

J. W. H. DOUBLER.
Combination-Locks.

No. 150,004.

Patented April 21, 1874.

Fig. 1.

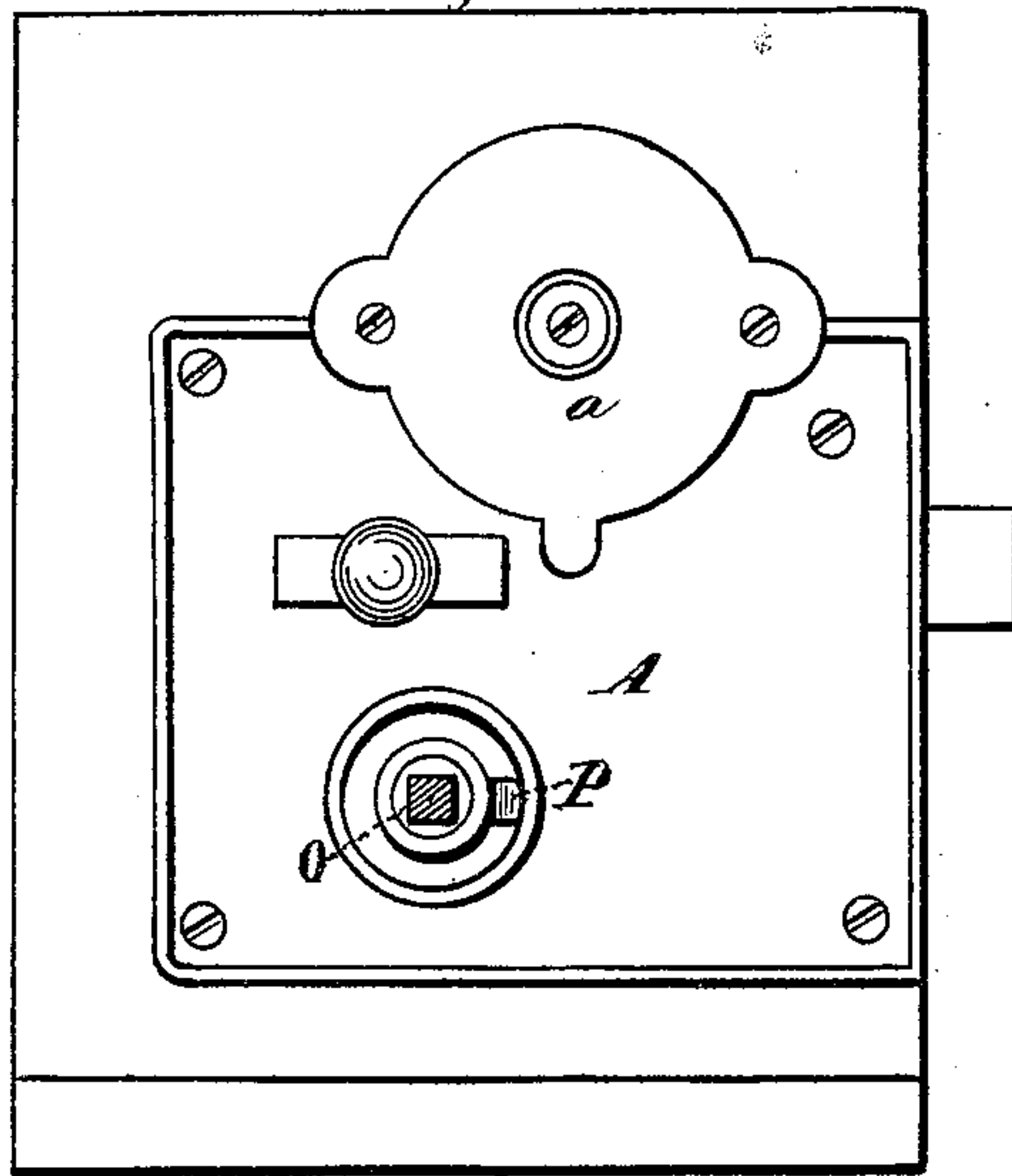


Fig. 2.

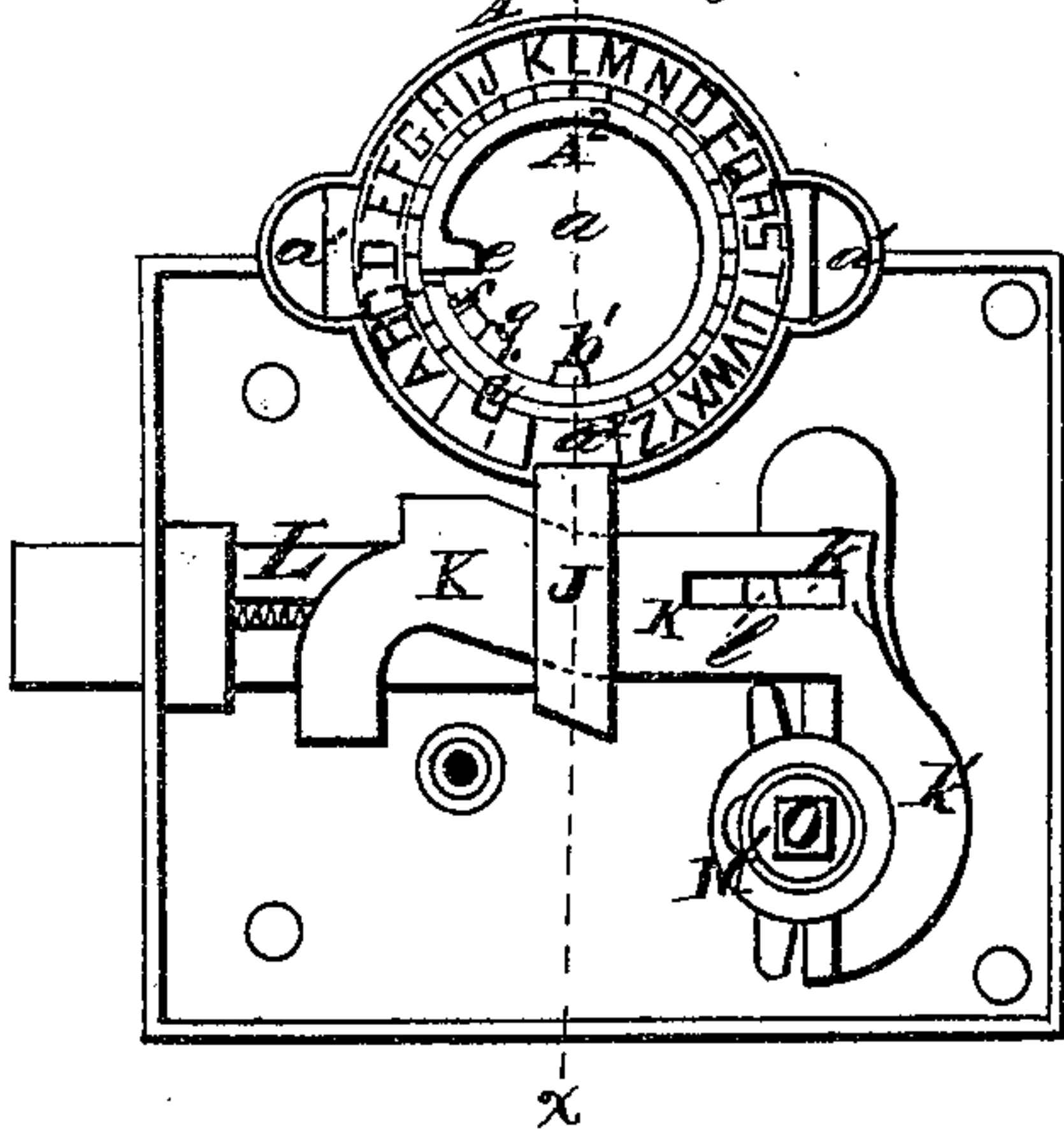
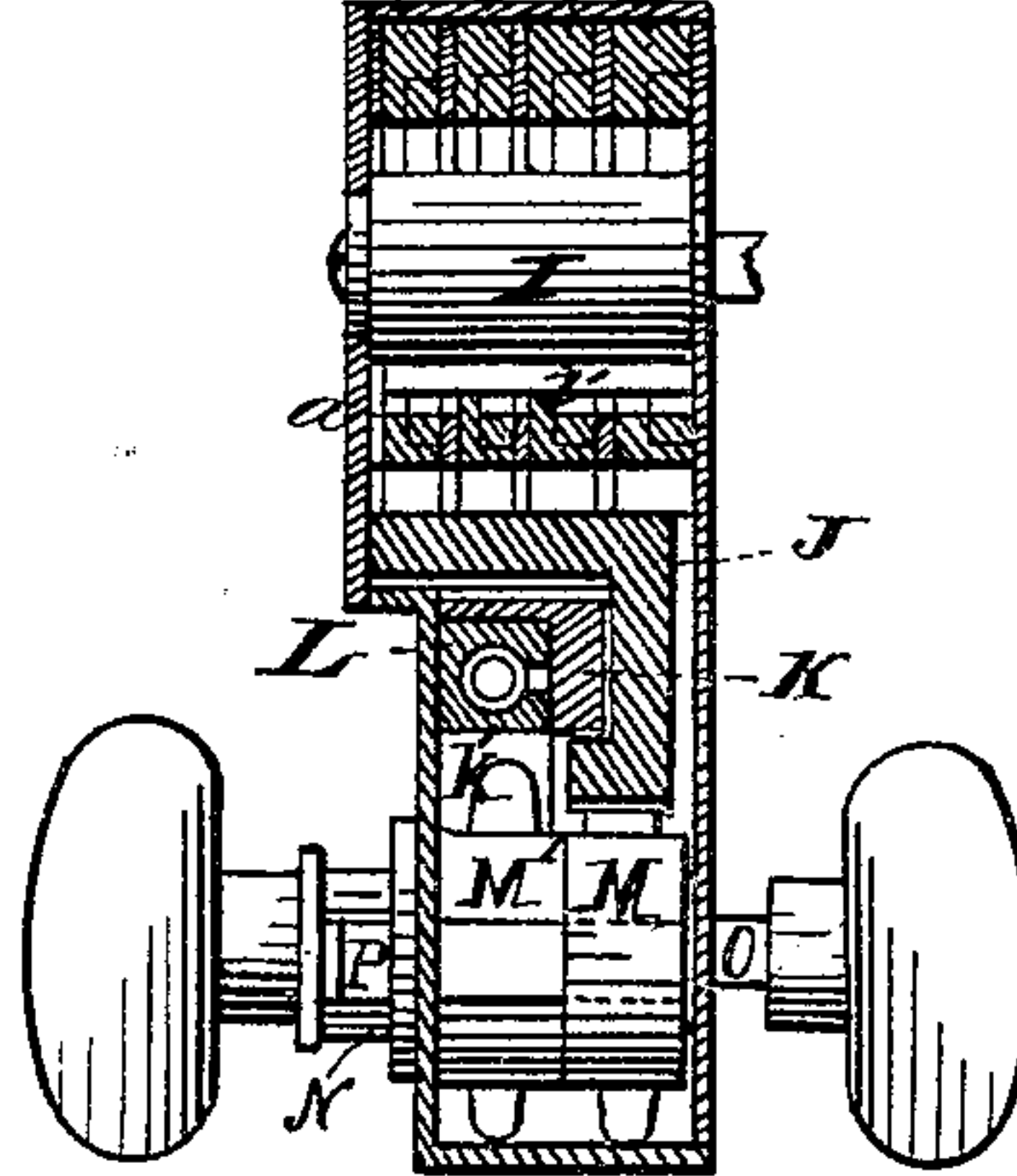


Fig. 3.



Witnesses:

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Inventor:

*John W. H. Doubler.
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Fig. 4.

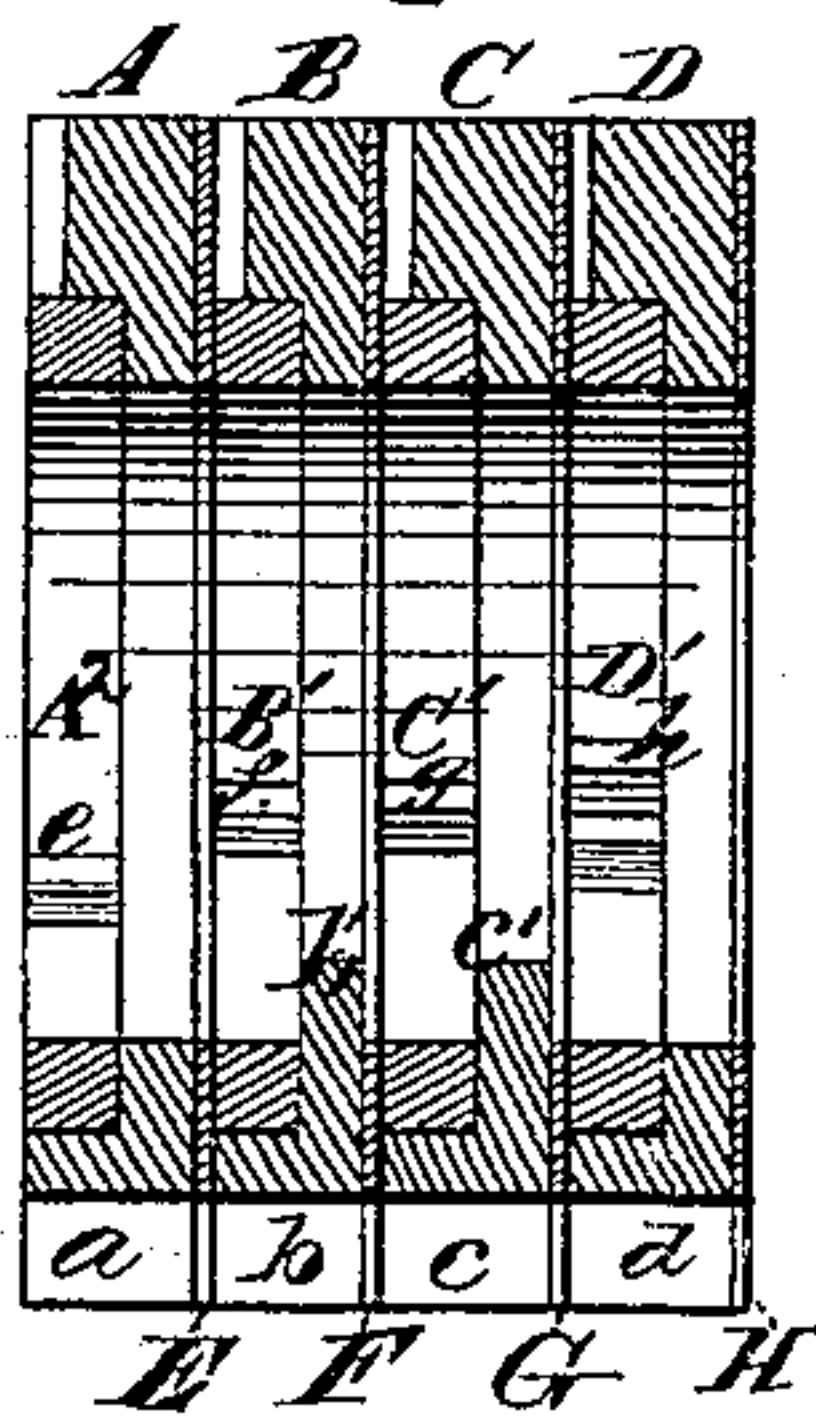
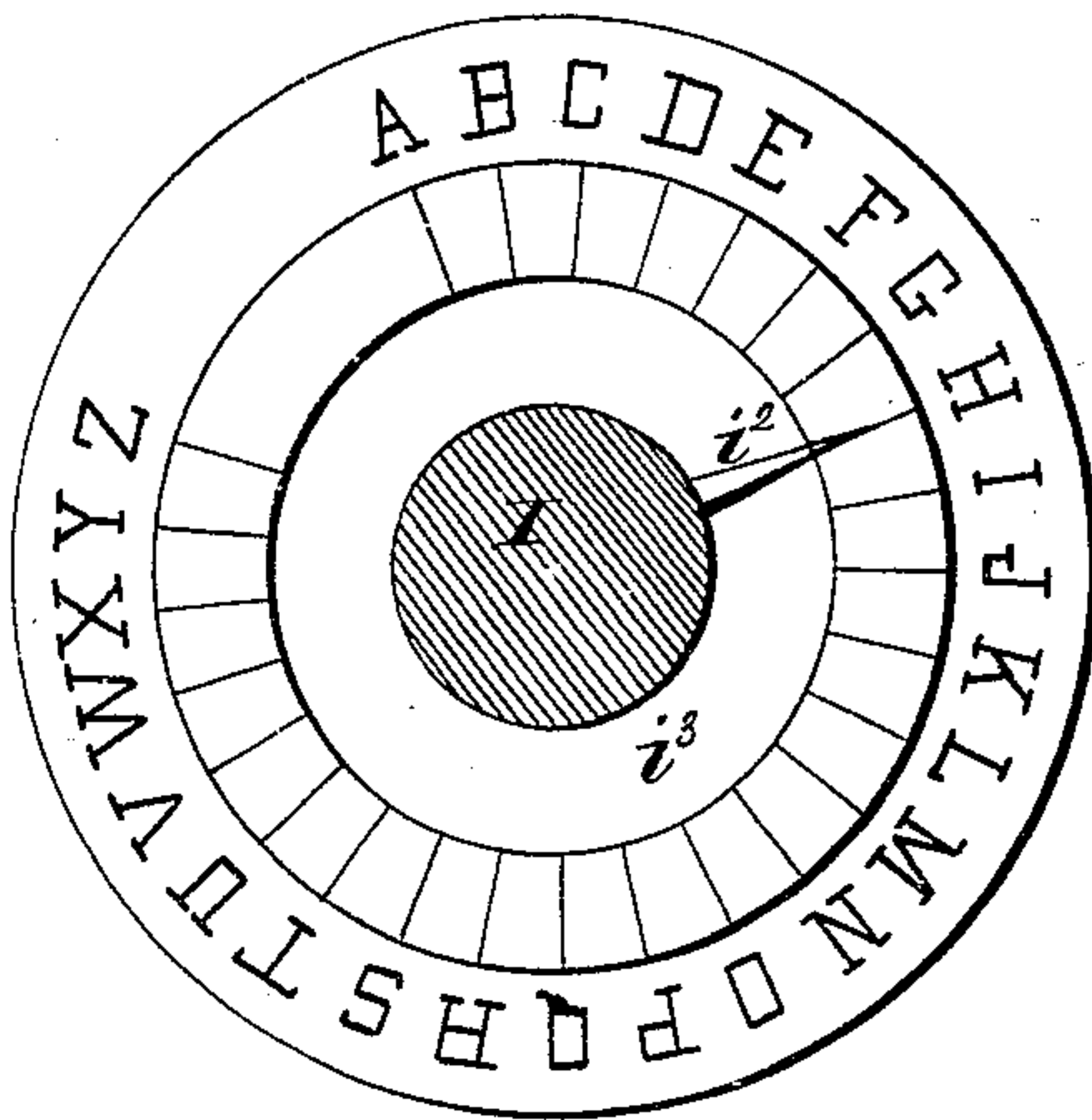


Fig. 5.



WITNESSES=

Jas. E. Hutchinson
 J. H. Miller

INVENTOR.

John W. H. Doubler
 Edwin B. Biss
 City

UNITED STATES PATENT OFFICE.

JOHN W. H. DOUBLER, OF PHILADELPHIA, PA., ASSIGNOR OF ONE-HALF
HIS RIGHT TO WILLIAM V. T. CRAMER, OF SAME PLACE.

IMPROVEMENT IN COMBINATION-LOCKS.

Specification forming part of Letters Patent No. **150,004**, dated April 21, 1874; application filed
January 31, 1874.

To all whom it may concern:

Be it known that I, JOHN W. H. DOUBLER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Permutation-Locks, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, in which—

Figure 1 is a side view of my improved lock, viewing it from the inside of the door. Fig. 2 is a like view of its internal construction. Fig. 3 is a vertical transverse section thereof, taken through the dotted line *xx* of Fig. 2. Fig. 4 is a vertical section of the respective tumblers, exhibiting their lugs and removable rings; and Fig. 5 is a front view of the dial-plate and pointer.

Corresponding parts in the several figures are designated by like letters of reference.

This invention relates to a certain improvement in permutation-locks; and it consists of the mechanism interposed between the tumblers and knob-spindle, consisting of a sliding bar, which receives a stud or projection on the bolt, and a vertical slide, from which extend two arms, forking the said bar, which, as the bolt plays back and forth, elevates the upper one of said arms, causing it to enter the slots of the tumblers, and retracts the same therefrom, a free or loose cam adjusted upon a sleeve on the knob-spindle engaging the sliding bar when the door is to be unlocked, substantially as hereinafter more fully specified.

To enable others to make and use my invention, I will proceed to describe it.

In the annexed drawing, A refers to the lock case or shell, as ordinarily constructed, in the upper part of which, and cast with it, is a second case or cylinder, *a*, emerging therefrom, and extending laterally upon its circumference, so as to constitute smaller chambers *a*¹ *a*¹. A¹ B C D are a series of tumblers, consisting of four flat rings, upon one side or face of each of which is stamped or formed the alphabet. These tumblers are supplied upon their exterior circumferences with the slots *a*² *b c d*, while to their interior circumferences are supplied the revolving and removable

rings A² B' C' D', each of which is provided with a lug or index, lettered, respectively, *e f g h*, and which are held in sockets or recesses in the said tumblers by wedges, as shown at *i*, or otherwise. Upon the interior circumferences of two of the tumblers or rings B C are formed lugs or projections *b' c'*. The lug or projection *h* of the ring D' is slotted or bifurcated to receive the bit of the spindle. E F G H are separating-rings, also supplied upon their exterior circumferences with slots, to permit of the entrance of the slide into the slots of the tumblers. These rings are provided with extensions, which rest in the smaller chambers *a*¹ *a*¹, to prevent the rings from revolving or turning, by which their slots are always kept in a line, or opposite to the slide. I is the locking and unlocking cylinder, through which passes a spindle or stem with feathers, entering longitudinal grooves or slots in the cylinder, by which means it is united to the latter, which is supplied with a bit, *i*¹. The spindle or stem I is provided upon the outside of the door with a knob for manipulating it, and a pointer or index, *i*², behind which, and attached to the outside of the door, is a dial or plate, *i*³, with the alphabet stamped thereon. J is a slide, the upper horizontal or elongated portion of which is inclosed in a trough of the case *a*, extending transversely to and below the tumblers, and the lower portion embracing the inclined portion of the sliding bar K, as shown in Fig. 3. This bar K is arranged parallel with and alongside of the door or latch-bolt L, and is supplied with an elongated slot, *k*, which receives a stud or projection, *l*, extending laterally from the bolt L, by which means it is held in place to the rear end of the latter, and remains undisturbed, or without being operated upon, by the said bolt, as the latter slides back and forth. From the rear end of the bar K depends an arm, *k'*, a similar one of which is attached to or depends from the latch-bolt L, both of which being curved, and fitting against hubs or cams M M', one fixed to the sleeve N, with an angular longitudinal opening to receive the knob-spindle O, and the other fitting loosely, or so

as to revolve thereon. Shoulders are supplied to the upper and lower extremities of the arms *k'* upon their inner surfaces, for the cams or their projections to strike against as the knob-spindle is turned, by which the slide J will be thrown up into the slots of the tumblers, and the latch-bolt L be retracted. Through the inclination of the forward end of the horizontally moving or sliding bar K, the slide J is caused to move vertically. P is a feather or sliding key, with its outer end bent in a manner to enable it to be easily manipulated and inserted through a slot in the sleeve N, between said sleeve and the movable or free cam or ring M', a slot being made in the said cam for its reception, by which the cam may be connected or united with the knob-spindle when it is desired to lock the door, as, when the tumblers are thrown in confusion as relates to their exterior slots which receive the slide J, the knob-spindle, which has thus been made fast to the cam M', which operates the slide J, cannot be turned, which it is necessary to do to retract the latch-bolt.

It will be observed that when the feather or key P is withdrawn from between the free or detached cam M' and that portion of the knob-spindle which it (the said cam) embraces, the said spindle will be free to turn without acting upon the slide J, and thus enable the lock to be used as a latch, or the bolt L to be projected and retracted. A coiled spring is interposed between the key P and the knob-spindle, to retain the said key properly in place.

The operation of the tumblers of my lock is as follows: The combination on which the lock is set being A B C D, still any other one may be used, and the slots *a b c d* are out of line with each other, or thrown in confusion, which prevents the slide J from rising, and consequently the latch or door-bolt L from be-

ing retracted, when the feather or key P is in between the knob-spindle and the cam M', when the door will be locked. The following directions will be observed in unlocking the door: Turn the knob of the cylinder I, with the index or pointer *i*², around to the right until its index points to the letter D on the plate *i*³, then back to the letter Z, again forward or to the right to the letter C, again back to about half-way between the letters A Z, once more forward to the letter B, and then back to the letter A, when all the slots of the tumblers will be in a line with each other, which will permit of the slide J rising when the knob-spindle is turned, and the latch-bolt L be retracted, which unlocks the door. The combination can be changed, when desired, by adjusting the revolving rings A¹ B' C' D' in such a manner as to bring their respective lugs or projections opposite the letters upon tumblers required to form the combination sought.

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

1. In combination with a series of tumblers and the knob-spindle, the slide J, sliding bar K *k'*, bolt L, and cams M M', substantially as and for the purpose set forth.

2. The slide J, slotted sliding bar K *k'*, bolt L, with lug or projection *l*, and free or loose cam M', adjusted upon a sleeve on the knob-spindle, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name this 20th day of January, 1874, in presence of two subscribing witnesses.

JOHN W. H. DOUBLER.

Witnesses:

CHAS. JENNINGS,
M. F. OSLER.