T. J. SULLIVAN.

SAFE AND VAULT.

No. 103,683. Patented May 31, 1870.

*Fig 1.*

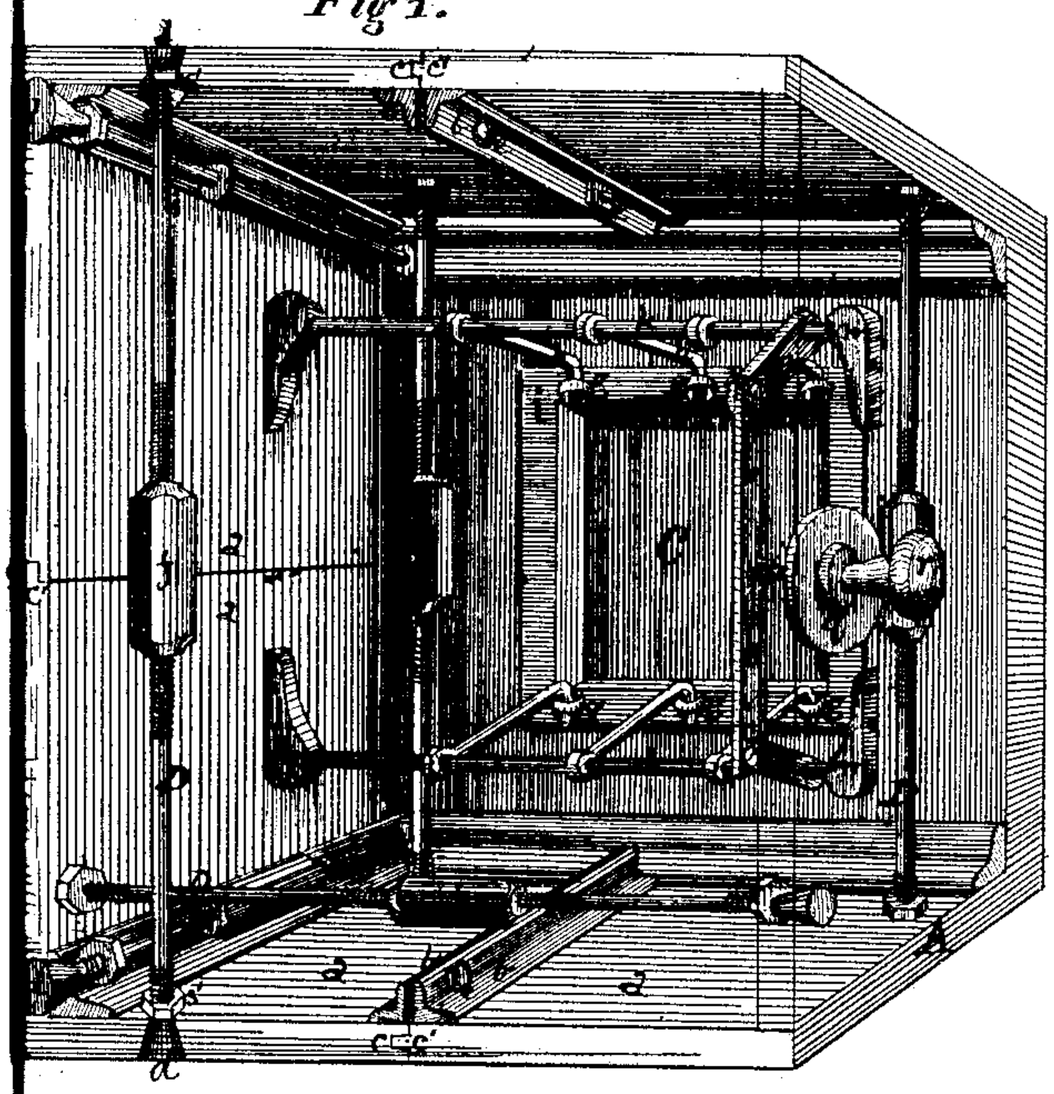


*Fig. 3.*

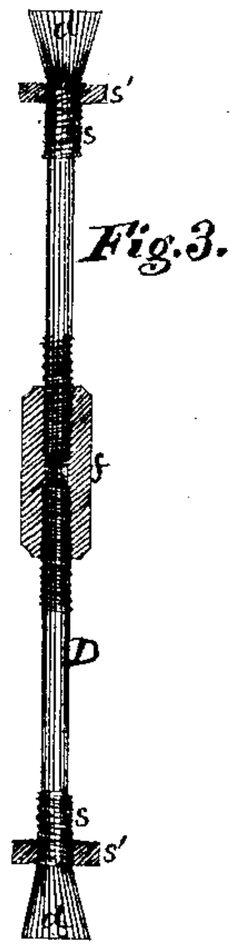


*Fig. 4.*

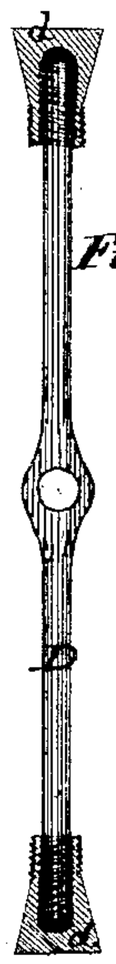


*Fig. 2.*

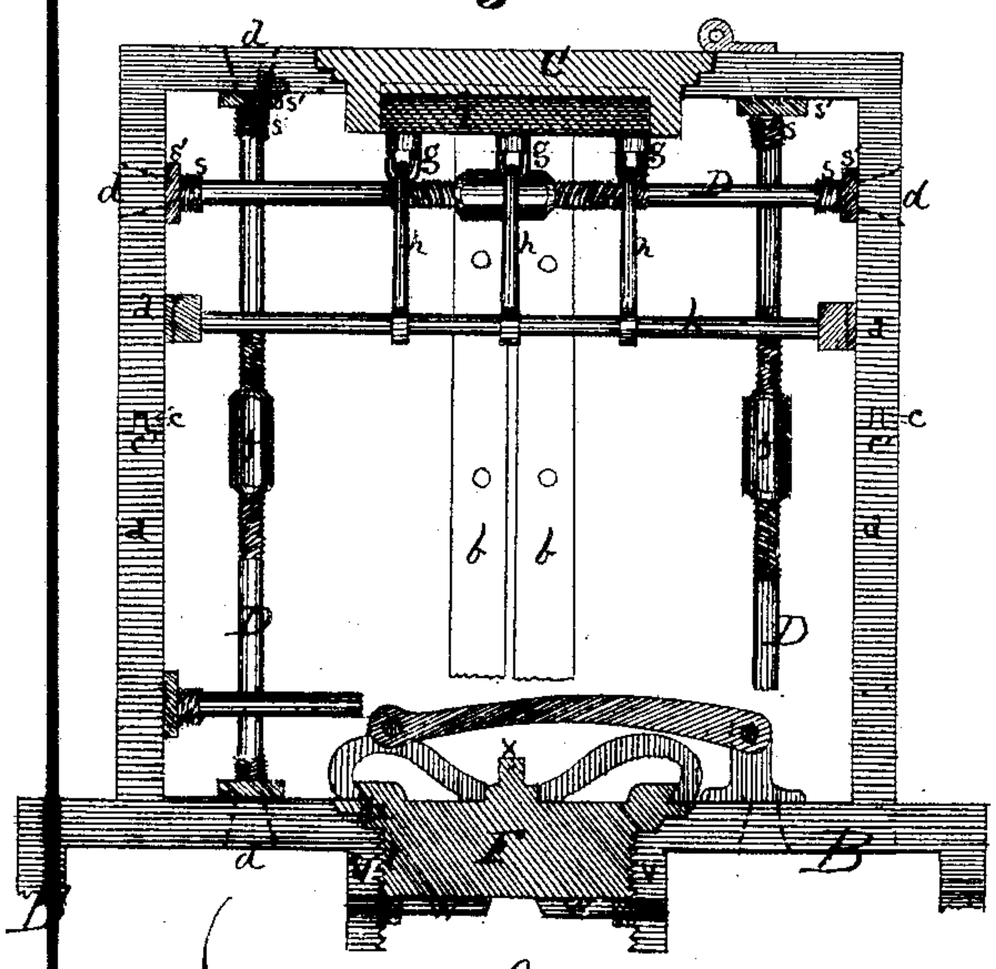


*Fig. 5.*

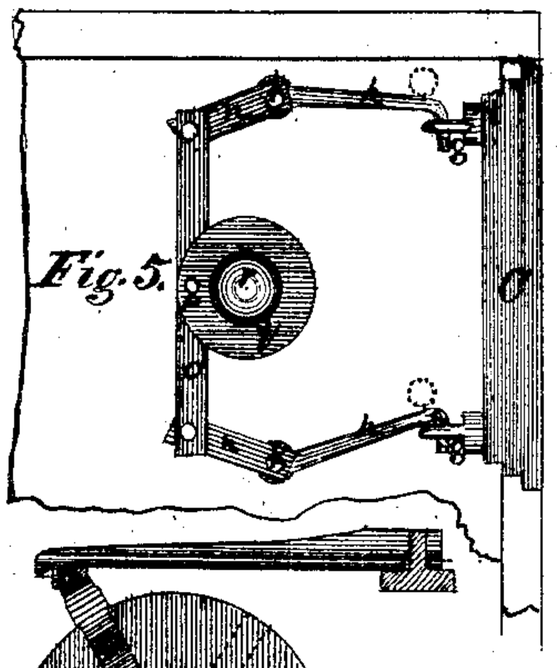
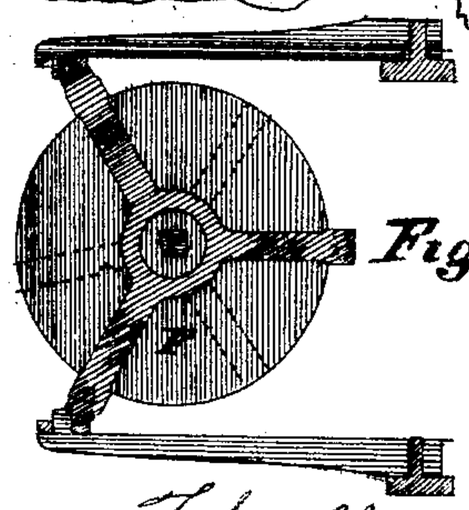


*Fig. 6.*



Witnesses { Alex. Selkirk
Chas. Selkirk.

T. J. Sullivan

Inventor.

# United States Patent Office.

TIMOTHY J. SULLIVAN, OF ALBANY, NEW YORK.

*Letters Patent No.* 103,683, *dated May* 31, 1870.

## IMPROVEMENT IN SAFES AND VAULTS.

The Schedule referred to in these Letters Patent and making part of the same

*To all whom it may concern:*

Be it known that I, TIMOTHY J. SULLIVAN, of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Safes and Vaults; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a perspective view of the interior of a safe or vault, or its vestibule, and illustrating some of the features of this invention.

Figure 2 represents a vertical view of a safe or vault, or its vestibule, embodying this invention.

Figure 3 is one form of stay-bolt used in this invention.

Figure 4 is a modification of the same.

Figure 5 represents a view of one part of this invention as applied to secure one of the doors of the safe or vault.

Figure 6 represents a view of another part of my invention and embodying a second door, and illustrating a mode of hanging the same.

As many burglars have become expert in the art of safe-breaking, all who have valuables to preserve feel that the only bar to safe-breakers from entering a safe or vault must depend on the material used in its construction, or the manner in which the said material is secured together, and on the manner of arrangement by which an entrance can be effected to the inside of the safe or vault.

In the drawing—

A represents the vestibule of a vault or safe, or the body of the same.

B, fig. 2, when a vestibule is used, represents a section of the body of the vault or safe.

C is the usual outer door.

The shell of both the vestibule and the body of the safe or vault I would construct of either chilled iron or steel, or of alternate plates of iron and steel, and in sections *a a*, as circumstances may demand. The edges of the said sections *a a* are furnished with grooves *c* and tongues *c'*, and placed in such a manner that the said tongues will enter the said grooves, as shown in fig. 1.

Around or at the edges of the said sections *a a* of a safe or vault, or vestibule, I place angle-irons *b b*, in such a manner that a space will be left between the said angle-irons, as shown in figs. 1 and 2. The said angle-irons *b* I secure to the said sections, when thus placed, by rivets or bolts. The projecting angles of the said angle-irons *b b* are provided with holes placed at a short distance apart, and opposite one another, through which holes short draw-bolts *e*, figs. 1 and 2, are inserted, and, when their nuts are screwed up, the said bolts *e* draw on each angle-iron *b*, secured to the edges of the sections *a*, and cause the tongues *c'* to draw into the groove *c*, and thus hold the edges of the sections *a a* together.

To further strengthen the body of the safe, vault, or vestibule, I make in the shell formed of the sections *a a*, at several points, large conical-shaped holes, which are to receive the corresponding-shaped heads of the large stay-bolts D. The said stay-bolts I would make of round bar-iron, about one and a half inch diameter, and form their heads *d* of steel, and harden the same. At the termination of the heads of the said bolts I cut a screw-thread, *s*, to receive a mash-nut, *s'*. The said bolts are to be used in pairs, and the terminating ends of the said bolts I furnish with right and left-hand screw-threads, which work in elongated draw-nuts *f*, furnished with corresponding right and left-hand screw-threads, as shown in fig. 3. A modification of the same bolt D is shown in fig. 4.

The number of such bolts D used in the construction of a safe or vault must in all cases depend on the size of such vault or safe, and their directions will always be registered by the arrangements of the sections *a a*, which they are to draw and strengthen together. When the heads *d* of the said bolts D are fitted in their places, and the draw-nut *f* is turned, so as to draw the bolts, in pairs, toward each other, until the edges of the sections are brought tight together; the mash-nut *s'* is then screwed up tightly to bring on the surface of the shell, or sections. Being thus placed and secured, no mechanical force can be brought to bear on the safe or vault, or any of their parts, either to force the several sections apart or to crush the same in, because of the heads which bind together, and the mash-nuts, which will prevent bending down or breaking in of the shell.

To make more secure the entrance to the vault or safe than is now made, I provide the door, besides the usual lock-bolts, with eyes *g*, into which work hooks *h*, figs. 1, 2, and 5. The said eyes are either screwed into the lock-frame *i* of the door C, or riveted into the same before the said lock-frame is secured to the door. The hooks *h* are attached to a heavy shaft, *k*, which shaft *k* has its bearings in blocks *m*, secured to the shell, and is free to be turned in the same. The said shafts *k* are operated by the levers *n n*, attached to the said shaft, and connected with a bar, *o*, which is operated by a pin, *p*, secured to the disk *q*, as shown in figs. 1, 2, and 5. A combination movement, not shown, is intended to be used with the said disk, as with a lock, and operated by a knob, *r*, which knob, when the combination is known, when turned in one direction will operate the hooks *h* by means of the aforsaid levers, bar, shaft, disk, and pin, or their equivalents, and throw them out from their eyes *g*, and, when turned in an opposite direction, will throw them into the same, and thus hold the door.

By this invention the outer door C of a safe or vault

will not only be held in place by the usual strong lock-bolts, but will also have its attachment to the vault or safe strengthened by the many hooks *h*, that may be used, and will also be further protected by the additional combination operating with the said hooks.

To give further security to the safe or vault, and to prevent the introduction of gunpowder, nitro-glycerine, or other explosive substance into the main body of the safe or vault, I furnish the safe or vault with an inner door, F, which will communicate with the body of the safe or vault at the termination of the vestibule. The said door F I make of steel, or of chilled iron, or of alternate layers of both. The said door is made round, as shown in fig. 1, and of sufficient size to admit without inconvenience, when removed, the passage of a person into the body of the vault.

I cut on the periphery of the said door a screw-thread, *t*, to a reasonable depth, say about three to four inches, more or less, and provide, on its outer side, flanges *u*, which work into corresponding seats provided in the body of the safe. I also make, on the inside of the body of the safe or vault, a flange, *v*, which projects out therefrom to such a distance as will be capable of receiving a screw-thread corresponding with the screw-thread *t* cut on the door, and also to receive the lock-bolts *w*, figs. 2 and 6. The said door F I would hang somewhat in the manner shown in figs. 2 and 6, or any other suitable manner, so that the said door could be properly supported and swung to and from its corresponding opening, and from its entrance in its place. In the body B I apply a crank-wrench, to the square spindle *x*, by which the said door would be screwed in or out.

To this door I would also apply any suitable combination lock, not shown, which would operate the lock-bolts *w*, after the door has been screwed to its place, and secure the door from being screwed out. Should the screw-threads be reversed in their order, so that the door F would screw on a flange, it would operate equally as well.

A safe or vault thus constructed and provided with an outer door, C, and inner door F, attached and secured in their places by the usual lock-bolts, hooks, and screwing, and guarded by three distinct sets of combinations, could not be entered by the most skillful experts in the longest interval of time that might be allowed between business hours.

Having described my invention,

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

1. In the construction of safes or vaults, the grooves *c*, and tongues *c'*, in combination with the angle-irons *b b* and draw-bolts *e*, substantially in the manner set forth, for the purpose specified.

2. In safes or vaults, the stay-bolts D, to draw together the several parts of the said vault or safe, substantially in the manner set forth.

3. The combination of the hooks *h*, eyes *g*, and shaft *k*, when constructed and arranged substantially in the manner set forth, for the purpose specified.

4. The outside knob *r*, in combination with the disk *q*, pin *p*, bar *o*, and levers *n*, substantially as and for the purpose set forth.

5. In combination with a safe or vault, the door C, arranged to swing in, and a door, F, to screw into or on its place, and used in combination, for the purpose specified.

T. J. SULLIVAN.

Witnesses:

ALEX. SELKIRK,

CHAS. SELKIRK.