(Model.)

# W. H. BRICKER.

## PERMUTATION LOCK.

No. 474,078. Patented May 3, 1892.

Fig. 1

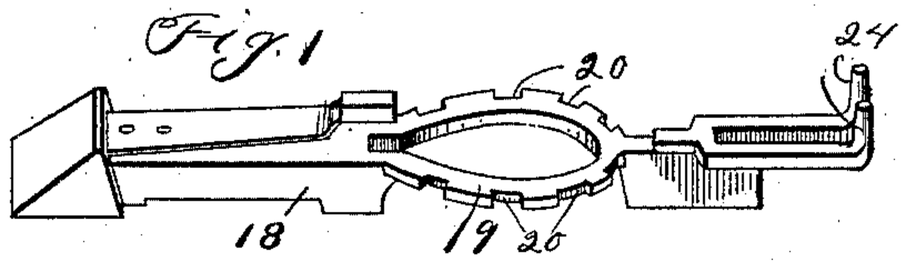



Fig. 3

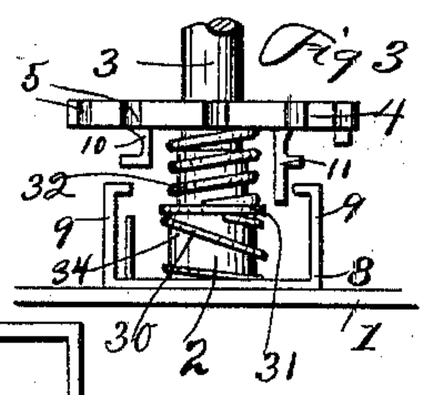



Fig. 2

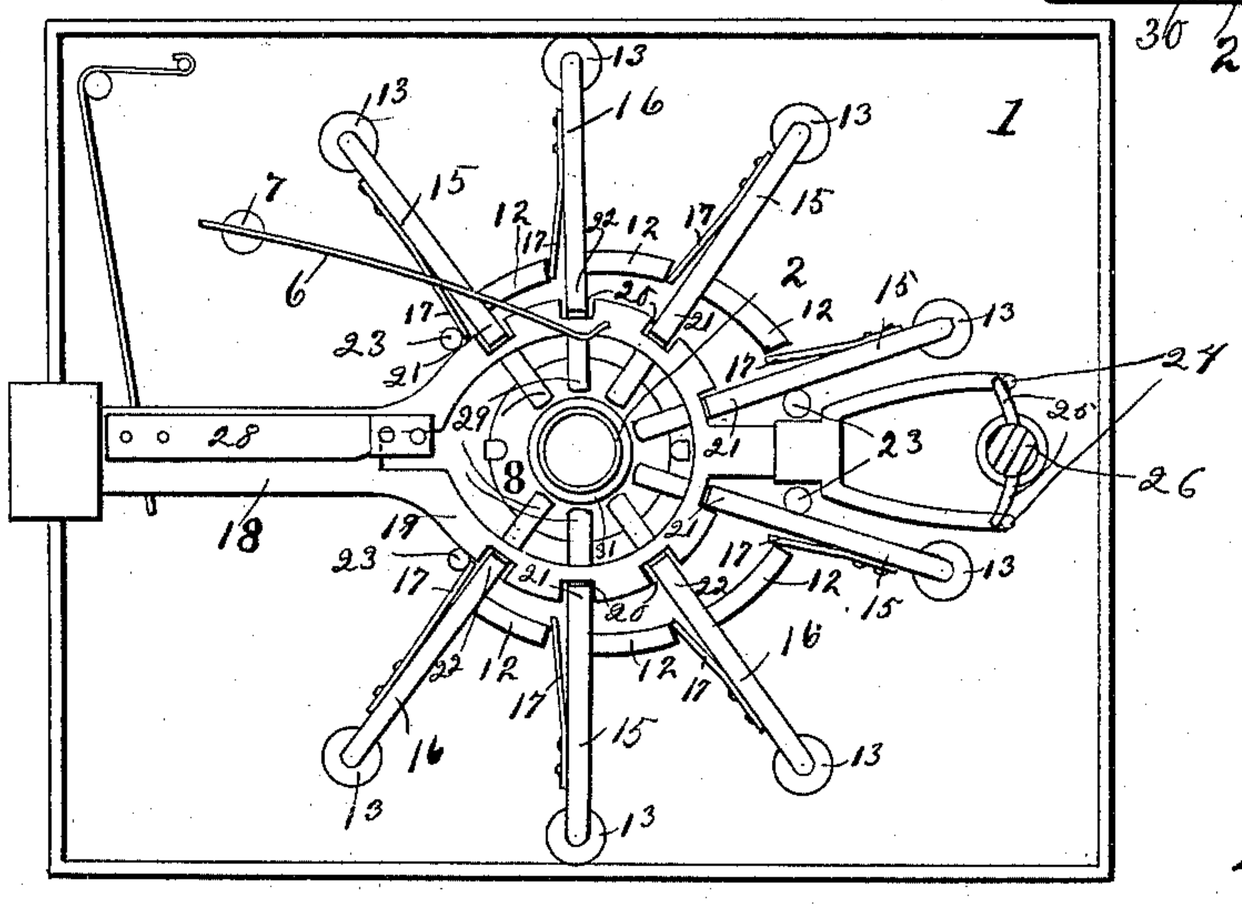



Fig. 4

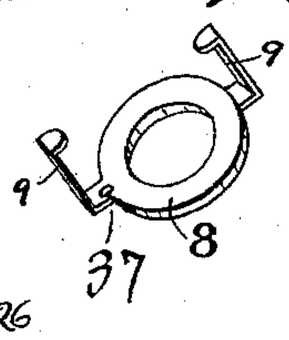



Fig. 6

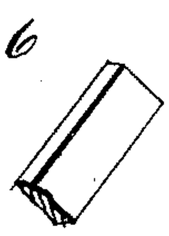


Fig. 5

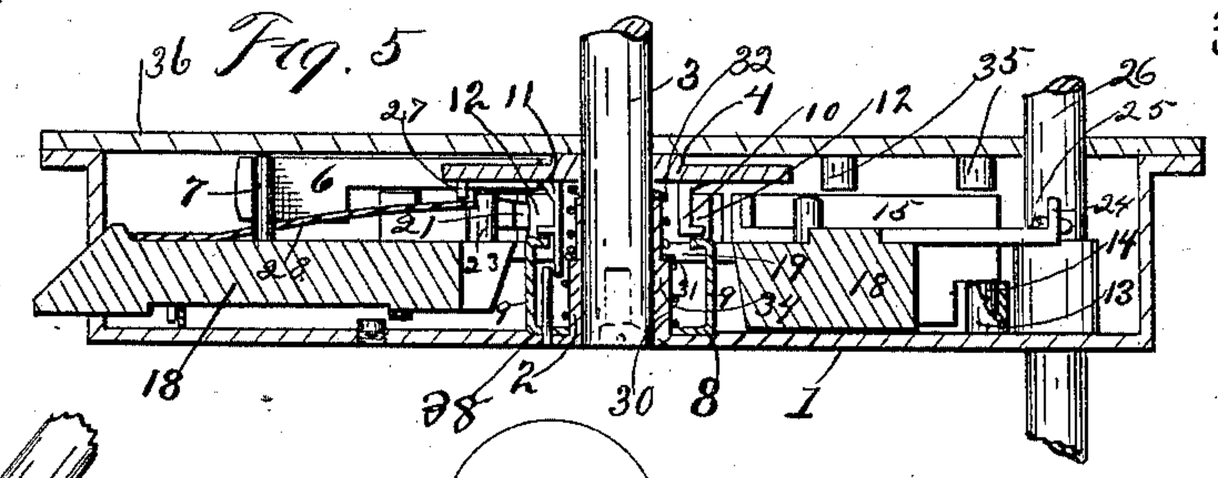



Fig. 7

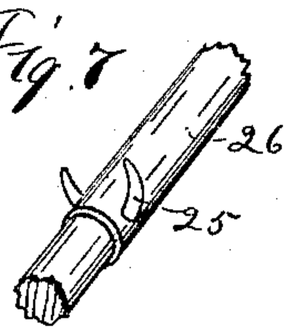



Fig. 8

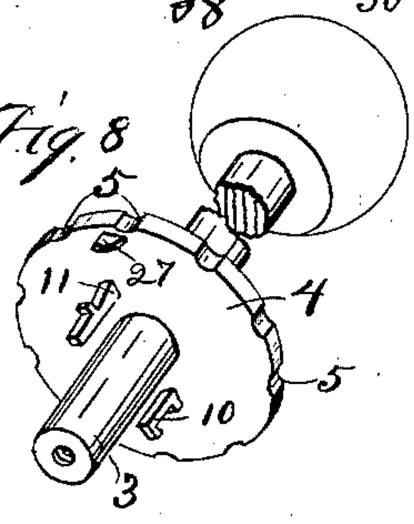



Fig. 9

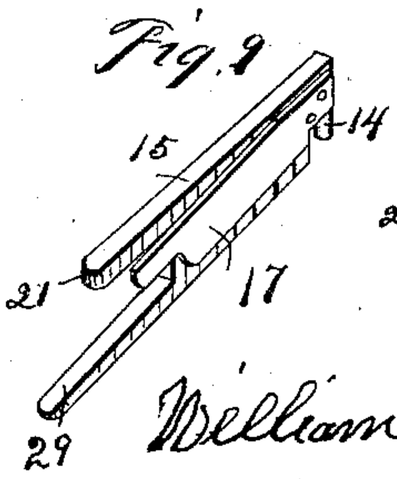
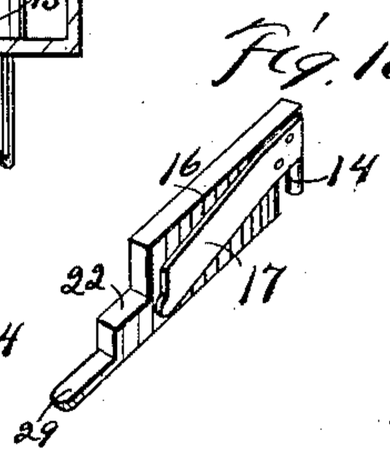



Fig. 10

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# UNITED STATES PATENT OFFICE.

WILLIAM H. BRICKER, OF CANTON, OHIO.

## PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 474,078, dated May 3, 1892.

Application filed June 24, 1891. Serial No. 397,286. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. BRICKER, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Permutation-Locks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a detached view of the sliding bolt, showing the catch-spring properly attached thereto. Fig. 2 is a view of the case, showing its lid or cover removed; also showing the disk-spindle removed. Fig. 3 is a side elevation of the disk-spindle, showing the disk properly located thereon and the location of the springs. Fig. 4 is a detached view of the elevating-ring and its catch-arms. Fig. 5 is a transverse section showing the cover or cap placed in proper position; also showing a portion of the bolt-spindle. Fig. 6 is a detached view of one of the spacing-posts. Fig. 7 is a detached view of a portion of the bolt-spindle and its dogs. Fig. 8 is a detached view of the disk-spindle, showing the counting-disk located thereon. Fig. 9 is a detached view of one of the forked lock-bars and its tension-spring. Fig. 10 is a detached view of one of the plain lock-bars and its tension-spring.

The present invention has relation to permutation-locks; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar numbers represent corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the case, which may be substantially of the form shown, or it may be of any other desired style, reference being had to properly attaching the different parts designed to be located in the casing.

The case 1 is provided with the center post 2 which is located substantially as illustrated in Figs. 2 and 5, and, as shown, it is formed hollow, for the purpose of receiving and holding the inner end of the disk-spindle 3. To the disk-spindle 3 is securely attached, in any convenient and well-known manner, the disk 4, which disk is provided upon its periphery with the counting-notches 5, which notches are for the purpose of receiving the free end or portion of the spring 6, which spring is so adjusted that it will press or bear against the periphery of the disk 4. The spring 6 is attached to the case 1 by means of the post 7 or its equivalent. The lifting ring or band 8 is located around the center post 2, and when in its normal position it will rest upon the inner face of the case 1, as illustrated in Fig. 5. The ring or band 8 is provided with the catch-arms 9, which catch-arms are preferably located diametrically opposite each other, said catch-arms being for the purpose of elevatvating the ring or band 8 by means of the catches 10 and 11, which catches 10 and 11 are securely attached in any convenient and well-known manner to the disk 4 and rotate with the disk 4.

To the case 1 are securely attached the spacing-posts 12, which spacing-posts are located as illustrated in Fig. 2. If desired, the spacing-posts 12 may be formed integral with the case 1. To the case 1 are fixed the thimbles or sockets 13, which are located substantially as illustrated in the drawings and are for the purpose of receiving and holding the pins 14, located upon and fixed to the locking-bars 15 and 16, and for the purpose of allowing the locking-bars to move up and down or to or from the case 1. The pins 14 are formed somewhat smaller in diameter than the diameters of the thimbles 13.

For the purpose of holding the locking-bars 15 and 16 at their desired points of adjustment the tension-springs 17 are provided, which springs are fixed or attached to the locking-bars 15 and 16 in any convenient and well-known manner, and are so adjusted that their free ends will stand a short distance away from the side of the locking-bars 15 and 16.

The sliding bolt 18 is substantially of the form shown in Fig. 1 and is placed in the casing 1, as illustrated in Fig. 2. The center portion of the sliding bolt 18 is formed open by means of the notched band or link 19, which band or link is provided with the notches 20, which notches are for the purpose of locking

the sliding bolt 18 by means of the locking-bars 15 and 16, as hereinafter described.

The locking-bar 15 is provided with the arm or extension 21, which extension is located upon the top or upper edge of the locking-bar, as illustrated in Fig. 9, and is so arranged with reference to the link 19 that it will engage one of the notches 20 when said locking-bar 15 is pushed down onto the inner face of the case 1.

The locking-bar 16 is provided with the shoulder 22, which shoulder is so located that it will engage one of the notches 20 when the free end of said locking-bar is elevated or moved away from the case 1.

In the drawings eight locking-bars are shown, three of which are provided with the arm or extension 21 and five of which are provided with the shoulder 22; but it will be understood that any desired number of locking-bars may be used, and the number provided with the extension 21 and the number provided with the shoulder 22 may be varied or changed without departing from the nature of my invention.

For the purpose of providing bearing-points for the locking-bars 15 or 16, located next to the sliding bolt 18, the pins or posts 23 are provided, which pins or posts are located as illustrated in Fig. 2. The object and purpose of providing the pins 23 is to give room for the movements of the sliding bolts 18. The spindle end of the sliding bolt 18 is provided with the hooked arms 24, which hooked arms are for the purpose of engaging the dogs 25, which dogs are for the purpose of operating the sliding bolt 18 by means of the spindle 26, which spindle is provided with the ordinary operating-knobs.

The counting-disk 4 is provided with the stop-lug 27, which is so located that it will engage the catch-spring 28, which catch-spring is attached to the sliding bolt 18. This catch-spring 28 is so adjusted that its free end will be elevated a short distance above the sliding bolt, as illustrated in Fig. 1. One side of the stop-lug 27 is inclined or beveled, so that as it passes the spring 28 it will press said spring toward the sliding bolt and pass the same without stopping the disk 4. The opposite side of the stop-lug 27 is formed straight, so that when it comes in contact with the spring 28 it will stop the disk-spindle. In use when it is desired to release the sliding bolt 18, the locking-bars 15 and 16 are so adjusted that they will be out of contact or engagement with the notched ring or link 19, at which time the sliding bolt 18 is free and in condition to be operated upon by means of the spindle 26.

When it is desired to release the sliding bolt 18, the disk-spindle 3 is rotated until it comes to a stop, at which time said disk-spindle is rotated in the opposite direction one count or notch when it is pushed or pulled endwise and again rotated until it comes to a stop, thereby bringing the catches 10 and 11 into contact with the arms 9, and as the disk-spindle is moved endwise it elevates the ring or band 8, which in turn raises the locking-bars 15 and 16 by means of the arms 29 overlapping said band 8, as illustrated in Fig. 2. This movement brings all of the locking-bars in their proper position to be acted upon, upon a certain or given combination, which, for the purpose of illustration, may be two, two, and three. The spindle is then rotated in the opposite direction from which it was stopped until two notches or clicks are counted, at which time the disk-spindle is pushed or pulled endwise, which movement pushes one of the locking-bars, which heretofore has been elevated, downward or away from the notched link 19 by means of the push-pin 11, said push-pin 11 also being provided with a catch; but it will be understood that a separate push-pin may be provided, if desired. The disk-spindle 3 is again rotated until two notches or clicks are counted, at which time said spindle is pushed or pulled endwise, as before, which pushes down the second locking-bar 16, after which three notches or clicks are counted and the disk-spindle pushed or pulled endwise, thereby disengaging the next locking-bar, which in the above-described combination releases the sliding bolt.

It will be understood that in the event the locking-bars 15 were to be pushed downward toward the case 1 the arm 21 would engage one of the notches 20, thereby locking the sliding bolt instead of unlocking it, as the locking-bars 16 do.

For the purpose of automatically forcing the band 8 toward the case 1, after it has been elevated and released, the spring 30 is provided, one end of which presses or bears against said band and the opposite end of said spring presses against the collar 31. For the purpose of forcing the disk-spindle 3 in the opposite direction from which it was pushed or pulled the spring 32 is provided, which is located between the disk 4 and the collar 31.

For the purpose of holding the collar 31 in proper position with reference to the springs 30 and 32 the shoulder 34 is provided, which shoulder is best seen in Fig. 5.

For the purpose of preventing the locking-bars 15 and 16 from becoming detached from their sockets or thimbles 13 the lugs 35 are provided, which lugs are located directly over the locking-bars and are formed integral with the cap or cover 36. It will be understood that the cap or cover 36 is to be attached to the casing 1 in the ordinary manner.

For the purpose of preventing the ring 8 from rotating said ring is provided with the aperture 37, which receives the stud or post 38. When it is desired to change the combination from that given above, the cap or cover

36 is removed, when the locking-bars 15 and 16 can be transposed to give any desired combination.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the case 1, the post 2, the sliding bolt 18, provided with an open ring or link having the notches 20, the locking-bars 15 and 16, the counting-disk 4, the ring or band 8, the catch-arms 9, and the catches 10 and 11, substantially as and for the purpose specified.

2. In a permutation-lock, the combination of a suitable casing and a cover fixed thereto, a hollow center post adapted to receive and hold the counting-spindle, a disk located upon the counting-spindle and provided with notches, a spring to bear against the disk, a sliding bolt provided with an open link having notches, locking-bars provided with shoulders to engage the sliding bolt, and means for adjusting the locking-bars, substantially as and for the purpose specified.

3. The combination of the casing 1, the locking-bars 15 and 16, provided with the tension-springs 17, the spacing-posts 12, and the ring 8, substantially as and for the purpose specified.

4. The combination of the casing 1, the center post 2, provided with the shoulder 34, the springs 30 and 32, the band 8, provided with the catch-arms 9, the catch 10, and the combined catch and push-pin 11, the disk 4, provided with the stop-lug 27, and the spring 28, substantially as and for the purpose specified.

5. The combination of the casing 1, having located therein a sliding bolt, an open ring or link 19, provided with notches, the band 8, provided with catch-arms, the counting-disk 4, provided with the notches 5, the spring 6, and the catches 10 and 11, fixed to and rotating with said disk, substantially as and for the purpose specified.

6. The combination of the spindle 3, having fixed thereto the disk 4, the catches 10 and 11, the locking-bars 15 and 16, provided with the tension-springs 17, and the posts 12 and 23, the bolt-spindle 26, provided with the dogs 25, the sliding bolt 18, provided with the hooked arms 24, substantially as and for the purpose specified.

7. The combination of the ring 8, provided with the catch-arms 9, and the aperture 37, and the pin or post 38, substantially as and for the purpose specified.

8. In a permutation-lock, a sliding bolt having an open link, as 19, and the interchangeable locking-bars 15 and 16, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. BRICKER.

Witnesses:
E. A. C. SMITH,
F. W. BOND.