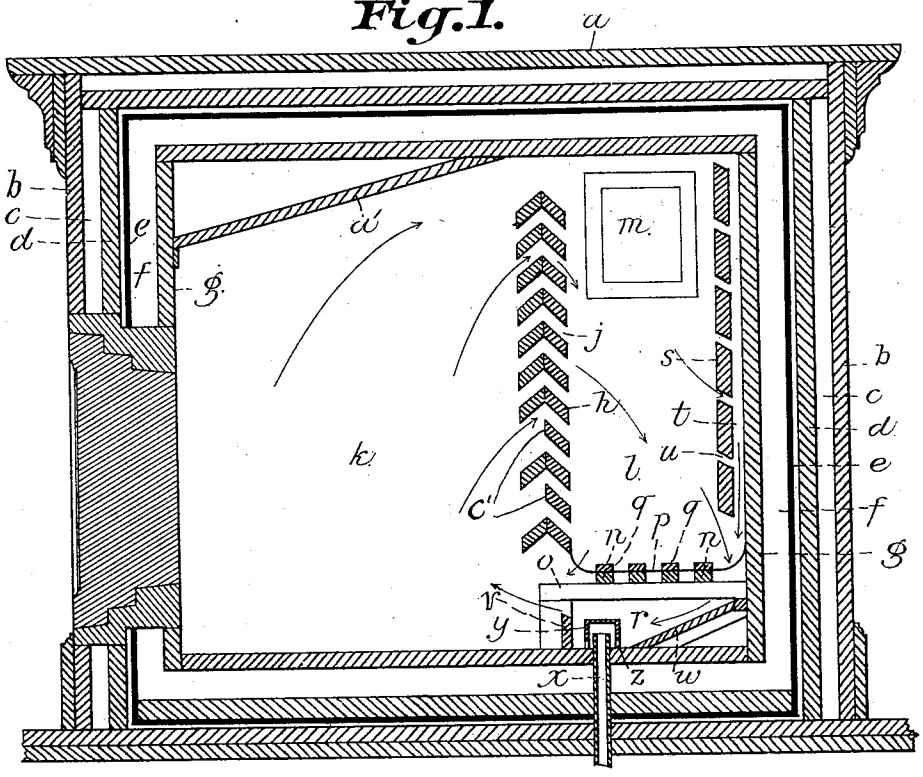
(No Model.)

G. F. QUINN.

COMBINED REFRIGERATOR AND FREEZER.

No. 539,009. Patented May 7, 1895.

Fig. 1.



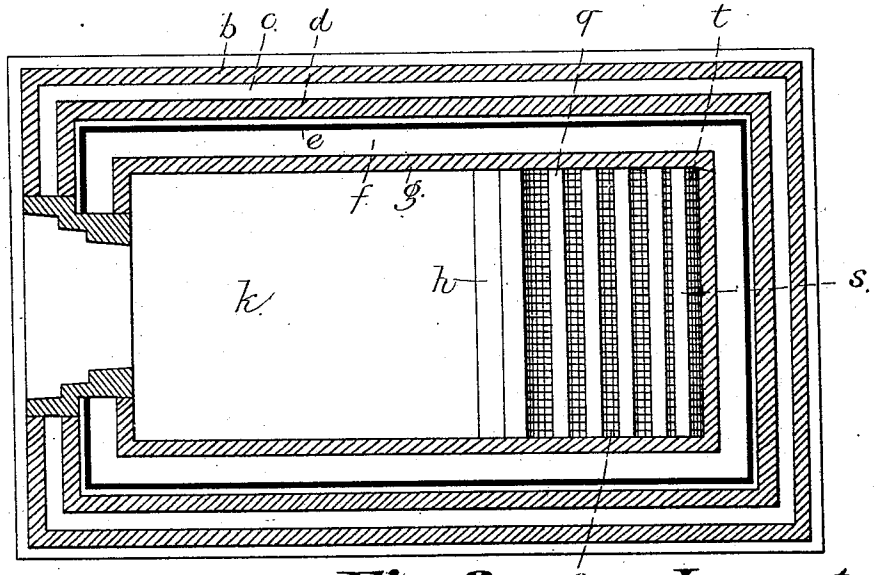


Fig. 2.

Witnesses:

Grace G. Collard

F. J. Ilsley

Inventor:

Gilbert F. Quinn

by Daniel A. Clifford

his attorneys.

UNITED STATES PATENT OFFICE.

GILBERT F. QUINN, OF PORTLAND, MAINE, ASSIGNOR TO THE G. F. QUINN REFRIGERATOR COMPANY, OF SAME PLACE.

COMBINED REFRIGERATOR AND FREEZER.

SPECIFICATION forming part of Letters Patent No. 539,009, dated May 7, 1895.

Application filed May 26, 1894. Serial No. 512,578. (No model.)

To all whom it may concern:

Be it known that I, GILBERT F. QUINN, a citizen of the United States of America, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in a Combined Refrigerator and Freezer; and I do hereby declare the following to be 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.

My invention relates to improvements in a combined refrigerator and freezer, and more particularly to certain principles of construction which tend to increase the refrigerating and freezing power and to regulate the degree of temperature.

It consists in a containing case constructed with suitable air spaces and non-conducting walls and arranged and constructed interiorly as follows: Between the ice bunker and the refrigerating or freezing room is a partition formed by a series of angular sections arranged one above the other and forming between each two sections an open space leading from the refrigerating or freezing room into the ice bunker, the apex of each section extending above the lowest point of the section immediately above it, thus forming between each two sections an inverted V-shaped open space, the object of which will be hereinafter more fully set forth. Between the bottom of the ice bunker and the bottom of the refrigerator case is a series of ice supporting bars placed at short distances apart, and extending from the lower section of said partition over said ice bars, and thence to the wall of the ice bunker is a wire netting to hold small particles of ice and salt. Underneath the ice bunker are an inclined drip pan and a trap leading down through the refrigerating case, and a partition which prevents the water from passing through into the refrigerating or freezing room. At the top of the refrigerating room is a ceiling inclined downwardly away from the ice bunker. The walls of the ice bunker have a shield with inclined openings therein leading to a cold air space between the partition and refrigerator case.

The object and operation of these several parts, together with certain other details of construction, will be hereinafter more fully described.

In the drawings herewith accompanying and making a part of this application, Figure 1 is a vertical longitudinal section. Fig. 2 is a horizontal section of the same.

Same letters refer to like parts.

In said drawings *a* represents the case proper of my improved refrigerator and freezer. This case may be made in any convenient or desirable way. As at present constructed, it rests upon the floor and has an outside wall *b*, dead air space *c*, interior wall *d*, insulator *e*, air space *f*, and inner wall *g*. It also has suitable doors leading into the refrigerating room and into the ice bunker.

The space formed by the interior wall *g* is divided into two parts by a partition formed of a series of sections *h* arranged to form an angle and placed one above the other leaving a space *j* between each two sections. These sections have their ends supported in any convenient manner against the walls of the case. These sections are so arranged that the apex of one is higher than the lower extremity of the one next above it, so that said spaces *j* between each two adjacent sections form as it were air siphons leading from the refrigerating room *k* into the ice bunker *l*.

To reduce the temperature in the refrigerating room below the point of freezing, it will be necessary to break up in some measure the ice in the ice bunker and mix therewith a quantity of salt to promote rapid melting of the ice. In order to do this, it is necessary to provide means or openings for the insertion of an ice breaking tool into the bunker at levels below the door *m*. To accomplish this object, I leave out half of each alternate section *c'* next to the refrigerating room.

At the bottom of the ice bunker is a series of bars *n* resting upon suitable supporting bars *o*. Extending from the inner wall of the lower section downwardly and over said supporting bars *o* and thence to the rear wall of the ice bunker, is a wire netting *p* which serves to prevent small particles of ice and salt from passing through. Passing over said netting at points directly over said bars *o* are supplemental bars *q*, upon which the cakes

of ice are designed to rest instead of resting directly upon the netting. The netting allows the free passage of water and cold air out of the ice bunker into the drip pan r beneath. These last are not essential, but they protect the wire from injury by the cakes of ice. The walls of the ice bunker are lined with a partition s forming an air space t between the partition s and the interior wall g of the case. This partition has a series of inclined ports u leading from the ice bunker into said air space. Said air space t leads downwardly and opens into the lower extremity of the ice bunker, and thence through the netting into the drip pan.

The drip pan is formed by the two sides and rear wall of the case, and a partition v between the drip pan and the refrigerating room. A considerable portion of the floor of the drip pan is formed by an inclined bottom w, extending from the rear wall downwardly and terminating just before the trap. The trap consists of a pipe x leading from the drip pan out of the refrigerator case. Over the head of the pipe is a strainer head y near the bottom of which are perforations z, through which the surplus water escapes.

The top of the refrigerating room inclines downwardly from the partition between the ice bunker and said chamber, as seen at a' Fig. 1.

The operation of my improved combined refrigerator and freezer is as follows: The ice is placed in the bunker through the door b'. The fineness of the ice and the quantity of salt will depend upon the degree of cold it is desired to attain. The finer the ice is crushed and the greater the proportion of salt, the more rapid will be the melting and the colder the temperature. The cold air in the ice bunker passes down through the netting directly and also out through the ports u and thence through the netting at the bottom of the bunker, and thence under the bunker and into the bottom of the refrigerating room. As the cold air descends in the bunker, each space j becomes as it were a siphon, drawing the air in the refrigerating room through said spaces into the ice bunker, and down through the ice and netting. The inclining downward of the parts of the sections gives a downward motion to the column of air passing through the spaces, and the apex of each being higher than the lower extremity of the one next above, there will be no drawing of the air horizontally across the bunker. Moreover, this arrangement prevents any water escaping from the melting ice through said spaces into the refrigerating room. When refrigerating only is required, all the sections may be complete, as it will not be necessary to break the ice after it is placed in the bunker, but when it is desired to reduce the temperature below freezing and to keep it at that point for a considerable time, it becomes necessary once in about twenty-four hours to break the ice in the bottom of the bunker, because the air at that point gradually freezes it again into a solid mass at the bottom of the bunker, and the melting becomes in consequence thereof too slow to induce the required temperature. To facilitate the rebreaking of the ice in the bottom of the bunker, I leave out the half of the partition sections next to the refrigerating room, as seen in Fig. 1, so that an ice breaking tool can be inserted between said sections into the bottom of the ice bunker.

The inclination of the bottom of the drip pan downward and forward toward the refrigerating room tends to throw the cold air descending from the bunker above into the refrigerating room. Again the inclination of the ceiling of the refrigerating room tends to throw the warmer and drier air into the bunker to take the place of the colder and moister air which has passed downward toward the bottom of the bunker. Thus a continual circulation of air is obtained passing from the refrigerating room through the spaces in the partition into the bunker, and thence through the bottom of the bunker and back into the refrigerating room, cold and dry.

Having thus described my invention and its use, what I claim is—

1. In a combined refrigerator and freezer, a suitable outside case, a refrigerating room and an ice bunker therein separated by a partition, inverted V-shaped ports in said partition leading from the refrigerating or freezing room into said ice bunker and ports leading through the bottom of said ice bunker and thence into the bottom of the refrigerating room, substantially as and for the purposes set forth.

2. In a combined refrigerator and freezer, a suitable outside case, a refrigerating or freezing room and an ice bunker contained therein, separated from each other by a partition having a series of ports therein leading from said refrigerating or freezing room to the ice bunker, a back wall, an air space between said back wall and the outside of the case, and downwardly inclined ports in said wall leading from the ice bunker to said air space, which opens underneath the bunker to the refrigerating and freezing room, substantially as and for the purposes set forth.

3. In a combined refrigerator and freezer, a suitable outside case, a refrigerating or freezing room and an ice bunker therein separated from each other by a partition, inverted V-shaped ports in said partition leading from the refrigerating or freezing room into said ice bunker, the bottom of said ice bunker being perforated and in communication with the refrigerating or freezing room, the floor under said ice bunker inclining downwardly toward the refrigerating or freezing room, substantially as and for the purposes set forth.

4. In a combined refrigerator and freezer, a suitable outside case a refrigerating or freezing room and an ice bunker contained therein separated from each other by a partition, in-

verted V-shaped ports in said partition, the bottom of said ice bunker being perforated and in communication through said perforations with the refrigerating or freezing room, the floor beneath the ice bunker inclining downwardly toward the refrigerator or freezing room, and the ceiling of the refrigerating or freezing room inclining away from said ice bunker, substantially as and for the purposes set forth.

5. In a combined refrigerator and freezer, a suitable outside case, a refrigerating or freezing room and an ice bunker contained therein separated from each other by a partition formed by a series of angular sections, placed one above the other and at some distance apart forming inverted V-shaped ports leading from the refrigerating or freezing room into said ice bunker, the half of one or more of the lower partitions next to the refrigerating or freezing room being removed, substantially as and for the purposes set forth.

6. In a combined refrigerator and freezer, a suitable outside case, a refrigerating and freezing room and an ice bunker contained therein separated from each other by a partition formed by a series of angular sections placed one above the other and at some distance apart forming thereby inverted V-shaped ports leading from the refrigerating or freezing room into said ice bunker, a lining in said ice bunker, an air space between said lining and the wall of said ice bunker and ports leading from the interior of said ice bunker into said air space the bottom of said ice bunker being perforated so as to leave a free passage way for the air from said ice bunker and from said air space to pass out into the refrigerating or freezing room, substantially as and for the purposes set forth.

7. In a combined refrigerator and freezer, a suitable outside case, a refrigerating or freezing room and an ice bunker contained therein separated from each other by a partition formed by a series of angular sections placed one above the other and at some distance apart, forming inverted V-shaped ports leading from the refrigerating or freezing room into said ice bunker, the apex of one section being higher than the lower extremities of the section next above it, the bottom of said ice bunker being perforated and in communication with the refrigerating or freezing room, substantially as and for the purposes set forth.

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

GILBERT F. QUINN.

Witnesses:

NATHAN CLIFFORD,

ELGIN C. VERRILL.