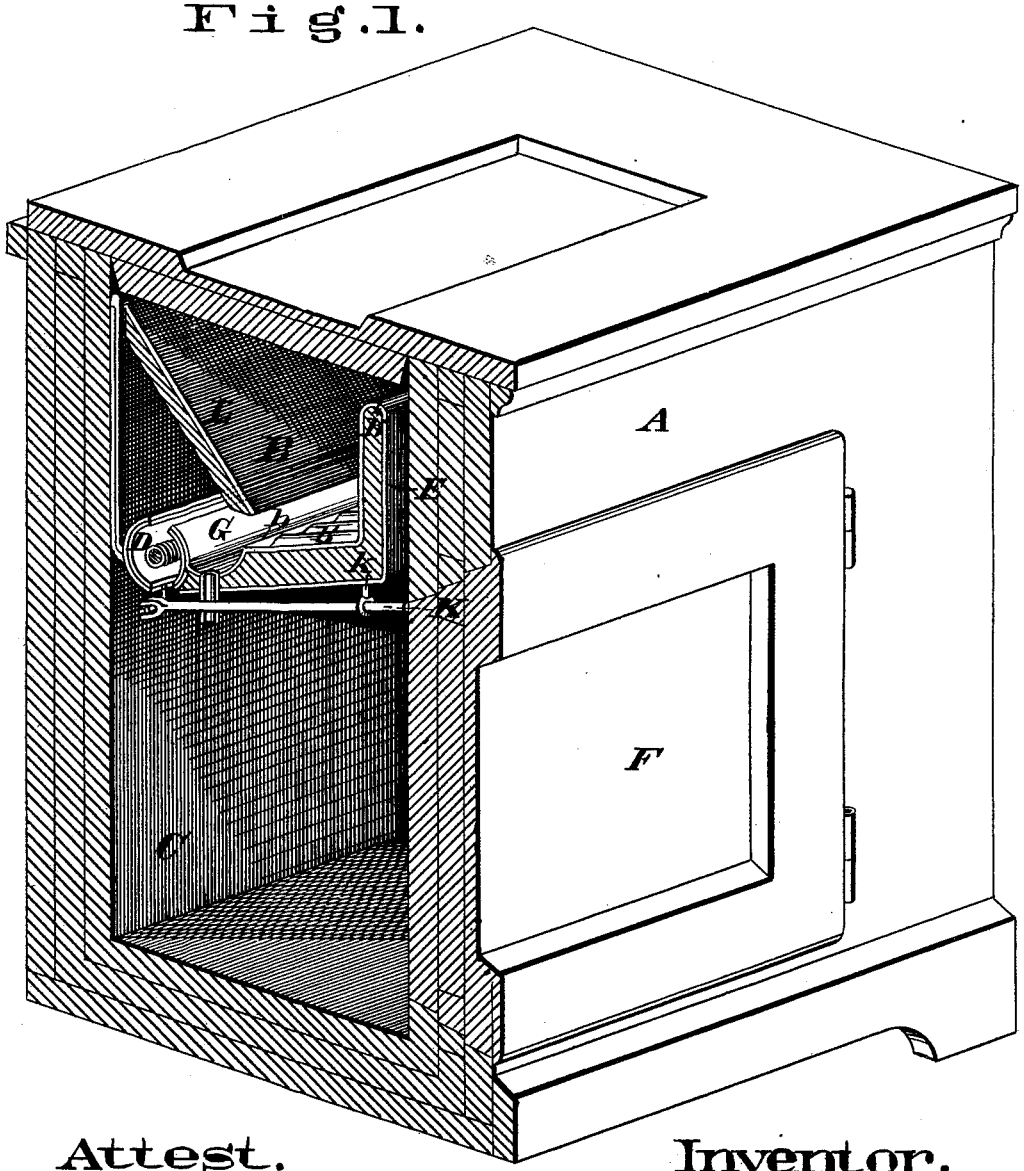
# H. W. CASS.
## Refrigerator.

No. 221,394. Patented Nov. 11, 1879.

Fig. 1.




Attest.
Paul Bakewell
Charles Pickles

Inventor.
Henry W. Cass.
by Chas. D. Moody.
atty.

# H. W. CASS.
## Refrigerator.

No. 221,394. Patented Nov. 11, 1879.

Fig. 2.

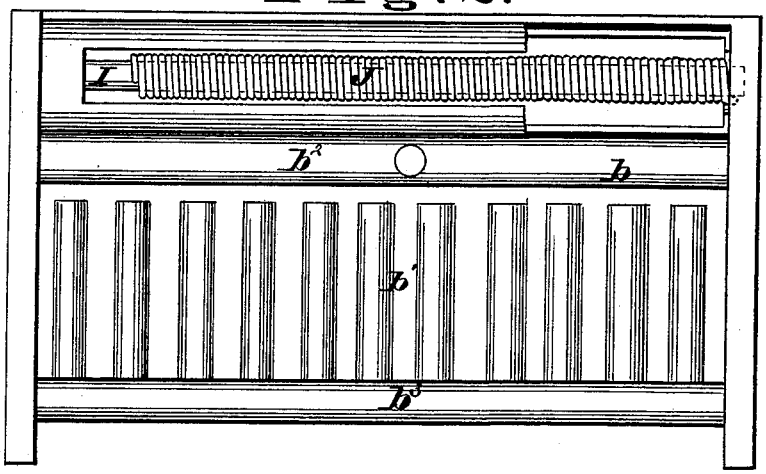



Fig. 3.

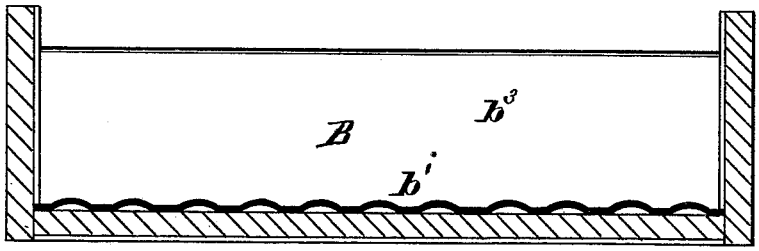



Fig. 4.

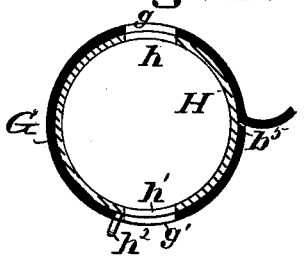
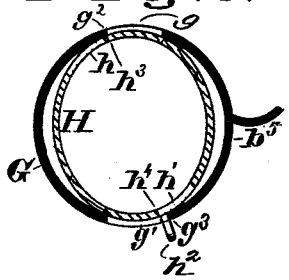



Fig. 5.




Attest.

Paul Bakewell
Charles Pickles

Inventor.

Henry W. Cass.
by Chas. D. Moody.
atty.

# UNITED STATES PATENT OFFICE.

HENRY W. CASS, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **221,394**, dated November 11, 1879; application filed July 3, 1879.

*To all whom it may concern:*

Be it known that I, HENRY W. CASS, of St. Louis, Missouri, have made a new and useful Improvement in Refrigerators, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a sectional perspective of a refrigerator having the present improvement; Fig. 2, a plan of the ice-chamber, showing the cut-off valve in the flue leading into the preserving-chamber, the valve-seat being partly in section; Fig. 3, a longitudinal vertical section taken through the ice-chamber; and Figs. 4 and 5, details, being cross-sections taken through the cut-off valve and seat, and showing the valve open in Fig. 4 and closed in Fig. 5.

The same letters denote the same parts.

Attempts have heretofore been made in the construction of refrigerators to provide an effectual means for arresting the air circulation between the ice-chamber and preserving-chamber whenever the latter is opened. The devices employed, however, have been defective in not thoroughly cutting off the passage of the air.

To provide a reliable means for closing the passage between the ice-chamber and preserving-chamber when the door to the latter is open is, mainly, my present aim; the improvement consisting, chiefly, in a slotted cylindrical cut-off valve working in a slotted tubular seat, substantially as hereinafter described.

It also has relation to the construction of that part of the bottom of the ice-chamber immediately connected with or adjacent to the cut-off valve.

Referring to the drawings, A represents a refrigerator having the present improvements, B representing the ice-chamber, C the preserving-chamber, D the flue through which the air descends from the ice-chamber, E the flue through which the air ascends into the ice-chamber, and F the door to the preserving-chamber.

G represents a valve-seat arranged in the descending flue D. It consists of a tube having slots $g\ g'$ in its upper and under sides.

H represents a valve arranged within the seat G, and having slots $h\ h'$, corresponding in shape and extent to the slots $g\ g'$.

The seat G extends across the flue D, the slots $g\ g'$ being the only opening through which the air can descend from the chamber B. The valve H is arranged to rotate within the seat, and so as, when the door F is closed, to cause the slots $g\ g'$ and $h\ h'$ to coincide, respectively, and allow the air to descend from the ice-chamber, and, when the door is opened, to close the openings $g\ g'$ and interrupt the descent of the air. To effect this the valve is attached to a shaft, I, that is within the valve and that turns in bearings in the ends of the ice-chamber. A spring, J, attached at one end to the shaft and at its other end to the wall of the ice-chamber, causes the shaft and valve to rotate and close the openings $g\ g'$, saving when its action is overcome. This is accomplished by means of a rod, K, that is suspended in bearings $k\ k$, and that at its inner end is jointed to, or made to abut against, a stop, $h^2$, upon the valve H, and at its outer end extended to come against the door F when the latter is nearly closed. Then, as the door is entirely closed, the rod is pushed in, causing the valve to rotate and the openings $h\ h'$ and $g\ g'$ to come in line, as shown in Figs. 1 and 4. As soon as the door is opened the pressure upon the rod is removed and the valve closes, as shown in Fig. 5.

Now, the advantage of the present form of valve is in this: the valve can be made to bear very closely against the seat, which is done by making the curvature of the valve slightly different from that of the seat, substantially as shown, and causing the edges $h^3\ h^4$ to strike the seat at $g^2\ g^3$ as the valve closes; and, secondly, a double bearing upon the seat is obtained—that is, at $g^2$ and $g^3$. The valve, also, can be made sufficiently thin to bulge slightly outward into the slots $g\ g'$, as shown in Fig. 5, and thus be made to close the valve-openings still more effectually.

The ice-chamber, instead of having a flange extending upward at the inner edge, $b$, of the bottom $b'$, as is customary, is made to open directly into the flue D—that is, the edge $b$ is at the same level with the top of the valve-seat, and the space between the seat and the

edge $b$ being made in the form of a gutter, $b^2$, to carry off the drip-water. This construction is more favorable to the air circulation than when a flange is used.

The bottom $b'$ of the ice-chamber is corrugated. This serves to raise the ice, so that the air can circulate beneath it, and thus increase the cooling-surface. It also strengthens the bottom.

The bottom $b'$ of the ice-chamber and the front $b^3$ and valve-seat G are also, preferably, made of a single piece of metal, one edge of which is at the point $b^4$ and the other at $b^5$.

I claim—

1. In a refrigerator having an ice-chamber and a preserving-chamber connected by a flue through which the cold air descends from the ice-chamber into the preserving-chamber, the combination of the slotted valve H, slotted valve-seat G, and flue D, as and for the purpose described.

2. The combination, in a refrigerator, of the chambers B C, flue D, valve H, having the slots $h$ $h'$, seat G, having the slots $g$ $g'$, shaft I, and spring J, substantially as described.

3. The combination of the chambers B C, flues D E, slotted valve H, slotted seat G, shaft I, spring J, rod K, and door F, substantially as described.

4. The combination of the double-seating valve H and the seat G, having the two seats $g^2$ $g^3$, said parts being all arranged in the descending flue D, substantially as described, and for the purpose set forth.

5. The combination, in the refrigerator A, of the chamber B, gutter $b^2$, flue D, and cylindrical seat G, substantially as described.

HENRY W. CASS.

Witnesses:
CHAS. D. MOODY,
CHAS. M. WHITNEY.