Feb. 24, 1925. 1,527,727

J. M. ZWEIMAN

PERMUTATION PADLOCK

Filed Aug. 20, 1921

Fig. 1.

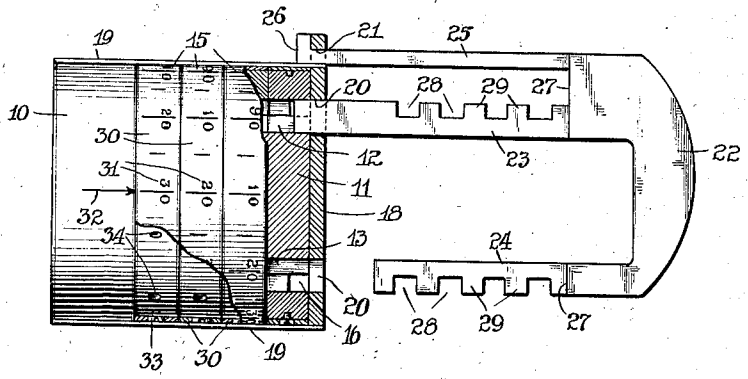


Fig. 2.

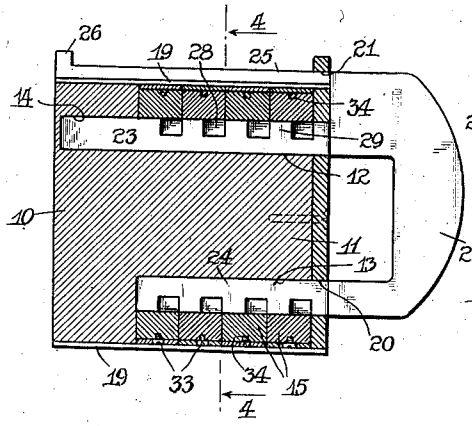


Fig. 3.

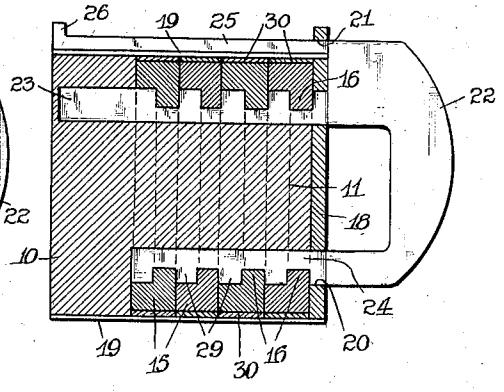


Fig. 4.

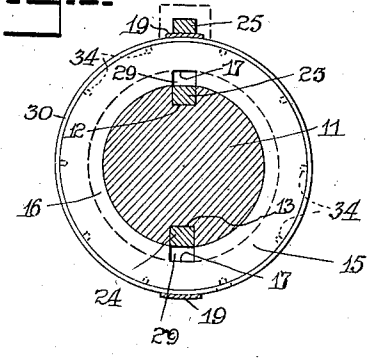
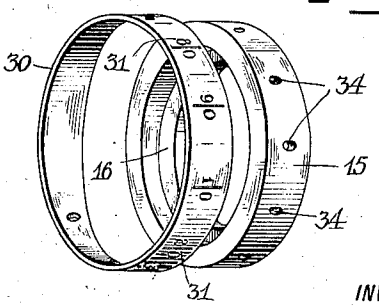


Fig. 5.



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Patented Feb. 24, 1925. 1,527,727

UNITED STATES PATENT OFFICE.

JAMES M. ZWEIMAN, OF WEST NEW YORK, NEW JERSEY.

PERMUTATION PADLOCK.

Application filed August 20, 1921. Serial No. 493,858.

To all whom it may concern:

Be it known that JAMES M. ZWEIMAN, citizen of Russia, residing at West New York, New Jersey, has invented a new and useful Improvement in Permutation Padlocks, of which the following is a specification.

My invention relates to improvements in the construction of a permutation or combination padlock; and has for its object to provide such a lock which is simple in construction and efficient in operation, and one which may be quickly adjusted to change from one combination to another without dismantling the entire operative mechanism of the lock.

Other objects of this invention will appear throughout the specification and be pointed out in the appended claims.

The invention is illustratively exemplified in the accompanying drawing, wherein—

Fig. 1 is a substantially side elevational view of the combination padlock with parts broken away to show more clearly the relative positions of the tumblers when the lock is in open position.

Fig. 2, is a longitudinal sectional view of the padlock showing the staple set.

Fig. 3, is a view similar to that shown in Fig. 2, except that the tumblers have been adjusted to lock the staple.

Fig. 4, is a transverse sectional view of the device taken on the lines 4—4 of Fig. 2; and

Fig. 5, is a perspective view of one of the rings or tumblers with the adjustable combination sleeve shown separated from the ring.

Referring to the drawing, 10 denotes a circular base plate having a forwardly projecting cylindrical core 11 provided with two longitudinally disposed grooves 12 and 13 on diametrically opposite sides of the core. One of the grooves extends well into body of base plate 10 while the other groove 13 extends only to the inner face of the base plate. The portion of the groove 12 in the base plate 10 is twice the height of the rest of the groove and is numbered 14. A series of rings or tumblers 15 are mounted to fit loosely around the core 11, each of said rings being provided with an inwardly projecting annular flange 16, and each of said flanges having a width substantially one-half of the width of the ring itself. Each flange 16 is provided with two recesses 17 arranged at diametrically opposite sides thereof and which are adapted to be brought into register with the two grooves 12 and 13 of the core 11. With reference to Fig. 2, it will be noted that when the rings 15 are in a position where each recess 17 is in register with the grooves 12 and 13 there will be an uninterrupted passage extending from the outside ring to the end of each groove. In order to hold each ring 15 in its respective position about the core 11 an annular disc or face plate 18 is secured to the end of the core either by means of screws or spot welding. This disc 18 is further held in position by straps 19 secured at one end to the surface of the base plate 10 and at the opposite end to the periphery of the disc. Radially disposed openings 20 are provided in the body of the disc 18 and which openings are adapted to register with the passages formed by the grooves 12 and 13 in the core 11. A third opening 21 adjacent the edge of the disc 18 and in line with the radial axis of the other two openings 20 is in a position to just meet the upper surface of one of the straps 19 and extend substantially above the latter.

In carrying out my invention I use a staple 22 having two arms or extensions 23 and 24 of unequal length and a third arm or extension 25 provided with an upturned end 26. This staple 22 is made from flat stock and the arms 23, 24 and 25 are reduced in gauge so that there will be formed a shoulder 26 to perform the function of a stop to limit the inward movement of the arms 23 and 24 in the passages before referred to. The outer edges of each of these arms 23 and 24 are provided with cut-out portions 28 defined by the parallel walls of lugs 29, the said cut-out portions 28 being adapted to overlie the flanges 16 and the lugs 29 being of a size provided to engage in the spaces between the inner edges of the flanges 16 and the unflanged faces of the rings 15. To assemble the parts the arms 23 and 24 are adapted to be received by the grooves 12 and 13 respectively, the said arm 23 being the longer of the two is received by the groove 12, while the arm 24 being the shorter of the two traverses the groove 13. The third arm 25 is adapted to enter the opening 21 in the margin of the disc 18 and when the staple 22 is in extended position, as

shown in Fig. 1 the angular end piece 26 prevents the staple from being entirely withdrawn from the body of the lock, the said angular piece 26 being adapted to abut the rear face of the disc 18.

In order to facilitate the changing of the combination required to operate the lock I have provided each ring or tumbler 15 with an adjustable peripheral sleeve or collar 30. This sleeve 30 comprises a tubular casing having a series of numbered divisions, in the present instance ten such divisions being shown, which are indicated 31 and may be subdivided into any number of parts. These sleeves 30 may be rotated with respect to the rings themselves so that any number may be moved to a predetermined point that will bring the recesses 17 in proper alignment with the grooves 12 and 13 when the said number is moved with the ring to an indication mark 32 extending longitudinally of the peripheral surface of the base plate 10. In order to secure the adjustment of the sleeves 30 the latter are provided with set screws 33 adapted to register with and be screwed into tapped radial openings 34 provided in the periphery of the rings 16. These openings 34 are arranged in a series about each of the rings so that there will be one such opening for each number 31 on the sleeve 30, and, as shown in Fig. 1, the openings 34 thus provided are disposed so that each will be located midway between the numbers 31 when the lock is in operative position.

The operation of the combination padlock is as follows:—Assuming the rings 16 are in the position, shown in Fig. 1, and the staple 22 is withdrawn, it will first be necessary to push the staple towards the opposite end of the base plate 10 whereupon the arms 23 and 24 will travel inwardly the length of the grooves 12 and 13 respectively and the third arm 25 will simply be moved so that the angular end 26 will be adjacent the rear face of the base plate 10. The lock will then be in the position, shown in Fig. 2. Then in order to set the combination the rings 15 are revolved about the core 11 moving the flanges 16 between the parallel walls of the lugs 29 of the arms 23 and 24. This last operation places the staple 22 in locked position.

When it is desired to reopen the lock the selected combination numbers 31 are rotated with the rings 15 until they are each brought into register with the indication mark 32 whereupon the depressions or recesses 17 will overlie the grooves 12 and 13, thereby permitting the lugs 29 to freely pass axially of the passages until the shorter of the two arms of the staple 22 is disengaged from its openings 20 in the face plate or disc 18.

Having fully set forth the nature of my invention what I claim and pray to secure by Letters Patent is:

1. In a permutation padlock, the combination with a core provided with oppositely arranged longitudinal grooves, of rings adjustable about said core and provided with internal flanges having recesses adapted to be brought into register with said grooves in the core to form parallel passages, a staple adjustable in said passages and comprising a long and a short arm, both thereof being provided with notches adapted to receive the internal flanges of said rings, and means carried by said staple to limit the outward movement at a point which frees the shorter arm from its passage, while the end of the longer arm is still projecting into its passage.

2. A permutation padlock, as claimed in claim 1, including an adjustable sleeve for each of said rings, said sleeves being capable of adjustment without removing same from the rings, the sleeves being further provided with numbered divisions, said core being provided with a stationary indication mark to which any division of said sleeves may be registered by rotation of the rings, and means carried by the sleeves and adapted to be inserted in openings in the rings, said openings being spaced apart a distance equal to the distances between the divisions of said rings.

3. In a permutation padlock, the combination of a staple having three parallel arms, two thereof being adapted to be engaged in the body of the lock and one arm of the pair is shorter than the other arm, the third arm being movable over the exterior of the lock and through a slot in the latter, and means carried by the third arm to engage the wall of the slot to limit the outward movement of said staple at a point which will leave the longer arm of the pair still projecting into the body of the lock while the shorter arm is clear of the end of the lock.

4. A permutation padlock, as claimed in claim 3, in which said means comprises an angular projection at the end of said third arm, the inside face of the projection being arranged at a point which is adjacent the end of the longer arm of the pair and beyond the end of the shorter arm.

5. A permutation padlock, as claimed in claim 3, in which the slot to receive the said means is disposed in the projection of a plate secured over the staple end of said lock.

6. In a combination padlock, the combination of a series of rings having recessed flanges extending inwardly thereof, a grooved core supporting said rings, a face plate secured to the end of said core and adapted to hold said rings against axial displacement, said plate being provided with

three openings therein two of which being adapted to register with said grooves in said core, and a staple having three arms two of which are adapted to enter said last named openings and the third of said arms being adapted to enter said third opening and being provided with an upstanding end portion to engage against the rear face of said plate when the staple is extended to an unlocked position.

In testimony whereof, JAMES M. ZWEIMAN has signed his name to this specification this 17th day of August 1921.

JAMES M. ZWEIMAN.