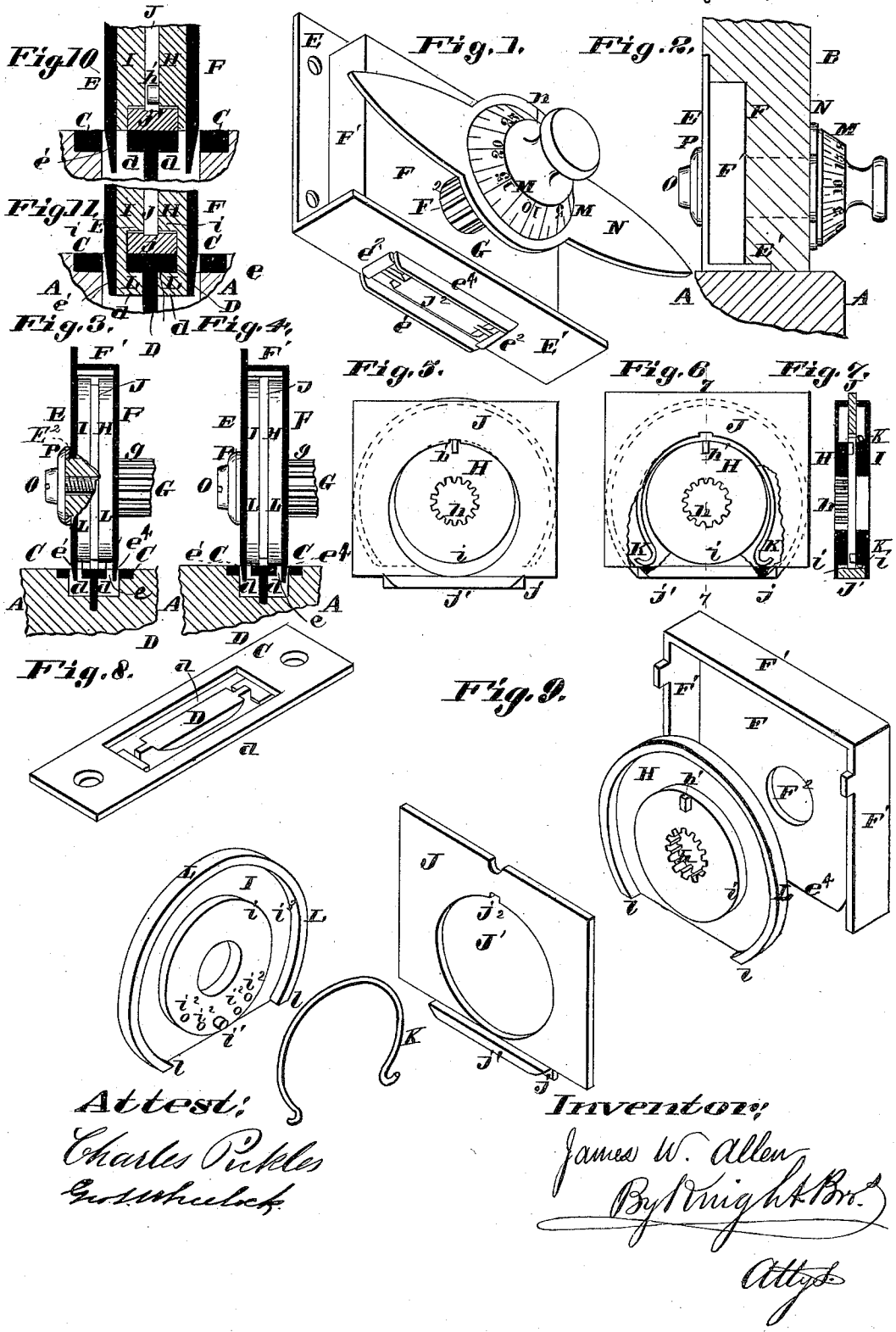
(No Model.)

J. W. ALLEN.

PERMUTATION LOCK.

No. 298,651. Patented May 13, 1884.



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UNITED STATES PATENT OFFICE.

JAMES W. ALLEN, OF ST. LOUIS, MISSOURI.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 298,651, dated May 13, 1884.

Application filed November 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. ALLEN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Combination-Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This is an improvement on the invention described in the specification of Letters Patent No. 282,691, dated August 7, 1883, the present improvement making the lock suitable for use upon cylinder or other desks.

Reference is made to the claim for "statement of invention."

Figure 1 is a perspective view of the lock. Fig. 2 is a transverse section through parts of the desk-table and cover, showing an end view of the lock. Fig. 3 is a transverse section of the lock showing the same slightly elevated from its locking position, so that the movable plate is allowed to descend to its lower position, as shown, to hold knob and the disk attached thereto in the unlocked position. Fig. 4 is a transverse section of the lock, showing it down upon the table, but unlocked. Fig. 5 is a side view of the movable division-plate in its lower position. Fig. 6 is a side view of the division-plate in its upper position, parts being broken away. Fig. 7 is a transverse section at 7 7, Fig. 6. Fig. 8 is an enlarged perspective view of the locking-plate. Fig. 9 shows parts of the lock disconnected and in enlarged perspective view. Fig. 10 is a transverse section showing the parts enlarged, in position for locking, but unlocked; and Fig. 11 is a similar view with the parts locked.

A is part of a desk-table; B, part of a falling cover of a "cylinder" or other desk.

C is the locking-plate, which is sunk flush in the table A and secured thereto. This plate has an orifice spanned by a longitudinal bar, D, that has upon each side a flange or lip, *d*, beneath which the flanges of the locking-disks engage when locked. The lock has two side plates, E and F, the former being secured to the cover B in any suitable manner. The plate E has a flange, E′, which is let into the lower edge of the cover B, so as to be about flush with the edge. This flange has an orifice *e*, and at the edges of the orifice are side lip, *e′*, and end lips, e^2, projecting outward beyond the face of the flange, so as to enter the orifice in the locking-plate each side of the bar D. These lips are beveled at the corners, so as to guide the lock into proper position as it comes down on the locking-plate. Another very important purpose of the lips is to prevent any tampering with the lock by the introduction of a thin blade between the lock and locking-plate to feel the position of the locking-disks. The plate F has flanges F′ bearing against the inner face of the plate E, and has a lip, e^4, extending into or through the orifice in the locking-plate for the purpose stated. The lips *e′* e^2 e^4 are inclined at the outer sides.

G is a knob-spindle passing through round holes E^2 and F^2 in the plates E and F.

H and I are two locking-disks. Of these there may be two or more.

J is a division-plate interposed between the disks, to prevent the rotation of one disk by frictional contact with the other disk. The plate J also performs a valuable duty in preventing the turning of the knob when the cover is lifted, as will be explained hereinafter. The lower edge of the plate J has a projection, *j*, having two side flanges, *j′*, upon which the shoulders *i* of the disks H and I bear when the desk is locked. The spindle passes axially through the disks, the part of the spindle passing through disk H having cogs, which may extend to the inner end of the spindle. The orifice in disk H, through which the spindle passes, has inside teeth, *h*, engaging the teeth or cogs *g* of the spindle, so that the disk at all times turns with the spindle. *h′* is a pin extending from the face of the disk H into the central orifice, J′, of the plate J. The turning of the disk H brings the pin or stud *h′* in contact with a pin, *i′*, extending from the disk I, so that the latter disk is turned with the former when the pins are in contact. It is preferred to make the pin *i′* movable, for which purpose it is made with a screw-thread, and a number of screw-threaded holes, i^2, are made in the disk, into any one of which the pin *i′* may be screwed to change the combination as to the first figure to which lock is set in unlocking.

K is a friction-spring placed between the disk I and the plate J, to prevent the accidental rotation of this disk. This spring occupies an

annular recess, i^3, in the side of the disk, and its ends bear against a flange, j', so as to push the plate J into its lower position whenever the lock is not down upon the locking-plate. The plate J is shown in its lower position in Figs. 3 and 5. When in this position, the pin h' enters a notch, j^2, at the upper edge of the orifice J', and prevents the disk H from turning; and as this disk is connected to the spindle G the latter is prevented from turning also. The disk I also remains at rest. Thus the disks are preserved from injury by the closing of the desk-cover, as they are always held in the unlocked position when the cover is up, (the plate J descending as the cover commences to rise.) There is another valuable end attained by this arrangement, for as the disks cannot be turned when the cover is up the combination for unlocking cannot be ascertained by one unacquainted with it.

The periphery of each disk H I has a locking-flange, L, extending all around the periphery, except where a segment has been removed from the disks, leaving the ends l of the flange exposed, so that when the cover B is closed down upon the table A, as seen in Figs. 2, 4, and 10, and the spindle turned, the end flanges will be carried down beneath the flanges d of the locking-plate C, thus locking the cover down to the table. It will be understood that the cover can only be lifted when both or all of the locking-flanges L are removed from beneath the flanges d, and this only takes place when the disks are in exact positions. These positions are shown by the numbered indicator-wheel M upon the spindle G. To illustrate, suppose the first setting number to be 10, the spindle may be turned around—say to the right—until this figure is brought in line with the notch n of the escutcheon-plate N the second time. The disk I is then in the unlocking position. To put the disk H in the unlocking position the spindle is then turned to the left until the proper number upon the indicator-wheel is brought in line with notch n. To do this the spindle must be turned less than a complete rotation, because a full rotation would bring the pins h' i' in contact and put the disk I out of position. To change both numbers of the combination, the spindle is drawn out and inserted in a different position in the disk H, so as to change the relative position of the indicator-numbers and the flat places in the periphery of the disks. This adjustment of the spindle does not change the difference between the first and second setting-numbers, such difference being changed by changing the position of pin i', as before set forth.

The spindle is shown held in the lock by a screw, O, in its end and a washer, P, bearing against the plate E. The washer has one or more teeth engaging the cogs of the spindle to prevent the turning of the washer on the spindle.

In addition to the described means for changing the combination of the numbers on which the lock is opened, a change can be made in the combination by interchange of the disks.

I claim as my invention—

1. In a combination-lock, two or more locking-disks having a limited movement independent of each other, with peripheral flanges L, projecting beyond the face of the lock, substantially as and for the purpose set forth.

2. In a combination-lock, the combination of two independently-movable disks provided with peripheral flanges having segments removed and projecting toward each other, a spindle by which a disk can be rotated to adjust the other disk and a locking-plate having an orifice, and a bar spanning the orifice, having flanges engaged by the disk-flanges, as set forth.

3. The combination, in a desk-lock, of rotary disks with flanges L, a lock-plate engaged by said disks, and lips e' e^2 upon the lock, entering the recess of the lock-plate, for the purposes set forth.

4. The combination, with the locking-disk H, having a pin or stud, h', of the movable division-plate J, with an orifice, J', and a notch, j^2, engaging on said pin when the lock is lifted from the table, for the purpose set forth.

JAMES W. ALLEN.

Witnesses:
JAMES C. MCDONOUGH,
HENRY B. DAVIS.