

E. M. HENDRICKSON.
 Improvement in Burglar-Proof Safes.
 No. 132,156. Patented Oct. 15, 1872.

Fig. 1.

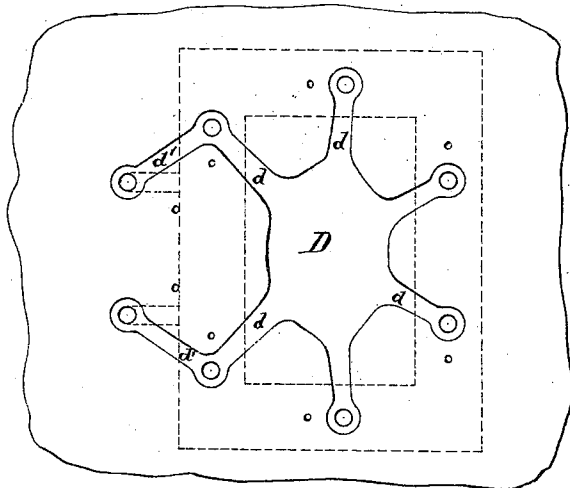


Fig. 2.

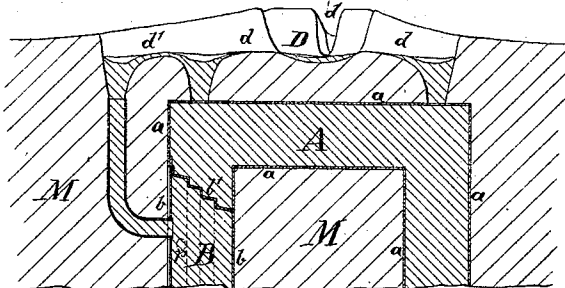


Fig. 4.

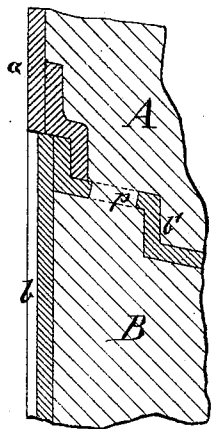


Fig. 5.

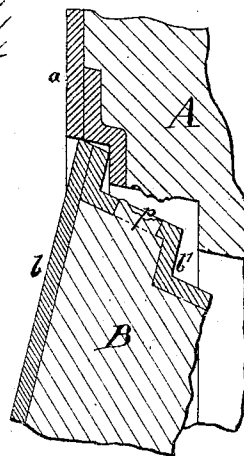
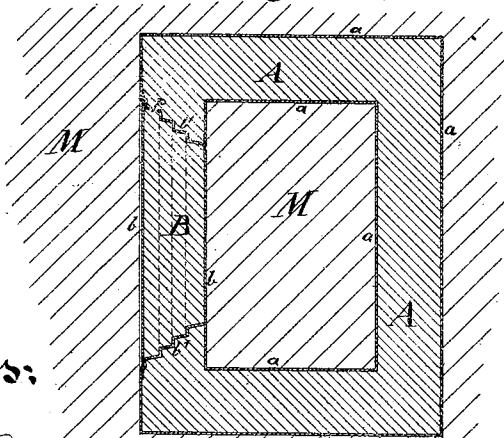


Fig. 3.



Witnesses:

Inventor:

Wm C Dey
Arnold Hornum

E. M. Hendrickson.
 by his attorney *J. S. Bates*

UNITED STATES PATENT OFFICE.

EZEKIEL M. HENDRICKSON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN BURGLAR-PROOF SAFES.

Specification forming part of Letters Patent No. 132,156, dated October 15, 1872.

To all whom it may concern:

Be it known that I, EZEKIEL M. HENDRICKSON, of Brooklyn, Kings county, New York, have invented a certain Improvement relating to Burglar-Proof Safes, of which the following is a specification:

The invention relates to safes in which Franklinite iron or other very hard material is cast to form the shell of the safe, either alone or variously interspersed with basket-work coils or other ties of soft iron. My invention provides for cheaply and perfectly fitting the door.

The following is a description of what I consider the best means of carrying out the invention. The accompanying drawing forms a part of this specification.

Figure 1 is a plan view of the mold, with the position of the safe in dotted lines. Fig. 2 is a vertical section, showing the same condition of the parts except that the metal has been poured. Fig. 3 is a horizontal section, showing the safe completely molded, but before the door has been opened. The succeeding figures show a small portion in horizontal section on a larger scale. Fig. 4 shows the cast-metal connection through the shell of the door, before it has been broken by opening the door. Fig. 5 shows the same after opening by a sufficient force.

Similar letters of reference indicate like parts in all the figures.

A is the main body of the safe, and B is the door. Each part is formed by pouring the melted hard metal into a space provided between thin sheets of wrought-iron previously placed in position. The shell of the main body is marked *a*, and the shell of the door is marked *b*. The stepped portion, which forms the edge of the door, is marked *b'*. It will be observed that there is no corresponding wrought metal at the adjacent edge of the main body. The two shells, which form the inner and outer surfaces of the main body, are held apart at proper distances by transverse stays, without any edge material. The Franklinite or other melted metal in the main body is allowed to flow directly against the stepped surface of the edge of the door, and it is molded thereby. The edge of the door being previously brushed over with black lead properly moistened, there is no adhesion between the wrought-iron of the door and the cast-iron which applies around

the exterior thereof. In pouring the melted material into the safe measures are taken to insure that the door fills evenly with the main body of the safe. There is no tendency of the metal to either expand the door or contract it beyond its proper limits. There is no tendency to such distortion due either to the fluid pressure of the dense melted metal or to the expansion by heat. The whole is of an even temperature when the iron is poured, and the shrinkage, in cooling, is uniform in the door and in the surrounding metal. M is the earth of the mold, which fills the entire interior of the safe, and is packed tightly around the exterior. D is the main reservoir of melted metal, and *d d* are the sprues and gates—in short, the channels through the mold which convey the melted iron into the shells to form the safe. Supposing the filling to be Franklinite iron, the metal is brought in a large ladle and poured rapidly into the reservoir D. It flows from thence, through the channels represented, to the several holes which supply it to the top of the safe, and it commences to fill the main body of the safe very rapidly. Soon after its commencing thus to fill the main body it accumulates in sufficient head in the reservoir to flow through certain side channels, which are marked *d'*, and thus passing around over the edge and partly down on the front face of the safe, flows into the holes provided in the front shell *b* of the door B. It is intended to so proportion these channels that before the door commences to receive the melted metal the fluid material will have accumulated in the main body A up to about the level of the lower edge of the door. It is difficult to effect such end with absolute perfection. There is always liable to be a more rapid flow of the metal into one part than into the other, so that in filling the safe the metal will accumulate in the part A to a higher level than in the part B, or the reverse. Such a chance might induce distortion. To avoid this I produce a number of small holes in the edge *b'* of the sheet-iron frame of the door. These holes are marked *p*. So soon as the melted Franklinite has filled above the lowermost of these holes the metal flows freely through the lowest, and in succession through the several holes *p* above, as the metal rises, so that any tendency to inequality in the height of the surface level in the

two parts of the safe is obviated. When the safe is nearly cooled I insert a strong temporary handle where the knob is intended to apply, and, by the aid of a hydraulic jack, or otherwise, slowly and powerfully strain open the door. The first effect is to slightly spring the parts; the next is to break the connections of the hard metal through the holes *p*, and thenceforward the door may be swung open and closed like any other. It is important to make the holes *p* only of moderate size on account of the violent strain which would otherwise be required to break the connection.

It is not necessary to describe the several means which I propose to adopt in properly constructing and securing together the thin metal parts of the frames *a* and *b b'*. I prefer a thickness of about one-fourth of an inch, and to stud the surface thickly with rivets and variously distorted attachments, which extend from the wrought-iron a little way into the cavity which is to be filled by the melted Franklinite. These serve to hold the whole securely together, in addition to the adhesion, which I promote as far as possible, between the wrought-iron and the cast material.

The edge of the door is constructed with offsets or steps, as above intimated. The material therefor I have produced in my experiments by the aid of rollers properly turned; and I have cut the iron thus produced to form a miter-joint at each corner and attached the pieces strongly, with a stout piece riveted underneath, forming a gusset or jump-joint. Stout screws are cast in on the inner face of the door, by which to attach the lock, the train-bolts, and any other attachment which may be

necessary, particularly one or more stout hooks or lapping pieces which are adapted to engage within the main body of the safe as the door closes, to avoid the possibility of opening the door by destroying the hinges.

I have succeeded, by this means, in producing safes having the body in one solid and strongly-united mass, and the door in another, with the door fitting easily and almost airtight into its place, with certainty, and with little labor or expense.

It will be understood that the stay-bolts or other soft-iron parts which are required to extend quite through the safe, from the outer to the inner side, should be crooked, so as to avoid the possibility of drilling through them into the interior. The screws for securing the lock and its accompaniments, as also for securing the hinges, need not extend through.

I claim as my invention—

1. The casings *a b b'*, filled with melted material in the manner shown, so that the metal is molded by contact with the exterior of the edge of the door, as and for the purposes herein specified.

2. The holes *p*, in the edge *b'* of the shell of the door, arranged to allow a flow of the metal in either direction, equalizing the level of the melted material in the main body and the door, as herein specified.

In testimony whereof I have hereunto set my hand this 19th day of August, 1872, in the presence of two subscribing witnesses.

E. M. HENDRICKSON.

Witnesses:

WM. C. DEY,
ARNOLD HÖRMANN.