

(No Model.)

C. E. JOHANSON.
PERMUTATION LOCK.

No. 420,625.

Patented Feb. 4, 1890.

Fig. 1.

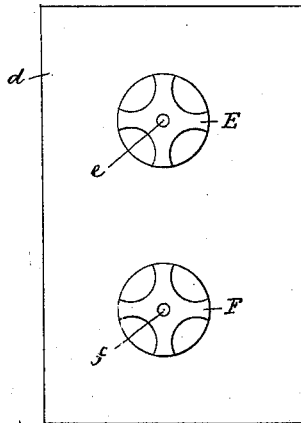


Fig. 2.

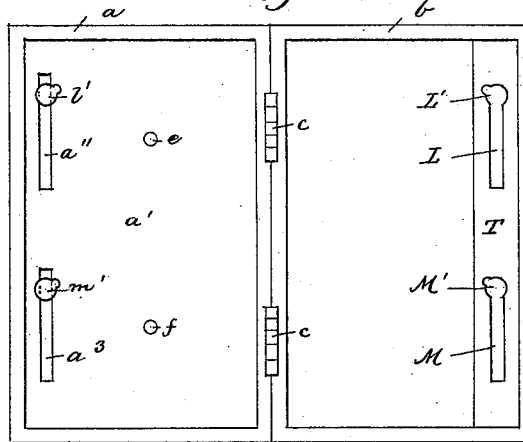


Fig. 3.

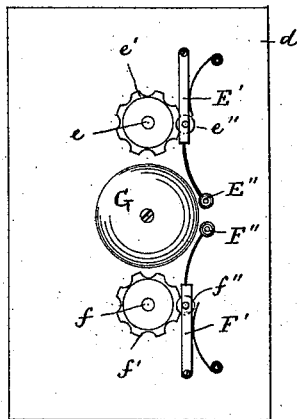
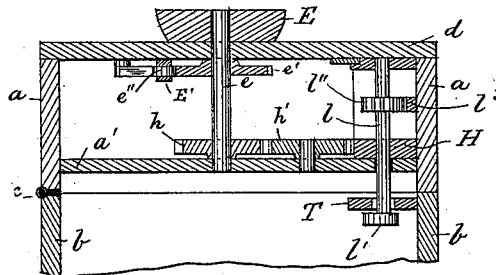
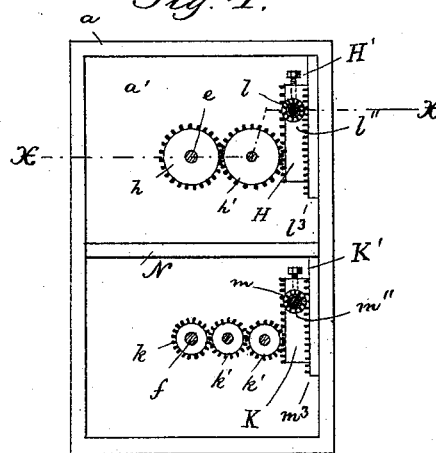


Fig. 4.



Witnesses.

Edma R. Schelin.

Geo. W. White.

Inventor.

Fig. 5 Carl E. Johanson.

by Wm. Andrien, his atty.

UNITED STATES PATENT OFFICE.

CARL E. JOHANSON, OF BOSTON, MASSACHUSETTS.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 420,625, dated February 4, 1890.

Application filed September 14, 1889. Serial No. 323,966. (No model.)

To all whom it may concern:

Be it known that I, CARL E. JOHANSON, a citizen of Sweden, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Permutation-Locks, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in safe or door locks, and it is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 represents a front elevation of the door. Fig. 2 represents an elevation of the safe and its door, the latter being shown as swung open. Fig. 3 represents an interior view of the door plate or cover. Fig. 4 represents an elevation of the safe-door, showing its plate or cover as removed; and Fig. 5 represents an enlarged cross-section of the door and safe on the line X X, shown in Fig. 4.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a represents the door-frame, hinged to the safe-body *b* by means of suitable hinges *c c*, as shown.

d is the door plate or cover, riveted or otherwise firmly secured to the front of the door-frame *a*, and *a'* is a plate or partition secured to the door-frame *a* below its cover, with a space between said parts for containing the operative mechanism by which the bolts are actuated.

In perforations in the outer and inner door-plates *d a'* are journaled the spindles *e* and *f*, having secured to their respective outer ends the knobs or handles *E F*. (Shown in Fig. 1.) On the inside of the plate *d* is located the gong or bell *G*. (Shown in Fig. 3.)

e' and *f'* are notched wheels secured, respectively, to the spindles *e* and *f* on the inside of the door-plate *d*, which, as they are rotated, impart a rocking motion to the respective spring-pressed hammer-levers *E' F'* and their hammers *E'' F''*, by which the gong or bell *G* is sounded one stroke for every time that either of said hammer-levers is actuated by a tooth on one of said wheels *e' f'*, as shown in Fig. 3.

The levers *E' F'* are preferably provided with the respective anti-friction rollers *e'' f''*,

so as to permit an intermittent movement of the handles *E F* and their notched wheels *e' f'*, for the purpose of actuating the spring-pressed hammer-levers *E' F'* and sounding the gong or bell *G* without much frictional resistance.

To the spindle *e* is secured the spur-gear *h*, the teeth of which mesh into the teeth of the intermediate gear *h'*, loosely journaled on a stud or pin secured to the door-plate *a'*, as shown in Figs. 4 and 5.

The teeth of the gear *h'* mesh in the teeth of the toothed block or bolt-carrier *H*, which is arranged in suitable guides in the door *a*, and it will thus be seen that by turning the handle *E* an up-and-down movement is imparted to the block or bolt-carrier *H*.

In the carrier *H* is journaled the bolt *l*, that passes through a slot *a''* in the door-plate *a'*, and terminates below the latter as an enlarged bolt-head *l'*, having a side projection, as shown in Fig. 2.

To the bolt *l* is secured the pinion *l''*, the teeth of which mesh into the teeth of the stationary rack *l'''*, secured to the door-frame *a*, as shown in Fig. 4, and it will thus be seen that a rotary motion is imparted to the bolt *l* as the block or bolt-carrier *H* is moved up or down.

H' is a set-screw made adjustable in the upper end of the movable bolt-carrier *H*, for the purpose of limiting and adjusting the upward motion of the said bolt-carrier, as may be desired by the person in charge of the safe.

Within the safe-frame *b* is secured a plate *T*, having a vertical slot *L*, coinciding with the slot *a''* in the door when the latter is closed, and said slot *L* having its upper end *L'* enlarged and made of a size and shape corresponding to the bolt-head *l'*, as shown in Fig. 2, so as to permit the latter to enter and pass through the perforation *L'* when the door is closed and the bolt-head moved to a position coinciding with that of the perforation *L*.

After closing the door, if it is desired to lock it, all that is necessary to do is to turn the knob *E* sufficiently to cause the block *H* and bolt *l* to be lowered far enough so that the bolt-head *l'* shall come back of the narrow slot *L*, thus preventing the opening of the door until the block *H* is again raised and its bolt

l' raised and turned to a position coinciding with that of the perforation L' in the plate T, as shown in Fig. 2.

For certain safes, vaults, &c., a single bolt and operating mechanism, as above described, may be sufficient; but in practice I prefer to use two or more of such bolts and bolt-operating devices, as shown in Fig. 4, where *k* represents a spur-gear secured to the spindle *f*, said gear being geared to the toothed block or bolt-carrier K by means of the intermediate gears *k' k'*. The block K is constructed and arranged like the block H aforesaid, and has journaled in it the bolt *m*, passing through a slot *a*³ in the door-plate *a'*, and terminates below the latter as an enlarged head *m'*, having a side projection, as shown in Fig. 2.

m'' is the pinion secured to the bolt *m*, the teeth of which mesh into the teeth of the rack *m*³, secured to the door-frame *a*, and M is the slot in the plate T, with its upper enlargement M', for the purpose of receiving and locking the head *m'* of the bolt *m* in a manner as above mentioned.

K' is an adjustable set-screw in the upper end of the block K for the purpose of limiting the upward motion of said block toward the central rib or projection N, that is secured to or forms a part of the door *a*, as shown in Fig. 4.

In opening the door, the operator first turns the knobs E and F, one in one direction and the other in an opposite direction, until the blocks H K are raised as far as the adjustable stop-screws H' K' will allow. Having previously ascertained how many strokes on the bell G will be sounded for the purpose of moving the bolt-carrying blocks to such po-

sitions that their heads shall coincide with the respective perforations L' M', he turns the respective handles E F one at a time in opposite directions to that in which they were first turned, and counts the number of sounds produced, stopping the turning of the handles when the desired strokes have been sounded, after which the door may freely be swung open.

By adjusting the screws H' K' any desired number of strokes on the bell may be agreed upon by the operator as necessary to be sounded for lowering the bolt-carrying blocks after they have been moved upward to their limits.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

The improved safe or door lock, as described, consisting of one or more knobs or handles on the outside of the door, each of said handles being secured to a spindle adapted when turned to operate a bell or sounder and connected by means of suitable gears to a sliding bolt-carrying block, in combination with a bolt journaled in said block and having a pinion attached to it, intermeshing with a stationary rack, and having a head in its end adapted to be locked in a slotted plate secured to the safe, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 19th day of March, A. D. 1889.

CARL E. JOHANSON.

Witnesses:

ALBAN ANDRÉN,
SELMA R. SCHELIN.