2 Sheets—Sheet 1.

M. BRIGGS.

SAFE AND VAULT DOOR.

No. 169,337. Patented Nov. 2, 1875.

Fig. 2.

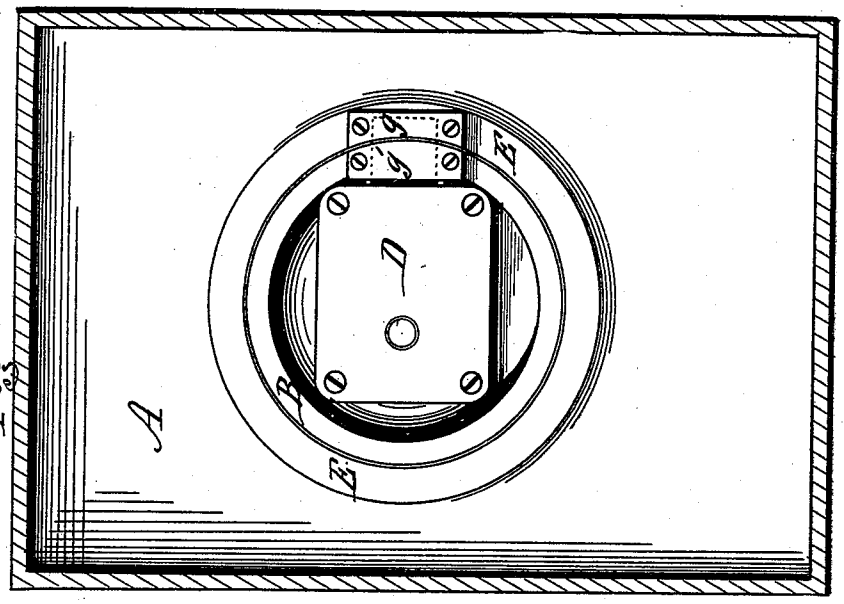
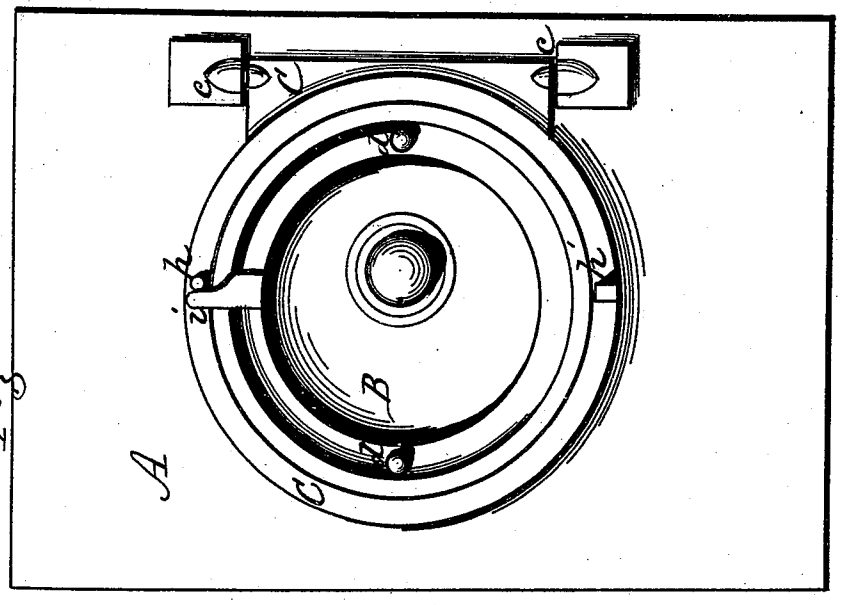


Fig. 1.



Witnesses.
E. B. Scott.
Louis Spahn.

Inventor.
Martin Briggs.
per R. F. Osgood,
Atty.

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Fig. 3.

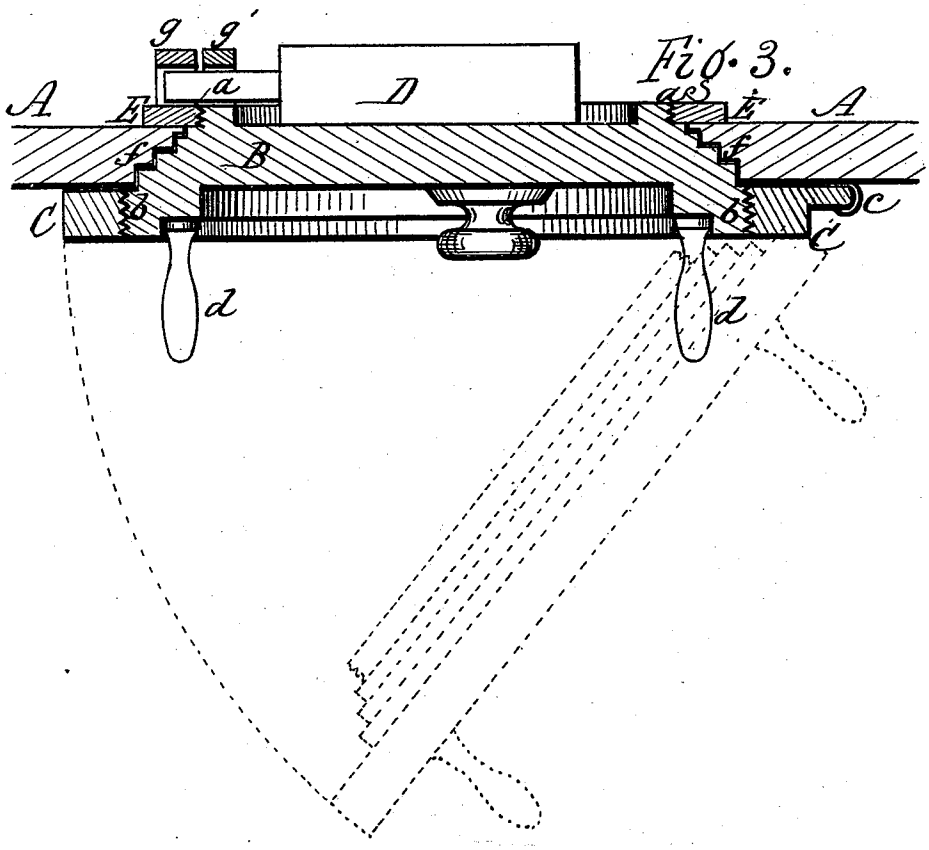
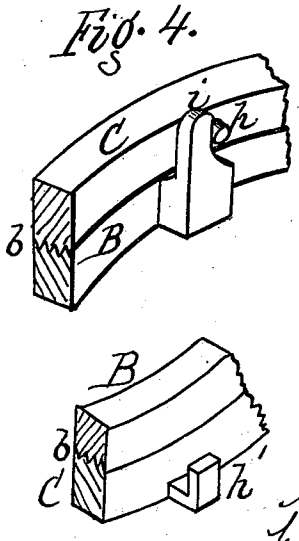


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARTIN BRIGGS, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN SAFE AND VAULT DOORS.

Specification forming part of Letters Patent No. **169,337**, dated November 2, 1875; application filed September 6, 1875.

To all whom it may concern:

Be it known that I, MARTIN BRIGGS, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Safe and Vault Doors; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation, showing the outside of the door. Fig. 2 is a similar view, showing the inside of the door. Fig. 3 is a horizontal section. Fig. 4 is a view of the stop arrangement.

My improvement relates to a screw-door attached to a swinging frame, so that when unscrewed from the safe the door may be turned back out of the way, like an ordinary swinging door. Such doors have before been known having two distinct threads, one of which enters the plating of the safe to secure the door in place, and the other screws forward and backward in the swinging arm or frame, to sustain the door as it is opened. The great objection to such doors is, that the screw that rests in the swinging frame is situated centrally of the door, and is of small size, being simply a screw-stem, so that it lies in the way of applying a lock upon the door, with the knob, spindle, or key projecting outward through the door, and necessitates the application of the lock upon the safe instead of the door. A still greater objection is, that this small screw-stem has to sustain the whole weight of the door when unscrewed from the safe, and in burglar-proof safes of large size, having doors weighing several hundred pounds, the door will sag, so that the thread which enters the safe will not engage with its fellow. So great has been this difficulty that such doors have not gone into use, especially on burglar-proof work having heavy doors.

To obviate this difficulty I construct my door with the outer thread of the largest diameter to fit in the swinging frame, whereby the whole surface of the door is left free for the lock and spindle or key, and no sagging can occur when the hinges are made sufficiently strong to hold the door in place.

My invention consists in such construction of the door, and in other parts, which will be hereinafter more fully described and claimed.

A represents the plating of a burglar-proof safe. B is the screw-door. C is the swinging frame. D is the lock. The door is of circular form, and is cut with two threads, *a b*, the first of which screws into the safe, while the latter screws into the swinging frame. The frame C is hung to the safe by hinges *c c*, of suitable form, and these hinges require only to be made of sufficient strength to hold the weight of the door, and prevent sagging when the door is open. The outer thread *b* is of the largest diameter, so that the whole face of the door is unimpeded, by which means the lock may be applied directly upon the inner face of the door, as shown, and the spindle or key may pass out centrally, thereby avoiding the necessity of applying the lock to the safe, as has heretofore been done, and also holding the door, when open, so firmly that no sagging can occur, and thereby insuring the engagement of the threads in the safe. This is of the utmost importance, since the threads are so small that even slight sagging will prevent their engagement. The size and pitch of the inner and outer threads must be the same to insure proper action. The door is provided with handles or levers *d d*, by which it is turned. Another advantage of making the outer thread of the greatest diameter is, that these handles cannot be turned without interfering with the swinging frame, which occurs where a central screw-stem is used. The safe and door are provided with a series of steps or offsets, *f f*, which shut together and form an indirect joint, that prevents the entrance of gunpowder or wedges. E is a ring, which is bolted or screwed to the jamb on the inside of the safe, and is cut with a thread to receive the inner thread *a* of the inner ring of the door. In burglar-proof safes this is necessary, since the plating is made of steel, or alternate steel and iron, plates, and the thread cannot be cut in this, owing to its extreme hardness, resisting tools of all kinds, and also to the fact that the joints of the plates spring more or less, which would throw the threads out of place. By the use of this independent ring of iron the attachment of the door is readily made clear to the inside of the safe. In

order to fit the hard steel door into the plating it is necessary to grind it in with emery, which makes a close joint, and in such case it would be impossible to cut a thread in the plating itself; hence the ring E must be used. *g g'* are two keepers or sockets, which receive the lock-bolt. The outer one, *g*, is made fast to the ring E, while the inner one, *g'*, is attached to the inner ring of the door, and revolves with the door, and retains the bolt at all times. In locking and unlocking, the bolt simply throws into and out of the outer keeper, and rides around in the inner keeper. The use of the inner keeper *g'* is specially to prevent wrenching strain being brought to bear upon the lock-bolt in turning the door. This it does by the close binding of the two keepers upon the bolt, expending the power upon the bolt, instead of bringing it to bear as a lever upon the lock-works, as would be the case if the outer keeper were alone used. This is of much importance, since great power is brought to bear upon the door by burglars, and the whole strain must be resisted by the lock-bolt. *h h'* are two stops, attached to the outside of the swinging frame, respectively, at the top and bottom. *i* is a projecting arm attached to the revolving door, and designed to be used in connection with these stops. The upper stop *h* is simply a short pin or stud, which projects from the frame. The lower stop *h'* is a right-angled lug, having the opening on the inside. The outward projection of the lower stop is greater than that of the upper one.

In screwing the door into place the arm *i* runs free of the stop *h* till it is fully entered, when it strikes the said stop, as shown in Fig. 1, and thereby gages the position of the lock-bolt with the outer keeper *g*, when it may be thrown therein, and thereby lock the door. In the reverse or back rotation of the door the arm *i* runs within the opening of the right-angled stop *h'* till the door is fully open, when it comes in coincidence with and strikes the said stop, thereby preventing unnecessary movement, and preventing the door from being disengaged from the swinging frame.

I am aware that stops have before been used in connection with the turning door, but differently arranged from mine, and I claim nothing more than the special arrangement as above described.

I do not claim, broadly, a double-threaded door, hinged in a swinging frame; neither do I claim, broadly, stops for gaging the forward and backward movement of the door; but

I claim—

1. The combination, with the swinging frame C, of the door B, constructed with the threads *a b*, the outer thread being of the greatest diameter, and engaging with the frame, thereby having the face of the door free for the passage of the spindle or key, and forming a firm support for the door, to prevent sagging, as shown and described.

2. In a burglar-proof safe, the combination, with the plating A and screw-door B, of the independent ring attached on the inside of the safe, and provided with a thread for the reception of the screw *a*, as shown and described, and for the purpose specified.

3. The combination, with the screw-door B and swinging frame C, of the arm *i* and stops *h h'*, projecting unequally from the frame, the lower stop constructed of right-angled form, in the manner and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

MARTIN BRIGGS.

Witnesses:
R. F. OSGOOD,
E. B. SCOTT.