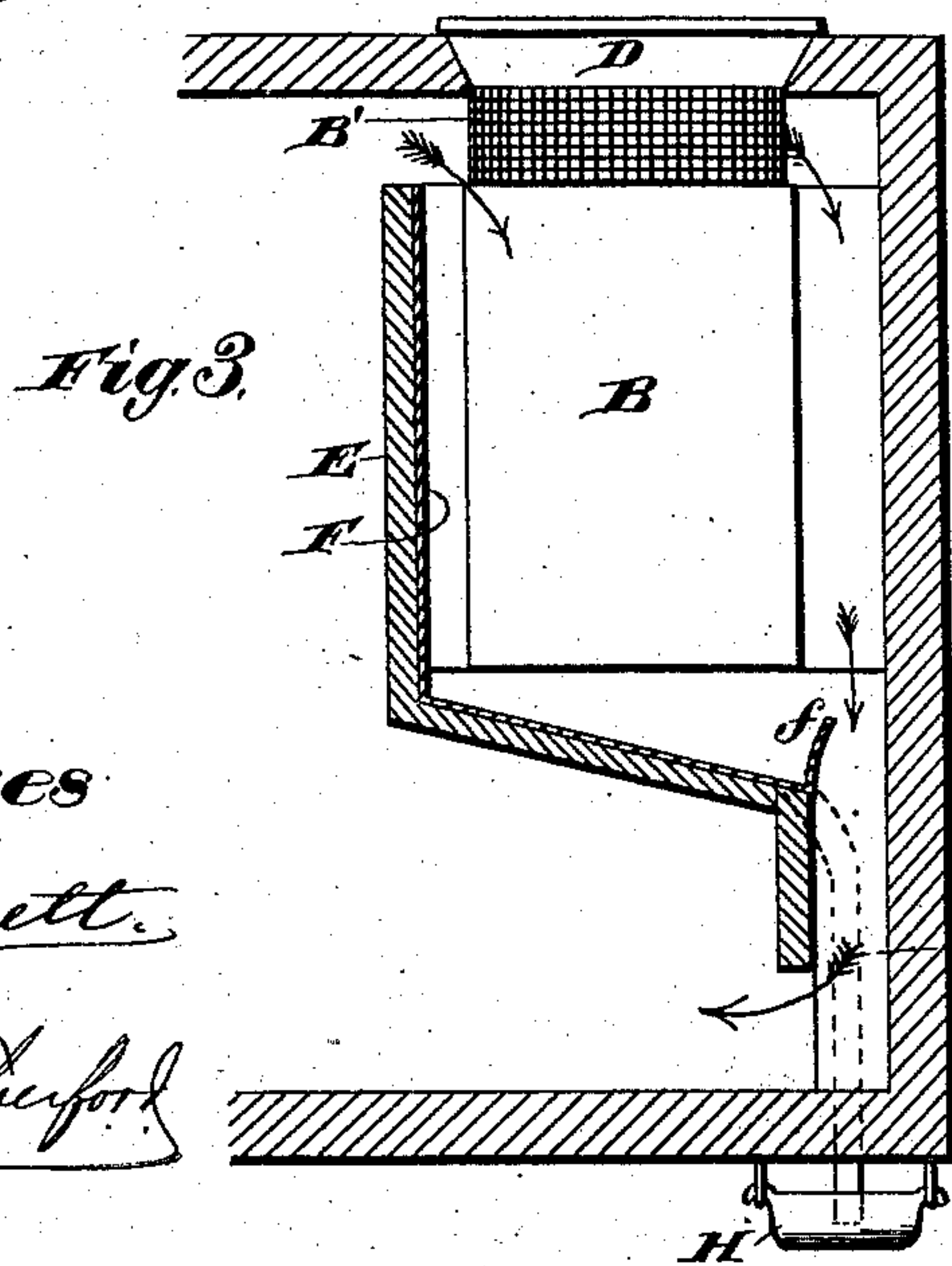
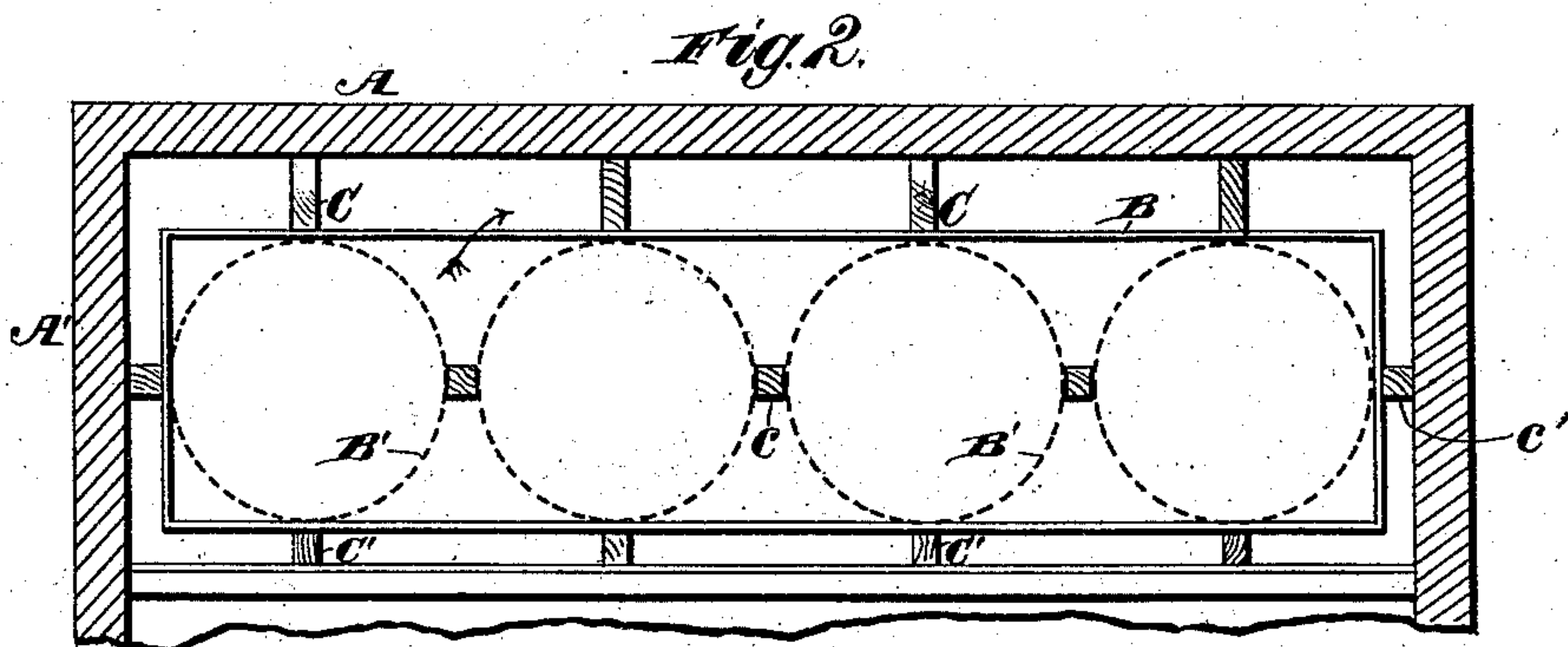
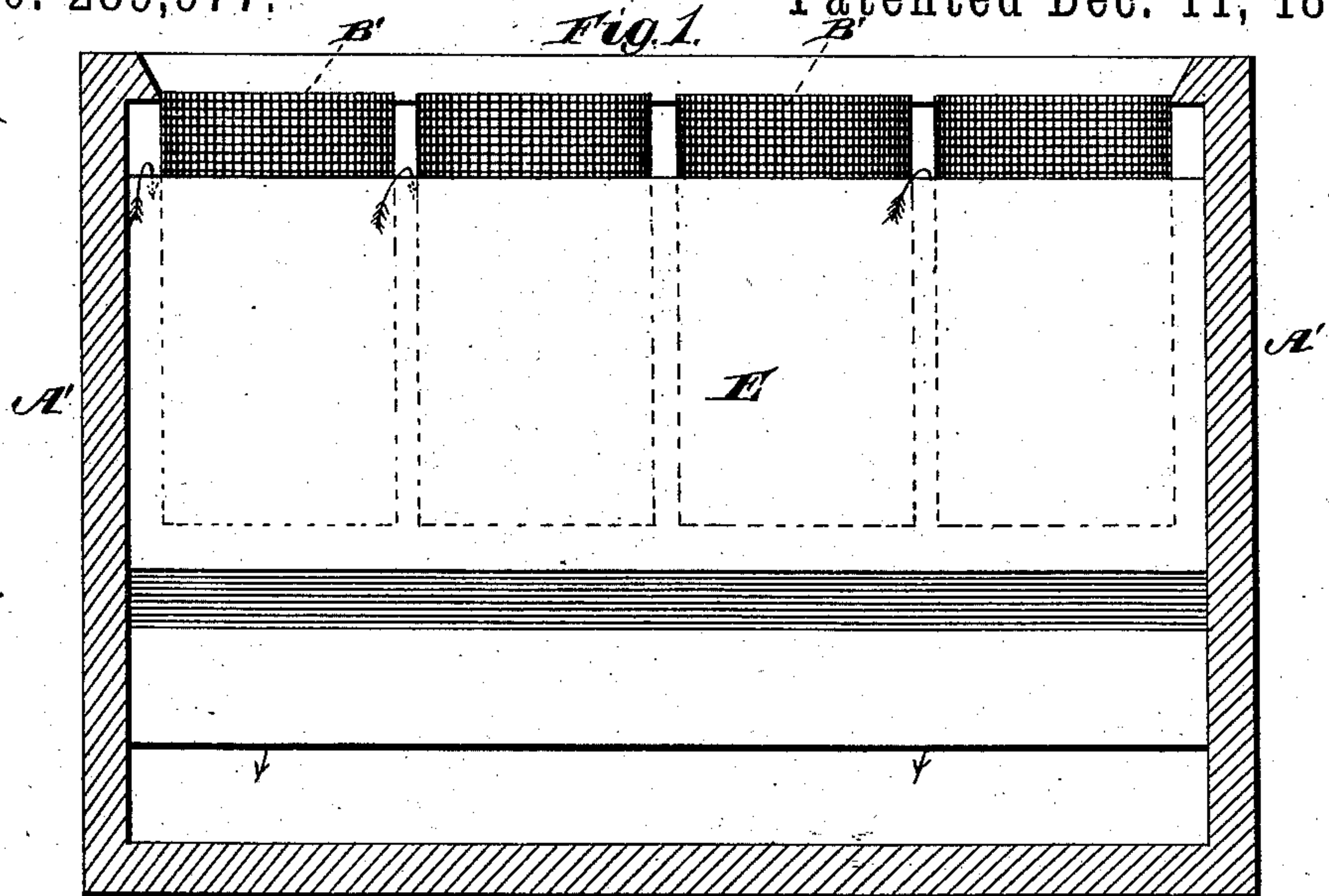


(No Model.)

W. A. CHASE.
REFRIGERATING CAR.

No. 289,977.

Patented Dec. 11, 1883.



Witnesses
Robert Emmett.
J. A. Rutherford

Inventor,
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UNITED STATES PATENT OFFICE.

WARREN A. CHASE, OF BOSTON, MASSACHUSETTS.

REFRIGERATING-CAR.

SPECIFICATION forming part of Letters Patent No. 289,977, dated December 11, 1882.

Application filed September 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, WARREN A. CHASE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Refrigerating-Cars, of which the following is a specification.

My invention relates to refrigerating-cars and similar preserving-compartments in which perishable material is stored in an atmosphere of low temperature, and the object thereof is to secure a free and unobstructed circulation of air, to provide a comparatively large cooling and condensing surface which shall be free from clogging by frost, and to effect the required reduction of temperature and condensation of moisture in the cheapest and most practical manner.

To this end, therefore, my invention consists in a series of ice-receptacles, each composed of wire-net or similar open-work, and inclosed within a metallic jacket, an air-dividing partition erected in front, and a drip-pan beneath, with an air-space in front, beneath, and behind, whereby the air passes from above down and around the inclosing-jacket, behind the same, and between its bottom and the drip-pan, escaping finally below the air-partition, whereby it is exposed to a large cooling and condensing surface, while at the same time the accumulation of frost is prevented.

Referring to the drawings, Figure 1 is a transverse vertical section of the car or compartment, taken near one end of the same. Fig. 2 is a horizontal section taken through the end portion of the car a little below the roof. Fig. 3 is a vertical longitudinal section of the parts shown in Figs. 1 and 2.

In said drawings, the letter A designates the end wall of the car, and A' the side walls, the construction being the same as that already known and used.

Across the end of the car I place a metallic jacket, B, having its open top arranged a short distance beneath the roof, while its bottom is not far from half-way between the roof and the floor. This jacket is supported by any suitable means, and is braced or supported at intervals by joists C, a space being left between the rear side of the jacket and the end wall of the car, and between its ends and the

side walls of the car or compartment. Within this jacket B, I place cylindrical receptacles B', formed of wire-net or an equivalent material, and having such dimensions that they project above the top of the jacket into the opening in the roof, which is closed by a cover, D. The diameter of these receptacles is such that they lie in contact with the sides and ends of the surrounding rectangular jacket, sufficient space between those adjacent being left for the insertion of a vertical joist, c, about four inches square, which joists sustain the adjacent walls of the receptacles in proper upright position, and resist lateral pressure on such portions of the walls. Upon the outside of the jacket are placed joists c', bearing against the ends, and joists C' along its front, and opposite the joists C.

In front of the jacket B is placed an air-dividing partition, E, having its top in about the same plane as the top of the jacket, and extending from side to side of the car. A few inches below the bottom of the said jacket this partition is carried toward the end wall, A, beneath the bottom of the jacket, a slight inclination being given to this portion, and it is then dropped vertically until its lower edge is a little above the floor. The inner face of the partition opposite the front side of the jacket is covered with sheet metal F, such as copper or galvanized iron, which is extended over that portion which lies beneath the jacket, and its edge is turned up, as shown at f, forming a drip-pan, which receives the water of condensation. An escape-pipe, G, allows the water to flow off into any suitable receptacle, H, without the car.

The refrigerating material is placed within the wire-receptacles B', which are filled through the roof. The warm air, which rises to the upper part of the car, passes over the top of the partition E, and its temperature is almost at once so far reduced as to change its specific gravity and give it a downward tendency. It flows down between the jacket B and the partition E, as well as between its ends and the side walls of the car, while at the same time a portion passes over the jacket, through the ice-receptacle B', and down between the end wall, A, and the rear side of the jacket. The air passing between the latter and the air-dividing partition flows over the drip-pan and

below the bottom of the jacket, and the several currents finally unite behind the lower end of the partition, and thence pass into the refrigerating-compartment beneath the latter. A circulation of air is thus set up, and as its temperature is reduced by passing through the cooling-chamber within which the jacket B is placed, the moisture taken up by the warmer strata is pressed out and deposited upon the metallic surfaces of the jacket and the inner lining of the partition, as well as upon the ice-receptacle and the ice or freezing-mixture itself. This, as will readily be seen, will make a rapid active cooler.

It will be seen that by the peculiar arrangement shown and described I obtain a comparatively large cooling and condensing surface and avoid the clogging of the parts by the accumulation of frost upon the outside of the vessel containing the refrigerating material.

Instead of wire-netting, other and equivalent material may be used in forming the ice-receptacles B'—such as perforated metal plate, for example. I prefer, however, to employ wire, as being cheaper, while it is equally strong and well adapted to the purpose.

I am aware that foraminous ice-tanks are not new, and that such tanks have been arranged in a chamber having top and bottom openings for the entrance and exit of air at such points; but such do not constitute my invention.

Having thus described my invention, what I claim is—

1. In a refrigerator-car, the combination of the metallic jacket B, extending transversely to the car-body and terminating at a distance from the roof thereof, a series of foraminous ice-receptacles, B', arranged within such jacket, and having their upper ends projecting above the upper edge thereof to an opening in the car-roof, having a movable cover, D, said receptacles having their side walls supported by the side walls of the jacket, and the said jacket being located to create an air-space between one of its transverse sides and the end of the car, substantially as described.

2. The combination, with a refrigerator-car, of a metallic jacket, B, arranged transverse to the car-body, with air-spaces between the ends of the jacket and the sides of the car and between the end of the latter and one side of the jacket, with joists sustaining the jacket in such position, and foraminous ice-receptacles arranged in the jacket, with a space between, provided with joists to sustain the receptacles, said receptacles projecting above the upper edge of the jacket to an opening in the car-roof having a movable cover, substantially as described.

3. The combination, with a refrigerator-car, of a metallic jacket extending transverse to the car-body, and arranged to create vertical air-spaces at its ends and sides, a series of foraminous ice-receptacles suspended in the jacket and projecting above the upper edges thereof to an opening in the roof having a

movable cover, and means whereby the walls of the foraminous ice-receptacles are sustained against lateral pressure at different sides, substantially as described.

4. The combination, with a refrigerator-car, of a partition extending from side to side of the car, and having a metallic inner surface, a jacket arranged transverse to the car-body, between its end wall and said partition, to create the intervening air-spaces, and a series of foraminous ice-receptacles suspended in the metallic jacket and projecting above the upper edges thereof to an opening in the car-roof, said receptacles having their walls braced by the walls of the jacket against lateral pressure, substantially as described.

5. The combination, with a refrigerator-car, of a metallic jacket extending transverse to the car-body, adjacent to the end wall thereof, and a series of foraminous ice-receptacles suspended in the jacket, and a partition extending from side to side of the car at a distance from the jacket, and having a metallic condensing-surface presented to the jacket, substantially as described.

6. The combination, with a refrigerator-car, of a metallic jacket arranged therein to create surrounding air-spaces, and a series of foraminous ice-receptacles arranged in the jacket and projecting above its upper edge, substantially as described.

7. The combination, with a refrigerator-car, of suspended foraminous ice-receptacles, a jacket surrounding all the receptacles and terminating below their upper ends, and an air-dividing and directing partition arranged in front of the metallic jacket and extending beneath the bottom of the said jacket, substantially as described.

8. In a refrigerating-car, the combination, with a metallic jacket arranged across the end of the car, of foraminous receptacles inclosed therein and projecting above the same, an air-dividing partition erected in front of said jacket and extending underneath it to a point a little above the floor, and a metal lining covering the face of the partition opposite the jacket and extending beneath it, and having its edge turned up to retain the drip, and a suitable escape-pipe, substantially as described.

9. The combination, with the jacket B, containing a series of cylindrical receptacles, B', formed of wire-net, of the air-dividing partition E, extending from side to side in front of the jacket, with an air-opening between it and the roof, the metal lining F, having an edge or flange, f, and the drip-pipe G, the partition extending in front of and beneath the jacket and to a point a little above the floor, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

Witnesses: WARREN A. CHASE.
EDWARD P. NETTLETON,
ROSCOE P. OWEN.