

L. ROSEN.
COMBINATION PADLOCK.
APPLICATION FILED AUG. 10, 1909.

948,251.

Patented Feb. 1, 1910.

Fig. 1

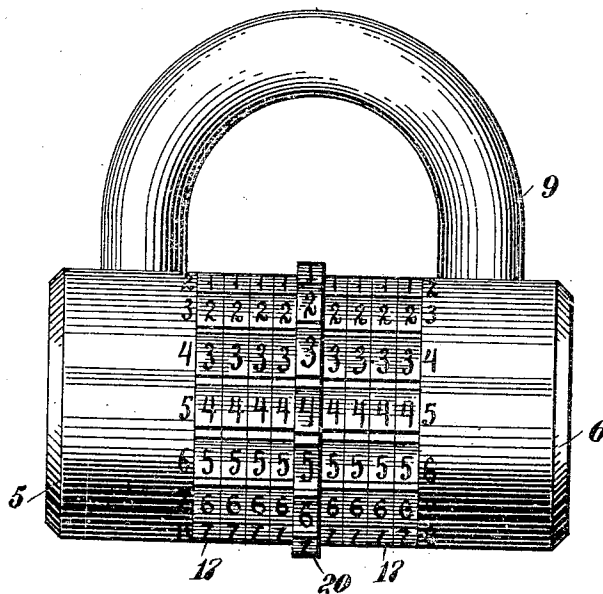


Fig. 2

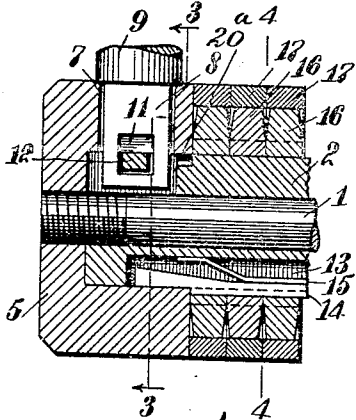


Fig. 3

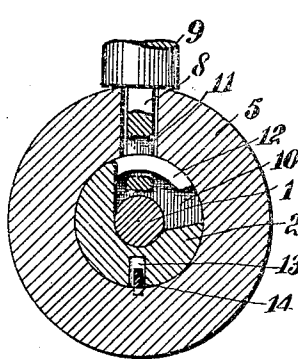


Fig. 4

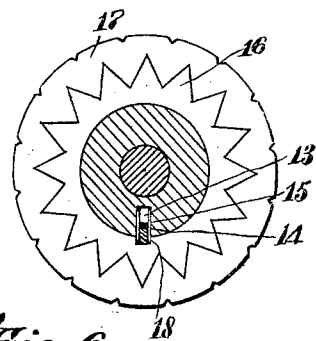


Fig. 6

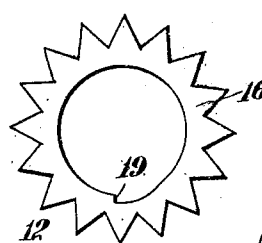


Fig. 5

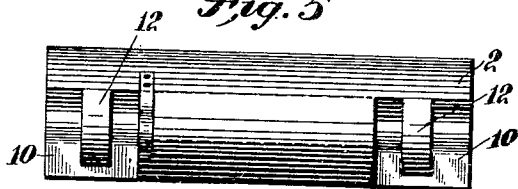
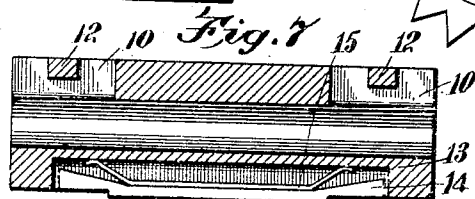


Fig. 7



WITNESSES

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LAZAR ROSEN, OF UNION HILL, NEW JERSEY.

COMBINATION-PADLOCK.

948,251.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed August 10, 1909. Serial No. 512,201.

To all whom it may concern:

Be it known that I, LAZAR ROSEN, a subject of the Czar of Russia, and a resident of Union Hill, in the county of Hudson and State of New Jersey, have invented a new and Improved Combination-Padlock, of which the following is a full, clear, and exact description.

This invention relates to a new and improved padlock of that type in which the locking mechanism is controlled by a combination mechanism.

An object of this invention is to provide a device which will be simple and strong in construction, inexpensive to manufacture, and of a type that cannot be readily picked.

A further object is to provide simple means whereby the series of combinations may be changed almost indefinitely.

These and further objects, together with the construction and combination of parts, will be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side view in elevation; Fig. 2 is a fragmentary longitudinal vertical section; Fig. 3 is a transverse vertical section on the line 3—3 of Fig. 2; Fig. 4 is a transverse vertical section on the line 4—4 of Fig. 2; Fig. 5 is a top plan view of the locking sleeve; Fig. 6 is a side view of a resetting disk; and Fig. 7 is a vertical longitudinal section of the locking sleeve, showing the position of the key.

Referring more particularly to the separate parts of the device, 1 indicates a central tie rod, on which is rotatably supported a locking sleeve 2. The ends of the tie rod 1 are preferably screw-threaded, to engage with corresponding screw-threaded central openings in heads 5 and 6. These heads are each provided with openings 7, through which bolt-engaging ends 8 of a shackle 9 are adapted to pass. The bolt-engaging ends 8 are adapted to pass in cut-out or rabbeted portions 10 on the locking sleeve 2, and have openings 11 therein, which are adapted to be engaged by bolts 12 secured on the locking sleeve 2 in any well known manner. The sleeve 2 is provided with a longitudinal groove or rabbet 13, in which is located a longitudinal key 14. The key 14 is normally

pressed out of the groove 13 by means of a spring 15, and has its intermediate portion raised somewhat from its end portions, so that its ends will engage the heads 5 and 6, to prevent it from going beyond a certain limit.

Concentric with the sleeve 2, and interposed between the heads 5 and 6, there are provided a plurality of star or toothed wheels or disks 16, which are engaged by concentric internally toothed rings 17. The rings 17 are provided with a plurality of characters, suitably inscribed on the periphery thereof and arranged opposite the internal grooves which engage the points or teeth on the disks 16. These rings may be provided with any number of characters, but the number must be the same as the number of teeth on the star wheel. The star wheels 16 and the character rings 17 go to make up permutation rings or tumblers which operate the locking member or sleeve 2. Each of the star wheels, with the exception of the central one, is provided with a groove 18 of similar cross section to the groove 13, and adapted to be brought opposite thereto, so that the key 14 may pass into the grooves in the star wheels when they are in alinement, thus connecting the locking sleeve 2 to the star wheels and their concentric rings. The central star wheel, which is illustrated in Fig. 6, has a rabbeted portion 19, in which the key 14 is adapted to slip, but one side of this rabbeted portion, however, instead of extending abruptly to the inner periphery of the star wheel, to form a groove, slopes gradually, to form a cam surface. The concentric character ring, designated by the numeral 20, on the central star wheel, is somewhat larger than the other rings, so that it can be more easily manipulated. The heads 5 and 6 are also provided with characters, suitably inscribed on their surfaces adjacent to the rings.

In order to prevent the disks 16 from accidentally rotating the sleeve 2 during the manipulation of said disks, a spring 20^a is secured in any well known manner in a rabbet in the sleeve and frictionally engages the interior of one of the heads 5.

In the operation of the device, the shackle 9 is passed through suitable staples or rings on the parts to be locked together, and the ends 8 inserted in the openings 7 in the heads 5 and 6. The sleeve 2 is then rotated by means of the star wheels and their con-

centric rings, which, when in alinement, engage the key 14, and are thereby locked to the sleeve 2. The key 14 is then forced back into the groove 13 out of the grooves 18 in the star wheels by rotating the resetting ring 20 relative to the remaining rings. When the key 14 is forced completely into the groove 13, the star wheels and their concentric rings may be rotated relative to each other, thereby destroying the alinement of the characters indicated on the surface. When it is desired to open the padlock, the characters on the rings must be arranged in the previously selected combination. When this arrangement has been accomplished, the grooves 18 in the star wheel will be in alinement, superposed over the groove 13, thereby permitting the key 14 to slip in the alined grooves 18, joining the sleeve 2 to the united star wheels and rings. The sleeve 2 may be then rotated by means of the rings, drawing the locking bolts 12 out of the openings 11 in the shackle 9, thereby permitting the shackle to be removed from the heads 5 and 6. When it is desired to change the combination, all that is necessary to do is to remove any number of the concentric rings from their particular star wheel and re-arrange their relative positions. The number on the ring which is placed opposite to the groove 18 on the star wheel, will be the number on the combination of that particular ring. In the form illustrated, there are sixteen points or teeth on the star wheels, and there are therefore sixteen numbers on each of the rings. This provides a number of combinations which may be obtained, reaching up into the billions. The device, moreover, is extremely simple in construction, and can be taken apart and reset with little or no difficulty, and yet is absolutely positive in its action.

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

1. In a combination lock, the combination with a support, of a locking member connected to said support, a shackle adapted to engage said locking member, and a plurality of permutation rings for manipulating said locking member.

2. In a combination lock, the combination with a support, of a locking member connected to said support, a shackle adapted to engage said locking member, a plurality of toothed wheels for operating said locking member, means for connecting said toothed wheels to said locking member, and character rings removably secured to said toothed wheels.

3. In a combination lock, the combination with a support, of a locking sleeve on said support, a shackle adapted to be locked to said sleeve, mechanism for operating said sleeve, means connecting said mechanism to

said sleeve, dependent on the relative position of the members of said mechanism, and adjustable means connected to said mechanism adapted to indicate the position thereof.

4. In a combination lock, the combination with a support, of a rotary locking sleeve on said support, a shackle adapted to engage said locking sleeve, permutation tumblers for rotating said sleeve, a key for connecting said sleeve to said tumblers, and means for normally forcing said key into engagement with said tumblers.

5. In a combination lock, the combination with a support, of a locking sleeve on said support, a shackle adapted to engage said locking sleeve, said sleeve having a groove therein, permutation tumblers for rotating said locking sleeve, having grooves therein, a key in said groove in said sleeve adapted to engage said grooves in said tumblers when said latter grooves are in alinement, and means for normally urging said key into engagement with said grooves in said tumblers.

6. In a combination lock, the combination with a rod, of heads secured to said rod, a locking sleeve on said rod having bolts thereon, a shackle adapted to engage said bolts, tumblers for operating said sleeve, having grooves therein, a key carried by said sleeve, adapted to engage said grooves in said tumblers when said grooves are in alinement, and means for normally urging said key into engagement with said tumblers.

7. In a combination padlock, the combination with a rod, of heads secured to said rod, a rotary sleeve on said rod, having locking bolts thereon, a shackle adapted to engage said locking bolt, said sleeve having a longitudinal groove therein, a key in said groove, a spring adapted to normally urge said key out of said groove, disks for rotating said sleeve, having grooves therein adapted to engage said key, and adjustable character rings on said disks.

8. In a combination lock, the combination with a rod, of heads secured to said rod, a rotary sleeve concentric with said rod, having locking bolts thereon, a shackle adapted to engage said locking bolt, said sleeve having a longitudinal groove therein, a key in said groove, a spring for normally urging said key out of said groove, toothed wheels for rotating said sleeve, having grooves therein adapted to be engaged by said key, and toothed character rings on said wheels.

9. In a combination lock, the combination with a rod, of heads secured on said rod, having openings therein, a rotary sleeve on said rod, having locking bolts thereon, a shackle adapted to be inserted in said openings in said heads to engage said locking bolts, said sleeve having a longitudinal groove therein, a key in said groove, toothed wheels for rotating said sleeve, having grooves therein adapted to be engaged by said key, a spring

adapted to normally urge said key into engagement with said grooves in said toothed wheels, and character rings removably secured to said toothed wheels.

5 10. In a combination padlock, the combination with a support, of a locking member on said support, a shackle adapted to engage said locking member, operating mechanism for said locking member, a connection
10 for joining said mechanism with said locking member, means for forcing said connection into connecting relation between said mechanism and said locking member, and means for forcing said connection out
15 of connecting relation.

11. In a combination lock, the combination with a support, of a locking member, a shackle adapted to engage said locking member, operating mechanism for said locking member, a connection for joining said
20 locking member and said mechanism, a spring adapted to force said connection into connecting relation, and means for forcing said connection out of connecting relation.

25 12. In a combination lock, the combination with a support, of a rotary locking member, a shackle adapted to engage said locking member, mechanism for rotating said locking member, a connection for joining
30 said locking member and said mechanism, means for forcing said connection into connecting relation, and a cam for forcing said connection out of connecting relation.

35 13. In a combination lock, the combination with a support, of a rotary locking member on said support, a shackle adapted to engage said locking member, mechanism for rotating said locking member, a connection between said mechanism and said locking
40 member, a spring for forcing said connection into connecting relation, and a cam for forcing said connection out of connecting relation.

14. In a combination lock, the combina-

tion with a rod, of a sleeve on said rod, having locking bolts thereon, a shackle adapted
45 to engage said locking bolts, disks for operating said sleeve, a key for connecting said disks to said sleeve, said sleeve having a
50 groove therein, and said disks having grooves therein, a key adapted to connect said groove in said sleeve with said grooves in said disks when said latter grooves are in
55 alinement, means for normally urging said key into engagement with said grooves in said disks, and a cam on one of said disks adapted to force said key out of engagement with said grooves in said disks.

15. In a combination lock, the combination with a rod, of heads secured to said rod,
60 a sleeve on said rod, having locking bolts thereon, a shackle adapted to engage said locking bolt, said sleeve having a longitudinal groove therein, a key in said groove, toothed wheels on said sleeve, having grooves
65 therein adapted to be brought into alinement, means for forcing said key into engagement with said grooves in said toothed wheels, means for forcing said key out of engagement with said grooves in said
70 toothed wheels, and character rings adjustably connected with said toothed wheels.

16. In a combination lock, the combination with a support, of a locking member connected to said support, a plurality of
75 permutation rings for manipulating said locking member, and means for connecting said permutation rings to said locking member, brought in play by the arrangement of said permutation rings in a predetermined
80 relation.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LAZAR ROSEN.

Witnesses:

MORRIS EICHMANN,
EDWARD GUNTHER.