No. 625,309. Patented May 23, 1899.

J. H. AMES.

REFRIGERATOR.

(Application filed Dec. 23, 1897.)

(No Model.)

Fig. 1.

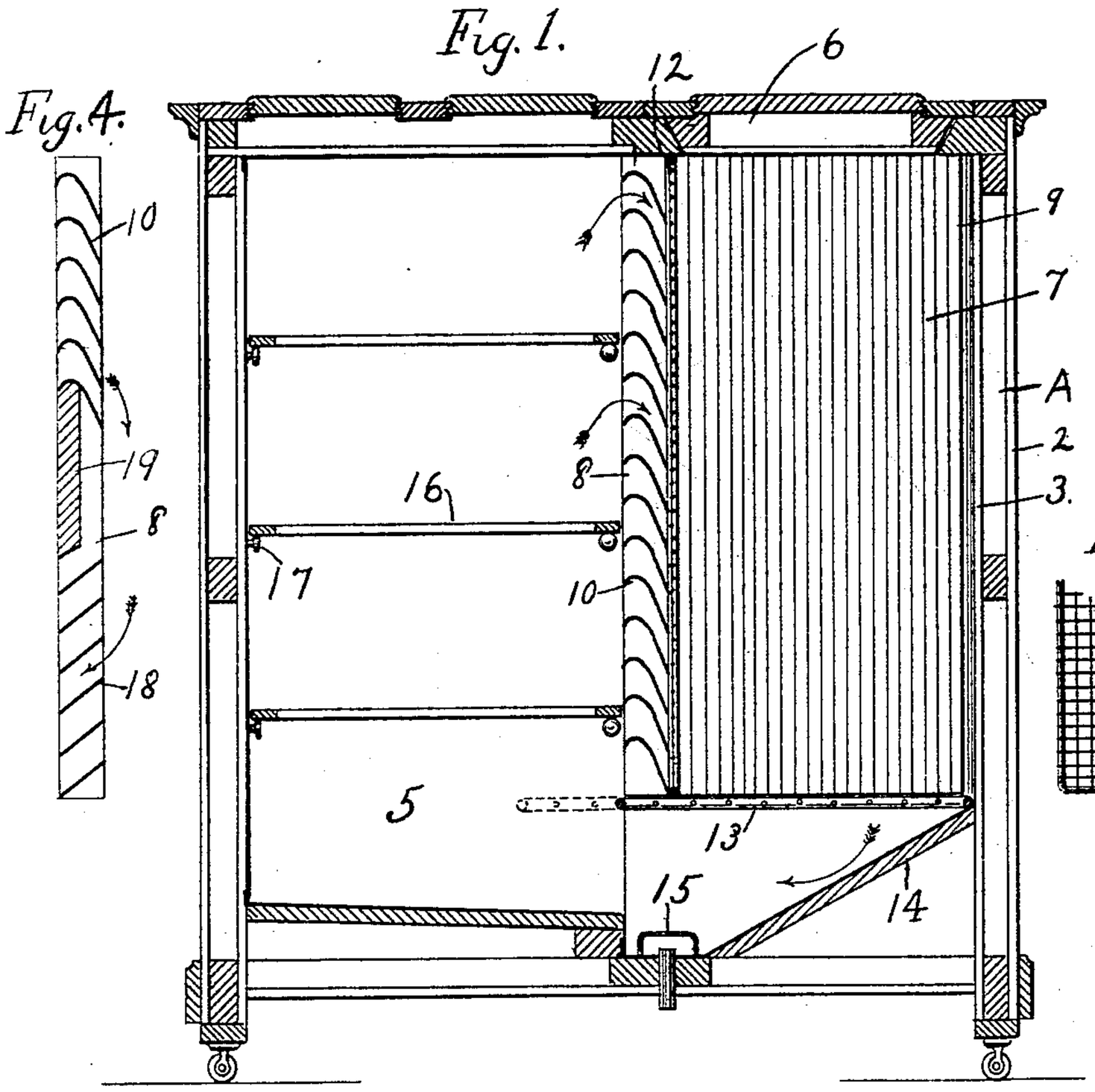


Fig. 4.

Fig. 3.

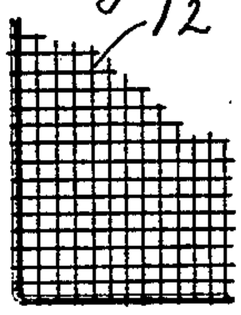
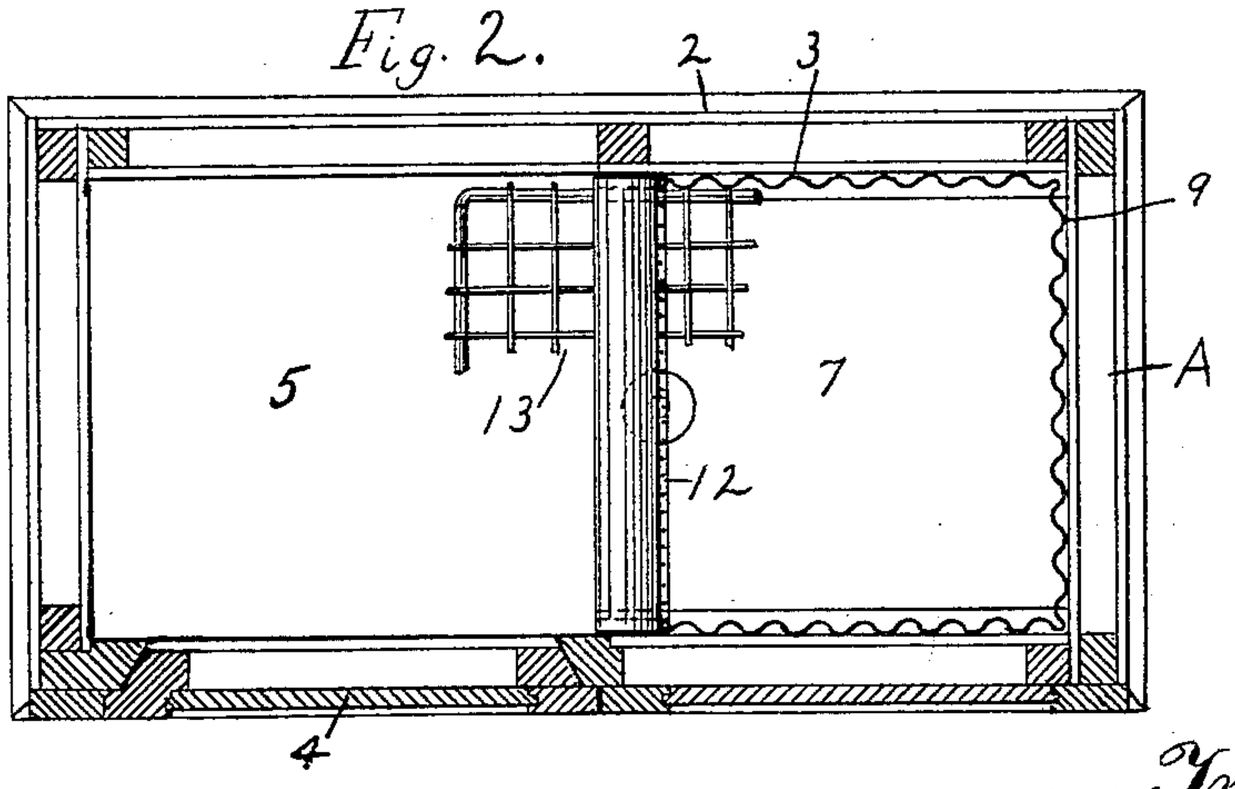


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

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REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 625,309, dated May 23, 1899.

Application filed December 23, 1897. Serial No. 663,115. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. AMES, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Refrigerators, of which the following is a specification.

My invention relates to improvements in refrigerators, its object being particularly to provide improved means for increasing the circulation of the air through the food-chamber.

To this end my invention consists, essentially, in arranging between the food-chamber and ice-bunker a wall made up of ports opening downward upon one side into the food-chamber and upon the other side into the ice-bunker, with the bunker side of each port of greater length than the opposite side.

My invention further consists in the construction and combination hereinafter particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical longitudinal section of a refrigerator embodying my improvements. Fig. 2 is a horizontal section of the same. Fig. 3 is a partial detail of the protecting-screen forming part of my invention, and Fig. 4 is a detail of a modified form of partition-wall between the food-chamber and ice-bunker.

In the drawings, A represents the outside case of the refrigerator, consisting of the outer wall 2 and the inner wall 3, forming an intermediate dead-air space. A suitable door 4 is provided, opening into the food-chamber 5, and a door 6 in the top of the refrigerator opens into the ice-bunker 7 to allow filling of the same. Between the ice-bunker and the food-chamber is a partition 8, the remaining three walls of the bunker being constituted by the vertical corrugated solid wall 9. The partition between the bunker and food-chamber is made up of a series of sections 10. These sections are preferably of sheet metal and, as shown in the drawings, are curved and have their inner sides, which project downwardly into the bunker, considerably longer than their outer sides. Said sections thus constitute intermediate curved ports 9, ascending from the food-chamber and descending into the ice-bunker, and as the descending portion is considerable longer than the ascending portion better results are obtained, as hereinafter described.

Within the bunker and parallel with the inner side of the partition 8 is arranged the screen or guard 12, the purpose of which is to protect the inner walls of the ports and to prevent the ice from freezing into the same and stopping their action. The bottom of the bunker is closed by the metal grating 13, having a sliding support, whereby it can be readily removed.

The floor 14 of the refrigerator underneath the bunker is downwardly inclined and terminates at the trap 15.

Within the food-chamber is arranged a series of shelves 16, resting upon suitable supports 17.

In Fig. 4 is illustrated a modified form of partition-wall between the food-chamber and ice-bunker. The upper part of the partition is provided with a series of my improved shape of ports, and the lower part of the partition is provided with a series of ports 18, leading from the ice-bunker downward into the food-chamber, the upper and lower series being separated by the wall 19. With the use of this modification of wall the air after passing into the bunker through the upper siphon-ports will pass into the food-chamber through the ports 18, as well as through the open-work grating constituting the bottom of the bunker.

As will be evident from the foregoing description, the ports which constitute the wall separating the food-chamber and ice-bunker are of siphon shape, with the short conduits extending downwardly into the food-chamber and the long conduits extending downwardly into the ice-bunker adjacent to the ice. The air in the long conduits being cooled and increased in specific gravity by the ice will drop, creating a vacuum, into which air from the short conduits passes, thus setting up a circulation. The currents of air pass from the siphon-ports through the bottom of the bunker to the food-chamber and rise in the food-chamber. As the air-currents pass upward in the food-chamber they are drawn into the short legs of the siphon-ports, and as said

short conduits or legs extend downwardly in the food-chamber the currents are drawn therein in line with the path of their flow.

It will be evident that the three features of the siphon shape are essential, the long conduits which extend downwardly into the ice-bunker, the short conduits which extend downwardly into the food-chamber, and the downward inclination of both. The curved shape is also necessary to secure efficient circulation, as with an angular shape a pocket is formed which causes counter-currents, retarding circulation.

I claim—

1. In a refrigerator, comprising in combination a food-chamber an ice-bunker, an open-work bottom for said bunker, and a wall separating said chamber and bunker made up of a plurality of siphon-shaped ports, the long conduits of which extend downward into the ice-bunker and the short conduits of which extend downward into the food-chamber.

2. In a refrigerator, comprising in combination a food-chamber, an ice-bunker, an open-work bottom for said bunker, and a wall separating said chamber and bunker made up of a plurality of curved siphon-shaped ports, with the short conduits of said ports extending downwardly into the food-chamber and the long conduits extending downwardly into the ice-bunker.

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

JOHN H. AMES.

Witnesses:
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