

F. H. Williams.

Bank Safe.

Patented Jan. 19, 1869.

Sheet 1

10 Streets.

N^o 85,978.

Fig. 1.

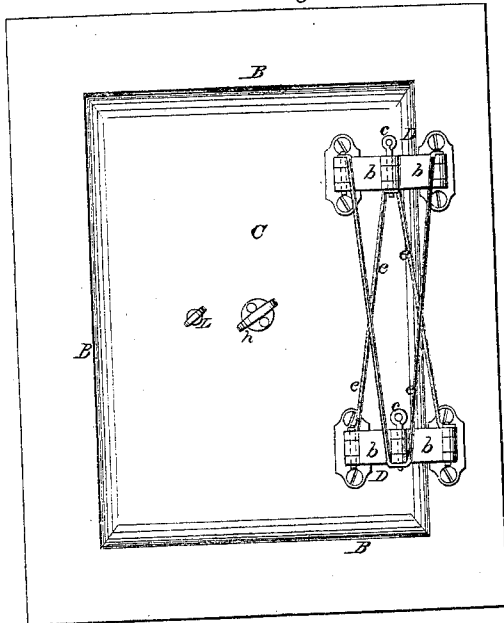


Fig. 3.

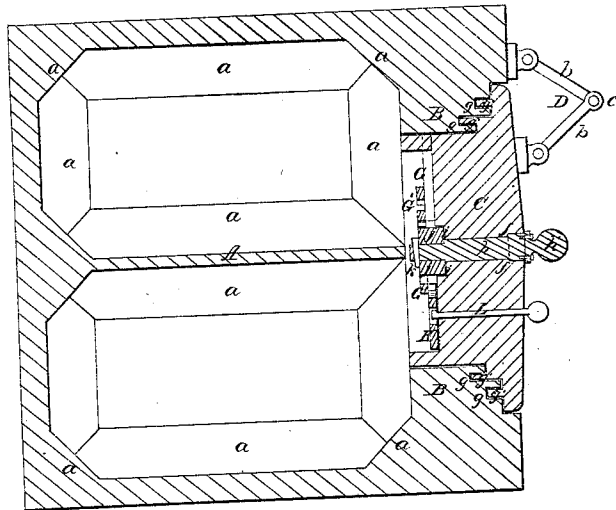
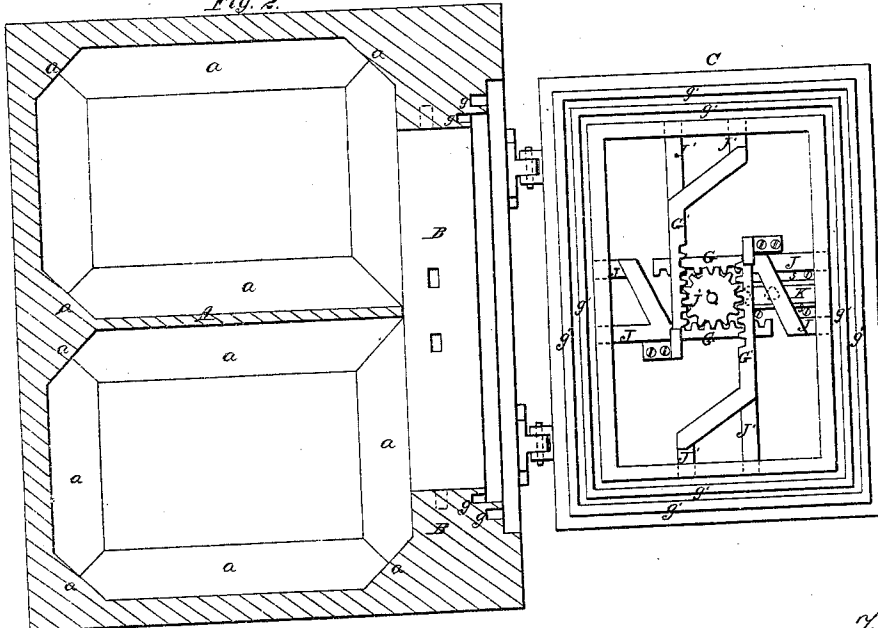


Fig. 2.



Witnesses.

*R. T. Campbell
J. W. Campbell*

Inventor.

*Francis H. Williams
by his agent
Mason, Fenwick
Hawson*

F. H. Williams

*Sheet 2,
2 Sheets*

Bank Safe.

Patented Jan. 19, 1869.

N^o 85,978.

Fig. 4.

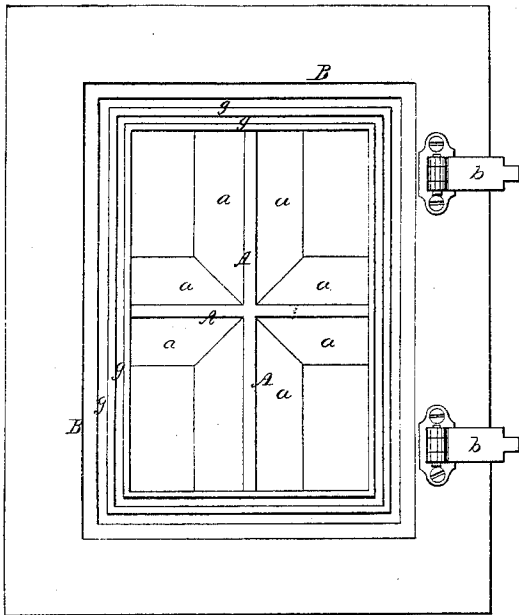


Fig. 5.

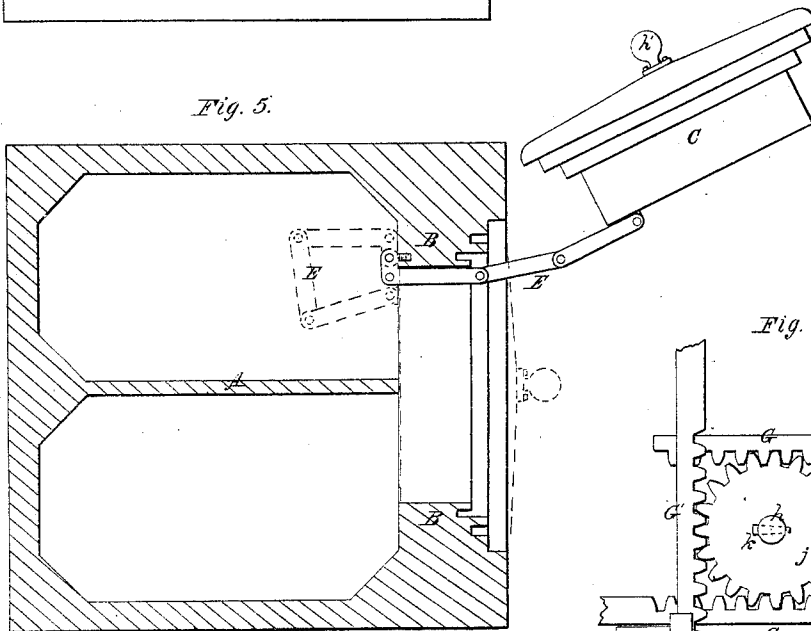
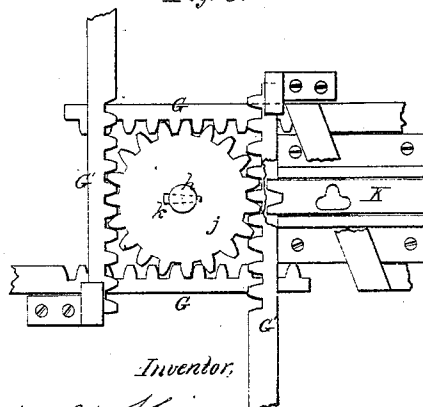


Fig. 6.



Inventor,

*Francis H. Williams
by his agent
Mason, Fenwick Lawrence*

*Witnesses,
R. T. Campbell
J. C. Campbell*

UNITED STATES PATENT OFFICE.

FRANCIS H. WILLIAMS, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN THE CONSTRUCTION OF SAFES.

Specification forming part of Letters Patent No. 85,978, dated January 19, 1869.

To all, whom it may concern:

Be it known that I, FRANCIS H. WILLIAMS, of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements on Safes and Vaults; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, Plate 1, is a front elevation of the improved safe or vault, having its door hinged to the outside of the same. Fig. 2, Plate 1, is a vertical section, taken longitudinally through the safe or vault, showing its door thrown open and exposing the bolts thereon. Fig. 3, Plate 1, is a horizontal section of the safe or vault with the door shut. Fig. 4, Plate 2, is a front view of the safe or vault with the door detached. Fig. 5, Plate 2, is a horizontal section of a safe or vault having its door applied by hinges, which are wholly upon the inside. Fig. 6, Plate 2, is a view in detail of the devices for operating the bolts and for locking the same.

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

This invention relates particularly to certain new and useful improvements on the construction of safes, vaults, and other repository for the preservation of valuable objects.

The first part of my invention consists in constructing the body of a safe or vault with vertical and horizontal partitions in the chamber of deposit, which partitions are so applied to the walls surrounding such chamber as to serve as braces for strengthening them against external pressure and concussion, in the event of the falling of the walls of a building during a fire, or an attempt to open the safe by crushing in its walls, as will be hereinafter explained. And in conjunction with such internal braces this part of my invention also consists in further strengthening the walls of a safe by casting with or otherwise applying braces or brackets to the interior angular corners of the walls, as will be hereinafter explained.

The second part of my invention consists in providing for moving four bolts in four different directions by means of a spur-wheel, which is applied upon a shouldered knob-spin-

dle; and in combining with said four-throw spur-wheel a device by which this wheel can be locked and prevented from turning, as will be hereinafter explained.

The invention also consists in a door which is so hinged as to be allowed to open and shut with a bodily movement at right angle to the front face of the safe or vault to which it is hinged, when such door is constructed with tenons, ribs, or projections upon it, that are adapted to fit squarely into corresponding recesses made in the jamb or frame which receives the door, when the door is shut, thereby preventing such door from being pried open, or its bolts from being unduly strained in an attempt to pry it open, as will be hereinafter explained.

The invention finally consists in the application to the door of a safe or other object, of inside folding hinges, which will allow the door to swing open or shut, and which will, when the door is shut, be wholly inclosed and protected, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The body of the safe which I have represented in the accompanying drawings is cast of one piece of metal, and I prefer to construct the safe in this manner, as I believe that greater security against effecting an entrance through its walls will be thereby obtained, than would be obtained by building up the safes of separate plates, secured together in the manner hitherto adopted. I do not, however, confine my invention to making the body of a safe of one piece by casting, as the same may be made of separate plates, as above mentioned.

In constructing the body of the safe, I form in the chamber of deposit vertical and horizontal partitions A A, which cross each other and serve as braces for sustaining the walls, inclosing the chamber of deposit against external pressure and concussion. If the body of the safe is cast in one piece, the partition walls or braces A will be cast solid with the walls of the safe, but if the body of the safe is made up of separate plates, the braces A will be separately made and secured in their places.

I also construct upon the inner side of the

body of the safe, along the angles or corners thereof, the brackets *a a* which thicken and strengthen the metal at such points, and greatly add to the strength of the safe. The strength which is afforded by the use of braces *A* and brackets or corner pieces *a* will enable me to make the walls of the safe thinner than would otherwise be required. Like the braces *A*, the corner-pieces *a* may be cast with the walls of the safe, or made separate and secured in any suitable manner to such walls.

The door jamb or frame *B*, which surrounds the opening leading to the chamber of deposit, is constructed with grooves or channels *g*, which are perpendicular to the front face of the safe, and which are adapted for receiving snugly into them tenons or elevations *g'*, which are formed upon the inner side of the safe-door *C*.

By thus constructing the door and fitting it to its jamb or frame, it will be seen that, in order to open or close this door, it must be moved bodily and squarely, and cannot be swung open or shut while entering or leaving the opening which it is adapted to close. This feature, broadly considered, is not new, as circular doors have been made with screw-threads cut upon them and adapted to fit into openings by giving such doors one or more turns. I do not desire to claim spiral threads upon doors, nor do I desire to use a circular door. The grooves and tenons upon the door-jamb and the corresponding grooves and tenons upon the door require the door to be moved in a direction which is perpendicular to the vertical face of the safe to open or shut this door, thereby preventing the door from being pried open by a lever introduced under or against one of its edges.

The safe-door *C* may be cast solid, or it may be made in any other suitable manner. It is attached to the front face of the body of the safe by means of sectional folding hinges *D D*, each one of which is composed of two sections or leaves, *b b*, jointed together by a removable pintle, *c*, and hinged respectively to the door and its frame.

These hinges, which are fully described in the schedule annexed to my Letters Patent numbered 78,851 will allow the door to be moved bodily into and out of the opening surrounded by frame *B*, and will also allow the door to swing freely. I shall connect the hinges *D D* together by means of diagonal braces *e e e e*, as shown in Fig. 1, for the purpose of strengthening them and admitting of the use of comparatively light leaves *b b*.

The said braces are secured in a suitable manner to the several pivots or pintles of the hinges, so as to allow the latter to articulate freely.

Instead of applying hinges to the outside of the door and body of the safe, it may be found desirable to apply hinges upon the inner side of the door and body of the safe. Fig. 5 is a horizontal section taken through the body of

the safe, showing a door hinged to it by means of inside hinges *E*, each one of which is constructed of three leaves or sections, so that they will allow the door to be opened and shut. When the door is shut the hinges *E* will be entirely inclosed within the chamber of deposit, as indicated in Fig. 5, so that they cannot be reached nor used as a means for effecting an entrance into the safe where its door is locked.

I will now describe my improved devices for bolting the door and locking the bolts. A hole is drilled centrally through the door and reamed out from the outside so as to enlarge it at and near its outer end and leave a shoulder *f*; and into this hole a knob-spindle, *h*, is passed from the outside, which spindle is also shouldered, so that it cannot be driven through its hole by outside appliances.

The outer enlarged end of the spindle *h* is flush with the outer surface of the door, and has a knob, *h'*, attached to it by screws or other suitable fastenings. The inner end of the said spindle has keyed upon it a spur-wheel, *j*, and receives also a pin, *k*. The spur-wheel, has a cylindrical portion, *i*, formed on it, which is fitted into a recess made in the door, as shown in Fig. 3. The teeth of wheel *j* engage with four racks, *G G' G' G'*, two of which move in opposite directions vertically, and two move in opposite directions horizontally. These racks work in suitable guides, and have the bolts *J J'* applied to their outer ends, all of which bolts are thrown out or retracted simultaneously by turning the knob-spindle *h*. I have represented two bolts upon the outer end of each rack-bar, but in practice one bolt, or several, may be employed, and formed on or secured to each rack-bar in any suitable manner.

In Figs. 2 and 6, I have represented a notched bar, *l*, applied to the inner face of the door *C*, on one side of the spur-wheel *j*, and arranged to slide in suitable guides *s*. This bar represents the bolt of a lock, and is designed to engage with one of the teeth of wheel *j*, and prevent this wheel from turning. I have represented a key, *L*, applied to the sliding bar *l*, for moving it back and forth, but, in practice, any well-known lock mechanism which will answer the purpose may be employed for moving the said bar.

I am aware that it is not new to employ jointed connections for moving several bolts in opposite directions, and therefore I shall not claim this feature broadly. The employment of a single spur-wheel with rack-bars, as described, obviates the difficulties attending jointed links or levers, and is more certain in its operations.

What I claim as new, and desire to secure by Letters Patent, is—

1. The safe or vault with partition-braces *A* in its chamber of deposit, whether such safe or vault be constructed of one or more pieces, substantially as described.

2. Thickening the walls of a safe at the interior angles thereof by casting its interior corners or angles in the form shown.

3. Constructing the door C with tenons *g* upon it adapted to enter squarely into corresponding recesses formed in the frame B of the door, substantially as described.

4. The application of hinges E wholly upon the inside of the door and door-frame of a

safe or other structure, substantially as described.

Witness my hand in matter of my application for a patent for improvement in bank safe and bolt.

F. H. WILLIAMS.

Witnesses:

R. T. CAMPBELL,

J. N. CAMPBELL.