(No Model.)

W. H. BOLTHOFF.

PERMUTATION PADLOCK.

No. 511,673. Patented Dec. 26, 1893.

Fig. 2.

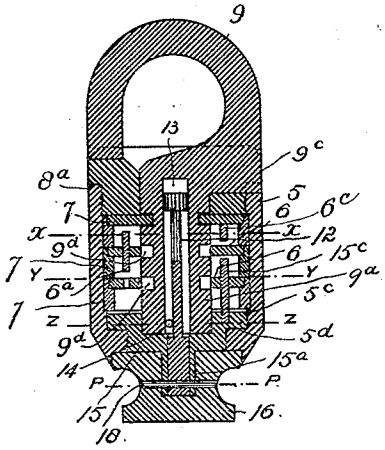


Fig. 1.

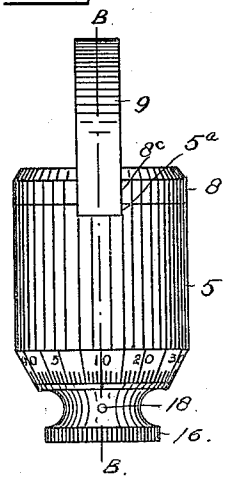


Fig. 3.

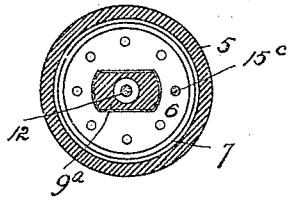


Fig. 4

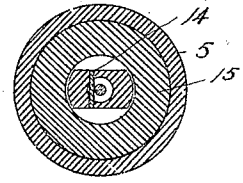
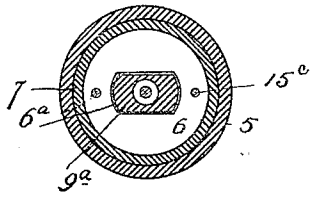


Fig. 5.



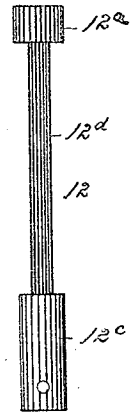


Fig. 6.

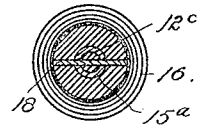


Fig. 7.

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PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 511,673, dated December 26, 1893.

Application filed July 5, 1893. Serial No. 479,682. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. BOLTHOFF, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Permutation-Padlocks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in permutation padlocks, and consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1. is a side elevation of the lock. Fig. 2. is a longitudinal section taken on the line B—B, Fig. 1. Figs. 3, 4, 5, and 6 are cross sections taken on the lines y—y, z—z, x—x, and p—p, respectively. Fig. 7. is a detail view on enlarged scale of the pin which connects the knob and the shackle.

Similar reference characters indicating corresponding parts or elements in these views, let the numeral 5 designate the outer shell or casing of the lock, inclosing the tumblers, 6, and the separating rings, 7. These tumblers consist of disks provided with elongated central apertures, 6^a. To the shell, 5, is applied a ring, 8, which is shouldered, as shown at 8^a, to engage the shell, its reduced portion being exteriorly threaded to engage the correspondingly threaded interior portion of the shell extremity. This ring, when applied to the shell or screwed to position engages the adjacent tumbler of the lock and maintains the tumblers and rings in operative relation within the shell. The shackle is composed of a hook, 9, and a stem, 9^a, the hook and the stem being formed integral. It is provided with a shoulder, 9^c, formed at right angles to the stem. This shouldered part of the shackle enters a recess, 8^c, formed in the ring, and a recess, 5^a, formed in the shell. In assembling the parts these two recesses must coincide as to position. The ring, 8, is further provided with a shallow recess adapted to receive the free extremity of the shackle when the parts are in the locked position. The stem of the shackle is provided with a number of recesses, 9^d, corresponding with the number of the tumblers. When the shackle is in the locked position the tumblers lie in the same plane with their corresponding recesses in the stem of the shackle. The stem of the shackle is shaped to enter the elongated apertures formed in the tumblers when the latter are all arranged to exactly coincide. The stem of the shackle is provided with a longitudinal recess, 13, to receive the pin, 12, which is composed of the enlarged extremities, 12^a, and 12^c, and the intermediate reduced portions, 12^d. The end, 12^a, is adapted to fit nicely within the recess, 13, and is locked therein by a pin, 14, passed through the stem and lying in the path of the shoulder of the extremity, 12^a. The pin, 14, is so located that it allows the shackle the movement required to permit the part retained by the shackle to pass between the hook extremity thereof and ring, 8, of the lock.

The shell, or casing, 5, is provided interiorly with two shoulders, 5^c, and 5^d, respectively. One of the separating rings, 7, engages the shoulder, 5^c, while the shoulder, 5^d, is engaged by a disk, 15, which is centrally apertured to receive the extremity, 12^c, of the connecting pin.

The disk, 15, is provided with a projecting sleeve, 15^a, which enters an interior counterpart recess formed in the rotatable knob, 16. The knob, the sleeve, and the extremity, 12^c, of the connecting pin, are apertured to receive a cross pin, 18, which locks the said parts together.

The disk, 15, is provided with a pin, 15^c, which passes through one of the apertures formed in the adjacent tumbler, 6, and projects on the opposite side. The next tumbler is provided with a pin, 6^a, which projects from both surfaces thereof, the one extremity being in the path of the pin, 15^c, and the other extremity in the path of the pin, 6^c, of the last tumbler, or that engaging the ring, 8. It will thus be seen that all the tumblers may be manipulated by rotating in the knob, while the combination may be changed by the pin,

15^c, through a different aperture in the adjacent tumbler which contains a series of apertures as shown in Fig. 3.

To unlock the mechanism the tumblers are moved through the agency of the knob until all the central apertures through which the stem of the shackle passes, exactly coincide. The shackle may then be drawn outward sufficiently to release the part engaged thereby. The stem of the shackle is prevented from slipping entirely out of the lock by the engagement of its cross pin, 14, with the extremity, 12^a, of the connecting pin. This mechanism is compact, very secure, and easily operated.

To disassociate the parts the device is first unlocked. The pin, 18, is then removed when the stem of the shackle may be separated from the tumblers. The ring, 8, is then unscrewed when all the parts inclosed by the shell may be removed.

Having thus described my invention, what I claim is—

1. In a permutation padlock the combination with the casing, of the tumblers, the separating rings, and the apertured disk inclosed by the casing, the screw ring for locking the parts in place, and the reciprocating integral shackle having a stem which enters central apertures formed in the tumblers, said stem being provided with recesses adapted to receive the edges of the tumblers, a connecting pin 12 having a shoulder 12^c entering a longitudinal recess formed in the stem the pin 12 being movable within the recess, a rotatable knob and a cross pin which passes through coinciding apertures formed in the knob, the apertured disk, and the connecting pin, substantially as described.

2. In a permutation padlock the combination of the casing, the rotatable knob, the tumblers, the separating rings, the apertured disk connected with the adjacent tumbler, the reciprocating shackle, the shouldered connecting pin engaging a longitudinal recess formed in the stem of the shackle, the connecting pin being movable within the recess and means for connecting the knob, the apertured disk, and the connecting pin in operative relation, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

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Witnesses:
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CHAS. E. DAWSON.