

(No Model.)

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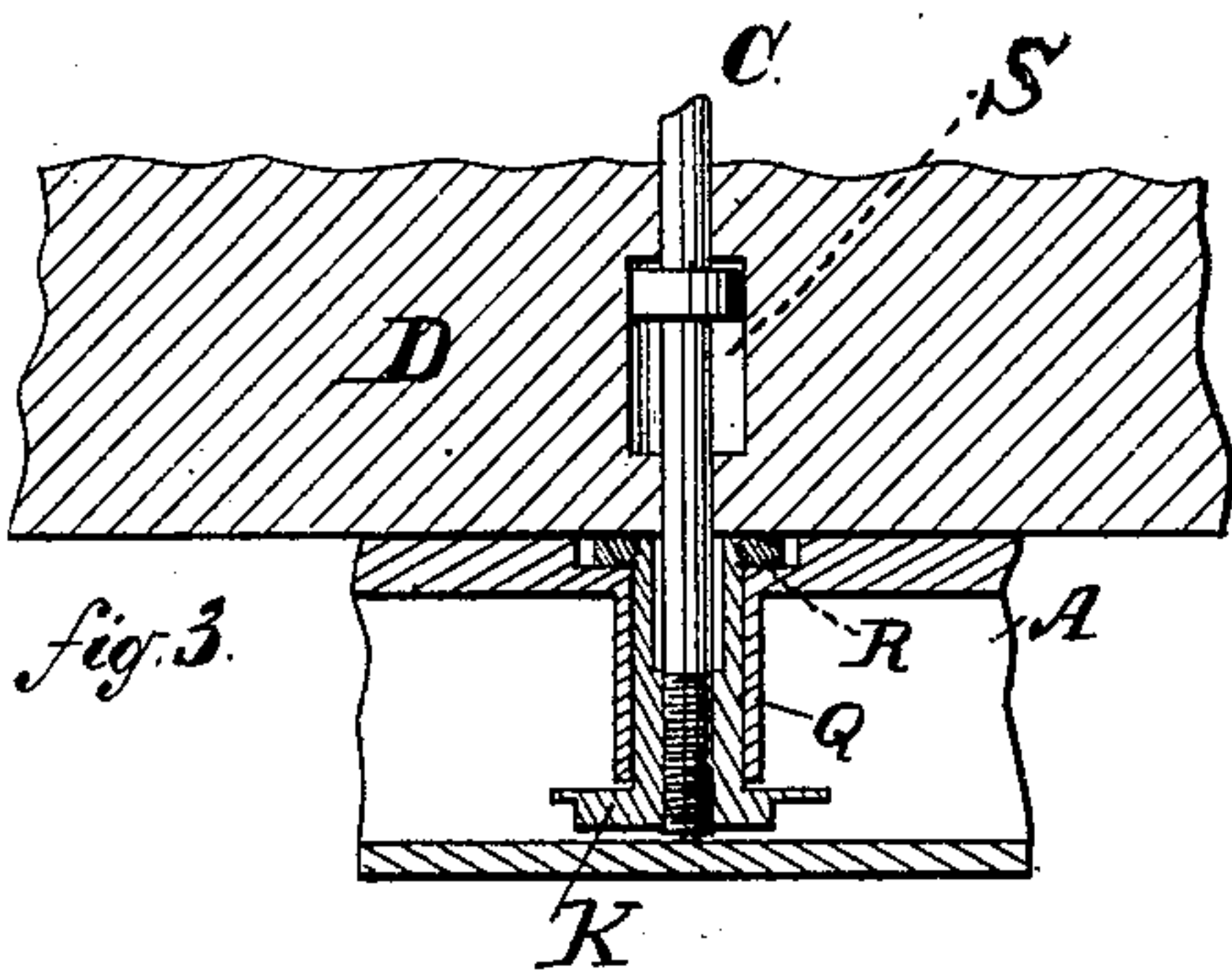
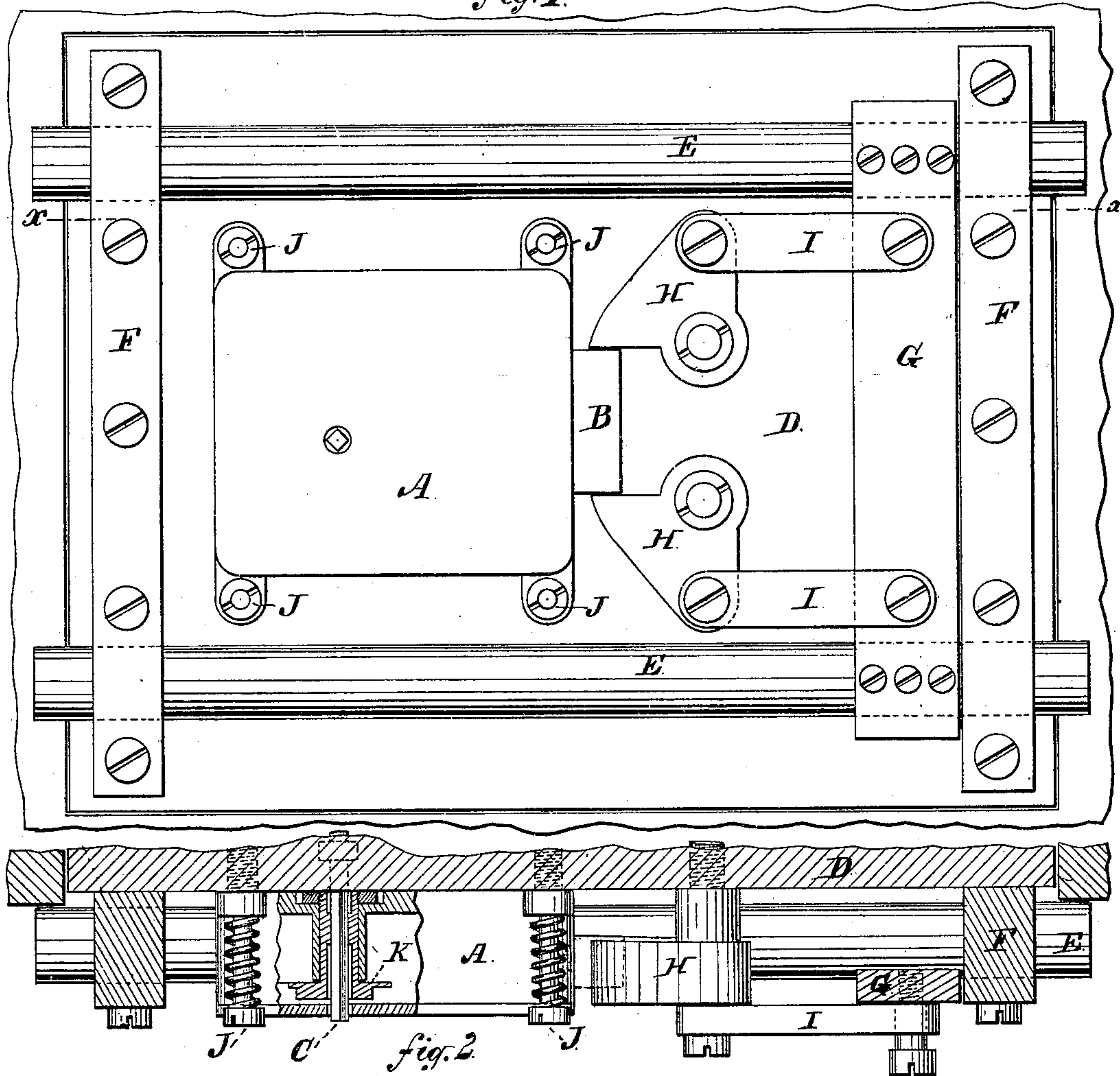
H. F. NEWBURY.

SAFE LOCK.

No. 270,829.

Patented Jan. 16, 1883.

fig. 1.



Witnesses:
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(No Model.)

2 Sheets—Sheet 2.

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fig. 4

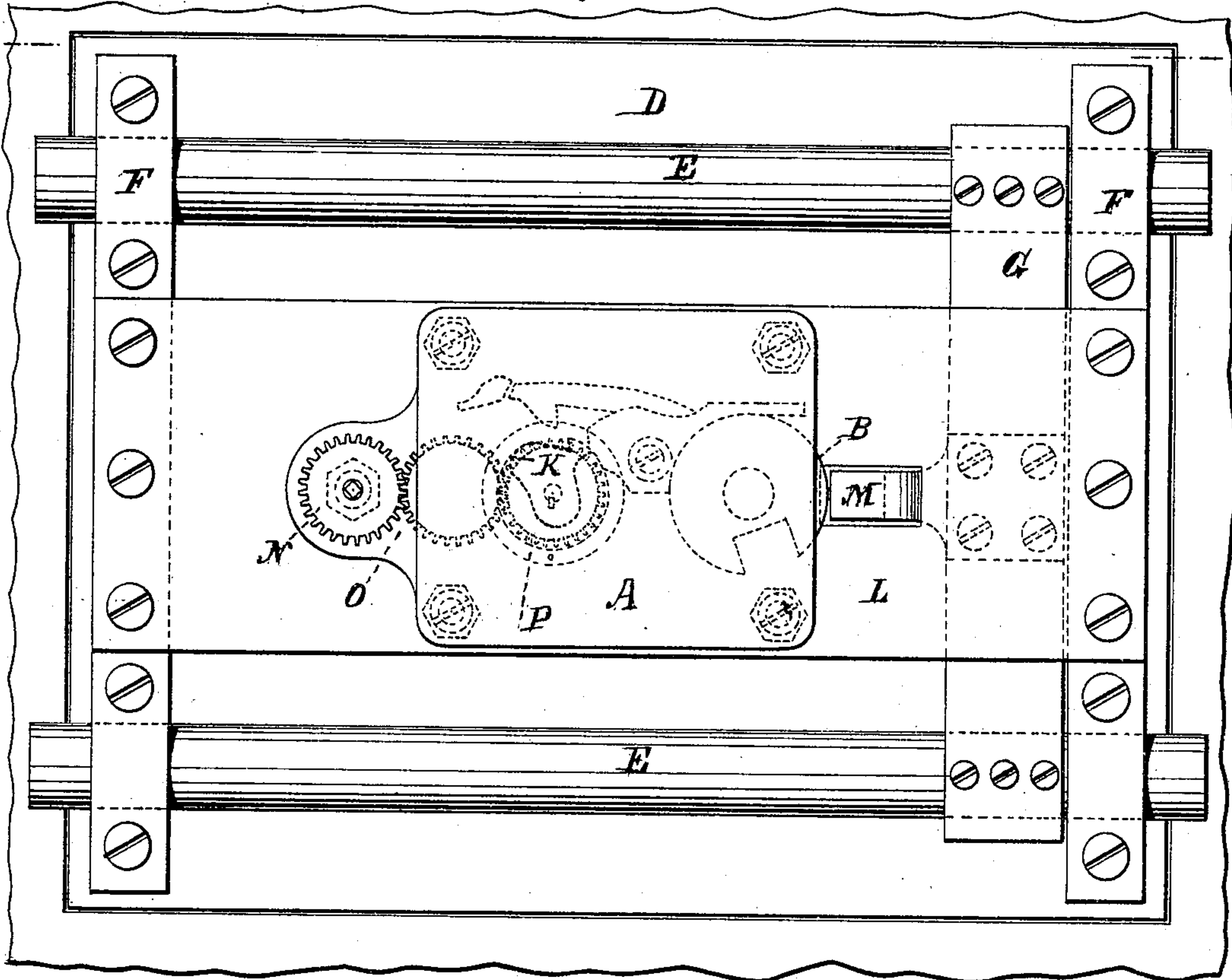
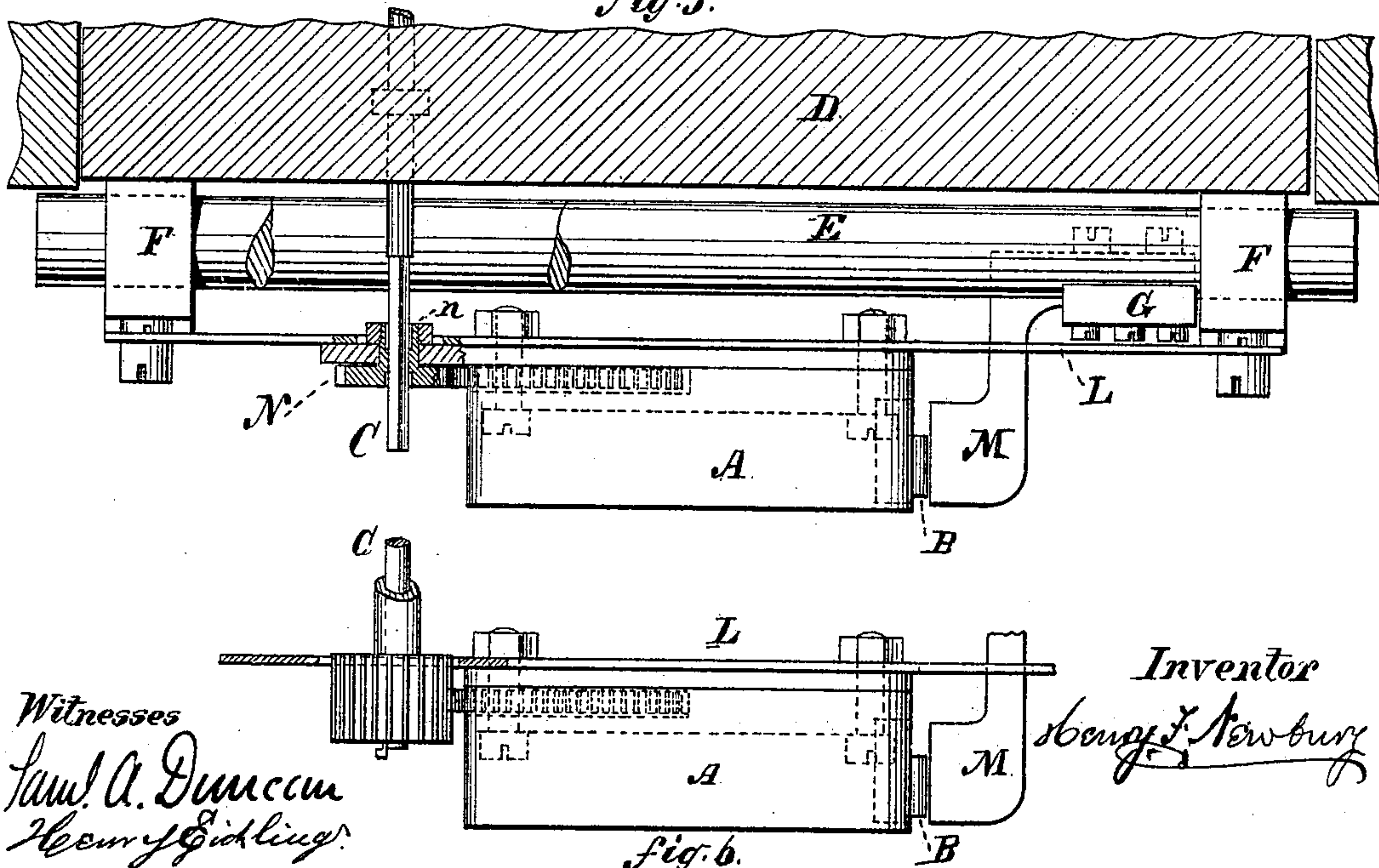


fig. 5.



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fig. 6.

UNITED STATES PATENT OFFICE.

HENRY F. NEWBURY, OF BROOKLYN, NEW YORK.

SAFE-LOCK.

SPECIFICATION forming part of Letters Patent No. 270,829, dated January 16, 1883.

Application filed August 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. NEWBURY, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Permutation-Locks and the Mode of Mounting the Same; and I hereby declare that the following is a full, clear, and exact description of my invention.

Permutation-locks (under which term I also include those classes of locks known variously as "combination-locks," "dial-locks," and "key register-locks," as well as other locks which are operated by means of a spindle) as heretofore mounted have been secured to the inner face of the door or wall of the safe, vault, or other structure which they have been used to guard by means of bolts passing through the lock-case and securing the case rigidly to the door or wall of the structure. I have discovered that when locks are thus mounted they can be displaced by a burglar without resort to force to break or penetrate the walls of the safe or vault. This can readily be effected by the use of a small charge of dynamite, nitro-glycerine, or other quick explosive exploded against the outside of that portion of the door or wall to which the lock is attached. The momentum which can be communicated to a lock through the walls of a safe, by reason of the suddenness with which the so-called "quick explosives" act, is such as to tear the lock away from its seat if it be rigidly fastened.

The present invention provides an improved mode of constructing and mounting the above-named classes of locks, in order to guard against the danger of their being displaced by a sudden and heavy shock directed against the exterior of the structure in which they are used; and it consists in so constructing and arranging the operating-spindle that it will have capacity of movement backward and forward relatively to the lock or to the door or wall of the safe when the latter is subjected to a heavy and sudden shock directed against its exterior; and, also, in connection with such spindle, in mounting the lock upon a flexible and elastic support, or in so arranging it behind the door or wall of the safe as to leave a space between it and the door or wall. When the lock is secured in place by means of a flexible and elastic support or supports an explosion of dynamite against the adjacent part of

the door or wall of the safe may cause the latter to move to and fro violently without materially affecting the lock. The elasticity of the supports will dissipate the force of the shock, and the fastenings of the lock will not be destroyed. So, also, if the lock should be mounted on a comparatively inelastic support; but with such space between it and the adjacent wall of the safe that the latter is permitted to move back and forth relatively to the lock under the force of a sudden shock it is manifest that the fastenings of the lock will not be destroyed. In either case, however, in order to compensate for the relative movement of the door and lock, it is necessary that the operative spindle be so constructed and arranged as to have a longitudinal play relatively either to the lock or to the door in which it is seated. Otherwise it is manifest any vibration imparted to the door would be transmitted through the spindle to the lock. In like manner, if the lock be mounted upon a rigid standard rising from the floor of the safe or vault and at a little distance from the door or wall of the structure, or, if it be mounted upon the interior face of an inner door, the door-spindle should be so constructed and arranged as to have this longitudinal play relatively either to the door through which it passes or to the lock.

The invention is illustrated in the accompanying drawings, in which Figure 1 is an elevation showing a combination-lock mounted upon the inner face of a safe-door, Fig. 2 being a horizontal section of the same on the line x , a portion of the lock-case also being broken away. Figs. 4 and 5 show, in elevation and plan respectively, a modified mode of mounting the lock; and Figs. 3 and 6 are modified modes of securing the requisite play of the spindle.

The lock shown in Figs. 1 and 2 is the ordinary form of combination-lock having a sliding bolt. The internal construction of these locks being well known, it is not deemed necessary to show or describe the same. Referring to these figures more in detail, A is the lock; B, the bolt; C, the spindle; D, the safe-door; E E, the door-bolts; G, the carrying or tie bar; H H, the angle-jaws, between which the lock-bolt works, and which are connected with the tie-bar by the links I. The lock is secured directly against the door by means of long

screw-bolts J J, which are provided with spiral springs. The inner end of the spindle C is square, and passes entirely through a hole of corresponding shape in the hub K of the driving-cam of the lock. With this construction and mode of mounting the lock and arranging the spindle, it will be found that if the door be subjected to a sudden and heavy shock, as by the explosion of a charge of dynamite against its exterior in the vicinity of the lock, the fastenings of the lock will not be destroyed. The great momentum imparted to the lock by the sudden action of such an explosion, instead of being thrown instantaneously upon the heads of the bolts J when the recoil of the door begins, is moderated and gradually absorbed by the cushioning action of the springs.

Instead of forming the elastic supports of the lock by the use of spiral springs, as above described, the lock may be supported upon a thin elastic metal bar, L, as shown in Figs. 4, 6. If this bar be set back in contact with the door, its elasticity will operate to protect the fastening-bolts in substantially the same way in which the elasticity of the spiral springs shown in Figs. 1 and 2 operates to protect the fastening-bolts of that lock—that is to say, a sudden shock, such as would be produced by an explosion of dynamite against the exterior of the door, will put both the door and the lock into very rapid motion inward, but upon the beginning of the recoil of the door the momentum acquired by the lock will be taken up and dissipated by the intervention of the elastic bar between the lock and the bolts passing through its ends and securing it in position, and thus these bolts will be effectually protected from injury. If, again, this metal bar be set away from contact with the door, as shown in Fig. 5, the lock will not acquire so great momentum as before from the inward movement of the door under the force of a sudden and heavy shock. Consequently the bar L may be made comparatively non-elastic, since the less the momentum communicated to the lock the less the strain brought upon the fastening-bolts when the recoil occurs. It will, however, ordinarily be advisable to make this supporting-bar flexible and elastic. If so made, the parts can be brought within narrower compass.

The lock shown in Figs. 4, 6 is an ordinary Sargent combination-lock, M being the stud or tongue piece, secured to the tie-bar G and abutting against the round lock-bolt B. As here shown, the spindle C, instead of passing through the door directly into the lock, enters the hub of a gear, N, placed outside the lock-case. This gear, as shown in Fig. 5, is fast-

ened to the lock-plate by means of a nut, n, screwed to its hub, and it operates the tumblers of the lock through the intervention of the gears O and P and the driving-cam K in a manner well known. In Fig. 5 the end of the spindle is made square, so as to have capacity of play in the hub of the gear N. In Fig. 6 the gear N is fastened to the inner end of the spindle in the usual manner; but in order to prevent disconnection between this gear and the adjoining one in case of a sudden shock imparted to the safe-door, the teeth of the gear are elongated, as fully shown in the drawings.

Instead of providing for a play of the spindle in the hub of a driving-gear or cam fastened to the lock or lock-case, as shown in Figs. 2 and 5, such gear or cam may also be fastened to the inner end of the spindle in any of the ways ordinarily practiced for making such connection, provided suitable provision be made for a longitudinal play of the spindle in the door of the safe. Such construction is shown in Fig. 3, in which the spindle C is screwed into the hub of the driving-cam K, and this hub is fastened to an inner post, Q, of the lock-case by means of a nut, R. A recess, S, in the door of the safe permits the requisite play of the spindle in the door. It is, however, preferred to adopt the construction shown in Figs. 2 and 5, in which the spindle has no play in the door.

From what has preceded it will of course be understood that the present invention is not limited in its application to any particular construction of lock further than that the lock be provided with some form of spindle for operating it from the exterior of the safe or vault.

What is claimed as new is—

1. The combination of a lock mounted substantially as described, whereby movement is permitted between it and the adjacent door or wall of the safe or vault in which it is used when such safe or vault is subjected to a sudden and heavy shock, and means for permitting a longitudinal play of the spindle by which such lock is operated, substantially as and for the purpose described.

2. The combination of a lock, a flexible and elastic support therefor, and a spindle for operating the lock, constructed and arranged as described, so as to have capacity for longitudinal play, substantially as and for the purpose set forth.

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Witnesses:

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