William Kock. Improved Cobination Lock.

117302

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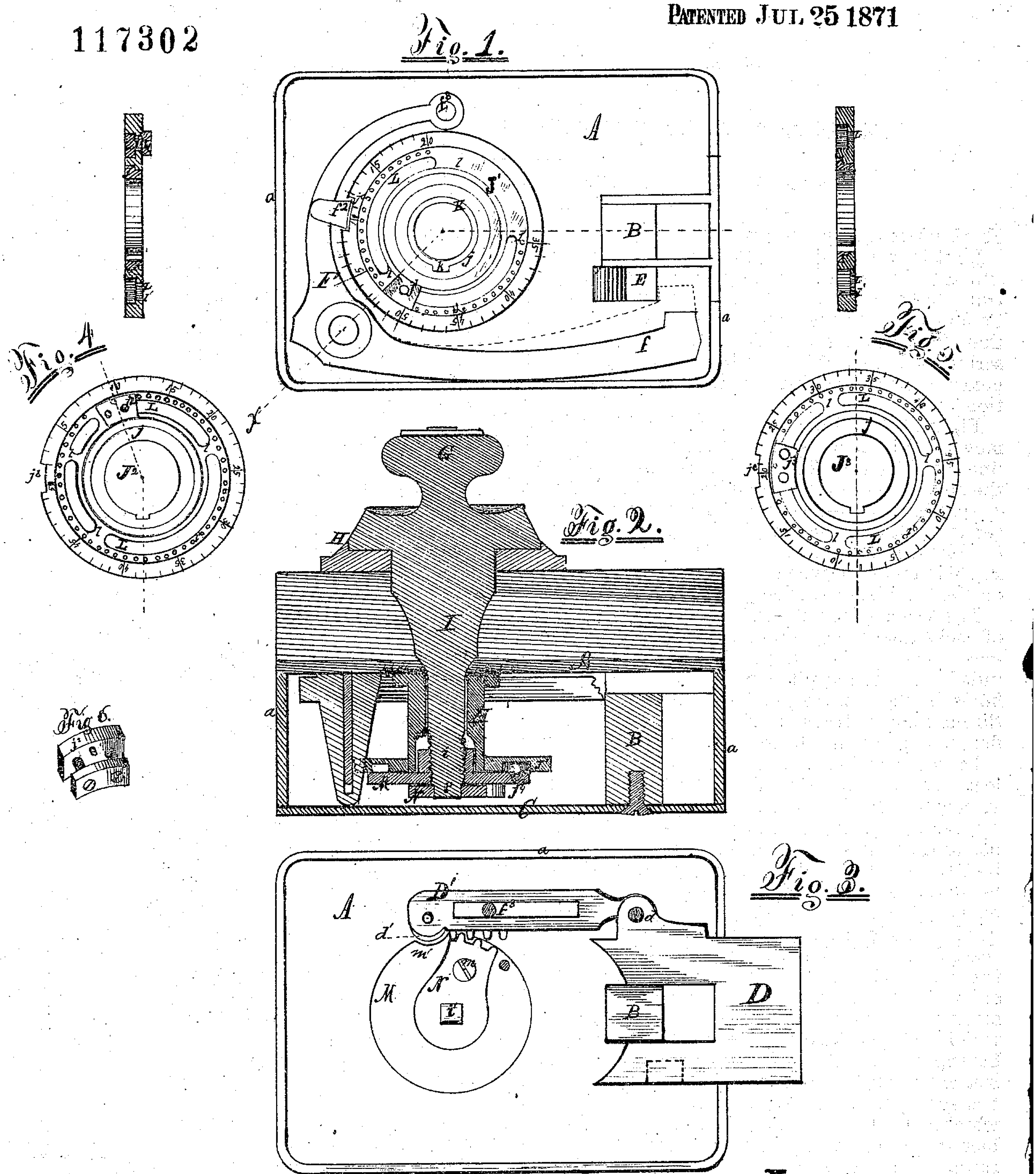

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TUMBLERS FOR PERMUTATION LOCKS.

Specification forming part of Letters Patent No. 117,302, dated July 25, 1871.

To all whom it may concern:

Be it known that I, WILLIAM KOCK, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Combination Locks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making a part of this specification.

Figure 1 is an inner-face view with the bolt removed. Fig. 2 is a sectional view taken in the line *x* of Fig. 1. Fig. 3 is inner-face view with the bolt and one of the tumblers in position. Fig. 4 represents the second tumbler with a transverse section of the same, and Fig. 5 gives the third tumbler accompanied by a similar sectional view. Fig. 6 is a perspective view of the adjustable stop on the tumblers detached.

The nature of my invention relates to that class of locks known as permutation or combination locks; and consists in the adjustable stop provided with a steady pin to engage with the spaced holes in the tumbler, and set-screws operating through concentric slots in the tumbler, to render its adjustment accurate and easy.

In the drawing, A is the bottom plate of the lock, having sides *a a*. The solid post B, cast on A, comes up flush with the sides *a a*, and is entered by a screw holding on the cap C. A secondary use of the post is to form an efficient guide for the bolt D. At E is another solid projection, of such height as to allow the inner side of the bolt to rest on its top; and the end of the arm *f* of locking-lever F (when it enters the bolt D) also rests against the part E. The knob G and dial-plate H are of the usual construction. The shank I has the shape shown in the drawing, and terminates with the screw *i* and square *i'*. J^1 J^2 J^3 are tumblers, which are provided with the bushing-rings *j*, having recesses that fit over the feather *k* of permanent neck K. The tumblers have a concentric space, L, cut away, except narrow necks *l*, which hold the inner and outer parts of the tumblers together; and just outside this space and running parallel with it is a row of small holes, *l'*, and in number equal to the degrees marked on the dial-plate H. The movable projections j^1 j^2 j^3, held by one or more screws, are provided each with a small nipple which enter the holes, as seen in Fig. 4. Each tumbler has a recess on its periphery, marked j^a j^b j^c, for the reception of the arm f^2 on the lever F. A cam, M, is screwed over the end of the shank I, and a segment of a pinion, N, fitting over the square *i'* and held to the cam by means of a machine-screw, *m*. The bolt D has jointed to it, at *d*, the slotted rack D', the teeth of which mesh into those on part N. A pin, f^3, on lever F, engages with the rack D' by entering the slot of rack D', as seen in Fig. 3, and a friction-roller, *d'*, is let into the end of rack D', resting on cam M. Figures or other characters are stamped on the tumblers to guide the operator in changing the combination.

The operation of my invention is as follows: When the knob is rotated the cam M revolves with it, being permanently attached thereto, until the screw-head j^4 on the cam comes in contact with movable projection j^1 on tumbler J^1, rotating it until the screw-head on its face moves the next tumbler, and so on to the tumbler J^3, when it is stopped so as to bring its recess j^c opposite the arm f^2. The motion is then reversed, when, by the same means, the tumbler J^2 is brought to the same position, and on reversing the last motion the recess or tumbler J^1 is also brought opposite arm f^2. The tumblers are now all in such a position as to allow the locking-lever to drop, which takes place as soon as the cam is rotated, so as to bring the depression on its periphery, seen at *m'*, under the friction-roller *d'*. The arm *f* of locking-lever F falls out of the bolt D past f^2, enters the three recesses of the three tumblers, and, the teeth of the rack D' and segment N meshing together, the bolt is withdrawn and again locked at pleasure by turning the knob. When the combination is to be changed the segment and cam are removed and any one or all three of the projections on the tumblers may be set to any figures on the tumblers, the small nipple always entering one or the other of the perforations, thereby running no risk of placing the projections j^1 j^2 j^3 between the degrees marked on the dial-plate H. The object of the two screws on projection seen in tumbler J^2 is for the purpose of spanning the bridges *l* when it is desired to place this projection over the same, in which case the screws are removed alternately.

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

The tumblers J, constructed with a series of concentric holes, *l'*, and concentric slots L, combined with a movable dog provided with nipple j^1 and set-screws, so that it may be adjusted without removing its holding-screw.

Witnesses:
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