3 Sheets—Sheet 1.

L. B. WOOLFOLK.

REFRIGERATOR.

No. 192,806. Patented July 3, 1877.

Fig. 1.

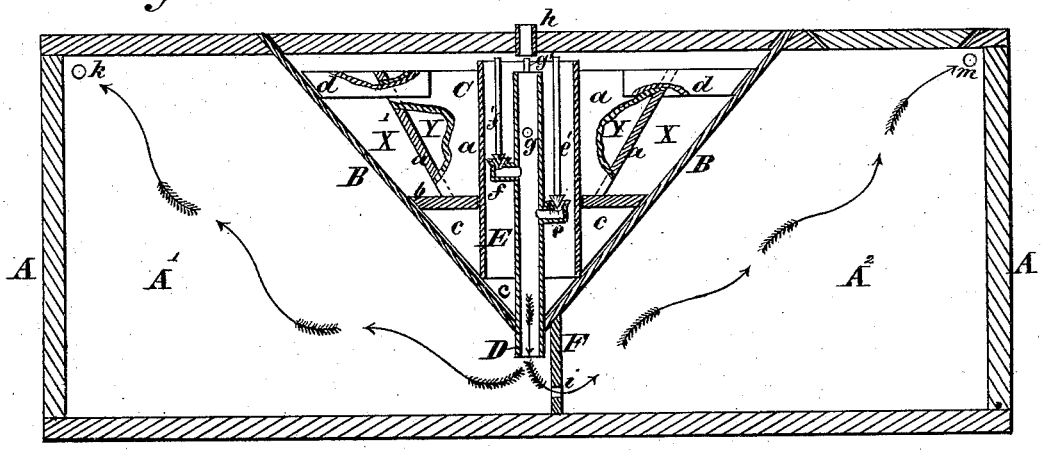


Fig. 2.

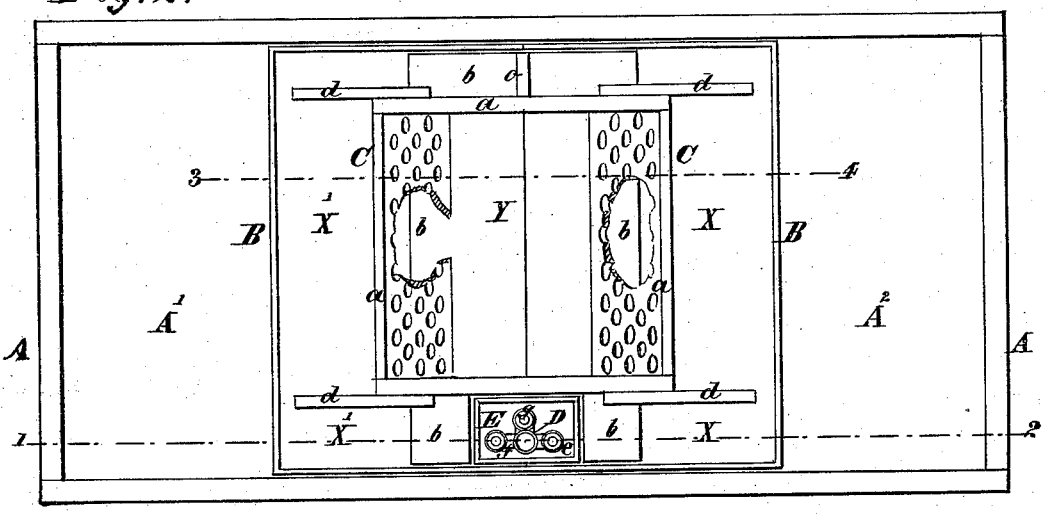
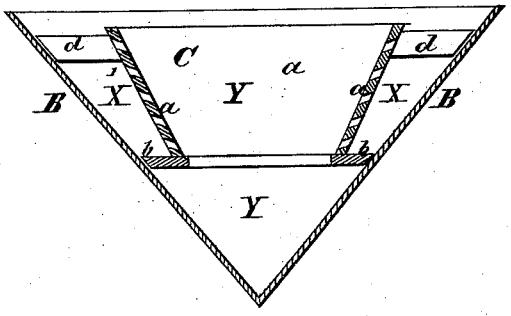


Fig. 3.



WITNESSES

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3 Sheets—Sheet 2.

L. B. WOOLFOLK.

REFRIGERATOR.

No. 192,806. Patented July 3, 1877.

Fig. 4

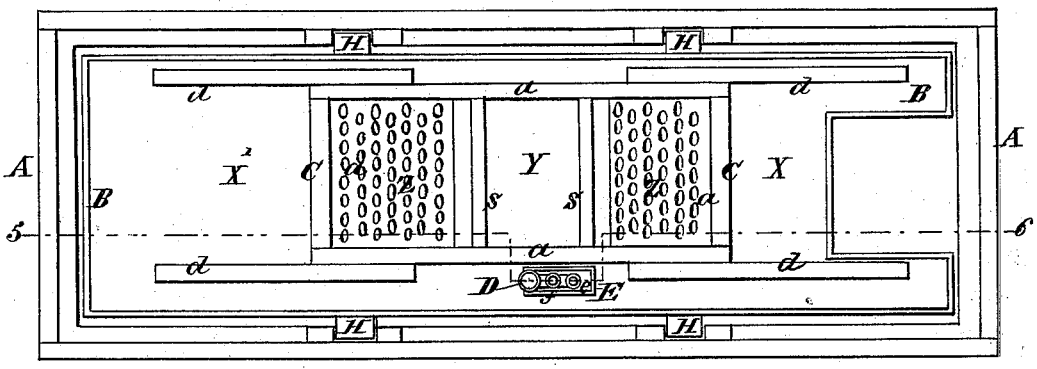


Fig. 5.

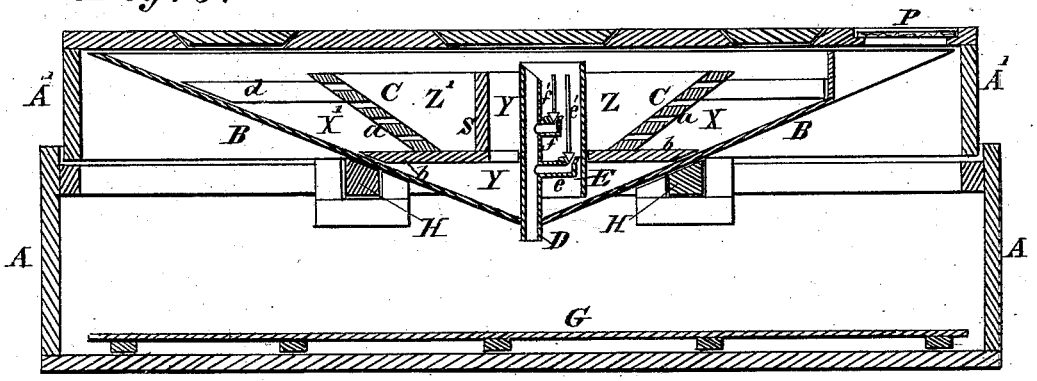
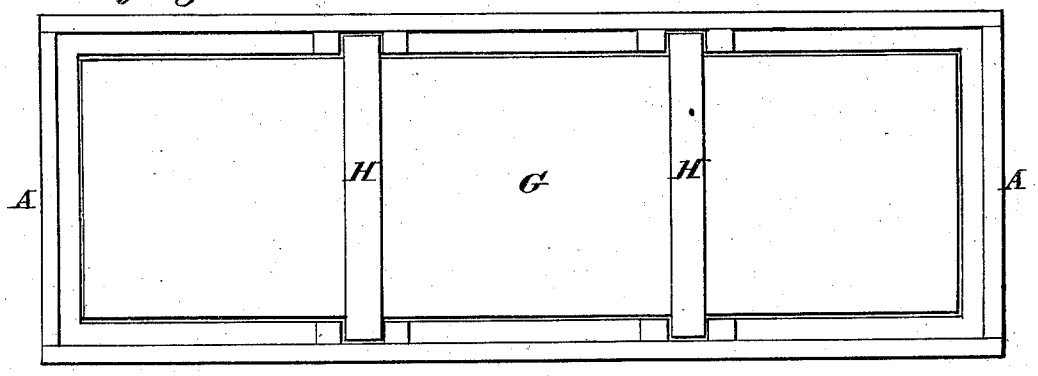


Fig. 6.



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3 Sheets—Sheet 3.

L. B. WOOLFOLK.

REFRIGERATOR.

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Fig. 7.

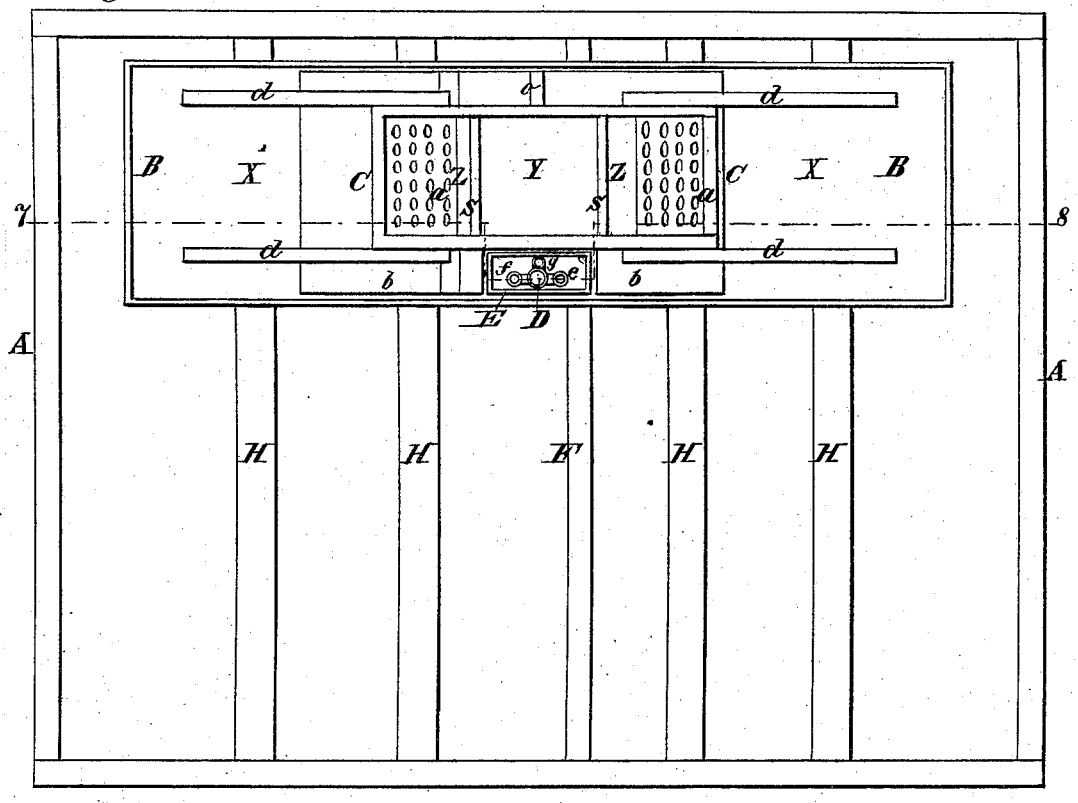


Fig. 8.

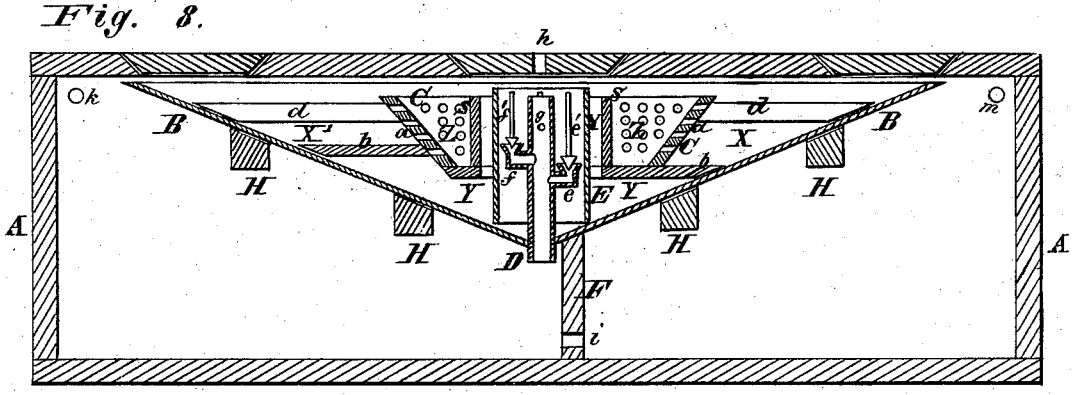


Fig. 10.

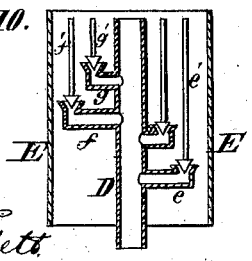
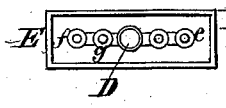


Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

LUCIEN B. WOOLFOLK, OF LEXINGTON, KENTUCKY.

IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **192,806**, dated July 3, 1877; application filed November 10, 1876.

To all whom it may concern:

Be it known that I, LUCIEN B. WOOLFOLK, of Lexington, in the county of Fayette and State of Kentucky, have invented an Improvement in Refrigerating Apparatus, of which the following is a specification:

My invention consists in constructing an ice-compartment in a refrigerating-vessel, of which the refrigerating-vessel constitutes the outer wall, while the inner wall and bottom are formed by an internal partition, whose side walls inclose a receptacle in the middle of the refrigerating-vessel which may be either vacant or used to contain salt, and whose bottom fits against the sides of the refrigerating-vessel to constitute the bottom of the ice-compartment. The offlet-pipe is open at the top, and provided with several outlets, placed at different heights, for the purpose of regulating the height at which the liquid that melts from the ice shall stand in the refrigerating-vessel, the offlet-pipe being surrounded by a loose casing-pipe, for the purpose of causing the liquid to flow off through the offlet-pipe from the bottom of the refrigerating-vessel.

In the accompanying drawings, Figure 1 is a vertical section taken through the line 1 2 of Fig. 2. Fig. 2 is a plan with covers removed. Fig. 3 is a vertical section of the refrigerating-vessel taken through the line 3 4 of Fig. 2. Figs. 4, 5, and 6, Sheet 2, represent a modification of the partition of the refrigerating-vessel as applied to a body-cooler, of which Fig. 4 is a plan with covers removed. Fig. 5 is a vertical section taken through the line 5 6 of Fig. 4, and Fig. 6 is a plan representing the box with the cross-bars, on which the refrigerating-vessel rests. Figs. 7 and 8 represent a modification of the refrigerating-vessel as applied to a large refrigerating-house or railway-car, of which Fig. 7 is a plan with covers removed, and Fig. 8 is a vertical section taken through the line 7 8 of Fig. 7. Figs. 9 and 10 represent the offlet-pipe, of which Fig. 9 is a plan, and Fig. 10 is a vertical section taken through the center of the same.

A is a refrigerator of any usual construction, having double walls filled between with non-conducting substance.

B is the refrigerating-vessel, constructed of any sheet metal, sloping from the top to an angle at the bottom.

C is the internal partition, constructed of wood, sheet metal, or cast-iron. The space or ice-receptacle X X′ is formed by the side walls *a a* and bottom *b* of the internal partition C, and the sides of the refrigerating-vessel B. This receptacle incloses the salt-receptacle Y in the middle of the refrigerating-vessel B, which remains empty or contains salt, as is preferred. The arms *d*, together with the bottom *b*, fit upon the sides of the refrigerating-vessel B and keep the internal partition C firmly in position. The bottom extension-piece *c* extends downward, in order, when salt is used, to prevent the salt from heaping around the offlet-pipe and obstructing it.

In Fig. 1 one of the side walls of the internal partition C is represented as broken, in order to show the construction of the partition C; and in Fig. 2 the sides are broken, in order to show the bottom *b*. The side walls of the partition are perforated, for the purpose of admitting the passage of air from the receptacle Y, when it is free from salt, into the ice-receptacle X X′, or when salt is placed in the receptacle Y, to allow the interchange of brine between the ice and salt. Instead of the perforated sides, the walls of the internal partition may be provided with adjustable pivoted slats, as in window-blinds, which, by being opened or closed, may regulate the communication between the salt-receptacle Y and the ice-receptacle X X′, as is desired.

D is the offlet-pipe, having the inlets *e f g* at different heights, and having the top open to admit of the off-flow of the liquid from the melting ice at any height desired. The inlets *e f g* are stopped by the stoppers *e′ f′ g′*. The offlet-pipe is surrounded by the loose pipe E, open at both ends, and having its top end higher than the top of the offlet-pipe, for the purpose of causing the liquid from the melting of the ice to flow off from the bottom of the refrigerating-vessel B.

F is a partition dividing the refrigerator into two compartments, A^1 and A^2. *h* is a tube inserted through the cover, immediately over the offlet-pipe D, for the purpose of admitting the external air. The air, being chilled in the offlet-pipe, descends into the refrigerator and

ventilates the compartment A^1 by passing out at the vent-hole *k*, and ventilates the compartment A^2 by passing into it through the hole *i* in the partition F, and escaping through the vent-hole *m*.

The pipe E and the partition *o* separate the ice-box into two receptacles, X and X′, and prevent the ice from passing from one to the other.

My apparatus may be used either with ice only, or with ice and salt. In either method of use it presents great advantages. When ice only is used, an economy of ice is effected by the arrangement of the partition C, whereby the ice is kept in the ice-receptacle X X′, and excluded from the receptacle Y. The receptacle Y also admits the free circulation of air, which, having passed down through the ice, rises up through the receptacle Y.

By the arrangement of the offlet-pipe D, and the construction of the ice-receptacle X X′, the water from the ice remains in the refrigerating-vessel B, below the bottom of the ice-receptacle, when the inlet *e* is open, and passes off from the bottom, where it is warmest, after it has imparted its chill, thus utilizing the cold of the water, and economizing ice.

Salt may be used with this apparatus very conveniently. It may be placed with the ice, in the usual manner, and the salt that wastes may be conveniently shoveled up from the bottom of the refrigerating-vessel through the receptacle Y; or, if desired, the receptacle Y may be filled to the top with salt. In this case, if the inlet *e* be open, the brine will stand below the bottom of the ice-receptacle, and the ice and the salt will not act on each other, and the apparatus will have the refrigerating-force of ice only. If the inlet *e* be stopped, the brine will rise to the inlet *f*, and thus come in contact with the ice and greatly increase its refrigerating-power. When the receptacle Y is filled with salt, the higher the brine stands in the refrigerating-vessel the greater the refrigerating-force. By means of the several inlets into the offlet-pipe the height of the brine may be regulated, so as to obtain any degree of refrigeration desired.

In Sheet 2, Figs. 4, 5, and 6, a modification of the apparatus is represented as applicable to a body-cooler.

G is a platform of sheet metal, on which the body lies. H H are cross-bars, which support the refrigerating-vessel. A^1 is the top of the cooler-box, having in it the glass *p*, through which the body may be observed.

In this the sides of the refrigerating-vessel B have an obtuse angle at the bottom, for the purpose of elongating the refrigerating-vessel. The internal partition C is also modified by having the bottom *b* extend within the side pieces *a a*, so as to form, in connection with the side pieces *a a* and the side pieces S S, the salt-boxes Z Z′, between the receptacle Y and the ice-receptacle X X′. The salt which wastes and falls upon the bottom of the refrigerating-vessel B may be dipped, as before, from the bottom through the receptacle Y. In this arrangement the ice-receptacles X X′ remain wholly unmodified.

In Sheet 3, Figs. 7 and 8, a further modification of the internal partition C is represented. The bottom piece *b* is placed higher on one side than the other, which arrangement raises the bottom of the ice-box higher in the receptacle X′ than the bottom of the receptacle X, so that when the brine is standing at the level of the inlet *f* of the offlet-pipe, the ice in the receptacle X is resting in the brine, and imparts to the compartment A^2 of the refrigerator the excessive cold of ice and salt, while the ice in the receptacle X′ is above the brine, and imparts to the compartment A^1 the chill of ice only.

In these figures of Sheet 3, the drawings are on a smaller scale, the refrigerating-vessel being applied to a large house or railroad-car, and occupying one side with its length, being adapted to contain a large quantity of refrigerating materials. In all the figures the ice-receptacles are substantially the same in arrangement and construction.

What I claim as new is—

1. The combination, with the refrigerating-vessel B, of the internal partition C, ice-receptacle X X′, salt-receptacle Y, offlet-pipe D, inlets *e f g*, casing-pipe E, and refrigerator-box A, substantially as described.

2. The combination, with the refrigerating-vessel B, of the ice-receptacle X X′, as and for the purposes set forth.

3. In a refrigerating apparatus, the offlet-pipe D, inlets *e f g*, stoppers *e′ f′ g′*, and casing-pipe E, as and for the purposes set forth.

LUCIEN B. WOOLFOLK.

Witnesses:

C. W. FOUSHER, Jr.,

H. W. YATES.