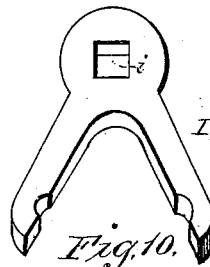
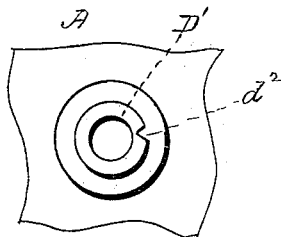
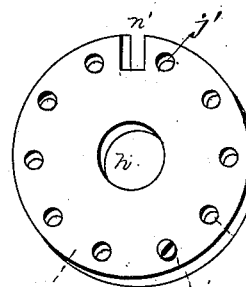
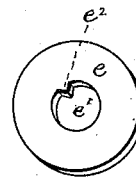
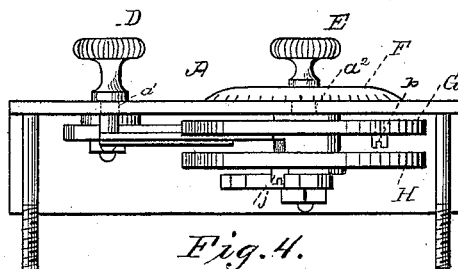
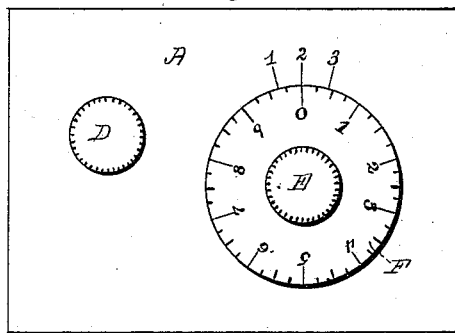
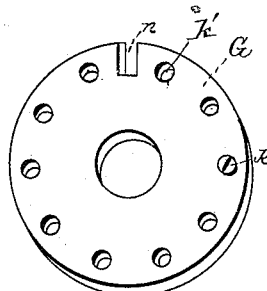
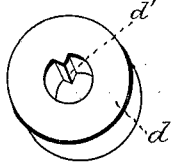
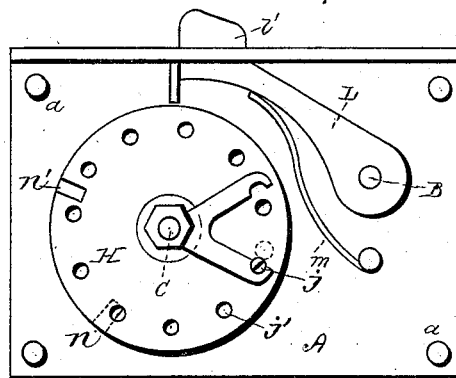
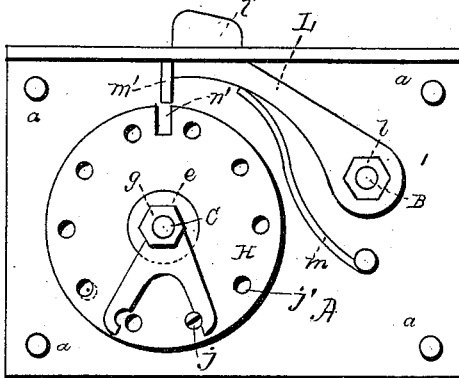


A. H. VAN PELT
PERMUTATION LOCK.

Patented Feb. 4, 1890.



Witnesses

M. A. Harris Fig. 9.

N. F. Gardner.

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UNITED STATES PATENT OFFICE.

ADA HENRY VAN PELT, OF OAKLAND, CALIFORNIA.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 420,841, dated February 4, 1890.

Application filed June 14, 1889. Serial No. 314,215. (No model.)

To all whom it may concern:

Be it known that I, ADA HENRY VAN PELT, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in 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. The invention has relation to permutation-locks designed for use on post-office lock-boxes, doors, jewel-cases, &c.; and it consists in the combination of parts hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

In the drawings, Figure 1 is a plan view of my improved lock, the parts being in position for the latch-bolt to be depressed. Fig. 2 shows a similar view, the parts being in a locked position; Fig. 3, an outside view of the lock; Fig. 4, an end view of same; Fig. 5, a detail view of washer *d*; Fig. 6, a detail view of washer *e*; Fig. 7, a detail view of tumbler *G*; Fig. 8, a detail view of tumbler *H*; Fig. 9, a detail view of barrel *D'*; Fig. 10, a detail view of angle-bar *I*.

A indicates the lock casing or housing, provided with inwardly-projecting securing pins or bolts *a* to adapt the same to be secured to the door, drawer, or the like to which the lock is to be applied. Through the casing extend openings *a'* *a''*, Fig. 4, the former to receive the latch or bolt spindle *B*, and the opening *a''* to receive the operating-spindle *C* of the lock. The outer ends of the spindles *B* *C* are provided with milled head or knobs *D* *E*, respectively, as usual, and for obvious purposes.

Upon the spindle *C*, on the outside of the casing, is rigidly mounted the dial *F*, bearing upon its outer face a series of numerals, as shown, and upon said spindle within the casing are loosely mounted the tumblers *G* *H*, the mode of mounting said tumblers, as well as the arms for operating said tumblers being as follows: The inner end of the spindle *C* projects through a sleeve or barrel *D'*, rigidly affixed upon the inner side of the casing, the projecting end of the former being squared for a portion of its length and screw-threaded

at its inner end. The tumbler *G* is provided with a central annular opening to adapt the same to be placed loosely over the barrel or sleeve *D'*, as shown. A washer *d*, provided with an annular opening, is then placed over the barrel next to the tumbler *G*, said washer being prevented from turning with the tumbler by a teat *d'*, which enters a vertical notch or recess *d''* in the barrel *D'*. The tumbler *H*, provided with the central annular opening *h* and adapted to turn on the barrel, is next placed over the barrel *D'*, against the washer *d*. A washer *e*, having a central annular opening *e'* and a teat *e''*, is then placed on the barrel *D'*, next to the tumbler *H*, the teat *e''* entering the notch or recess to prevent it from turning with tumbler *H*.

The means for operating the tumbler *H* when the operating-spindle *C* is turned, consist of the two-armed angular lever *I*, which is provided with a squared opening *i*, fitting over the squared shoulder of the spindle, said lever, when in position, lying against the washer *e*, this lever, as well as the washer and tumblers, being secured in their assembled position, as above described, by a nut *g*, which is screwed upon the threaded end of the operating-spindle *C*.

It will be seen that when the spindle is turned the angular lever will be turned therewith, and in order that the tumblers *G* *H* may be operated therefrom I provide the following means: Within a threaded opening *j'* of the tumbler *H* is screwed a headed pin *j*, the inner end of which projects through the tumbler and lies within the path of the head of a like pin *k*, screwed within a threaded opening *k'* in the tumbler *G*. The head of the pin *j* lies between the arms of the angular lever *I*, and when the latter is turned in either direction one of its arms engages this head, thereby causing the tumbler *H* to be turned in the same direction.

L indicates the latch, which is rigidly mounted upon the spindle *B* upon the inner side of the casing by a nut *l*. The head *l'* of the latch-bolt projects through the usual slot in the casing, and is adapted to enter the keeper in the door-frames, &c., said latch-bolt being held in a normally-projecting position by a spring *m* secured upon the inner

side of the casing. The latch-bolt is provided at its outer end with an inwardly-projecting arm m' , which is adapted to enter notches $n n'$ in the tumblers G H when said notches occupy the same relative position in rear of the arm m' , and thereby enable the head of the latch to be drawn within the casing and allow the door to be opened.

The operation of the device is as follows: We will suppose the parts to be in position represented in Fig. 2. In order to allow the door or the like to be opened it is necessary for the notches $n n'$ to register in rear of the arm m' . To accomplish this the spindle C is turned in either direction, thereby causing one of the arms of the angular lever to engage the head of the pin j and carry around the tumbler H until the pin j strikes the head of the pin k , carrying with it the tumbler G. This revolution is continued until the notch n in the tumbler G arrives opposite the arm m' of the latch-bolt. The spindle C is then turned in the opposite direction (the tumbler G remaining stationary) until the notch n' in the tumbler H arrives in a position corresponding with the notch n in the tumbler G, or, in other words, until it registers with it, and both notches are in rear of the arm m' , when, by turning the spindle B to the right, the head of the latch-bolt will be withdrawn within the casing and the door allowed to be open.

In order that the lock can be set upon any combination of numbers, the face of the dial F is provided with a series of numerals, as shown, and each of the tumblers G H provided with a corresponding number of threaded openings, so that by changing the relative positions of the pins $j k$ the lock may be set to be opened on any combination, as will be readily understood.

In order to determine upon what combination of numbers the lock is set, this is of course ascertained before the lock is attached to the door or the like by turning the tumbler in the manner before described and noticing first what number on the dial F stands opposite the index-mark on the outer face of the casing when notch n in the tumbler G stands opposite the arm of the latch-bolt. The dial F is then reversed until the notch n' corresponds in position, and the two numbers thus indicated are the required combination.

Instead of a single index-mark on the casing, a series of such marks or numbers may be provided and thereby enable the number of combinations to be increased, as will be understood. It will also be observed that by reason of my peculiar construction a double combination is afforded, or, in other words, two separate and distinct combinations at the same time, either of which may be used to bring the notches $n n'$ of the dials in line in rear of the latch-arm m' . The particular combination to effect this result depends upon the direction in which the outer dial F

is turned at the start—as, for instance, if turned to the right one combination must be employed, if turned to the left the other must be used. This difference is caused by the relative difference in position of the pins $j k$, by which the movement of the tumblers G H are controlled, and the distance between the arms of the forked lever I—as, for example, suppose the lock is set on the combination 5 and $4\frac{1}{2}$, zero being at the top, the dial F is turned to the right until its figure 5 registers with figure 2 on the case A, when the notch n in the tumbler G is in rear of the latch-arm m' . The dial F is then turned to the left until $4\frac{1}{2}$ registers with figure 2 on the case A and the notch n' registers with n , when the latch-arm m' passes within the notches, and the door may be opened. If the dial F is first turned to the left instead of the right, the combination will necessarily be varied to a degree corresponding with the reversed position of the pins $j k$ and the distance between the arms of the levers.

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

1. In a permutation-lock, the combination, with the casing provided with suitable openings and having the barrel or sleeve D rigidly secured to its inner side, the tumblers G H, loosely mounted upon the barrel or sleeve and provided, respectively, with radial notches $n n'$, and with pins $j k$, removably secured in the threaded openings and adapted to engage with each other, the spindle C, projecting through the sleeve and having rigidly secured to its inner end a lever adapted to operate the inner tumbler H by contact with its pin j , the latch-bolt L, pivoted at its inner end within the casing and having at its opposite end an outward projection adapted to pass through the casing into a keeper and an inward projection adapted to enter the registering notches in the tumblers G H, substantially as described.

2. In a permutation-lock, the combination, with the casing having suitable openings and a barrel or sleeve rigidly fixed to its inner side, of the tumblers loosely mounted on said sleeve, each provided with a radial notch $n n'$, pins $j k$, and a series of screw-threaded openings $j' k'$, arranged near their outer edges, a spindle extending through the sleeve having rigidly fixed to it on the outer face of the casing a dial F, provided with a series of indicating-numbers, and upon its outer end a bifurcated or angular lever having its arms on either side of the pin j of the tumbler H, and adapted to engage said pin for the purpose of revolving the tumblers, and the pivoted latch-bolt, substantially as described.

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

ADA HENRY VAN PELT.

Witnesses:

H. G. HANNA,

J. A. MARSHALL.