2 Sheets—Sheet 1.

W. R. EDELEN.

LOCKS AND CHAIN FASTENINGS COMBINED.

No. 181,925. Patented Sept. 5, 1876.

Fig. 1.

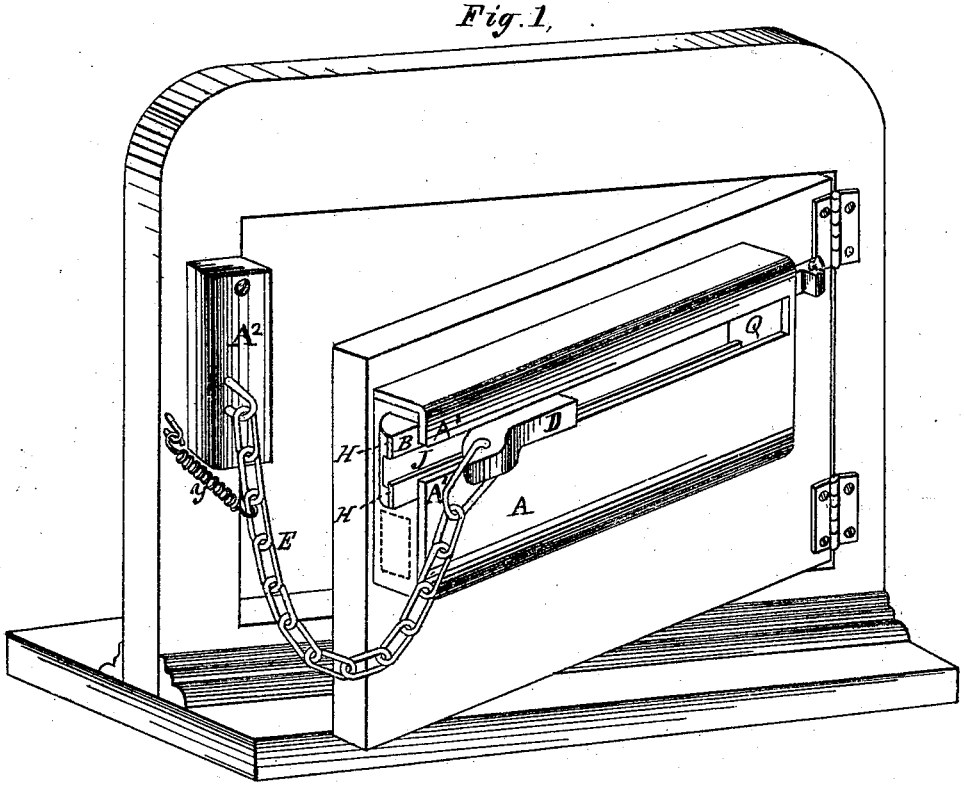


Fig. 2.

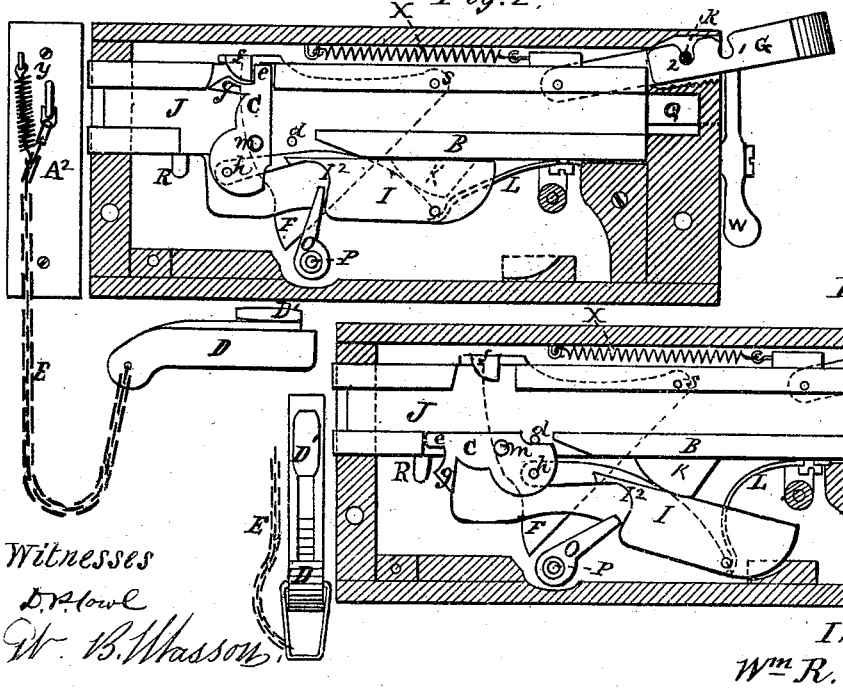


Fig. 3.

Witnesses
D. A. Lowe
W. B. Wasson

Inventor.
Wm R. Edelen
by E. E. Masson atty

2 Sheets—Sheet 2.

W. R. EDELEN.

LOCKS AND CHAIN FASTENINGS COMBINED.

No. 181,925. Patented Sept. 5, 1876.

Fig. 4.

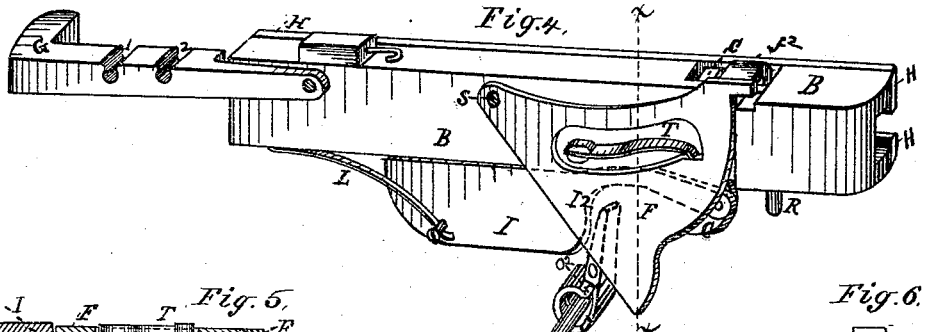


Fig. 5.

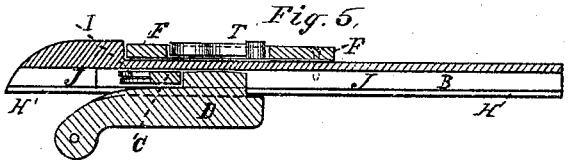


Fig. 6.

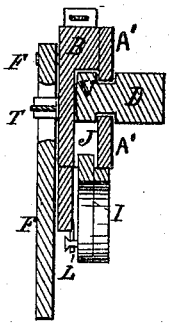


Fig. 7.

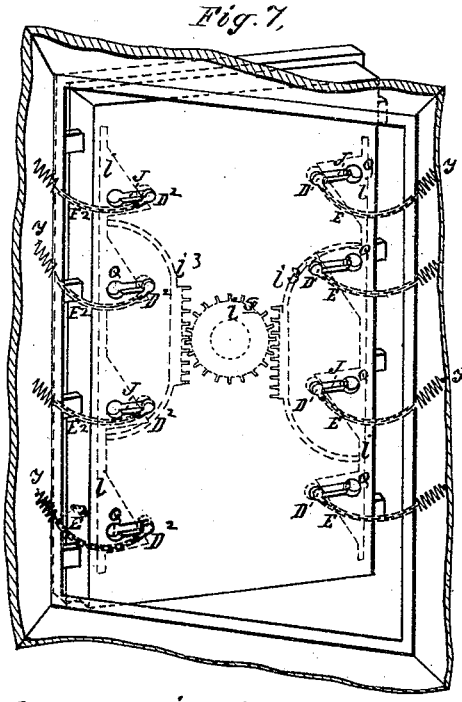


Fig. 8.

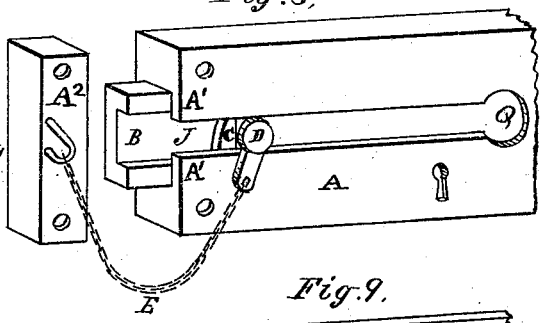


Fig. 9.

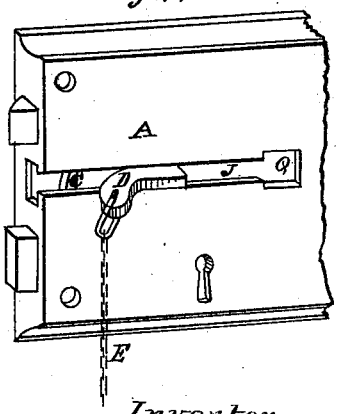


Fig. 10.

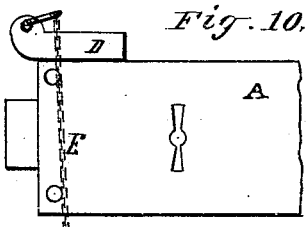


Fig. 11.

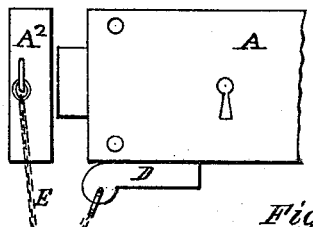


Fig. 12.

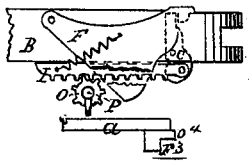
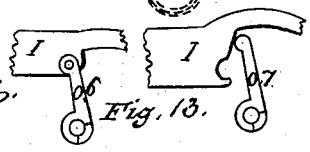


Fig. 13.



Witnesses.

D. P. Hood

W. B. Wasson.

Inventor.

Wm R. Edelen

by E. E. Masson

atty

UNITED STATES PATENT OFFICE.

WILLIAM R. EDELEN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN LOCK AND CHAIN-FASTENING COMBINED.

Specification forming part of Letters Patent No. **181,925**, dated September 5, 1876; application filed July 20, 1876.

To all whom it may concern:

Be it known that I, WILLIAM R. EDELEN, of Washington, District of Columbia, have invented certain new and useful Improvements in Combined Lock and Chain-Fastenings; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents, in perspective, the combined lock and chain-fastening, attached to and viewed from the inside of a door. Fig. 2 represents the same in longitudinal vertical section, with the bolt held back by the catch, and with the trigger used to retain the chain-lug in its normal position, but with the chain-lug and key removed. Fig. 3 represents the same in longitudinal vertical section, with the trigger down, to allow the chain-lug to escape at the fore end of the bolt, as when operated from the outside with the key. Fig. 4 represents, in perspective, the bolt with the operating mechanism attached to it. Fig. 5 represents a horizontal section of the bolt and chain-lug, the latter being in contact with the trigger. Fig. 6 represents a transverse vertical section of Fig. 4, taken on line *x x*. Fig. 7 represents, in perspective, an inside view of part of the frame of a bank-vault or safe and door, with eight chains operated by one lock. Fig. 8 represents, in perspective, a lock, with a plain grooved bolt and the chain-lug-retaining flanges formed by the case of the lock. Fig. 9 represents, in perspective, a lock, having a latch and bolt, with a groove between for the reception of the chain-lug. Fig. 10 represents, in elevation, a lock with the chain-lug or groove located on the top. Fig. 11 represents the same with the chain-lug or groove on the under side of the lock. Figs. 12 and 13 represent modifications of the trigger-shifter operating device.

Similar letters of reference where they occur denote like parts in all the figures.

The object of my invention is to produce a combined chain-fastening and lock for doors, to give double security to the inmates of houses against tramps, sneak-thieves, and ill-disposed persons.

Chain-fastenings, independent of locks, have been used for years, and are very convenient to permit doors to remain partly opened for ventilation or other purposes, without permitting a person to enter before being admitted by some inmate. This last device often produces inconvenience, as some one is obliged to go to the door to admit those requiring entrance.

The object of my invention is also to allow the chain-fastening to be removed from the door from the outside with a key for the purpose, or with the same key that opens the lock, while the lock-bolt is free from the catch in the position in which the bolt is generally left in the day-time, and also permitting both the bolt of the lock and the chain-fastening to be held immovably and locked against the operation of the key when the bolt is shot out of the lock, and retained in that position by the catch, thus giving in that position the same security with my chain-fastening that is found with those now in use.

The object of my invention is also to allow a person when leaving the house to secure the door with the chain-fastening from the outside without disturbing the occupants inside, by using the key to lower the trigger, and introducing the chain-lug in the groove provided for its reception from its outer end.

It is evident that a device similar, or slightly modified, can be applied to secure the doors of bank-vaults or safes against burglars, and that the chain-fastenings will retain the door against admission even after the other bolts or fastenings have been destroyed by an explosion or otherwise.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents the case of the lock, and B the spring-bolt. This bolt B is provided with a longitudinal groove, J, for the reception of the knob D′ of the chain-lug D. The case A extends back of the bolt a sufficient distance to leave an opening, Q, for the introduction of the knob D′ into the rear end of the groove J, that has flanges H extending the whole length to retain the knob D′.

These flanges may be cut away at the rear portion to receive the knob D′; but I prefer to have the opening Q in the casing, as the latter may be extended and only a short bolt

used, and a plain groove in the bolt without flanges can be more conveniently manufactured, and the retaining-flanges A^1 formed by the casing of the lock, as shown in Figs. 8 and 9.

A^2 represents the keeper attached to the jamb of the door. One end of the chain E is preferably connected with it, and with a spring, *y*, if desired, to receive any shock to which it may be subjected. The catch G, pivoted to the bolt B, is to retain the latter in position when engaged with the keeper, or when retracted within the lock by means of the pin *k* entering either of the notches 2 or 1. It also takes the place of a knob or button to retract the bolt from the inside of the door.

When the bolt is retracted and fastened within the lock, the opening Q is partly closed by the retracted bolt, so that the knob of the chain-lug cannot be pushed back and unfastened from the lock with a wire from the outside. The catch G can be locked in either position, for greater security, by means of the eccentric button W.

The knob D′ of the chain-lug D is retained in the groove J, and prevented from escaping at the front end of the lock by the trigger C when in its normal position, as shown in Fig. 2, unless it is lowered down by the action of the key, as shown in Fig. 3; then the chain-lug can be slipped out by hand, or simply by the act of opening the door. The trigger C is pivoted at *m* to the bolt B, and is kept in position (closed against the exit of the chain-lug) by the saddle-hook *f* of the tumbler F, which is pivoted at *s* to the bolt B. A guard, *g*, is formed on the trigger C to prevent any tampering with the lock-tumbler hook *f* through the groove J, and a pin, *d*, upon the bolt B keeps it from revolving too far under the impulse of the key upon the trigger-shifter I, as shown in Fig. 3. This trigger-shifter I is connected with the trigger by means of the pin *h*, and is thrown forward by the spring L attached to the bolt B. The trigger C is thus partly revolved to close the groove J, and locked in that position by the tumbler-hook *f* engaging behind the shoulder *e*. The bolt B is thrown forward by the spring X, and arrested by the stop or pin R. It is retracted from the inside of the door through the medium of the catch G, or from the outside with the key *a*, the ward o^4 of which engages an independent finger, *o*, (revolving around the spindle P,) forcing said finger against a shoulder, I^2, of the trigger-shifter I before releasing the trigger from the tumbler-hook *f*, thus first retracting the bolt, and by continuing to revolve the key the bit F^3 engages with the tumbler F, raises it against its spring T, and releases the shoulder *e* of the trigger from the tumbler-hook *f;* then the key-lever or finger *o*, in continuing its rotation, retracts and depresses the trigger-shifter I, and lowers the trigger to a horizontal position to allow the chain-lug D to escape.

The trigger-shifter is depressed by riding against the curved projection K on the under side of the bolt B, to permit the key-lever *o* to be made shorter than it would otherwise be required, and said key-lever may even be dispensed with by using a long bit upon the key *a*, as shown at o^5; or, if a key-lever is used, the projection K may be dispensed with by hinging the trigger-shifter I to the key-lever, as shown at o^6, Fig. 13, or simply forming a recess in the trigger-shifter for the reception of the extremity of the key or key-lever o^7, Fig. 13.

The key-lever can even be dispensed with, and a short-nib key used, by connecting it with a pinion (which will then take the place of a key-lever) that engages with a trigger-shifter rack, Fig. 12, to first partly retract the bolt B; then the nib of the key, extending beyond the teeth of the pinion, lifts the tumbler F, and releases the trigger C.

In Fig. 7 I have shown my invention as applied to the door of a bank-vault or safe, with four removable chain-fastenings connecting the door on each side with the frame of the safe, and a simple mode of removing them simultaneously by means of a central pinion, i^5, connected with the lock, this pinion engaging with two racks, i^3, connected with vertical bars *i*, having four inclined projections, each to engage with the knobs D′ of the chain-lugs, and force them through the grooves J; but said grooves could generally be dispensed with on the side next to the hinges, and stationary chains used; but in either case the chains should, for better security, be connected with the frame by powerful springs, and every alternate chain be longer than its fellow, so that if any attempt should be made to open the safe by explosives, the ordinary bolts will receive the first shock; then one of the series of chains will sustain the door, and allow the expanded gases to escape; but if they should give way, the second series will yet retain the door in position, and keep burglars out.

To a person inside, the operation of attaching and detaching the chain-fastening is similar to an ordinary chain-fastening without any lock connected with it.

To attach it, the door is closed and the knob of the chain-key D is introduced at Q in the groove formed for its reception, and slid in it until it arrives in contact with the trigger C, the latter being kept in a vertical rigid position across the groove by the hook of the tumbler F; then the door can be partly opened, and remain fastened in that position.

To remove the chain-fastening, the door is closed and the chain-lug slid back until it reaches the opening Q, where it is removed from the lock.

To disconnect the chain-fastening from the outside, whether the door is closed or partly open, the key is placed in the lock and turned, as indicated by the arrow, Fig. 4; the nib o^4 of the key will come against the shoulder o^2 of the key-lever *o*, and carry it against the

shoulder I^2 of the trigger-shifter I, which retracts the bolt B, and at the same time all the mechanism attached to it, until about two-thirds of the projecting part of said bolt is withdrawn within the lock; then the nib F^3 of the key will strike the tumbler F, and raise it gradually until its hook *f* has released the trigger C, and the continued rotation of the key has withdrawn the bolt B entirely within the lock, and brought the trigger to a horizontal position even with the bottom of the groove J, when, by introducing the hand between the door and jamb, and taking hold of the chain, or simply pushing the door open, the chain-lug will slide out at the front end of the bolt and release the door.

To attach the chain-fastening from the outside without disturbing the inmates, the key is inserted in the lock and turned as for unlocking, until the trigger is lowered even with the bottom of the groove; the knob of the chain-lug is introduced within the groove J from the outer end, and pushed back until it has passed the position of the trigger, and the key is reversed, thus allowing the trigger to return to its normal vertical position locked by the hook *f*, and the key is withdrawn, leaving the door either simply fastened by the chain, or, by closing it, secured by the end of the spring-bolt B within its keeper.

It is evident that if there is a key-hole on the inside of the door, the trigger could be lowered from the inside, and the chain-lug removed from the outer end of the bolt in the same manner, by a person within. It is also evident that any desired form of a key could be used, and as many tumblers as security may demand; and I do not confine myself to any peculiar form of case for the lock, which may be made either of the length of the groove, or quite short, with the necessary extension only for the groove or the bolt.

Having thus described my invention, what I claim is—

1. The combination of a door-lock with a chain-fastening, operated and released from the opposite side of the door to which it is attached, substantially as and for the purpose described.

2. In combination with a chain-fastening, connected to a lock, the movable bolt B, carrying the trigger C, tumbler F, and trigger-shifter I, substantially as and for the purpose specified.

3. In combination with a chain-fastening connecting a door-jamb with the bolt of a lock, the trigger C and trigger-shifter I, operated by a key and key-lever or its equivalent, substantially as and for the purpose described.

4. In combination with a chain-fastening connecting a door with the jamb of the same, a spring or springs located between the two, and fastened to the chain, to receive any shock it may have to bear, substantially as described.

5. In combination with a chain-fastening and the grooved bolt of a lock carrying the trigger C and trigger-shifter I, the projection K, formed upon the bolt, to depress said trigger-shifter and retain it in contact with the key or key-lever, substantially as described.

6. In combination with the trigger C and tumbler or tumblers F, pivoted to a grooved bolt, the tumbler hook or hooks *f*, to retain the trigger against the groove of said bolt until released by the key, substantially as described.

7. In combination with the grooved bolt B, to receive the knob or lug of a chain-fastening, and the hooks of tumblers pivoted to said bolt B and the trigger C, the projection *g* upon said trigger, to prevent any tampering with the tumbler-hooks through the groove of the bolt, substantially as described.

8. In combination with a chain-fastening connected with a lock, and a grooved bolt, B, having a pivoted catch, G, the said grooved bolt extending back over a portion of the opening Q, (when so retained by the catch G,) to prevent the removal of the chain-lug from the lock, substantially as described.

9. In combination with a chain-fastening and lock, the bolt B, having a longitudinal groove for the reception of the chain-lug, and the trigger C, capable of being adjusted to permit the release or the introduction of said chain-lug at the front end of the bolt from the outside of the door, substantially as described.

10. In combination with a chain-fastening and lock carrying a grooved bolt, substantially as shown in Fig. 8, the flanges A^1 A^1, formed upon the case of the lock, substantially as and for the purpose described.

W. R. EDELEN.

Witnesses:
E. E. MASSON,
W. B. MASSON.