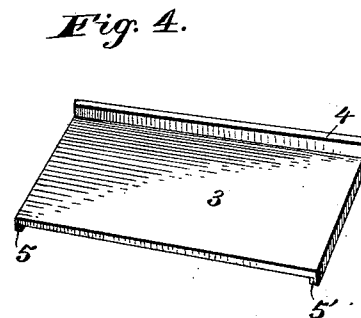
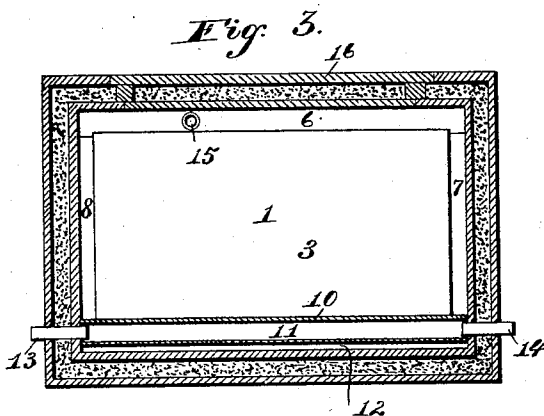
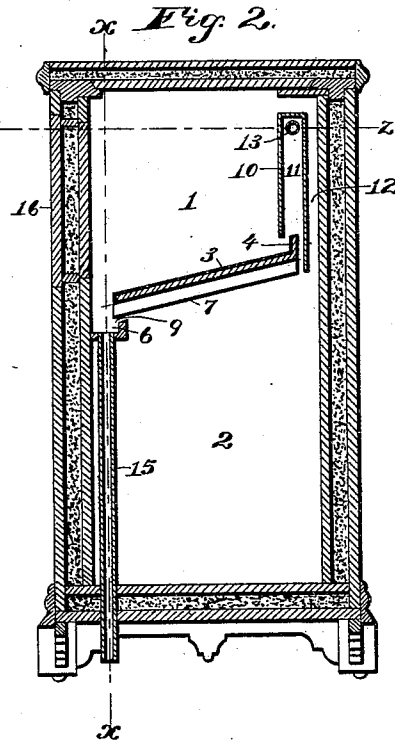
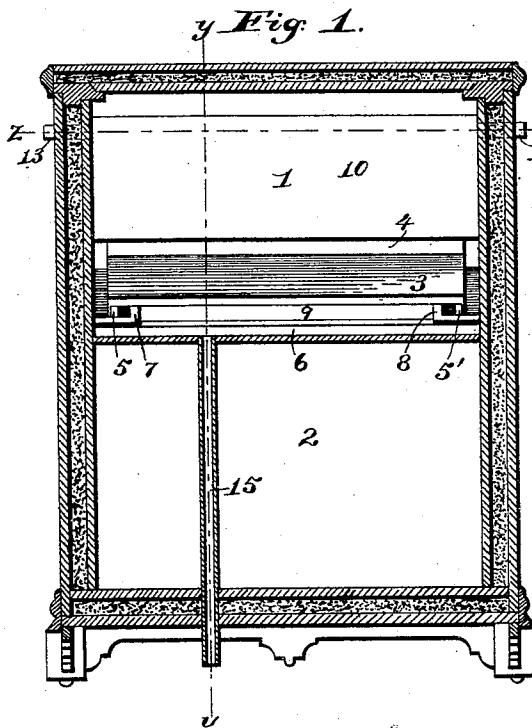


(No Model.)

M. S. MILLARD.
REFRIGERATOR.

No. 475,592.

Patented May 24, 1892.



Witnesses;

Percy C. Bowen.
W. J. Berchard

Inventor;

Martin S. Millard,
By *Edson Bros.,*
Attorneys.

UNITED STATES PATENT OFFICE.

MARTIN S. MILLARD, OF KANSAS CITY, MISSOURI.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 475,592, dated May 24, 1892.

Application filed September 10, 1891. Serial No. 405,332. (No model.)

To all whom it may concern:

Be it known that I, MARTIN S. MILLARD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Refrigerators; and I do hereby 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.

My present invention relates to improvements in refrigerators especially adapted for domestic or household purposes; and the objects of the invention are, first, to insure perfect ventilation of the vapors or odors arising from the articles placed in the cooling-chamber and to provide an inexpensive and economical domestic refrigerator embodying the essential features of a first-class article.

My invention consists in the combination, with the cooling and refrigerant chambers, of an inclined pan forming a bottom for the refrigerant-chamber and provided at its upper edge with a vertical flange, a drip-trough arranged below the lower end of the inclined bottom and out of contact therewith to provide for the passage of cold air between the bottom and said trough, and a vertical hollow wall arranged near the rear end of the refrigerant-chamber and having its lower open end receiving the vertical flange on the upper end of the inclined bottom. This vertical hollow wall forms an important part of my present improvements, as it is so arranged relatively to the rear wall of the refrigerant-chamber as to form a flue between itself and said wall of the chamber, and at the same time said hollow wall receives all the warmer vapors that arise from hot substances placed in the cooling-chamber, and which are conducted to the outside of the refrigerator by exit pipes or passages that lead from the upper part of the hollow partition.

My invention further consists in the novel construction and arrangement of parts, which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure I is a vertical sectional view through my improved refrigerator on the plane indicated by the dotted line $z z$ of Fig. II. Fig. II is a vertical transverse sectional view on the plane

indicated by the dotted line $y y$ of Fig. I. Fig. III is a horizontal sectional view on the line $z z$ of Figs. I and II. Fig. IV is a detail perspective view of the pan or bottom of the refrigerant-chamber.

Like numerals of reference denote corresponding parts in the several figures of the drawings.

In the manufacture of my improved refrigerator I first proceed to construct an outline or skeleton frame and then place within the same the interior matched lining of the ordinary form, which is suitably secured in position. The space between the matched lining on the interior side of the frame and the outside panel-work of the body is filled with a non-conducting vermin-proof composition, which is in a plastic state and pressed or worked thoroughly into the crevices or spaces in the joints of the frame and interior lining; but previous to filling the composition in the frame I cement the outside surface of the lining and the outside parts of the frame. The cement employed may be any good material or mineral paint which will effectually close all the joints and prevent the passage of air and the entrance of insects. After the lining and the frame have been thus prepared I fill the space within the frame with the composition, which consists of the following ingredients, to wit: sawdust, charcoal, lime, carbonate of iron, and glue, which are intimately mixed together and reduced to a plastic state by the addition of hot water or steam. I use about one-tenth part of charcoal and a similar proportion of lime; but only a small quantity of the carbonate of iron is used, and sufficient glue added to the whole to make the mass sufficiently adhesive. The carbonate of iron is employed as an insecticide to prevent vermin from destroying the filling, and the charcoal and lime are employed for their disinfecting and preserving properties. After the composition has been thoroughly worked into the frame and become partially or wholly dry the outside casing or panel-work is put on the body and the refrigerator finished in any preferable style.

I will now proceed to describe the construction of the interior of the refrigerator.

The space or interior of the body is divided into two chambers 1 2, the upper chamber 1

forming the refrigerant-chamber and the lower chamber 2 constituting the cooling or provision chamber. This division is effected by the pan 3, which constitutes the bottom of the refrigerant-chamber, and said pan is arranged in a vertically-inclined position, with its higher end contiguous to the rear part of the refrigerant-chamber and its lower end near to the front side of said chamber. This pan or bottom 3 is constructed of wood and formed with an upwardly-extending flange 4 at its rear edge and with depending cleats or flanges 5 5' at its side edges, which prevent the board from warping. The upper surface of the board and the flanges are covered with sheet metal or other suitable material.

At the front side of the refrigerant-chamber I provide a horizontal drip-trough 6, which extends from side to side of the refrigerator, and at the sides of said refrigerant-chamber the inclined troughs 7 and 8 are arranged, the upper sides of the horizontal and inclined troughs being open and the inclined troughs being arranged to discharge into the horizontal trough. The inclined bottom or pan 3 is arranged above the troughs with its side cleats 5 5' resting in the inclined side troughs 7 8, and the lower front edge of the bottom projects over the rear side of the horizontal front trough 6; but said edge of the bottom or pan 3 does not contact with the front trough 6, so that a space 9 is provided between the lower edge of the bottom and the front trough for the passage of cold air from the refrigerant-chamber to the cooling-chamber 2 below.

At the rear side of the refrigerant-chamber, but out of contact with the rear wall of the same, I arrange the vertical hollow partition 10, consisting of the two side pieces and the short top piece, the lower end of the partition being open. This hollow partition is arranged in a vertical plane over the upwardly-extending flange 4 at the rear edge of the inclined bottom 3, so as to receive the said flange within itself, and the rear wall or side of the partition extends below the lower side or surface of the inclined bottom, as shown in Fig. II. The hollow partition 10 thus forms a chamber 11 within itself, which communicates with the cooling-chamber and a flue 12 between its rear side and the rear wall of the refrigerant-chamber.

13 14 designate two exit pipes or passages, which lead from opposite sides of the hollow partition 10 through the side walls of the refrigerator, and these pipes are designed to conduct to the outside of the refrigerator the warmer vapors or odors that pass through the chamber in the hollow partition, thereby ventilating the cooling-chamber containing the articles to be preserved. An exit-pipe 15 for the drip and waste water of the refrigerant-chamber leads from the front horizontal trough. The pipe may lead centrally from the front trough or from either side thereof to convey the waste water to the outside of

the refrigerator. Access is had to the refrigerant-chamber through a door 16 in front of the body, and a similar door is provided at a suitable point in the body for permitting access to the lower cooling-chamber.

The operation of my invention is simple and readily explained. The cold air from the refrigerant-chamber descends through the opening or passage between the bottom 3 and the front trough, and thus passes to the lower cooling-chamber, while the warmest air passes through the hollow partition and the exit-passages to the outside of the refrigerator and the air circulates through the flue 12 from the cooling-chamber to the refrigerant-chamber. A constant circulation of air from the cooling-chamber to the refrigerant-chamber and back from the refrigerant-chamber to the cooling-chamber is thus established, while the objectionable vapors and odors from warm dishes that may be placed in the cooling-chamber are carried off through the hollow partition, and the chambers are thus thoroughly ventilated. The interior of the refrigerator can be readily cleansed, as the bottom 3 can be removed simply by lifting up the lower edge of the same and withdrawing the upwardly-extending flange 4 from the space in the hollow partition. The bottom can be replaced with ease, as it is only necessary to fit the flanged end 4 in the partition and allow the cleats 5 5' to drop into the inclined side troughs 7 8.

I am aware that changes in the form and proportion of parts and details of construction of the devices herein described and shown as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages of my invention.

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

1. In a refrigerator, the combination, with a removable bottom or pan, of a hollow vertical partition which receives one edge of the pan and forms a flue in rear of the pan or bottom for the passage of air from the cooling to the refrigerant chamber, substantially as and for the purpose set forth.

2. In a refrigerator, the combination of the inclined side troughs and the horizontal front trough which receives from the side troughs and the inclined bottom or pan supported by the side troughs and having its front end elevated above and extended over the front trough, the arrangement of the bottom relatively to the front trough being such as to discharge the drippings in the trough and to form an air-passage between said trough and the lower edge of the bottom, substantially as described.

3. In a refrigerator, the combination, with a bottom having the vertical flange at its upper end, of a vertical hollow partition extending transversely across the rear side of the refrigerant-chamber and out of contact with the rear wall thereof, said partition receiving

the flange of the bottom and forming a flue
12 in rear of the bottom, and a separate pas-
sage for the warm air, and exits or passages
leading from the hollow partition to the out-
5 side of the refrigerator, substantially as and
for the purpose described.

4. The combination of a bottom and a hol-
low partition containing an air-passage with-
in itself and forming an air-flue in rear of the
10 bottom and exits for the air from said passage
within the partition, substantially as de-
scribed.

5. In a refrigerator, the combination of a
bottom and a vertical hollow partition form-
ing flues and spaces for the circulation of air 15
and a separate passage for the escape of hot
air and vapors, substantially as described.

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

MARTIN S. MILLARD.

Witnesses:

E. T. PAGETTI,
JOHN PORTER.