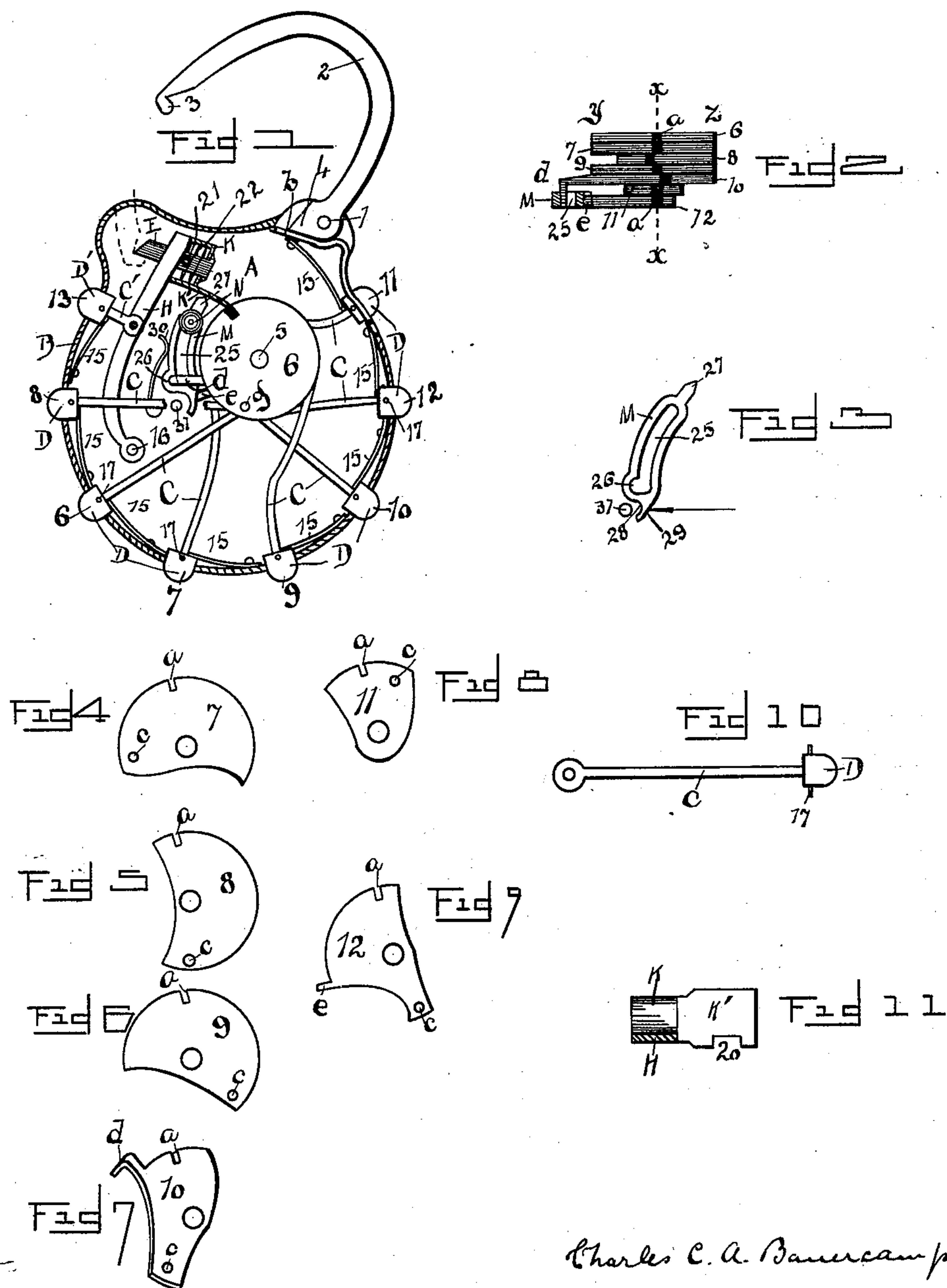


(No Model.)

C. C. A. BAUERCAMPER.
PERMUTATION PADLOCK.

No. 598,971.

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WITNESSES:

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PERMUTATION-PADLOCK.

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To all whom it may concern:

Be it known that I, CHARLES C. A. BAUERCAMPER, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain useful Improvements in Locks; and I do hereby declare that the following is 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, which form a part of this specification.

This invention relates to that class of keyless locks in which a series of operating-stems project from the housing and which are so arranged that the lock may be operated by means of these projecting stems.

In the drawings I have shown a padlock embodying my invention.

A great many locks are being used in securing bicycles. It is found, however, that these locks occasionally are hard to unlock, especially in the dark. At night the most careful riders in leaving their wheels for a short time secure the same by locking them, usually with an ordinary padlock. This is an easy method usually, as these locks are generally made to readily snap in locking. To unlock these locks, however, in the dark is often a very trying procedure, in that the small key-slots are difficult to find.

To provide a lock which can be operated in the dark or by a blind operator fully as well as a lock which can be unlocked in the daytime and by a seeing operator is the aim of this invention.

In the accompanying drawings, Figure 1 shows a view, with parts removed, of an ordinary padlock constructed according to my invention. Fig. 2 shows an elevation of the tumblers. Fig. 3 shows a top view of the bolt-link as used in my invention. Figs. 4 to 9, inclusive, show views of the various tumblers as disconnected. Fig. 10 shows a detail of one of the operating-buttons and connected stem, while Fig. 11 shows a detached view of the dog as used in my lock.

My invention comprises, essentially, a lock-housing A, of any suitable size or material, which is provided with the upwardly-extending flange B, which flange, in conjunction with two similar plates A, forms my lock-

housing. The flange B is secured to the plates A, which are both similar in size, shape, and construction with the exception of one end *b* thereof, which end of the flange is loose and actuates as a spring, this flange B being of spring material. Secured to the plates A by means of a pin 1 is the hasp 2, which has an end 3 in the form of a lock-seating, as is shown. The hasp is further provided with an extension 4, which operates against the flange end *b* as a lever to press the same in when the hasp is closed, so that this hasp is normally under spring-tension in working against the end *b* of the flange B.

Positioned at a suitable point within the casing is a shaft 5, upon which shaft are mounted seven tumblers, six of which, for the sake of convenience, are mutilated, as is shown in Figs. 4 to 9, inclusive. The upper integral tumbler is numbered 6, the succeeding one 7, the following one 8, succeeded by the tumblers 9, 10, 11, and 12. Each of these tumblers is provided with a central opening adapted to accommodate the shaft 5, while each is further provided with a tumbler-incision *a*. The tumblers numbered 10 and 12, however, are provided with projections, the tumbler 10 being provided with a projecting downwardly-extending hook *d*, while the mutilated tumbler 12 is provided with a stub projection *e*. Each tumbler, in addition, is provided with an opening *c*, through which a pin *g* (shown in Fig. 1) is made to pass in securing these tumblers each to a bar C, which bar is provided with an operating-button E, as is shown in the drawings. Each of these operating-buttons is made to pass through an opening within the flange B, these buttons being held and guided within their openings. Upon the inside each operating-button is provided with a spring 15, working against the lower end of the button proper, so that each button is normally held outwardly under spring-tension, as will be understood in referring to Fig. 1.

Pivotaly secured within the lock-housing is a lever H, secured by means of the pivot 16, and to which is secured a stem C', provided with the button D', so that this lever H is normally held under spring tension in one direction. To prevent these buttons from passing too far outward, each is provided with a

projecting pin 17, so that these operating-buttons, with their bars and connected tumblers, are all held in a spring-locked condition, the pin 17 preventing the buttons from passing outward, while the spring 15 holds the buttons under spring tension inwardly.

Projecting from the lever H is a housing K, from which extends the dog K', which dog below is provided with a bolt-opening 20, as is shown in Fig. 11. Working within the housing K is a bar E, which is provided at the rear with the flaring head projecting beyond the housing and upon the inside with a pin 21, and between this pin 21 in the bottom of the housing K is an ordinary expansion coil-spring 22 to normally force this bar E outward to form a spring-catch, the bar E preferably passing through the lever H for the sake of strength.

Working adjacent to the mutilated tumblers is a sliding link M, (shown as detached in Fig. 3,) which is provided with a central slot 25, which near the rear is provided with the seating 26, in front with the projecting nosing 27, and at the rear with a projection provided with a seating 28 and the breast 29, as is shown in Fig. 3. This link is held in position by means of a pin N, and upon the side provided with the seating 26 is further positioned an ordinary spring 30 to normally force this link toward the series of tumblers. In its normal position this sliding link M is forced against the projection *e* of the tumbler 12, as is shown in Fig. 1. In this position the hook end *d* of the mutilated tumbler 10 rides within the slot 25 and resting immediately within the seating 26, as shown.

To open the lock, it would be necessary to move the dog, with its connected spring catching-bar E, out of the seating 3. This, however, could not be done unless the slots or incisions *a* would all come within line, so that this dog could find a seating within the combined tumbler-incisions, permitting the escape of the hasp 2.

While several hundred combinations can be made with a lock constructed as described, I have shown one combination disclosing the instrumentalities, as shown. In this combination, referring now to Fig. 2, where the line *xx* represents the position of the dog K', it would be impossible to unlock the hasp unless the mutilated tumbler 8 were carried toward the *z* side, so as to bring its slot within line of the tumblers 6, 7, 9, 11, and 12, while the tumbler 10, however, would have to be carried toward the *y* side in order to bring about the alinement. This, as shown, would require the depression of the button marked 8, as well as a depression of the button marked 10. Should any other button, however, be touched, it would of course carry its connected tumbler out of proper alinement and prevent the falling of the dog.

The arrangement of the tumblers without the operation of the link M would comprise an ordinary simple lock, which could be easily

picked. However, by the addition of the sliding link M the combinations are multiplied, as well as made very difficult in operation. Should, for instance, the button 10 be touched at any time, it would carry the link M forward, so that the nosing 27 would find a seating and act as a bolt to lock the dog K', and then, even though all the slots be in proper alinement, it would be impossible to depress the releasing-button 13, as the nosing 27 would securely lock the same. From this it will be seen that the tumbler 10 has two positions, so that its slot *a* would come in true alinement with the dog K'. In one instance, however, should the tumbler 10 have been actuated before the link M had been carried outward, the tumbler 10 would have carried the link forward in alining its slot; but the forward movement would have carried the nosing 27 into the dog K', so that while all the slots were in true alinement for the admission of the dog this dog-slot would have been held inoperative and so lock in its closed condition by virtue of the link-nosing being within the dog. The button of the tumbler 10 has been so placed that it is the most easily touched, so that should through any accident this tumbler be actuated before its proper interval in the permutation of the lock the dog would be held in a locked position, as has been described.

Should the mutilated tumbler 12 be actuated alone, it would, by means of the projections *e*, force the link M outward, so that the seating 28 would engage the pin 31, in which position the link would be held. The outward movement of the link then would permit the passage of the hook *d*, so that the incision or slot within the mutilated tumbler 10 could be brought into proper alinement.

If a lock were constructed and arranged precisely as is shown in Figs. 1 and 2, the combination to unlock the same would be as follows: Depress 8, 12, then 10, then release 12, and finally depress 13, when the lock could be opened.

In referring to Fig. 2, 8 would have been depressed to bring its slot into alinement. Next 12 would have been depressed; but this depression was not made to bring its slot into alinement, as this slot already was in proper position; but the depression was made so that the projection *e* would engage the breast 29 of the link to carry this link outward. The button 10 was next depressed, which was permitted movement by virtue of the tumbler 12 holding the link outward, and after this tumbler 10 had been brought in alinement it would be necessary to release the button 12 to bring its slot again into alinement, when by simply depressing the releasing-button D' the dog would fall into the slots or incisions, permitting the opening of the lock.

While the hook *d* is positioned within the opening 25, the tension of the spring 30 through the link is of course upon the hook *d*. To facilitate the opening of the lock, the

lock upon one side is smooth and upon the other milled or roughened, so that the operator the minute he touches the lock will know which side to bring uppermost. If the operator is left-handed, he will prefer to have one side uppermost, while a right-handed operator will prefer the opposite side upward. Then by putting, say, the thumb of his left hand upon the button 8 to depress the same, his second finger upon button 12, his third finger upon button 10, then releasing button 12 and depressing button 13 with the thumb of his right hand, the lock will instantly fly open.

To get new combinations, it is of course understood that it is simply necessary to change the position of the slots or incisions within the mutilated tumblers, as well as change the hook *d* and projection *e* in placing the same upon some remaining tumblers.

The tumblers are mutilated for convenience, so that the rods or bars C may readily work between the various tumblers.

This lock can be made of any suitable size or material, and of course a greater or less number of mutilated tumblers could be used. So, also, could another link M be added, if desired.

Now, having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent, is—

1. The combination of a plurality of tumblers, operating-bars extending from said tumblers, springs to normally force said bars in an outward direction, and a latching-dog pivoted adjoining to said tumblers, said tumblers controlling the movement of said dog in one direction.

2. The combination of a plurality of incised tumblers, operating-bars extending from said tumblers, a latching-dog pivoted adjoining to said tumblers and adapted to work into said tumbler-incisions, said tumblers controlling the movement of said dog in an inward direction, and an operating-bar secured to said dog controlling the movement of said dog in an outward direction.

3. The combination with a plurality of incised tumblers, operating-stems extending from said tumblers, the incisions within said tumblers normally being out of alinement, a movable latching-dog pivoted adjoining to said tumblers, an extension secured to said dog and working in front of said normally-disarranged incisions, and an operating-bar secured to said dog, said instrumentalities being so arranged that the projection of said dog may be forced into the tumbler-incisions when all of said incisions have been brought into alinement.

4. The combination of a plurality of incised tumblers, an operating-bar extending from each of said tumblers, means to normally force said tumbler-incisions out of alinement, stops to control the movement of said tumblers, a dog pivoted adjoining to said

tumblers, a locking-hasp extending from said dog, and means to operate said dog.

5. The combination with a lock-housing, of a plurality of incised tumblers, spring-operated bars projecting from said tumblers beyond said housing, a pivoted dog adapted to work within said tumbler-incisions, an operating-stem extending from said dog, a sliding link, one of said tumblers being provided with a projection adapted to actuate said sliding link, said link being adapted to lock said dog, substantially as set forth.

6. The combination with a plurality of incised tumblers, operating-bars extending from said tumblers, a locking-dog adapted to work into said tumbler-incisions, a sliding link pivotally and movably held adjacent to said tumblers and dog, a seating and communicating slot within said link, a projection extending from one of said tumblers and adapted to work within said seating and slot, and a lug upon one of said tumblers to actuate said link, said instrumentalities being so arranged that should said projection-tumbler be actuated before the lug-tumbler, said link will lock said dog.

7. The combination with a plurality of tumblers, operating-bars extending from said tumblers, a projection extending from one of said tumblers, a sliding link, a seating and communicating slot within said link, said projection being adapted to work within said seating and slot, and a lug projecting from one of said tumblers and adapted to force said projection out of its seating into said communicating slot.

8. The combination with a plurality of tumblers, operating-bars extending from said tumblers, a projection extending from one of said tumblers, a sliding link, a seating and communicating slot within said link, said projection being adapted to work within said seating and slot, a lug extending from one of said tumblers and adapted to force said projection out of its seating into said communicating slot, and a stop to check the movement of said sliding link after being operated upon by said lug-tumbler.

9. The combination with a plurality of incised tumblers, means to operate said tumblers, a projection extending from one of said tumblers, a link, a seating and communicating slot within said link, said projection normally resting within said seating to actuate said link, a lug projecting from one of said tumblers to throw said link out of operation with said projection, and a locking-dog, adapted to work into said incisions when in alinement, and a seating within said dog, said link being adapted to work into said dog-seating, when said projection-tumbler is actuated before said lug-tumbler.

10. The combination with a lock-housing, of a plurality of tumblers, spring-actuated operating-bars extending from said tumblers, a projection extending from one of said tum-

blers, a lug extending from another of said
tumblers, a sliding spring-actuated link held
adjacent to said tumblers, a seating and con-
nected slot within said link, said projection
5 being adapted to normally work within said
seating, said lug working against said link to
actuate the same, a stop to lock said link
when actuated by said lug, incisions within
said tumblers, a dog adapted to work within
10 said incisions, a seating within said dog, said
link being adapted to work within said dog-

seating, a spring-actuated locking-bar within
said dog, a hasp pivotally secured to said lock-
housing and engaged by said locking-bar and
a spring-operated stem secured to said dog. 15

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

CHARLES C. A. BAUERCAMPER.

Witnesses:

GEO. W. SUES,
A. ELLEJER.