

(No Model.)

S. W. BATES.
REFRIGERATOR.

No. 591,374.

Patented Oct. 12, 1897.

Fig. 1.

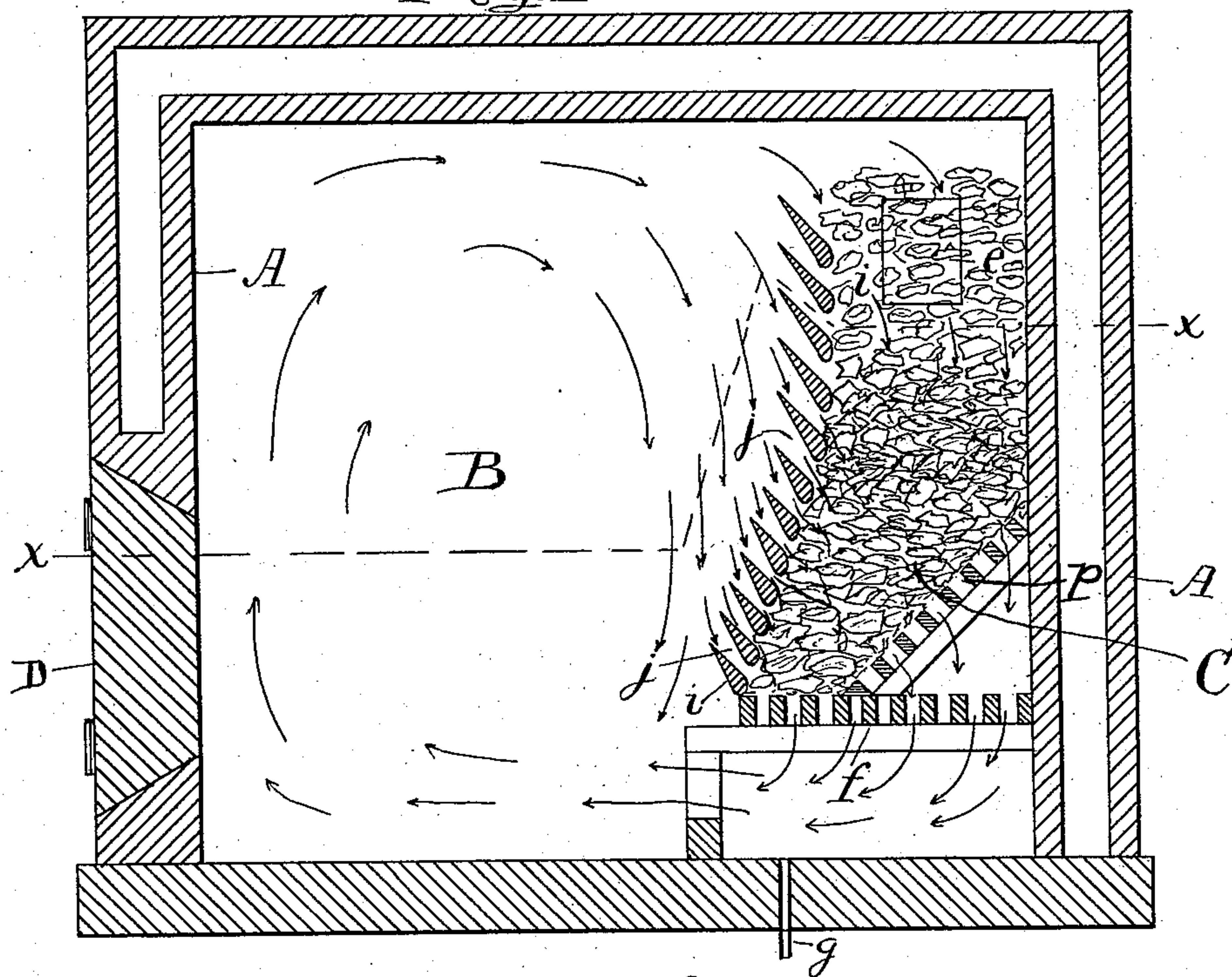
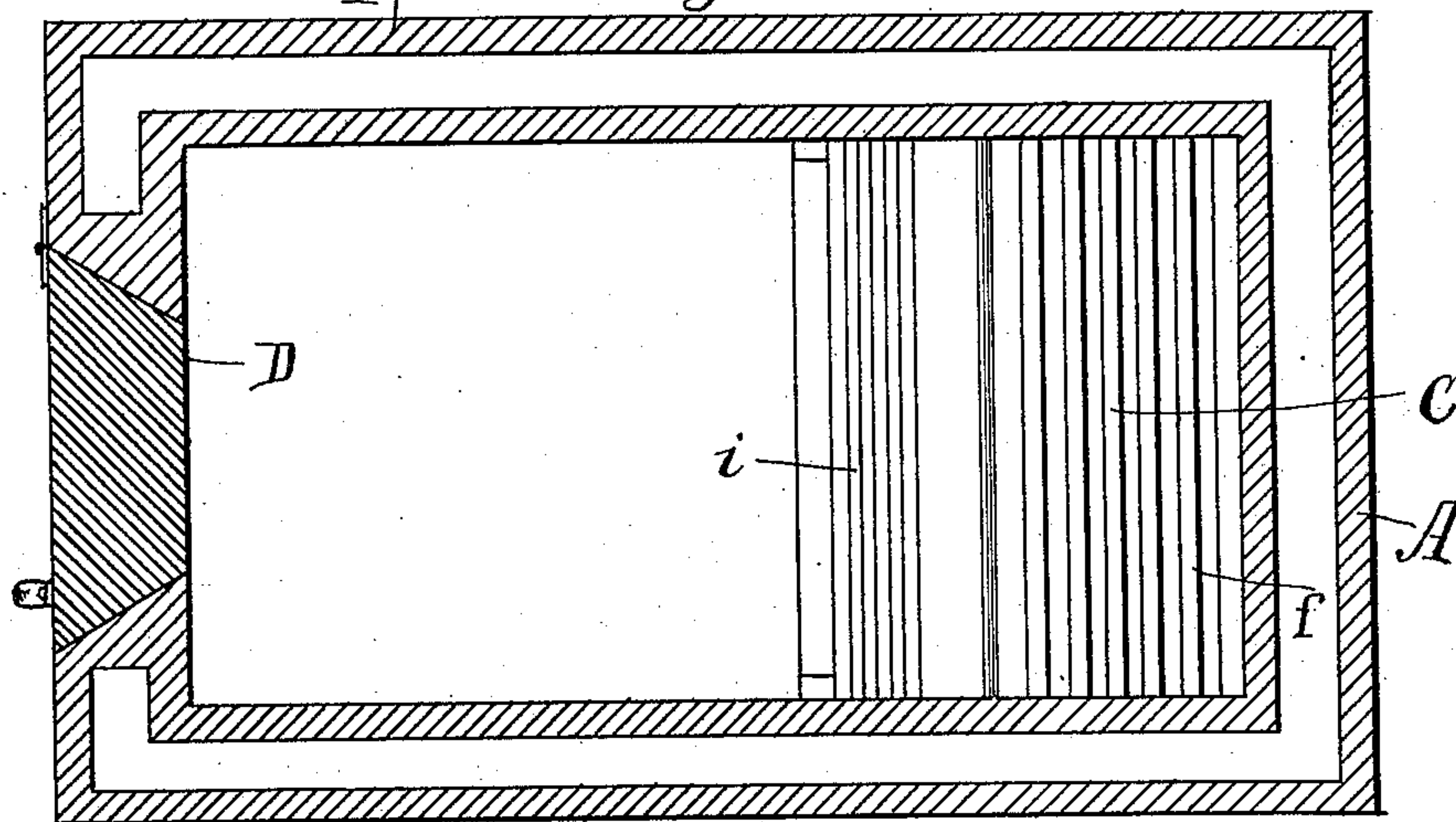


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

SOLOMON W. BATES, OF PORTLAND, MAINE.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 591,374, dated October 12, 1897.

Application filed December 14, 1896. Serial No. 615,597. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON W. BATES, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, 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 invention relates to refrigerators of that class wherein the refrigerating-chamber and the ice-chamber are located side by side, with a dividing-partition having openings inclining downward toward the ice-chamber. In these refrigerators the warm moist air rises to the top of the refrigerating-chamber, flowing toward the ice-chamber, becoming chilled as it approaches, and falls along the face of the dividing-partition, a portion of the air passing through the inclined openings into the ice-chamber. This air passes through the ice and thence out at the bottom of the ice-chamber and so back into the refrigerating-chamber. In order to provide for the most perfect circulation of air, it is desirable that as much of the air which descends adjacent to the perforated partition as possible shall pass through said partition into the ice-chamber; and my invention has for its object to so construct this partition that it will afford a passage for a large proportion of the cooled air which passes down adjacent to its face. For this purpose I make the inclined ports or openings which pass through the partition so that they contract or taper downward toward the ice-chamber, flaring or enlarging upward, so that they will catch as much air as possible and divert it into the ice-chamber. Again, instead of making the partition vertical I project the lower portion out into the air-chamber, giving the partition an inclination by which it catches more of the partially-cooled air as it falls along the partition than it would if vertical.

By the above-described construction I collect a large proportion of the air which has begun to fall before actually reaching the ice-chamber, and so prevent this air from cir-

culating in the refrigerating-chamber before its moisture has been deposited in the ice-chamber.

In the accompanying drawings I have illustrated a refrigerator or ice-box constructed according to my invention.

In the drawings, Figure 1 is a vertical section taken through the refrigerator, and Fig. 2 is a section taken on the line $x x$ of Fig. 1.

A A represent the refrigerator or ice-box, which may be of any approved construction, D being the main door and e the ice-door. The refrigerator is divided into a refrigerating-chamber B and an ice-chamber C, located side by side and separated by a generally vertical partition made up of horizontally-disposed flattened bars i , so set as to form a series of openings j , one over the other. These openings are inclined downward toward the ice-chamber, so as to catch the descending currents adjacent to the partition, and they are contracted or tapered downward and expanded or widened upward, making the inlet portion of the opening wider than the outlet portion. This form is given to the openings, as herein shown, by making the bars with their lower or inner edges thicker than their upper edges. The outer or upper edges I prefer to make quite sharp with a taper from the inner edge, thus leaving as little obstruction as possible for the passage of the air through the partition consistent with the necessary number of bars to give strength to the partition. The lower portion of the partition sets out somewhat into the refrigerating-chamber, giving an inclination to the lower portion of the partition, so that it is struck by the downward currents, which descend adjacent to the partition.

ff represent the slats which form the floor of the ice-chamber, and underneath the ice-chamber is a space communicating with the refrigerating-chamber, by which the cold air passes back after being chilled. It is desirable in this class of ice-boxes to have the greater portion of the ice at the top of the ice-chamber and as little as possible at the bottom, and for this reason I contract the lower portion of the ice-chamber by inclining the

rear portion of the bottom in such a way as to narrow up the space at the lower portion of the chamber. For this purpose I provide an inclined partition *p* at the lower rear portion of the ice-chamber, whereby the bottom of the ice-chamber is narrowed up and the bulk of the ice retained at the top.

A suitable drip-pipe *g* is provided to carry off the water from the melting ice.

10 The operation of the refrigerator is evident from what has been said. The air in the refrigerating-room becoming heated rises and flows toward the top of the ice-chamber. A portion of it passes into the top of the ice-chamber and works its way down through the ice, while another portion, becoming cooled as it approaches the partition, descends along the face of the partition. This cooled air strikes into the flaring openings and works in through the ice, while that portion which does not pass through above strikes the lower portion of the partition and finds the flaring openings directly in its downward course. The inclined position of the lower portion of the partition is important, because the strong flow of cold air out from under the ice-chamber has a tendency to draw the descending air away from the lower portion of the partition, and if the latter were vertical comparatively little air would enter at this point. Another advantage of this construction is that the currents of air which enter through these openings are not vertically over each other, as in the case of a vertical partition, 35 but they are admitted to the ice in different

vertical planes and so reach a larger portion of the ice as they pass down through.

By my improved construction of the partition the air is cooled to a lower temperature, a more active circulation is assured, and the efficiency of the refrigerator is increased accordingly. 40

It is evident that either ordinary ice or any freezing mixture can be used in the ice-chamber, according to the temperature desired in the refrigerator. 45

I claim—

1. The herein-described refrigerator having a refrigerating-chamber and an ice-chamber separated by a generally vertical partition composed of flattened horizontal bars having one edge thicker than the other said bars being placed one above the other to form spaces inclining and tapering or contracting downward toward the ice-chamber. 50

2. The herein-described refrigerator having a refrigerating-chamber and an ice-chamber placed side by side and separated by a partition having a series of openings inclining toward said ice-chamber, the lower portion of said partition extending farther into said refrigerating-chamber than the upper portion. 55

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

SOLOMON W. BATES.

Witnesses:

JAMES E. McDOWELL,

FRANK H. COLLEY.