2 Sheets—Sheet 1.

E. STOCKWELL.

Safe and Vault Fastening.

No. 206,147. **Patented July 16, 1878.**

Fig. 1.

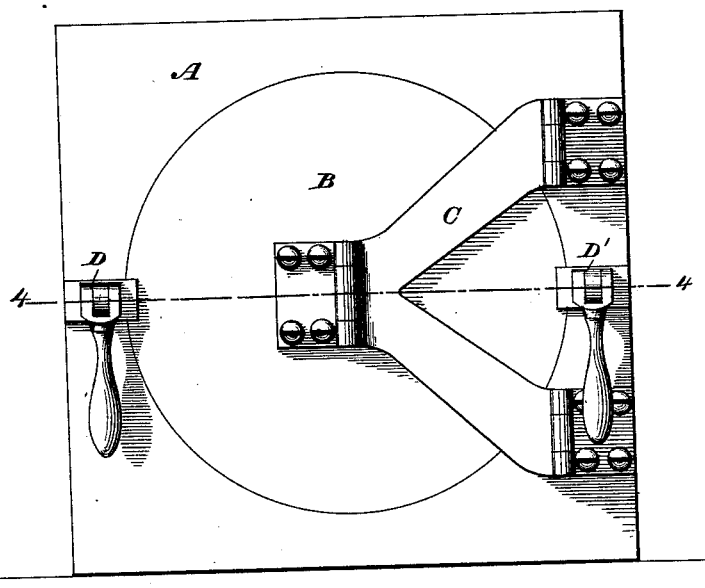
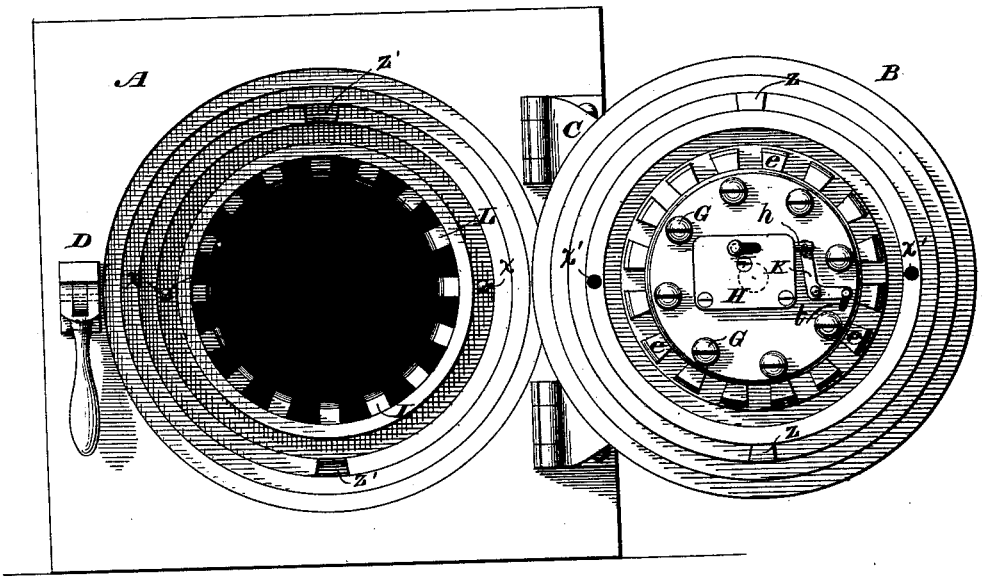


Fig. 2.



WITNESSES

John A. Ellis.
Wm A Skinkle

INVENTOR.

Emory Stockwell

By his Attorneys

Baldwin, Hopkins, & Peyton

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Fig. 3.

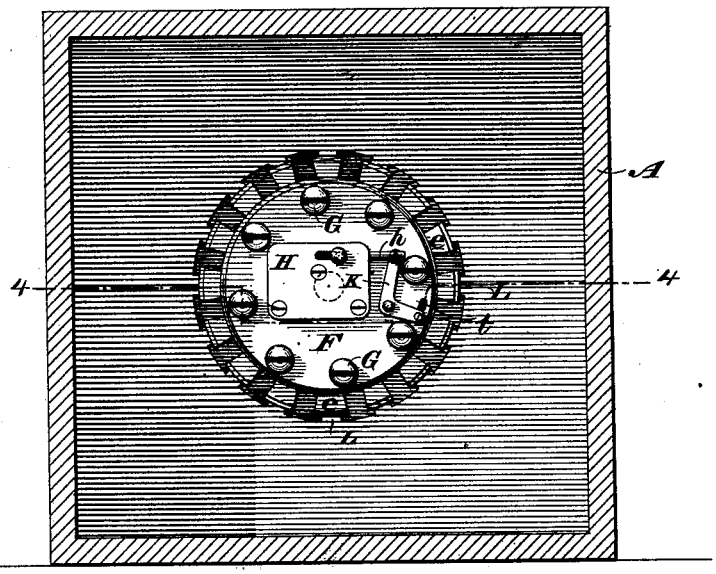


Fig. 4.

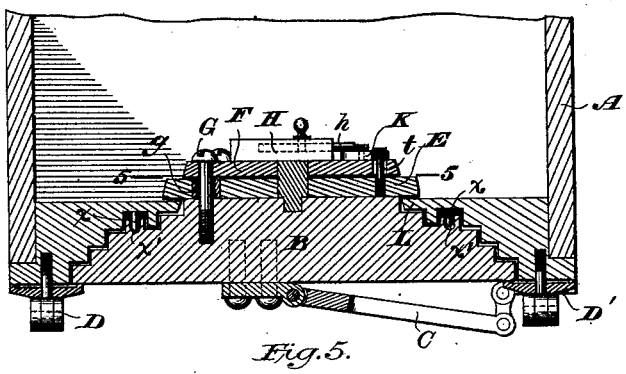
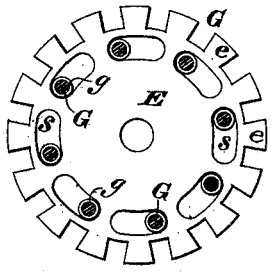


Fig. 5.



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UNITED STATES PATENT OFFICE.

EMORY STOCKWELL, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE LOCK MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN SAFE AND VAULT FASTENINGS.

Specification forming part of Letters Patent No. **206,147**, dated July 16, 1878; application filed March 16, 1878.

To all whom it may concern:

Be it known that I, EMORY STOCKWELL, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain Improvements in Safe and Vault Door Fastenings, of which the following is a specification, accompanied by suitable drawings illustrating my improvements, to which drawings reference is made by letters.

The object of my invention is to provide a safe or vault to be secured by a powerful system of independent revolving or oscillating bolt-work carried on the door and engaging at numerous points with or behind the jamb. This bolt-work is to be not only dogged and released, but also operated—that is to say, engaged and disengaged with the door-jamb by means of a time-lock, which, like the bolt-work, is carried on the door.

My purpose is to have no communication whatever between the outside and inside of the safe or vault through the door or elsewhere, either with the time-lock or the bolt-work. Heretofore time-locks provided with sliding bolts of their own for engaging with the door-jamb have been applied to safes and vaults without other fastenings so as to secure their doors, and all connection between the outside and inside of the depository has thus been cut off; but the weakness and inadequacy of this plan of fastening is that the sliding lock-bolts that can be housed in and carried by the lock-case are not sufficiently numerous and strong to secure the door at all points. Attempts have been made—as, for example, by the patent of Holbrook and Fish, granted April 28, 1857—to increase the number of sliding bolts that may be employed in connection with such a time-lock; but, however apparently excellent in theory, this plan (in which each bolt is independent of the others and is locked and unlocked by separate springs) has not attained success in practice.

Again, time-locks have been applied to dog and release independent ponderous sliding bolt-work connected with the exterior of the door by an an operating-spindle, as shown in the patents of Lyman Derby, of November 2, 1858, and Samuel A. Little, of January 27, 1874.

The objection to this plan is that, while the advantage of independent multiple bolt-work is secured, an avenue for attack is opened to the interior through the spindle, which can readily be driven in by blows or modern explosives and otherwise successfully attacked. This same objection holds with still greater force where a non-time-lock has been added to the bolt-work to independently dog and release it in conjunction with the time-lock, because the non-time-lock, through its spindle, furnishes an additional avenue for ingress to the interior of the depository, and by the use of the now well-known explosives, such as dynamite and certain gases, if any aperture whatever be opened or left capable of being mechanically or forcibly made to the interior of a safe or vault within a burglar's time, the depository can be blown to fragments and its contents secured with entire facility.

In an attempt to obviate these difficulties with the above-mentioned systems of securing the doors of safes and vaults another plan has been adopted, which consists in combining the door and bolt-work in one, and altogether dispensing with separate moving bolt-work. To accomplish this a circular door is employed, and is provided with radial projections around its inner periphery, and when closed it is contrived to be turned bodily in its place in the safe-wall by levers and other mechanical appliances, so as to bring its projections behind corresponding radial lugs within the door-aperture. The difficulty with this plan is that it involves the expensive, exact, and strong pivoting of the ponderous door on the fixed hinged part, so that it will always register perfectly, and so that it can be revolved by powerful mechanical appliances sufficient to overcome the friction of the door in its socket, which is necessarily very great, because rubber packing and steps must be employed in the joint between the door and the safe-wall, and the door must be pressed in and compress the rubber before it is turned for fastening. After it is supposed to be thus seated and forcibly turned for fastening it is locked to prevent its backward revolution by a time-lock. It is only possible with this plan to use a circular door, and the larger the safe or

vault and its door the greater the difficulty in fitting, adjusting, and working.

This comparatively complicated and expensive plan is defective, mainly because it contemplates locking by the heavy operation of turning the door itself.

My invention is intended to overcome all of the difficulties and objections above mentioned as pertaining to the various plans of securing depositories heretofore known, and to attain the most invulnerable fastening possible.

The gist of it consists in the employment of separate pivoted oscillating bolt-work on the inner face of a safe or vault door, (which door may be of the usual rectangular form or of circular form,) so constructed and arranged as to have no connection with the exterior of the door by spindle or otherwise, and to be oscillated for fastening and unfastening, after the door has been closed, by a time-lock constructed for the purpose.

The mechanical appliances by which I carry out my invention will now be particularly described, and then designated in my claims.

In the drawings, Figure 1, A indicates the body of a safe; B, the door; C, the projecting hinges; and D D', cam-clamps for pressing the door snugly into place, so as to compress the rubber or other equivalent packing to be used, as usual, in a groove or grooves employed in connection with the ordinary corresponding steps on the edge of the door and on the jamb. None of these parts are novel or peculiar, but may be of any ordinary or suitable construction.

My bolt-work consists of a frame or plate, E, either circular or rectangular in form, centrally pivoted to the inner face-plate of the door, and provided with any desirable number of bolts or projections, *e*. Over this pivoted bolt-work I secure a cap plate or disk, F, by means of screw-bolts G, passing through shoulders *g* in curved slots *s* in the bolt-work, taking care to leave space enough between the cap-plate and the door, so that the bolt-work will turn freely. This cap-plate backs up and serves to greatly aid the bolt-work to resist any heavy strain that may be applied to the exterior of the door to force it open.

H indicates a time-lock, with its reciprocating bolt *h* connected to one arm of a bell-crank lever, K, the other arm of which is connected, by a wrist-pin working in a slot, *t*, of the plate F, to the bolt-work.

It is not my purpose to claim the time-lock, *per se*, which I employ, or to describe it further than merely to indicate its function as a motor in this connection, because I make it the subject of a separate patent of even date with this.

I provide stumps or abutments L on the jamb, near its inner face, corresponding in number to the bolt ends or projections of the bolt-work, and at such distances apart as to permit the bolt ends to pass between them when the door is closed and pressed home by the cam-clamps. The time-lock then turns the bolt-work until its projections come behind the abutments to secure the door, and again, at the time predetermined, turns it back to release the door.

As my bolt-work, when compared with a door and bolt-work combined in one, is light, and as it can be pivoted on a small central pivot, and as it is not to be pressed tightly against any frictional surface, but can be made to play freely, and can have all its frictional surfaces polished and lubricated, and as its movement is rotary instead of sliding, it will require only a slight force, that may readily be exerted by a time-lock, to operate it.

In order to prevent the door itself from being turned to effect unlocking, when a circular door is used, by any powerful lever or mechanism applied to its exterior, I provide two or more strong dowel-pins, *x*, in the jamb, to enter corresponding holes *x'* in the door when it is closed, and this is a feature marking the advantage of my invention over the plan of turning the door itself for fastening, because, where that is done, there are not only the objections hereinbefore pointed out, but the resistance to turning for opening it by means of the powerful appliances of burglars is only that of the lock-bolt of the time-lock, which is necessarily very precarious in such a situation.

Instead of using dowel-pins, lugs and corresponding slots *z z'* may be formed in one or more of the steps, if preferred, or any other well-known and convenient interlocking arrangement may be employed.

I may cast my bolt-work in one piece or make it, as usual, of several pieces connected together.

Although it is not consonant with the attainment of the highest security at which I aim, it is obvious that a spindle might be connected with my bolt-work, and extend to the exterior of the door, to operate the bolt-work from without in the usual way, should it be desired in any instance, and that, therefore, my plan does not necessarily exclude the possibility of the ordinary mode of operation of independent bolt-work, although I apprehend that, in practice, there would seldom be occasion for it.

Having thus described my invention and its mode of operation, what I claim is—

1. The combination, with a non-rotating safe or vault door, of a centrally-pivoted separate rotating bolt-work and a time-lock connected with the bolt-work by intermediate mechanism, substantially as described, by which the bolt-work may be alternately cast and retracted at predetermined times, the bolt-work being applied to the inner face of the door, so as to have no connection by a spindle or otherwise with its outer face, substantially as described.

2. The combination, with a non-rotating safe or vault door, of a centrally-pivoted separate rotating bolt-work and a cap-plate secured to the inner face of the door over the body of the

bolt-work, so as to back it up and afford a seat for a time-lock, substantially as described.

3. The combination of a centrally-pivoted rotating bolt-work, a circular door, and fixed pins and pin-holes x and x', or interlocking lugs and slots, whereby the door is secured against turning to rotate the bolt-work and effect unlocking, substantially as described.

4. The combination, with a circular non-rotating safe or vault door, of a concentric centrally-pivoted separate rotating bolt-work applied to the inner face of the door, so as to have no connection with its outer face, substantially as described.

In testimony whereof I have hereunto subscribed my name.

EMORY STOCKWELL.

Witnesses:

E. D. OGDEN, Jr.,

SCHUYLER MERRITT.