J. J. BATE.

REFRIGERATOR.

No. 188,567. Patented March 20, 1877.

Fig. 1.

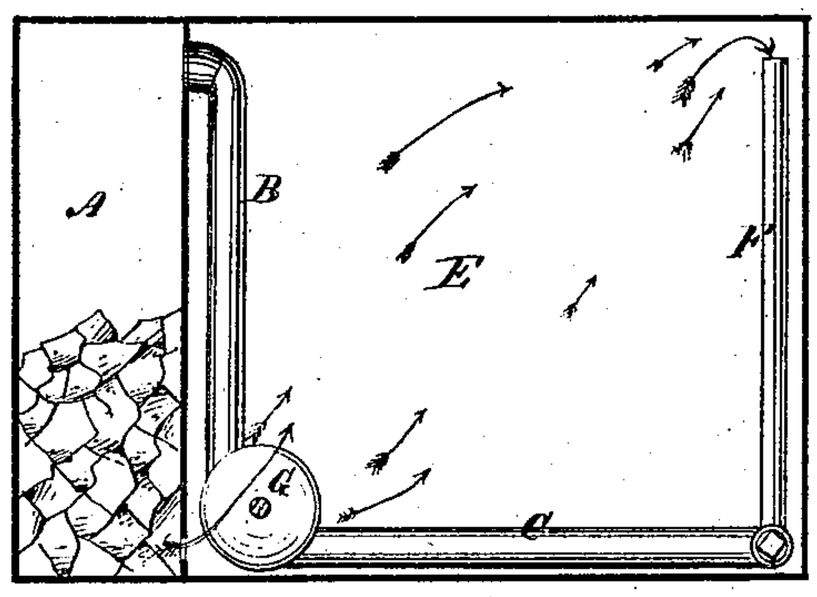


Fig. 2.

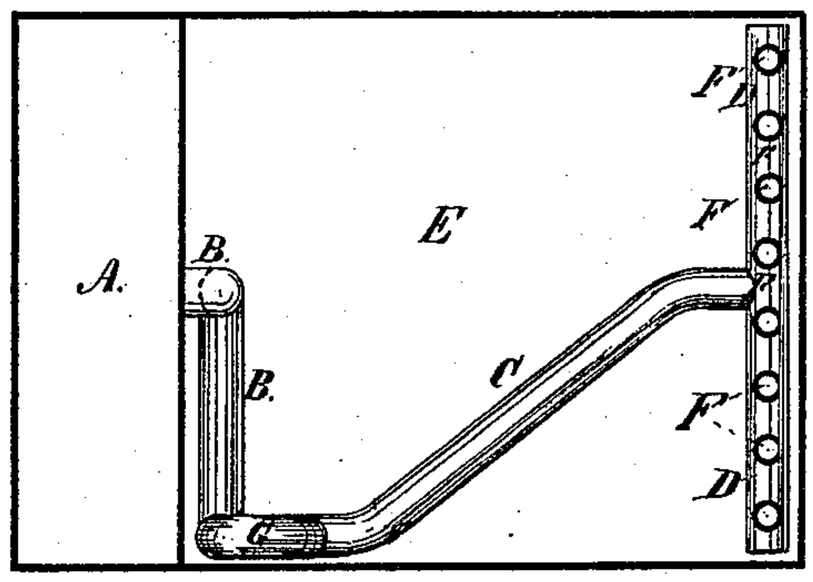
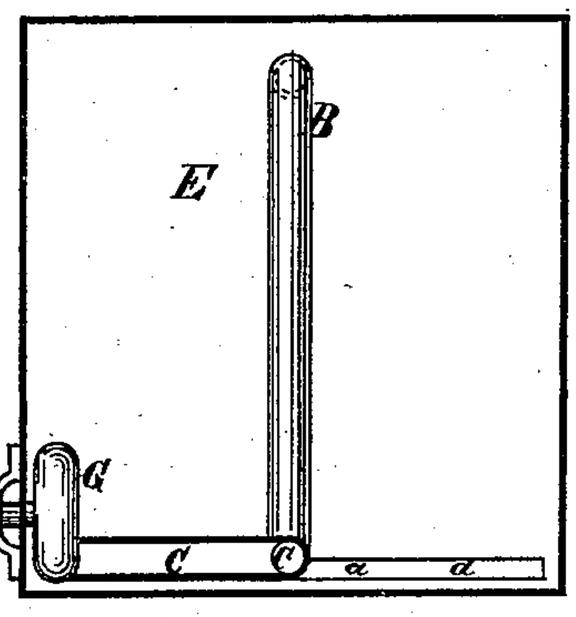


Fig. 3.



Witnesses:
Henry Eichling.
H. Wells Jr

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UNITED STATES PATENT OFFICE.

JOHN J. BATE, OF BROOKLYN, NEW YORK, ASSIGNOR TO BATE REFRIGERATING COMPANY.

IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **188,567**, dated March 20, 1877; application filed April 12, 1876.

To all whom it may concern:

Be it known that I, JOHN J. BATE, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Refrigerators, of which the following is a specification:

This invention consists in a novel combination of an ice-box provided within a chamber closed against access of external air, and constructed with suitable openings, through which air passing from the ice-box is distributed to the said closed chamber; a trunk, provided with a fan-blower or other air-forcing apparatus; and horizontal air-conducting pipe or pipes, provided with vertical inlet-pipes, open at or near their ends, in order that air may pass from the chamber to and through the ice-box, and arranged at the sides of the chamber, the whole constructed, combined, and arranged to insure the uniform and equable circulation of air throughout each and every portion of the closed chamber, together with perfect dryness of the said air, and the refrigeration thereof of the required degree with the least possible consumption of ice or other refrigerating material.

Figure 1 is a vertical sectional view of a refrigerator made according to my invention. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a vertical sectional view taken in a plane at right angles to Fig. 1.

A is the ice-box, filled with ice in blocks or fragments, in the usual manner. This ice-box has a longitudinal opening, *a*, at or near its bottom, which may either be continuous in the form of a horizontal slit, or may comprise a system of holes or orifices placed in line with each other. The ice-box is closed at the top, except that a pipe, B, enters the said top, said pipe, being vertical, connecting at its lower end with a horizontal trunk, C. This trunk C connects with one or more horizontal pipes, D, which are extended along one or more of the sides or ends of the refrigerating-chamber B, in which the ice-box and other devices herein described are placed. The pipe or pipes D are closed at their ends, and are provided with vertical pipes F, which extend nearly to the ceiling of the chamber E, and which are open at or near their upper extremities.

In the trunk C is placed a fan-blower, G, or equivalent air-forcing apparatus, the actuating-shaft *a* of which may be extended to the side wall of the chamber E, with its pulley *b* external thereto, so that the fan-blower may be actuated by any suitable power outside of said chamber.

In the operation of the invention, the rotation of the fan-blower draws the air from the upper part of the chamber E down through the pipes F, the horizontal pipe or pipes D, and the trunk C, to and through the shell or casing of the fan-blower itself, and thence up through the pipe D into the top of the ice-box A, from whence it is forced downward through and in contact with the ice in the said ice-box, and, finally, emerges through the opening *a* along the bottom of said ice-box, being thrown with force in all directions therefrom into the lower part of the chamber E, the air being cooled and dried by its contact with the ice. As fast as the cooled and dried air is forced into the lower part of the chamber E it displaces that previously located in such part of said chamber; and this displaced air is in its turn drawn into the vertical pipes F, and is in its turn forced to and through the ice-box, and thence again to the lower part of the chamber E, a continuous circulation of the air within the chamber being thereby provided, in such manner that all parts of the chamber—the corners, sides, bottom, and top thereof, as well as the central portions of the same—are kept continually supplied with a moving current of the dried and refrigerated air confined within the said chamber, but forced over and over again through and in contact with the ice.

It will, of course, be understood that a mere reversal in position of the parts hereinbefore described—as, for example, if the trunk and horizontal pipes were placed at the ceiling instead of at the bottom or floor of the chamber E, with the vertical pipes opening at their lower instead of their upper ends, and with air forced into the ice-box at the bottom instead of at the top—would be simply a modi-

fication of my invention, and would not affect the principle or *modus operandi* of the same.

What I claim as my invention is—

The combination of the ice-box A, constructed with the distributing-opening *a*, the trunk C, provided with the fan-blower G or other air-forcing apparatus, and the horizontal air-conducting pipes D, provided with the vertical inlet-pipes F, open at or near the ends, and arranged at the sides of the refrigerating-chamber E, the whole constructed, combined, and arranged for use and operation, substantially as and for the purpose herein set forth.

JOHN J. BATE.

Witnesses:
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