(No Model.)

3 Sheets—Sheet 1.

R. HIRSH.

CHEMICAL REFRIGERATOR.

No. 458,726. Patented Sept. 1, 1891.

Fig. 1.

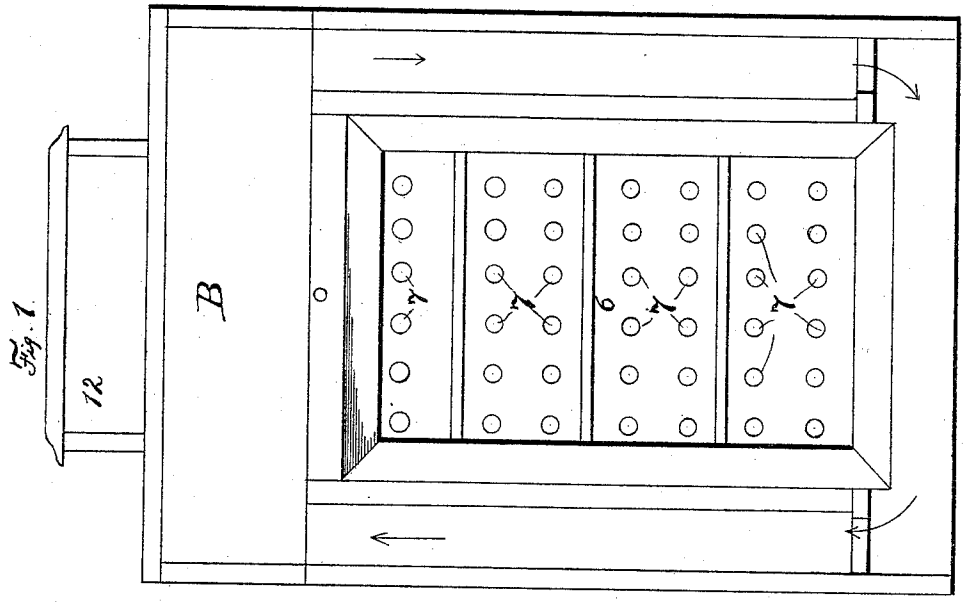
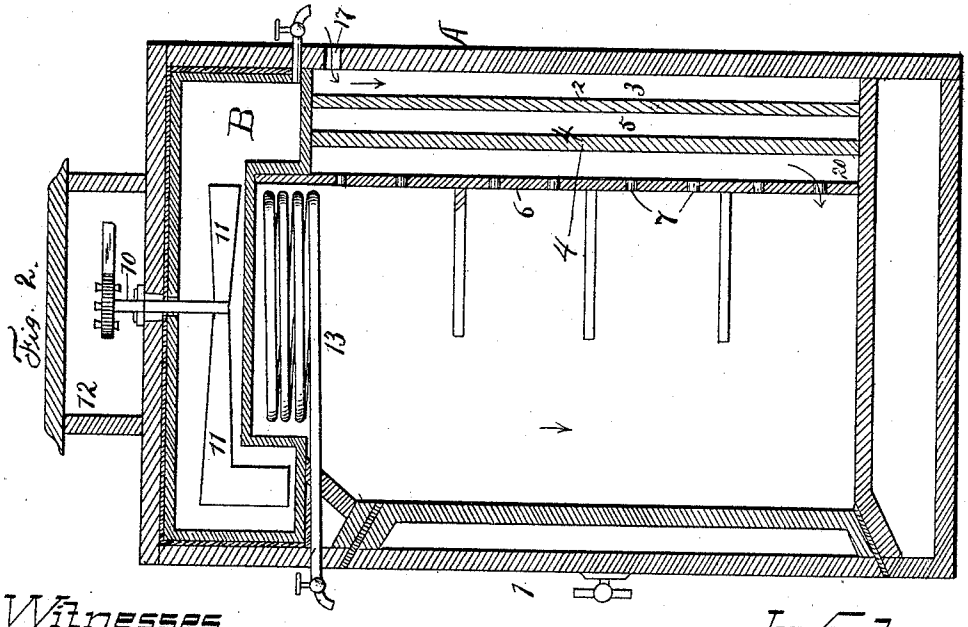


Fig. 2.



Witnesses

C. D. Mack

H. A. Carhart

Inventor

Ralph Hirsh

By Smith & Dimson

Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

3 Sheets—Sheet 2.

R. HIRSH.

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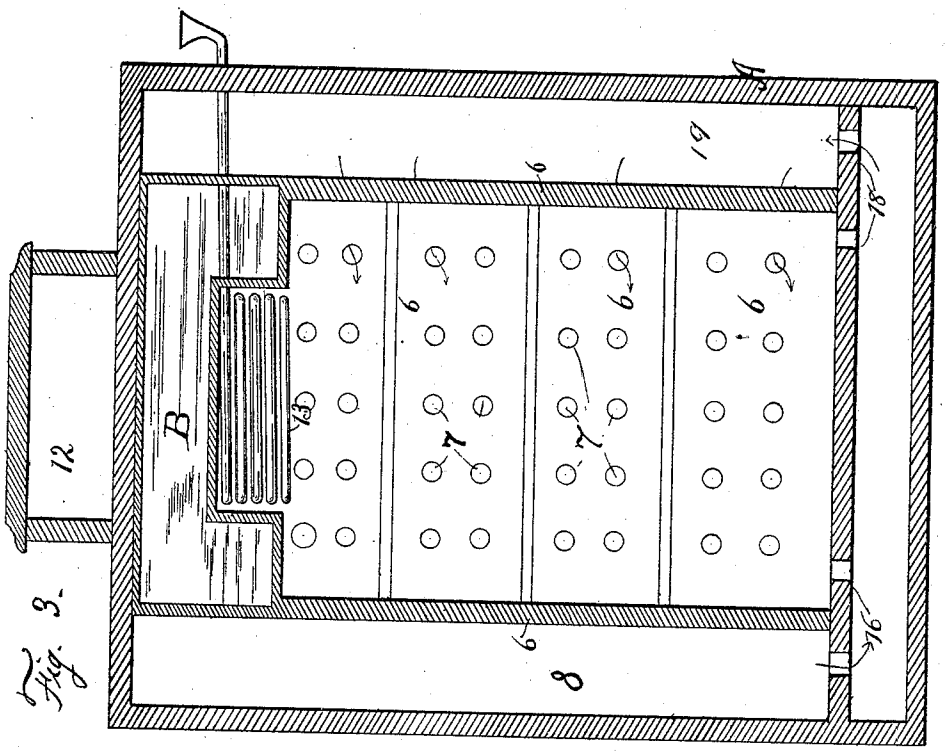

Fig. 3.

Witnesses
E. V. Mack
H. A. Carhart

Inventor
Ralph Hirsh
By Smith & Dawson
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

R. HIRSH.

CHEMICAL REFRIGERATOR.

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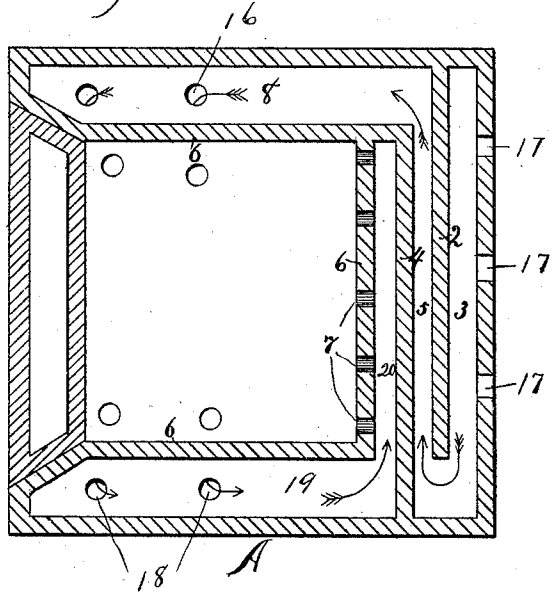
Fig. 4.



Witnesses
C. C. Mack
H. A. Carhart.

Ralph Hirsh. Inventor

By his Attorneys
Smith & Dimeon

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RALPH HIRSH, OF SYRACUSE, NEW YORK.

CHEMICAL REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 458,726, dated September 1, 1891.

Application filed May 9, 1890. Serial No. 351,204. (No model.)

To all whom it may concern:

Be it known that I, RALPH HIRSH, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Chemical Refrigerators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improvement in refrigerators, and especially to that class wherein chemicals are used as the refrigerating agent.

My invention consists, generally stated, in providing the interior of the refrigerator with a tank for the reception of the chemicals, an agitator in the tank, a coil of pipe introduced in a raised portion of the provision-chamber and being surrounded by the refrigerating agents.

Other details of invention consist in forming a series of partitions at the back of the provision-chamber, said partitions so arranged as to form a zigzag flue or cold-air chamber for the passage of exterior air to subject the same to the cooling influence of the cold-air chamber, and thereby reduce the temperature of the exterior air before admitting the same to the provision-chamber.

In the drawings, Figure 1 represents a front elevation with the door removed. Fig. 2 represents a vertical central section. Fig. 3 is a similar view taken at an angle to Fig. 2, and Fig. 4 is a horizontal section.

Referring to the drawings by letters of reference, wherein like symbols refer to corresponding parts wherever they occur, A indicates the box, and B the chemical-receptacle in the upper portion thereof. Extending into the bottom of this receptacle is a chamber into which the water-coil 13 is introduced, said water-coil having suitable connections and means for the ingress and egress of the water. The refrigerating agent in the receptacle B is agitated by the arms 11, power being derived through the medium of shaft 10, which has suitable connections with any suitable motive power (not shown) and which imparts motion to the same.

12 indicates a casing on top of the box, in which may be placed an electric motor to actuate the shaft 10.

1 represents the door.

2 represents a partition extending from top to bottom near the rear walls of the box and nearly to the opposite side thereof, whereby a flue 3 is formed, into which the exterior air first enters near the top of the box through opening 17.

4 indicates a partition extending from a side of the box opposite that of the partition 2, the said partitions 2 4 forming a continuation of the flue 3 and into which the air enters after leaving flue 3.

6 indicates the sides and back of the provision-chamber, the latter of which is perforated, as at 7. One side of the provision-chamber is extended beyond the rear wall thereof and forms a joint, with partition 4, to prevent the air from entering flue 8, immediately in the rear of the provision-chamber.

8 and 19 indicate flues at the sides of the provision-box and at the rear thereof, said side flues being connected by a supplemental bottom forming a connecting flue 21, together with perforations 16 and 18, in said supplemental bottom.

The operation may be described as follows: The agitation of the refrigerating agent induces the low temperature in the water-coil, which reduces the temperature of the air in the provision-chamber, together with that of the surrounding flues and cold-air chamber. The reduction of temperature in the box creates a circulation. The air entering at 17 comes in contact with the cooler air in flue 3, from whence it passes into flue 8 through flue 5, taking a zigzag course in its passage. From flue 8 it descends into the flue between the supplemental floor and the bottom of the refrigerator, through opening 16, from whence it passes through opening 18 into flue 19, thence into flue 20, from whence it passes through the perforations 7 into the provision-chamber. The cold air descending from the coil 13 comes in contact with the more heated air entering through perforation 7, and reducing the temperature carries it down forward of the shelves into the flue at the bottom of the refrigerator, from whence it again ascends into flues 19 and 20 to again pass through the perforation 7 into the provision-chamber, where it again comes in contact with the cold air from coil 13, to continue on in its circuitous route above described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the box, of a chemical-receptacle in its upper portion, an extension of the top of the provision-chamber into said receptacle, a water-coil in said extension, means for the circulation of water through the coil, and agitators arranged to operate in a path around the extension in which the water-coil is placed, substantially as and for the purposes described.

2. In a refrigerator, the combination, with the box, of partitions extending from opposite sides thereof, a provision-chamber forward of said partitions forming side flues, with which the flues formed by the partitions at the rear of the provision-chamber communicate, a supplemental bottom or floor for supporting the provision-chamber and partitions, and suitable openings connecting the provision-chamber with the flues at the sides of the provision-chamber, substantially as and for the purposes described.

In witness whereof I have hereunto set my hand this 7th day of May, 1890.

RALPH HIRSH.

In presence of—
HOWARD P. DENISON,
CHAS. G. HIRSH.