

(No Model.)

C. P. CHASE.  
PERMUTATION LOCK.

No. 599,765.

Patented Mar. 1, 1898.

Fig. 1

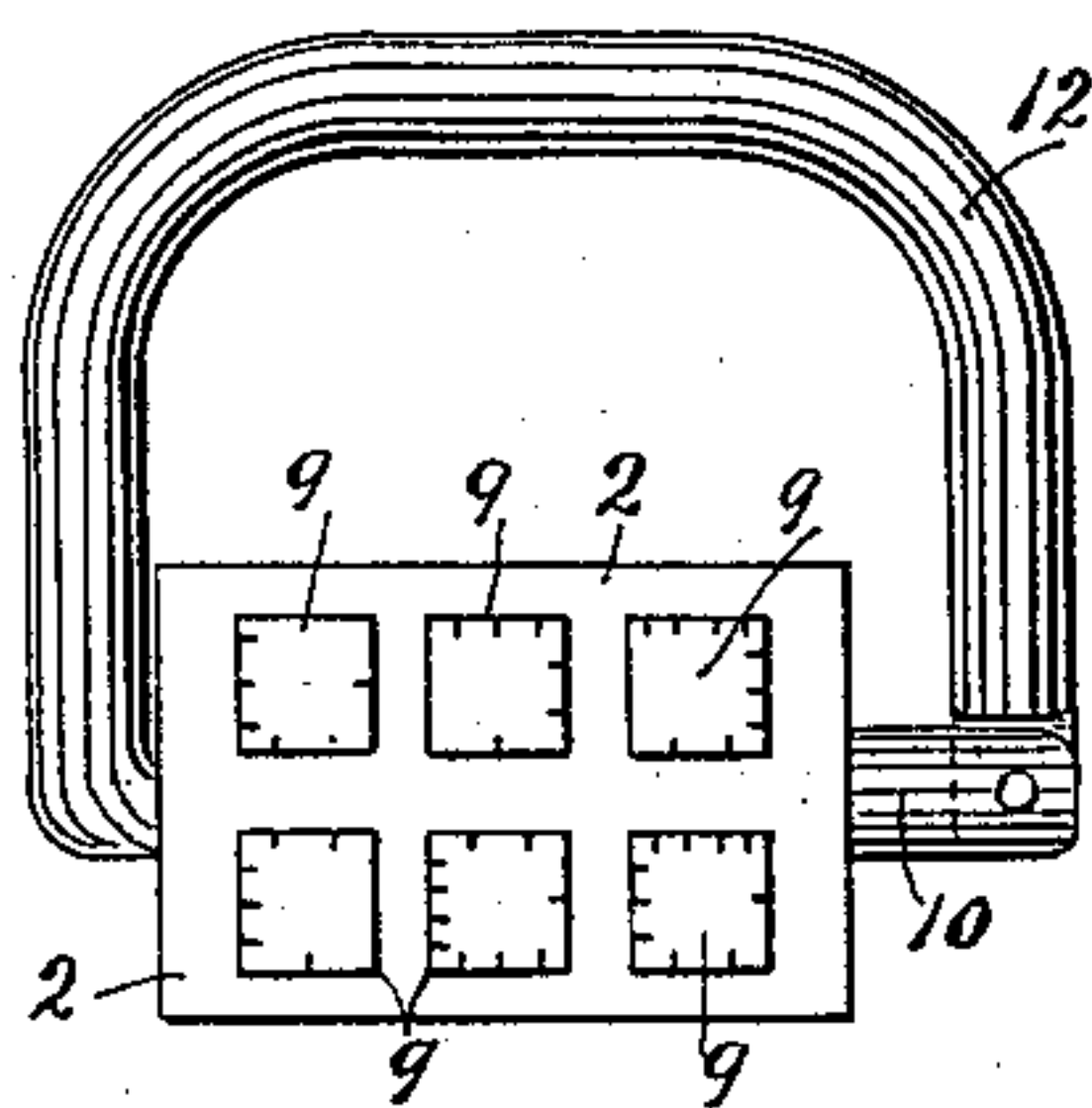


Fig. 2.

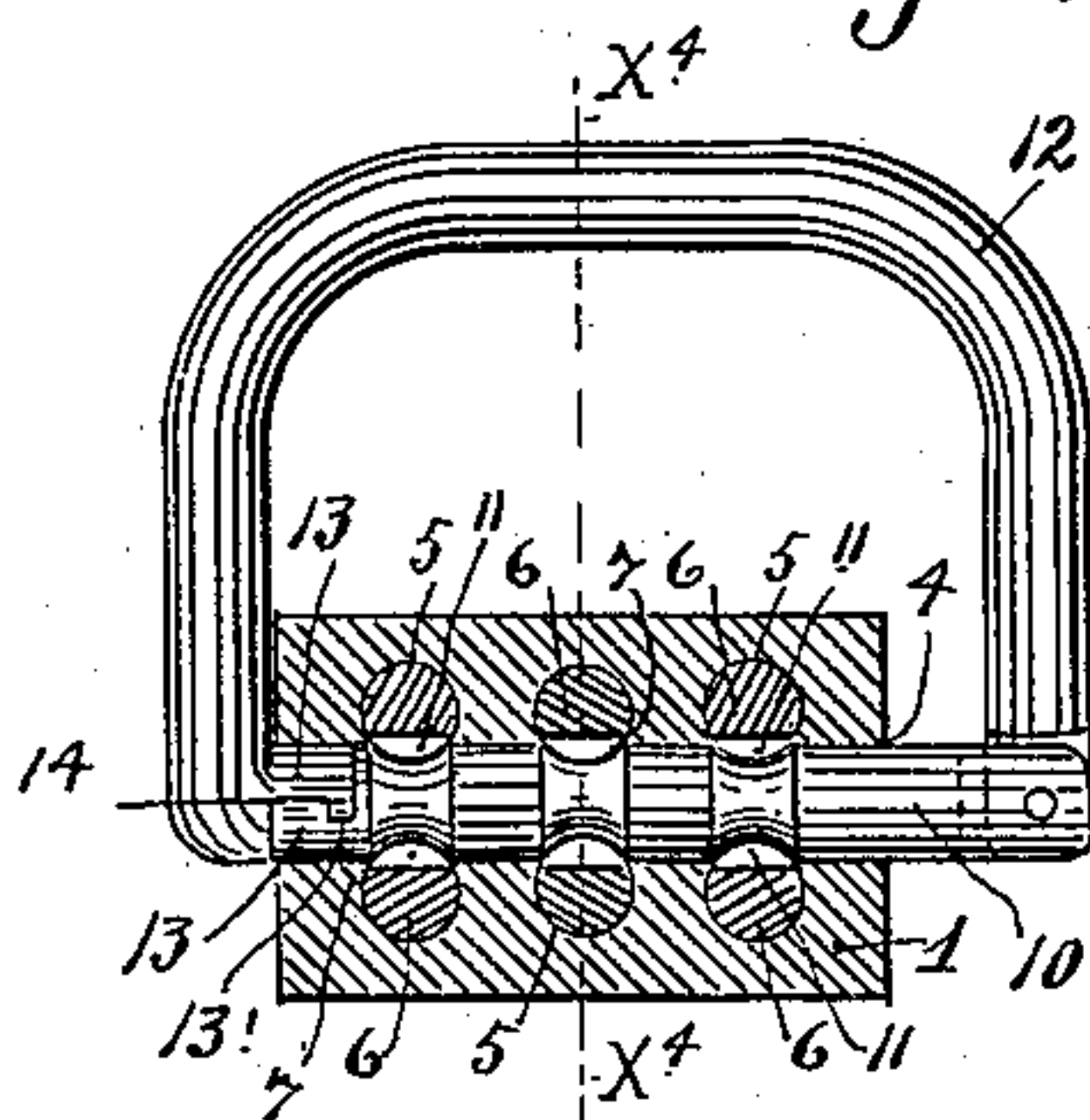


Fig. 3.

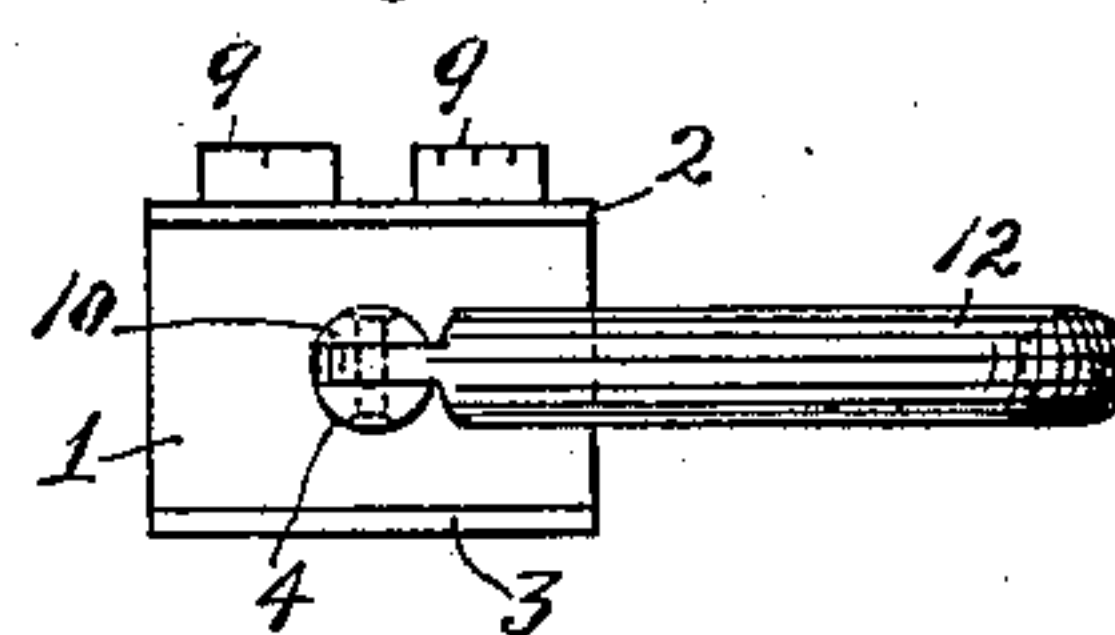


Fig. 5.

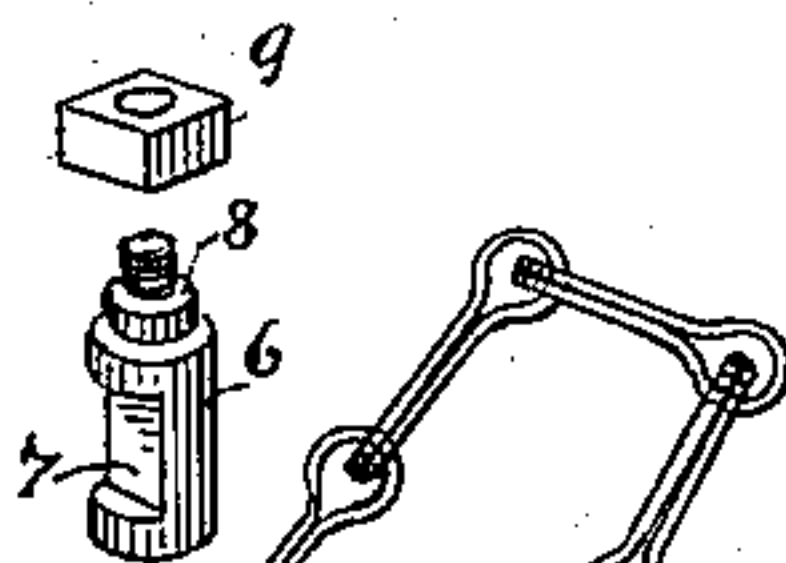


Fig. 4.

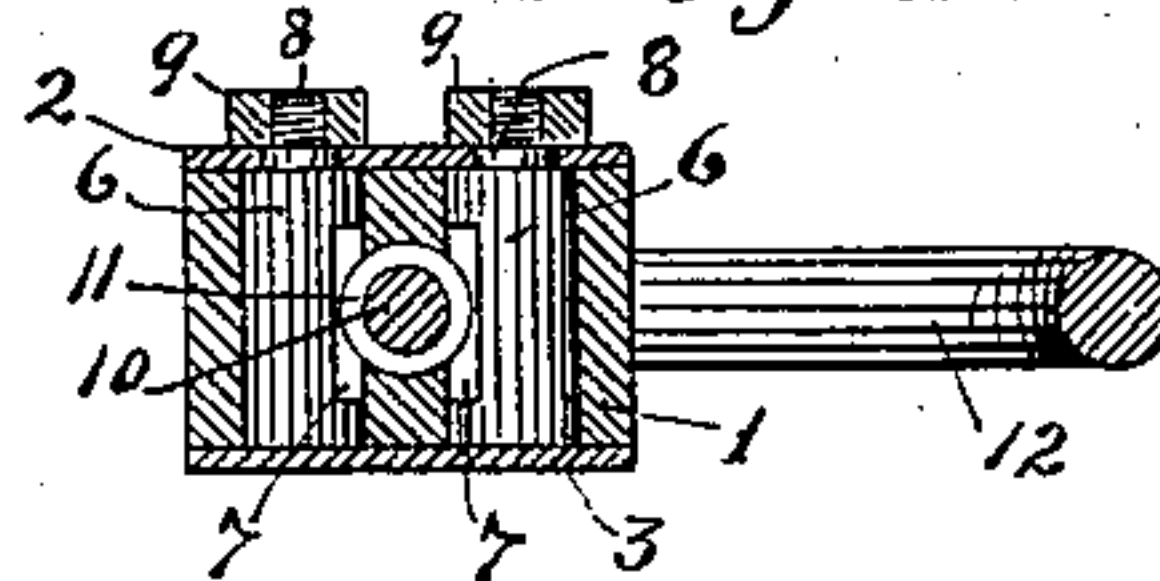


Fig. 6.

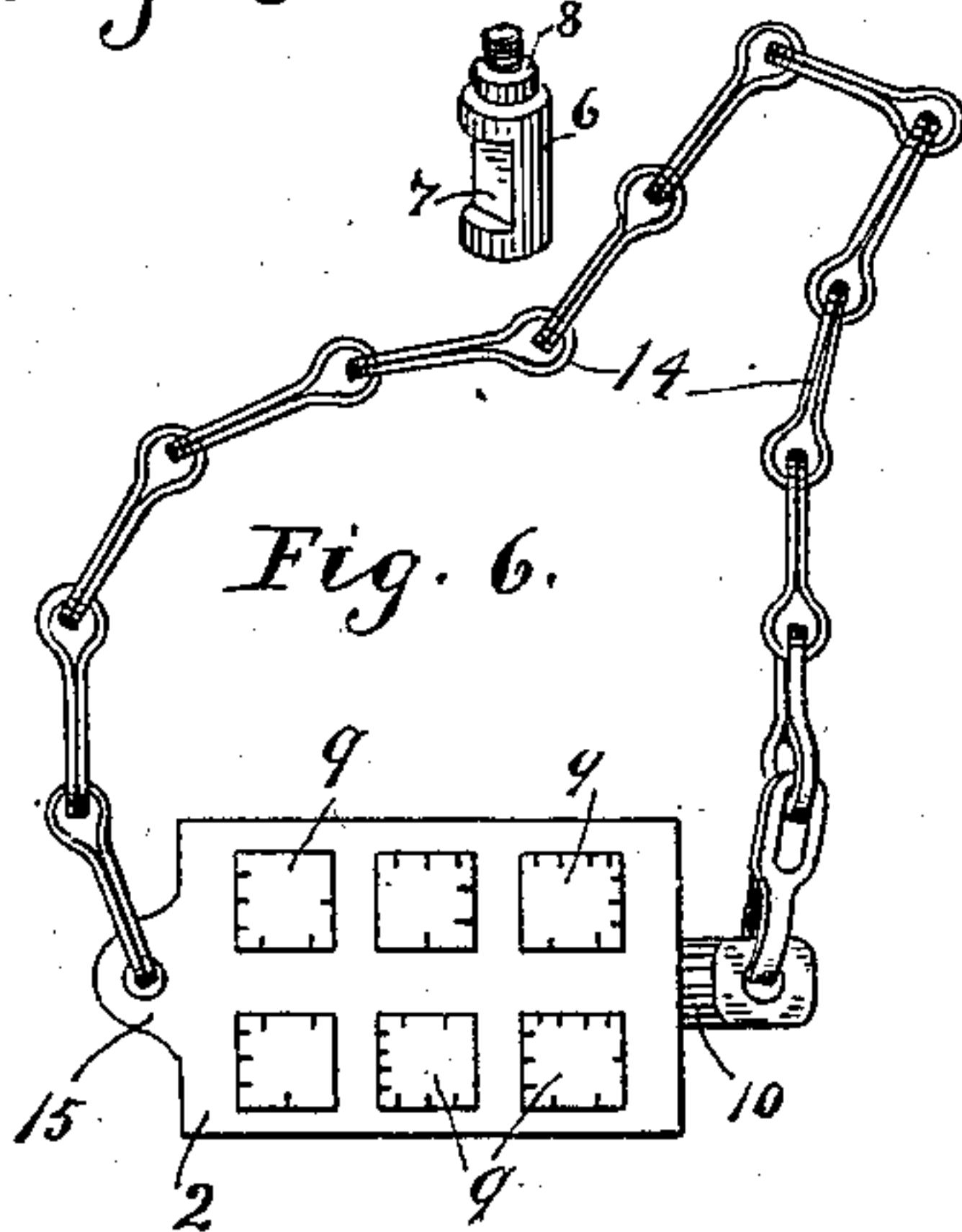
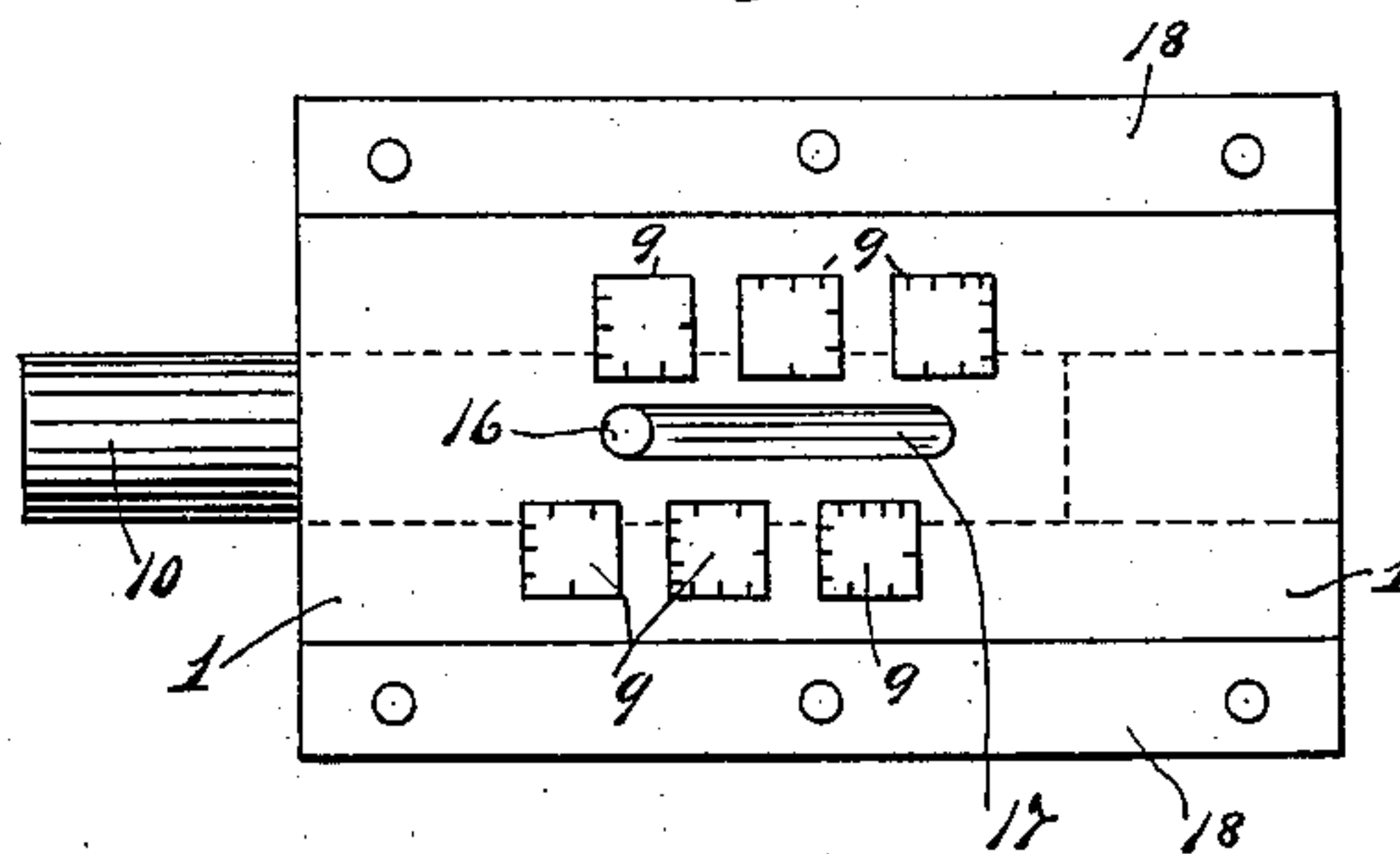


Fig. 7.



Witnesses.  
A. B. Opsahl.  
C. F. Kilgore

Inventor  
Cormwell P. Chase.  
By his Attorney.  
Jas. F. Williamson



# UNITED STATES PATENT OFFICE.

CORNWELL P. CHASE, OF MINNEAPOLIS, MINNESOTA.

## PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 599,765, dated March 1, 1898.

Application filed September 13, 1897. Serial No. 651,402. (No model.)

*To all whom it may concern:*

Be it known that I, CORNWELL P. CHASE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Permutation-Locks; and I do hereby 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.

My invention has for its especial object to provide an improved and simple permutation or keyless padlock adapted for use in locking bicycles and for numerous other purposes. My invention is, however, capable of more general application wherever a permutation-lock is desirable.

To the ends above noted my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

Several forms of my invention are illustrated in the accompanying drawings, wherein, like numerals indicating like parts throughout the several views—

Figure 1 is a plan view of the preferred form of my invention shown as in the form of a padlock. Fig. 2 is a similar view to Fig. 1, but with the lock case or block shown in horizontal section. Fig. 3 is an end elevation of the lock shown in Figs. 1 and 2. Fig. 4 is a transverse section taken on the line  $x^4 x^4$  of Fig. 2. Fig. 5 is a perspective view of one of the rotary detents removed from the lock. Fig. 6 is a plan view of a modified form of the padlock, and Fig. 7 is another modification of the lock shown as designed for use as a door or chest lock.

Referring first to the construction illustrated in Figs. 1 to 5, inclusive, 1 indicates a metallic block, which is preferably rectangular in form and, together with the top plate 2 and the bottom plate 3, constitutes the lock-case. The said plates 2 and 3 may be secured to the block 1 by means of rivets, screws, or otherwise.

The block 1 is provided with a bolt seat or passage 4, which extends longitudinally through the same, and also with a series of vertical seats 5, in which rotary detents 6 are mounted. As shown, there are six detents 6,

located three on each side of the bolt-seat 4, with their own seats 5 extending into said bolt-seat 4.

The rotary detents 6 are cylindrical in form, but are each cut away transversely or notched, as shown at 7, so that when said detents are all turned so that their notches 7 stand as shown in Fig. 2 no parts thereof will project into the bolt-seat 4. Said detents 6 are provided on their upper ends with trunnions 8, which extend upward through the top plate 2 and are provided with square heads or nuts 9, which are rigidly secured thereto by screw-threaded engagement or otherwise. These heads or nuts 9 are marked on their different edges with different characters or indicia. As shown, this is accomplished by providing the edges thereof with different numbers of notches. The number and arrangement of these notches or markings is arbitrary; but they must bear some predetermined relation to the relative positions of the notches 7 of the particular detents 6 with which they cooperate, and this particular relation must of course be known to a person in order to enable him to unlock the lock.

The bolt 10, which in this construction is cylindrical, fits into the seat 4 and is provided with three annular grooves 11, which when the bolt is positioned for locking stand one-opposite each laterally-spaced pair of detents 6. To one end of the bolt 10 is pivoted one end of a shackle in the form of a U-shaped staple 12. The free ends of the staple 12 and bolt 10 are split longitudinally or formed with half-cylindrical sections 13, which overlap each other and are held against endwise movement by interlocking engagement. (Shown at 14.)

When the bolt 10 is in a position to be locked, the overlapping sections 13 are drawn into the bolt-seat 4, and hence the bolt 10 and staple 12 are locked together.

As is evident, whenever any one or more of the rotary detents 6 is turned from the position indicated in Fig. 2 the body of said detent or detents will be turned into the notch or notches 11 and hold said bolt 10 against endwise movement in the block 1. When, however, the detents 6 are all turned into their unlocking positions, as indicated in Fig. 2, the bolt 10 may be moved endwise toward



the left far enough to throw the section 13 of the staple 12 out of the seat 4. After this has been accomplished the staple 12 may be opened up by pivotal movement and the bolt 10 may be withdrawn from its seat 4, if desired.

To set the detents in their unlocking positions, the operator must of course know the combination. The combination for which the lock above described is set is, for the upper row, "blank," "3," "4," and for the lower row "1," "3," "2." By substituting or interchanging the detents the combination may of course be varied at will.

The lock illustrated in Fig. 6 may be identical with that above described except that a chain or shackle 14 is substituted for the staple 12. This chain 14 is secured at one end to the projecting end of the locking-bolt 10 and at its other end to a lug 15, formed as an extension of the top plate 2.

In the door or chest lock (illustrated in Fig. 7) the locking-bolt 10 is provided with a finger-piece or stud 16, which works through a slot 17 in the block or case-section 1, and said block 1 is shown as provided with laterally-projecting flanges 18, by means of which it may be secured to a door or chest. Otherwise than as noted the construction shown in Fig. 7 is substantially the same as that shown in Figs. 1 to 5, inclusive.

The advantages of a lock or locks such as above described are thought to be obvious. They do not of course require the use of a key and have no parts which may be lost. They may be readily opened by a person know-

ing the combination either in the daytime or at night, inasmuch as the notches cut in the edges of the heads 9 may be felt as well as seen. The lock is very simple in construction, strong and durable, and of small cost, and it will be found practically impossible to open the lock without knowing the combination.

It will be understood, of course, that various alterations in the details of construction other than those above set forth may be made within the scope of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a lock, the combination with the block 1 with bolt-seat 4, of the series of rotary detents 6 with notches 7, the cylindrical bolt 10 with annular notches or grooves 11, and devices for indicating to the persons knowing the combination, the unlocking positions of said detents, substantially as described.

2. In a lock, the combination with the block 1 with bolt-seat 4, of the series of rotary detents 6 with notches 7, the bolt 10 with notches or grooves 11, and the staple 12 pivoted at one end to said bolt 10 and detachably connected to the other end thereof by means of the half-cylindrical sections 13 and interlocking joint 14, substantially as described.

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

CORNWELL P. CHASE.

Witnesses:

LILLIAN C. ELMORE,  
F. D. MERCHANT.