H. F. CRIM & W. C. LOY.

TRUNK AND SUIT CASE LOCK.

APPLICATION FILED JULY 14, 1908.

954,854.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

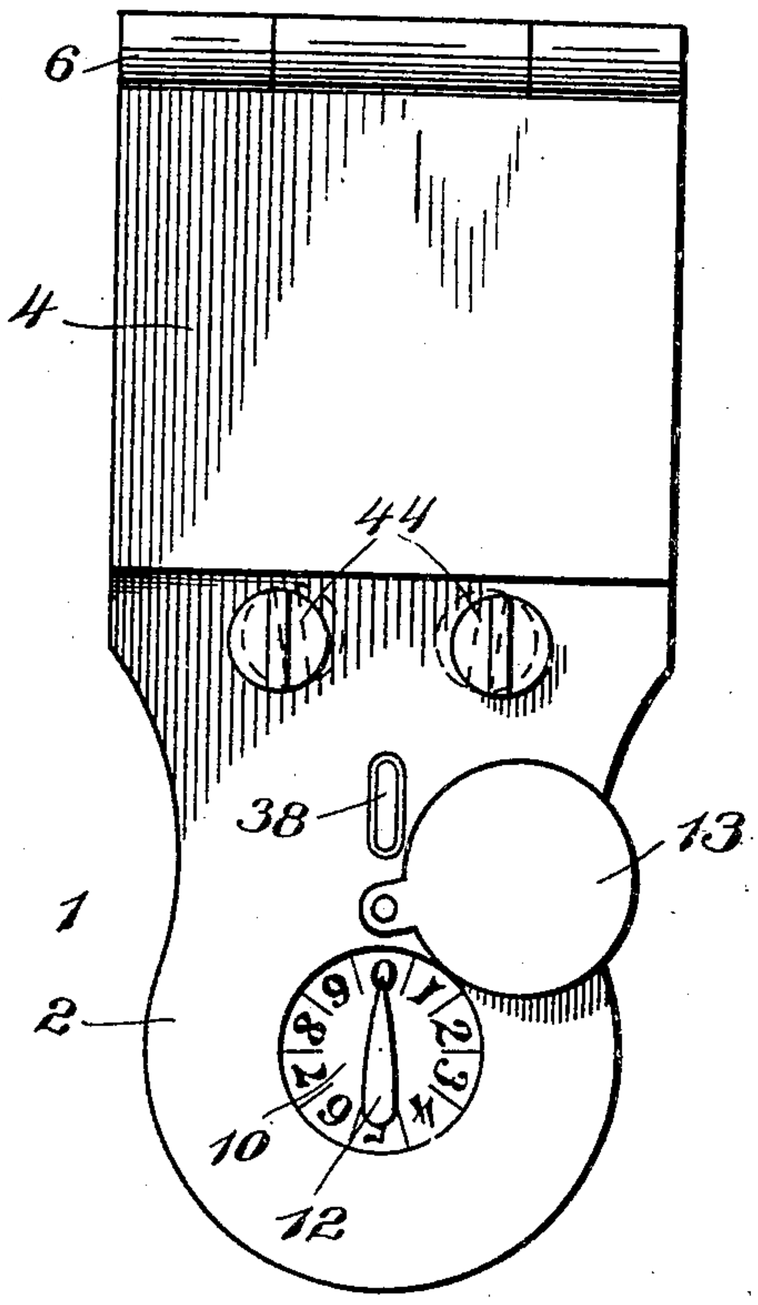


Fig. 8.

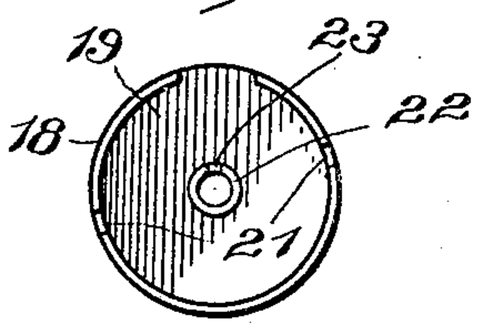


Fig. 9.

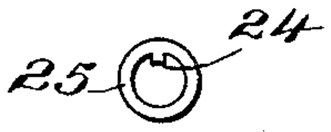


Fig. 2.

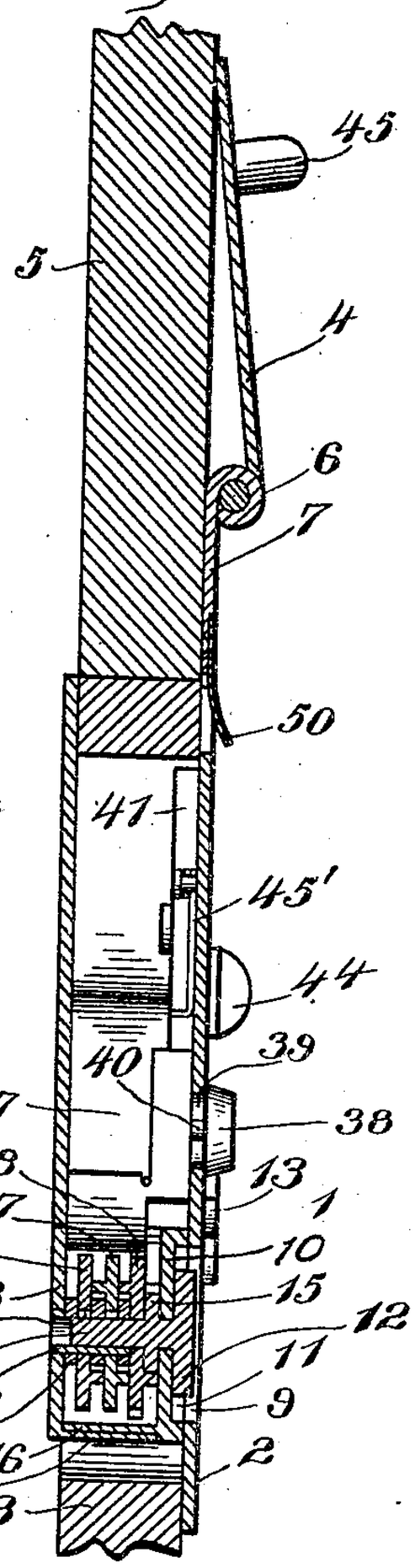
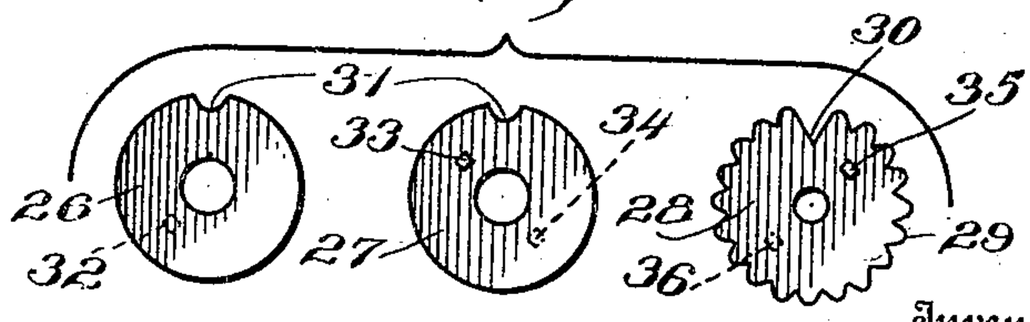


Fig. 10.



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2 SHEETS—SHEET 2.

Fig. 3.

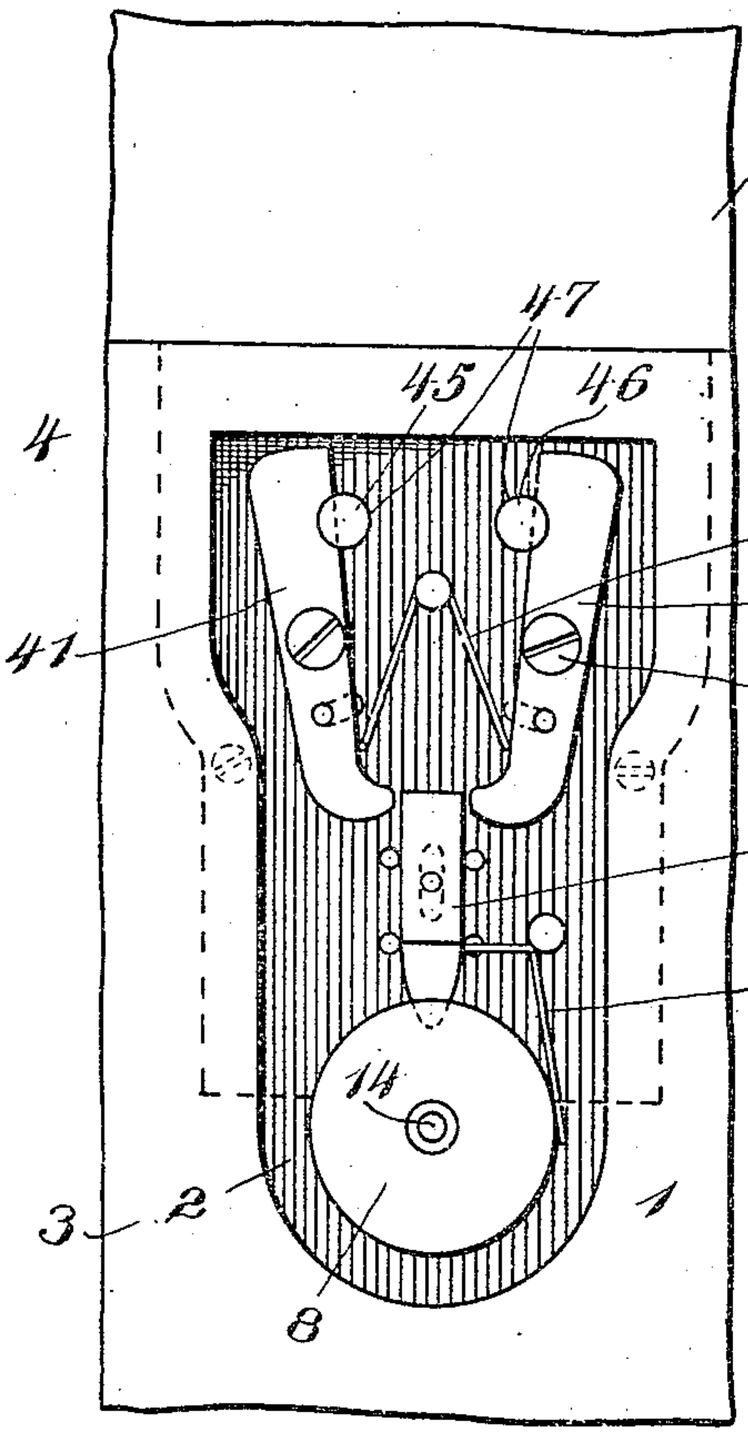


Fig. 4.

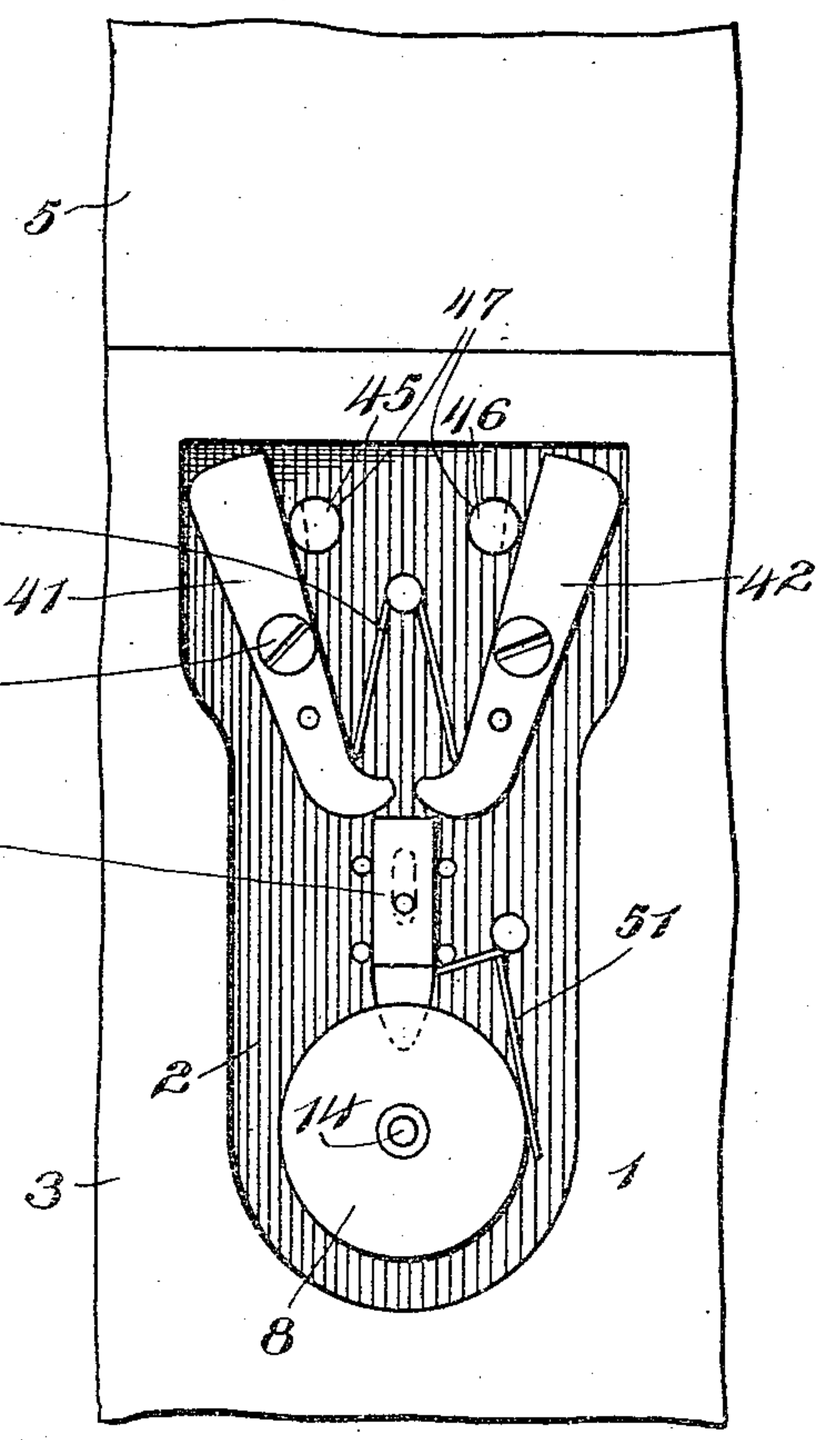


Fig. 5.

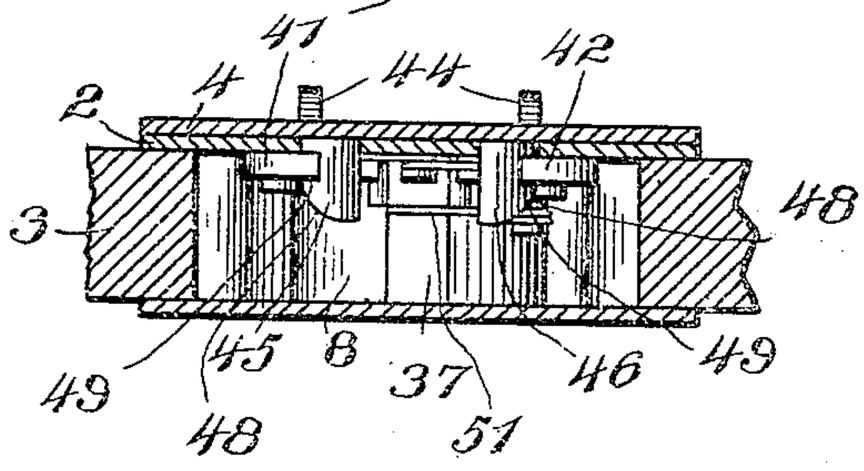


Fig. 6.

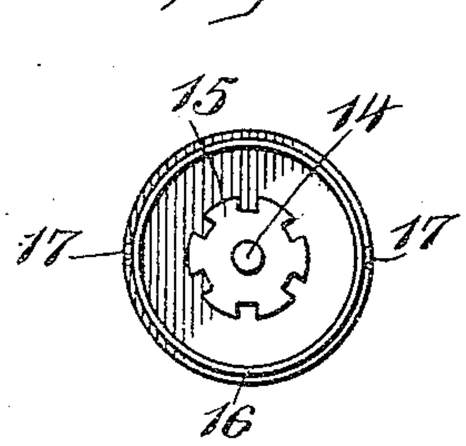
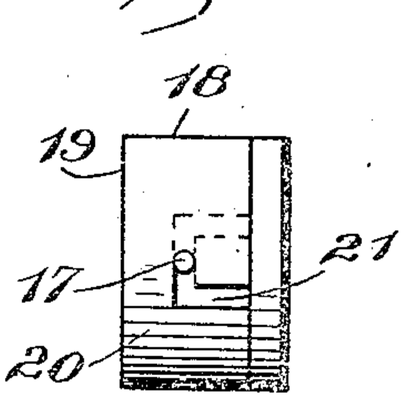


Fig. 7.



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UNITED STATES PATENT OFFICE.

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TRUNK AND SUIT-CASE LOCK.

954,854. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed July 14, 1908. Serial No. 443,566.

To all whom it may concern:

Be it known that we, HENRY F. CRIM and WILLIAM C. LOY, citizens of the United States, residing at Rochester, in the county of Fulton and State of Indiana, have invented certain new and useful Improvements in Trunk and Suit-Case Locks; and we 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 numerals of reference marked thereon, which form a part of this specification.

Our invention relates to permutation locks for trunks, suit cases or the like, and has for its object to provide a lock of this character which possesses the advantages of a permutation lock and which provides an extremely strong, simple and efficient trunk or suit case lock.

A further object of our invention is to provide a lock for trunks, suit cases or the like which can be opened in the dark without the use of a key or the like.

A further object of our invention is to provide a lock for trunks, suit cases or the like which is particularly simple in its construction, easy and cheap to manufacture and composed of a minimum number of parts.

With these objects in view our invention consists in the novel construction and arrangement of the several parts of the lock; and our invention consists particularly in the combination of the permutation feature and elements coöperating therewith which constitute the lock.

Our invention also consists in certain other novel features of construction and in combinations of parts, all of which will be first fully described and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings: Figure 1 is an elevation of a lock constructed in accordance with our invention. Fig. 2 is a vertical transverse sectional view through the lock. Fig. 3 is a rear elevation of the locking mechanism showing same in locking position. Fig. 4 is a similar view showing the lock in an unlocked position. Fig. 5 is a transverse sectional view through the locking mechanism taken on line 4—4 of Fig. 3. Fig. 6 is a plan view of the tumbler casing. Fig. 7 is an elevation of the same. Fig. 8 is an inside plan view of the cap of the tumbler casing. Fig. 9 is a plan of one of the tumbler washers, and Fig. 10 is a plan view of the three tumblers.

Like numerals of reference indicate the same parts throughout the several figures in which:

1 indicates the lock which comprises the face plate 2 which, as shown in Fig. 2, is secured on the outside of the trunk or suit case 3 in the usual manner.

4 indicates the hinged plate which as shown in Fig. 2 is secured to the opposite member or section 5 of the trunk or suit case, said plate 4 being hinged at 6 to the member 7 as clearly shown.

Referring now to Figs. 2, 3 and 4 it will be seen that a casing 8 is provided on the inner face of the lock plate 2, and by referring to Fig. 2 it will be seen that an opening 9 is provided near the bottom thereof directly under which opening 9 the casing 8 is secured. It will also be seen that the face or dial 10 of the casing 8 is offset, as shown in Fig. 2, in order to provide a chamber or recess 11 to accommodate the pointer 12.

As shown in Fig. 1 a pivoted cover 13 is provided on the face of the lock plate 2 for the purpose of covering and concealing the dial 10.

Referring now to Fig. 6 and in this connection also to Fig. 2 it will be seen that the pointer 12 is provided with a post 14 which passes into the casing 8, while a regularly notched disk 15 is mounted on said post 14 as clearly shown. It will also be seen from Figs. 2 and 6 that a wall or flange 16 is formed behind the face or dial 10, said wall or flange 16 being provided with two small lugs or pins 17 as clearly shown in Figs. 6 and 7.

18 indicates the cap or removable portion of the casing 8, which cap or removable portion is provided with a face 19 and a wall or flange 20, said wall or flange 20 being provided with a bayonet slot 21 to register with the pins or lugs 17 on the flange 16 of the permanent member of the casing, this construction forming a simple bayonet joint as will clearly appear from Fig. 7.

Referring now to Fig. 8 and also to Fig. 2 it will be seen that on the cap 18 or removable member of the casing 8 we provide a

sleeve 22 into which sleeve the post 14 of the pointer 10 enters as clearly shown in Fig. 2. We also provide a longitudinal slot 23 in said sleeve within which slot the lugs or projections 24 (Fig. 9) of the washers 25 enter, said washers 25 being passed over the sleeve 22 and held against rotation thereon by means of the lug or projection 24 entering the slot 23 in the sleeve 22 as is obvious.

26, 27 and 28 indicate the tumblers, and as will appear from Fig. 10 the tumbler 28 is of greater circumference than the tumblers 26 and 27, while the periphery of the tumbler 28 is provided with teeth 29 and a single V-shaped recess 30. The peripheries of the tumblers 26 and 27 are smooth except for the single notch or recess 31 in each of the said tumblers. It will also appear from Fig. 10 that the tumbler 26 (which is the one first passed over the sleeve 22) is provided with a lug 32 shown in dotted lines; while the tumbler 27 is provided with two lugs 33 and 34, one on each face of the tumbler. The toothed tumbler 28 is also provided with two lugs 35 and 36, all of said lugs being in the path of each other in such manner that the lugs on the adjacent face of the tumblers engage each other as is obvious.

Referring to Figs. 3 and 4, which illustrate the rear face of the lock plate 2, it will be seen that a locking bolt 37 is arranged on the rear face of said plate, said locking bolt being provided with a knob 38 (Figs. 1 and 2) which is arranged on the outer face of the lock plate 2, a suitable slot 39 being provided in the plate 2 through which the stem 40 of the knob 38 extends. Referring in this connection to Fig. 2 it will be seen that the lower end of the locking bolt 37 enters the casing 8 and is normally in engagement with the toothed periphery of the tumbler 28.

Referring again to Figs. 3 and 4 it will be seen that two dogs 41 and 42 are arranged on the inner face of the plate 2 and pivoted thereto at 43, said dogs 41 and 42 having their lower ends curved, as shown, in such manner that they will engage the locking bolt 37 when said bolt is in position shown in Fig. 3.

Referring now to Figs. 1, 2 and 5 it will be seen that each of the dogs 41 and 42 are provided with a knob 44 located on the face of the plate 2; while a leaf spring 45′ is arranged between the two dogs 41 and 42 which normally holds them in position shown in Fig. 3.

The hinged plate 4 is, as shown in Figs. 2, 3, 4 and 5, provided with two lugs 45 and 46, and the plate 2 is provided with two perforations 47 registering with the lugs 45 and 46 through which said perforations said lugs extend. The lugs, as shown in Fig. 5, have their ends inclined at 48 and a transverse slot 49 is formed in each of said lugs within which slot the upper ends of the dogs 41 and 42 enter as clearly shown in Figs. 3 and 5.

Referring now to Fig. 2 it will be seen that a small spring 50 is provided on the upper section 7 of the plate 2, said spring having a normal tendency to force the hinged plate 4 out of engagement with the dogs 41 and 42 as soon as the said lugs 45 and 46 are released by said dogs.

As shown in Figs. 3 and 4 a leaf spring 51 in engagement with the locking bolt 37 is arranged on the inner side of the plate 2, said spring having a normal tendency to hold the locking bolt 37 in engagement with the periphery of the toothed tumbler 28.

Having thus described the several parts of our invention its operation is as follows: The lock is applied to a trunk, suit case or the like in the usual manner. In order to fasten the trunk or suit case the hinged plate 4 is swung down into position shown in Fig. 1 and the lugs or projections 45 are passed through the perforations 47 in the plate 2. The inclined surfaces 48 of the lugs 45 and 46 engage the inner edges of the dogs 41 and 42 forcing them apart as shown in Fig. 4. As soon, however, as the transverse slots 49 in said lugs 45 come in line with the dogs 41 and 42 the leaf spring 45′ forces said dogs within the transverse slots 49 as shown in Figs. 3 and 5 thus fastening the said lugs 45 and 46 in a locked position.

When it is desired to fasten the trunk, suit case or the like without actually locking the same the locking dog 37 is in position shown in Fig. 4, and by means of the two knobs 44 on the dogs 41 and 42 the said dogs can be thrown in position shown in Fig. 4 manually, thus releasing the lugs 47 and allowing the hinged plate 4 to be swung into position shown in Fig. 2.

When the locking bolt 37 is in position shown in Fig. 4 all of the tumblers 26, 27 and 28 have their notches 30 and 31 registering in such manner that the tapered end of the locking bolt 37 lies within the said notches. When the bolt is in this position the lower ends of the dogs 41 and 42 can be brought together in position shown in Fig. 4 to release the lugs 45 and 46 on the hinged plate 4. When, however, the locking bolt 37 is in a raised position as shown in Fig. 3 the upper end of said bolt lies between the lower ends of the dogs 41 and 42 as shown in Fig. 3. The position of the bolt in this instance prevents any movement of the dogs 41 and 42 and effectually prevents said dogs from being carried out of engagement with the lugs 45 and 46 on the hinged plate 4. When the locking bolt is in this position the device is securely locked as is of course obvious.

In order to throw the locking bolt 37 into its raised position as shown in Fig. 3 the pointer 12 is turned to the right or to the

left, and by reason of the inclined or V-shaped form of the notch 30 in the toothed tumbler 28 the tapered end of the locking bolt 37 is forced up and the toothed periphery of the said tumbler 28 holds said locking bolt 37 in its raised position. The lug 36 on the toothed tumbler 28 lies within one of the notches in the notched disk 15, and as said disk is rotated with the shaft 14 of the pointer 12 said tumbler 28 is rotated with said disk, the lug 35 on the opposite face of said tumbler being in the path of the lug 34 on the second tumbler 27, said tumbler 27 is rotated by the toothed tumbler 28 while the lug 33 on the opposite face of the tumbler 27 being in line with the lug 32 on the tumbler 26, said tumbler 26 is rotated with the tumbler 27. Between each of the tumblers we provide washers 25 which are passed on the sleeve 22 holding said tumblers in their proper relative position, and by reason of the lug 24 on each of the washers lying in the longitudinal slot 23 in the sleeve 22, said washers are not rotated with the tumblers. The locking bolt being in a raised or locked position as shown in Fig. 3 in order to unlock the device the pointer 12 is turned to a certain point on the dial 10 until the notch 31 in the tumbler 26 lies directly under the tapered end of the locking bolt 37. The pointer 12 is then turned in the opposite direction until the notch 31 in the tumbler 27 lies directly under the tapered end of the locking bolt 37. The pointer 12 is then turned in the opposite direction to a certain point on the dial 10 which rotates the toothed tumbler 28 and carries the V-shaped notch 30 therein directly under the tapered end of the locking bolt 37. When the three notches 30 and 31 are thus directly under the end of the locking bolt the leaf spring 51 carries said bolt down within the said notches in position shown in Fig. 4, thus carrying said bolt out of the path of the dogs 41 and 42, allowing said dogs to be operated by the knobs 44 on the outer face of the plate 2. When the locking bolt is in this position the device can be fastened and unfastened at will without recourse to the pointer 12. In order, however, to again lock the device the pointer is simply to be turned a short distance sufficiently to carry the V-shaped notch 30 out of line with the locking bolt 37, which operation again raises the locking bolt into position shown in Fig. 3, thus securely locking the lugs 45 and 46 in position shown in Fig. 3. As the periphery of the tumbler 28 is toothed, and as the lower end of the locking bolt 37 is at all times in engagement with the toothed periphery of said tumbler, the amount of rotation of the said tumbler can be ascertained on account of the clink or sound which is caused by the rotation of the tumbler 28 under the locking bolt 37. By this means the combination when once known can be learned in such a way that the device can be unlocked in the dark or without looking at the face of the dial.

Having thus fully described our invention what we claim as new and desire to secure by Letters Patent of the United States, is:

1. A permutation lock for trunks, suit cases and the like comprising a movable plate, a casing, means on said movable plate entering said casing, two locking dogs pivoted side by side within said casing and having a normal tendency to engage said means on said movable plate, a locking bolt within said casing, a series of tumblers associated with said locking bolt to engage the same and force said locking bolt between said pivoted locking dogs and into their path of movement to maintain same in their normal position and in locking engagement with the said means on said movable plate.

2. A permutation lock for trunks, suit cases and the like comprising a movable plate, a casing, means on said movable plate entering said casing, two locking dogs pivoted side by side within said casing and having a normal tendency to engage said means on said movable plate to lock the same, a locking bolt having its path of movement between the lower ends of said locking dogs and a lock mechanism for maintaining said locking bolt between the lower ends of said locking dogs and in their path of movement.

3. A permutation lock for trunks, suit cases and the like, comprising a movable plate, a casing, means on said movable plate entering said casing, two locking dogs pivoted side by side within said casing and normally tending to engage said means on said movable plate, a locking bolt, means for normally holding the same out of the path of movement of said locking dogs, and means for maintaining said locking bolt between the said locking dogs and in their path of movement to lock the same in engagement with the said means on said movable plate.

In testimony whereof, we affix our signatures, in presence of two witnesses.

HENRY F. CRIM.
WILLIAM C. LOY.

Witnesses:
MICHAEL SHERIDAN,
O. R. ENYART.