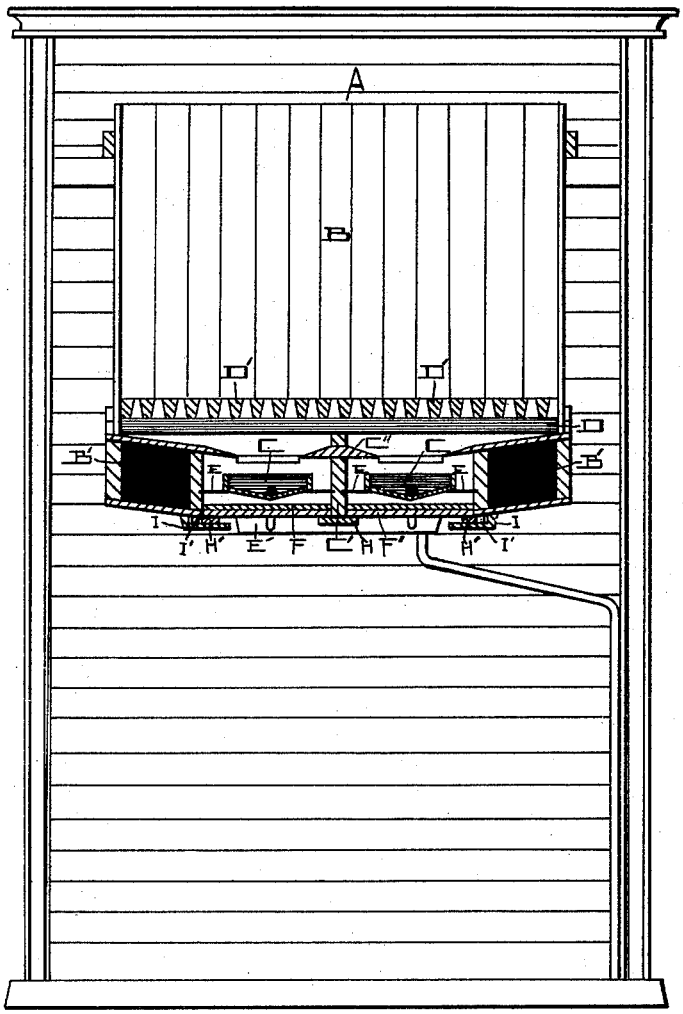
(No Model.) 2 Sheets—Sheet 1.

L. HELLER.

REFRIGERATOR.

No. 489,004. Patented Jan. 3, 1893.

Fig 1



WITNESSES:

W D Donahoe

H. V. Sues.

Louis Heller
INVENTOR

BY H. V. Sues

ATTORNEY.

(No Model.) 2 Sheets—Sheet 2.

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REFRIGERATOR.

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Fig 2

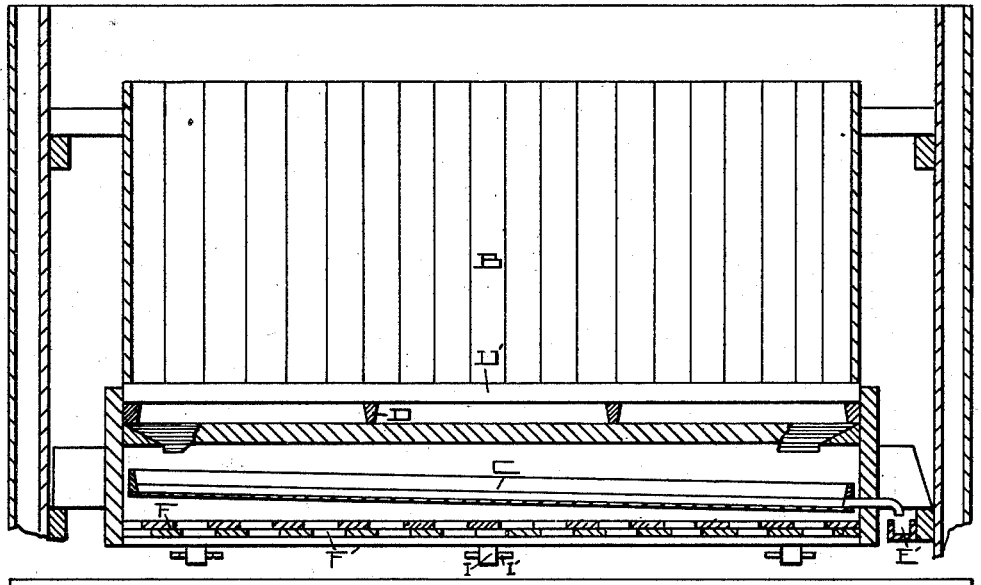
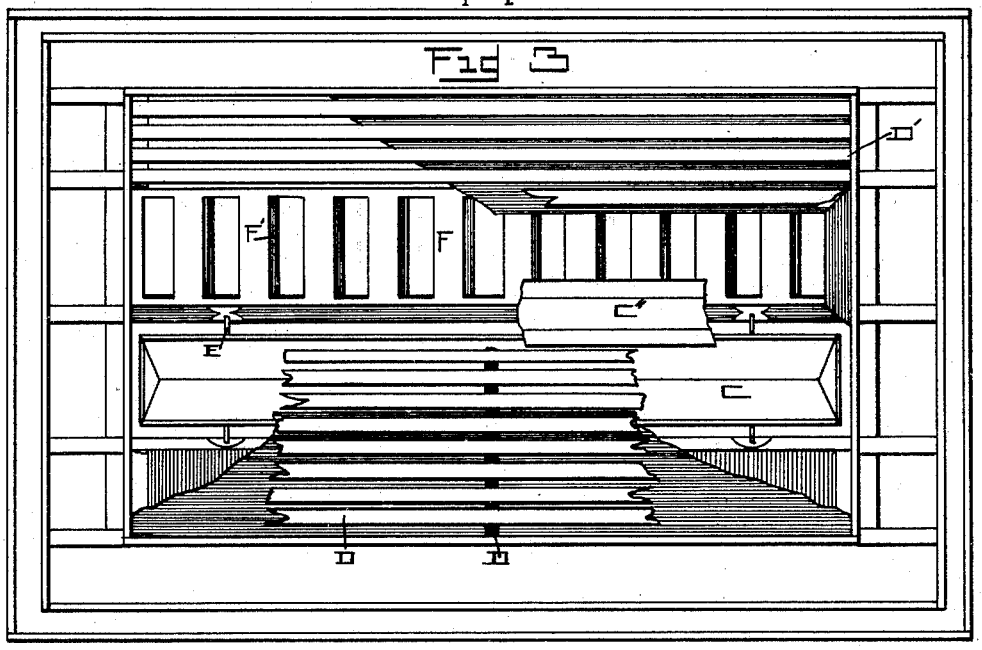


Fig 3



WITNESSES:

W Donahoe

H. V. Sues.

INVENTOR

BY Louis Heller

C. H. Sues

ATTORNEY.

UNITED STATES PATENT OFFICE.

LOUIS HELLER, OF OMAHA, NEBRASKA.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 489,004, dated January 3, 1893.

Application filed September 23, 1891. Serial No. 406,613. (No model.)

To all whom it may concern:

Be it known that I, LOUIS HELLER, of Omaha, in the county of Douglas and State of Nebraska, have invented certain useful Improvements in Refrigerators; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention has relation to a new and useful improvement in refrigerators.

The object of this invention is to provide a refrigerator wherein a circulating or recurrent air belt shall be made to pass from an ice into a storage chamber, the passage of said air being under control so as to regulate the temperature and consumption of ice, as will be described more fully hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1, represents a transverse vertical sectional view of a refrigerator embodying my invention; Fig. 2 shows a longitudinal sectional view of the ice chamber, illustrating the arrangement of the troughs and regulating shutter; while Fig. 3 shows a top view of the ice chamber, with parts broken away.

Similar letters of reference refer to corresponding parts.

A represents a properly constructed refrigerator of any suitable dimensions, provided with one or more doors, within which is suspended an ice chamber B. The chamber B is constructed independent of the chest proper, and consists essentially of two or more dead air chambers B′, B′, between which is suspended a series of troughs C, as will be understood by referring to Fig. 1.

The chamber B is constructed proportionately to the dimensions of the refrigerator, so that there will be ample space between the suspended chamber and sides of the refrigerator for the circulating air. In arranging the ice chamber for ordinary sized refrigerators, I provide a dead air chamber below the bottom of said chamber proper, at two sides, which extend the full length of the chamber. Intermedially between said chambers, I provide a central support C′, so as to divide the space between said dead air chambers, into two compartments, within which the inclined troughs C are held. The decks of the dead air compartments are slightly inclined toward the center, and provided with a waterproof covering, preferably sheet zinc, the edges of which are bent, and terminate above the troughs, as shown. The lower portion of the troughs incline outward.

Supported by the inclined decks of the dead air chambers B′ and the central supporting joist C′, are a set of transverse supporting bars D, which support the wooden ice guard or grating forming the flooring within the ice chamber B, running parallel with the air chamber B′. The central support C′ is provided with a deflecting hood C″, extending upon either side and beyond the troughs C, and also being provided with a zinc cover, so that all the water dripping from the melting ice, is carried into the troughs.

The troughs C are approximately as long as the ice chamber, and are supported at an angle, and by means of four pivoted metallic arms E, which work within suitable openings within the sides of the air chambers and the central support C′, as shown. They are considerably smaller than the compartments within which they hang, so as to allow ample space for the circulation of the air. The troughs empty into an end trough E′, from which the water is led by means of a pipe to a suitable point without.

Below the trough C, I provide a horizontally sliding shutter F, adjustably held below the stationary bottom, and by means of which the passage openings leading from the ice into the storage chamber may be adjusted. The upper section F of the shutter is fixed, but the lower section F′ is adjustably held and supported by means of the rib H, attached to the support C′, and the bars H′ H′, which work within brackets I, I, below the air chambers B′, B′. When it is desired to lock the shutters F and F′, the bar H is forced outward by means of an ordinary wooden pin 1′, so as to wedge below the shutter F′, as will be understood by referring to Fig. 1.

The ice is packed within the chamber B and as it melts the drippings are collected within the troughs C, C, from whence they are carried off.

As the air within the refrigerator is cooled, it descends through the shutter openings into the chamber below, while the warm air is driven upward. In its upward passage, this air strikes the lower outwardly and upwardly inclined surface of the dead air chambers, and is thus given direction passing upward and over and coming in contact with the ice, and then in its reduced state passing through the trough chambers and shutters, into the compartment below. As soon as this cold air has become warmer, it begins to expand and rise. As it cannot ascend in the center of the room, on account of the cold air descending there, it is forced to the side of the chamber, reaching the top where it is again cooled. The storage chamber being filled with a larger amount of cold and therefore heavier air, than warm or expanded, it naturally exerts a pressure upon the warmer air, forcing the same up to the ceiling of the refrigerator directly over the ice chamber, from whence, having now no other outlet, it again descends, thus forming a continuously circulating air belt, as described.

In constructing very large refrigerators, the dead air chambers, as well as the trough compartments are preferably mounted in alternating series. The device is simple and effective in its operation, and

Having thus described my said invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. In a refrigerator, the combination of a suspended ice chamber, the lower portion of said chamber being provided with dead air compartments, the upper or deck portion of said compartments being inclined toward one or more drip troughs, the lower portion of said dead air chamber being inclined, upwardly toward the walls an ice guard above said chambers, and a horizontally reciprocating shutter below said chambers, all arranged substantially as and for the purpose set forth.

2. In a refrigerator, the combination with a suspended ice chamber, comprising two dead air chambers, a central support between said chambers provided with a deflecting hood, inclined troughs upon each side of said support, and partly below said hood, the decks of the said dead air chambers declining and terminating above said troughs, an ice guard resting upon said dead air chambers, and a two part sliding shutter movable below said ice chamber, the openings of which may be made to register, all substantially as and for the purpose set forth.

3. In a refrigerator, the combination of the following instrumentalities, to wit: the ice chamber B, provided upon two sides with the air chambers B′, B′, the troughs C, C, suspended between said air chamber, the central support C′, the transverse supporting bars D resting upon said air chambers and supporting the ice guard, the pivot arms E supporting the troughs C, and the horizontally sliding shutter F, F′, adjustably supported by means of the rib H, support C′ and bracket I, all arranged substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS HELLER.

Witnesses:
G. W. SUES,
E. D. FRAY.