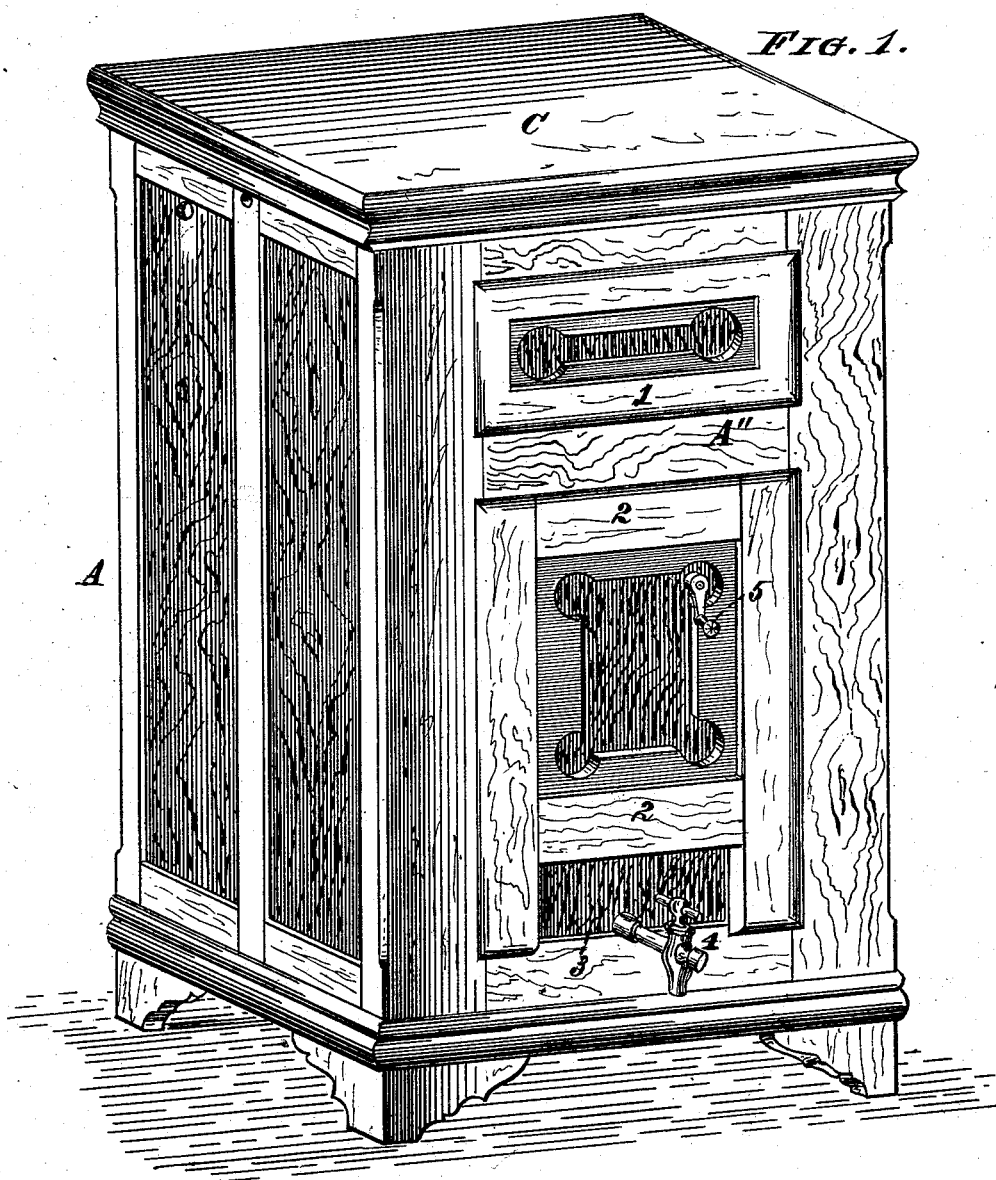


W. GRETH.  
Refrigerator.

No. 219,355.

Patented Sept. 9, 1879.



Witnesses:

*Michael Stark-*  
*J.A. McIntosh*

Inventor:

*William Greth,*  
*by Michael Stark*  
*Attorney.*

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FIG. 2.

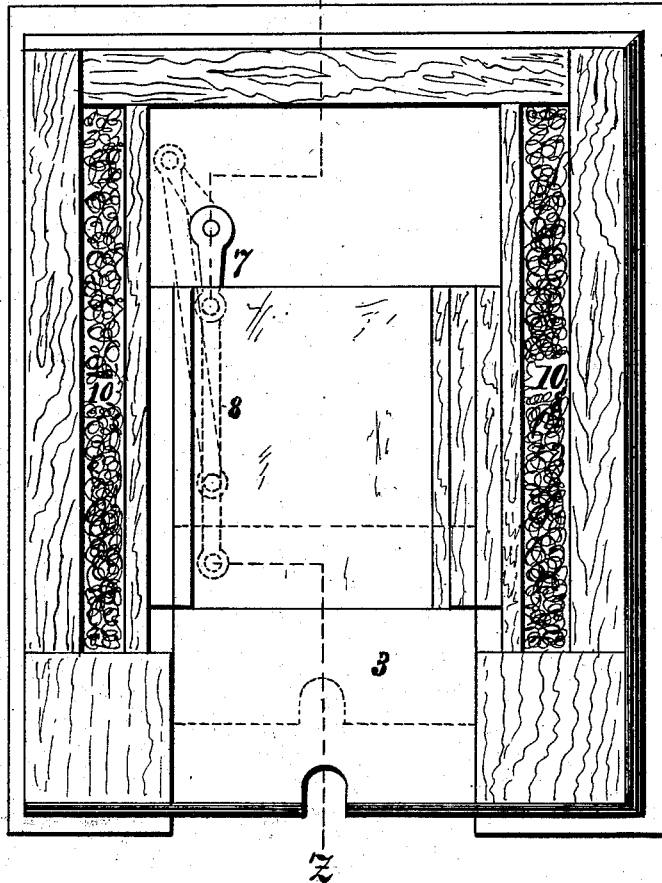
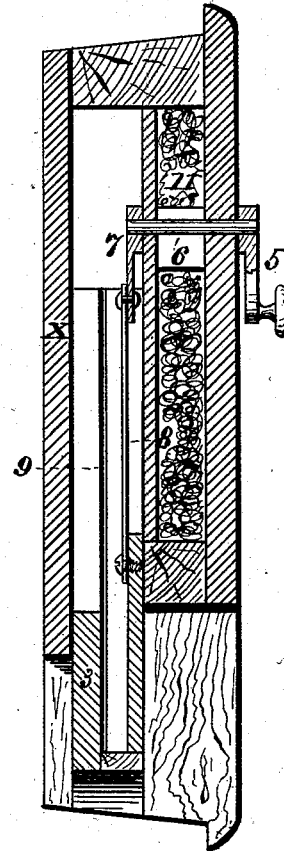


FIG. 3.



Witnesses:

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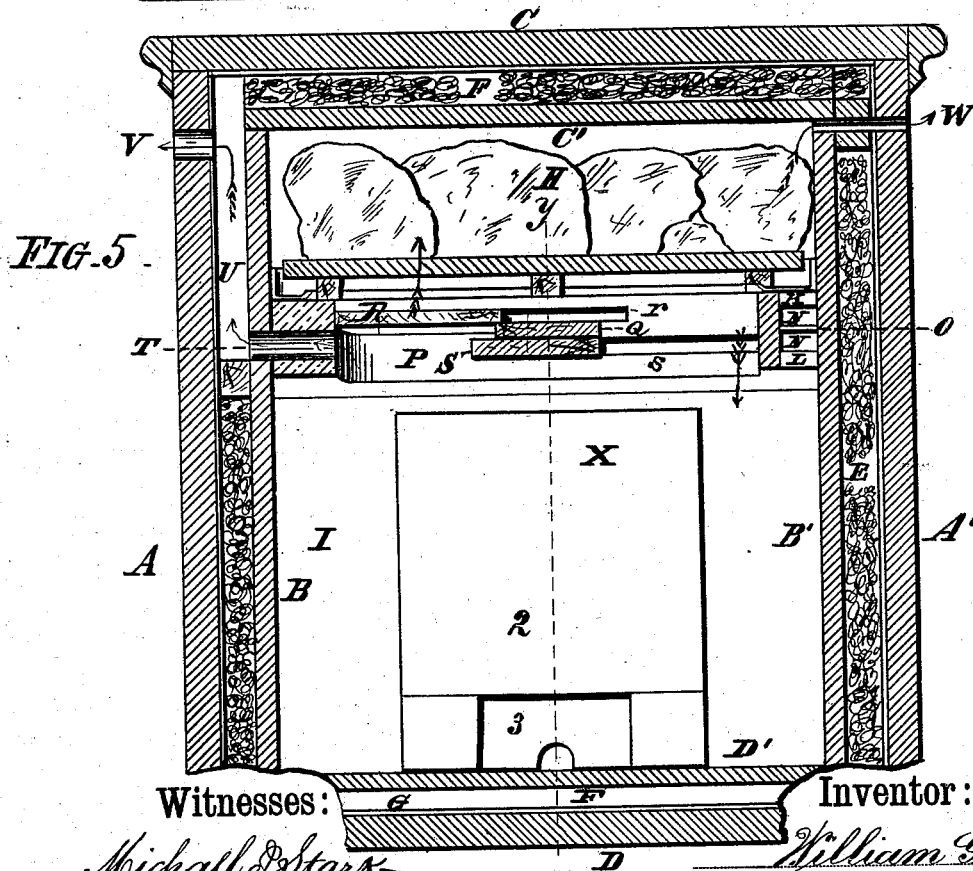
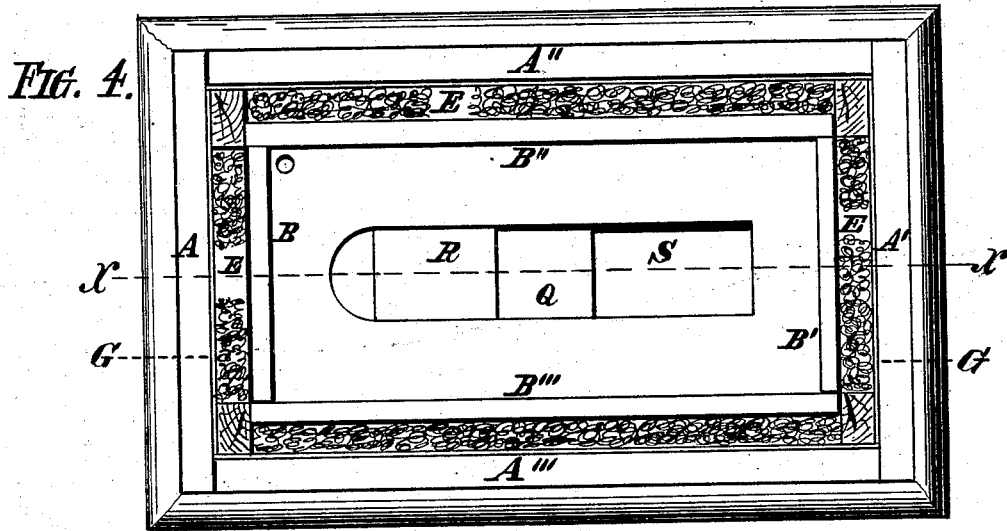
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# UNITED STATES PATENT OFFICE.

WILLIAM GRETH, OF BUFFALO, NEW YORK.

## IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **219,355**, dated September 9, 1879; application filed May 3, 1879.

### *To all whom it may concern:*

Be it known that I, WILLIAM GRETH, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on a Refrigerator; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to lager-beer and other refrigerators; and it consists, first, in the combination, with the partition or floor separating the ice and preserving chambers, provided with an oblong duct, of a fixed partition, located centrally within said duct, and two side slides above and below said fixed partition, which slides, when opened, afford two separate passages within the single duct, one for the ascending and the other for the descending air; second, in the novel construction of the preserving-chamber door, having a slide operated by cranks and a connecting-rod, whereby the said door can be opened with the faucet remaining in position.

In the drawings already referred to, Figure 1 is a perspective view of my improved refrigerator; Fig. 2 is a rear view of the door for the preserving-chamber, the back board, X, being removed to expose its interior construction. Fig. 3 is a longitudinal sectional elevation in line Z Z of Fig. 2. Fig. 4 is a plan of the refrigerator with the top board, C, and partition-wall O' removed. Fig. 5 is a longitudinal sectional elevation in line X X of Fig. 4.

Like parts are designated by corresponding letters of reference in all the figures.

The object of my present invention is the production of a refrigerator particularly designed with a view of preserving beer in casks, &c., which shall be perfectly dry and produce the lowest possible temperature within the preserving-chamber, and at the same time allow the preserving-chamber door being opened with the tap-faucet in position.

To accomplish these results I construct my refrigerator of exterior walls, A A' A'' A''', and interior walls, B B' B'' B''', and the top walls, C C', and bottoms D D', separating all

the respective exterior walls in such manner as to produce spaces E in the side and F in the top and bottom walls. These spaces I pack with some good non-conductor of heat, such as shavings, sawdust, charcoal, &c., to produce an isolation of the interior ice and preserving chambers. Next to the exterior walls I place a covering of water-proof material, G, to prevent condensation and moisture in the interior chambers.

At a suitable distance above the floor I place a partition horizontally through the structure, to divide the interior thereof into two chambers, H and I, the former being the ice and the latter the preserving chamber. This partition, which consists of the floor K of the ice and ceiling L of the preserving chamber, separated by two dead-air spaces, N, and a partition of water-proof material, O, has centrally an oblong opening, P, provided with a stationary partition, Q, and two slides, R S, respectively, said slides being constructed to move in grooves *r s* in said opening P, as clearly illustrated in Fig. 5. Within the floor of the ice-chamber, and proceeding from the opening P, is a horizontal passage, T, communicating with a vertical passage, U, between the walls A B, terminating in an exit-opening, V, in said wall A immediately below the top of the structure. Within said walls A and A', and communicating with the highest point of the ice-chambers, are two exit-openings, W, which may, if desired, be provided with ventilators, shutters, or the like, to close them, when found necessary.

Each of the chambers H and I is provided with a door, the one marked 1 being for the ice, and that one marked 2 being for the preserving chamber. Both these doors have beveled edges, so as to allow their being tightly wedged into their respective openings, and they are hinged to the body in the usual manner.

The door 2 (illustrated in detail in Figs. 2 and 3) has a large opening in its lower part, closed by a slide, 3, which opening, when unobstructed by said slide, allows the said door 2 being opened with the faucet 4, Fig. 1, in position. This slide is operated by means of a crank-handle, 5, placed on the outside of the door 2 upon a shaft, 6, the inner extremity of

which carries another crank, 7, connected with the slide 3 by a connecting-rod, 8. The outer crank being turned in the proper direction causes the slide 3 to move upward into the casing of the door 2, and thereby to produce an opening in said door large enough to allow its being opened with the faucet 4 in position. When turned upward beyond its highest point the crank 7 strikes the casing of the door, and thereby prevents its further movement. In this position the slide 3 is suspended by said rod 8, and kept open until the crank 5 is actuated in the proper direction, thereby closing said opening in the door 2.

By this peculiar construction of the said door with its slide I have overcome one of the greatest objections to refrigerator-doors for lager-beer, &c.—viz., the removal of the door or slides in said door whenever access is desired to the preserving-chamber, owing to the fact that the faucet protruding from said chamber is in the way. Heretofore the door 2 was generally made entirely removable, while in some few cases the door was hinged to the box and provided with a removable slide, or with a small door pivoted within the main door.

The removable slide is objectionable, because it is apt to be thrown about, and soon assumes a very unsightly appearance, while the small door, hinged within the large door, must be closed again as soon as the main door has passed the faucet, or it will strike the front wall of the refrigerator and prevent the main door from being entirely opened, at the same time also marring the refrigerator-casing.

My door overcomes all these objections and drawbacks, and accomplishes its object in a highly satisfactory manner.

The operation of this refrigerator is substantially as follows: The ice being placed into the ice-chamber, a reduction of temperature takes place at once, causing the descending of the air in said ice-chamber down into the preserving-chamber through the central opening, P, in the ice-chamber floor. This opening is centrally closed by the stationary part Q, thereby dividing said opening P into two parts. The floor of the ice and ceiling of the preserving chambers are inclined, so that the descending cold air passes into the preserving-chamber on the lowest part, while the ascending warmer

air passes to the ice-chamber at the higher part. Now, the opening P in said floor being divided into two separate parts by the partition Q, and one branch thereof being in the higher and the other in the lower part, the cold air will descend through the opening in the lower part and the warm air ascend through that in the higher part. These openings are provided with shutters R S, and are thereby rendered adjustable with respect of their respective sizes, so that I can at all times adjust them in accordance with the requirements in each case, depending upon the state of the atmosphere, &c. In the drawings the said floor is shown as being horizontal, or nearly so. In practice I shall, however, incline the same to a more or less degree, as experience shall determine. Part of the warm air rising in the preserving-chamber is carried directly from the preserving-chamber to the external atmosphere through the ducts T U V, carrying with it all obnoxious gases, &c., while the ice-chamber is sufficiently ventilated through the small openings W.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent—

1. In a refrigerator, the combination, with the partition or floor separating the ice and preserving chambers, provided with an oblong duct, P, of the central fixed partition, Q, and the two side slides, R S, said slide R being located above and the slide S below the fixed partition Q, whereby two separate passages are produced within the single duct P, substantially in the manner as and for the object specified.

2. In refrigerators, the door 2, having the slide 3, operated by the crank 7 and connecting-rod 8 within and the crank-handle 5 without said door, substantially in the manner and for the object specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand and affixed my seal in the presence of two subscribing witnesses.

WILLIAM GRETH. [L. S.]

Attest:

MICHAEL J. STARK,  
J. A. McINTOSH.