(No Model.)

H. C. LOWRIE.

PERMUTATION PADLOCK.

No. 502,308. Patented Aug. 1, 1893.

Fig. 1.

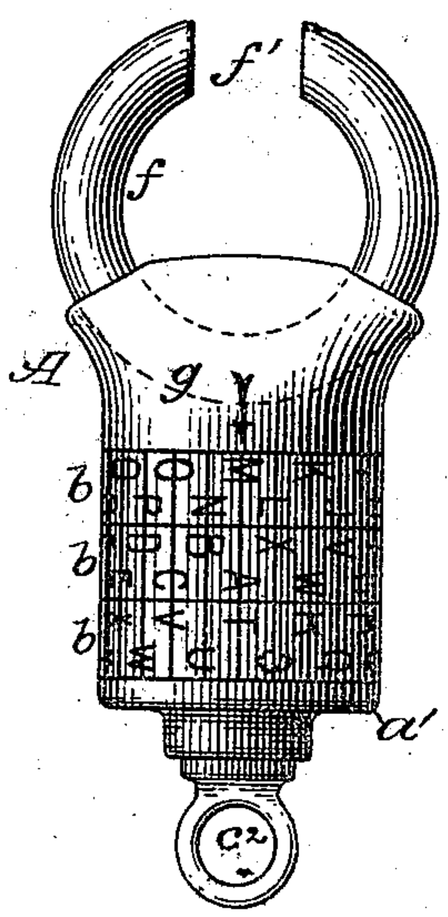


Fig. 2.

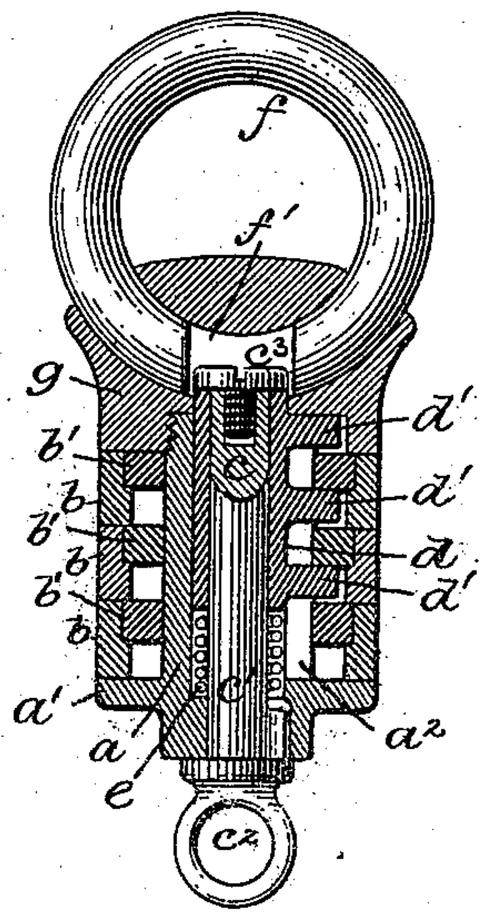


Fig. 3.

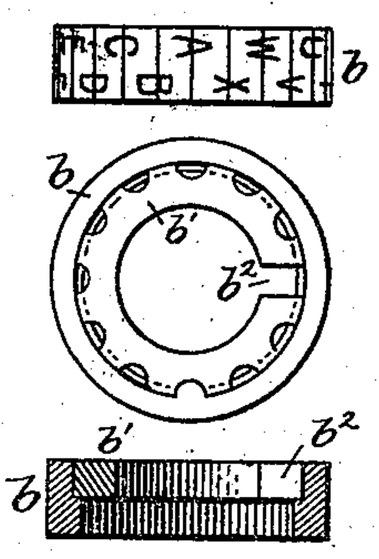


Fig. 4.

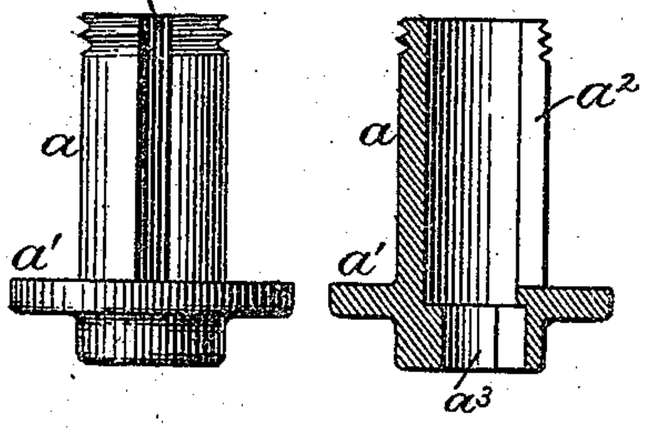


Fig. 5.

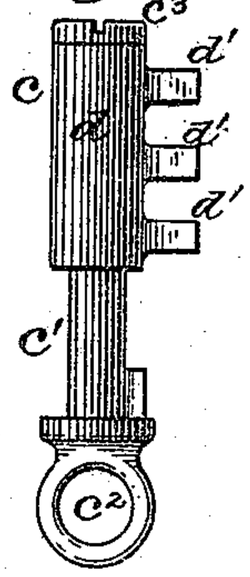


Fig. 6.

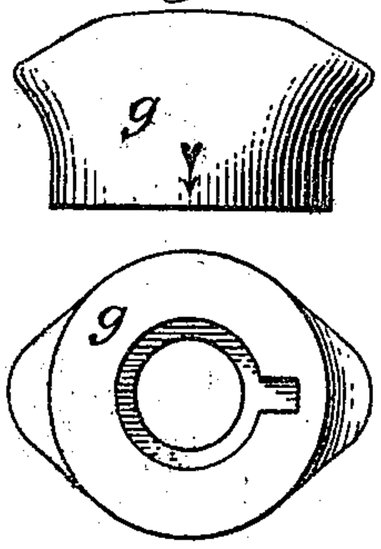


Fig. 7.

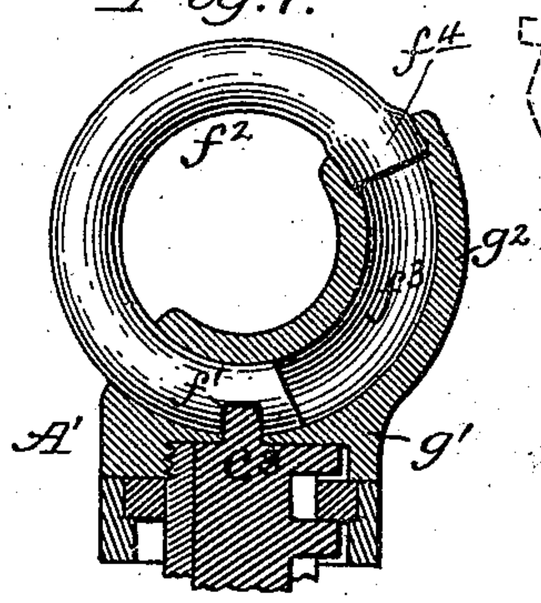
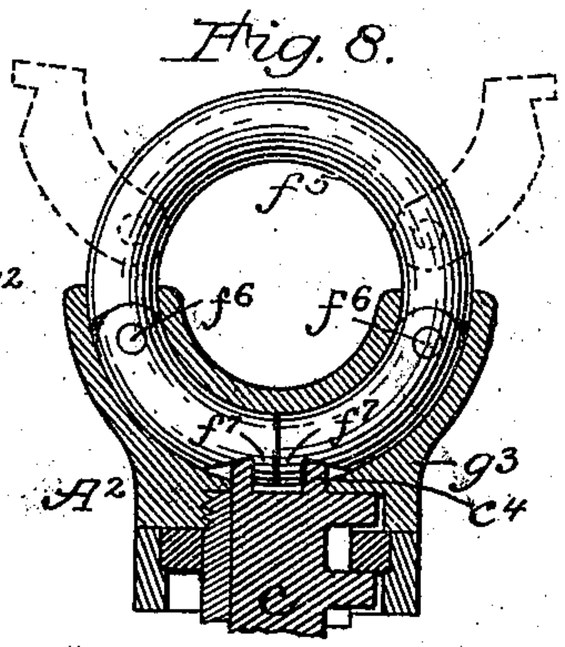


Fig. 8.



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UNITED STATES PATENT OFFICE.

HARVEY C. LOWRIE, OF DENVER, COLORADO.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 502,308, dated August 1, 1893.

Application filed September 29, 1892. Serial No. 447,328. (No model.)

To all whom it may concern:

Be it known that I, HARVEY C. LOWRIE, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Permutation-Padlocks; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

The object of my invention is to produce a simple, efficient and inexpensive permutation padlock, having a rotative annular hasp, and to that end I have devised a lock in which appropriately marked working rings control a central slidable locking bolt which engages with an annular hasp, which may be either a ring which is solid, except as to providing for a limited shackle opening, or a hinged ring, composed of two or more parts which may be widely opened to afford an extensive shackling capacity.

To more particularly describe my invention I will refer to the accompanying drawings, and after a detailed description of the locks illustrated, the several features deemed novel will be duly specified in appropriate clauses of claim hereunto annexed.

Figure 1, in side view illustrates one form of my lock having a rotative annular hasp, in one piece, and with the hasp open, and in condition to receive chain links, rings or staples. Fig. 2, is a central sectional view of the lock, Fig. 1. Fig. 3, in side, top, and sectional views illustrates one of the counterpart working rings. Fig. 4, illustrates in side view and section, a central tube on which the working rings are axially mounted. Fig. 5, illustrates the bolt of the lock and its locking lugs. Fig. 6, illustrates the cap plate of the lock, Fig. 1, in side, bottom, and top views. Fig. 7, in section illustrates the upper portion of a lock similar to the lock Fig. 1, but with a hasp arranged to afford a wider entrance to the shackling eye. Fig. 8, in section illustrates the upper portion of a lock, differing from those previously shown, in the construction of the bolt head, as well as of the hasp, the latter being rotative as before but sectional and adapted to afford an extraordinary opening into the shackling eye.

Within the body of the lock there is a central tube *a*, Fig. 4, which has a base plate *a'*, and a longitudinal slot a^2, and also an opening in the center of the base plate at a^3. The working rings are complex, each as heretofore comprising an inner ring and an outer ring *b*, appropriately marked on its periphery, as by letters as shown, or with numerals. As here shown, the letters are believed to involve a valuable novelty, in that they are arranged on each ring in two rows, so zig-zagged or offset with relation to each other that each ring is provided with many more clearly defined letters, each with its registering line mark, than could have been placed thereon if a single row of letters of the same size had been used. The inner ring *b'* is notched at one side as at b^2, and it occupies an annular recess in the outer ring at one side thereof. These two rings, as is common in permutation locks, are normally united, but capable of separation and readjustment in the usual manner for readily enabling many changes in permutation. It is to be understood that the working rings can be separated if desired, by means of fixed washers in the usual manner. The bolt *c* is longitudinally slidable and has a stem *c'* shouldered near its outer end, where it abuts against the base plate a^3, and it also has a grasping eye or handle c^2; it is also provided with a fixed sleeve *d* having radial locking lugs *d'*, *d'*, *d'*, to correspond with the working rings *b*, *b*, *b*, said lugs in each case occupying the longitudinal slot a^2 of the central tube *a*. It is not essential that the locking lugs should thus be carried by the bolt as by way of a sleeve, if, for instance, the handle of the bolt be separately constructed and securely applied, in which case the locking lugs *d'* may be either inserted into or be integral with the bolt, thus avoiding the use of a screw in or at the head of the bolt for confining a sleeve thereon.

Between the bottom of the central tube *a*, and the adjacent end of the sleeve *d* there is a spiral spring *e* surrounding the bolt stem *c'* for forcing the bolt longitudinally from its unlocked position into its locking position.

In the lock A, Fig. 1, the hasp *f* is in one piece annular, and round in cross section, and has a shackle opening *f'*, which can, by rotation of the hasp, be placed in line with the bolt and serve as a gating therefor, or when

released from its locked position by the bolt, it can be readily rotated and exposed outside of its housing in the cap plate g, which is provided with a curved gating, corresponding in contour with the hasp, so that the latter may be freely rotated. The cap plate g may be made solidly, or constructed in two halves, riveted together, but when solid the hasp is inserted before it is fully bent into form. The head c^3 of the bolt, corresponds in dimensions with the opening f' in the hasp, and confines the latter against rotation.

It will be readily understood that when the several notches in the working rings are made to register with each other, and also with the slot a^2 in the central tube, the bolt can be withdrawn against its spring by means of its handle, and the hasp thereby released for rotation; and also that when the hasp is again returned to proper position, the bolt will be projected into locking engagement with the hasp, and secured in that position by deranging the locking rings.

With the hasp f the entrance to the shackling eye in the hasp is limited to the width of the gating f', and this is restricted to the corresponding dimensions of the bolt head, but for affording a wider entrance to the eye, the bolt head being as before described, should have its own special notch to engage with, independently of the opening to the eye, as illustrated in the lock A′, which is partly shown in Fig. 7. In this case the cap plate g' has an extended tubular projection at one side as at g^2, and the hasp f^2 has a wide opening or gating at f^3 for affording the introduction of large links or a large staple as is sometimes desirable. This hasp has a head at f^4, which by abutting against a shoulder in the cap plate, restricts the hasp to rotation in one direction. At one side of the opening f^3 the hasp is provided with a locking notch f' which serves as a gating for and is occupied by the bolt head c^3 as in the lock A.

For affording a still wider opening or gating into the shackling eye or space inclosed by the hasp, the latter is constructed in two or more parts, properly hinged together, and the bolt is organized not only so as to prevent the rotation of the hasp as in the locks already described, but it also binds the two free ends of the hasp into firm locking relations. Such a lock is illustrated in Fig. 8. This lock A^2 has a cap plate g^3 substantially like that in the lock A, but the hasp f^5 is constructed in three parts, strongly hinged together, as at f^6, f^6, the joints being such as to restrict the parts to one plane, and not to impair its annular form, or its capacity for rotation, but its cross section may be either square or circular.

The two ends of the hasp abut closely with each other and each has a gating space affording a locking shoulder f^7, f^7, so that both of said shoulders may be embraced after the manner of a tenon, by the mortised head c^4 of the bolt c, which therefore not only confines the hasp against rotation, but also firmly binds or locks the two ends of the hasp against displacement. It will be seen that when this hasp has been rotated until both of its ends are free from the cap plate, they may be swung outwardly as indicated in dotted lines. With this form of hasp the cap plate may be a solid structure, the riveting at f^6 being done after inserting the hasp.

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

1. In a permutation padlock, the combination with appropriately marked working rings, and a slidable spring actuated bolt, controlled by said rings, and confined by them in its locked position, of an annular hasp, rotative in the cap plate of the lock, and provided with a gating with which the head of the bolt engages, and also with an external handle by which the bolt may be retracted after the working rings have been properly adjusted.

2. In a permutation padlock, the combination substantially as hereinbefore described, of a series of appropriately marked working rings; a central longitudinally slotted tube concentric with said rings and serving as their axial support, and provided with a cap plate and a base plate; a slidable bolt within the tube, but projecting through the base plate, and carrying a series of locking lugs which occupy the slot in the central tube, and are controlled by the working rings; a spring for projecting said bolt from its unlocked to its locked position; and an annular hasp, rotative in the cap plate, provided with an opening into its central space or shackling eye, and also with locking shoulders with which the bolt head engages.

3. In a permutation lock, working rings having on their peripheries separate rows of markings, as by letters or numerals, the letters or numerals in one row being offset with relation to adjacent letters in the adjacent row, and each letter having its own registering line, as and for the purposes specified.

HARVEY C. LOWRIE.

Witnesses:
CORNELIUS FERRIS,
R. N. KNOWLES.