(No Model.)

D. MELFI.

PADLOCK.

No. 489,022. Patented Jan. 3, 1893.

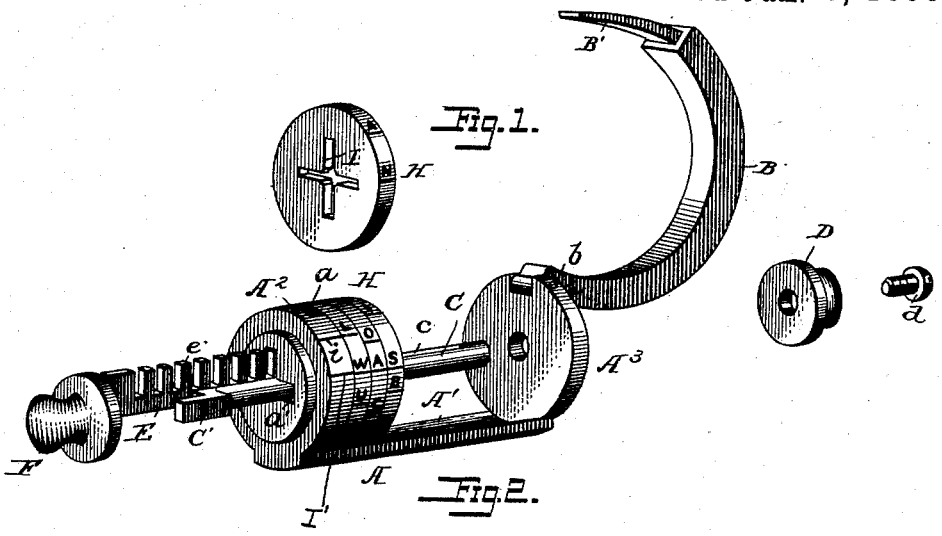


Fig. 1.

Fig. 2.

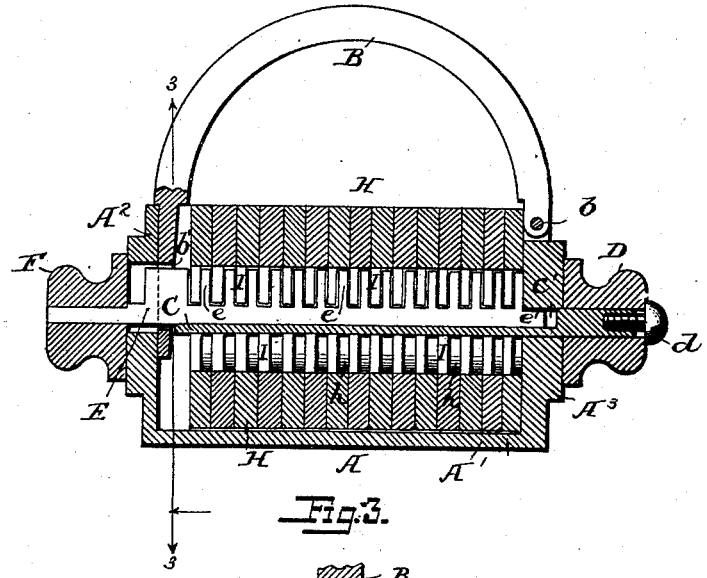
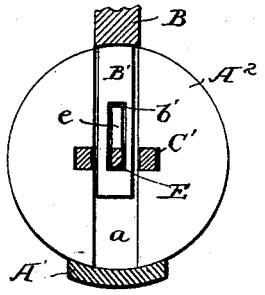


Fig. 3.



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UNITED STATES PATENT OFFICE.

DOMENICO MELFI, OF NEW YORK, N. Y.

PADLOCK.

SPECIFICATION forming part of Letters Patent No. 489,022, dated January 3, 1893.

Application filed June 11, 1892. Serial No. 436,312. (No model.)

To all whom it may concern:

Be it known that I, DOMENICO MELFI, a citizen of the United States, and a resident of New York, New York county, New York, have invented certain new and useful Improvements in Padlocks, of which the following is a specification.

My invention relates to permutation padlocks, and it has for its object to provide such a padlock in which the parts shall be simple, and cheap to manufacture, but in which the combinations or permutations can be many and various, rendering it exceedingly difficult to open the lock, without knowing the precise combination on which it is set, and to these ends my invention consists in the permutation padlock having the features of construction substantially as hereinafter pointed out.

Referring to the accompanying drawings, Figure 1, is a perspective view of the lock showing the parts detached; Fig. 2, is a longitudinal vertical section of a lock in its closed position; Fig. 3, is a transverse section through the line 3—3, Fig. 2.

In carrying out my invention I provide a case or frame A, having a cross piece A′, and the uprights or heads A^2, A^3, secured thereto. These parts are preferably made of a single piece of cast material, although of course they may be separately and properly united. The head A^3 has connected to it by a suitable pivot as *b*, a shackle B, and the free end of the shackle is provided with a tongue B′, having an opening *b*′, the tongue being adapted to fit into a slot *a* in the head A^2. Also connecting the head A^2, A^3 is a shaft C, and this shaft is formed at one end with a yoke as C′, which fits into a corresponding recess *a*′ in the head A^2, the yoke extending into the slot *a*, far enough to permit the tongue B′ of the shackle to pass between its arms as best shown in Fig. 2. This shaft may be secured in the heads in any suitable way, and I have shown a washer D, fitting one end, and held thereon by a screw *d*, but of course it will be understood that the nut can be dispensed with, and the screw *d*, applied so as to bear practically upon the head A^3, the washer being shown simply to make a finished and balanced configuration for the lock. This shaft C is grooved as shown at *c*, and fitted to slide in the shaft is a bolt E, consisting of a comb-like structure having lugs or teeth *e* at proper distances apart. Projecting from one side and connected to the bolt is a handle or knob F, by which it may be conveniently operated. The forward end *e*′ of the bolt fits in the portion *c*′ of the groove, which is within the outlines of the head A^3, so that the bolt is held in position in the groove when the padlock is closed. Mounted on the shaft is a series of tumblers or disks H, having on their peripheries, certain indicating marks or letters, as clearly shown in Fig. 1, and having their central portions reduced as shown at *h* to a thickness corresponding to the width of the spaces between the lugs or teeth on the bolt E, so that the tumblers can freely revolve on the shaft, and between the lugs of the key when it is in position. These tumblers are provided with a series of radial slots or notches I, four being shown in the drawings, and these notches are of a size to allow the bolt with its lugs to pass through the tumblers, when the tumblers are arranged in proper relation thereto. It will be seen that each tumbler has as many positions in which the bolt can be passed through it, as there are slots or notches I, and if there are four notches there are four positions for each tumbler in which the bolt can be inserted or removed from the lock. The lettering or indications on the tumblers are variously arranged, as shown in Fig. 1, and preferably at different distances apart, but in order to have the notches of the various tumblers come in line it is necessary to bring the proper indications on a line as shown by the letters W. A. S. on the tumblers in Fig. 1. It will be understood of course that there may be as many of these tumblers as are desired, the greater the number, the more difficult to operate the lock, and the greater the number of permutations, and I do not limit myself to any particular number, or any particular style of lettering or indications.

Such being the construction of the lock, its operation will be readily understood. In Fig. 2, the parts are shown as locked with the bolt in position, and in order to remove the bolt, it will be understood that all the tumblers must be arranged on a certain line, so that one of their notches I, will be in line with the

lugs or teeth on the bolt, and when they are so arranged, the bolt can be withdrawn from the tumbler and finally from the tongue of the shackle, and the lock opened.

It will be noticed that the lock cannot be opened until the bolt has been withdrawn from all the tumblers, and then from the tongue of the shackle, so that if, perchance, an unauthorized party should manipulate the lock so as to partially move the bolt, the lock could not be opened until the bolt was free therefrom. If four notches are used in each tumbler, it will be seen that there are four positions or combinations of positions in which the lock can be opened, and it will be observed that on the disk A^2 there are certain indicating marks *i*, arranged at different distances apart, and the letters or indications on the tumblers H, can also be arranged so that one combination of devices W. A. S. must be brought in co-incidence with the mark I′, while another combination to have the lugs pass through another notch I in the tumblers, must be brought in co-incidence with the mark *i*. In this way it will be seen that the lock can be set upon different combinations, and in different positions.

What I claim is:

1. A combination padlock comprising the frame having the outside cross piece and the heads connected thereto, the shackle pivoted to one of the heads, and fitting in a slot in the other head, a removable grooved shaft connecting the heads, and adapted to be locked in position by the shackle a bolt having lugs fitting the shaft, and a series of tumblers mounted on the shaft and having reduced portions to pass through the space between the lugs on the bolt, substantially as described.

2. A combination padlock comprising a frame, a grooved shaft connecting the heads of the frame, the shaft having a yoke at one end to receive the tongue of the shackle, a shackle connected to the frame, and having a tongue passing through the yoke, a bolt fitting the grooved shaft, and a series of tumblers controlling the bolt, substantially as described.

3. In a permutation lock, the combination with the head having various indicating marks, of a series of tumblers each having a plurality of radial slots and a series of indicating marks irregularly arranged on their peripheries, and a single bolt having a series of tumbles, whereby the tumblers may be set on different combinations with respect to the various marks on the head, substantially as described.

4. In a permutation lock the combination with the head having indicating marks thereon irregularly arranged, a grooved shaft connecting the heads, a bolt having lugs fitting the grooved shaft, and a series of tumblers, each having a plurality of radial slots, and a series of indicating marks irregularly arranged on their peripheries, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DOMENICO MELFI.

Witnesses:
FRANK MAROTTA,
FRANK L. FREEMAN.