(Model.)

H. GROSS.

LOCK MECHANISM FOR SAFES AND VAULTS.

No. 342,005. Patented May 18, 1886.

Fig. 1.

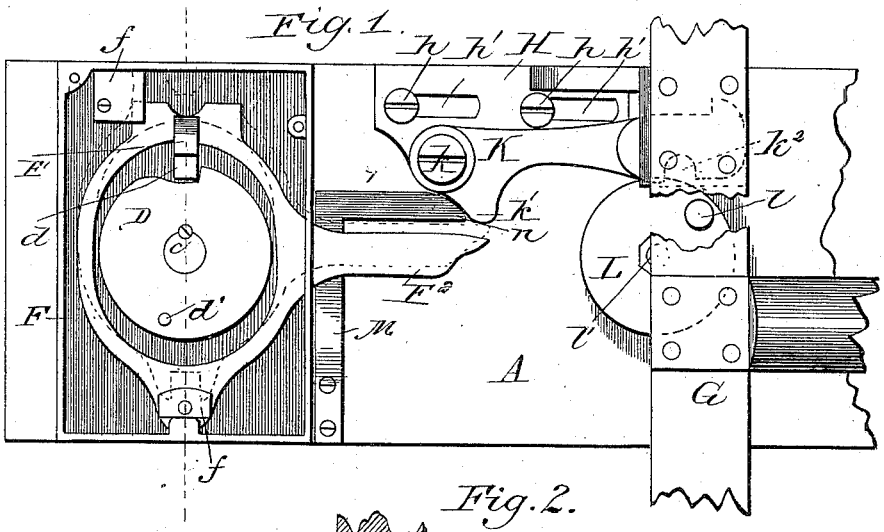


Fig. 2.

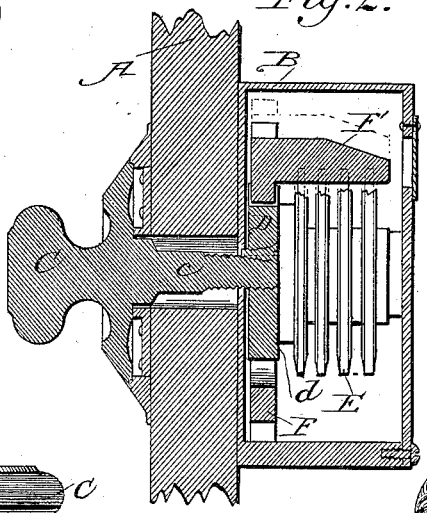
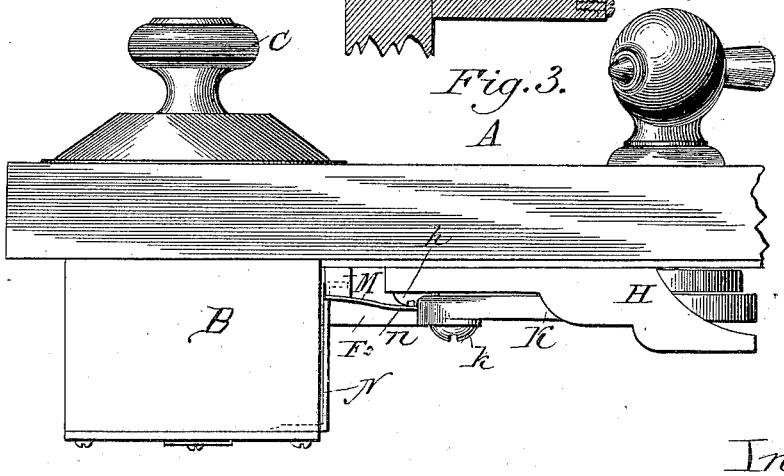


Fig. 3.



Witnesses.
W Rossiter
Edward Thorpe.

Inventor.
Henry Gross
By Pierce & Fisher
His Attys.

UNITED STATES PATENT OFFICE.

HENRY GROSS, OF CHICAGO, ILLINOIS.

LOCK MECHANISM FOR SAFES AND VAULTS.

SPECIFICATION forming part of Letters Patent No. 342,005, dated May 18, 1886.

Application filed September 26, 1885. Serial No. 178,231. (Model.)

To all whom it may concern:

Be it known that I, HENRY GROSS, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Lock Mechanism for Safes and Vaults, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates particularly to that class of lock mechanism known as "permutation-locks," and has for its object, first, to simplify the means whereby the driving-tumbler of the permutation spindle may throw the bolt-work out of engagement with the turning-knob, and, second, to provide means whereby, in event the permutation is broken or blown off in an attempt to forcibly open the safe, the removal of the permutation-work will cause a detent to come into operation and hold the bolt mechanism out of engagement with the disk of the turning-arbor, so that the bolt mechanism cannot be operated.

To this end my invention consists in the combination, with the permutation-spindle and driving-tumbler, of a yoke carrying the tumbler-fence and provided with a lifting-arm for throwing the bolt mechanism out of action.

My invention also consists in the combination, with the permutation-work and the bolt-work, of a detent for holding the bolt-work out of engagement with its turning-disk and a suitable stop for retaining such detent out of action while the permutation work is in its proper position.

My invention further consists in certain novel details of construction hereinafter described, illustrated in the accompanying drawings, and particularly defined in the claims at the end of this specification.

Figure 1 is a view in side elevation of a permutation-lock embodying my invention, parts being removed and parts being broken away for the purpose of better illustration. Fig. 2 is a view in vertical transverse section through the dial-arbor and tumblers of the lock. Fig. 3 is a plan view of my improved lock mechanism.

A designates the door of a safe or vault, and B denotes the casing of the permutation mechanism, that is suitably attached thereto.

Through the door A extends the spindle *c* of the usual dial-knob, C, and upon the threaded end of this spindle is keyed the driving-tumbler D, of the permutation mechanism, having the notch *d* formed in its periphery, and provided with the pin *d'*, that operates the notched tumblers E of the lock.

Around the driving-tumbler D extends the yoke F, that is retained against the wall of the casing, in a manner free to slide in vertical direction, by means of the screw-plates *f*. The opening of this yoke is, as seen, considerably larger in diameter than the driving-tumbler, and from the face of the yoke projects the fence F', that is caught by the permutation-tumblers when the notches of these tumblers are brought into alignment.

About midway the periphery of the yoke F is formed the lifting-arm F^2, that extends through a slot in the casing B, and this arm, as well as the fence, is preferably cast integral with the yoke.

To the wall of the door is suitably connected the bolt-work, which comprises the bar G, to which the bolts will be attached in the usual manner, the bolt-plate H, that is held in a manner free to slide upon the screws *h*, that enter the slot *h'*, and the bolt-link K, that is pivotally connected to the bolt-plate H by means of the screw *k*. The bolt-link K is provided upon its under side with a lug or shoulder, *k'*, at its inner end, adapted to be struck by the outer end of the lifting-arm F^2 and at its opposite end with the slot k^2, by which will be caught the stud *l* of the turning-disk L, by means of which the bolt-work will be thrown. The arbor *l'* of the disk L will extend through the door of the safe, and will be provided with a turning-knob in the usual manner.

To the inner face of the door, and preferably in the relative position shown by the drawings, is attached the detent M, that serves to hold the bolt-work out of engagement with the turning-disk when the permutation mechanism has been displaced. This detent consists, preferably, of a thin bent spring-plate, which is pressed toward the door by the stop-bar N, that is attached to the casing B of the

permutation mechanism, but which, when this stop ceases to bear thereon, will spring outwardly in such manner that its end *n* will come beneath the lug or shoulder *k'* of the bolt-link K, and will hold this link in elevated position, so that it cannot engage with the stud *l* of the turning-disk.

From the foregoing construction it will be seen that the yoke F, provided as it is with the fence F' and lifting-arm F², affords a ready means for lifting the bolt-link, and thus disengaging the bolt-work from the turning-disk. It will also be seen that in case of any attempt to force open the safe by knocking or blowing off the permutation mechanism the detent M will serve to hold the bolt-link elevated in such manner that, notwithstanding the displacement of the lock mechanism, the bolt-work cannot be operated by the turning-knob. So long, however, as the permutation mechanism is in proper position the detent will be out of action.

It will be readily understood that the precise form and location of the detent M may be modified, and the details of construction above set out may also be modified without departing from the spirit of my invention.

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

1. In lock mechanism, the combination, with the permutation-spindle and driving-tumbler, of a yoke carrying the tumbler-fence and provided with a lifting-arm for throwing the bolt mechanism out of action, substantially as described.

2. In lock mechanism, the combination, with the permutation-spindle and driving-tumbler, of the sliding yoke encircling said tumbler and provided with the tumbler-fence lifting-arm, the bolt-link K, having shoulder *k'*, and the bolt-plate H, substantially as described.

3. In lock mechanism, the combination, with suitable permutation-work and bolt-work, of a detent for holding the bolt-work out of engagement with the turning-disk and a suitable stop for retaining the detent out of action while the permutation-work is in proper place, substantially as described.

4. In lock mechanism, the combination, with the permutation-work and the bolt-work having the link-bar K, provided with the shoulder *k'*, of the spring-detent M and a suitable stop for holding the spring-detent normally out of engagement with the link-bar, substantially as described.

5. In lock mechanism, the combination of the permutation-casing provided with the stop or arm N, the spring-detent M, the pivoted link-bar K, having shoulders *k'*, the sliding bolt-plate H, and the turning-disk L, substantially as described.

HENRY GROSS.

Witnesses:
GEO. P. FISHER, Jr.,
JAMES H. PEIRCE.