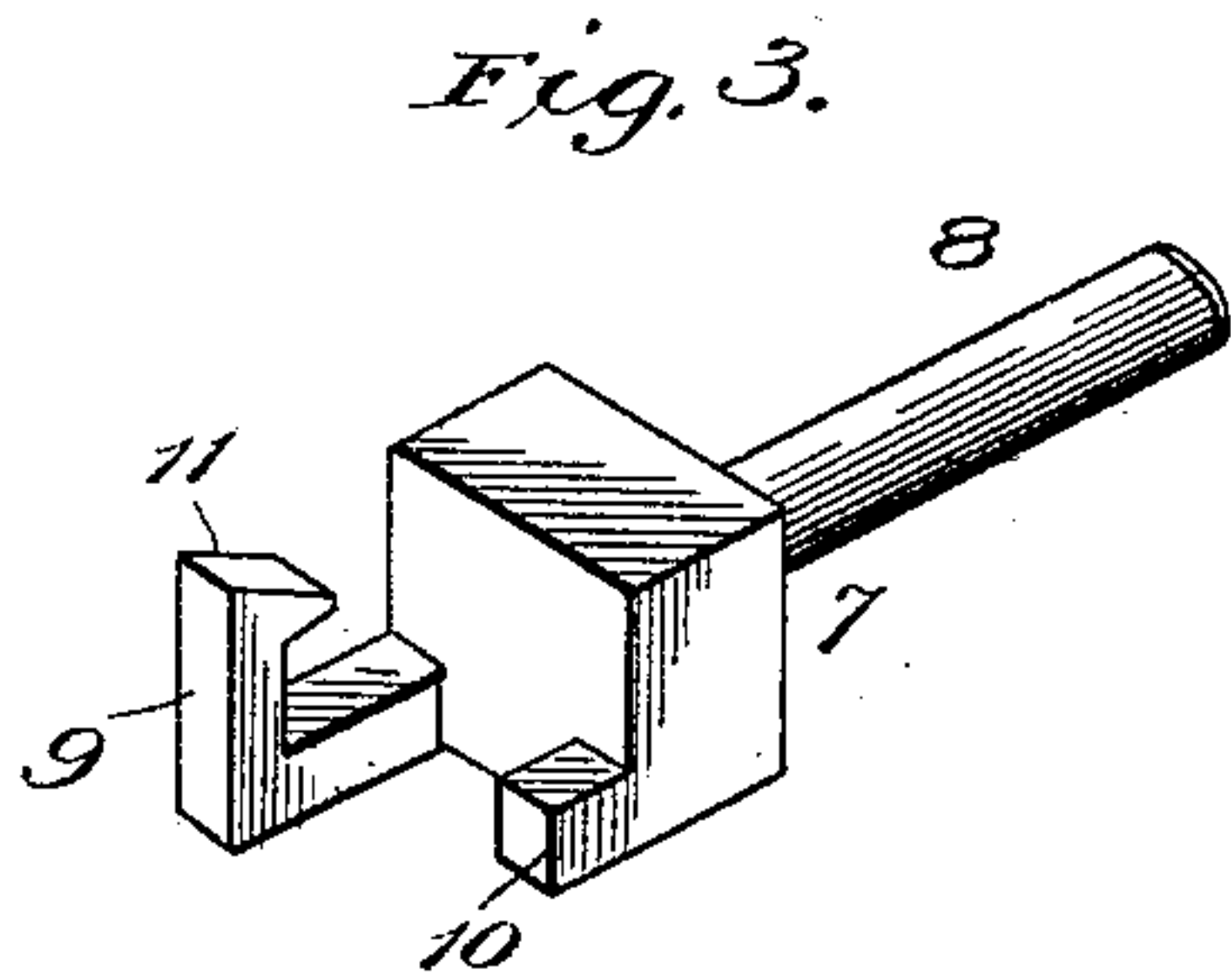
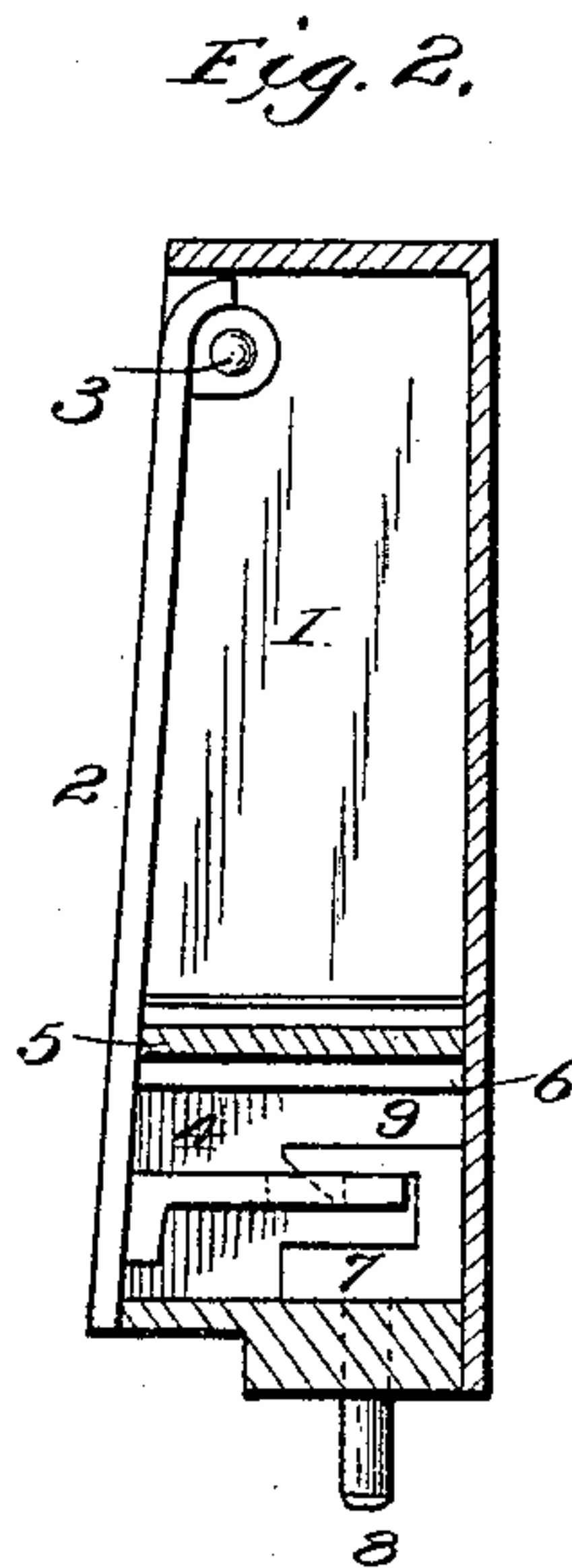
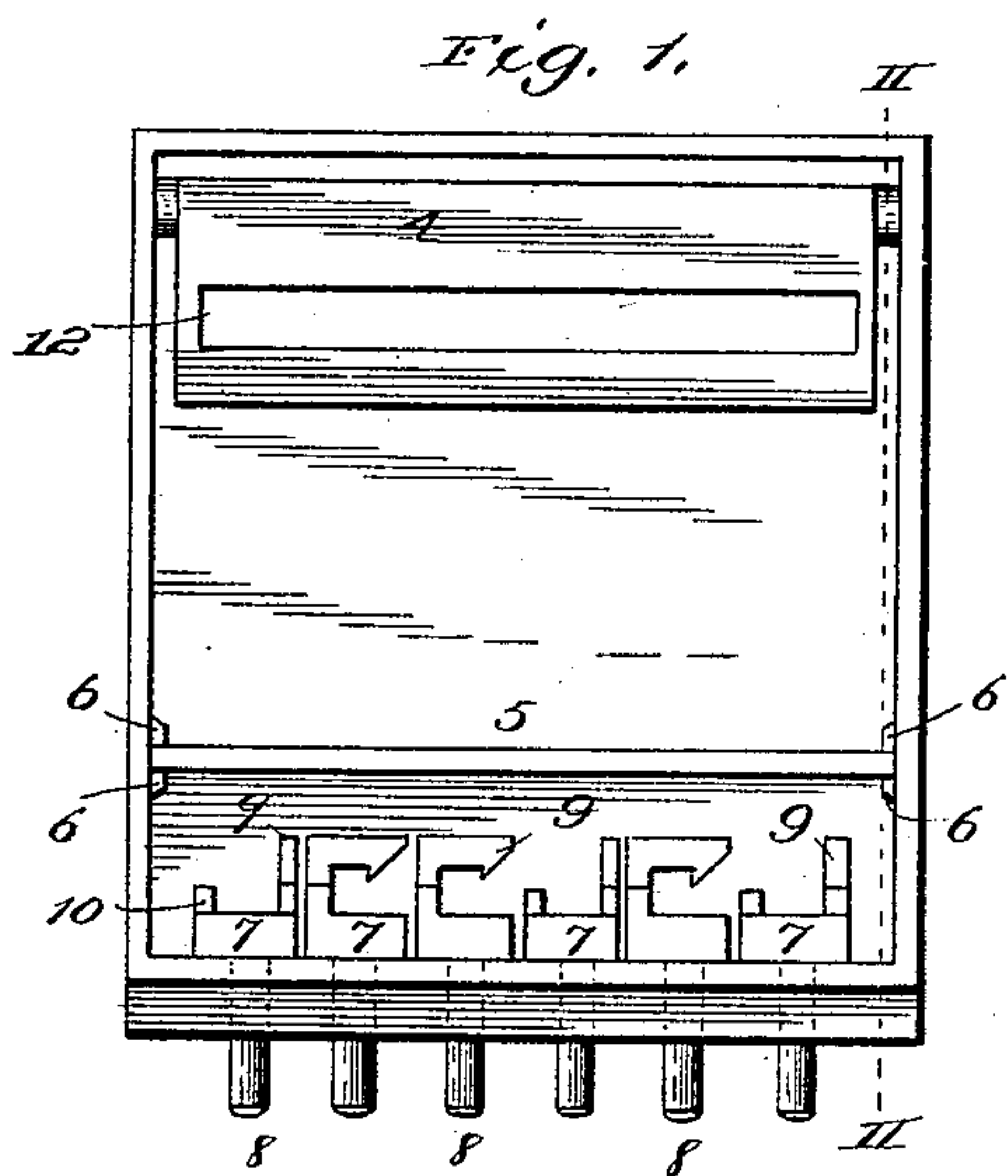


(No Model.)

J. RINGEN.
COMBINATION LOCK.

No. 495,911.

Patented Apr. 18, 1893.



witnesses:

Harry E. Rohrer.
Geo. E. Curren.

Inventor

John Ringen.

By Knight Bros.
" A.H. 45.

UNITED STATES PATENT OFFICE.

JOHN RINGEN, OF ST. LOUIS, MISSOURI.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 495,911, dated April 18, 1893.

Application filed July 23, 1892. Serial No. 441,039. (No model.)

To all whom it may concern:

Be it known that I, JOHN RINGEN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Combination-Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an automatic combination lock, for securing the doors of boxes, or other doors; and my invention consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a front elevation, illustrative of my invention, a box being shown with the door raised to a horizontal position. Fig. II is a vertical, transverse section, taken on line II—II, Fig. I; the door being shown closed. Fig. III is an enlarged, perspective view of one of the tumblers of the lock.

Referring to the drawings, 1 represents a box in connection with which my improved combination lock may be used.

2 represents the door of the box, hinged or pivoted at 3. Secured to the free end of the door is an inwardly projecting, locking plate 4, which has a slot, as indicated by dotted lines, Fig. II.

The box is preferably divided off into an upper and lower partition by means of a movable plate 5 fitting between lugs 6, cast or formed upon the inner surface of the ends of the box, this partition dividing the main portion of the interior of the box from the tumblers of my combination lock.

7 represents a series of sliding tumblers or keys, supported side by side in the lower part of the box, and formed with depending shanks or finger-pieces 8, which project through openings in the bottom of the box, the fingers projecting sufficiently below the bottom of the box, for convenience in operating them. Each of the tumblers 7 is formed of a rectangular block having a hook 9 formed integral with and projecting from one corner, and a square lug 10 formed integral with and projecting from another corner, as clearly shown in Fig. III. The hook 9 projects downwardly, and is formed with a beveled or rounded nose 11, for guiding the locking plate 4 on the door of the box into engagement with the hook,

and the lug 10 is shorter vertically than the hook. It will be observed that the block is cut away in front of the hook 9, and between the lug 10 and the hook, so as to allow free up and down play of the tumbler, when the locking plate is in locked position.

The tumblers 7 form a combination locking key and blind stop, operating as a locking key or blind stop, according as the hooks 9 or lugs 10 are presented outwardly to the locking plate, and as all of the tumblers are the same size, they are suitable to be placed in any position, and any number and arrangement of them can be used as locking keys or blind stops. In the drawings I have represented three tumblers in locking position, and three serving as blind stops.

The operation is as follows:—When the door 2 is closed, the edge of the locking plate 4 comes in contact with the beveled nose 11 of the locking tumblers, and thereby raises them until the hooks 9 pass through the slot of the locking plate, and the tumblers then fall by gravity into engagement with the plate, the lugs 10 of the blind stop tumblers remaining lower than the locking plate, so as not to interfere with it. When it is desired to open the door 2, it is necessary to raise the locking tumblers alone out of engagement with the locking plate, leaving the blind stop tumblers in their lower position, and open the door, which is then unlocked. If the blind stop tumblers are raised at the same time with the locking tumblers, it is clear that the lugs 10 would come into engagement with the locking plate and hold the door from being opened, and thus the necessity of knowing the combination and raising the locking tumblers only. It is obvious that, by opening the door and removing the plate 5, the position and arrangement of the tumblers can be changed so as to change the combination of the lock.

I claim as my invention—

1. The combination of a door having a locking plate projecting therefrom, with a series of vertically sliding locking tumblers or keys adapted to engage said locking plate; substantially as set forth.

2. The combination of a hinged door, having a locking plate projecting therefrom, and

a series of vertically sliding tumblers or keys, supported in suitable relation to said locking plate, some of said tumblers or keys being locking tumblers, and others being blind keys, substantially as set forth.

3. The combination of a hinged door, having a locking plate projecting therefrom, and a series of vertically sliding, gravitating tumblers or keys supported in suitable relation to said locking plate, some of said tumblers being arranged to engage the locking plate in their raised position, and some being arranged to engage said plate in their lowered position; substantially as set forth.

4. The combination of a hinged door, having a locking plate projecting therefrom, and a series of sliding tumblers or keys supported in suitable relation to said plate, and adapted to engage therewith for holding the door closed, each of said tumblers comprising a block having a hook projecting from one corner, and a lug projecting from another corner; substantially as set forth.

5. The combination of a hinged door having a locking plate projecting therefrom, and a series of sliding tumblers or keys supported in suitable relation to said locking plate, each of said tumblers consisting of a square block having a downwardly projecting hook extending from one of the upper corners of the block, and an upwardly projecting lug extending from another corner of said block, and a downwardly projecting, operating finger extending from the under side of said block; substantially as set forth.

6. The combination of a suitable box or receptacle, a hinged door to said box or receptacle, provided with an inwardly projecting locking plate, a series of combined, changeable locking tumblers and blind keys supported in said box or receptacle, in suitable relation to said locking plate, and a removable plate separating the tumblers from the rest of the chamber, substantially as set forth.

7. The combination of a suitable receptacle, a hinged door to said receptacle provided with an inwardly projecting locking plate, and a series of locking tumblers and blind keys supported in suitable relation to said locking plate; said locking tumblers consisting essentially of sliding blocks formed with downwardly projecting hooks, and said blind keys consisting essentially of sliding blocks formed with upwardly projecting lugs; substantially as set forth.

8. The combination of a suitable receptacle formed with a series of openings through its bottom wall, a hinged door to said receptacle provided with an inwardly projecting locking plate, and a series of vertically sliding tumblers adapted to engage said locking plate, and formed with downwardly projecting shanks or finger pieces which operate in the openings in the bottom of the wall of the receptacle; substantially as set forth.

JOHN RINGEN.

Witnesses:

WM. E. KNIGHT,
OCTAVIUS KNIGHT.