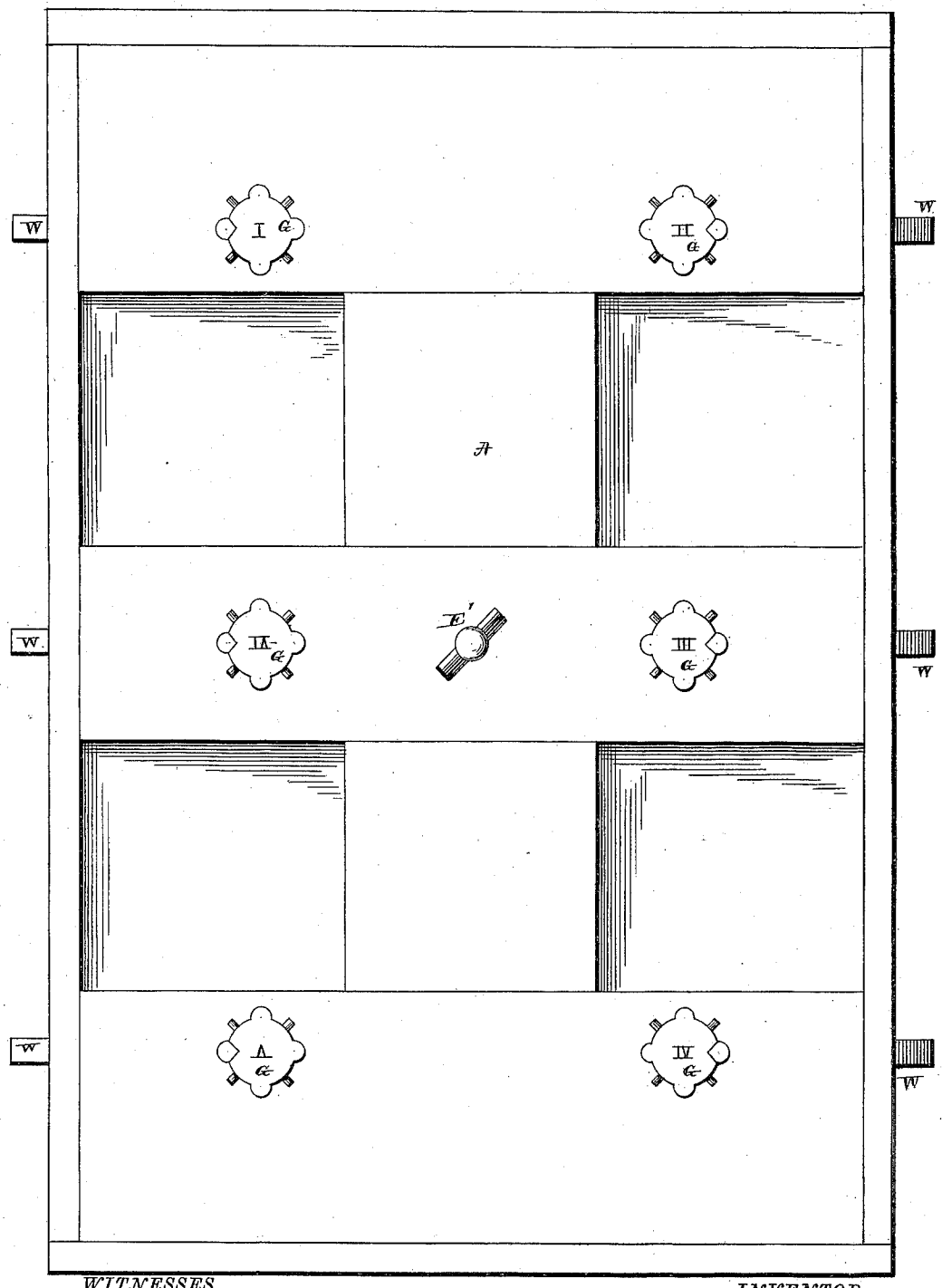
(Model.) 3 Sheets—Sheet 1.

M. F. BROWN.

DOOR OR SAFE LOCK.

No. 343,794. Patented June 15, 1886.



WITNESSES

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Fig. 1.

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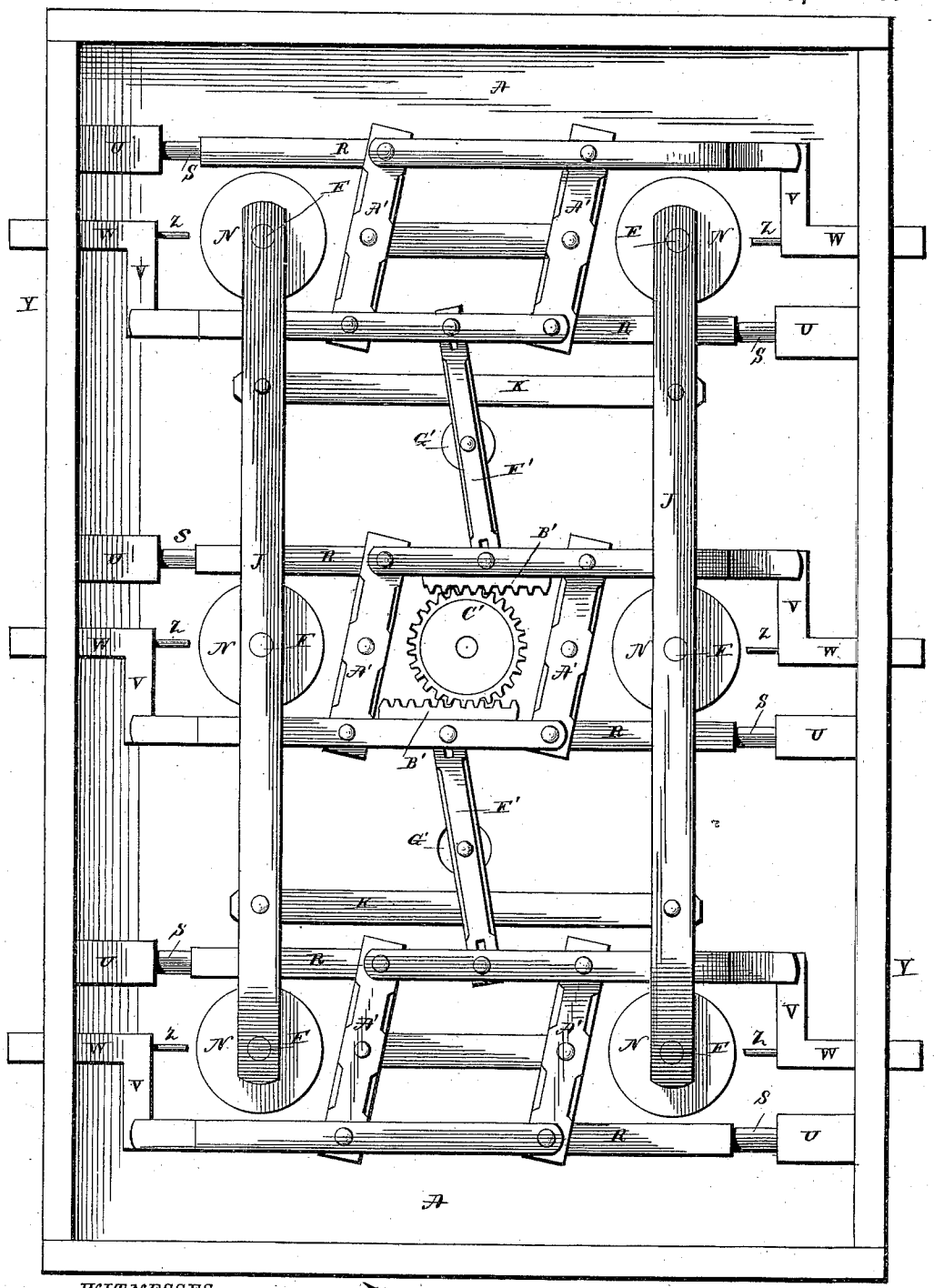


Fig. 2.

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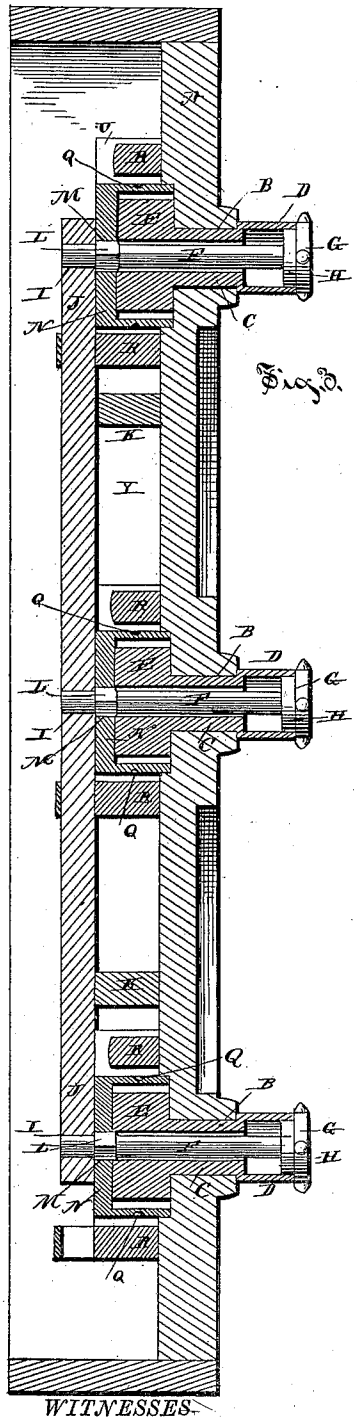


Fig. 3.

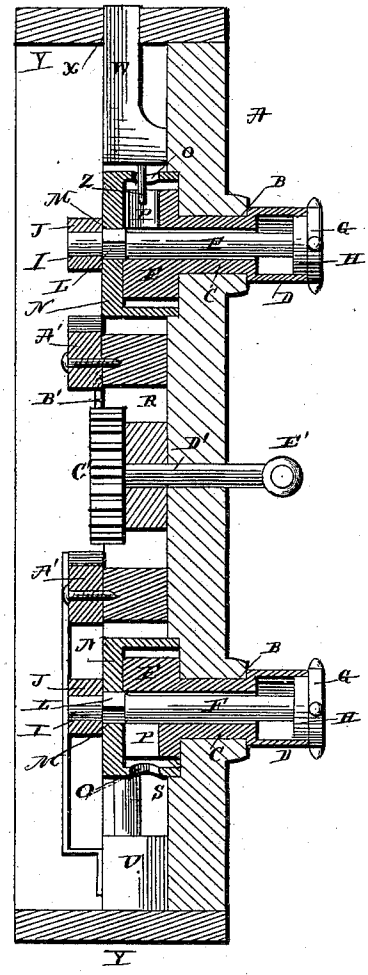
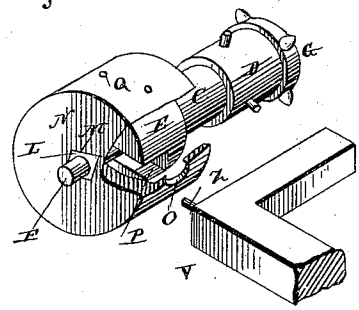


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

MILLARD F. BROWN, OF EAST RINGGOLD, OHIO.

DOOR OR SAFE LOCK.

SPECIFICATION forming part of Letters Patent No. 343,794, dated June 15, 1886.

Application filed April 10, 1886. Serial No. 193,490. (Model.)

To all whom it may concern:

Be it known that I, MILLARD F. BROWN, a citizen of the United States, and a resident of East Ringgold, in the county of Pickaway and State of Ohio, have invented certain new and useful Improvements in Door or Safe Locks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front view of a door provided with my improved combination-lock, showing portions of the facing of the door removed. Fig. 2 is a rear view of the same. Fig. 3 is a vertical sectional view of the door, taken through one row of tumblers. Fig. 4 is a horizontal sectional view taken through a row of tumblers; and Fig. 5 is a perspective detail view of a tumbler and a portion of the bolt, showing portions broken away, so as to illustrate the entire working of the tumblers and bolts.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to that class of locks for safes, vaults, or similar doors in which a number of bolts are operated simultaneously by one handle, and in which each bolt has a tumbler for admitting of the bolt being either locked or unlocked, all of which tumblers must be separately set at their proper combination before the bolts may be withdrawn; and it consists in the improved construction and combination of parts of such a lock, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the door, which is formed with perforations B, arranged vertically in pairs about half-way between the side edges of the door and the middle of the door. A sleeve, C, fits and turns in each of these perforations, and is provided at its outer end with a collar, D, having radiating studs, and at its inner end with a collar, E, having a notch in its inner face extending from the outer side of the collar to the axial bore. The shank F of a disk, G, fits and turns in the bore of the sleeve, and the inner side of the disk is formed with a shoulder, H, which fits into the outer enlarged bore of the sleeve, while the periphery of the disk is formed with a number of radiating studs. The inner end of this shank is reduced, and journaled in a registering perforation, I, in one of two longitudinal bars, J J, secured to cross pieces K upon the rear side of the door, and formed with the bearings registering with the perforations in the door. The portion of the shank next to the reduced end is square, as shown at L, and this square portion fits in a square perforation, M, in the center of the head of a cylindrical cap, N, fitting upon the collar or head of the sleeve. This cap has a perforation, O, in its side, which perforation may be brought to register with the notch P in the head of the sleeve, and the outer side of the cap is formed with a number of recesses, Q, at equal distances.

The bolts consist of horizontal bars R, having their rear ends reduced, as shown at S, and fitting in perforations in blocks U, secured upon the inner sides of the side pieces of the frame for the door, and at the forward ends of these bolts they are bent at right angles, the vertical portions, V, thus formed projecting in opposite directions in each pair of bolts, the bolts being arranged in pairs. The bolts proper, W, slide with their outer ends in perforations in the side pieces, Y, of the frame for the door, and the inner ends of the bolts, which are at right angles to the vertical portions of the bolt-bars, are provided with inwardly-projecting pins Z, which may enter the registering perforations and notches of the caps and heads when the latter are all so turned as to bring them opposite to the pins.

Each pair of bolt-bars are connected by means of a pair of parallel levers or arms, A′, which are pivoted at their ends to the bolt-bars and at their middles to the inner side of the door, and it will be seen that these levers will connect the bolts and move both bolts at one time when one bolt is moved.

The central pair of bolt-bars are provided at their facing sides with two racks, B′, which are engaged by a pinion, C′, upon the inner end of a spindle, D′, having a handle, E′, upon the outer end, which projects through the door, and the middles of these central bolts have the inner ends of levers F′ pivoted to them, the outer ends of the levers being piv-

oted to the middles of the bolt-bars above and below the central bolts. These connecting-levers are pivoted at their middles upon blocks G', projecting from the rear side of the door, and it will be seen that the bolts may be moved simultaneously when the pins at their rear ends register with the perforations in the caps and heads of the revolving tumblers, admitting of the door being unlocked by simply turning the handle, revolving the shaft and pinion, and sliding the central bolts. It will also be seen that all the sleeves and spindles have to be turned so as to bring the notches and perforations to register with each other and with the pins upon the bolts, the disks having the studs and the collars having the studs serving to offer a convenient handle for the spindles and sleeves, and if one of the sleeves or spindles is not turned so as to bring the notch or perforation to register correctly the lock cannot be opened.

The disks and the collars may be marked in any suitable manner with letters or numbers, or may have other marks, which require to be brought to register with each other to bring the perforation and notch to register, and any number of combinations may be accomplished in each tumbler mechanism, and each of the mechanisms may have its separate combination.

It will thus be seen that considerable security may be obtained by this lock, and although all the bolts are operated simultaneously, each bolt is provided with its separate locking mechanism, and likewise, although there is one locking mechanism to each bolt, one bolt may not be moved without all the other bolts are moved simultaneously. In this manner either the entire door or the structure to which the door is applied will have to be demolished before an entrance can be effected, preventing the possibility of blowing up the lock and thereupon opening the door, as is often resorted to by burglars breaking into safes.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a lock for safe or vault doors, the combination of a sleeve revolving in a perforation in the door, and having a collar at its outer end formed with an enlarged bore, and a collar or head at its inner end formed with a notch extending from the periphery to the axial bore, a spindle having a disk upon its outer end formed with a shoulder upon its inner side fitting in the bore of the collar, and having its inner reduced end journaled in a bearing registering with the perforation in the door, a cylindrical cap fitting with a square perforation in its top upon a correspondingly-shaped portion of the spindle, and having its periphery formed with a number of small recesses and with a perforation, and a bolt having a pin at its rear end for entering the perforation and the notch when drawn back, and bearing against the outer side of the cap when drawn out, as and for the purpose shown and set forth.

2. In a lock for safe or similar doors, the combination of bolt-bars arranged in horizontal pairs and having reduced rear ends, and having their forward portions bent twice at right angles and sliding with the bolt portions in the side pieces of the frame for the door, perforated blocks upon the inner sides of the side pieces receiving the reduced ends of the bolt-bars, levers pivoted at their middles and pivoted at their ends to the bolt-bars, one pair of levers to each pair of bolts, levers pivoted at their middles and pivoted at their inner ends to the central pair of bolt-bars and at their outer ends to the adjoining bolts, rack-bars secured to the facing sides of the central bolt-bars, and a handle having its spindle journaled in the door, and having a pinion upon the inner end of the spindle engaging the rack-bars, as and for the purpose shown and set forth.

3. In a lock for safe or similar doors, the combination of bolt-bars arranged in horizontal pairs, and having means for sliding them out simultaneously, and provided at their outer ends with vertical portions and with horizontal bolt portions having pins at their inner ends, a sleeve having a suitable enlargement upon its outer end, and having a notch in a collar upon its inner end, and a cylindrical cap having a perforation and means for revolving it, the inner end of the pin bearing against its periphery when the bolt is drawn out, and adapted to enter the perforation and the notch when the latter register and the bolt is drawn back, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

his
MILLARD × F. BROWN.
mark.

Witnesses:
GEO. H. PONTIUS,
S. L. GRIGSBY.