H. M. KING & S. D. PIERCE.

Combination Padlock.

No. 200,617. Patented Feb. 26, 1878.

Fig. 1.

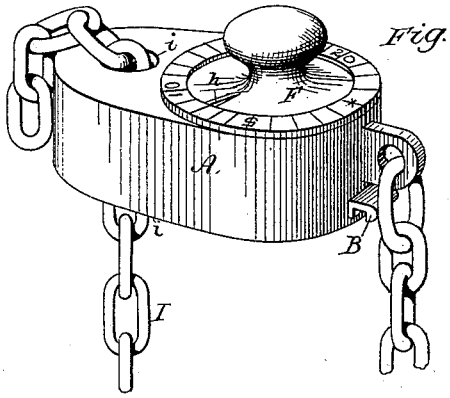


Fig. 2.

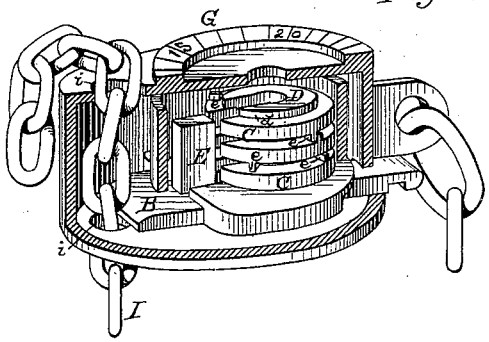


Fig. 3.

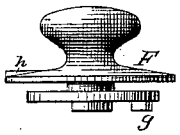
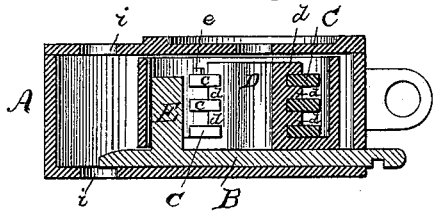


Fig. 4.



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UNITED STATES PATENT OFFICE.

HERBERT M. KING AND S. DERMOTT PIERCE, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN COMBINATION-PADLOCKS.

Specification forming part of Letters Patent No. **200,617**, dated February 26, 1878; application filed July 2, 1877.

To all whom it may concern:

Be it known that we, HERBERT M. KING and S. DERMOTT PIERCE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Locks, especially adapted to the fastening of chains, &c., of which the following is a specification:

This improvement relates to that class of locks known as "permutation-locks," wherein tumblers or their equivalent parts are arranged in a certain order by the turning of a central spindle, and without the employment of any key; and it consists, first, in the peculiar bolt, which is adapted to engage with the chain between the ends of two adjacent links, and jam the intermediate link against the edge of the orifice in the lock-plate through which the chain is passed, and a series of permutation locking-rings to hold said bolt in position; second, in a hollow central hub for the permutation-rings, into which hub the stud on the locking-bolt may retreat.

That others may fully understand our invention, we will particularly describe it, having reference to the accompanying drawing, wherein—

Figure 1 is a perspective view of our lock in use. Fig. 2 is a perspective longitudinal section of the same. Fig. 3 is an elevation of the operative button. Fig. 4 is a central longitudinal section of the lock.

A is the case of the lock, and B is the locking-bolt, adapted at its front end to enter between the links and jam them against the edge of the plate, and so engage with them as to prevent the withdrawal of the chain while the bolt is retained in place. The rear or tail end of the bolt B protrudes through the rear end of the case A, so that it may be caught by the fingers and drawn back, when the locking devices release it.

The locking devices, as shown herein, consist of a stud, E, placed upon the bolt B, and a series of rings, C, placed upon a hollow cylindrical post, D, with separating annular rings *d* rigidly secured to said post, so that there cannot be any frictional contact between the rings C as they move. Each of said rings is provided on one side with an opening sufficient to permit the stud E to pass through when the bolt is retracted, and it is apparent that said bolt cannot be retracted until all the openings coincide.

Each ring C has upon its surface, and near its outer periphery, a little stud or pin, *e*, and these studs upon the proximate faces of said rings are in line with each other, so that when one ring, C, is caused to move its pin *e* will come in contact and engage with the similar pin on the adjoining ring, and cause that ring to move also. Thus, when the uppermost of said rings is rotated it will finally engage with and produce a similar movement of the middle ring, and this latter will similarly carry the lower ring with it, so that, if the relative positions of the several pins are known, it may be possible, by rotation and counter rotation of the upper ring, to finally arrange them all with their open sides coincident.

Therefore the index-plate F is arranged in the top of the plate of the lock, so as to rotate upon an axis coincident with the axis of the rings, and a stud, *g*, similar to the pins *e*, is placed in the bottom of an arm projecting laterally from the spindle of said plate, so that as the same is revolved it will engage with the upper pin *e* of the upper ring C, and said ring may thereby be caused to rotate in either direction. Around the seat of the index-plate F there is indicated a dial, G, the graduations of which are preferably numbered, and the pointer *h* serves to identify the several required adjustments.

Suppose, now, the bolt B to be withdrawn and the lock ready for use. The chain I is inserted through the holes *i i*, and said bolt is shoved forward again until it engages between the chain-links as above described. The index-plate F is then revolved two or three times in either direction, and one or more of the rings C will thereby be rotated and caused to close behind the stud E, so that said bolt can thereafter be withdrawn only by a person acquainted with the necessary movements or combinations of said index to restore the rings C to their coincident position.

With the arrangement of the pins *e* shown, the necessary combination of motions will be as follows: First, rotate the index-plate F to the right four or five revolutions to bring all the drive-pins *e* into engagement, and stop the index *h* at "4" on the dial. Thereby the lower

ring C will be brought to the proper position; second, rotate the plate F to the left until the index *h* has passed the * or 24 of the dial three times, and arrest said index at 14½ of the dial. The middle ring will then be in position; third, again rotate the plate F to the right, passing said star once, and arrest at 22 and a fraction of the dial, and the upper ring will be in position, and the bolt B may be withdrawn.

The positions of the pins *e* may be varied, and the combination movements may thereby be changed or varied indefinitely.

A fourth ring may be added, if desired, by attaching it rigidly to the plate F, which will then require a final and definite adjustment after the present third ring is adjusted.

Having described our invention, what we claim as new is—

1. A case, A, with an orifice, *i*, adapted to receive a chain, combined with the locking-bolt B, moving flatwise across said orifice to engage between the links of a chain in the manner shown, and the combination locking-rings C C, substantially as set forth.

2. The several rings C C, provided with pins *e e*, as set forth, and arranged to rotate upon a hollow center hub, D, into which the stud E may retreat when the bolt B is withdrawn.

3. The bolt B, adapted to lock a chain by clamping its links against the edge of the orifice *i* of the plate A, and combined with a series of rings, C C, divided at one side, as set forth, and provided with pins *e e*, and actuated by the rotation of the spindle of the index-plate F, as shown and described.

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Witnesses:
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