H. GOODRICH.

COMBINATION-LOCKS.

No. 195,815. Patented Oct. 2, 1877.

Fig. 1.

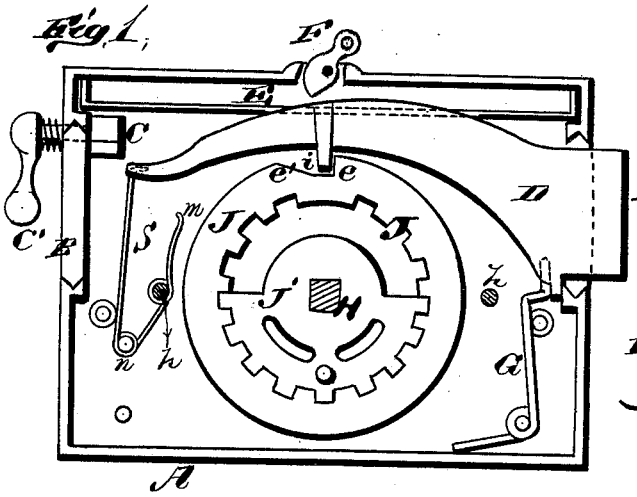

Fig. 2.

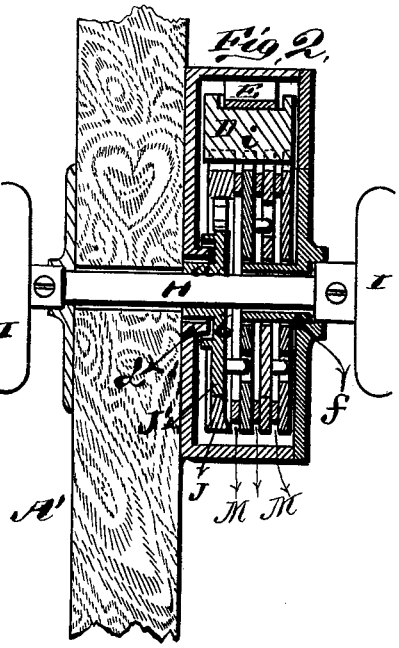

Fig. 3.

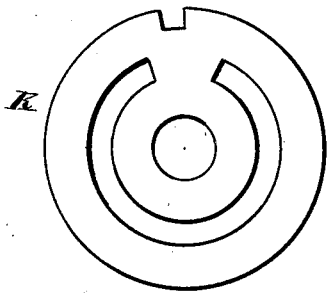

Fig. 4.

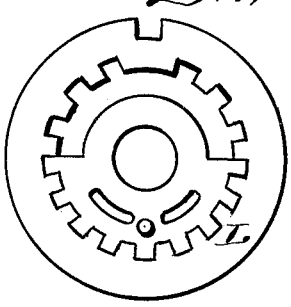

Fig. 5.

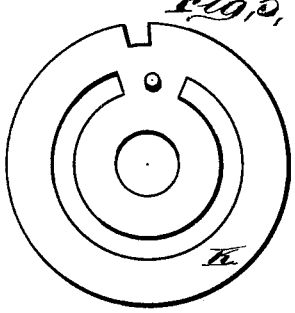

Fig. 6.

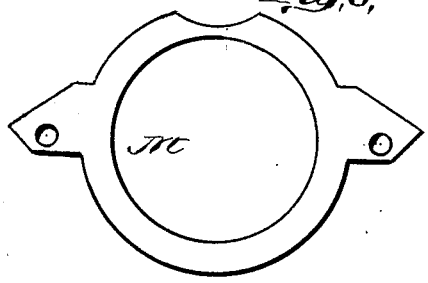

Fig. 7.

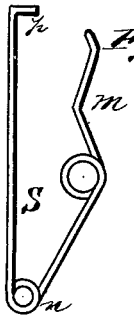

Fig. 8.

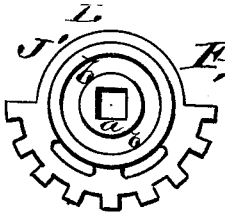

Fig. 9.

WITNESSES

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Hanson Goodrich.

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ATTORNEYS

UNITED STATES PATENT OFFICE.

HANSON GOODRICH, OF McLEANSBOROUGH, ILLINOIS.

IMPROVEMENT IN COMBINATION-LOCKS.

Specification forming part of Letters Patent No. **195,815**, dated October 2, 1877; application filed July 7, 1877.

To all whom it may concern:

Be it known that I, HANSON GOODRICH, of McLeansborough, in the county of Hamilton and State of Illinois, have invented a new and valuable Improvement in Combination-Lock Latches; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of my combination-lock latch. Fig. 2 is a transverse vertical sectional view; and Figs. 3, 4, 5, 6, 7, 8, and 9 are details of the same.

The nature of my invention relates to certain improvements upon the reversible combination-lock for which Letters Patent No. 188,890 were granted to myself and P. J. Chapman, March 27, 1877, as will be hereinafter more fully set forth.

The annexed drawing, to which reference is made, fully illustrates my invention.

A represents the lock-case fastened to the door A′, and provided with detachable plate B at the end. D is the bolt, with spring G. C is the cam or block, with handle C′ at the inner end of the bolt. F is the locking-cam at the top of the case, with spring E between it and the bolt. H is the knob-spindle, with a knob, I, at each end.

Next to the inner part of the lock-case is placed an interiorly-geared rim, J, within which is placed a cogged segment, J′. This segment has a hub, *a*, projecting through that side of the case, and around said hub is formed an annular groove, *b*, which fits over and around a circular flange, *d*, formed on the inside of the lock-case, as shown in Fig. 2.

In the edge of the rim J is a notch, *e*, having one side, *e′*, made inclined, as seen in Fig. 1.

In addition to this compound wheel, as constructed, I use a series of alternate single wheels, K and compound wheels L, placed around the hub *f*, projecting inward from the outer plate of the lock-case, and constructed in precisely the same manner as described in the patent above referred to.

Between the various wheels are placed anti-friction rings M M, provided with suitable ears, and placed on studs *h h* in the lock-case.

The peculiar construction of the compound wheel J J′, with the hub, groove, and flange as described, prevents anybody from picking the lock from the outside by the insertion of any instrument.

The operation of the lock is precisely the same as in the patent referred to, the bolt D dropping down so that the rib *i* in its under side will drop into the notches on the wheels when said wheels are turned so that the various notches will coincide, and then the bolt is operated, like the latch-bolt of an ordinary door-lock, by turning either one of the door-knobs.

In addition to the devices above described, I use in my present lock a series of wire springs, S, one for each wheel in the combination. Each spring S is made of a single piece of wire coiled around one of the studs or posts *h*, one end being bent as shown in Fig. 7 to form the brake *m*. The other end of the wire extends downward for a certain distance, and then coiled to form a spring, *n*. From this coil the wire extends upward, and forms a hook, *p*, which is engaged in a notch, *s*, in the inner end of the bolt D. In this end of the bolt is a series of notches, *s*, as shown in Fig. 9, corresponding with the number of springs used.

When the bolt is raised and locked the ends *p* of the springs S are drawn upward, which causes the ends *m* to lie against the periphery of the wheels and act as brakes thereon. When the bolt is unlocked these brakes are relieved from the wheels.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a combination-lock, substantially as herein described, the compound wheel consisting of the internally-geared rim J, having outside notch *e*, with incline *e′*, and the cogged segment J′, formed with the projecting hub *a*, with groove *b* surrounding the same, in

combination with the circular flange *d* on the lock-case, as and for the purposes herein set forth.

2. One or more springs, S, coiled around the stud *h*, and forming brakes *m*, coils *n*, and hooks *p*, in combination with bolt D, having notches *s* in its inner end, and the series of wheels of the lock, substantially as and for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HANSON GOODRICH.

Witnesses:
JAMES T. WALKER,
J. E. WILLIAMSON.