

No. 129,795.

Patented July 23, 1872.



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John Witham

Inventor.

Indentor:
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Improvement in Safe-Vaults.

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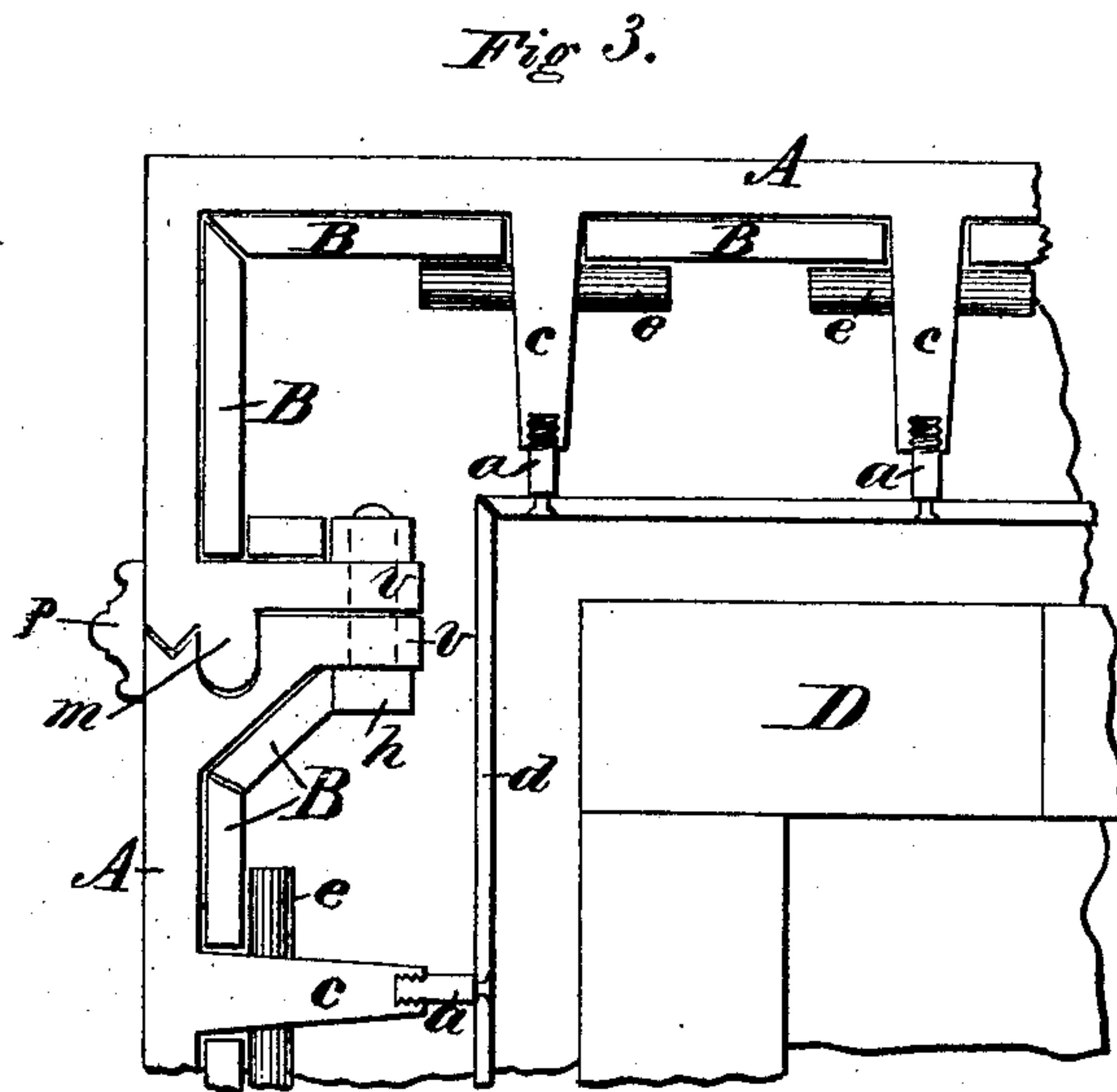
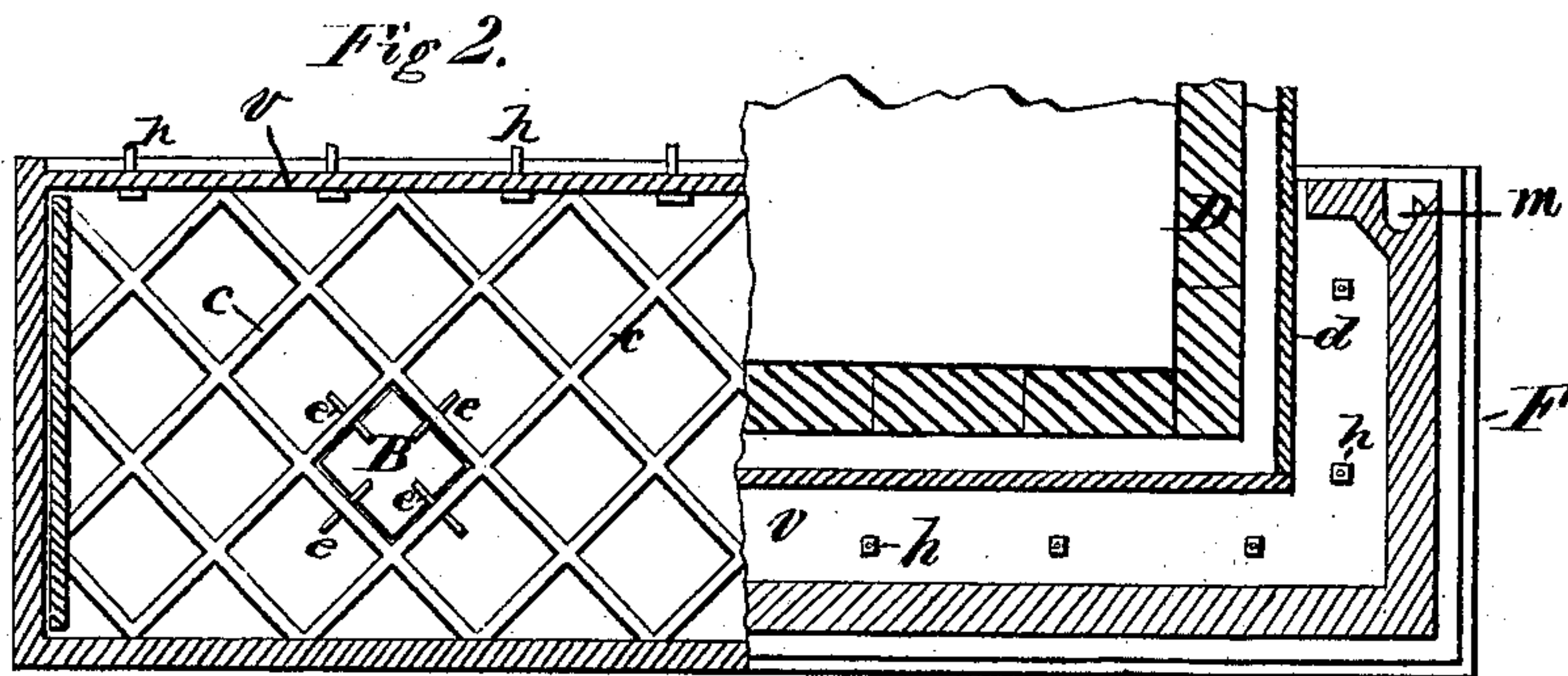
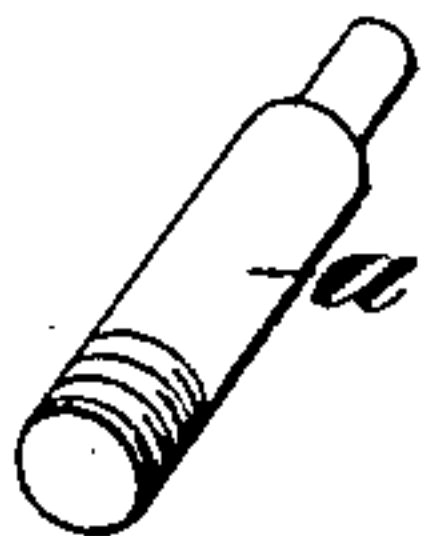


Fig 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN SAFE-VAULTS.

Specification forming part of Letters Patent No. 129,795, dated July 23, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JOHN CRUMP, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in the Construction of Safe-Vaults, of which the following is a specification, reference being had to the accompanying drawing.

My invention consists in constructing vaults for safes and similar purposes of an exterior shell of cast-iron, formed in sections in such a manner that they can be united by means of flanges and bolts internally, and with joints of such a construction as to prevent them from being opened by means of wedges; and also in providing them on their inner faces with strengthening-ribs. It further consists in a novel manner of securing chilled plates and also a steel lining thereto, and in certain other details, all as hereinafter more fully described.

Figure 1 is a front elevation of a vault made on my plan, a portion being shown in section for the purpose of more fully illustrating the same. Fig. 2 is a top-plan view of the bottom, shown partly in section. Fig. 3 is a transverse section of a portion enlarged, and Fig. 4 is a perspective view of one of the tie-bolts used to secure the steel lining.

The object of my invention is to provide a means whereby vaults, such as are used by safe-deposit companies and similar institutions, may be more readily and cheaply constructed, and which shall be so made that they can be built complete at the factory, excepting the masonry work, and be shipped and set up at any point desired.

To this end I construct the body or outer shell of cast-iron plates, A, of any desired size, having cast thereon and projecting from their inner faces a series of ribs, c, as shown in Fig. 1. These ribs are arranged to intersect each other, thus forming on the inner face of the plates a continuous series of cells of any desired shape, and preferably not over six inches in diameter, the ribs being six inches, more or less, in depth. These plates along their edges are provided with internally-projecting flanges v, as shown in Fig. 3, by means of which they can be bolted firmly together by bolts h. To prevent the possibility of using wedges to separate the parts forming the body, the sections

at all points where they meet—at sides, top, and bottom—are provided with a tongue-and-groove joint, having curved or rounded surfaces, as shown at m, Fig. 3, and also with a V-shaped joint outside of the tongue and groove. By this method of forming the joint it will be seen that if a wedge be driven into the joint from the outside it will first strike against the solid metal at the point of the V-shaped recess, and cannot penetrate further. If, however, the inner portion of the metal forming this V-shaped recess should be broken off by the wedge, its point would then enter the curved recess, which would tend to deflect the wedge and would break off its point, thus rendering it useless. In order to render it still more secure I also rivet, bolt, or otherwise secure over the outside of the joint a strong rib, p, which may be made of hardened steel and formed in the shape of an ornamental molding, as represented in Fig. 3. It will be understood that the top and bottom parts are constructed in the same manner and united by the bolted flanges v and by the style of joints already described, and as represented in Fig. 1. To guard against the use of drills I provide a series of chilled plates, B, of the proper shape and size to fit in the cells formed by the ribs c, and secure them therein by means of steel pins or bolts e, which pass transversely through the ribs c, inside of the plates B, as represented in Figs. 1 and 2 and more clearly in Fig. 3. Thus it will be seen that if an attempt be made to drill through the plates at any point other than directly over the ribs c the drill will strike the plates B, which will prevent their further penetration; and if they chance to strike the ribs the drill will have to penetrate some seven inches of solid metal; and even if this were done, in order to effect an entrance such a number of holes would have to be drilled that it would be impossible to accomplish it within the limited time that burglars would have for such a purpose. The plates B, when inserted within the cells, are to be embedded in cement of any suitable kind, so that no space shall be left between them and the outer plates, thus preventing the possibility of introducing powder between them. As a further means of security I then secure, at some little distance from the inner face of the ribs, c a steel lining, d, this

lining consisting of a strong steel plate extending all around the sides and from top to bottom, with its ends resting in grooves formed for it in the flanges of the side plates A at top and bottom, as shown at *t*, Fig. 1. This lining is further secured by tie-bolts *a*, as shown in Figs. 1 and 3. These bolts, one of which is shown detached in Fig. 4, are formed with a screw-thread on one end to screw into holes in the inner edges of the ribs *c*, and with a shoulder, against which the steel plate *d* rests, their inner ends protruding through holes in the plate *d* and being riveted on the inside, as represented clearly in Fig. 3, thus securing the steel lining rigidly in place and leaving an air-space all around between this lining and the outer body. As shown in Fig. 1, the steel lining is also placed at top and bottom, and secured in the same manner. To render the vault still more complete, especially as regards fire, I then build inside of this steel lining, and separated a few inches therefrom, a brick lining or wall, D, as represented in Figs. 1 and 3, this wall being tied to the body A at suitable points by means of metal ties *n*, which have their outer ends secured to the vertical flanges *v*, as represented in Fig. 1. By this means a second air-space is formed between the steel lining and the brick wall, and as confined air is one of the best non-conductors of heat this arrangement affords great security against fires. To prevent the accumulation of moisture within these spaces, as may occur when the vault is located in damp situations, I propose to connect them by means of a strong metal tube, *g*, as shown in Fig. 1; and, if desired, a tube may lead from the top to a flue in the wall, an inlet-tube entering the bottom at some safe or inaccessible point, by which means a current of air may be allowed to pass at will

through the spaces; or, if desired, it may be arranged to have a current of cool air forced continuously through them. By this means not only will the accumulation of moisture be prevented, but in case of fire additional safety is secured by the entrance of cold air into the air-spaces, which will thus displace the heated air that would be generated therein by the fire outside.

It is obvious that this plan of constructing vaults is applicable to a great variety of purposes, and as the metal parts can all be prepared at the factory, ready to be shipped and set up at any desired point, it affords a most simple and complete method of constructing such structures.

Having thus described my invention, what I claim is—

1. The cast-iron plates A, provided with the ribs *c* and joints *m*, constructed substantially as and for the purpose set forth.

2. The chilled plates B, in combination with the plates A, when arranged substantially as described.

3. In combination with the body, composed of the plates A, I claim the steel lining *d*, arranged to operate substantially as set forth.

4. I claim the combination, in a vault, of the cast-iron body A, the steel lining *d*, and the brick wall D, when constructed and arranged substantially as described.

5. I claim a vault or room having its body or outer wall composed of a series of cast-iron plates, constructed and united substantially as herein described.

Philadelphia, Pa., April 22, 1872.

JOHN CRUMP.

Witnesses:

WM. McKEEGAN,
W. W. DOUGHERTY.