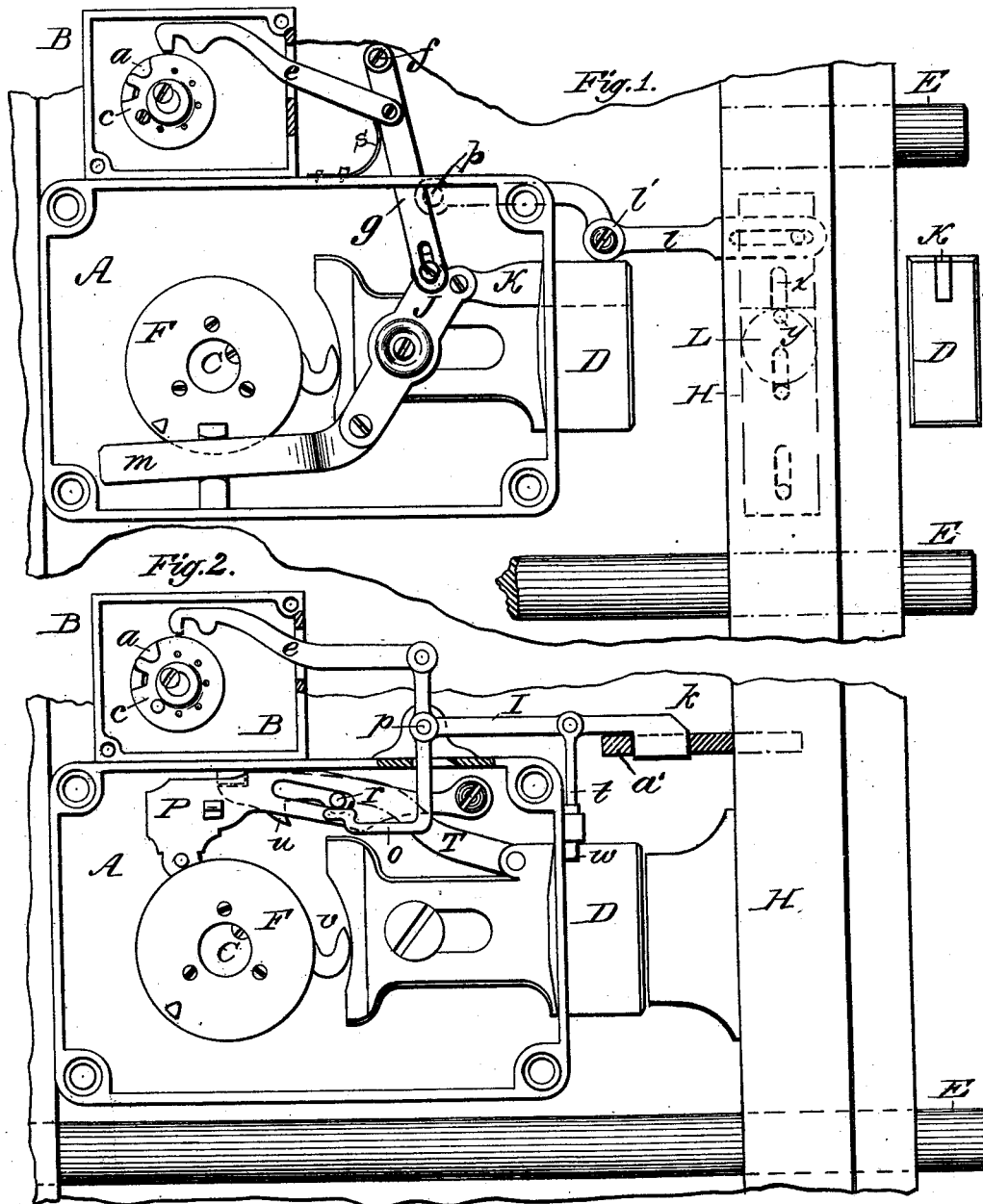


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Locks for Safes, &c.

No. 213,566.

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Witnesses:
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LOCKS FOR SAFES, &c.

Specification forming part of Letters Patent No. **213,566**, dated March 25, 1879; application filed May 27, 1878.

To all whom it may concern:

Be it known that I, JOSEPH L. HALL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Locks for Safes, &c., of which the following is a specification:

This invention consists of a guard-lock arranged to retract a series of dogging devices used to dog the bolt-work or the main lock, or both, as may be preferred, on a safe or vault door, as hereinafter more fully described.

The drawings represent a portion of a safe or vault door with my improvements applied thereto, and shown in front elevation, with the face-plates of the locks removed.

It is well known that burglars often seize the officer or person having charge of safes or vaults and compel him to divulge the combination on which the lock is set or to open it for them; and it is to prevent such occurrences, and also to prevent those having the combination of the main lock from opening the safe or vault at improper times, that this invention is designed.

In the drawings, A represent an ordinary permutation-lock, the tumblers being removed for the purpose of showing the arrangement of the other parts. C indicates the spindle or arbor of the main lock A, and F the disk which drives the tumblers, these parts being constructed in any of the usual styles.

In Figure 1 I have represented my invention applied to a safe or door having what is known as a detachable arbor—that is, an arbor arranged to operate the bolt-work in such a manner that after the door is closed and the bolts thrown to fasten it the arbor can be disconnected from the bolt-work, and thus have no effect upon it until it is again connected therewith—this being a well-known arrangement in safes, and therefore not necessary to describe.

In this case the slide-bar H, which serves to move the bolts E, and which is disconnected from the bolt-arbor L by elevating it, so that the crank-pin *y* of the arbor shall be withdrawn from the slot *x* in the slide-bar, is thus elevated by a slotted lever, *l*, which has its opposite end pivoted to the door or lock-case

at *p*, Fig. 1, and which is raised by the bolt D of the main lock as the latter is protruded, and comes in contact with a friction-roller, *V*, secured to the lever *l*, as shown in Fig. 1.

In order to prevent the slide-bar from dropping when the bolt D is withdrawn I provide a slide, K, which rests in a groove made for it in the upper side of bolt D, as shown in dotted lines in Fig. 1 and in an end view of the bolt at the right of said figure, this slide K being pivoted to one end of a pivoted lever, J, which has a slide-bar, *m*, pivoted to its opposite end, as shown, for the purpose of balancing the parts, and preventing an accidental movement of the slide K when the bolt D is retracted, though, as is obvious, this slide *m* may be dispensed with, if desired. A spring, *s*, will be applied as shown, or in any suitable manner, of sufficient strength to simply throw out the slide K and hold it in position when the bolt D is withdrawn, this slide K not being designed to raise the slide-bar H, that being done by the lock-bolt D, but simply to hold the slide-bar H detached from its arbor after the bolt D has been withdrawn.

It will thus be seen that even when the bolt D of the main lock has been withdrawn the lever *l* will rest on the projecting slide or support K, and will thus still hold the slide-bar H detached from the arbor L, and that, consequently, the bolts E, not being capable of being retracted by turning the bolt-arbor, will still hold the door fast.

In order to be able to withdraw the slide K, and thus let the lever *l* fall, so as to connect the slide-bar H with its arbor L, I provide a device which I term a "guard-lock," and which is shown at B of Figs. 1 and 2. This is not a lock proper, as it does not serve to lock or dog anything, but is used wholly for disconnecting or withdrawing the various dogging devices, as hereinafter explained.

This guard-lock consists of two or more permutation-tumblers, *c*, and a draw-bar, *e*, arranged to be operated thereby in the same manner as in ordinary permutation-locks, the tumblers being driven from the same spindle and set by the same dial that is used on the main lock A, the spindles of the two being

connected by pinions set in recesses in the back of the lock-cases, and not shown in the drawings.

I have shown the guard-lock as being in a separate case, as will be most convenient where it is desired to apply my improvements to a door which is already provided with a main lock; but it may be arranged within the case of the main lock, and in making the two together such arrangement will be more convenient and compact.

The draw-bar *e* of this guard-lock is to be connected with the slide *K* in such a manner that by setting up the tumblers of the guard-lock, and then operating the bar *e*, it shall pull back the slide *K*, thereby letting the slide-bar *H* drop into position, when, of course, the bolts *E* can be retracted by turning the arbor *L* in the usual manner. A simple manner of making this connection is shown in Fig. 1, where the draw-bar *e* is shown connected to a bar, *g*, pivoted at its upper end on a pin, *f*, and having its lower end pivoted to the slide *K*, or to the lever *J*, to which *K* is attached.

Other forms of connection will readily suggest themselves to mechanics, it being obvious that the manner of forming the connection must vary according to the location and relative position of the main lock and the other parts.

In Fig. 2 I have shown the guard-lock so applied as to retract or withdraw dogging devices applied to dog both the main lock and also the bolt-work, where the latter is operated by an arbor that is not detached. In this case the bolts *E* are connected by a bar, *H*, which is fastened to them rigidly, so as to have no movement independent of the bolts.

To prevent the bolt-work from being retracted, in case the main lock should have its bolt *D* withdrawn by force or fraud, I provide an elbow-lever, *I*, which may be pivoted on a pin, *p*, as shown in Fig. 2, and have its end *k* provided with a hook to engage in a hole in a stump or bar, *a'*, rigidly secured to the bar *H*, in which case it will be apparent that the bolts *E* cannot be retracted until the end of lever *I* is raised, so as to disconnect it from the stump *a'*, and thus be out of the way of the backward movement of the bolt-work. This is effected by connecting the draw-bar *e* of the guard-lock to an arm of the lever *I*, as shown, so that by setting the tumblers of the guard-lock *B* and drawing back its bar *e* the dogging-lever *I* will be moved so as to release the bolt-work and permit the door to be opened.

It will be readily understood that instead of having a hook on the dogging-lever *I* to engage in a hole in the stump *a'*, it may simply be arranged so that its end will drop in rear of the stump, and operate in precisely the same manner.

In Fig. 2 I have also shown two plans of dogging the main lock and of retracting the dogging devices by means of the guard-lock. One of these plans consists in dogging the

bolt *D* of the main lock, which is effected by a bolt, *t*, arranged to engage in a notch in said bolt, as shown, so that the bolt *D* cannot be retracted until the bolt or dogging device *t* is retracted by the guard-lock. The other plan consists in arranging an arm, *o*, to engage the angle-bar and hold it suspended, so that even if the tumblers are gated, still the fence of the angle-bar will not drop into their notches, and hence the bolt of the main lock is prevented from being retracted until the arm *o* is moved by operating the guard-lock.

For convenience I have shown both the bolt *t* and the arm *o* as being connected to the dogging-lever *I*; but, as is obvious, either of these may be used independently of the other by simply making the proper connections with the draw-bar *e* of the guard-lock.

It is also obvious that any style or construction of dogging devices may be used, and that they may be so applied as to dog the bolt-work or the main lock, or both together, as may be preferred, and still be retracted by means of the guard-lock.

The manner of applying and using my improvements will be obvious from the foregoing description: In order to make its use most effectual, however, the combination of the main lock and of the guard-lock should be entrusted to different persons, and never both to the same person; and as these two persons will generally, if not always, be at different places during the night, and seldom or never both be captured by burglars at the same time, it will be seen that the capture of one or the possession of the secret by which either the main lock or the guard-lock can alone be operated will be of no avail, as the door cannot be opened until both have been operated.

When the safe or vault is first opened for the business of the day, the guard-lock will first be operated to withdraw the dogging devices of whatever kind or however arranged, after which the main lock will be unlocked and the door opened, and thereafter during the day the main lock only will be used until the time arrives for closing for the night, when both will be used.

One great advantage of making the guard-lock with tumblers is that it enables the combination on which it may be set to be changed at will, so that in case it should be discovered it may be reset, and thus rendered secret again.

I am aware that two permutation-locks have been so arranged that both would act in their usual manner to lock the bolt-work, and so connected that one could only be unlocked by first unlocking the other, and therefore I do not claim such an arrangement or combination of locks; but

What I do claim is—

1. In combination with a bolt-work having a detachable arbor, a main lock, *A*, having its bolt arranged to raise the slide-bar and detach it from its arbor, an independent slide

or support, K, arranged to hold the slide-bar detached from its arbor after the bolt of the main lock is withdrawn, with a guard-lock, B, arranged to retract said support K, substantially as described.

2. In combination with the bolt-work of a safe or vault door provided with a detachable arbor or handle, a main lock, and a slide or device arranged to hold the arbor detached

after the bolt of the lock is retracted, with a guard-lock, B, arranged to release the detached arbor from the effect of said slide or device, substantially as and for the purpose herein set forth.

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Witnesses:

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