

UNITED STATES PATENT OFFICE.

FRED E. BENNETT, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO PHOENIX COMBINATION LOCK COMPANY, OF PHOENIX, ARIZONA TERRITORY, A CORPORATION OF ARIZONA TERRITORY.

PERMUTATION-PADLOCK.

978,831.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRED E. BENNETT, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Permutation-Padlocks, of which the following is a specification.

This invention relates to a permutation lock of the padlock type, and consists in the provision of various features which simplify the construction, render the operation more sure and exact and increase the difficulty of picking.

The features of construction embody a means to prevent the bolt from coming into contact with any but the locking disk or member which must be the last moved into place to release the bolt. This is accomplished in the present form by making one of the disks larger than the remainder. In the showing, there are only two locking disks shown, but the number may be increased as desired.

Another feature of the construction is the beveling of the bolt and of the notch in the shackle so that the shackle must be pulled out in order to force the bolt into the notches in the locking disks. By this means it is provided that it is impossible to find the notches in the locking disks by the passage of those notches under the bolt.

Another feature resides in the relative placement of the disks and bolt. This is so designed that, if the bolt is pulled out of place by an outward pull on the shackle, the bolt will be pulled more tightly against the locking disks. There is also provided a spring or other means for holding the bolt normally against the shackle and away from the disks; this also provides that the notches in the disks cannot be found by contact with the bolt.

In the accompanying drawings: Figure 1 is a side elevation of my improved lock. Fig. 2 is a sectional view taken on line 2—2 of Fig. 3. Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

In the drawings 5 designates the body or

case of the lock, this body being of a general annular shape. Shackle 6 enters into the case 5, long arm 7 projecting inside the case and short arm 9 entering an aperture 8 and being held from movement thereby. When the shackle is unlocked it may be lifted or drawn outwardly sufficiently to allow the short arm 9 to be lifted out of aperture 8 and the shackle may then be swung around on arm 7 as an axis.

Inside the case long arm 7 passes through two lugs 10, these lugs being spaced apart and forming guides for bolt 11, which is placed between them. Bolt 11 has an edge beveled on its lower face as at 12, which enters a similarly shaped notch 13 on the side of the shackle, the beveled edge of the notch forming a bolt-engaging surface on the lower side so that an outward pull on the shackle will force the bolt to the right in Fig. 2 and out of engagement with the shackle. A spring 14 or any equivalent device keeps the bolt 11 in place against the shackle, a pin 15 preventing the withdrawal of the shackle to an unnecessary extent.

Mounted in grooves 16 in case 5 are front and rear plates 17 and 18 and intermediate plate 19. Plate 18 is merely intended to cover up the portions of the mechanism which would be otherwise exposed, but may be dispensed with if desired. Plates 17 and 19 are both provided with central apertures for carrying the rotating mechanism of the lock. This comprises a shaft 20 which directly carries a locking disk 21, the disk being mounted on the shaft tightly enough to ordinarily prevent its movement thereon but so that its position may be rotatively shifted if it is desired to change the combination of the lock. A sleeve 22 spaces disk 21 from front plate 17, and a sleeve 23 spaces it from a ferrule 24 which is rigidly mounted in sleeve 26 in turn mounted rigidly in the central aperture of plate 19. On ferrule 24 is mounted the second locking disk 25, this disk being spaced from the plate 19 by means of the sleeve 26. This construction may be varied, the main feature being to mount one of the disks on a sleeve which

does not turn with the shaft. In case a larger number of disks are placed in the lock, these sleeves become in form more similar to washers. By this means it will be
 5 seen that disk 21 has no direct frictional action on disk 25, insuring that disk 25 will remain in any position where it is placed. Spring 27 bears against both disks 21 and 25 and prevents either from being acci-
 10 dentally displaced.

Shaft 20 is journaled inside of ferrule 24 and is upset on one end as at 30 to hold it against longitudinal movement. On the
 15 other end it carries a knurled thumb nut 31 by means of which it may be turned. On the back of the thumb nut is mounted a circular plate 32 provided with numbered divisions as shown by means of which the movements of the nut and the shaft may be
 20 accurately gaged.

Projecting lugs 33 on the faces of the disks 21 and 25 provide means for the rotation of disk 25 from disk 21. When it is desired to open the lock, thumb nut 31 is
 25 turned in either direction to the number on plate 32 to which it is known that the plate must be turned in order to register notch 35 in disk 25 with bolt 11. The thumb nut is then turned in the opposite direction to the
 30 point where notch 36 in disk 21 is also in register with bolt 11. By then pulling outwardly on the shackle the lock may be opened. It will be seen that spring 14 will keep bolt 11 normally out of direct contact
 35 with the edges of disks 21 and 25, the bolt only passing into the notches in the disks when the shackle is pulled outwardly. By this means it is provided that the notches in the disk cannot be found by the rubbing of
 40 the bolt over them. Another feature is the making of the secondary disk 25 of lesser diameter than primary disk 21. This provides that the bolt cannot possibly come into contact with the notch in the secondary disk
 45 until the notch in the primary disk, which is the larger, is registered, and this cannot be the case while the secondary disk is being turned, lugs 33 being so placed that the two notches are not opposite each other. An-
 50 other feature of the lock is embodied in the beveling of the sides of the notch 36 in the primary disk, as at 37. By this means it is provided that bolt 11 will be forced outwardly, or toward the left in Fig. 2, when
 55 thumb nut 31 is rotated, thus immediately locking the shackle in place.

Having described my invention, I claim:—

1. In a lock of the character described, a longitudinally movable shackle having a V-
 60 shaped notch therein, a bolt engaging the notch and constructed to be forced out of engagement therewith by a longitudinal movement of the shackle, and a locking disk

having a notch with beveled edges in its periphery adapted for registration with the
 65 bolt.

2. In a lock of the character described, a longitudinally movable shackle having a V-shaped notch therein, a bolt engaging the
 70 notch and constructed to be forced out of engagement therewith by a longitudinal movement of the shackle, means to keep the bolt in engagement with the shackle, and a locking disk having a notch with beveled
 75 edges in its periphery adapted for registration with the bolt.

3. In a lock of the character described, a longitudinally moving shackle having a transversely extending notch therein one
 80 wall of the notch being oblique to the line of movement of the shackle, a bolt adapted to enter the notch in the shackle and to be removed therefrom by a movement of the shackle, resilient means to hold the bolt in
 85 engagement with the shackle, and a locking disk peripherally engaging with the bolt to prevent its movement out of the notch in the shackle the disk being provided with a notch with beveled edges in its periphery
 90 into which the bolt is adapted to enter.

4. In a lock of the character described, a case, a shackle adapted to move longitudinally in the case, a bolt engaging surface on
 95 the shackle, a bolt adapted to move transversely to the line of movement of the shackle and to engage with the bolt engaging surface, resilient means to hold the bolt in engagement with the shackle, and a locking
 100 disk adapted to peripherally engage with the bolt and having a notch with beveled edges into which the bolt is adapted to enter, the bolt engaging surface on the shackle being oblique to the line of movement thereof so that the bolt is forced away
 105 from the shackle and into the notch in the disk upon the longitudinal movement of the shackle.

5. In a lock of the character described, a longitudinally movable shackle having a V-shaped notch therein, a bolt engaging the
 110 notch and constructed to be forced out of engagement therewith by the longitudinal movement of the shackle, a pair of locking disks having notches in their peripheries adapted for registration with the bolt, and
 115 means to force the bolt toward the shackle.

6. In a lock of the character described, an annular case, a back for the case, a sleeve mounted centrally on the back and projecting
 120 within the case, a front plate for the case, a shaft revolvably mounted in the sleeve and front plate, a notched locking disk revolvably mounted on the sleeve, a second notched locking disk rigidly mounted on the
 125 shaft, connecting means between the two disks whereby the first named is revolved

through the agency of the second named, a longitudinally movable shackle mounted in the case and having a V-shaped notch therein, and a bolt engaging the notch and constructed to be forced out of engagement
5 therewith by the longitudinal movement of the shackle, the bolt adapted to enter the notches in the disks.

In witness that I claim the foregoing I have hereunto subscribed my name this 14th 10 day of January 1910.

FRED E. BENNETT.

Witnesses:

JAMES T. BARKELEW,
ELWOOD H. BARKELEW.