig. 2, and whereby the same is enabled to be turned by the said spindle. The rear end of the spindle is screw-threaded, and upon the outside of the casing a screw-nut, E, is placed, by which it and the socket are retained in place. The outer end of the operating-arm C engages with the lower projection, *b*, of the bolt G, and the said bolt may be moved up and down by vibrating the arm C. The bolt G is of the shape shown in Fig. 1. The longer arm, *b*, extends beyond the guide *g* and engages with the arm C, by means of which the bolt is moved back and forth, while the shorter arm, *e*, enters the slots *d*, made in the tumblers, when the tumblers are turned, so that all of the slots are in a line with each other, as shown in Fig. 1.

H represents a spring which is coiled around the socket B, and is provided with two arms, I J. The arm I supports and exerts an upward strain upon a brake or friction shoe, K, which bears against the two inner tumblers, K′ K², and prevents their turning except when direct pressure is exerted for this purpose, and the other end, J, bears against a projection, L, placed upon the operating-arm C, and exerts a downward pressure, the tendency of which is to withdraw the bolt from a locking position.

M represents the outer tumbler, between which and the remaining tumbler, K′ K², suitable connections are formed in any well-known manner. This arrangement of these tumblers and the manner in which they operate one upon the other being well known, it will not be necessary to give a detailed description thereof. The front face of this tumbler M is provided with a disk, N, provided with a series of indentations in its periphery.

O represents the operating-spindle, which is provided upon its outer end with a convenient handle, O′, for grasping when it is desired to reverse the tumblers, and it is also provided with a disk, P, carrying a pin, *c′*, so situated that the said pin may be inserted into any desired notch of the disk upon the first tumbler. The opposite side of the tumbler M is made plain, and has the stud *i* projecting therefrom to engage with a similar stud, *j*, which projects from opposite sides of the tumbler K², which is made plain upon both of its sides. The stud *j* engages with the stud *l*, which projects from the inner face of the third tumbler, K′. These three tumblers are separated from each other by washers of suitable thickness, and the tumblers are held in place by the sleeve *n*, through which the spindle O passes. This sleeve *n* passes through the plate A at one end and forms a bearing for all of the tumblers, as shown in Fig. 2. By turning the knob O′ and its spindle O back and forth in the usual manner the tumblers are turned until all of the slots *d* are brought into line with each other, and then the knob D can be turned so that its arm C will draw the bolt G backward. The inner end of the operating-spindle is provided with an elongated screw-thread, O², upon which is placed a screw-nut, R, which bears against the inner plate, A, of the lock and holds the spindle in position.

When it is desired to hold the tumblers in a position to allow the bolt to be withdrawn for any purpose, a pin may be inserted through

the opening S in the rear portion of the casing, which is situated opposite the said notches when they are in a position to allow the bolt to be withdrawn.

Having thus described my invention, what I claim is—

1. The combination of the tumblers, the spindle O, upon which the tumblers are placed, and the bolt, with the socket, the spindle D, which secures said socket in place, the arm secured to said socket and engaging with the bolt, the brake which presses against two of the tumblers, and the spring having one end to bear against the brake and the other against the operating-arm, substantially as shown.

2. The combination of the spindle O, provided at its outer end with the handle O′, the disk P, provided with a pin, *c′*, the upper slotted tumbler, M, provided with the toothed disk N and a pin, stud, or projection, the inner tumblers, also slotted and provided with pins, studs, or projections, and the sleeve *n*, through which the spindle passes and around which the tumblers revolve, with the bolt G, shaped as shown, and the spindle and arm for moving the bolt, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. HARD.

Witnesses:

STAFFORD APPLEGET,

J. H. TIEDEMANN.