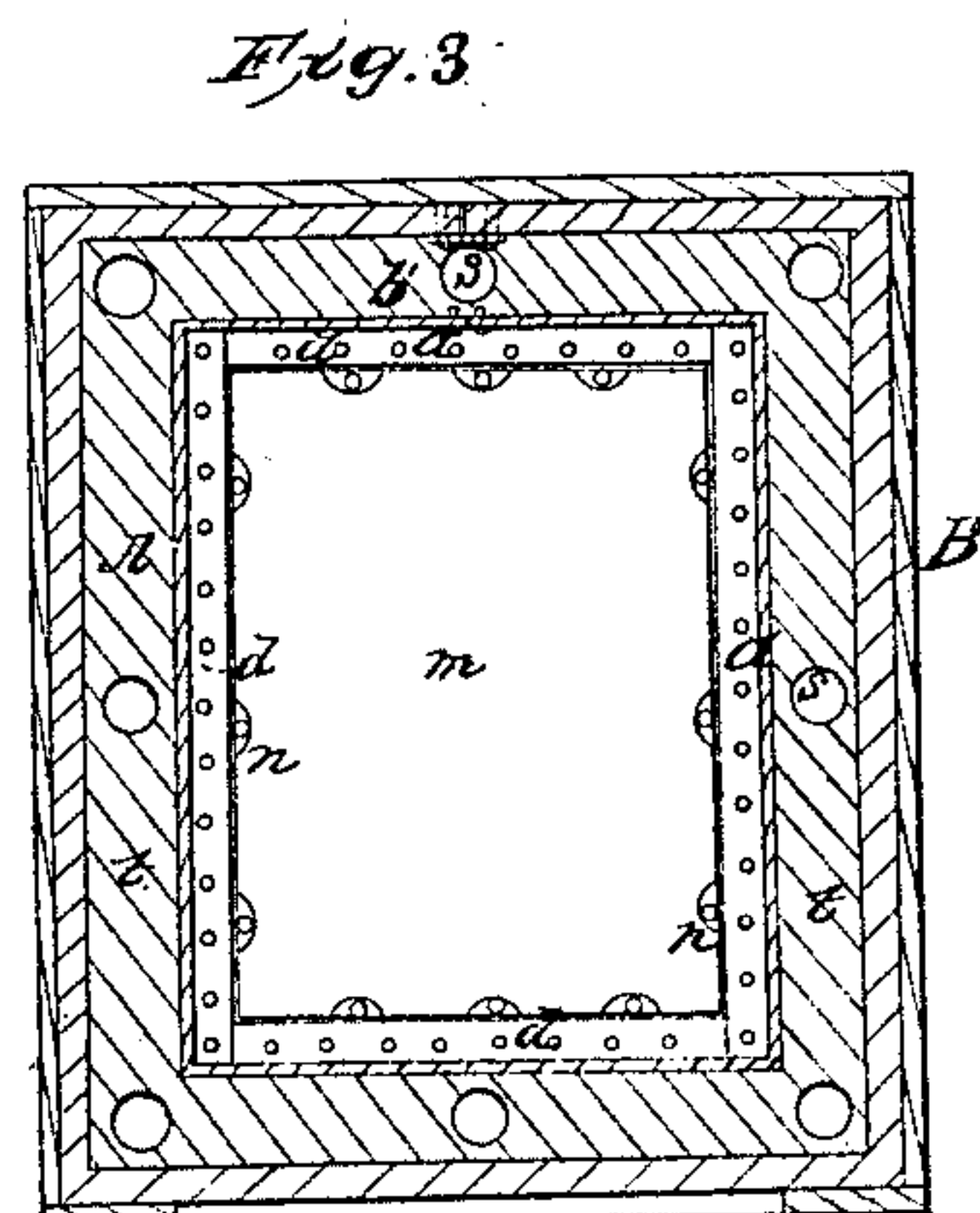
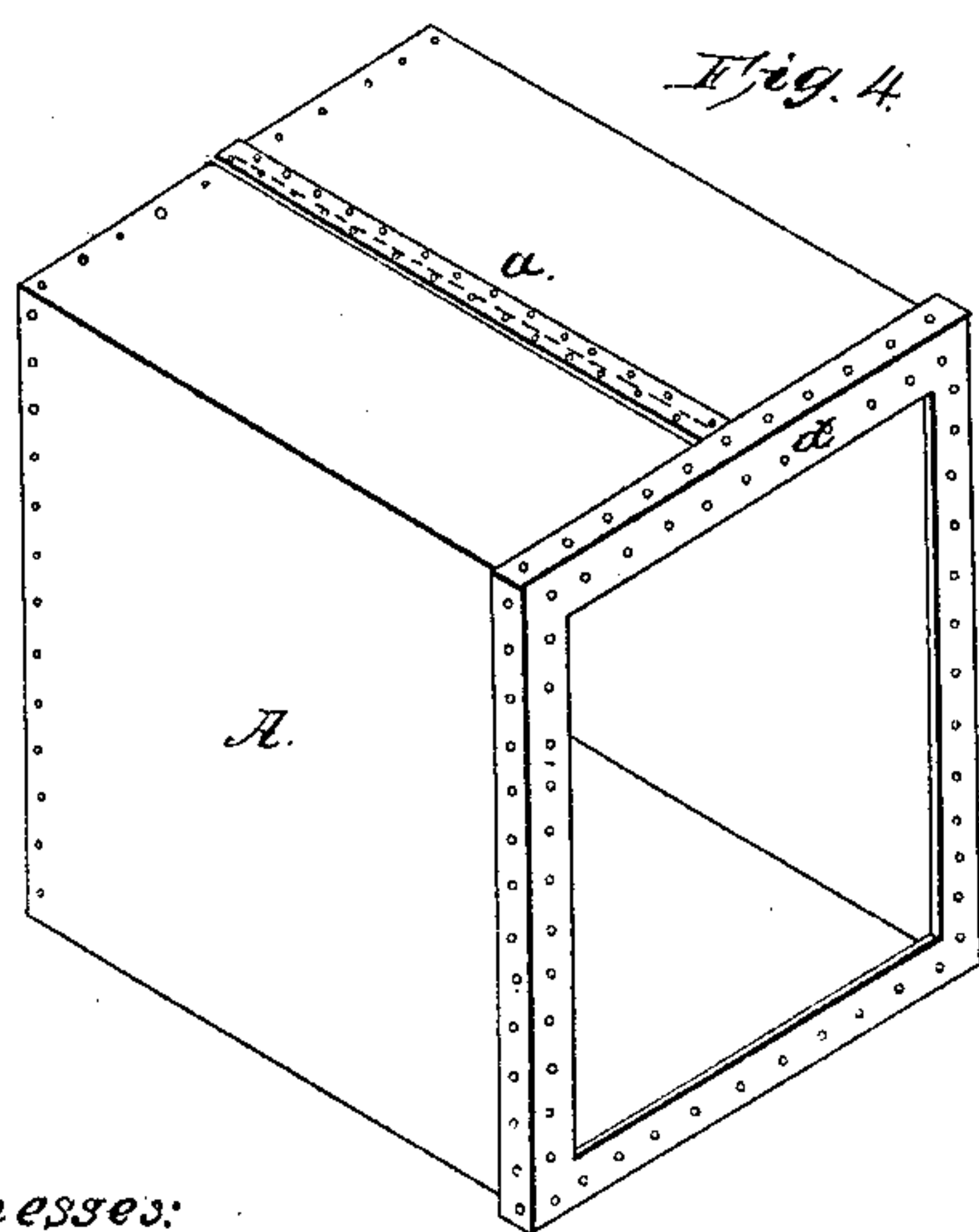
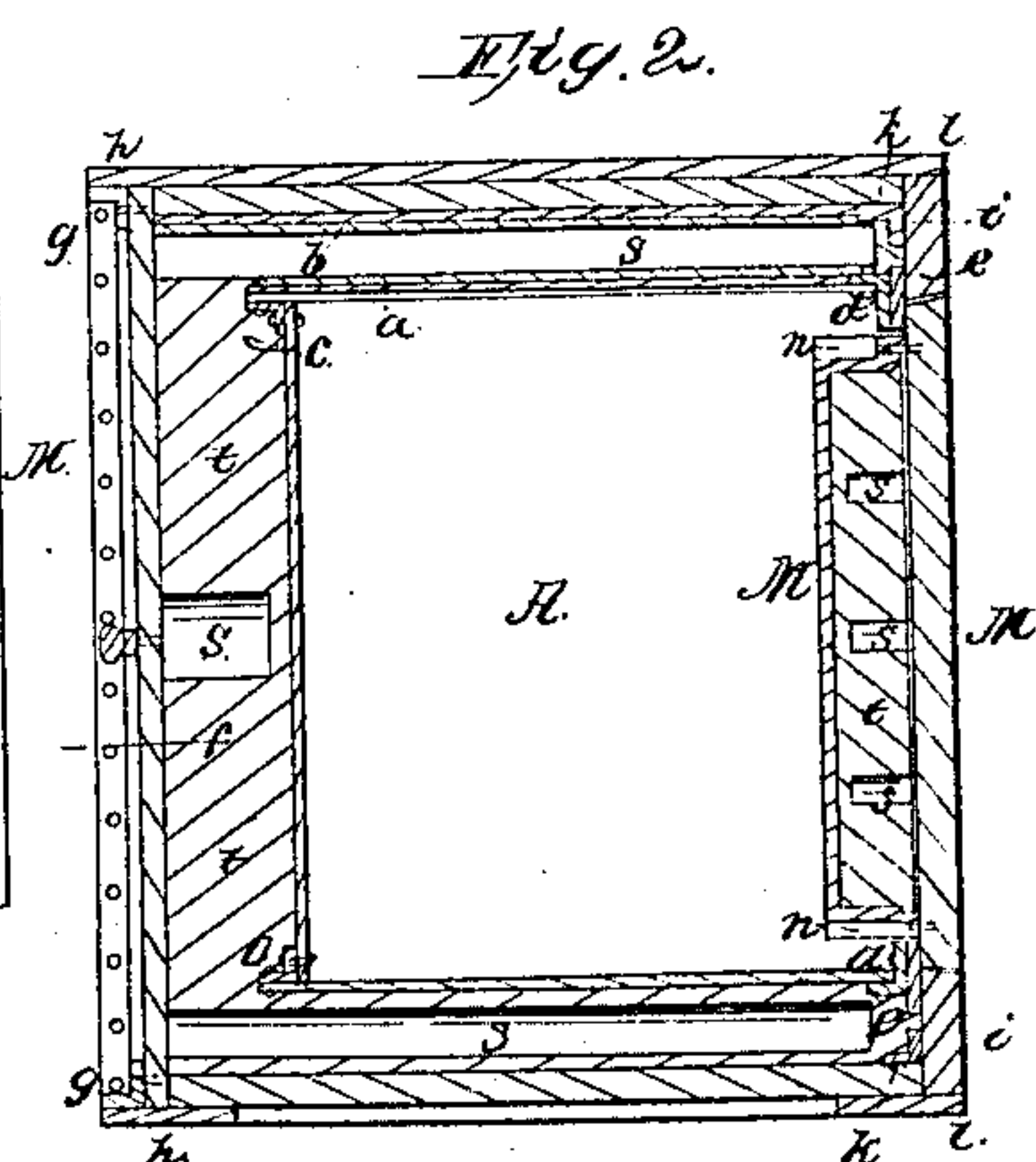
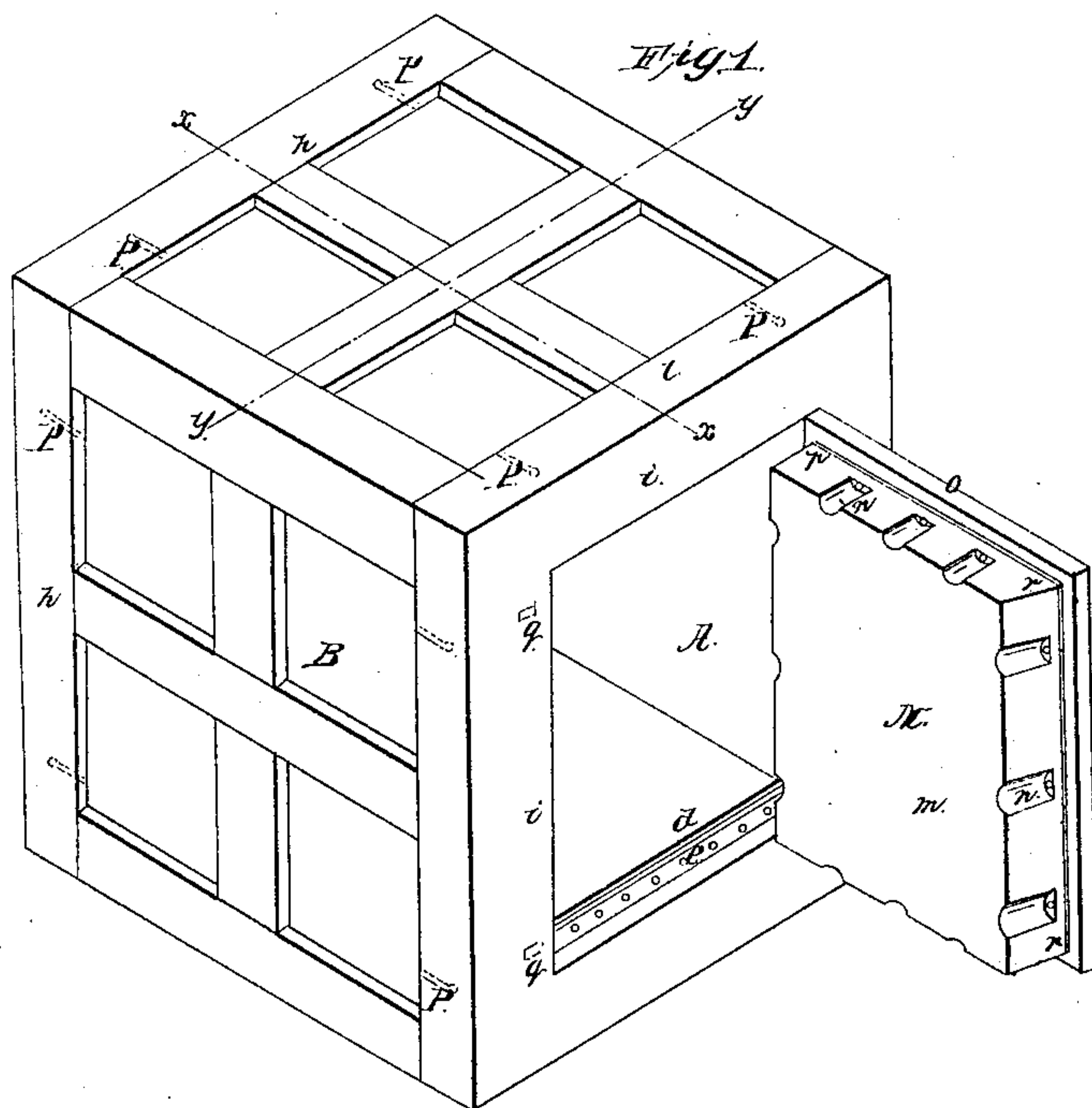


*E. N. Horsford,*

*Fire-Proof Safe.*

*N<sup>o</sup> 39,920.*

*Patented Sep. 15, 1863.*



Witnesses:

*J. S. Anderson*  
*W. Brooke Jones*

Inventor:

*E. N. Horsford*  
by his attorney  
*Wm. B. Baldwin*



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## UNITED STATES PATENT OFFICE

EBEN N. HORSFORD, OF CAMBRIDGE, MASSACHUSETTS.

## IMPROVEMENT IN FIRE-PROOF SAFES OR CHESTS.

Specification forming part of Letters Patent No. 39,920, dated September 15, 1863.

*to all whom it may concern.*

Be it known that I, EBEN NORTON HORSFORD, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Fire-Proof Safes or Chests, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in perspective of a fire-proof safe embracing my improvements, the door being shown as open in order to illustrate the details of its construction; Fig. 2, a vertical section through the same at the line *xx* of Fig. 1; Fig. 3, a similar section at the line *yy* of Fig. 1; and Fig. 4, a view in perspective of the inner shell or casing of the safe detached, showing more especially the manner in which the shells are constructed.

Fire-proof safes as heretofore constructed have been found by experience to be defective in many respects. They usually have been filled with some material which is a bad conductor of heat, which is put in in a wet state. The safe is consequently liable to be burst from the freezing of the water. The moisture, moreover, exhales through the joints of the safe and injures its contents, besides depriving it of its fire-resisting qualities and corroding the casing. Furthermore, when exposed to a high temperature the steam or vapor expelled from the filling forces its way into the papers or other valuables in the safe and injures them.

It is one of the objects of my invention to obviate the disadvantages incident to safes of this class, and to provide a safe which shall preserve its contents under any ordinary circumstances; and to these ends the improvements claimed under this patent consist, first, in forming cavities or spaces in the filling of a fire-proof safe in order that when exposed to a freezing-temperature the water may be driven into these cavities by its expansion, and thus prevent the bursting of the safe or the straining or opening of its joints or seams; secondly, in the use of a composition of gutta-percha and paraffine varnish for coating the joints and surfaces of the casings, which prevents corrosion and renders the joints tight.

In the accompanying drawings, which exemplify one mode of carrying out the objects

of my invention, the safe is shown as consisting, mainly, of two shells or casings, A B. In order to render these casings perfectly air or water tight, I take a sheet of metal and bend it into the form of a rectangular tube or box open at both ends and with its edges abutting against each other, as shown in Fig. 4, which represents the inner shell, A. The seam thus formed is covered with an overlapping plate or bar, *a*, and fastened with a double row of rivets like a steam-boiler. A sheet, *b*, of metal is cut accurately to fit one end of this tube or casing A, and strips *c* of angle-iron are then riveted around its outer edge. (See Fig. 2.) The plate is then slipped within the end of the casing and securely fastened by rivets passing through the angle-iron and the edges of the casing, as shown in Figs. 2 and 4. The other end of the tube or box at which the door is situated is likewise encompassed by angle-irons *d*, which are riveted to its outer side in such manner that their edges project within the casing and form a flange, to which the battening-bar *e* of the door may be attached, as shown in Fig. 2.

The outer casing, B, is constructed in a manner similar to the inner one. In this instance, however, the back plate, *f*, instead of fitting inside the outer casing, abuts against it, and has its angle-irons *g* riveted to a band or hoop, *h*, which encompasses the back end of the safe, and the bar *b'*, which overlaps the joint, is riveted on the inner side of the shell. The safe is to be strengthened externally by bands or straps in the most approved manner. The joints and seams in every instance are to be made air and water tight and securely fastened in any suitable and well-known way. The front hoop, *i*, is attached to the outer shell by means of angle irons *k*, instead of the knees usually employed for that purpose, firmly riveted to both hoop and shell. The battening-bar *e* is in like manner firmly riveted to this hoop near its inner edge, and, as the flange *d* of the inner casing, A, is likewise riveted to this battening-bar, the two shells are securely united. A hoop, *l*, similar to the back hoop, *h*, encompasses the front end of the safe and protects the joint between the casing B and the hoop *i*. The door M is made of a plate of metal suitably strengthened by hoops and bars in the usual manner. The back plate, *m*, of the door is cast in one piece with slots or grooves *n* in



its edges for the insertion of screws by which to secure it to the plate M. A strip, *o*, of vulcanized-rubber packing is interposed between the two plates in order to form a tight joint. The door may be hung in any approved way, and an internal door may be provided if deemed necessary.

In order to prevent corrosion or the escape of moisture, I coat thoroughly all the internal portion of the filling-compartments with a varnish composed of one part by weight of gutta-percha and three parts of paraffine varnish prepared in the following manner: I heat the varnish in a suitable vessel and while heated introduce little by little small pieces of the gutta-percha until the whole quantity is dissolved and thoroughly incorporated with the varnish, stirring the mixture all the time. This varnish is to be applied while hot with a brush or swab several hours before the filling is poured in.

Before filling the safe I turn it face or door downward and insert into the compartments to be occupied by the filling rods or bars of wood or metal. These rods are made slightly tapering, and may be wrapped with paper in order to facilitate their removal after the filling *t* is poured in. I prefer to arrange these rods parallel to the sides of the safe and equidistant from each other. This, however, is not a matter of essential importance. The rods should be long enough to reach from the front to the back of the safe, and it is best to have not less than eight of them and arranged as shown in the drawings. They should likewise be of such dimensions that when withdrawn from the filling the aggregate capacity or area of the cavities *s*, formed by them, will not be less than one twelfth of the entire space embraced in the compartments occupied by the filling. The filling is poured into its compartments in a plastic or fluid state, and when it has "set" sufficiently the rods are withdrawn, leaving cavities *s* in the compartments. The office of these cavities is to prevent injury to the safe from exposure to low temperatures, for if the water contained in the

safe should freeze the freezing would naturally commence on the outer sides, and the expansion thus caused would force a portion of the water into the cavities, and thus afford room for the necessary expansion, and thus prevent the bursting of the safe or the opening of its joints either internally or externally. After the plaster has set, the outer back, *f*, is put on and securely riveted, as hereinbefore described. The cavity of the door M is filled in a manner similar to the other compartment before the plates are screwed together, and a strip, *o*, of vulcanized rubber is interposed to make a tight joint.

The advantages of my improved safe are such that it is equally well adapted to resist great extremes of either heat or cold. When exposed to cold sufficient to freeze the filling, the bursting of the safe is prevented by the water being driven into the cavities, as above described.

I deem it unnecessary here to describe in detail the mode of constructing the safe and preparing the filling, as such details form no part of the subject matter herein claimed, and are moreover fully shown and described in two other patents issued simultaneously with this one.

What I claim under this patent as my invention, and desire to secure by Letters Patent, is—

1. Forming cavities in the filling of a fire-proof safe substantially in the manner described for the purposes of providing for the expansion of the water to prevent the bursting of the safe by freezing, as set forth.

2. Covering those portions of the safe exposed to contact with the filling with a mixture of gutta-percha and paraffine varnish compounded in the proportions or thereabouts and substantially in the manner described.

In testimony whereof I have hereunto subscribed my name.

E. N. HORSFORD.

Witnesses:

A. POLLOK,  
LAWRENCE A. SUEDEN.