No. 743,850. PATENTED NOV. 10, 1903.

J. D. FOSTER.

PERMUTATION LOCK.

APPLICATION FILED MAR. 21, 1903.

NO MODEL.

Fig. 1.

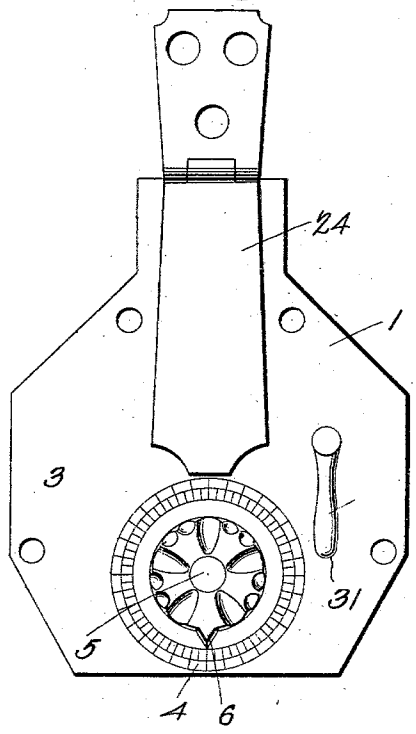


Fig. 2.

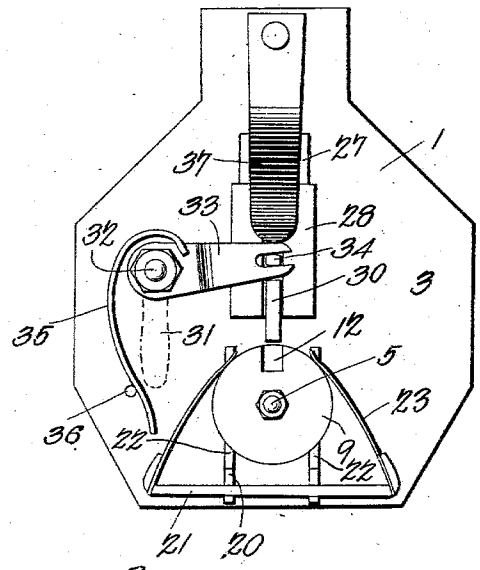


Fig. 3.

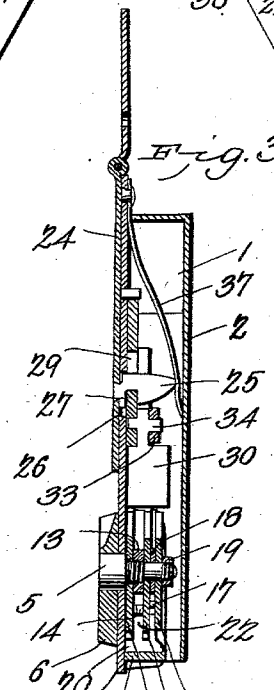


Fig. 4.

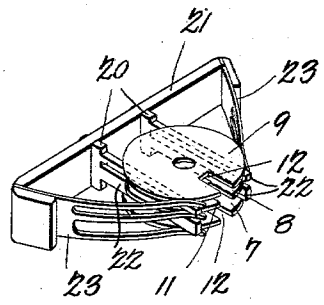
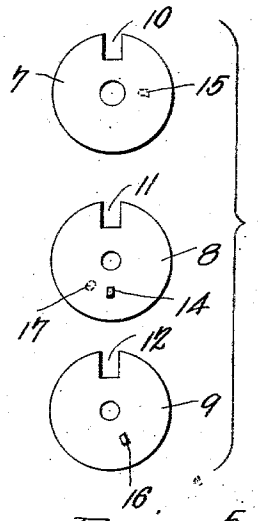


Fig. 5.



Witnesses

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No. 743,850. Patented November 10, 1903.

UNITED STATES PATENT OFFICE.

JAMES D. FOSTER, OF CHATTANOOGA, TENNESSEE.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 743,850, dated November 10, 1903.

Application filed March 21, 1903. Serial No. 148,965. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. FOSTER, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Permutation-Lock, of which the following is a specification.

My invention relates to locks, and is especially directed to permutation or combination locks, and has for its objects to produce a device of this character which will be simple of construction, efficient in operation, one in which the combination of the lock may be readily changed and one in which the number of combinations attainable is widely increased.

To these ends the invention comprises the novel details of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a front elevation. Fig. 2 is a rear elevation with the casing removed. Fig. 3 is a central longitudinal section with the casing in position. Fig. 4 is a detail view in perspective of the tumblers and their attendant parts. Fig. 5 is a detail view of the tumblers unassembled.

Referring to the drawings, 1 indicates my improved lock, which in the present instance is designed for application to trunks or the like; but in this connection it is to be noted that the same may, with slight changes in its form, proportions, and the like, be adapted for application wherever a lock of such character is desired. The lock is provided with a casing 2, of sheet metal, provided with a removable face-plate 3. The outer face of the plate has formed upon it a scale 4, suitably divided and numbered, as usual, to act as a guide in manipulating the pointer for bringing the lock-tumblers in proper position to permit actuation of the lock, as in the well-known manner.

5 is a bolt which extends through the face-plate 3 at the center of the scale 4. The head of the bolt lies flush with the outer surface of the face-plate and is provided with a pointer 6, preferably formed integral with the former, while the shank of the bolt extends loosely through the face-plate for free rotation and is suitably threaded for the purpose presently explained. Mounted upon the bolt within the casing are three tumblers 7 8 9, which are provided, respectively, with recesses 10 11 12. The tumbler 7 lies flush upon the inner surface of the face-plate and is fixed for movement with the bolt by means of a washer 13, tapped upon the shank of the bolt and bearing tightly upon the outer face of the tumbler. The tumbler 8 is mounted for free rotation upon the shank of the bolt and lies directly over the washer 13 and has formed upon its inner face a stud 14, adapted for engagement by a stud 15, formed upon the adjacent face of the tumbler 7, whereby the former may operatively engage the latter, as presently explained. The tumbler 9 is likewise mounted for free rotation upon the shank of the bolt and is provided upon its inner face with a stud 16, which engages a stud 17, formed upon the adjacent face of the tumbler 8, whereby the former will operatively engage the latter.

18 is a washer which overlies the outer face of the tumbler 9, and 19 a nut which is tapped upon the inner end of the bolt to retain the tumblers in position thereon.

20 indicates a pair of members which are secured in any suitable manner to the end wall 21 of the casing. These members are suitably spaced one from the other and are provided with parallel spaced fingers 22, which extend between the tumblers to properly space them one from the other and permit lateral play of the same.

23 represents a pair of spring members which are suitably secured to the end wall 21 of the casing and project therefrom toward the center of the casing. These members converge relatively and are provided with three spaced spring-fingers, which engage the edges of the respective tumblers to hold the same frictionally and prevent their accidental rotation.

24 indicates a pivoted hasp with a recessed latch-finger 25, adapted for entrance into the casing through a suitable perforation 26, formed in the face-plate 3, for engagement with a sliding latch bolt or member 27, which is slidingly mounted upon the inner face of the plate 3 and is retained by flanges 28, suitably associated therewith for engagement with the longitudinal edges of the bolt. The body portion of the bolt is flat and extends

parallel with the face-plate and is slotted, as at 29, for the reception of the latch-finger 25.

30 is a finger formed integral with the body portion of the bolt and disposed in a plane at right angles thereto and adapted for entrance into the recesses 10 11 12 of the tumblers in the manner and for the purpose hereinafter set forth. The bolt is reciprocated by means of a lever 31, mounted at the outer side of the face-plate 3 upon the end of a pintle 32, which projects through the face-plate into the casing and receives a rocking member 33, which is retained upon the pintle by means of a suitable nut. This rocking member lies at right angles to the sliding bolt and has its free end, which overlies the bolt, bifurcated for the reception of a stud 34, formed integral with the bolt. A leaf-spring 35 is attached to the rocking member and bears at its free end upon a post 36. This spring serves to retain the member in its normal position, with the bolt in locking position.

37 is a second leaf-spring, which is attached in any suitable manner to the inner face of plate 3 and at its free end overlies the bolt in position to bear upon the inner end of the latch-finger 25 when the hasp is locked, the purpose of this spring being to automatically throw the latch-finger out of engagement with the bolt when the latter is moved to unlocking position.

In operation the locking-bolt will normally occupy the position illustrated by full lines in Fig. 3 for engagement with the recess of finger 25 to maintain the hasp locked, and when in locked position movement of the bolt will be prevented, owing to the recesses of the tumblers being out of register. With the parts in this position if it is desired to release the hasp the tumblers will be moved to bring their recesses into register, thus permitting the finger 30 of the locking-bolt to pass into the same, the depth of the recesses being sufficient, of course, to permit a movement of the bolt which will release the hasp. The movement of the tumblers to bring their recesses into proper register is controlled, as usual, by moving the pointer 6 to certain predetermined numbers upon the scale 4, and when so operated the outer tumbler 9 will first be brought to the proper position next the tumbler 8 and finally tumbler 7. The tumblers 8 and 9 are of course operated by the tumbler 7 through the medium of the various interengaging studs formed upon the faces of the respective tumblers.

When it is desired to change the combination of a lock, the washer 13 is manipulated to release tumbler 7 and permit a movement of the same relative to the shank of the bolt, and by a very slight movement of the tumbler the entire combination will of course be changed, owing to the fact that the remaining tumblers are, as before stated, actuated by tumbler 7.

From the foregoing it will be seen that I produce a simple and efficient device and one in which a great variety of combinations is attainable, and in attaining these ends it is to be noted that I do not limit myself to the precise details herein shown and described, inasmuch as minor changes may be made therein without departing from the spirit or scope of my invention.

Having thus described my invention, what I claim is—

1. In a lock of the class described, the combination with a casing, of an operating-bolt provided with an actuating member, a plurality of tumblers mounted upon the bolt, a pair of members associated with the casing and having fingers which extend between and space the tumblers, and means for preventing accidental rotation of the tumblers.

2. In a lock of the class described, the combination with a casing, of an operating-bolt provided with an actuating member, a plurality of tumblers mounted upon the bolt, a pair of members associated with the casing and having fingers which extend between and space the tumblers, and spring members associated with the casing and provided with spring-fingers for frictionally engaging the tumblers to prevent accidental rotation of the same.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES D. FOSTER.

Witnesses:
S. C. CATHEY,
PETER C. MCNULTY.