

(No Model.)

S. W. GAINES.
REFRIGERATOR SHIPPING BOX.

No. 599,172.

Patented Feb. 15, 1898.

Fig. 1.

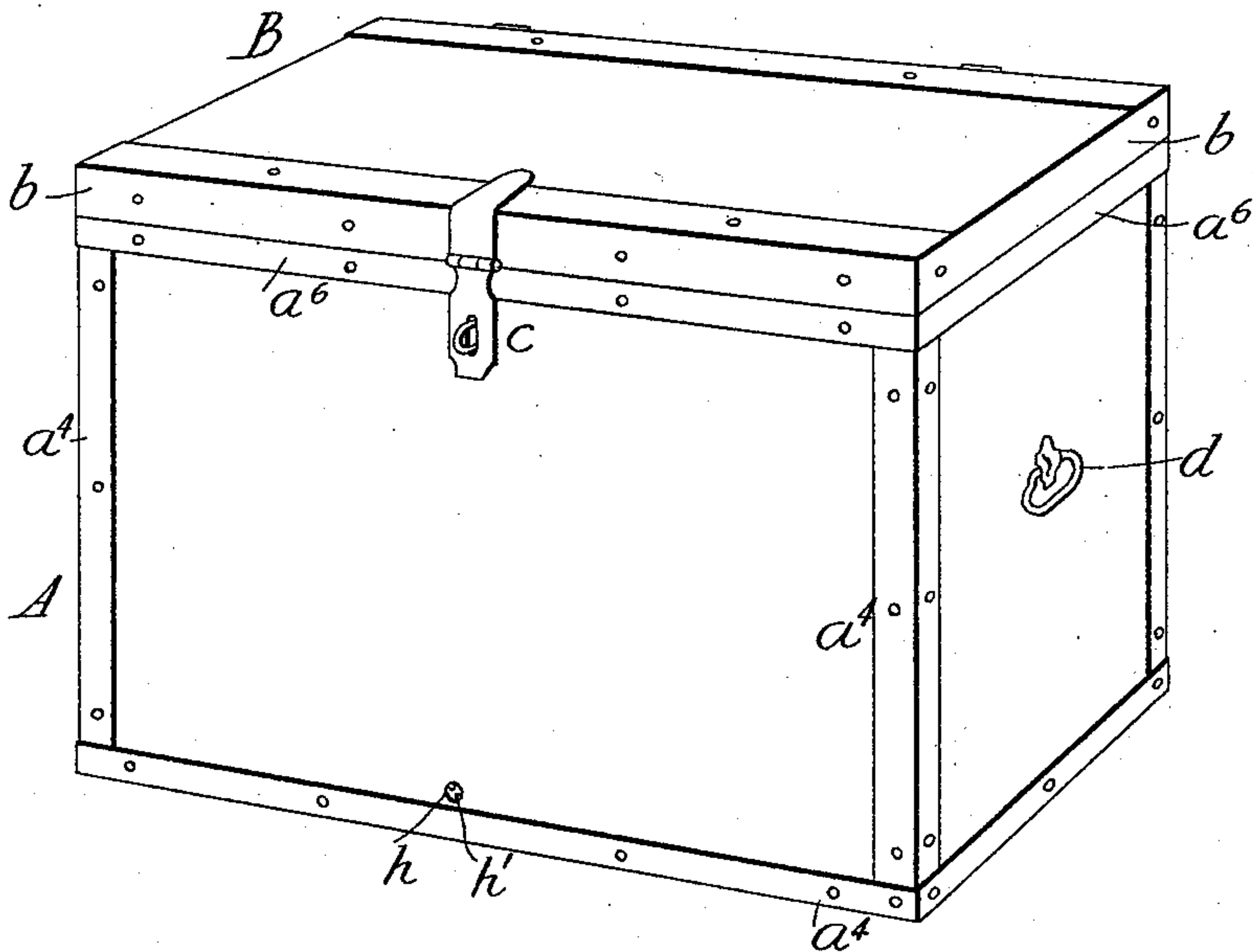
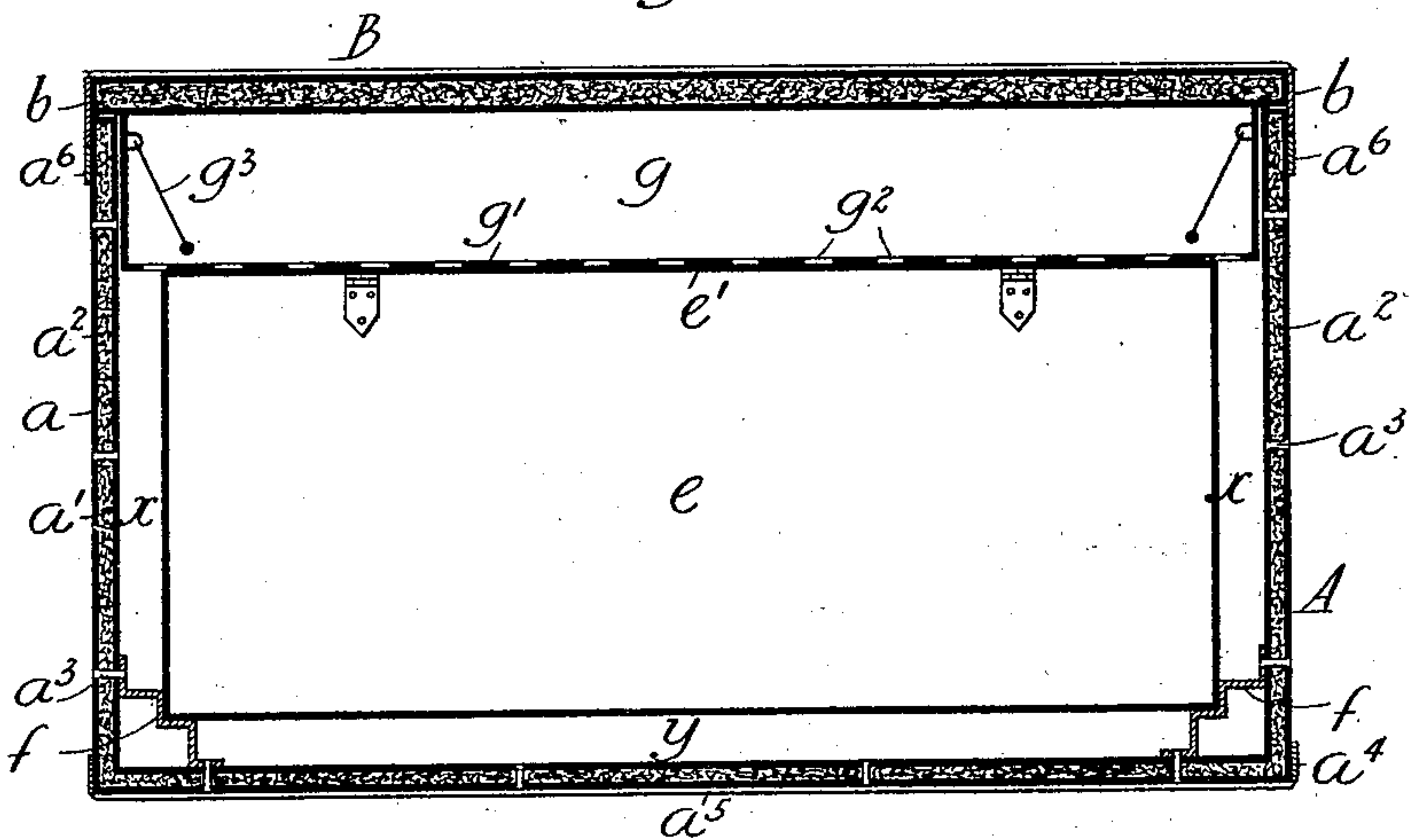


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

STEPHEN W. GAINES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
PORTABLE REFRIGERATOR AND FREEZER COMPANY, OF SAME PLACE.

REFRIGERATOR SHIPPING-BOX.

SPECIFICATION forming part of Letters Patent No. 599,172, dated February 15, 1898.

Application filed March 10, 1897. Serial No. 626,753. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN W. GAINES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Refrigerating Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention is directed to improvements in refrigerating apparatus, and more particularly to that class of such devices which are transportable and which are hence adapted for employment in the shipment of goods of a perishable nature from the producer to the market.

The object of the invention is the production of an apparatus of box form which is of comparatively simple construction, and hence cheaply made, and by the use of which is obtained the maximum efficiency in the preservation of the goods while in transit, provision being made for the employment of a refrigerant and also for maintaining the low temperature produced thereby for a considerable period of time.

A further object of the invention is to provide means by which, when necessary, the apparatus may be recharged with the refrigerant without in any way disturbing or exposing the contents; also, to provide a construction the separable parts of which are easily manipulated and which as a whole is light of weight, but strong and durable and very compact.

The details of construction and operation of my invention are fully and clearly set forth in the following description, which is to be read in connection with the accompanying drawings, which form a part thereof, and in which—

Figure 1 is a perspective view of my improved refrigerating apparatus, and Fig. 2 is a vertical longitudinal sectional view.

Referring to the said drawings by letter, A

denotes the casing of the apparatus, which is rectangular in form and provided with a cover B, hinged thereto, and *c* is a hasp-lock for fastening the cover when lowered to prevent access by unauthorized persons. The casing and its cover are constructed of non-oxidizable material, such as galvanized sheet-iron, and the sides, ends, and bottom of the casing are made double, a space being formed between the outer sheets *a* and the inner sheets *a'*, which space is filled with closely-packed deadening-felt *a²* or equivalent material, which operates as an efficient non-conductor of temperature. The casing-sheets are secured together at intervals by rivets *a³*, and all joints and the rivet-heads are soldered, by which the casing is rendered perfectly water-tight. At the outer edges of the casing are secured, by riveting or otherwise, strengthening-bands *a⁴* *a⁴* for resisting strain, and bands *a⁵* are similarly secured to the underside, which, in addition to further strengthening the structure, provide against wear and serve as runners. Below the upper edge of the casing is a strengthening-band *a⁶*, which provides a seat for the flange *b* of the cover and produces, with said latter flange, a water-tight joint. The cover B has its sides and top made double, and the space is filled with tightly-packed deadening-felt, as in the construction of the casing. The flange *b* is formed of a separate strengthening-band, which is riveted to the cover sides, as shown. Handles *d d* are provided at the ends of the casing for convenience in moving and carrying the apparatus.

Within the casing is a box *e* for containing the goods to be preserved. This box is constructed, preferably, of galvanized sheet-iron and is of rectangular form and has a cover *e'* hinged thereto, as shown. The dimensions of the box are such as to provide at all sides a space *x* between it and the casing-sheets *a'*, and I prefer also to provide, as shown, a similar space *y* between the base of the box and the bottom of the casing. The box is removable from the casing and is positioned to provide the spaces referred to by step-pieces *f f*, which are castings of galvanized iron secured to the sides and bottom of

the casing by riveting or otherwise. These step-pieces also serve to prevent lateral movement of the box.

The pan for the refrigerant is shown at g and in practice rests on the box-cover, entirely filling the horizontal area of the casing, and consequently closing the spaces x . The pan is of galvanized sheet-iron and open at its top, and the bottom g' is provided with a number of perforations $g^2 g^3$. The vertical dimension of the pan is such that when in place the top is flush with the upper edge of the casing, and when the latter is closed its cover contacts with the pan-top and thereby prevents movement of the pan and the box on which it rests. The pan is provided with handles $g^3 g^3$ for ready manipulation.

In practice the box, with its perishable contents, is inserted within the casing, resting on the step-pieces before referred to, and the refrigerant-charged pan is then placed on the top of said box, and the casing-cover being lowered and secured the apparatus is ready for transportation. Where ice is employed for the refrigerant, the water therefrom passes through the perforations in the pan-bottom over and down the sides of the box containing the goods and collects at the bottom of the casing, from which it may be withdrawn from time to time through an opening h , provided with a suitable faucet, as h' . The employment of the non-conducting material in connection with the casing and its cover precludes the penetration of temperature, and the whole interior of the casing is therefore subjected to the cooling influence of the refrigerant without material modification from the outer atmosphere. The refrigerant is therefore preserved by its created temperature and melts very slowly, and will therefore last a comparatively long time. The low temperature of the interior of the casing also keeps the water coming from the ice at an effective degree, and owing to the location of the refrigerant above the box and the arrangement of the spaces the cold water by falling over and down the sides of the box and collecting beneath the latter has the effect of distributing evenly the low tem-

perature necessary to the preservation of the goods. The location of the pan above the box also enables the recharging of the pan without disturbing or exposing the contents of the box, as it is merely necessary that the casing-cover be raised to replenish the refrigerant.

The apparatus is simple in construction, may be manufactured at a comparatively low cost, is strong and durable and compact, and is highly efficient in operation.

I claim as my invention—

1. In a portable refrigerating apparatus, the combination with a casing and cover, said casing and cover being constructed with double metallic sheets and an interposed filling of non-conducting material, of a box for the goods to be preserved, removably arranged therein and provided with a cover extending over its horizontal area, step-pieces for supporting the box above the bottom of the casing, and for positioning the same to provide spaces at its sides, and a perforated pan filling the casing horizontally and adapted to rest on the cover of the box and to contact with the casing-cover when the same is lowered, whereby the box and pan are held against movement, substantially as described.

2. In a portable refrigerating apparatus, the combination with a casing and cover constructed with double metallic sheets and an interposed filling of non-conducting material, and provided with strengthening-bands and with runner-bands as described, of a box for the goods to be preserved, removably positioned therein to provide a space at the sides and bottom, and provided with a closure covering its horizontal area, and a pan adapted to fill the casing horizontally and provided with a perforated bottom adapted to rest on the cover of the box, and with sides which contact with the casing-cover when the latter is lowered, substantially as described.

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

STEPHEN W. GAINES.

Witnesses:

W. T. NORTON,

ARTHUR BROWNING.