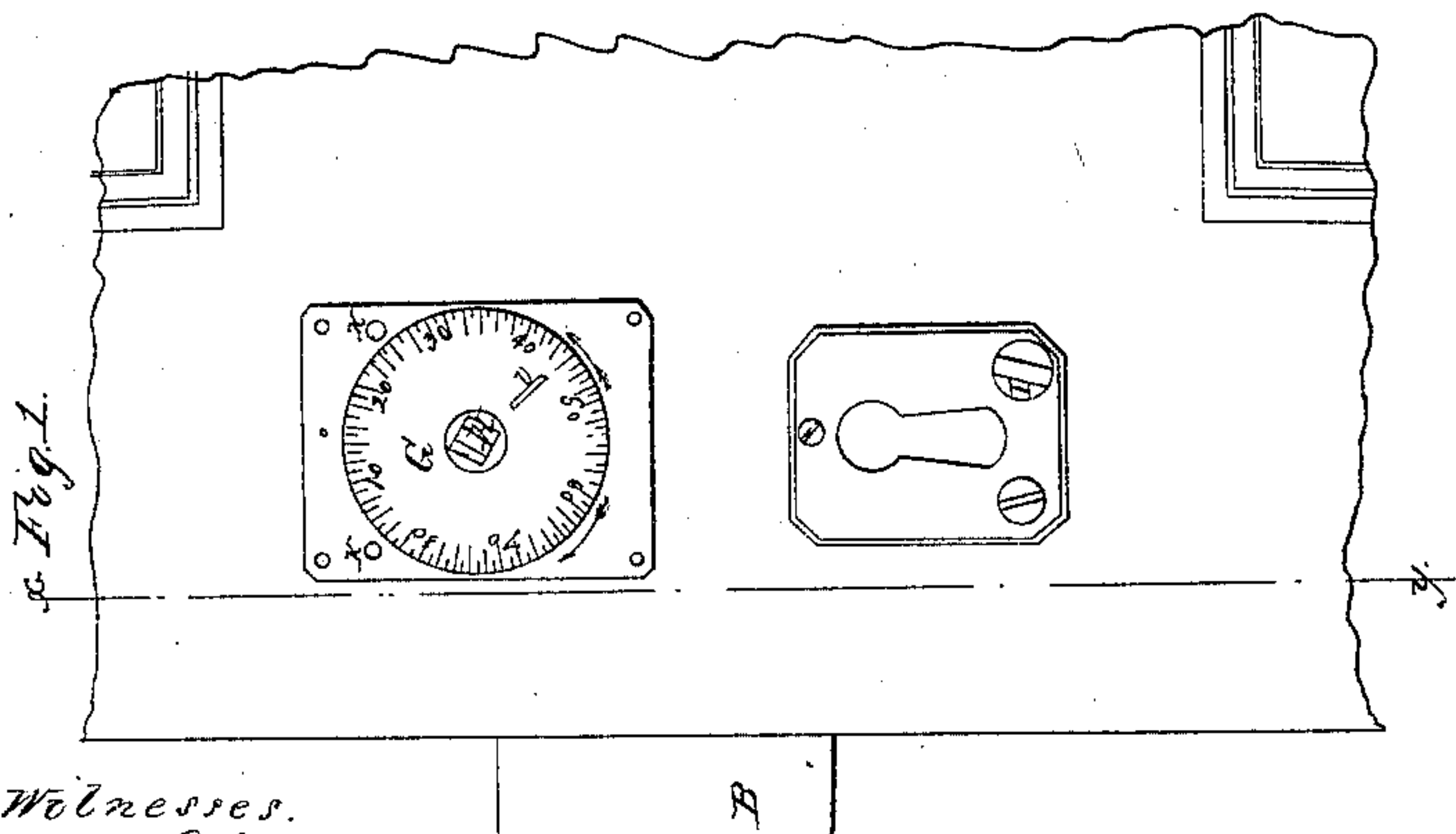
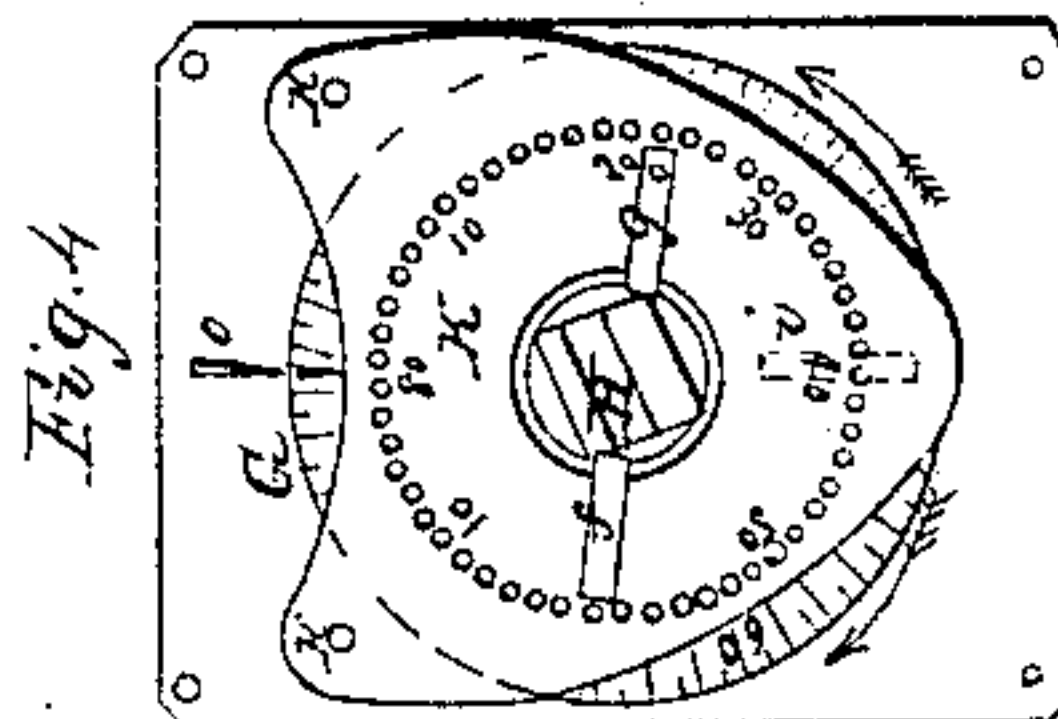
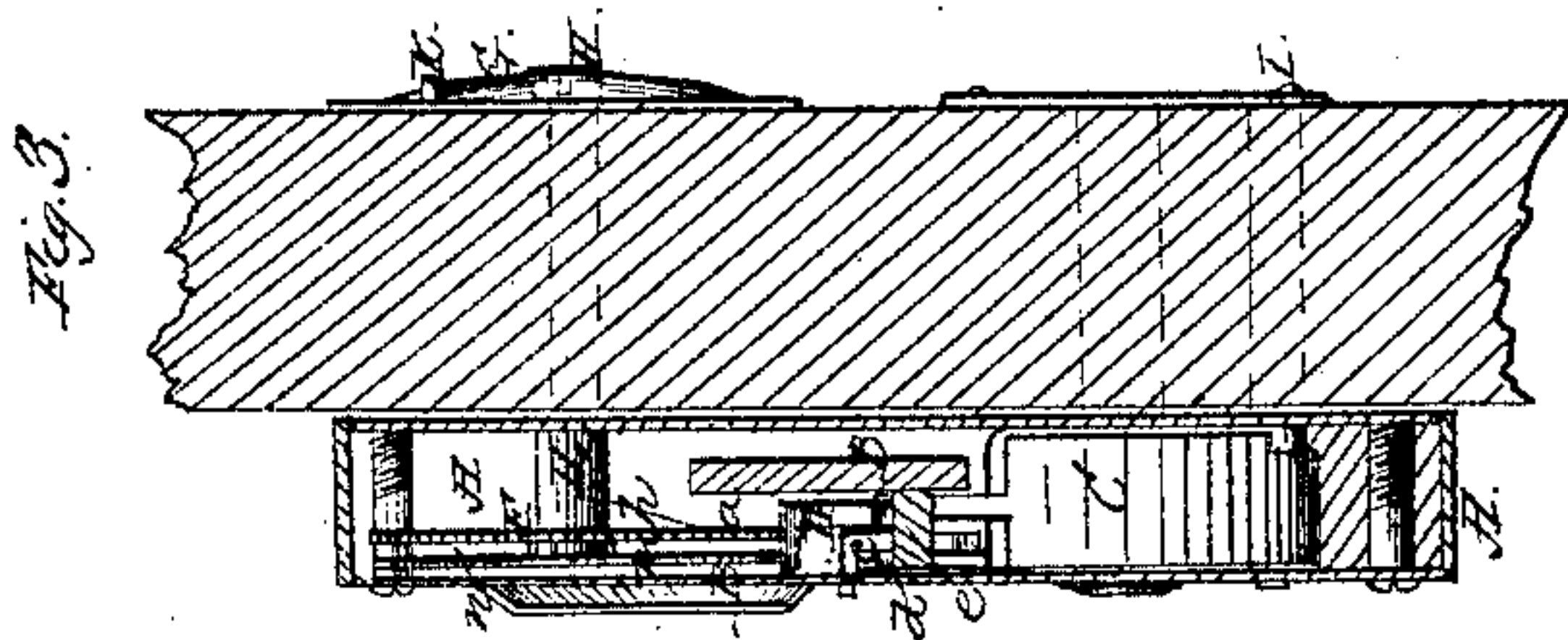
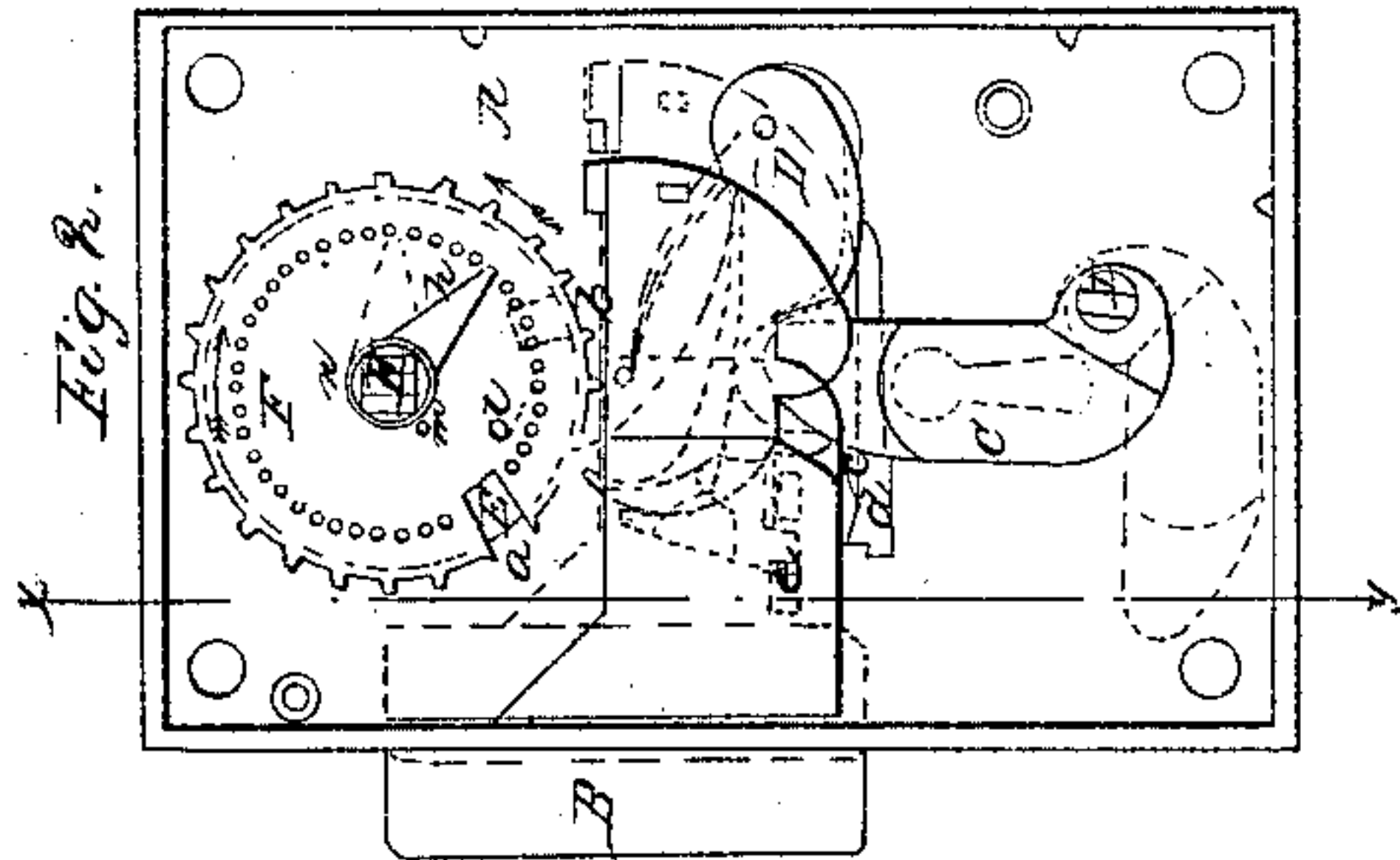


P. S. Felter,

Permutation Lock.

N^o 56,394.

Patented July 17, 1866.



Witnesses.
Small Gie

Chas. C. Gie

Inventor.

Phil. S. Felter

UNITED STATES PATENT OFFICE.

PHILO S. FELTER, OF CINCINNATUS, NEW YORK.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. 56,394, dated July 17, 1866.

To all whom it may concern:

Be it known that I, PHILO S. FELTER, of Cincinnati, in the county of Cortland and State of New York, have invented a new and useful Improvement in Locks; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, figures, and letters of reference thereon, making part of this specification.

Of the said drawings, Figure 1 is a view of the lock as attached to a door. Fig. 2 is a front elevation, having the front plate removed to show the internal mechanism. Fig. 3 is a vertical section through line *xy*. Fig. 4 is a view of the dial-plate and the device for opening the lock in the night time or without referring to the figures on the dial.

Similar letters of reference indicate like parts in all the drawings.

My invention is designed as an improvement upon a patent granted me December 17, 1861; and it consists, first, in a novel arrangement of mechanism to make a lock burglar-proof by covering the key-hole and retaining the cover in place; second, in a device which may be readily applied to the lock to unlock the same without referring to the figures or combination by which it is locked up.

To enable others skilled in the art to make and use my invention, I will describe the construction and operation thereof.

A is the case or shell of the lock. B is the bolt. C is the key-hole guard or cover. D is the tumbler for retaining the said guard in place. E is a disk-wheel, which has a pin shown at *n*, Fig. 3, which pin is directly under *n*, Fig. 2. F is a toothed wheel directly over the disk-wheel E, provided with a series of holes, as shown in Fig. 2. G is the dial-plate attached to the door-frame on the outside of the lock. H is an arbor, provided with an arm, *h*, having a projection on the end, which fits the holes in the spur-wheel F. I is an arbor or shaft for operating the key-hole guard. K is the plate, which is detachable from the lock and carried with the owner, and by means of which the lock can be operated without recourse to the figures or set by which the guard is controlled.

The combination set by which the lock is operated is 22, 63. The square end of the key

is inserted in the mortise of the arbor H, and the dial is rotated in the direction of the black arrow until the first number of the set 22, will be in line with the point *o*, which operation will bring the notch or recess *b* in the wheel E in proper position for the curved end of the tumbler to enter therein. The disk-wheel E has a pin, *n*, in its face, and the spur-wheel F has a pin, *m*, upon the same line of circumference, and as the dial is rotated these pins are brought in contact and the disk E is rotated and held at any point by friction. The dial G is then rotated backward in the direction of the red arrow until the number 63 of the set coincides with the point *o* on the dial-plate, which will bring the notch or recess *a* in the wheel F directly over the recess in the wheel E and in line with the curved end of the tumbler D. The key is inserted in the lock, the bolt thrown and held by the tumblers *c d*, the guard thrown over the key-hole by the shaft I, and by turning the dial G partially around the notches *a b* are thrown out of line with the end of the tumbler D, and the lock is secured from picking.

The key-hole guard or cover, which is of hardened metal and fills the space between the plates of the lock, is pivoted to the arbor I, and has a groove cut across the hole where it is pivoted, which is fitted by a pin through the arbor I. The end of the arbor I is mortised to receive the tenon on the end of the key, and by turning the arbor forward the guard is thrown over the key-hole.

The lock of itself consists of a series of tumblers, *c d*, which are operated in the ordinary way, and as they form no part of my invention a detailed description is omitted. All the tumblers are moved in one direction by springs, as shown in Fig. 2.

To unlock the lock the dial is rotated once around in the direction of the dark arrow to make sure of the contact of the pins *m* and *n*, and consequently of the wheel E being rotated. The dial is then rotated in the same direction until the first number, 22, of the set is in line with the point *o*. The dial is then turned in the opposite direction—red arrow—until the second number, 63, coincides with the point *o*, which operation brings the notches in the wheels E F directly in line with the end of the tumbler D, which secures the guard.

The key-hole guard is thrown out of place, and the key may then be inserted. The arbor H projects through the back plate of the lock, and is grasped firmly by the jaws of a spring-plate, which is covered by a circular cap (shown in Fig. 3.)

To alter the set by which the lock is operated, the end of the arbor is released from the spring-plate and thrown forward a small distance to disengage the arm *h* from the wheel F, the arbor turned to a new position, and the spring-plate replaced.

To find the new set there is a small hole in the lock-plate directly under the arbor H, and also one in each of the wheels E and F, which will coincide with each other when the recesses *a* and *b* are in line with the end of the tumbler D. On removing the cap a small pin will be found, which insert in the hole in the lock-plate and turn the dial forward in the direction of the dark arrow until the pin slips into the hole of the first wheel, E. The number on the dial then in line with the point *o* will be the first number of the set. Turn the dial backward until the pin slips in the hole in the second wheel F. The number at the point *o* will be the second number of the set. Remove the pin and replace the cap.

The set can be changed as many times as there are holes in the wheel F.

To operate the lock without recourse to the figures or set, the detachable plate K has a series of holes and a dial, and is provided with springs *f* and *g*, the ends of which are pointed and project through the holes in the plate K, as shown in Fig. 4. The dial G is set at the first figure of the set, and the rough spring *g* of the plate K is set to allow its point to enter

the mortise *i* of the dial G. The dial is then turned until the second figure of the set is at the point *o* and the smooth spring *f* is set over the mortise *i*, so that its point may enter the same. The plate may now be detached and carried with the person having charge of the lock. To open the lock with this plate the dial is rotated once (for reasons stated above) and the plate placed on the pin *k k'*. The finger is pressed on the rough spring *g* and the dial rotated forward until the point of the spring slips into the mortise *i* and stops the dial. Pressure is now removed from the spring *g* and applied to the smooth spring *f*, and the dial turned backward until the point of the spring slips into the mortise. The key-hole guard may now be turned down and the lock operated.

I claim—

1. The combination of the wheels E and F, tumbler D, and key-hole guard or cover C, arranged and operating together substantially as described and specified.

2. The combination of the wheels E and F, tumbler D, key-hole cover C, with the arbor H and dial G, arranged and operating substantially as described and specified.

3. In combination with the subject-matter of the above, the detachable plate K, arranged as described, for operating the lock without recourse to the numbers of the set by which it is locked, substantially as described and specified.

PHILO S. FELTER.

Witnesses:

ISRAEL GEE.

CHAS. C. GEE.