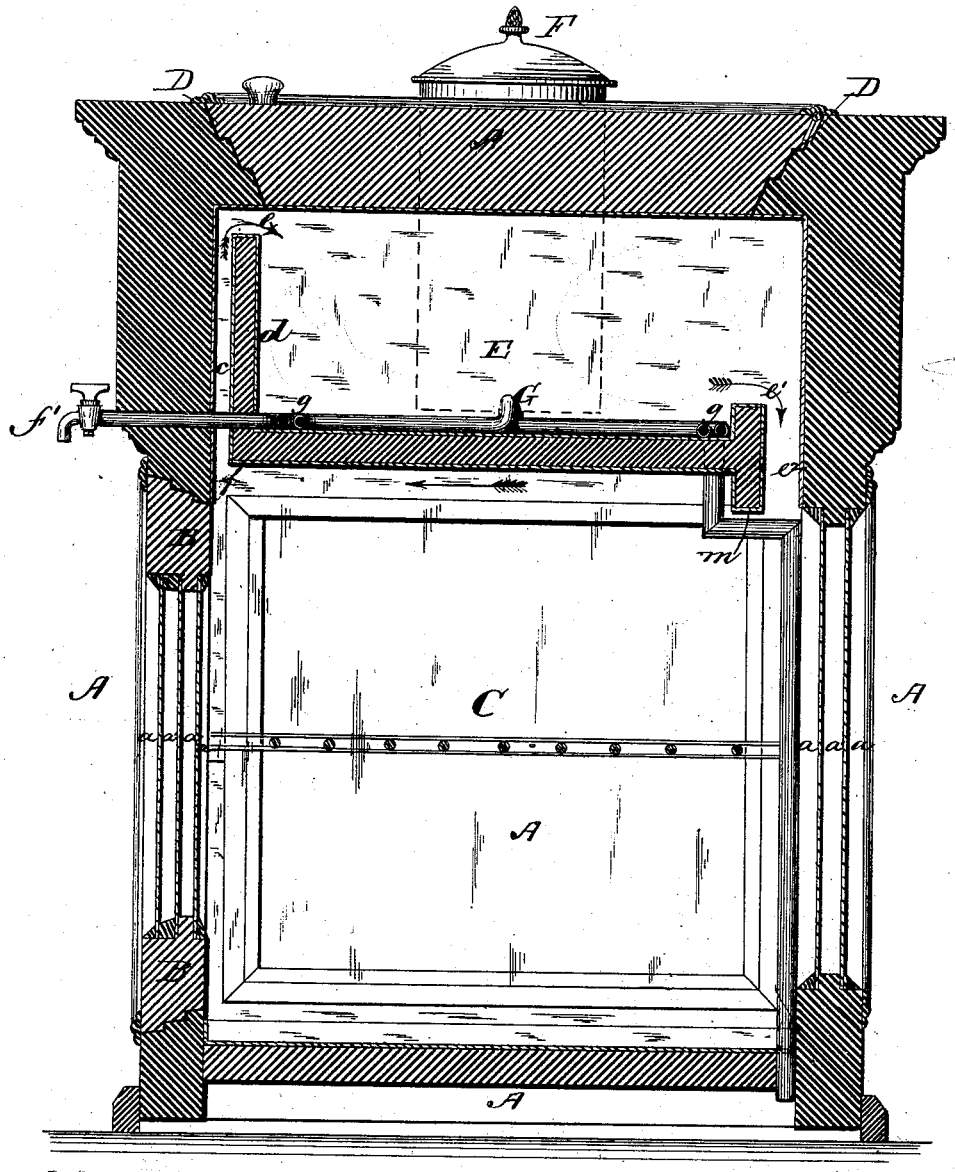
H. M. DIGGINS.
Refrigerator.

No. 221,218. Patented Nov. 4, 1879.



Witnesses;
W. C. Jordan
Wm Blackstock.

Inventor
Henry M. Diggins;
By Lysander Hill.
His Atty.

UNITED STATES PATENT OFFICE.

HENRY M. DIGGINS, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **221,218**, dated November 4, 1879; application filed May 21, 1878.

To all whom it may concern:

Be it known that I, HENRY M. DIGGINS, of Washington, District of Columbia, have invented a certain new and Improved Refrigerator; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which the figure represents a longitudinal vertical section.

Like letters of reference indicate the same parts in the figure.

This invention relates to that class of refrigerators having an ice-box arranged in or near the top, and a preserving chamber or chambers beneath said box, entered through a lateral or front door, and in which a constant circulation of air is kept up to equalize the temperature throughout the entire structure.

In refrigerators of this class there is a tendency for the warm outside air to rush into and through the preserving-chamber whenever the door leading to the latter is opened; and to provide against the bad effects of this tendency, a flue or passage has been arranged immediately above the door, for the purpose of conducting the said inflowing warm air to the ice-box before it passes to the preserving-chamber. In all prior inventions, however, within my knowledge, the said inflowing warm air has been conducted merely in contact with the exterior surface of the top and sides of a slate box containing the ice, and beneath a slotted bottom, on which the ice rests; but in such construction, there being no actual direct contact with the ice itself, said air has been insufficiently cooled before it enters the preserving-chamber.

The object of my invention, therefore, is to more rapidly and effectually cool the air by circulating it directly over and in contact with the ice; and to this end it consists in an improved construction of the ice-box and the air passages or flues connected therewith, whereby the warm air, on entering through the open door, is conducted up to the top of the chamber, and thence over and in direct contact with the ice therein, and, finally, in its cooled condition, down into the preserving-chamber below, all as I will now proceed to describe.

In the drawing, A indicates the top, bottom, side walls, and end walls of the refrigerator, any or all of which may be made, in whole or in part, of plates *a a* of glass, with dead-air spaces *a'* contained between them, for the purpose of preventing conduction of heat. B represents the lateral or front door, by which access is had to the preserving-chamber C, the ice-box E being filled from an opening, D, provided with a cover in the top. The front wall, *d*, of the ice-box may be vertical or inclined downward and backward in straight or curved lines from its front upper edge at *e* to its rear lower edge. A space is thus left at *c* all along the front side of the refrigerator directly above the door B, and into which the warm air, entering at B, will incline to rise. From the top of this space *c* an opening, *e*, conducts said warm rising currents into the ice-box, where they pass over and through the ice, and thence out over a low bridge-wall, *e'*, and down through an opening, e^2, into the rear part of the chamber C, meaning by the "rear part" the part farthest removed from the door B.

The cold-air currents thus falling into the rear part of the chamber tend to crowd the whole atmospheric contents thereof forward toward the door B, so that when said door is opened the entering currents are met by the currents moving forward and are deflected upward toward the space *c*. At the same time the opening of the door B, giving a freer downward movement to the heavy cold air at the back of the chamber C, creates an increased suction from the space *c* through the opening *e* and ice-box, to supply the place of the more rapidly-moving descending currents in the rear of the chamber, and this increased upward movement of the currents in the space *c* intercepts the warm-air currents entering near the top of the door B and conducts them directly into the space *c*, and thence to the ice-box, leaving the food in the chamber C surrounded all the while by the cold currents descending and moving forward from the rear of the chamber.

A small flange, *m*, projects downward from

the bottom of the ice-box in front of the opening e^2, to deflect back any warm air that might pass the lower end of the space e and be caught under the bottom of the ice-box. The top of the ice-box is closed except at the opening e, which extends its entire length, and the bottom is closed except at the opening e^2, which also extends its whole length.

The bottom of the ice-box, the front wall of the same, the bridge-wall at the rear, and the depending flange are all thoroughly packed with non-conducting material, and consequently the exterior surfaces of these parts are not affected by the coldness of the ice, but remain at the same temperature as the air in contact with them, thus preventing the accumulation of moisture thereon or sweating, and not interfering in the slightest with the flow of the air-currents.

It will be observed that the cold air flows down behind the bridge-wall into the preserving-chamber and passes forward toward the front door, and thence up through the space or flue C, being by that time considerably warmed by contact with the contents of the preserving-chamber. From the flues C the air is delivered directly onto the ice, which immediately absorbs all the moisture it contained and cools it before again passing into the chamber below. A constant and rapid circulation is thus maintained and the air in the preserving-chamber kept perfectly dry, as well as the walls of the same, all moisture being absorbed and taken up by the ice itself.

The water tank or cooler is shown at F, and the pipe leading from it to the discharge-cock f' is shown at G, the coils under the ice being represented at g g.

Having thus described my invention, I claim as new—

In a refrigerator, the combination, with the preserving-chamber C and side or front door, B, of the ice-box E, having inclosed sides, a front wall or diaphragm, d, arranged as described, leaving a space, e e, as the only ascending air-passage immediately inside of and above the door, and provided with a low bridge-wall, e', and a depending flange, m, on its rear upper and lower edges, behind which is arranged a diving flue or passage, e^2, whereby the warm air, entering when the door is opened, passes up through the space e e over and in contact with the ice, and thence passes, in its cooled condition, through the flue e^2 into the preserving-chamber below, substantially as described, for the purpose specified.

HENRY M. DIGGINS.

Witnesses:

A. P. L'ECUYER,

M. L. ROBISON.