(No Model.)

C. C. GILMAN.

FIRE PROOF SAFE AND VAULT.

No. 332,246. Patented Dec. 15, 1885.

Fig. 1.

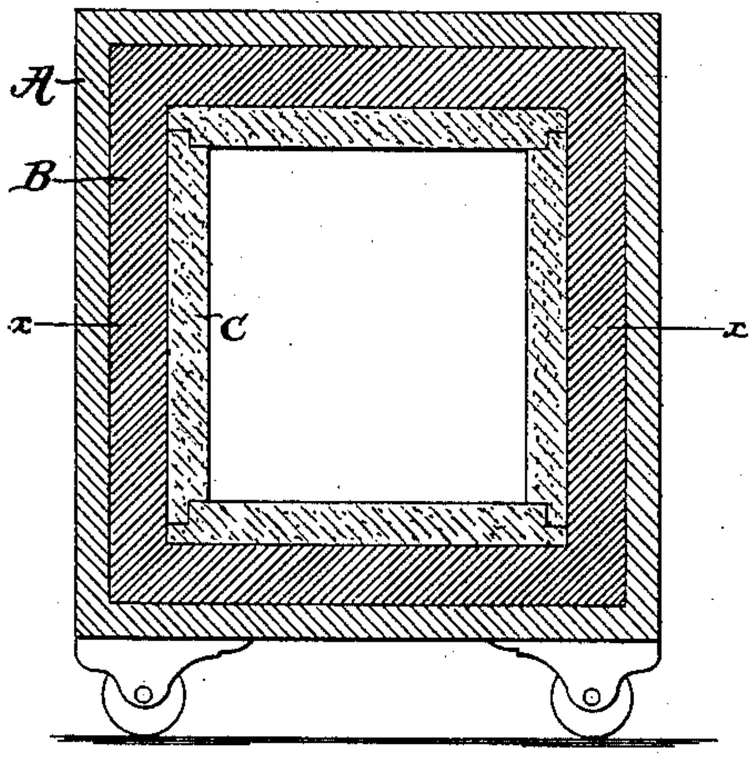


Fig. 2.

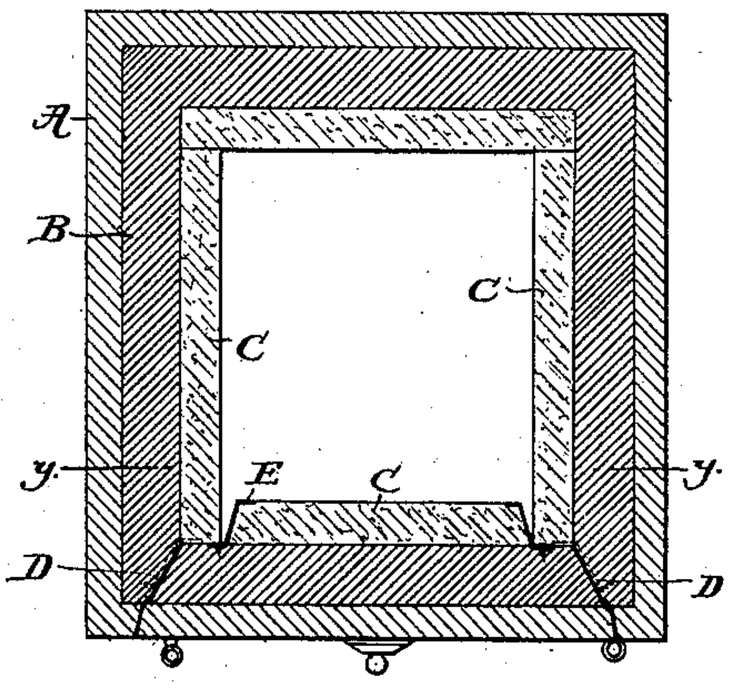


Fig. 3.

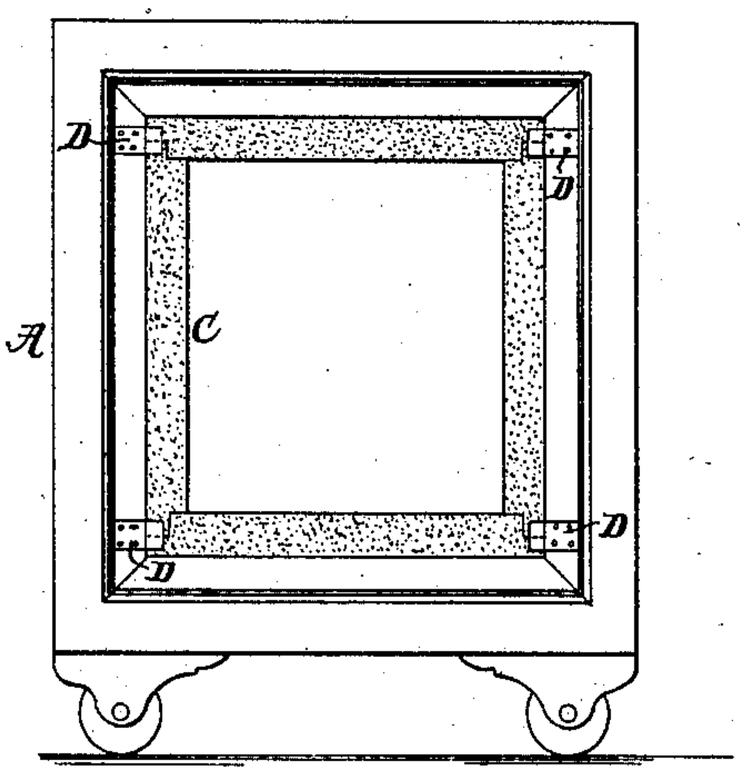
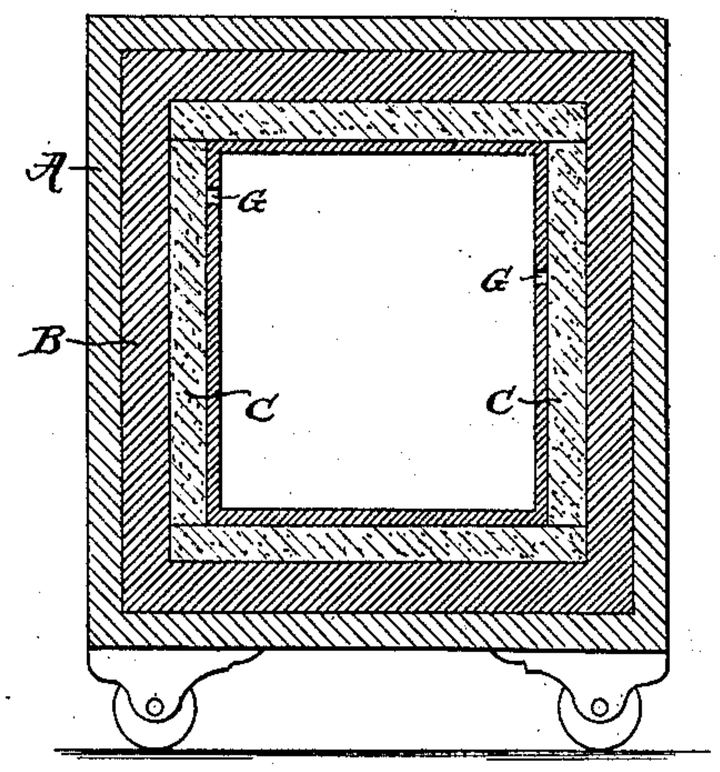


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES CARROLL GILMAN, OF ELDORA, IOWA.

FIRE-PROOF SAFE AND VAULT.

SPECIFICATION forming part of Letters Patent No. 332,246, dated December 15, 1885.

Application filed March 18, 1885. Serial No. 159,284. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CARROLL GILMAN, a citizen of the United States, and a resident of Eldora, Hardin county, Iowa, have invented a new and useful Improvement in Fire-Proof Safes and Vaults, of which the following is a specification.

The object of my invention is to improve the fire-proof character of safes, vaults, and similar structures; and it consists in a safe or vault embracing in its construction a porous fire-proof material charged with a liquescent salt.

In the accompanying drawings, which form a part of this specification, Figure 1 represents a vertical transverse section on line *y y*, Fig. 2, of a safe embodying my invention. Fig. 2 is a horizontal cross-section of the same, taken on line *x x* of Fig. 1. Fig. 3 is a front elevation thereof, the door being removed; and Fig. 4 represents the lining shown in Fig. 1, covered by plates of iron or steel.

Referring to the drawings, the body of the safe may be constructed of iron, A, and steel, B, as illustrated, or in any other approved manner that will insure the requisite strength. A lining, C, consisting of terra-cotta lumber or a porous burned brick material, impregnated or saturated with alum, is applied to the interior of the safe, to protect the contents thereof against fire and heat. Said lining is produced in the following manner: Slabs or blocks of porous terra-cotta, made in accordance with Reissued Letters Patent Nos. 10,419 and 10,420, and consisting, preferably, of one part clay and two parts sawdust, pressed or molded into the desired form before firing, or sawed or trimmed with edged tools subsequently, are immersed in shallow pans or vessels containing a strong solution of alum or other liquescent salt, and left therein until thoroughly saturated with said solution. The depth of the liquid should be slightly less than the thickness of the slabs, so that the air may escape and permit the liquid to enter the cells of the material. When the material has become thoroughly saturated with the liquid, it is removed and dried. If the operation is properly conducted, the slabs, when dry, will weigh nearly one hundred per cent. more than they did previous to treatment. The alum imprisoned in said slabs will yield nine-tenths of its volume in liquid when exposed to a heat considerably less than 200° Fahrenheit, and said liquid, vaporizing at 212° Fahrenheit or more, will impregnate the contents of the safe or receptacle to such a degree as to materially assist in resisting the action of heat. The porous burned brick material, after serving as a matrix for the alum—*i. e.*, after the latter has abandoned it—does not decompose, but remains unaltered in form, and, being fire-proof and a very good non-conductor of heat, acts as an efficient barrier against the action of fire.

To prevent corrosion of the metal with which the slabs come into contact, they may be lightly painted.

In Figs. 1 to 3 I have shown the alum-saturated terra-cotta lumber applied as an inner lining to a safe, and in Fig. 4 as a filling, it being placed, in the latter case, between the layers of iron or steel. The slabs of the alum-saturated material have rabbeted ends, as shown in Figs. 1 and 3, by which means they sustain each other in place without the use of other fastening means. To prevent the slabs from sliding forward, should they not fit sufficiently tight, I screw to the iron of the safe small angle-irons D, which project in front of the slabs, covering the joints and acting as stops. These angle-irons may be let into the metal and the slabs, as shown, so as to be flush with the surfaces of the same. The inner surface of the door is also lined with a slab of the same material, held in place by angular clamping-plates E, screwed to the metal of the door and overlapping the said lining, as shown in Fig. 2.

When the alum-saturated terra-cotta lumber is used as a filling, I perforate the inner layer of iron or steel in a few places, as indicated at G in Fig. 4.

I am aware that a molded mixture of gypsum, alum, copperas, and Epsom salts, and a composition consisting of alum and plaster-of-paris have been used in the construction of safes; but the material, which in said compositions acts as a matrix for the alum, decomposes and crumbles to powder when sufficiently heated to release the alum, whereas in my invention the matrix—*i. e.*, the terra-cotta lumber—remains intact as a protecting

medium after the heat has expelled the alum.

I am also aware of the construction described in Letters Patent No. 11,842, to B. Sherwood, which consists in a lining of thin brick or tile inside of the outer shell, and within that a layer of a composition of alum and clay, made into the consistence of mortar; but this mortar of unburned clay and alum will crumble when sufficiently heated to release the alum, and is as objectionable as the composition of alum and plaster-of-paris above referred to.

Having described my invention, what I desire to claim, and secure by Letters Patent, is—

1. A fire-proof safe, vault, or similar receptacle embracing in its construction a porous fire-proof material charged with a liquescent salt, substantially as described.

2. A fire-proof safe or vault provided with a lining consisting of a porous burned brick material saturated with alum, substantially as described.

3. A fire-proof safe or vault provided with a lining consisting of slabs of porous burned brick material saturated with alum, the said slabs being rabbeted and fitted together, so as to remain in place, substantially as described.

4. A fire-proof safe or vault provided with a lining consisting of slabs of porous burned brick material saturated with alum, the said slabs being rabbeted and fitted together and prevented from sliding forward by stops, substantially as described.

In testimony whereof I have signed my name in the presence of two witnesses.

CHARLES CARROLL GILMAN.

Witnesses:

CHARLES CARROLL,

FRANCIS P. NICHOLS.