# L. LILLIE.

## Combined Metal Safe.

No. 108,494. Patented Oct. 18, 1870.

Fig. 1.

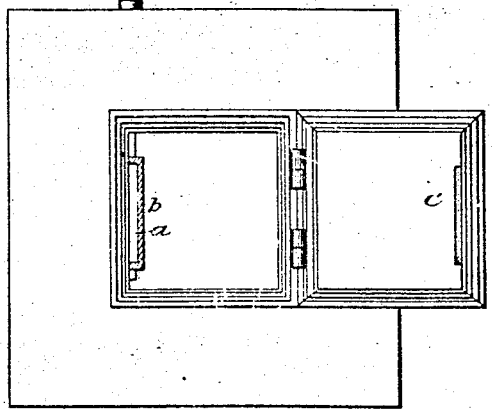



Fig. 2.

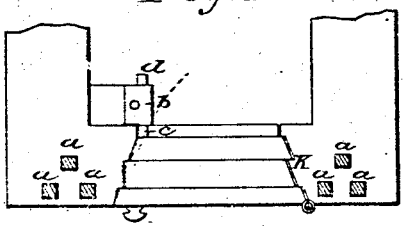



Fig. 5.

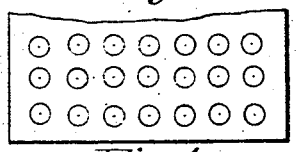


Fig. 3.

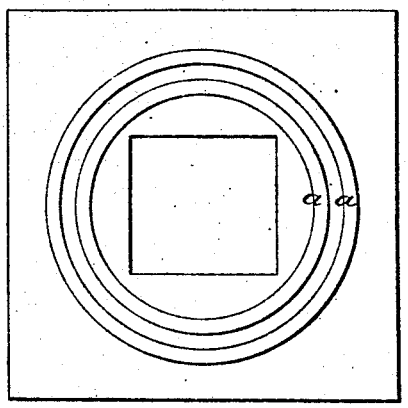



Fig. 4.

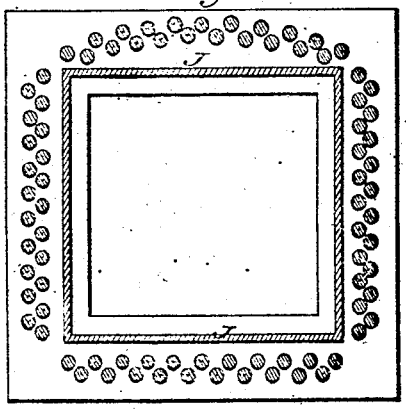
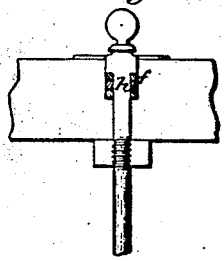



Fig. 6.



Witnesses:

Ralph C. Lawson

Robert Lang

Inventor.

Lewis Lillie

# United States Patent Office.

LEWIS LILLIE, OF CLINTON, NEW JERSEY.

Letters Patent No. 108,494, dated October 18, 1870.

## IMPROVEMENT IN IRON SAFES.

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

I, LEWIS LILLIE, of the town of Clinton, county of Essex and State of New Jersey, have invented certain Improvements in Iron Safes, of which the following is a specification.

My improvements consist—

First, in adding tensile to vertical strength of the front of the safe;

Second, in a provision for resisting the operation of drilling;

Third, in a manner of attaching and fitting the door;

Fourth, in a peculiar adaptation of bolt and spindle to locking and securing the door; and

Fifth, in the use of steel in certain parts, in combination, as hereinafter described.

In the accompanying drawings—

Figure 1 is a front view of the safe, showing the position of the lock and the place where the bolt enters the door.

Figure 2 is a cross-section of front and door, and shows the principle of security in the lock.

Figure 3 is a vertical section of the front, showing the means of increase of tensile strength of resistance in the front.

Figure 4 is a cross-section through the body of the safe, showing the apertures for the rods of steel to balk the drill.

Figure 5 is a piece of one of the sides of a case or box of wrought-metal plates, cast in the body, the edges of which are seen in fig. 4.

Figure 6 is the improved spindle of the lock.

There is shown in fig. 3, rings *a*, which are of cast-steel bars, about an inch square, imbedded in the iron when cast.

The tensile strength of each ring being about one hundred and thirty thousand pounds, two or three or more of these rings imbedded in the five inches of cast-iron around the opening for the door offers a resistance so that no wedging between the door and jamb can open it one hair's breadth.

In the main body of the safe, as shown in fig. 4, holes about an inch in diameter are cored in the casting, alternated, so that a drill can only be introduced between them at such an angle, if at all, as to render perforation of the next hard obstruction an impossibility.

The cored holes are filled with hardened steel rods, driven in after the safe is cast, the holes coming through at the back of the safe.

The wrought-metal pipes of my former patent are omitted.

The door, fitting as shown in fig. 2, is either made first, and the safe cast upon it, or the safe is made first, and the door cast in the opening. In either case, the hinges are imbedded in the castings. I, by this manner, obtain a perfect fit of the door to the jambs.

The lock *b* is attached to the body of the safe. The inner edge of the door in opening moves in a circle, the arc of which is shown by dotted lines in fig. 2, the hinge being the center; any small hard substance, an eighth of an inch in thickness, interposed between the door and the jamb at that edge, renders the door immovable. I therefore form a recess, *c*, in the inner edge of the door, for the interposition of the bolt between the door and the jamb; its slightly wedging fit secures the door more effectually than by any other locking. No force less than is required to crush the metal to atoms can open the door the sixteenth of an inch; at the same time there is a projection, *k*, on the opposite side of the door, that catches in a corresponding projection in the jamb, and which would, with the lock, keep the door in its place, if the hinges were entirely cut off.

The spindle *e* of the lock *b* has a shoulder, *f*, at its upper end, the part above it fitting a recess, *g*.

In the top of the safe rings of rubber, *h*, or any other elastic material, are placed between the shoulder and the bottom of the recess.

A nut, *i*, is put upon the spindle inside the safe, and as the spindle passes freely quite through the lock, no pulling or driving can remove the spindle or injure the lock.

Casting frames or boxes, in the body of a safe, formed of bars of wrought-iron, is common. I am not aware that steel plates have ever been used to enhance the strength.

Fig. 5 represents a piece of the side of the frame or box, the edge of which is shown at *j* in fig. 4; the cast metal meeting through the holes forms a solid plate.

Permutation dial-locks are used, and there can be more than one, if preferred, and can be operated by one spindle.

I claim—

1. The rings *a*, constructed as and for the purpose shown and described.

2. The hardened steel rods, as and for the purpose hereinbefore set forth.

3. The method of casting the door and safe in relation to each other, as described.

LEWIS LILLIE.

Witnesses:

RALPH H. PAINE,

ROBERT LANG.