M. B. BROOKS.

Combination Pad-Lock.

No. 163,147. Patented May 11, 1875.

Fig. 1.

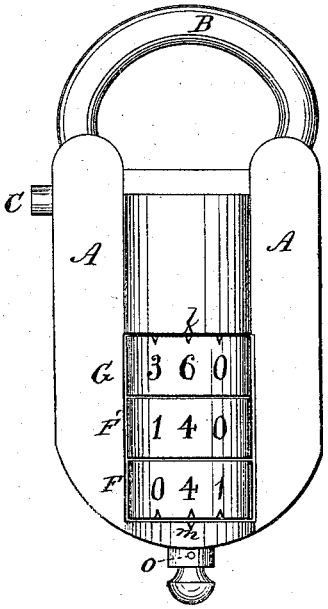


Fig. 2.

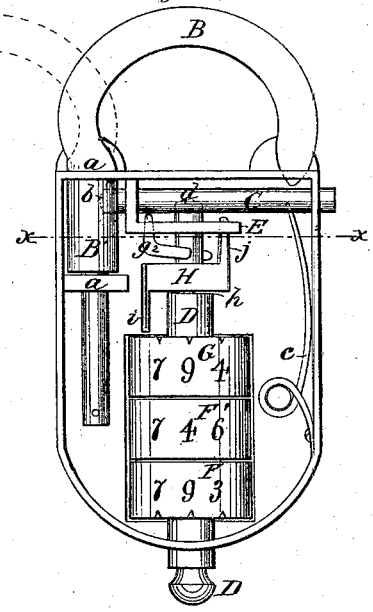


Fig. 3.

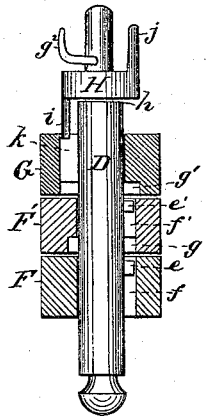
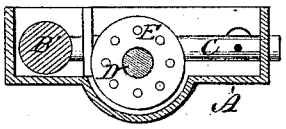


Fig. 4.



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UNITED STATES PATENT OFFICE.

MOTT B. BROOKS, OF BROCKVILLE, CANADA, ASSIGNOR TO JOHN MACLEOD GILL, OF SAME PLACE.

IMPROVEMENT IN COMBINATION-PADLOCKS.

Specification forming part of Letters Patent No. **163,147**, dated May 11, 1875; application filed April 9, 1875.

To all whom it may concern:

Be it known that I, MOTT B. BROOKS, of Brockville, in the county of Leeds, in the Province of Ontario, Dominion of Canada, have invented a new and Improved Permutation-Lock; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a vertical front elevation of the lock. Fig. 2 is a vertical rear elevation with the back plate removed. Fig. 3 is a sectional view of the permutating devices. Fig. 4 is a transverse section through line *x x* of Fig. 2.

This invention relates to certain improvements in permutation-locks. It consists in a semicircular link, having one end extended and pivoted in bearings in the case of the lock, and so arranged as to be drawn out and turned upon its pivot. The extended straight portion of the link is provided with a recess with which a transverse spring-bolt is made to engage for the purpose of locking the link, and the transverse bolt is also provided with a recess, with which a longitudinal bolt is made to engage for the purpose of locking the spring-bolt. Upon said longitudinal bolt the permutating devices are arranged, which consist of three numbered rings, a clutch-collar, and a perforated disk. The said rings have upon their inner peripheries circular and longitudinal grooves. In the longitudinal grooves of the two lower rings move two aligned studs attached to the longitudinal bolt. Upon a shoulder of said bolt is a clutch-collar, which has on each side an extension, one of which engages with the longitudinal groove of the first ring, and the other with the holes in the perforated disk. The longitudinal bolt has a clutch, which, when the lock is fastened engages the perforated disk to keep it from turning, so that said bolt never revolves except when the lock is open, and then the two lower rings, which operate together, revolve with it. To unlock the spring-bolt it is necessary that the extension of the clutch-collar should be directly over the longitudinal groove of the first ring, and the two aligned studs of the longitudinal bolt in alignment with the grooves of the two lower rings. The said longitudinal bolt can then be drawn from the recess of the spring-bolt, and the arm of the link pulled out and turned. The determination of the unlocking positions of the devices is effected by the registration of numbers upon the rings, and the relative positions of the line of number to notches in the case. The two lower rings are made to operate together as one ring by an absolute combination, and the number of their locking position is limited to the number of figures upon the periphery of one of them. The top ring, however, being independent, makes the entire number of combinations of the lock equal to the multiple of the number of figures of the top ring by the number of the figures upon one of the lower rings.

In the drawing, A represents the metallic case of the lock, and B is the semicircular link, having its end B′ extended into the case and pivoted in bearings *a a′*. C is a tranverse bolt, which engages a recess, *b*, in the extended portion of the link, to lock the same in position. Said bolt is retracted from its locking position by a spring, *c*, and has a recess, *d*, with which a longitudinal bolt, D, engages to hold it in its locking position. Said longitudinal bolt D slides in a bearing in the lower part of the case, and in a perforated disk, E, in the upper part, and carries upon it the rings F F′ G, and the clutch-collar H, which constitute the permutating devices. The longitudinal bolt D carries two aligned studs, *e e′*, which, when in the longitudinal grooves *f f′*, allow the bolt to be withdrawn, and which, when pushed up in the circular grooves *g g′* to lock the bolt, allow the rings F F′ to be turned upon the same to secure the locking of the devices and to break the combination. The collar H revolves loosely upon the bolt D, but moves longitudinally with it by reason of the bent pin g^2, and shoulder *h* of the bolt. This said collar has extensions *i* and *j*, of which *i* engages with the longitudinal groove *k* in the ring G, and *j* with the perforations in disk E, which said perforations correspond in number to the number of the figures upon the rings. The said rings F F′ G are arranged with figures upon their peripheries, the lower rings F F′

being made separate and independent of each other in construction, but linked together in operation by means of an absolute arrangement of their respective figures, which arrangement, once made, must always be preserved, because in this position alone are their longitudinal grooves in alignment so as to admit of the movement of the studs *e e'* in the same. The top ring G, however, having no connection with the bolt D, is independent of the other rings both in construction and operation. This ring prevents the withdrawal of the bolt D, even when the rings F F' are in position, until its longitudinal groove *k* is in alignment with the extension *i* of the collar, which position is determined by the relative arrangement of the figures upon the ring G with respect to the rings F F'. The positions, thus, of the rings F F' are limited to the number of figures upon one of their peripheries, and the entire number of combinations of the lock is the multiple of this number by the number of figures upon the ring G. The case of the lock is notched at *l* and *m* for the adjustment of the figures of the rings in line. As a provision against the loss of the combination upon which the device is locked, the bolt D is indented at *o* so that the absolute arrangement of the rings F F' being known, and the position of the studs upon the bolt being indicated by said indentation *o*, the only labor in searching for the unlocking positions is with the one ring G. Thus, the absolute arrangement of the rings F F' being 4+4 for the alignment of their longitudinal grooves, and the registration with said figures 4+4 of the indentation *o* of the bolt D, bringing its studs in position for the grooves of the rings, the only adjustment to be sought is the position of the ring G. The absolute arrangement of rings F F' will be different for different locks, and may be the registration of any two numbers desired.

Having thus described my invention, what I claim as new is—

1. The combination of the case A, semicircular link B, having a pivoted extension, B', and a recess, *b*, the transverse bolt C, having a recess, *d*, the spring *c*, and the longitudinal bolt D, substantially as and for the purpose described.

2. The combination of the link B, having extension B', the bolt C, the bolt D, having studs *e e'*, the rings F F', having grooves *f f' g* g^1, the bent pin g^2, and the perforated disk E, substantially as and for the purpose described.

3. The combination of the collar H, having extensions *i* and *j*, the perforated disk E, the bolt C, the bolt D, and the ring G, having longitudinal groove *k*, substantially as and for the purpose described.

4. The combination of the link B, bolt C, bolt D, perforated disk E, the collar H, and the rings F F' G, substantially as and for the purpose described.

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