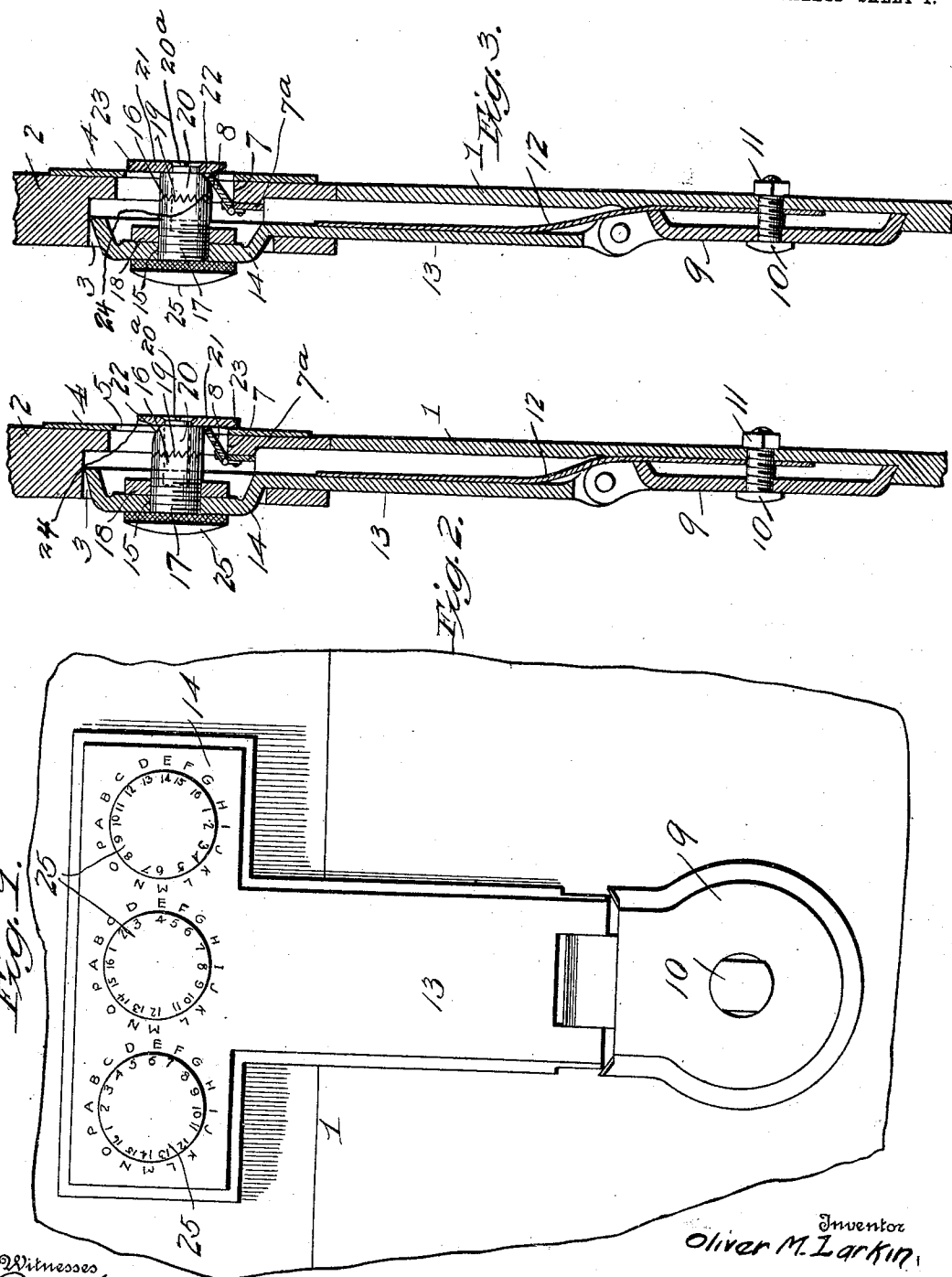


O. M. LARKIN.
COMBINATION LOCK.
APPLICATION FILED DEC. 12, 1908.

959,234.

Patented May 24, 1910.

2 SHEETS—SHEET 1.



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Fig. 4.

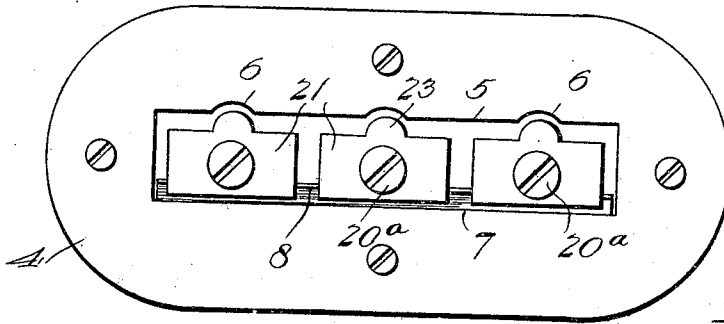


Fig. 7.

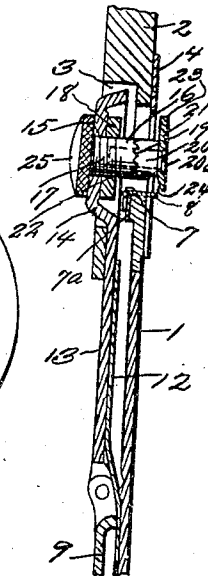


Fig. 5.

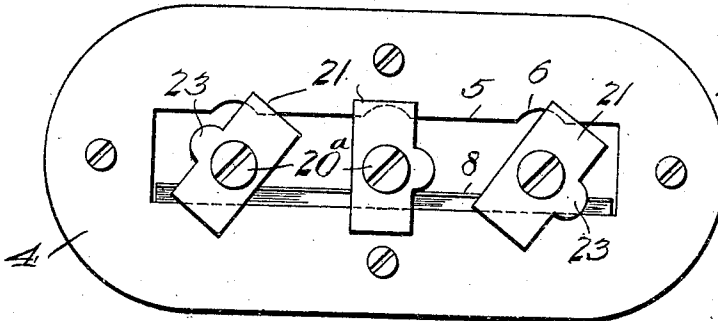
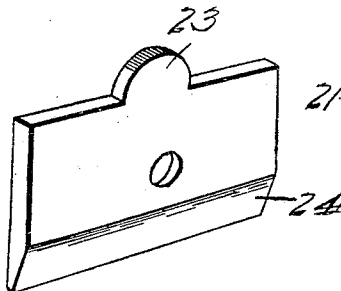


Fig. 6.



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UNITED STATES PATENT OFFICE.

OLIVER M. LARKIN, OF ST. LOUIS, MISSOURI.

COMBINATION-LOCK.

959,234.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed December 12, 1908. Serial No. 467,166.

To all whom it may concern:

Be it known that I, OLIVER M. LARKIN, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented new and useful Improvements in Combination-Locks, of which the following is a specification.

This invention relates to combination locks adapted for use in connection with trunks and for other purposes wherein it will be found applicable; and the object thereof is to provide a lock which will compel a person to be thoroughly familiar with the combination to enable such person to open the lock when occasion requires.

A further object of the invention is to provide a lock for the purpose set forth with a plurality of latch members each independently adjusted with respect to the other, thereby enabling the combination of each latch member to be different from another so that it will be extremely difficult for any one unless familiar with the combination to open the lock when occasion so requires.

Further objects of the invention are to provide a lock for the purpose set forth which shall be simple of construction, strong, durable, efficient in use, ready of attachment to a trunk or other receptacle, or to a door, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations, and modification may be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, wherein like characters denote corresponding parts throughout the several views, and in which—

Figure 1 is a front view of a portion of a trunk showing the improved combination lock applied thereto. Fig. 2 is a central vertical sectional view of the same, showing the latching plates in a locked position. Fig. 3 is a view similar to Fig. 2, but showing the latching plates in an unlocked position. Fig. 4 is a rear elevation of the latching mechanism as shown in Fig. 3. Fig. 5 is a

similar view of the latching mechanism as shown in Fig. 2. Fig. 6 is a detail perspective view of one of the latching plates. Fig. 7 is a view similar to Fig. 3, showing the hasp in a different position.

Referring to said drawings, 1 designates the body of a trunk or the like which is provided with a recessed hasp plate seat, and 2 designates the usual lid or cover therefor which is provided with a rectangular opening 3. The inner edge of the opening 3 is surrounded and reinforced by means of a plate 4 having a rectangular opening 5 therein the top edge of which is provided with a plurality of notches or recesses 6. Secured to the inner surface of the lid or cover adjacent to the opening 7 therein (for the passage of the locking plates) is a plate 7^a, to which a gravity locking plate 8 is hinged, the functions of which will be presently explained.

A hasp plate 9 is seated within the recessed seat of the trunk body and held in such position by means of a bolt 10 and nut 11, or equivalent fastening means which pass through the said plate and the bottom of said recess, as indicated more clearly in Figs. 2 and 3. Said bolt also serves to hold one end of a spring plate 12 beneath said plate 9, the free end of said spring plate normally lying in the upper part of the recess and exerting a pressure on the hasp 13 which has the usual hinge connection with the hasp plate. The upper or free end of said hasp is rectangularly shaped as indicated at 14 and has a plurality of openings 15 formed through it for the passage of a plurality of operating shafts 16 which are threaded as indicated at 17 for engagement with the washers 18 which bear upon the inner side of the rectangular shaped head, and at their outer portions, the said shafts being ratcheted as indicated at 19 for engagement with a similar ratcheted surface of a sleeve 20, which carries a latching plate 21. The sleeve 20 has one side beveled or rounded as indicated at 22 which provides a clearance space for the edge of the gravity locking plate 8, as shown more clearly in Fig. 3. The ratchet teeth of the sleeve 20 are held in engagement with the teeth of the shaft 16, after the combination of the lock is set, by means of the screw 20^a, which penetrates the latching plate 21, the sleeve 20, and into the shaft 16, as indicated.

The latching plates 21 are of duplicate

construction, each having a central upstanding and rounded portion 23 which permits the same to pass through the notches or recesses 6 of the reinforcing plate 4 when said latching plates are in alinement therewith. The said latching plates, have their entire lower edges rounded or beveled, as indicated at 24, in order to permit the locking plate 8 to freely pass the latching plates, when falling out of their path, for instance, when the latching plates are in registration with the slots in said slotted plate.

The operating shafts 16 are provided with the usual rotating knobs or heads 25 each of which has a dial thereon, and the surface of the rectangular shaped head of the hasp has the usual dials thereon which surround the said knobs.

The steps in the operation of unlocking the mechanism is shown in detail in Figs. 2, 3, 4 and 5, and by reference to said figures it will be seen that when the latching plates 21 are in the positions shown in Figs. 2 and 5, the same will be across the opening in the reinforcing plate 4 and will also be in engagement with the gravity locking plate, so that the latter is held in a raised position which assists in retaining the parts locked together. Now when the knobs are turned to cause said latching plates to aline with the slot formed through the plate 4 and with the notches or recesses therein, the entire rounded or beveled edges of said latching plates will be in a position to permit the gravity plate to drop so as to clear the lower edges of said plates, whereupon the pressure of the spring 12 will force the hasp from the lid or cover, and the same may be readily opened. But before the gravity plate will completely pass the rounded or beveled edges, manual pressure should be exerted upon the hasp, to overcome the pressure of the spring 12, in order that the hasp will assume the position shown in Fig. 7, in which it will be noted that the free portion of the gravity plate will easily pass the lower part of the plates 21. To re-lock the lid, the hasp is forced into the slot in the same, the latching plates passed through the reinforcing plate, after which a slight rotary movement of the operating shafts will turn said plates to locking engagement with the said reinforcing plate and the gravity plate.

It will be seen from the foregoing that the hinged gravity locking plate is automatically raised to its locking position when the latching plates are rotated to assume their locking position, the automatic action being obtained by means of the described formation of the edges of the latching plates, and this automatic raising of said gravity plate is further assisted by the cutaway portion of the sleeve 20, and the spring plate 12. Another prominent feature of the invention

is in the provision of the washers 18, as the same will serve to prevent the unlimited rotating of the shafts in one direction, as such movement would cause them to ride up the threads of said shaft and enter into binding engagement with the wall of the head of the hasp.

What I claim is:—

1. In a lock, a stationary slotted member, a plurality of latching members carried by a movable part to cooperate with the slot in said member, of a gravitating member located in the path of the latching members and designed to fall out of the path of the latching members when they are in an unlocked position.

2. In a device as set forth, a stationary slotted plate, a plurality of latching plates carried by a movable part and adapted to be brought into and out of registration with the slot in said plate to lock or unlock said device, of a gravitating member located in the path of the latching plates and designed to fall out of the path of the latching plates when they are in registration with said slot, said latching plates having their lower edges reduced to insure the passing of the latching plates by the gravitating member.

3. In a device as set forth, a stationary slotted plate, a plurality of latching plates carried by a movable part and adapted to be brought into and out of registration with the slot in said plate to lock or unlock said device, of a pivoted gravitating member located in the path of the latching plates and designed to fall out of the path of the latching plates when they are in registration with said slot, said latching plates having their lower edges reduced to insure the passing of the latching plates by the gravitating member, and means for operating the latching plates.

4. In a device as set forth, a stationary slotted plate, a plurality of latching plates carried by a movable part and adapted to be brought into and out of registration with the slot in said plate to lock or unlock said device, of a pivoted gravitating member located in the path of the latching plates and designed to fall out of the path of the latching plates when they are in registration with said slot, said latching plates having their lower edges reduced to insure the passing of the latching plates by the gravitating member, and means for operating the latching plates, said means having a member to limit the movement of said means in one direction thereof.

5. A lock of the character described comprising a plate having a central opening and a recessed or notched edge, a gravity locking plate located adjacent to said plate, a plurality of operating shafts carrying latching plates having one edge conforming to the contour of the opening in the plate, and

adapted to be alined therewith to open the lock, said latching plates having their lower edges reduced to permit the gravity plate to drop below the same, and means for operating said shafts.

6. A lock comprising a slotted plate the upper portion of which is notched or recessed, a plate pivotally mounted adjacent to said slotted plate, a hasp carrying a plurality of operating shafts, latching plates carried by said shafts and conforming to the contour of the slotted portion of the first

mentioned plate, said latching plates being provided with reduced edges which permit the pivotally mounted plate to automatically drop past them when the latching plates are in a lock releasing position, and means for operating said shafts. 15

In testimony whereof, I affix my signature in presence of two witnesses.

OLIVER M. LARKIN.

Witnesses:

HENRY GERDT,
ADOLPH BURKHARDT.