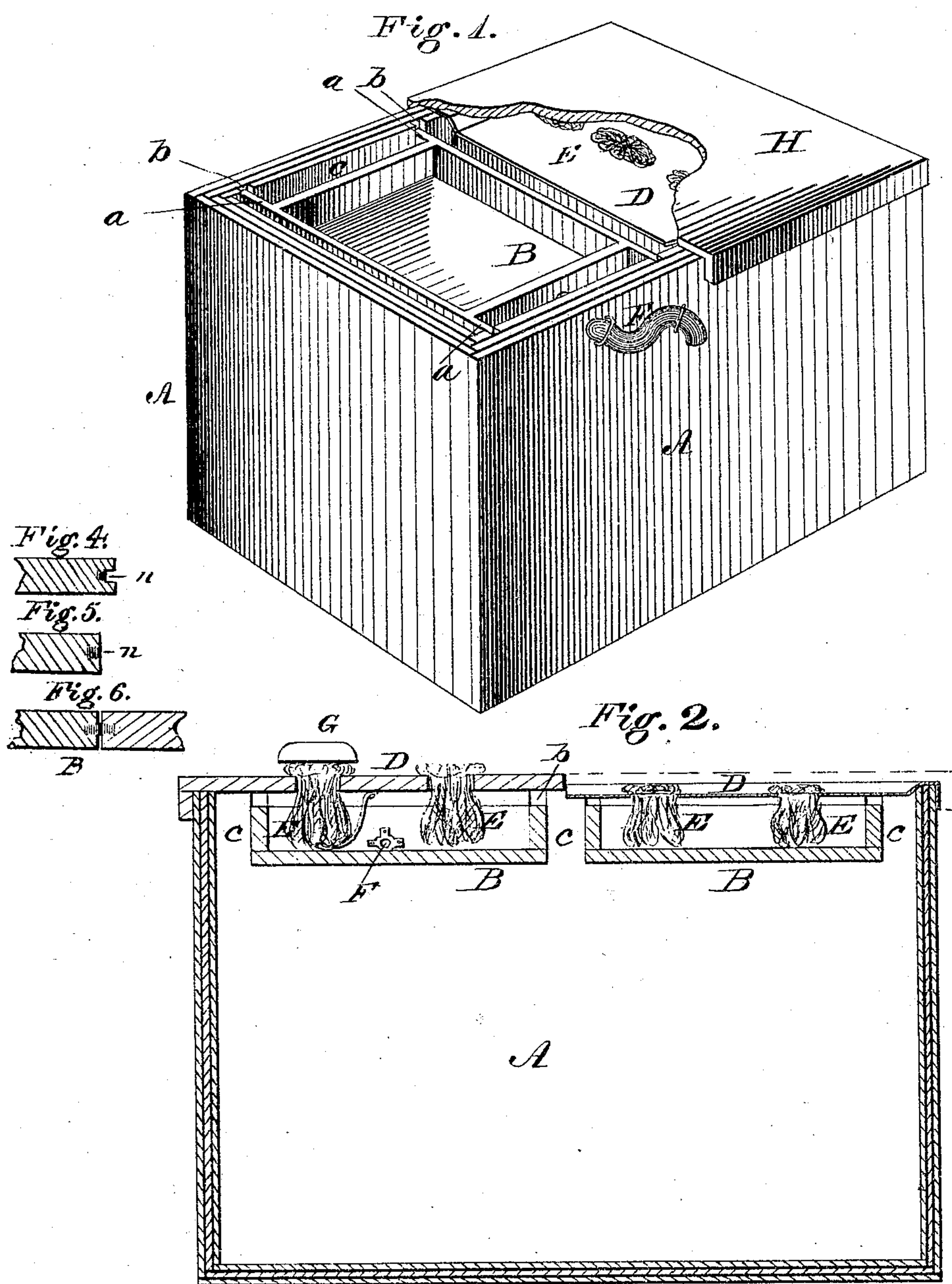


R. W. SANBORN.

Refrigerators for Transporting Meats, Fruits, &c.

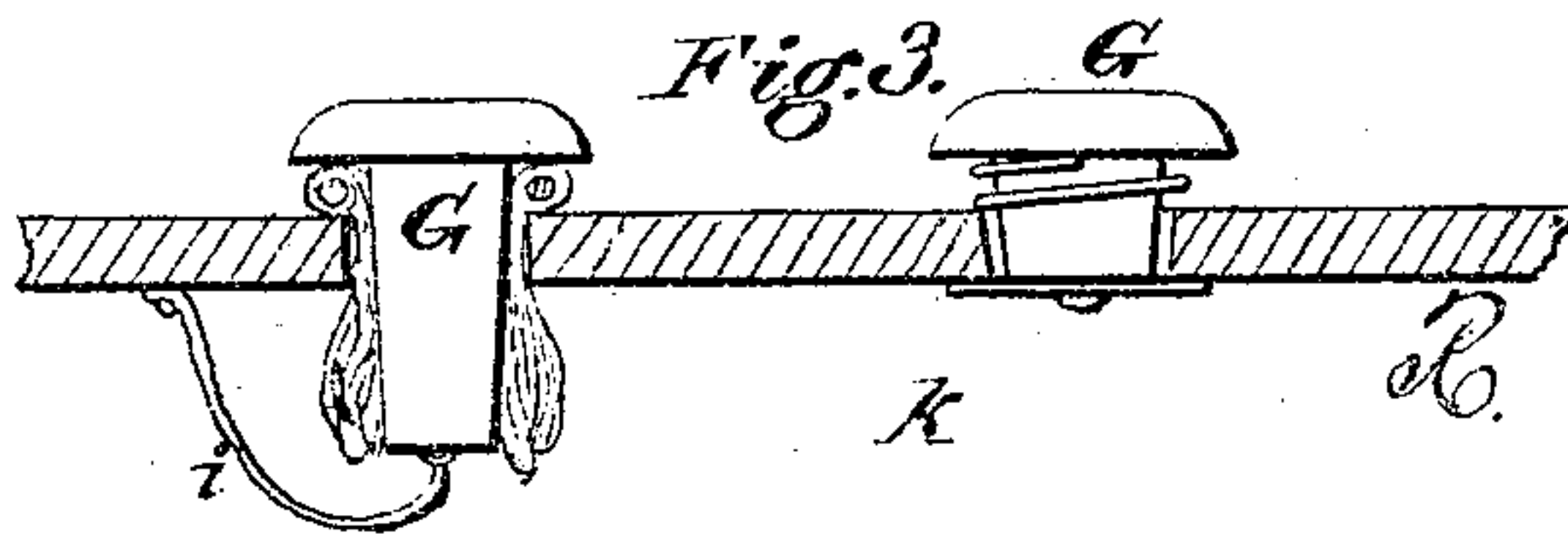
No. 152,520.

Patented June 30, 1874.



Witnesses:

H. H. Dodge
Wm. E. Chaffee



Inventor:

R. W. Sanborn
By Dodge & Son
Atty

UNITED STATES PATENT OFFICE.

RODMAN W. SANBORN, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN REFRIGERATORS FOR TRANSPORTING MEATS, FRUITS, &c.

Specification forming part of Letters Patent No. **152,520**, dated June 30, 1874; application filed January 8, 1874.

To all whom it may concern:

Be it known that I, RODMAN W. SANBORN, of Rochester, in the county of Monroe and State of New York, have invented certain Improvements in Coolers or Refrigerators for Meats, Fruits, &c., of which the following is a specification:

My invention relates to a cooler or refrigerator intended more especially for use in transporting meats, fruits, and other articles liable to rapid decay. The apparatus consists of a body composed of alternate layers of wood and woolen cloth, provided at its top with removable wooden ice or water trays of peculiar construction, having flexible waste-pipes, and provided also with a perforated cover containing woolen or other conductors, which hang down into the trays and conduct the water therefrom up through the cover, so that it is rapidly evaporated.

Figure 1 is a perspective view of my cooler with one-half of its top uncovered. Fig. 2 is a longitudinal vertical section of the same, with the two halves of its top provided with covers of different forms; Fig. 3, a vertical section, showing two forms of the plugs used for controlling evaporation; Figs. 4, 5, and 6, sectional views, showing the manner in which the ice or water trays are constructed.

A represents the body of the apparatus, made of a rectangular form, with a tight bottom and sides, but without a top, and composed of several layers of wood, having woolen cloth or other good non-conducting material placed between them.

There may be any desired number of layers, and they may be secured together by rivets, clinch-nails, screws, or other fastenings.

If metal fastenings are used, they should not pass through the entire thickness of the body, for the reason that, being good conductors of heat, they will transmit the same inward, and in warm climates materially affect the temperature within the body.

This difficulty may be avoided by passing one series of fastenings through the inner and middle layers, and another through the middle and outer layers; or by arranging wooden ribs or bars inside of the body, and passing the fastenings through the body into but not through said ribs.

In order to give the body great strength, and to prevent it from warping or twisting out of shape, the grain of one layer of wood should be arranged at right angles to that of the next layer.

In the top of the body I mount two removable wooden trays, B, supported by arms or projections *a*, which fit into notches, *b*, in the body, in such manner that the trays may be readily lifted out.

In order to render the trays water-tight without the application of packing or paint to the joints or seams, I take boards or pieces a little larger than required for use, and then by means of a suitable tool indent their edges so as to form a groove therein, and compress the fiber at the bottom of said groove, as shown at *n*, Fig. 4. I then cut away the edges of the material down flush with the bottom of the groove *n*, or, in other words, to the face of the compressed fiber, thereby bringing the pieces to the proper size for use. I then construct the trays of the pieces thus prepared, in the usual manner, securing the edges of the different parts in close contact with each other. When the trays thus constructed are subjected to moisture, the compressed fiber *n* expands greatly and permanently, and closes all the joints, so that water cannot pass through them. The expansion and the elasticity of the compressed fiber are so great that, no matter how long the trays may remain empty and dry, the joints will remain tight.

By this method of construction I not only reduce the expense, but avoid the use of the usual calking, paint, &c., which are liable to taint the contents.

The trays are so arranged that there is an open air-space, *c*, around and between them, as shown in Figs. 1 and 2. Each tray is provided with a rubber or other flexible waste-pipe, F, which extends out through a hole in the body, and has its outer ends curved through staples or supports, *d*, thereon, as shown in Fig. 1. The pipes are so curved that water always remains in them, and forms a trap to prevent the passage of air through them into the body. Being flexible, they may be bent so as to maintain the water at any desired height in the trays. When the trays are removed, the pipes are drawn out with them.

On the top of the body I place a close-fitting cover, D, provided with numerous holes or openings, *e*, containing wool, sponge, or other porous material, E, which extends down into the trays B and absorbs the water therein. The water, being carried up by said material through the cover, comes in contact with the outside atmosphere and is rapidly evaporated. This evaporation of the water causes a great reduction of the temperature in the body, and cools the articles therein to such a degree that they may be kept for any required length of time without danger of decay or decomposition.

Ordinarily ice will be kept in the trays and the water for evaporation obtained by the melting of the ice; but when ice cannot be procured, water, brine, or any volatile fluid may be placed in the trays. The water which escapes through the waste-pipes absorbs more or less heat, and thereby assists in reducing the temperature in the body. The perforated cover, containing the absorbent material, may be made of wood, as shown on the left in Fig. 2, or of sheet metal, as shown on the right in Fig. 2 and in Fig. 1.

For indoor use and warm climates the metal cover is preferable, but for cooler climates the wood is more desirable. When the temperature of the outside atmosphere decreases, as in coming from a southern to a northern latitude, it is desirable to diminish or even prevent entirely the evaporation through the absorbent material. When the perforated metal cover is used, this result is accomplished by placing over, or substituting for, the metal cover a tight wooden cover, H, as shown in Fig. 1. When, however, the absorbent material is arranged in a wooden cover, tapering plugs, G, are inserted into the holes and forced down in the center of the absorbent material, in order to close the holes, compress the material, and prevent the ascent of the water.

It will be seen that the tight wooden cover applied over the perforated metal one answers the same purpose as the taper plugs in connection with the perforated wooden cover.

The plugs may be secured to the cover by a cord, *i*, as shown in Fig. 1, which will permit them to be drawn out and laid upon the cover, but prevent them from being lost, as shown on the left in Fig. 3; or the plug may be provided with a bar, *k*, across its lower end to prevent its removal, and with a spiral spring around its upper end to hold it up when desired.

By means of an apparatus constructed as above, I am able to preserve fruits, meats, and like perishable articles for any required length of time, at a very slight expense.

The apparatus is cheap, simple, and durable, requires but little attention, and is free from all objections. It may, of course, be made of any form and size desired, either for portable or stationary use.

When used for transporting meat long distances, and in large quantities, cars may be constructed on my plan.

It is obvious that the number of trays used is a mere matter of convenience, and that one, two, or three may be used.

Having thus described my invention, what I claim is—

1. The refrigerator consisting of the closed body A, provided with the removable trays B and the removable perforated cover D, containing the absorbent material E, as shown and described.

2. A refrigerator-body, A, consisting of alternate layers of wood and cloth, or like material, the layers of wood being arranged with their grain in different directions, as and for the purposes set forth.

3. In combination with the absorbent material E, mounted in the perforated cover, the plugs G, or their equivalent, for checking evaporation, as set forth.

4. A wooden water-tray having the fiber in the edges of its parts or pieces compressed, as and for the purpose set forth.

RODMAN W. SANBORN.

Witnesses:

J. MCKENNEY,
P. T. DODGE.