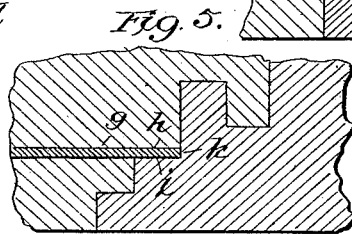
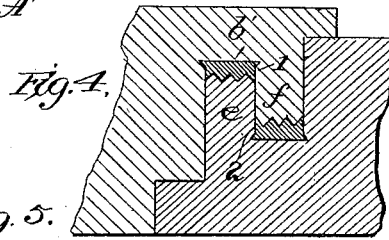
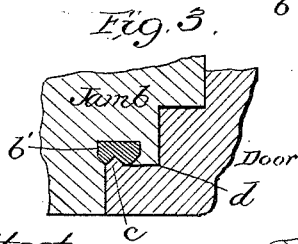
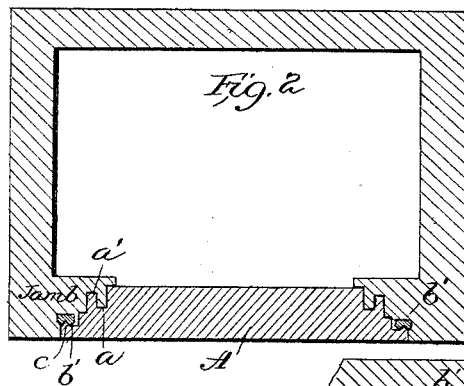
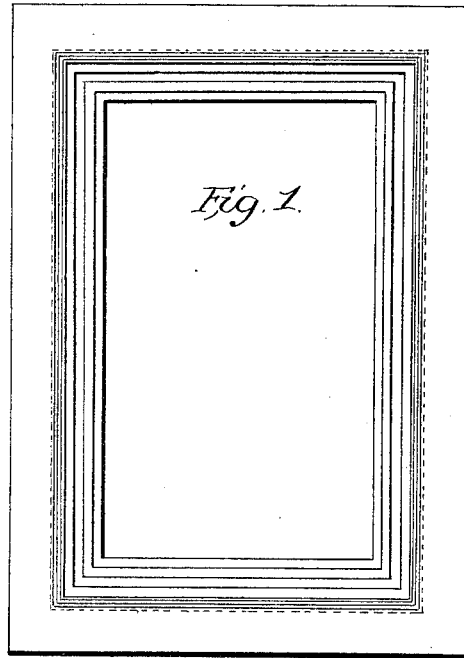


(No Model.)

W. H. HOLLAR.
SAFE OR VAULT.

No. 459,226.

Patented Sept. 8, 1891.



Attest
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UNITED STATES PATENT OFFICE.

WILLIAM HENRY HOLLAR, OF PHILADELPHIA, PENNSYLVANIA.

SAFE OR VAULT.

SPECIFICATION forming part of Letters Patent No. 459,226, dated September 8, 1891.

Application filed April 23, 1891. Serial No. 390,193. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY HOLLAR, a citizen of the United States of America, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Safes, of which the following is a specification.

My said invention is designed as a substitute for the rubber and felt packings heretofore commonly used in the rabbets or breaks of the tongues and grooves in doors of safes or vaults. These packings are used to make a tight joint and to prevent the introduction of any explosive into the safe or vault; but the rubber and felt are materials easily destroyed and may be disintegrated or removed by the action of heat or acids, and thus access may be had to the interior of the safe or vault. The object of my invention is to provide an indestructible material or one which cannot be destroyed or removed by any known means under the conditions in which a door-packing exists in the ordinary construction of the doors of safes or vaults.

My invention consists, essentially, in combining with the door and jamb of a safe or vault a packing of soft metal. This metal may be pure copper, which I have found to be well suited to the purpose, it being sufficiently soft and yielding to allow it to change its shape under the pressure exerted by the door of a vault or safe when it is forced to its seat and capable of conforming both to the shape of the groove in which it is placed and to that part of the face of the door which is brought into contact with it. At the same time it will retain the configuration and impression imparted to it by the pressure of the door; but there are other metals or compositions of metals which may be used for the purpose, and I do not limit myself in this respect. It is desirable, however, that if compositions of metals be used they should not have a low fusing-point.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a front elevation of the doorway of the vault or safe with the door removed. Fig. 2 shows a horizontal section of Fig. 1 with the door closed. Figs. 3, 4, and 5 show horizontal sections of a part of the

jamb and a contiguous part of the door, showing the packing in different forms.

In the drawings the door of the safe is represented at A. The ordinary tongues and grooves in the door and in the jamb are shown at *a'*. The packing is shown at *b'*. In the construction represented in Fig. 2 it is located near the outer surface of the door at the intersection of the first offset; but the construction is more plainly shown in the illustrations of Figs. 3, 4, and 5, which are on a large scale.

In Fig. 3 the packing *b'* is set into a groove at the bottom of the first rabbet in the jamb. The corresponding face of the rabbeted edge of the door is provided with a sharp rib *c* near the edge of the door. It will be understood that the metal strip *b* is at first placed within the groove, with its outer face projecting beyond the face marked *d* of the rabbet, so that as the door is closed it will not at first permit the corresponding face of the rabbeted edge of the door to bear against the face of the jamb, the bearing of the door being at first upon the projecting face of the soft-metal strip. The first impact would be that of the edge of the rib *c*, and as the metal packing is sufficiently soft to yield under the force exerted upon the door it will cause the rib to sink into the soft metal, and the plane face of the rabbet upon the door will at the same time crush down the plane face of the packing, so that the face of the door bearing upon the packing will fit itself upon the packing. This automatically forms a bearing face or fit of the rabbeted surfaces caused by the pressure of the door. The packing, as is well understood, is in itself not new; but the ordinary packing, whether of felt or rubber or analogous substance, forms a close joint by reason of its elastic qualities, which causes it to press against the face of the door bearing upon it, and these elastic qualities cause the packing when the pressure of the door is removed to regain to a greater or less extent the original form of the packing, so that in case of rubber or felt the part of the door which bears upon the packing must at each act of closing impress upon the packing its own form. The closeness and efficiency of the joint in the old kinds of packing heretofore referred to depend upon the elasticity of the packing itself,

and this varies according to the exposure or amount of use or length of time; but with the metal packing of the nature above indicated the impression made by the part of the door which comes in contact with the packing is a permanent one, and this form imparted to it by a swaging impression is necessarily exact.

In the form of grooves shown in Fig. 3 the bottom of the groove is made a little wider than the top of outer face, the side walls being sloped so as to give a large interior space, and this allows the packing to extend laterally under the pressure of the door, and thus fixes it permanently in place. As the fit is caused by the swaging effect of the door, the joint is a tight one and forbids the introduction of explosives in any form.

In Fig. 4 I have shown a different form of packing, or rather a different form of groove, this being enlarged at the bottom by lateral undercutting, so that the soft metal is swaged out laterally at the bottom of the groove. The packing is also placed at the bottom of the groove in the jamb instead of in a special groove made in the rabbeted face. The tongue upon the door (marked *e*) is also provided with a series of sharp ribs V-shaped in cross-section, which when the door is pressed upon the packing impart to the packing a corresponding configuration and leave thereon a permanent impression of its own face, thus forming a perfectly close fit of one part upon the other automatically produced. Another packing of the same kind may be placed in the groove of the door and the same ribbed construction be formed upon the tongue *f* of the jamb, thus forming a double packing, the lateral parts of which are pressed to form lateral joints. Thus at the point 1 the packing in the groove of the jamb presses against the tongue *f* of the jamb and the packing in the door presses at 2 against the tongue of the door.

In the construction shown in Fig. 5 I have provided a plate of the same kind of soft metal shown at *g*. This is interposed as a layer in the construction of the wall, and is extended over one of the rabbeted faces, as at *h*, so that the rabbeted face of the door at *i* and the side of the tongue of the door at *k* bear against the soft packing. The forms given are deemed sufficient to indicate the construction of the packing. Manifestly a very great number of special forms might be devised, all upon the same principle, and I do not limit myself in respect to the special forms.

It will be understood that in the use of packing in the doors of safes or vaults it is necessary to move the door a certain distance in or out in a right line before swinging it on its hinges. This is the ordinary arrangement, and the door is forced tightly to its seat by various applications of cam movement placed across the door or in a vertical position in suitable boxes on the frames. Such a construction is sufficient to force the door upon its seat and to compress the packing when made of soft metal in accordance with my invention. I prefer, however, to use worm-gearing in addition to the cam, so as to force the door inward, if need be, with a pressure to the extent of several tons.

I claim as my invention—

In combination, the jamb, the door, and a packing of soft metal arranged intermediate of the adjacent faces of the jamb and door to receive pressure therefrom and conforming to the shape of the parts when the door is closed, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HENRY HOLLAR.

Witnesses:

F. S. HOLMES,

RICHD. CADBURY.