

E. STOCKWELL.
Permutation Lock.

No. 234,085.

Patented Nov. 2, 1880.

Fig. 1.

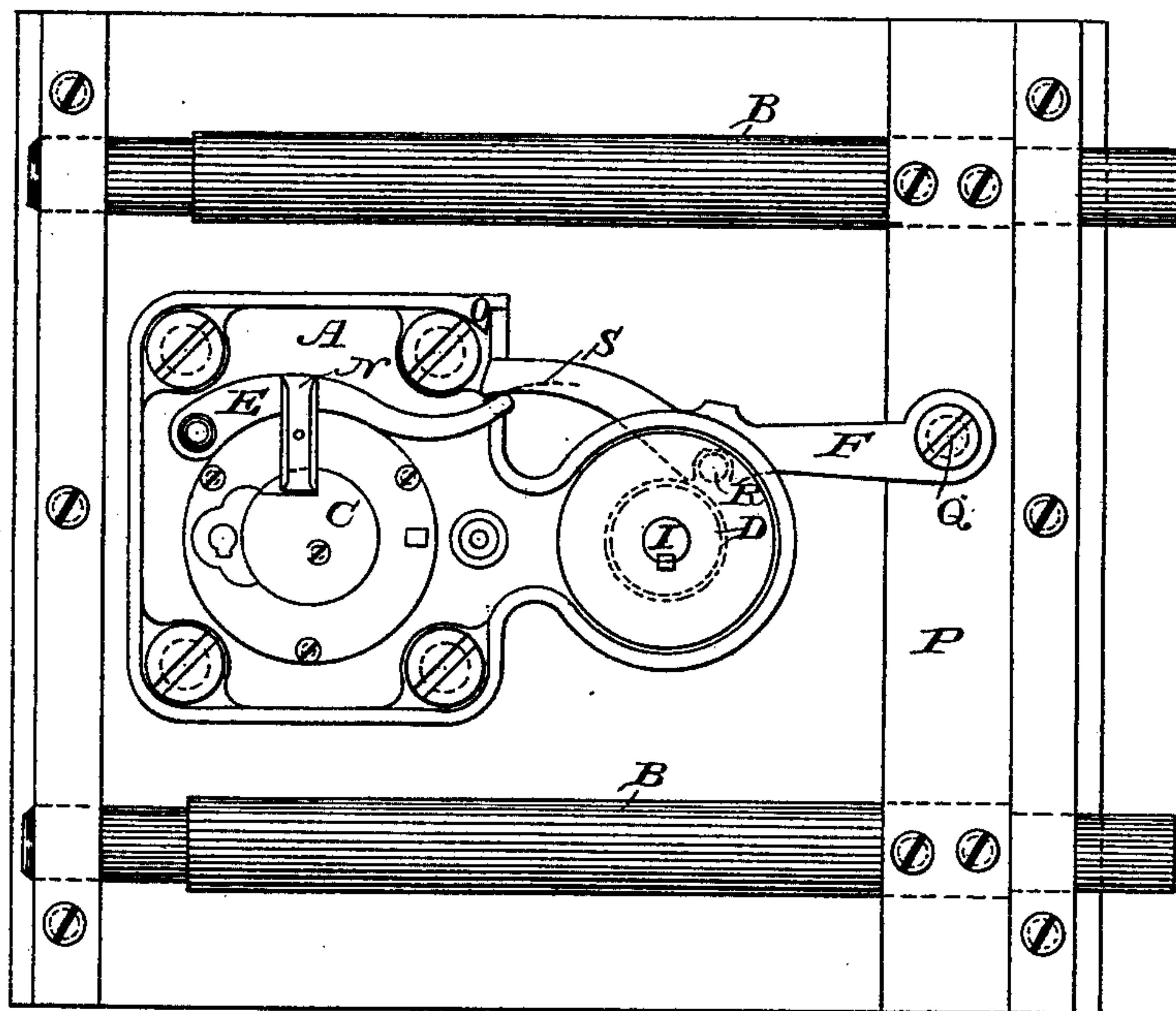


Fig. 2.

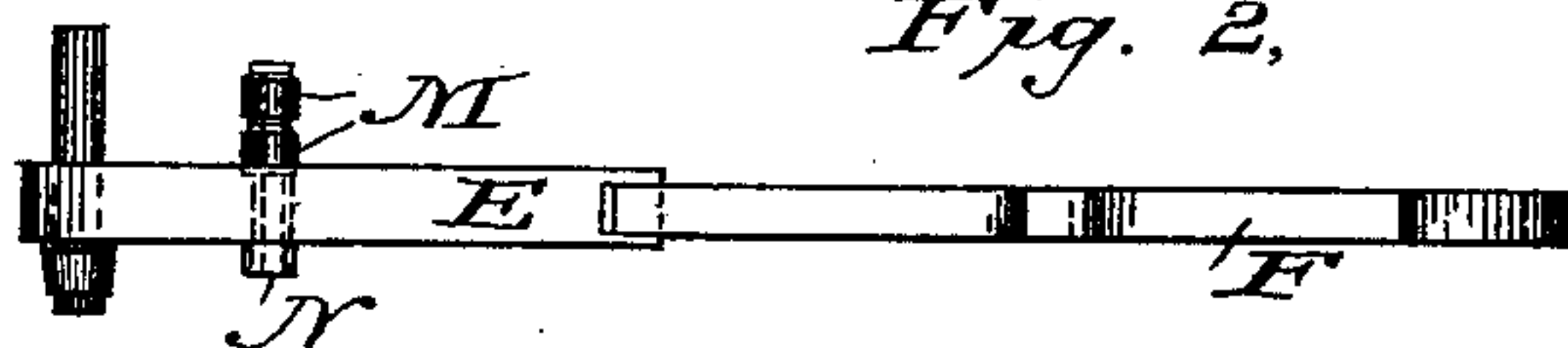
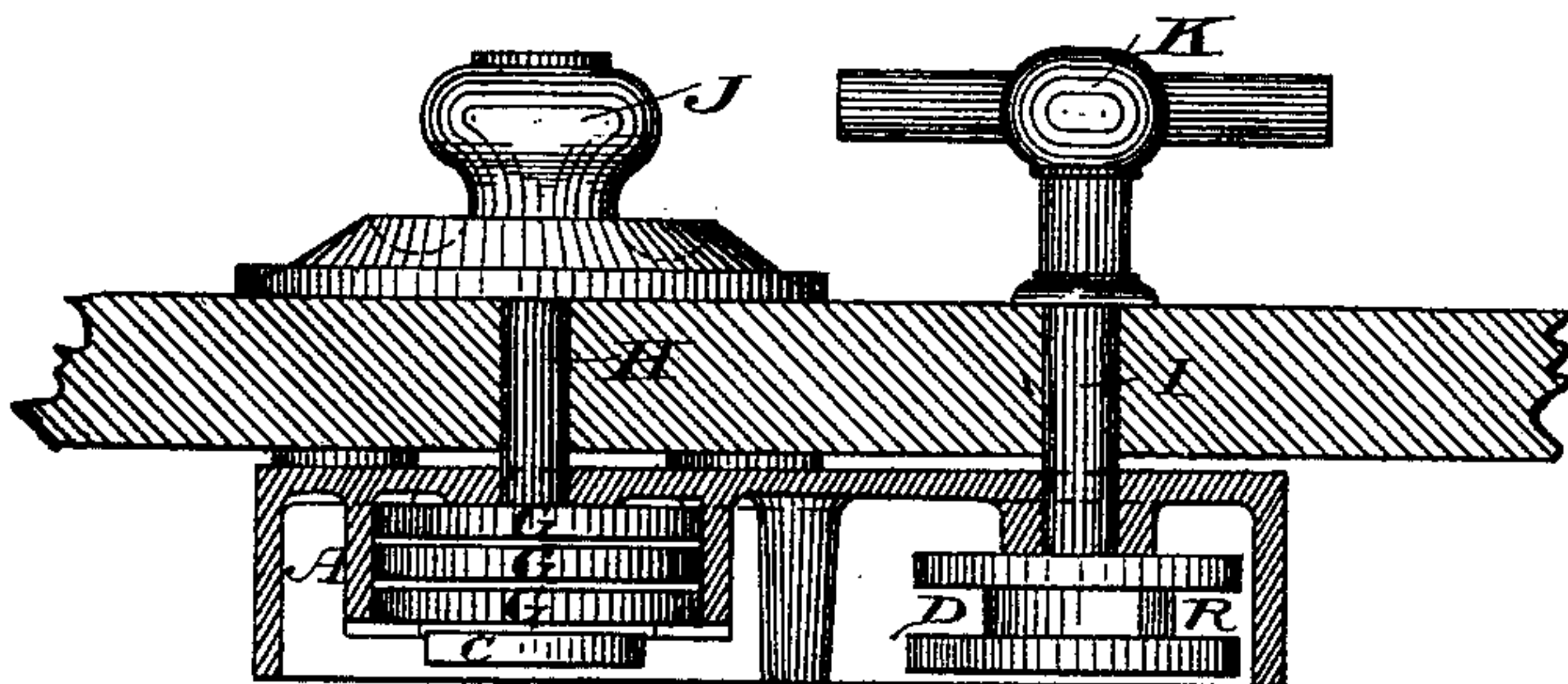


Fig. 4.



Fig. 3.



WITNESSES

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EMORY STOCKWELL, OF STAMFORD, CONNECTICUT.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 234,085, dated November 2, 1880.

Application filed October 28, 1873.

To all whom it may concern:

Be it known that I, EMORY STOCKWELL, of Stamford, in the county of Fairfield and State of Connecticut, have invented a new and useful Mode of Constructing Locks for Fire and Burglar Proof Safes, Vaults, &c.; and I hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is an elevation of my improved lock, showing also the mode of connection with the ordinary bolt-work of a safe-door. Fig. II is a horizontal section through the case of the lock. Fig. III shows the form and relative positions of the fence lever and bolt-work lever. Fig. IV shows different views of one of the elastic disconcerting-rollers, full-sized.

Similar letters of reference indicate corresponding parts throughout.

The object of my invention is to produce in a compact, simple, and economical form the complete operating mechanism of a safe-door.

As safe-doors are ordinarily constructed they are provided with a handle and spindle for operating the bolt-work, and with a lock containing a sliding or other bolt, which is used to fasten or "dog" the sliding bolt-work after it has been thrown forward by means of its operating-spindle, the two sets of mechanism being entirely distinct and separate except where one abuts against the other. In my improved lock, however, I combine these two sets of devices in a single case, dispense with a sliding or other lock-bolt, and effect the locking of the bolt-work of the door by very simple means, composed of few pieces.

My invention consists in a locking mechanism for safe-doors constructed without a bolt, in which are combined a fence-lever and a bolting-lever, the latter attached to or communicating motion to the bolt-work of the safe-door.

The invention further consists in the combination, with the fence-lever and bolting-lever, of the spindle and bolt-work cam, for the purpose of operating the bolt-work of the safe-door.

The invention further consists in the combination, with the levers above named, of a compensating-spring arranged between them for the purpose of steadying the bolt-work lever.

A is the lock-case; B, the door-bolts. C is the lock-cam. D is the bolt-work cam. E is the

fence-lever. F is the bolt-work lever. G G G are the tumblers. H is the lock-spindle. I is the bolt-work spindle. J is the dial-knob for operation of lock. K is the handle for operating the bolt-work. L is the fence. M M are the disconcerting-rollers. N is the supporting-arm of fence-lever. O is the stop for lever F. P is the string-bar of bolt-work. Q is the pivot for lever F. R is the driving-pin in cam D. S is the supporting-spring in lever F.

The construction of my lock will be readily understood from the following description. The case A of the lock is provided with two spindle-bearings, in one of which is the lock-spindle H and in the other the bolt-work spindle I. On the inner end of the former is a cam, C, and projecting from this is a pin, which engages with one of the tumblers G, and by means of which the tumblers are operated or "set" in the manner common to all dial-locks. Suspended above the tumblers is the lever E, and projecting from this, on one side, is the fence L, carrying rollers M M, and on the other side a supporting-arm, N, which rests on the cam C. On the inner end of the bolt-work spindle I is the cam D, containing between its flanges the pin R, and suspended above it is the lever F, the outer end of which is attached to the string-bar P, and the inner end of which, when raised, abuts against the stop or shoulder O of the lock-case, in which position it effectually dogs the bolt-work of the door, and is also withdrawn beyond the reach of the driving-pin R of cam D.

It will be noticed that the inner end of lever F rests upon the outer end of lever E, so that when the lever E is raised it will elevate the lever F, and when lowered the latter, being unsupported, will drop.

To open the lock the tumblers are set by means of the dial, in the usual manner, so that their "gatings" or notches are all in line under the fence L. The cam C is then turned to the position shown in Fig. 1, thus permitting the lever E to drop. This, in turn, permits the lever F to drop also, and thus brings the latter within reach of the driving-pin R and removes it from contact with the stop O. The cam D is now rotated slowly by means of handle K until the pin R enters the notch in lever F, when, a connection being thus formed with the bolt-work, the latter may be moved to and

fro by means of handle K. To lock the door again, it is only necessary to throw the bolt-work by handle K, and to then revolve the cam C by means of dial-knob J, thus simultaneously raising levers E and F and disturbing the tumblers G G G.

On the fence L, I use disconcerting-rollers M M. These rollers are shown in the drawings as concentric; but I contemplate making them eccentric, as described in my Patent No. 117,478, granted July 25, 1871. The peripheries of these rollers are covered with india-rubber, leather, or other soft and semi-elastic material. The purpose accomplished by the eccentricity of the rollers is fully set forth in the specification of my former patent. By covering them with the material above described metallic contact between the fence and the tumblers is broken, and the passage of the rollers over the gatings or any irregularities of the tumblers is rendered imperceptible to either the touch or hearing.

A further service may be rendered by the elastic material in preventing the passing of a current of electricity through the cam and fence in the event of an attempt being made to pick the lock by any such instrumentality. The adhesion of the rubber to the surface of the tumblers insures the rotation of the rollers when the lock is operated, and thus insures a more positive action of the rollers than when a metallic contact is relied upon.

It will be seen that as the dial-knob is revolved the varying eccentricity of the rollers M M will cause a tremulous or vibratory motion of the outer end of lever E. To prevent the imparting of this motion to the lever F the spring S is inserted in the end of lever F in such a manner as to intervene between levers E and F and to support lever F. By means of this device the vibration alluded to is neutralized before reaching the lever F.

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

1. The combination, substantially as hereinbefore set forth, of the fence-lever E and the stop or dog O with the operating arm or lever F, arranged to communicate motion to the bolt-work of a safe-door, whereby the fence-lever E supports the lever F in the elevated position in engagement with the stop until the lock is unlocked.

2. The combination, substantially as hereinbefore set forth, of the spindle I, the cam D, and the pin r thereon, with the notched lever F and fence-lever E, for the purpose specified.

3. In combination with the levers E and F, the compensating-spring S, arranged between them, for the purpose specified.

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Witnesses:

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