

(No Model.)

E. HAMILTON.  
REFRIGERATING CHAMBER.

No. 248,738.

Patented Oct. 25, 1881.

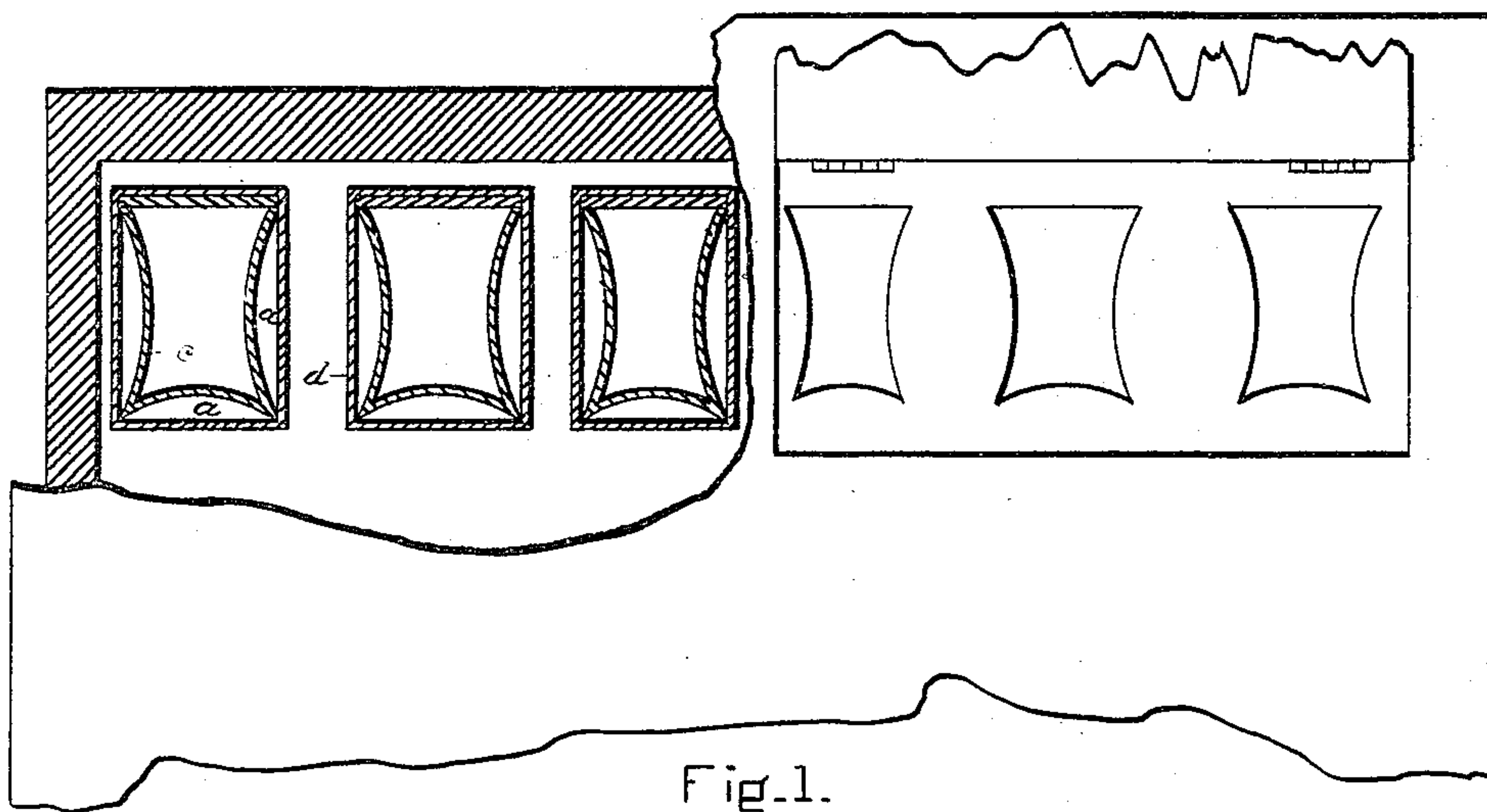


Fig. 1.

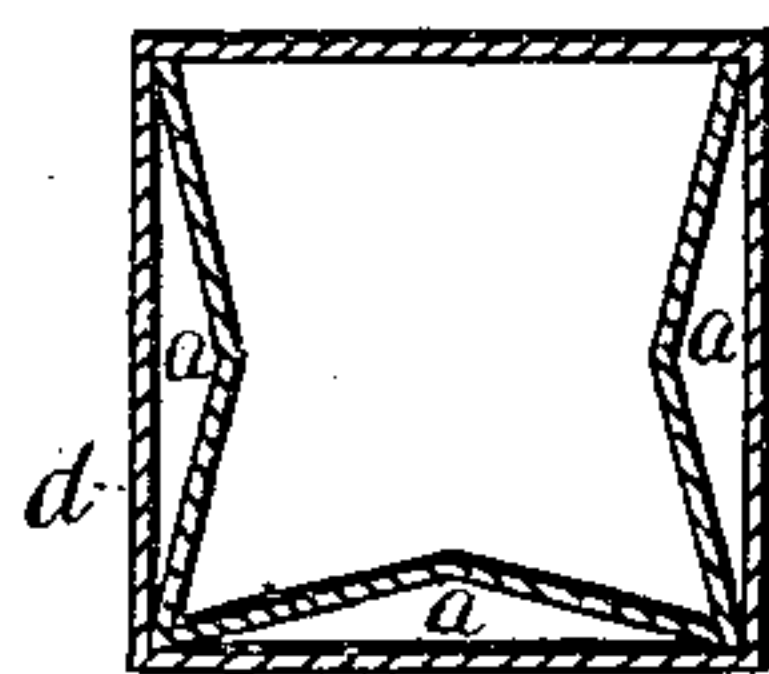


Fig. 2.

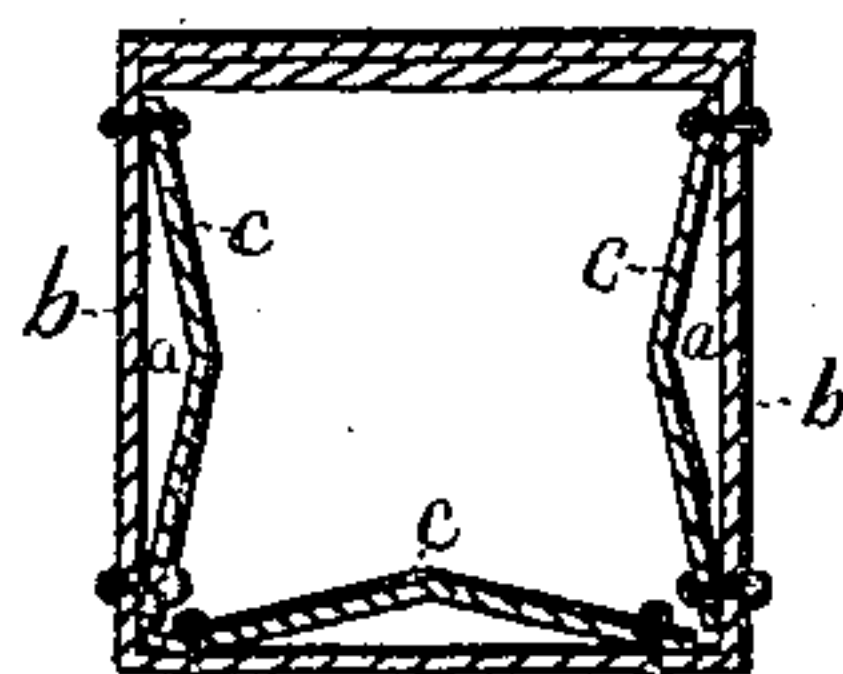


Fig. 3.

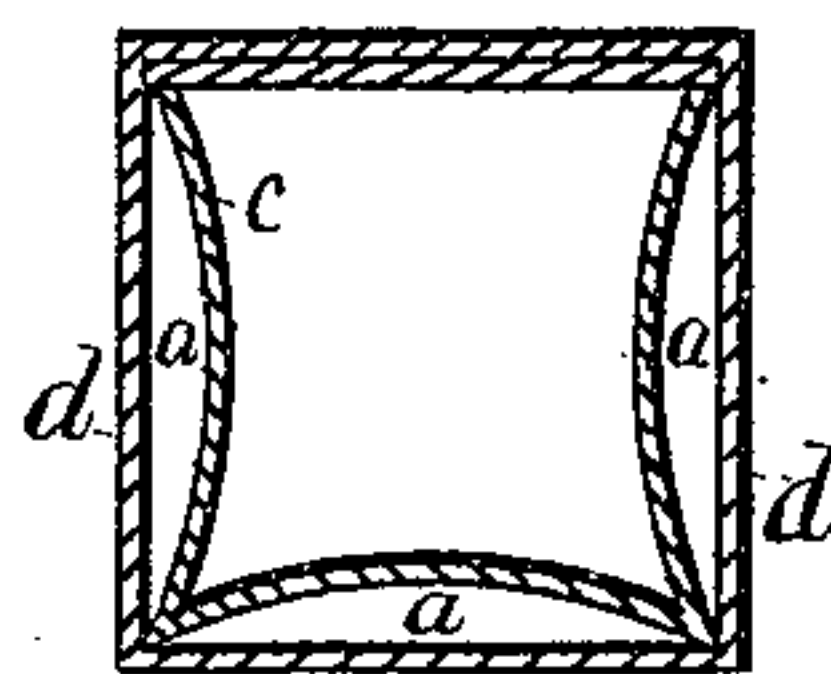


Fig. 4.

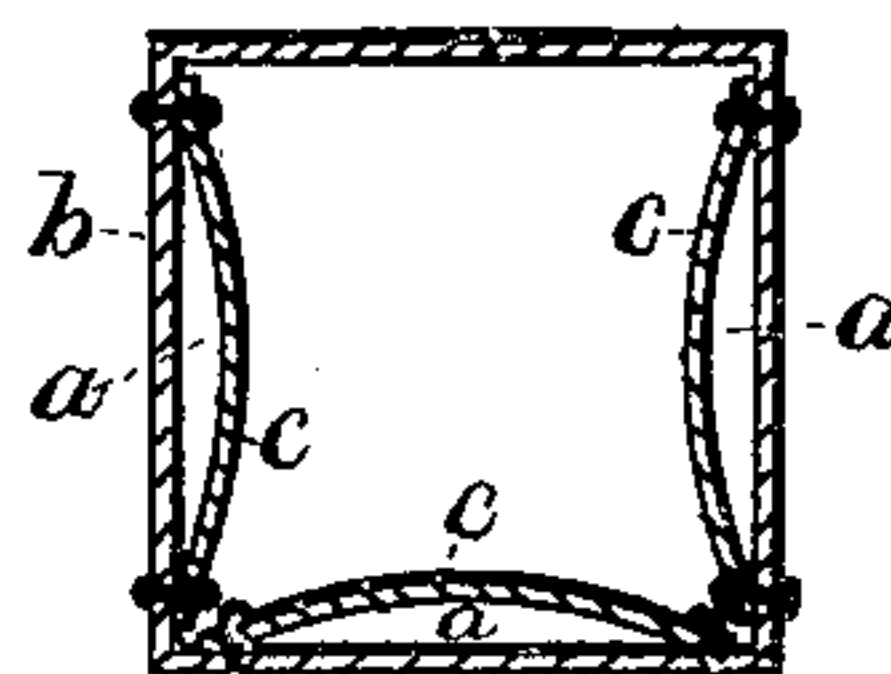


Fig. 5.

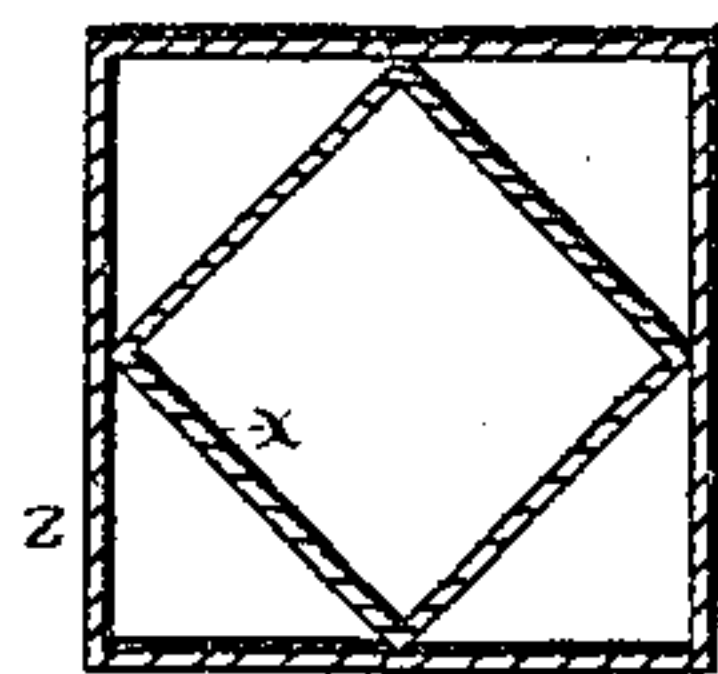


Fig. 6.

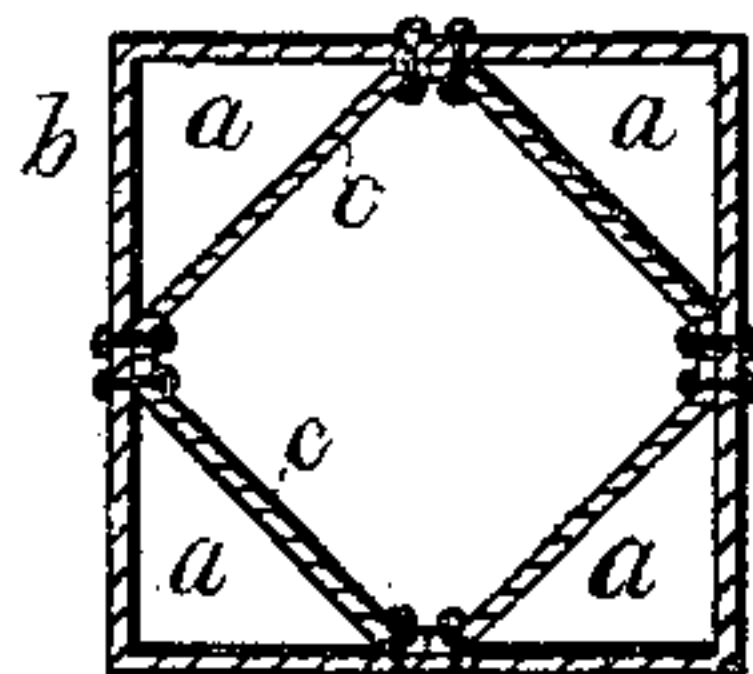


Fig. 7.

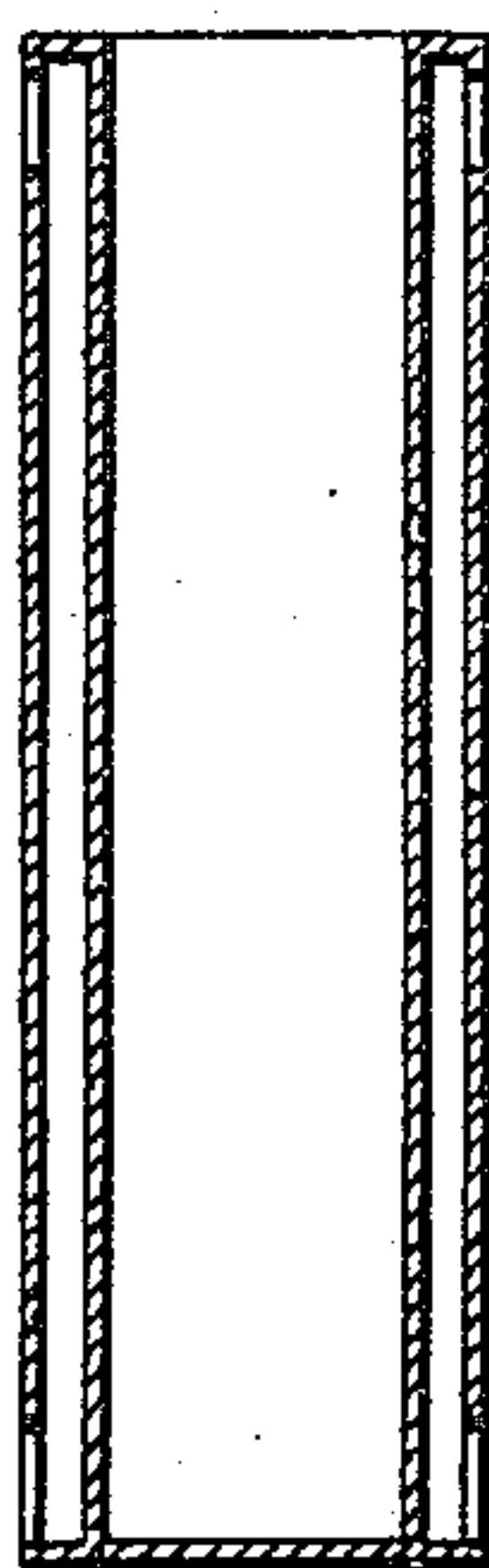


Fig. 12.

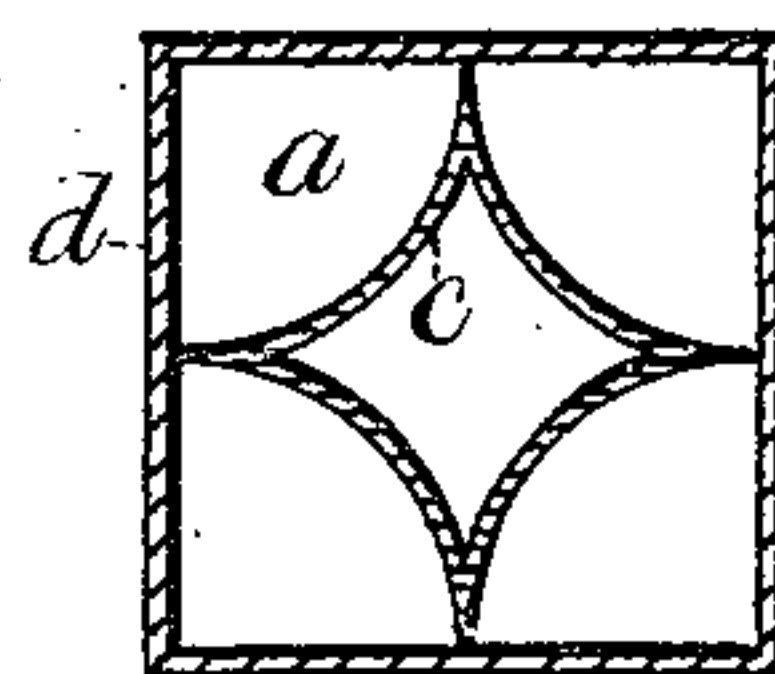


Fig. 8.

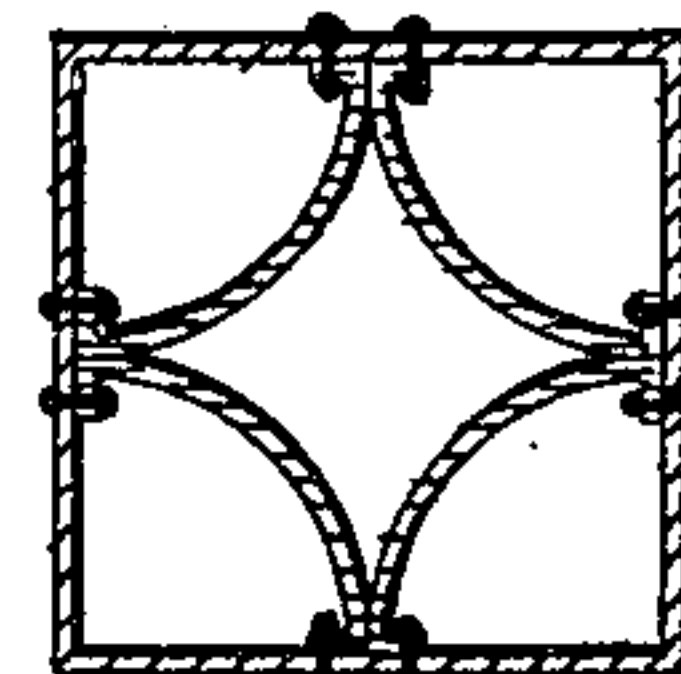


Fig. 9.

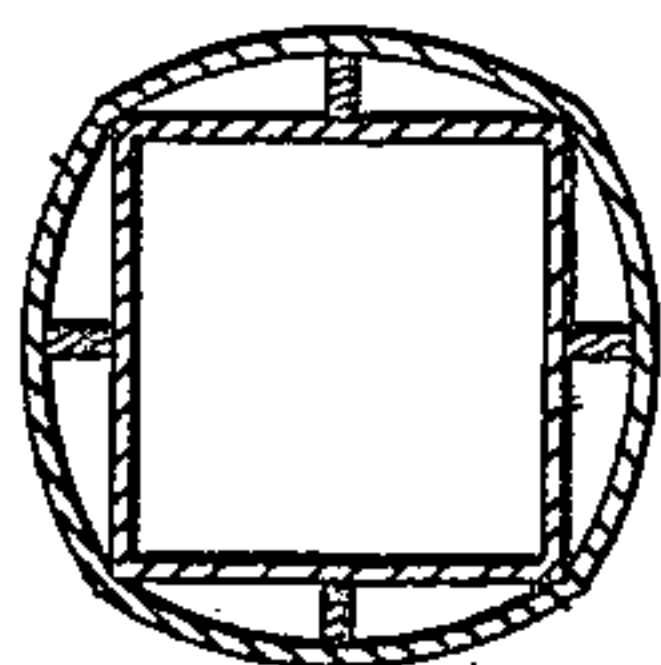


Fig. 10.

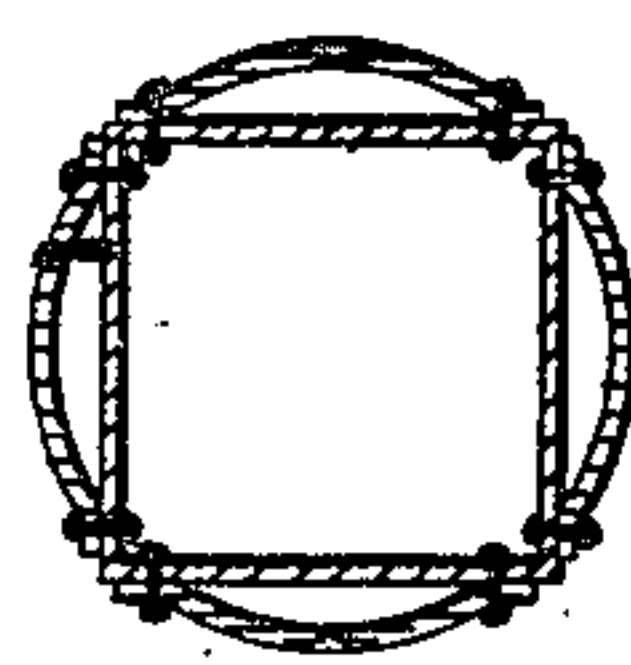


Fig. 11.

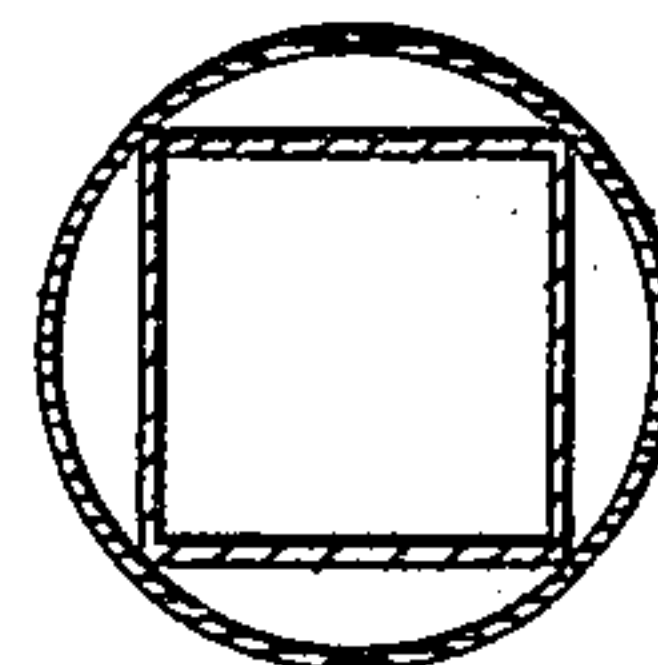


Fig. 13.

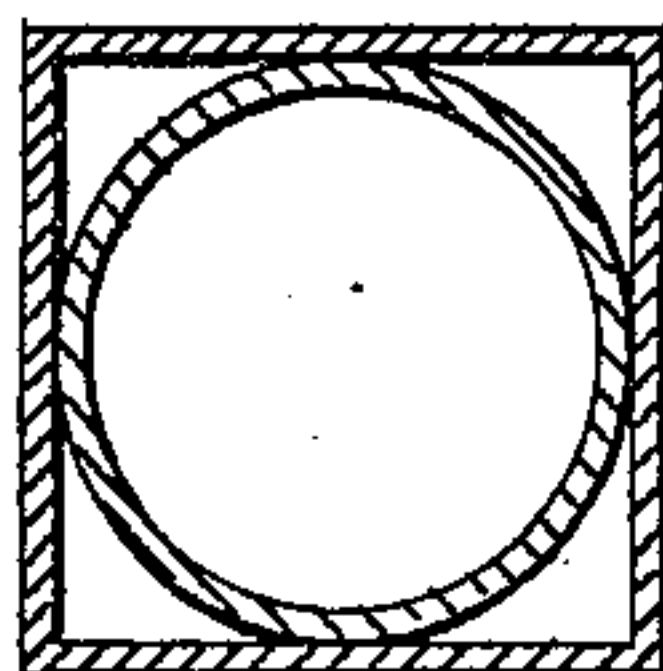


Fig. 14.

WITNESSES

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# UNITED STATES PATENT OFFICE.

EDWARD HAMILTON, OF BOSTON, MASSACHUSETTS.

## REFRIGERATING-CHAMBER.

SPECIFICATION forming part of Letters Patent No. 248,738, dated October 25, 1881.

Application filed September 5, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD HAMILTON, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, a citizen of the United States, have invented a certain new and useful Improvement in Refrigerating-Chambers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature, in which—

Figure 1 is a view, part in plan and part in horizontal section, of a car or chamber embracing my improvement. Figs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, and 14 represent horizontal sections of the tanks employed, hereinafter more fully described. Fig. 12 is a vertical section of a tank, which is also hereinafter referred to.

My invention is especially adapted for use in refrigerating-cars, on vessels, and for large refrigerating establishments, and it is an improvement upon that described in Letters Patent No. 244,676, granted William Scott, assignor, dated July 19, 1881. In said patent there is shown and described a refrigerating-chamber having one or more ice-tanks, comprising a metallic shell corrugated on one or more sides, which corrugated portion is covered by a plate in such a manner as to provide chambers or ducts between the plate and the shell in which the air is cooled, and through which a continuous circulation of air is maintained.

My improvement consists in a modification in this construction, whereby larger ducts or chambers are obtained and the cost of manufacture cheapened. The use of corrugated metal for the purpose indicated is expensive, because it requires a much larger amount than is essential to provide suitable passages and strength, and also because it requires special machinery to form metal plate with corrugations of sufficient size to make large enough ducts or passages. I construct my tank or tanks with one or more exterior air ducts or chambers, *a*, of plate *b*, formed into a shell by bending to the required shape and riveting or otherwise fastening its edges, or of independent plates secured together, and the bent, curved, or straight plate *c*, fastened to one or more sides of the shell by riveting, or in any other way. In this event, of course, there is an opening into the passage or duct *a* from the

chamber without, at both top and bottom of the tank.

Another form of construction is that shown in Figs. 2, 4, 6, and 8, in which the plates *c*, instead of being attached to the inner sides of the tank, are united together at their edges, or are in one piece, to form the shell of the tank, and are surrounded by a sleeve or casing, *d*, which, however, does not extend to the top or bottom of the tank, leaving sufficient space for the air from the chamber or room to enter and leave the chamber or duct.

In Figs. 6, 7, 8, and 9 I show a detail in the construction in which the shell and sleeve are so arranged that the air-passages *a* occur at the corners instead of at the sides; and in Figs. 10, 11, and 13 I represent a construction in which the outer surface of the tank is curved. This is easily accomplished by surrounding a tank substantially square in cross section by a cylindrical sleeve. Whichever of these constructions is employed, the result is that the tank has one or more large exterior chambers or ducts, in which the air circulates and is brought in contact with a cooling-surface, and cheapness of construction and economy in the use of material is effected.

Another feature of my invention embraces the making of one side of the tank of or lining the inner side with wood, in order that a surface may be provided against which the ice may be thrown or moved, when being put into the tank, without doing any injury to the tank. This wooden lining or surface, when used, I prefer to locate upon the side next the end of the car.

The advantages of this invention are twofold: first, cheapness in construction is obtained, and, second, large chambers or ducts for the circulation of the air about the cooling-surfaces are provided.

Of course any desirable metal may be used in making the shell, and the exterior casing or sleeve may or may not be metallic.

It will be observed that whichever of the details in construction herein described is employed in constructing the tank, the same effect is produced—namely, that the tank is best disposed to obtain large exterior chambers or ducts, economy in material, and strength, and the latter element is of especial importance, particularly when taken in connection with economy of



material. And this feature in detail, it will be observed, exists in Figs. 2, 3, 4, 5, 8, 9, and 10, because the inner parts of the tank-shell are bent or curved inwardly, and, in connection with the outer parts, form a truss construction or rigid stays, whereby great strength is attained. In Figs. 6 and 7 the same result is effected, because the three sides  $x$ ,  $y$ , and  $z$  form a rigid bracing or stay portion. In Figs. 10, 11, and 13 the effect is also the same, the "truss," if so it may be called, or stay being upon the outside instead of upon the inside, as in Figs. 1, 2, 3, 4, 5, 8, and 9.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A refrigerating-chamber, in combination with one or more ice-tanks having vertical passages upon one or more sides formed therein, substantially as described, and for the purposes set forth.

2. A metallic ice-tank consisting of a shell shaped upon one or more of its surfaces, as

shown, and a casing surrounding said shell in whole or in part, and forming the wide exterior air-chamber, all substantially as and for the purposes described.

3. A metallic ice-tank consisting of a shell having one or more air-chambers or ducts formed by the bent or curved plate or plates  $c$ , which are attached or fastened to the shell, all substantially as and for the purposes described.

4. A metallic ice-tank having one of its inner vertical faces of or lined with wood, substantially as and for the purposes described.

5. An ice-tank having one or more of its sides formed by two sections, one of which is curved or bent to an angular form in relation to the other, and thereby re-enforces it, and at the same time provides the exterior chamber or duct, all substantially as and for the purposes described.

EDWARD HAMILTON.

Witnesses:

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FRED. HARRIS.