

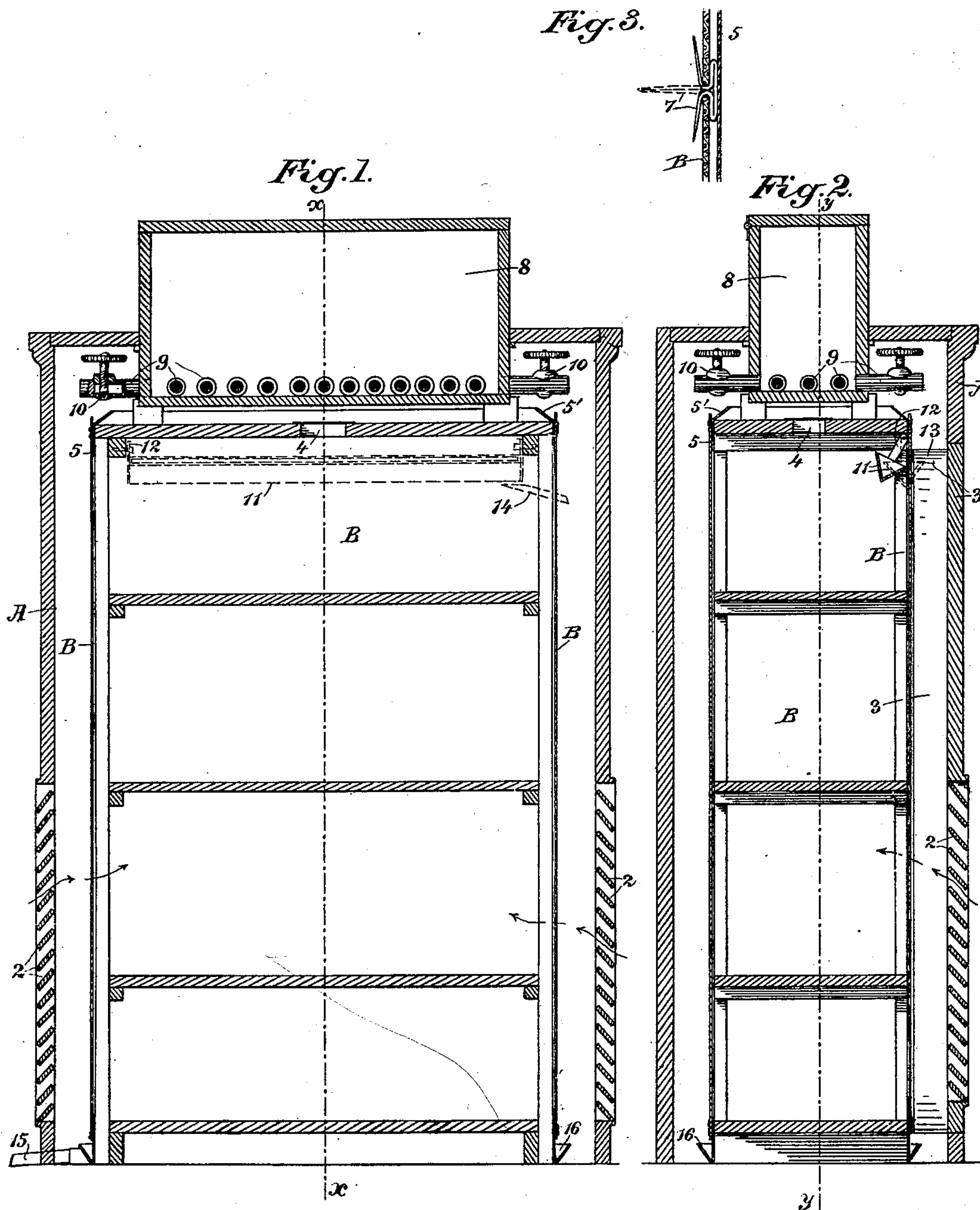
No. 667,446.

Patented Feb. 5, 1901.

R. A. MADDOX.
ICELESS REFRIGERATOR.

(Application filed Oct. 24, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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ICELESS REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 667,446, dated February 5, 1901.

Application filed October 24, 1900. Serial No. 34,152. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. MADDOX, a citizen of the United States, residing at Phoenix, county of Maricopa, Arizona, have invented an Improvement in Iceless Refrigerators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus for refrigerating or cooling air within a cooling box or chamber.

It consists of an exterior chamber, the lower part of which is provided with openings formed by inclined slats or blinds, and an interior chamber having its walls made of fibrous material, between which and the outer walls is an annular space. Upon the top or in suitable relation with the apparatus is a water-tank having discharge-pipes and needle-valves, by which a supply of water is allowed to drip upon the fibrous inner walls and percolate through them to the bottom. A drip-trough and discharge-conductor receive any water which may reach the bottom. In conjunction with these devices is a pivoted tilting drip-trough located above the inner wall of the door and which is normally pressed out of the way so that water may fall upon the fibrous fabric of the door when the latter is closed; but when the door is opened the drip-trough will automatically swing into line beneath the water-discharge and will thus prevent any drip upon articles which are being placed in or removed from the refrigerator.

My invention also comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section through the refrigerator on line *y y*, Fig. 2. Fig. 2 is a similar section on line *x x*, Fig. 1. Fig. 3 shows the manner of fastening the burlap to the galvanized iron.

A is the outer wall of the refrigerator, the upper portion and top of which are closed, and the lower portion is formed of inclined slats, as shown at 2, through which air may be admitted. 3 is a door hinged at one side having any suitable fastening, and this is also made tight at the top and provided with slats

at the bottom. This outer casing and door may be made of wood or other suitable material. Interior to this structure is the inner frame, which is preferably made entirely of galvanized iron to prevent shrinking and swelling or becoming moldy with constant dampness, and it is also a good conductor of heat, and therefore assists to reduce the temperature lower than it could otherwise be maintained. Burlap or other fibrous material B is fastened upon this inside frame, so as to form an interior wall which stands at a sufficient distance from the outer wall of the structure to form an annular space between the two.

In the top of the inner structure is an opening or passage 4, which may be covered with screen material, and through the slats 2 around the bottom a constant draft of air takes place, thus causing an evaporation of moisture with which the fibrous material is saturated, so that the interior of the apparatus is maintained at a low temperature.

The top head or end of the frame is made with a strip 5 all around of galvanized iron, with an inclined or slanting lip 5' bent over, and the edge of the burlap B is tacked upon the face of the frame one-eighth of an inch above the edge of the lip, so that water which is discharged upon this inclined surface will not flow over the burlap, but will be directed against it, so as to be absorbed and saturate the burlap.

The fastenings for the fibrous material may be made in any suitable manner. I have shown a very convenient device for fastening, which consists of a double-pointed tack or holder 7, the head of which may be soldered or otherwise secured to the face of the galvanized iron, and the fibrous material being pressed over the points the latter are then folded down to hold it in place. This makes it easily removable for change or cleansing.

Upon or above the top of the apparatus is a tank containing water, as shown at 8. Projecting from the sides and ends of this tank and at a suitable distance apart are horizontal pipes 9, having in the outer ends vertically-disposed needle-valves 10, which control the flow of water from openings in the lower parts of the pipes. These openings and controlling-valves are situated in line

above the slanting lip, so that water delivered from these openings will fall upon the lip and flow down into the fibrous material, which is thus kept constantly saturated. These
 5 "needle-valves," so called, have screw-threaded stems turnable in a suitable nut on the top of the pipe, and in line therewith on the lower part of the pipe are made the small conical discharge-openings. The lower ends
 10 of these valves are also conical and may be screwed down so as to entirely close the openings. When turned so as to slightly expose the openings, the water will be allowed to drip, falling in drops as frequently as neces-
 15 sary for the purpose of keeping the fibrous material wet.

The door is made double, like the remainder of the box, the inside part being attached to the outside by boards 13 of sufficient width
 20 running up and down and edgewise and holding the outer and inner walls apart, and also stiffening them, so that they cannot warp or twist.

The inside face of the door may be made
 25 of galvanized iron, as described, for the inner walls of the box, and the burlap or fibrous material is fastened to this galvanized-iron support, so that it normally stands in a plane with the walls of the box when the door is
 30 closed and beneath the inclined water-delivering surface at the top, so that water will be discharged upon the fibrous material of the door as well as upon the remaining sides of the box when the door is closed.

When the door is opened, it is desirable to
 35 protect the contents of the refrigerator from the water dripping from above and when articles are being put in or taken out. This is effected by means of a trough 11, having arms
 40 or hangers 12 at each end, which are so pivoted that when the door is opened this trough will hang in line beneath the water-feed and any drip therefrom will fall into the trough and be conveyed away by means of a dis-
 45 charge-spout 14 at one end. When the door is closed, the contact with the trough causes the latter to swing about its pivot-points out of the way of the drip, and the latter then falls upon the fibrous lining of the door and
 50 continues to moisten it, as before described.

Around and below the bottom edge of the interior wall of the refrigerator is fitted an open trough 16, which serves to receive any drip reaching that point from the fibrous
 55 material. This trough extends all the way around the bottom and at one corner has connected with it a discharge pipe or passage 15, through which the surplus moisture is discharged.

Fastenings or holders for the fibrous mate-
 60 rial are fixed upon the vertical inner corner-posts and along the lower edge of the inner wall in the same manner as described for the fastening at the top, so that the material is
 65 securely held in place.

The interior of the structure may be provided with shelves of any suitable or desired

description for the reception of articles which it is desired to keep cool and protect from the heat.

By the use of this apparatus I am enabled to reduce the temperature in hot climates to a comparatively low degree without the employment of ice.

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

1. In a refrigerator, the combination of an inner and outer case one separated from the other, a door, means for supplying water
 80 upon the upper portion of the inner case, and a drip-trough pivotally hung within said inner case and adapted to swing outward to catch the drip when the door is opened.

2. In a refrigerator, the combination of an
 85 inner and outer case and a door whereby access is had to the inner case, means for admitting water to the upper portion of the inner case, and a swinging drip-trough suspended in the door-opening and adapted to
 90 move outward to receive the drip when the door is opened, and to be moved inward and out of the way by the closing action of the door.

3. In a refrigerator, the combination of a
 95 non-conducting outer case, a conducting inner case separated therefrom and including vertical corner-posts and upper and lower head-flanges said upper flange having its up-
 100 per edge bent inwardly and upwardly and said lower flange bent to form a drip-trough, having a discharge through the outer case, a fibrous covering forming pervious walls for the inner case said inner case having a dis-
 105 charge-opening in its upper portion, means for securing the covering to the corner-posts and strips, said covering extending above the angle of the bent upper strip, and means for supplying water upon said bent strip where-
 110 by the covering is kept moistened.

4. In a refrigerator, the combination of an outer non-conducting case having a slatted lower portion, a conducting inner case separated from the outer case and including ver-
 115 tical corner-posts and upper and lower head-flanges, bent to form water-troughs, a fibrous covering forming pervious walls for the inner case, said inner case having a screened dis-
 120 charge-opening in its top, a water-receptacle supported on top of the inner case and having projecting pipes with discharge openings, arranged in line with the top of the inner case, and needle-valves controlling said open-
 125 ings.

5. A refrigerator consisting of outer and
 125 inner casings having an annular space between, air-admission passages around the lower part of the outer case and a discharge-passage through the top, fibrous material fixed to the inner casing-walls, a means for
 130 supplying water to saturate said material, a door hinged in one side of the case composed of outer and inner walls with a separating space coincident with the space around the

case when the door is closed, and a corresponding fibrous covering for the inner wall with means for conveying water thereto, and a drip-trough suspended in the upper part of
5 the device so as to be pressed to one side when the door is closed to allow water to flow upon the fibrous covering, said trough swinging automatically into the line of the water-sup-

ply whereby drip is prevented while the door is opened.

In witness whereof I have hereunto set my
hand.

ROBERT A. MADDOX.

Witnesses:

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RILEY JOHNSTON.