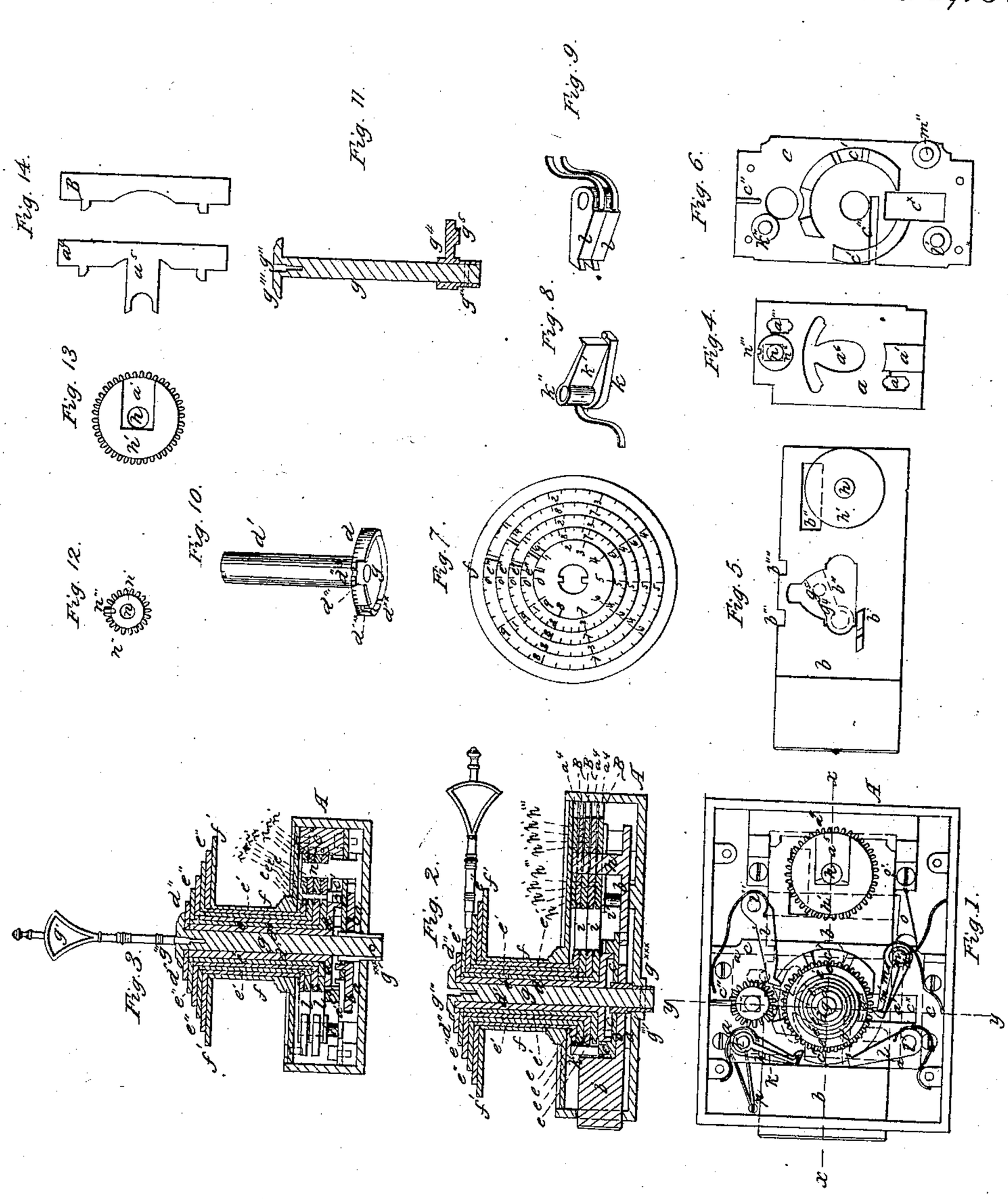
J. Neiman.

Permutation Lock.

No. 12,081. Patented Dec. 12, 1854.



UNITED STATES PATENT OFFICE.

JACOB WEIMAR, OF NEW YORK, N. Y.

DOOR-LOCK.

Specification of Letters Patent No. 12,081, dated December 12, 1854.

To all whom it may concern:

Be it known that I, JACOB WEIMAR, of the city, county, and State of New York, have invented a new and Improved Lock for Safes, Bank-Vaults, &c.; 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, in which—

Figure 1, is an interior view of the lock the outer casing and circular plates being removed. Fig. 2, is a longitudinal vertical section of ditto taken at the line (*x*) (*x*) Fig. 1. Fig. 3, is a transverse vertical section of ditto taken at the line (*y*) (*y*), Fig. 1. Fig. 4, is a detached view of a sliding tumbler plate. Fig. 5, is a detached view of the bolt of the lock. Fig. 6, is a detached view of a stationary plate which is placed over the bolt. Fig. 7, is a detached face view of the circular plates which are on the outer side of the casing of the lock. Figs. 8 and 9 are detached views of pawls. Fig. 10, is a detached perspective view of the cam by which the pawls are operated. Fig. 11, is a detached view of the bit and shank by which the bolt of the lock is operated. Fig. 12, is a detached view of one of the smaller circular toothed tumblers. Fig. 13, is a detached view of one of the larger circular toothed tumblers. Fig. 14, is a view of one of the dividing plates and one of the plates having projections upon them which work in the larger circular toothed tumblers.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and improved lock for safes, bank vaults, etc.

The nature of the invention consists in the peculiar arrangement of slotted circular toothed tumblers, toothed wheels, and pawls, constructed and arranged as will be hereafter described so that the lock cannot be picked, nor gun powder placed within it for the purpose of forcing it open by the explosion of the same.

To enable others skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, Figs. 1, 2 and 3 represents the casing of the lock constructed in any proper manner, and (*a*) is a plate which slides on proper stumps at the back part of the casing A, the stumps fitting in recesses (*a'''*) in the plate, see Figs. 1 and 4. The bolt of the lock designated by (*b*) is fitted over the sliding plate (*a*) the plate and bolt crossing each other, at right angles as shown in Fig. 1, the plate (*a*) being shown by dotted lines.

The bolt (*b*) has an irregular shaped opening (*b''*) made through it near its center, and the plate (*a*) has also an opening (a^6) made through it as shown in Fig. 4 and by dotted lines in Fig. 1. A shaft or spindle (*g*) passes through the casing A and has upon its end a bit (g^4) which bit fits in the opening (*b''*) in the bolt, and to the outer surface of the bit there is attached a pin (g^5) which fits in the opening (a^6) in the plate (*a*), so that when the spindle (*g*) is turned, the bolt (*b*) is thrown either to the right or left and the plate (*a*) at the same time moved in a transverse direction, the bit (g^4) moving the bolt, and the pin (g^5) moving the plate.

The spindle (*g*) is provided at its outer end with a circular plate (*g'''*) and has a pin (g^{xxx}) passing transversely through it near its inner end, said pin keeping the spindle properly in place.

Upon the plate (*a*) there is secured a shaft (*n*) upon which a series of slotted circular toothed tumblers (*n'*) are placed, the slots in the tumblers (*n'*) are designated by (*n'''*) see Figs. 1 and 12. On the side of the casing A opposite the tumblers (*n'*) there is a projection (*c''*) see Figs. 1 and 3.

Upon the bolt (*b*) near its inner end there is secured a shaft (*h*) having upon it a series of slotted circular tumblers (*h*), see Fig. 1. These slots are not made in the tumblers (*h'*) but are made in circular plates attached to the faces of the tumblers see Figs. 1 and 12 (*a'*) representing the slots, on the side of the casing opposite the tumblers (*h'*) are fitted a series of plates (a^4) having projections (a^5) attached to them, and between the plates (a^4) are fitted plates B which correspond in thickness to the circular tumblers (*h'*).

In the edge of the bolt (*b*) there are two recesses or notches (*b'''*) (*b''''*) see Fig. 5 and dotted line in Fig. 1.

C is a plate which is secured permanently within the casing of the lock and directly over the bolt (*b*). This plate C has a circular ledge or projection (*c'*) on its outer surface and also has two recesses or slots (c^x) and (*c'''*) made through it, see Fig. 6. A

ledge (a'') on the plate (a) fits in the slot or recess (c^x) and a ledge (b') on the bolt (b) fits in the recess (c''').

Within the circular ledge or projection (c') on the plate C there is fitted a circular disk or plate (d) having notches (d^x) cut in its edge and recesses (d^{xx}) (d^{xxx}) made through a lip on the periphery of the plate or disk, see more particularly Fig. 10. The disk or plate is provided with a hollow shaft (d') which encompasses the spindle (g) and which has a circular plate (d'') attached to its outer end, see Figs. 2 and 3. The spindle (g) is also provided at its outer end with a circular plate (g''').

Directly over the plate or disk (d) there are placed a series of toothed wheels (e) each one being provided with a hollow shaft, the hollow shafts fitting one over the other and provided at their outer ends with circular plates (e'') (f') see Figs. 2 and 3, the hollow shafts being designated by (e') (f). In Fig. 7 a face view of the different circular plates are shown.

(k) (k') (m) (m') are pawls secured to the outer surface of the plate C these pawls bear against the periphery of the disk or plate (d), (i) and (l) are pawls which catch into the teeth of the wheels (e).

A key (g') fits into a recess (g'') in the outer part of the spindle (g) see Fig. 3.

The lock is locked or the bolt (b) is thrown out by turning the key (g') in the proper direction, the key of course turning the spindle (g) and bit (g^4) which operates against the bolt (b), the pin (g^5) moving the sliding plate a and throwing the shaft (n) out of the notch (b'''') in the edge of the bolt. When the bolt is thrown forward, or the lock is in a locked state, the toothed wheels (e), are in gear with the small circular tumblers (n') and the larger circular tumblers (h'). The toothed wheels (e) one or more of them are then turned by moving the circular plates (d'') (e'') (f') and the slots (n''') in the small tumblers (n') and the slots (a') in the larger tumblers (h') are moved out of line with the projections (c,) (a^5) and the disk (d) is also turned so as to allow the ends of the pawls (k) (m) to catch into the teeth of the wheels (e) the lower or inner edges of the pawls fitting in the notches (d^x) in the periphery of the disk (d).

It will be seen that the bolt (b) cannot be thrown back without the slots in the two sets of tumblers are brought in line with the projections (c'') and (a^5) the recesses (d^{xxx}) in the disk (d) must also be brought in line with the projection (b') on the bolt. The circular plates on the outer ends of the hollow shafts of the wheels (e) are marked so that the person in locking the lock will know the distance he has moved each wheel and thus be enabled to move them back to their original position, so that the slots in the tumblers will be in line with the projections and allow the bolt to be moved back the projections passing into the slots in the tumblers. Before the wheels (e) can be turned the disk (d) must be turned so that the pawls (k) (m) may be thrown out from the teeth of the wheels (e).

Different changes may be made by throwing the bolt (b) partly back, about half way, and then carrying the position of the circular plates so as to change the position of the tumblers. The changes can thus be made without unlocking the lock, a recess or notch (o') is made in the side or edge of the bolt in which, when the bolt is thrown half way back, a pawl (o) catches, see Fig. 1.

The above lock is simple in construction, and not liable to get out of repair. It cannot be picked or forced open with gunpowder as there is no opening through which it can pass into the lock, and the lock cannot be opened with the proper key without a knowledge of the precise distance in which the circular plates should be turned.

I do not claim separately the circular tumblers (n') (h') for they have been previously used, neither do I claim the circular plates on the outer ends of the hollow shafts of the toothed wheels (e); but

What I do claim as new and desire to secure by Letters Patent, is—

The employment or use of the two sets of slotted circular tumblers (n') (h') toothed wheels (e) disk (d) and pawls (k) (m) arranged as herein shown, viz, one set (h') being placed upon a shaft attached to the bolt (b) and the other set (n') placed upon a shaft attached to a sliding plate (a) so that when the bolt is thrown forward both sets of tumblers will be thrown in gear with the toothed wheels (e) and thereby allowing the slots in the tumblers being moved so as to be out of line with the projections (a^5) (c''), the pawls (k) (m) preventing the wheels (e) being moved until the disk (d) is also turned or moved the proper distance, and thus preventing the lock being picked by tampering with or trying the tumblers in order to get a pressure of the bolt thereon.

JACOB WEIMAR.

Witnesses:
PHILIP WEIMAR,
ROBERT NEIJOH.