(No Model.)

J. T. HOUGH.

SAFE LOCK.

No. 294,625. Patented Mar. 4, 1884.

Fig. 1.

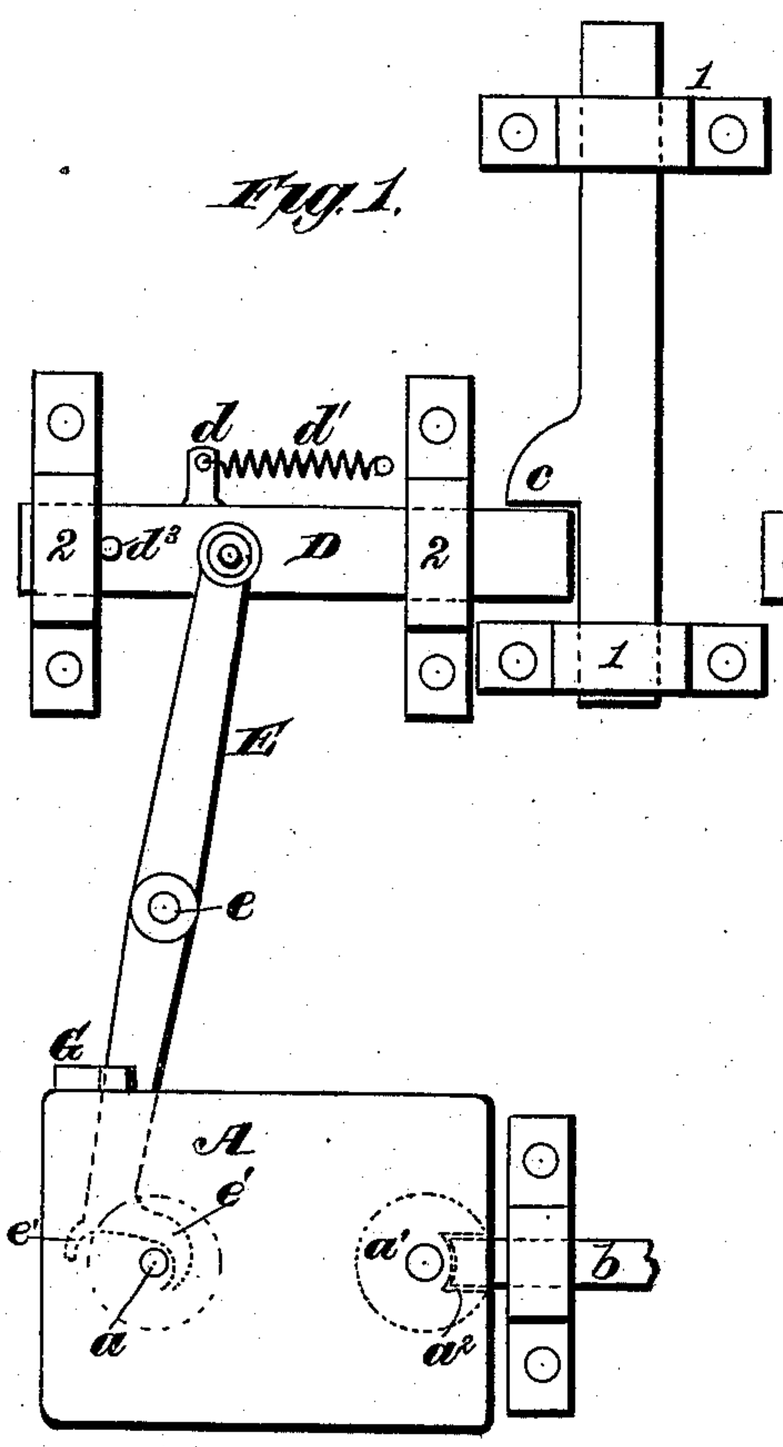

Fig. 2.

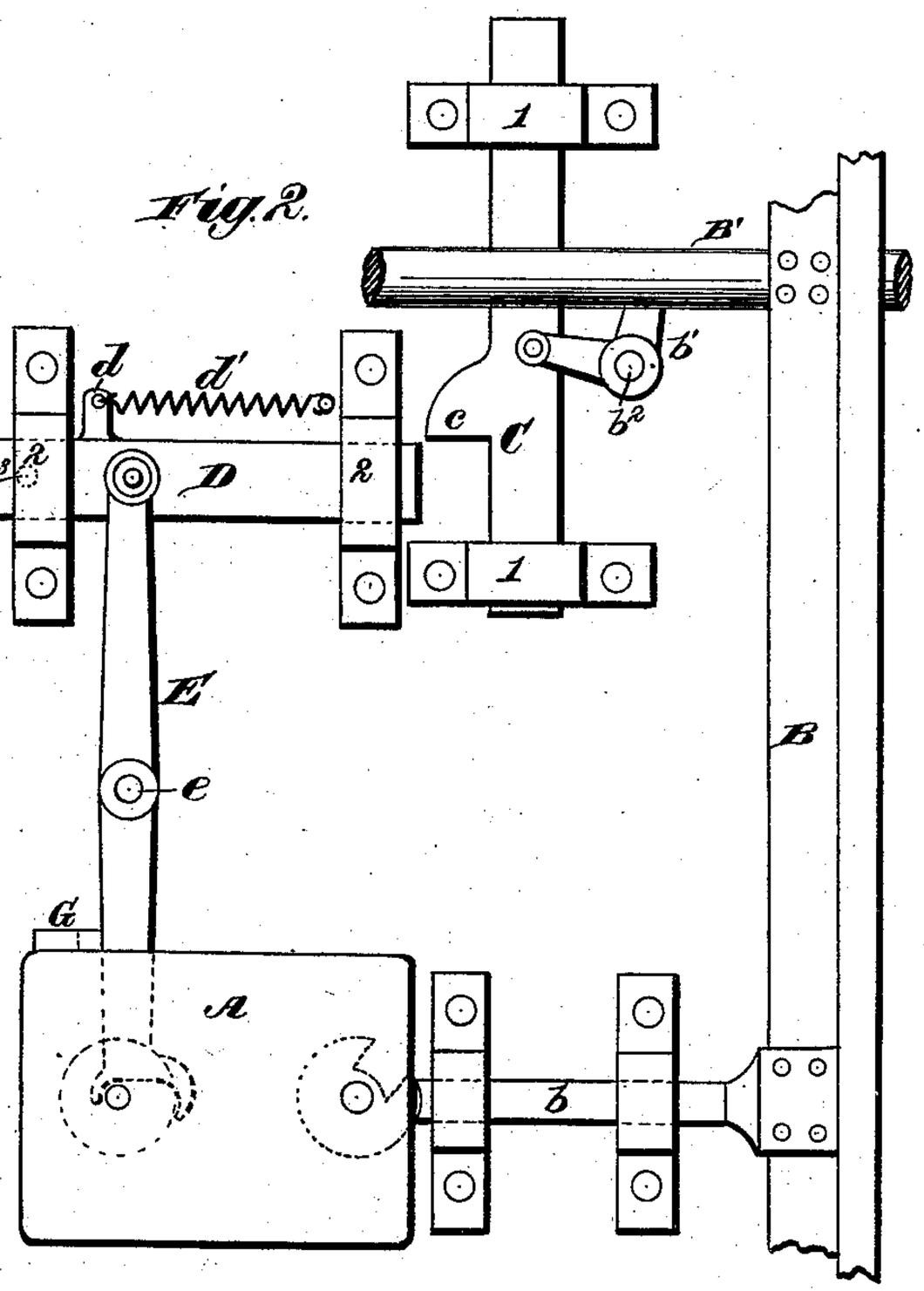

Fig. 3.

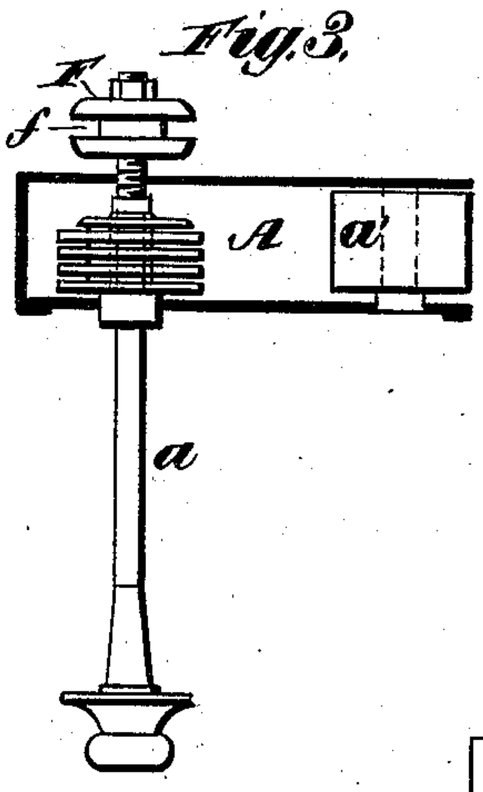

Fig. 4.

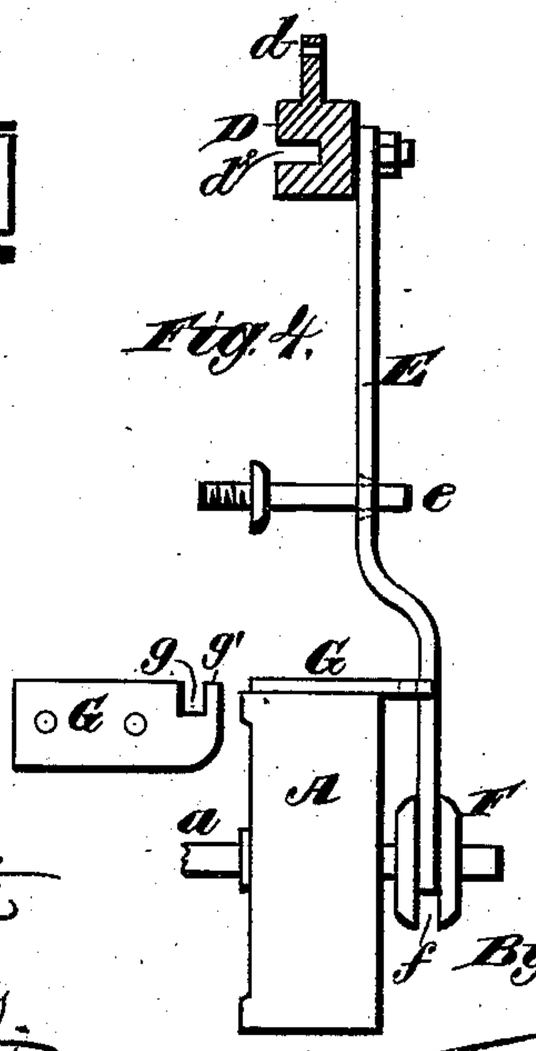

Fig. 5.

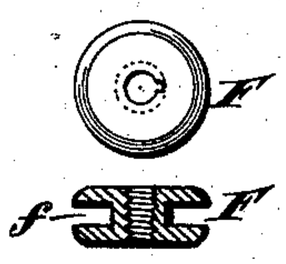

Fig. 6.

Witnesses.
Robert Everett.
A. H. Norris.

Inventor.
John T. Hough.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

JOHN T. HOUGH, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOHN A. HARPER, OF PITTSBURG, PENNSYLVANIA.

SAFE-LOCK.

SPECIFICATION forming part of Letters Patent No. 294,625, dated March 4, 1884.

Application filed September 18, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. HOUGH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Bank-Locks, of which the following is a specification.

My invention relates to certain improvements in bank-locks, the purpose thereof being to provide a series of attachments to prevent the bolts that hold the doors or covering from being thrown back to release the door, the lock-spindle having first been removed or holes drilled through the parts surrounding the lock, whereby the lock-bolt is moved so as to form a recess for the connecting-bolt to pass into.

To this end my invention consists in the construction and combination of parts hereinafter set forth, and pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation of an ordinary combination-lock with my invention attached. Fig. 2 is a similar view, showing the connection with the bolt-work. Fig. 3 is a sectional view of the lock and spindle. Fig. 4 is an end elevation of the same parts with the detachable lock-bar in place. Fig. 5 is a detail edge and face elevation of the grooved nut upon the lock-spindle. Fig. 6 is a view of the sliding bolt with its locking-pin.

A in said drawings represents a combination-lock, wherein *a* is the lock spindle, and *a'* the lock-bolt, having a recess, a^2, to receive the bolt *b*, which connects with the bolt-work B.

To the bolt-work B are attached the locking-bolts B' in the usual manner. To one of said bolts is pivoted an arm of a bell-crank, *b'*, mounted at its angle upon a stationary pivot, b^2, and having its other end pivoted to a vertically reciprocating bolt, C, moving in keepers 1 1, and having a lip, *c*, which is adapted for a purpose presently to be described.

D represents a bolt sliding in keepers 2 2, and having a lug, *d*, to which is connected a spiral spring, *d'*, by which the bolt is normally thrown forward, its arrangement being such that when the bolt C is raised, by throwing the locking-bolts B' forward to secure the door, it will pass under the lip *c* and prevent the retraction of the bolts B'.

E represents a detachable lock-bar, having its upper end pivoted to the bolt D, and fulcrumed at a point not far from its center upon a stud, *e*. It extends down to a point just above the lock-spindle *a*, and its lower end is provided with a fork having its arms *e' e'* projecting below and upon each side of the lock-spindle, which is carried through the lock and projects from its rear side. Upon this portion of the lock-spindle is placed a nut, F, having a groove, *f*, within which the forked end of the lock-bar is placed.

Upon the top of the lock A, and behind the lock-bar E, is placed a keeper, G, having a notch, *g*, and the lock-bar is so arranged that at all ordinary times it rests against the solid end *g'* of the keeper, thereby retracting the bolt D against the tension of the spring *d'* and holding it permanently in that position, as shown in Figs. 2 and 4. While in this position the movement of the bolt C is freely permitted. Should an attempt be made upon the safe or other lock-up by removing the lock or lock-spindle in order to pick out the combination, the lock-bar is at once unseated from the point *g'* of the keeper and dropped into the notch *g*, when the tension of the spring *d'* at once throws the bolt D forward under the lip *c* of the bolt C, locking the latter in its raised position, as shown in Fig. 1, and thereby effectually preventing the retraction of the bolts after the lock-bolt *a'* is operated.

Within an aperture, d^2, in the bolt D is placed a pin, d^3, which is normally thrown outward by the tension of a leaf-spring, d^4, arranged in a recess in said bolt and bearing against the end of the pin. The arrangement of parts is such that when the bolt *d* is in the position shown in Fig. 2 the pin d^3 is held wholly within the bolt by the rear keeper, 2, against which its end abuts. On the other hand, when the bolt D is released in the manner described, and is shot under the lip *c* of the bolt C, the pin d^3 emerges from the staple just as the bolt reaches its proper place, and being forced outward by the spring d^4 it projects from the face of the bolt just in front of the edge of the staple, where it offers an insurmountable barrier to the operation of the bolts.

It is well-known that it is a frequent occurrence for bank-vaults, safes, &c., to be forced

by removing the lock and lock-spindle, or by drilling holes in front of the lock, so that a burglar may insert an instrument or a wire and pick up the combination of the lock, so that the dog will drop in place when by moving the tumbler the lock-bolt is turned, so that the bolt connecting with the bolt-work may drop into its opening. After this is accomplished the door is readily opened by merely throwing back the bolts. By my invention, however, this method of forcing such lock-outs is effectually prevented.

It will readily be seen that instead of attaching the lock-bar E to the lock-spindle it may be connected with any part of the lock which would be removed in forcing the vault or safe.

The bolt C, instead of having a lip, *c*, may be provided with a recess to receive the bolt D.

The object of my lock attachment is to attach it to all lock and bolt spindles at present used in vaults and safes or that may hereafter be in use.

Having thus described my invention, what I claim is—

1. The combination, with the bolts and bolt-work of a safe, vault, or other lock-up, of a vertically-reciprocating lipped or recessed bolt actuated by the movement of the locking-bolts, a spring-actuated safety-bolt adapted to engage with the latter, a detachable lock-bar connected with said bolt and with the lock-spindle, and a notched keeper against which said lock-bar rests, thereby holding the safety-bolt out of engagement with the lipped bolt, substantially as described.

2. The combination, in a safe or vault lock, of the locking-bolts, the bolt-work, the vertically-sliding lipped bolt connected with and actuated by the bolt-work, the horizontally-sliding safety-bolt, the guide-staple for the latter, a pin arranged in an aperture in the safety-bolt and normally projected by a spring to bear against the staple when the safety-bolt is advanced, and a lock-bar connected with the safety-bolt and with the spindle of the lock-bolt, substantially as described.

3. The combination, with the locking-bolts, of a lipped or recessed bolt, a bell-crank lever connecting said parts, by which the lipped bolt is reciprocated by the action of the locking-bolts, and a spring-actuated safety-bolt engaging with said lipped or recessed bolt when the lock is tampered with, substantially as described.

4. The combination of the lock having its spindle projecting from the back thereof, a grooved nut secured on the said projecting end of the spindle, the lock-bar having its lower end forked and engaging the nut, a safety-bolt connected with the upper end of the lock-bar, a vertically-sliding lipped bolt, and the bolt-work connected with and actuating the vertically-sliding bolt, substantially as described.

5. The combination, with the lock A, having spindle *a* and keeper G, of the lock-bar E, the safety-bolt D, having spring *d'*, the lipped bolt C, bell-crank *b'*, and bolts B', substantially as described.

6. The combination of the locking-bolts of a safe or vault, the bolt-work, a vertically-sliding lipped bolt connected with and actuated by the bolt-work, a sliding safety-bolt, a lock-bar connected with the latter and with the spindle of the lock, and means for holding the safety-bolt in engagement with the lipped bolt, and thereby preventing the movement of the bolt-work, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN T. HOUGH.

Witnesses:

JOHN C. CUMMINGS,

M. D. WILBER.