2 Sheets--Sheet 1.

J. H. HOFFMAN.

Show Case Refrigerator.

No. 165,733. Patented July 20, 1875.

FIG I

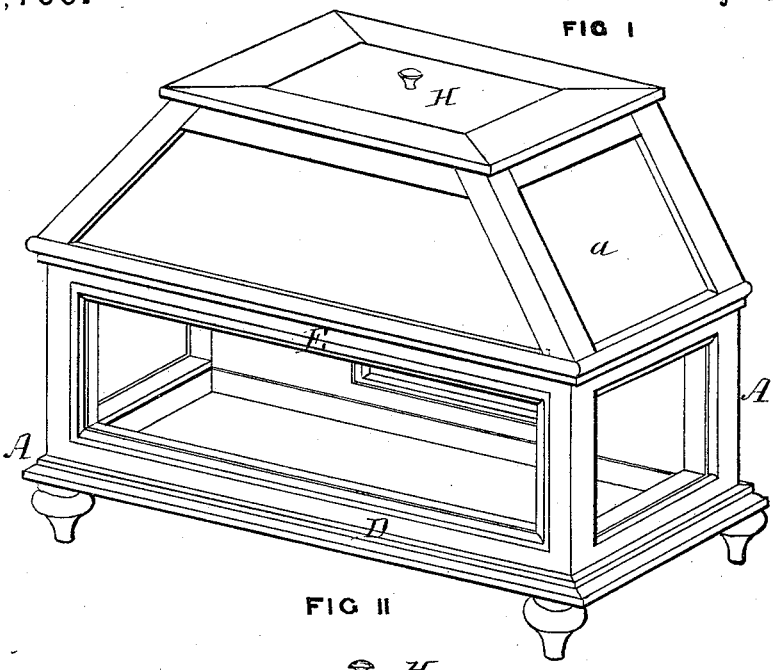


FIG II

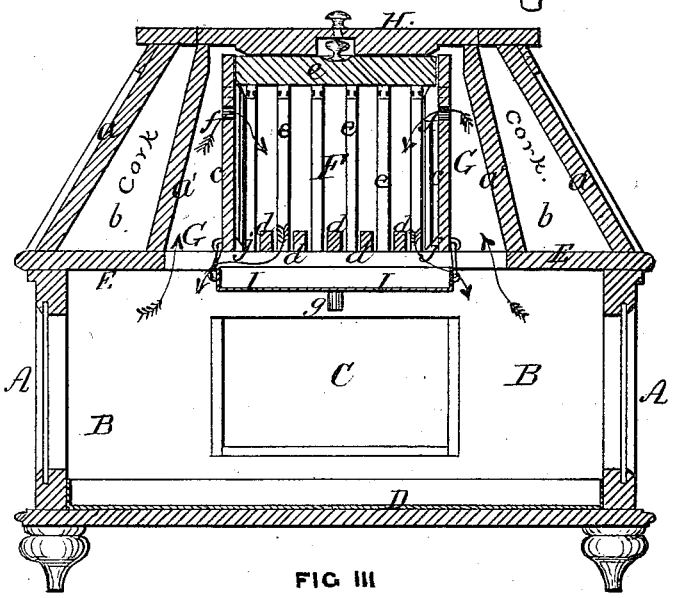
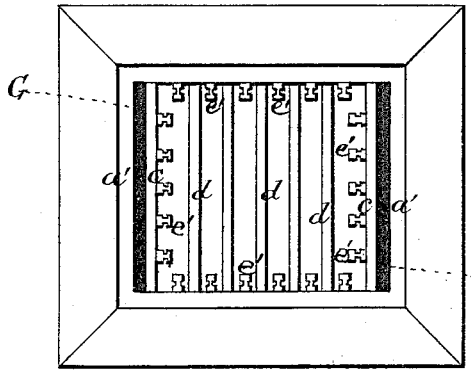


FIG III



WITNESSES

John E. Laing.

J. Rutherford

INVENTOR

Joseph H. Hoffman

By Johnson and Johnson

his Attys.

2 Sheets--Sheet 2.

J. H. HOFFMAN.

Show-Case Refrigerator.

No. 165,733. Patented July 20, 1875.

FIG. 4:

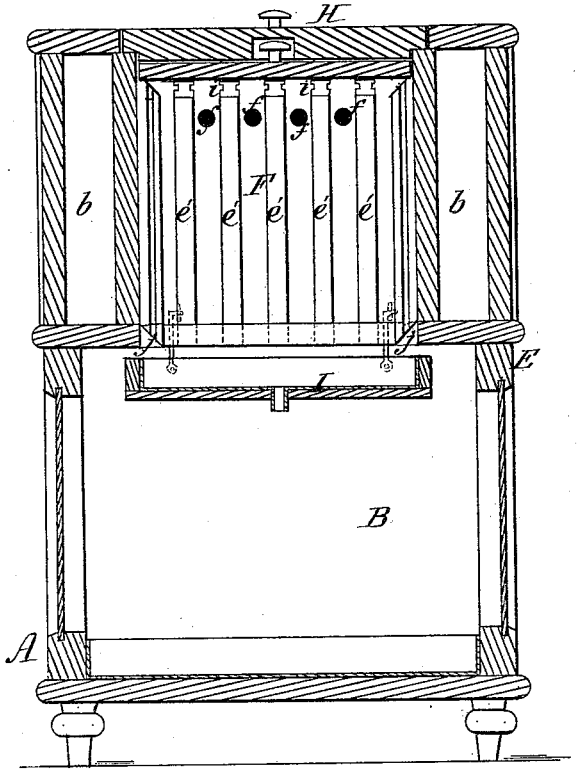
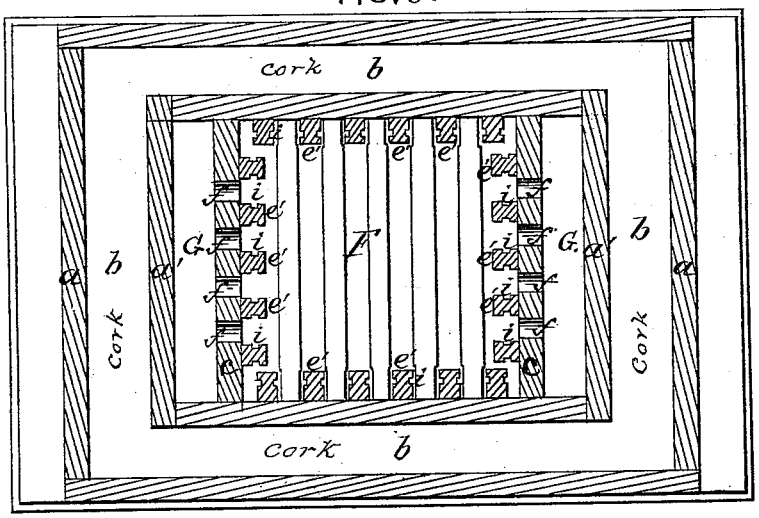


FIG. 3:



WITNESSES:

J. Wm. Wagner.
J. H. Rutherford

INVENTOR:

Joseph H. Hoffman
By Johnson & Johnson
his Attys

UNITED STATES PATENT OFFICE.

JOSEPH H. HOFFMAN, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN SHOW-CASE REFRIGERATORS.

Specification forming part of Letters Patent No. **165,733**, dated July 20, 1875; application filed May 28, 1875.

To all whom it may concern:

Be it known that I, JOSEPH H. HOFFMAN, of Baltimore city, and State of Maryland, have invented certain new and useful Improvements in Show-Case Refrigerators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

My object is to produce a simple and practically efficient refrigerator, adapted for general use, but especially desirable for restaurants and eating-houses, to display the various viands offered to the public, while preserving them free from the outside air, which in bar-rooms is a matter of great importance. I have been unable to find such show-case refrigerator in use, and the approval with which my invention meets from those using it shows that it is both useful and desirable.

The construction produces and maintains a temperature of about 50°, and keeps the inside walls perfectly dry, so that the show-case is at no time covered with moisture, but always clear, and the interior kept sweet and dry, and entirely free from flies and roaches.

The features which distinguish my invention from other refrigerators consist in the combination, with a single-walled base-chamber section, of an upper ice-box, comprising a crib, double end and side walls, and intervening chambers, having communication with the crib all round its open end to effect the circulation of cold air at every point beneath the crib into the food-receiving chamber.

A drip-pan is suspended from the open-bottomed ice-crib, and combined therewith and with the show-case, so as to leave the bottom of the ice-crib open all round for the outlet of the cold air on all sides between the drip-pan and the crib, and to effect by such isolation the communication of the ice-crib with the side chambers above said drip-pan. The wall crib-bars are provided with side channels which terminate in inward-beveled ends of the bars above the drip-pan, so that the water from the ice will pass over the sides of the bars only as far as the vertical channels, and entering them will descend to the beveled point into the pan and thereby keep the inside walls of the ice-box dry, so that no part of the interior except the bottom and the drip-pan, is required to be lined with zinc, and thus save a very great item of expense, as the walls of the air-chambers and every part of the interior surface will be kept perfectly dry by the cold air issuing over all the sides of the drip-pan at the base of the side chambers.

A very material part of my invention is the employment of a single-walled receiving-chamber, in connection with a cap having double end and side walls only, and open from one side chamber to another, on a line above the drip-pan.

In the accompanying drawings, Figure 1 represents a view in perspective of my show-case refrigerator; Fig. 2, a vertical longitudinal section; Fig. 3, a partial top view, showing the ice-crib; Fig. 4, a vertical transverse section, showing the side channels and beveled lower ends of the crib-bars; and Fig. 5 an enlarged horizontal section of the ice-crib.

The show-case A is a box of any suitable design, and preferably has three of its sides of glass, the rear or unexposed side B being of wood, and provided with a door, C, through which the attendant has access to its contents. The base D is of wood, lined with tin or zinc, and the top E is also of wood, and for the most part open to permit of the action of the air from the cooling medium, as will be hereinafter described.

Resting upon this show-case, and forming a part of the structure, is the ice-box, which may be of any suitable form. This ice-box has double walls *a a'*, which are filled in with cork *b*, or other suitable non-conducting material. These inner walls *a'*, bound an open space, within which a crib or ice-receptacle, F, is suspended and suitably secured to the inner walls. The inner walls *a'* of the ice-box form two sides of this ice-crib F, while its remaining sides *c c* are formed of partitions separated a short distance from the ice-box walls, so as to leave free spaces G on the two end sides thereof, open at top and bottom. These spaces have the function of flues for the cold air, as will be described presently. The partitions *c* do not rise flush with the under part

of the ice-box cover H, but terminate within a short distance thereof. The ice-crib F has a bottom of open grating *d*, and is provided with a tight-fitting lid or cover, *e*, which rests upon its side bars. Both the covers H and *e* may be lift-lids or hinged, as desired. Suitably secured below this crib is a drip-pan, I, which, however, is of less length than the opening E of the food-receptacle top, so as to preserve the full free spaces upon either side of the drip-pan, and permit of the unobstructed circulation of air through the flues or spaces G, between the walls of ice-box and ice-crib. The partitions *c c* of the ice-receptacle are provided near their tops with perforations *f*, through which the air from the show-case is returned to the ice-receptacle F, and a perpetual circulation of cold air kept up by the following means: Between the partitions *c c* the spaces G are larger at bottom than top, by reason of the incline of the walls *a' a'* of the ice-box. The spaces gradually diminish toward the top, whereby the air, if it be possible for it to lose its coldness in its long and gradually confining ascent up the sides of the ice-crib, becomes still colder before it enters the ice-receptacle through said perforations *f*. This current, rising up from the show-case or food-receptacle, thus becomes cool before it enters the ice-crib through the perforations, and passing through the ice and the open bottom *d* dives from the space between the drip-pan and the bottoms of the partitions *c c*, above described, and, passing around, rises up in the gradually-increasing spaces G and passes again into the ice-crib through the perforations *f* thereof, and dives again, and so on *ad infinitum*.

I cool and preserve the articles in the show-case by means of a perpetual circulation of air, which, being constantly in motion, never rests upon either the glass sides of the case or the articles therein, and hence has no time to impart moisture. The air is all confined within the ice-receptacle and show-case, and is independent of the outside atmosphere or of any induced current. The natural contained air, being cooled by the ice, dives and rises, as indicated by the arrows in the drawing.

I have made no mere theoretical discovery, but, as evidenced by the show-case refrigerators I have made and sold, cigars may be smoked, matches lighted, and sandwiches and fish heartily relished, after being kept for several days in the case. In fact, butter may be placed side by side with fresh fish, meats, lard, &c., without one tasting of the other, as is generally the case.

It is a useful ornament in any room, having for its base a plate-glass show-case, and tapering toward the top, somewhat resembles the letter A, whence I denominate the invention in the market.

The construction, so far as ornament and access to food in the case is concerned, may be varied to suit the fancy or necessities of those using them. For the use of private families, the show-case loses its distinctive feature as such, and may have its glass sides stained or enameled, or otherwise ornamented, or all its sides may be of paneled wood.

The water from the drip-pan I may be carried off by a tube, *g*, or by hose or other suitable means.

To keep the inner side of the walls of the ice-crib dry, I provide the opposite sides of the ice-crib bars *e'* with deep channels *i*, extending from the top to the bottoms thereof, and terminate the ends of said bars in points beveled from the walls to the inner sides of said bars, so that the latter present a series of points, *j*, isolated from the walls above the drip-pan, in order thereby that the water will pass over the sides of the bars into the channels, and descend to the points *j*, and fall into the drip-pan, and thereby be prevented from touching the crib-walls at any point within said crib, so that the latter may be made of of wood and kept perfectly dry, and by this means I dispense with the expensive zinc lining usually required in all ice-boxes. This is highly important in lessening the expense of the construction of refrigerators.

I claim the following as my invention—

1. The combination, with a single-walled base-chamber section, B, of an upper ice-box composed of a crib, F, double end and side walls *b b*, and intervening chambers G G communicating with said crib all round its open bottom, substantially as and for the purpose herein set forth.

2. The combination of the chambers G G, on two opposite sides only, with the ice-crib F, having a closed top and sides, two of the latter perforated at or near their tops, and ending at their bottoms both in the horizontal plane of the bases of the double walls *b b*, and above the isolated drip-pan I, as and for the purpose herein set forth.

3. The combination, with the vertical wall-bars *e* of the ice-crib, of the side channels *i i*, and the beveled or pointed ends *j*, substantially as described, whereby the inner side walls of the ice-crib are kept dry, and the water passed from the bar-points into the drip-pan.

4. The ice-crib F, provided with channeled and pointed wall-bars *e*, in combination with the drip-pan I below and isolated from the crib, the side chambers G G, double end and side walls *b b*, and the single-walled receiving-chamber B, constituting the refrigerator herein described.

In testimony that I claim the foregoing as my own, I have affixed my signature in presence of two witnesses.

JOSEPH H. HOFFMAN.

Witnesses:

A. E. H. JOHNSON,

J. W. HAMILTON JOHNSON.