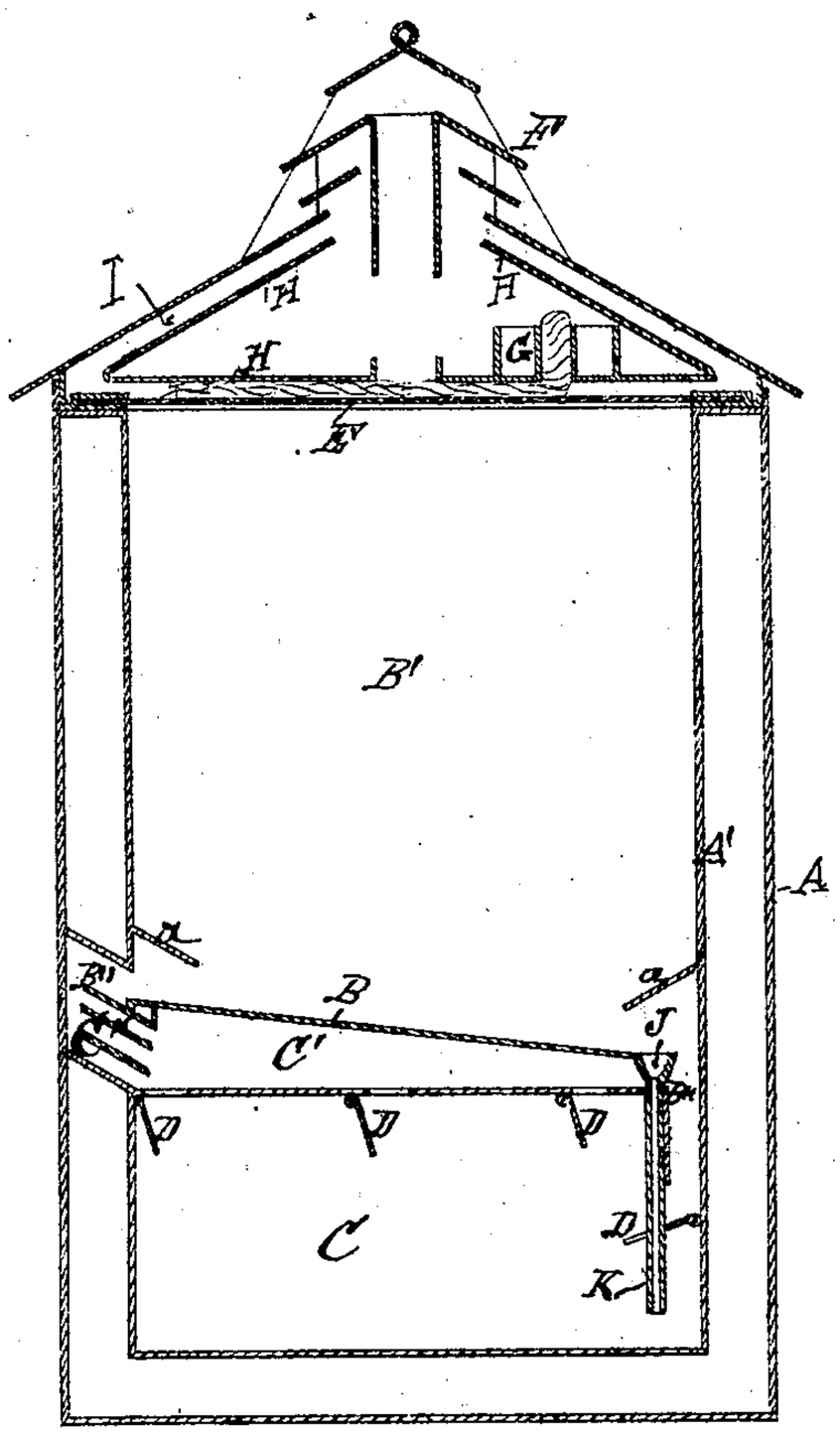
HENRY A. ROBERTS.

Improvement in Refrigerating Preserving House.

No. 124,012. Patented Feb. 27, 1872.

Fig. 1.



Witnesses.

John S. Rice

James Mellen.

Inventor.

by Henry. A. Roberts

124,012

UNITED STATES PATENT OFFICE.

HENRY A. ROBERTS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN REFRIGERATING PRESERVING-HOUSES.

Specification forming part of Letters Patent No. 124,012, dated February 27, 1872.

To all whom it may concern:

Be it known that I, HENRY A. ROBERTS, of Boston, county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in the Construction of Ice-House for producing dry-air refrigeration by means of internal circulation of the atmosphere of the refrigerating-chamber, to and from a body of ice; and to enable others skilled in the art to make and use the same, I will proceed to describe it, referring to the drawing, in which the same letters indicate like parts.

My invention relates to the construction of ice-houses having refrigerating-rooms attached, within which a degree of cooling effect is imparted to the air by the presence of a large body of ice stored in the ice-chamber; and consists, first, of adjustable valves for regulating the condition of desiccation and circulation of air requisite to the quantities of fresh meats to be conditioned and preserved in the refrigerating-chamber by a continuous circulation of air through the air-passages and across the base of the ice to and from the refrigerating-chamber. The second part of my invention is a horizontal air-passage extending over the whole of the refrigerating-chamber, said air-passages having a series of narrow longitudinal openings in the ceiling of the same, which openings are covered with adjustable valves, in combination with a vertical air-passage, hereinafter described. The horizontal air-passage with openings is for the purpose of directing the ascending circulation of air flowing from the refrigerating-chamber to the vertical passage, from whence it passes to the base of the ice.

To enable others to understand, construct, and use my invention, I will proceed to describe it.

In the said drawing, A′ represents the sides of my improved ice-house, having inner and outer walls filled between with suitable non conductor filling. E F G H H H I is the ceiling of the ice-chamber and the roof section of the house. The ice-chamber B′ is located in the upper story, in which the entire season's supply of ice is stored. When filled with ice the ice-chamber acts as a self-feeding magazine of supply to desiccate and purify the circulating stratum of air across the base. B is the incline floor for the support of the ice, having connected therewith, at its lower inclined edge, a water-trough, J, into which the water from the melting ice flows, and is conveyed out of the house by the discharge-pipe K. *a a′* are projecting aprons provided for the purpose of preventing an overflow and stoppage of the air-passages by the ice. B″ B″ are induction and eduction air-passages. The induction air-passage is made at the upper incline of the ice-floor B, the same terminating nearly on a line with the inner wall, and intersecting the ascending air-passage C″. The eduction air-passage B″ is formed by a longitudinal opening at the lower incline of the ice-floor, and extends into the refrigerating-chamber C, in which the fresh-slaughtered meats are placed for conditioning and preserving. D D D D are adjustable valves covering the longitudinal openings in the ceiling of the refrigerating-chamber C and eduction air-passage B″. The purpose of the valves is to regulate the circulation and desiccation of air through the air-passages of induction and eduction B″ across the base of the ice. The valves so regulate the ascending desiccated currents of air that they may be directed at will throughout the entire refrigerating-chamber, or any portion of it, according as the quanties of meats to be conditioned require. The horizontal air-passage is formed between the under surface of the inclined ice-floor B and the ceiling of the refrigerating-chamber C, and extends over the entire surface of the ceiling of the chamber C and intersects the ascending rarefying air-passage C″. Through the ceiling of the chamber C is constructed a series of narrow longitudinal openings, which are placed equidistant, for the purpose of directing the ascending currents of air from the chamber C. C″ is a vertical rarefying air-passage, made within one of the side walls of the house, and is formed by leaving out the con-conductor filling, or a portion thereof, between the wall, commencing from a point near the ceiling of the refrigerating-chamber and extending vertically a little above the level of the inclined ice-floor B, and communicating with the induction air-passage B″. Within the air-passage C are constructed inclined vanes, placed equidistant, their lower sides projecting into the horizontal air-passage C′. Their upper sides extend into the air-passage C″, and so

arranged that the upward currents, becoming rarefied, are directed and impelled with facility to the upper level of the inclined ice-floor B, thus setting in motion a stratum of air across the base of the ice upon the ice-floor B; thence through the longitudinal air-passage B″ into the chamber C, thus establishing a continuous circulation throughout the refrigerating-chamber and the intersecting air-passages across the base of the ice.

Having explained the construction of my improved ice-house, it will be seen that a large body of ice within the ice-chamber will impart to the air in the refrigerating-chamber the cooling effect. The desiccation and purification of the cooled air is accomplished by circulating the air in a thin stratum across the base of the ice; whereon the humidity and impurities are fully condensed, and, with the water from the melting ice, are conveyed out of the house by the means provided therefor. The air circulating across the base of the ice is colder than the air within the refrigerator-chamber. It flows, by its own specific gravity, down the incline ice-floor; thence through the eduction air-passage into the refrigerating-chamber. The colder air displaces the warmer air before it causes it to ascend through the openings in the ceiling of the refrigerating-chamber, when the circulation, desiccation, and tempering the air may be regulated at will by the adjustable valves, and joining in a general current through the air-passages across the base of the ice, where it again becomes desiccated and purified, and, flowing into the refrigerating-chamber over the surface of fresh-killed meats, absorbs the moisture arising from the animal exhalations, and continues the circulation, as described, across the base of the ice.

I have thus endeavored to show the nature and extent of my invention, so as to enable others skilled in the art to make the same therefrom.

What I claim, therefore, and desire to secure by Letters Patent, is—

1. The combination of the rarefying air-passage C″, induction and eduction air-passages B″, incline ice-floor B, ice-chamber B′, substantially as and for the purpose set forth.

2. I claim the valves D for regulating the ascending and descending currents of air across the base of the ice, in combination with the induction and eduction air-passages B″, substantially as and for the purpose set forth.

HENRY A. ROBERTS.

Witnesses:
JOHN S. RICE,
JAMES MELLEN.