

A. THOMA & C. EURICH.

APPARATUS FOR PRESERVING FOOD.

No. 182,971.

Patented Oct. 3, 1876.

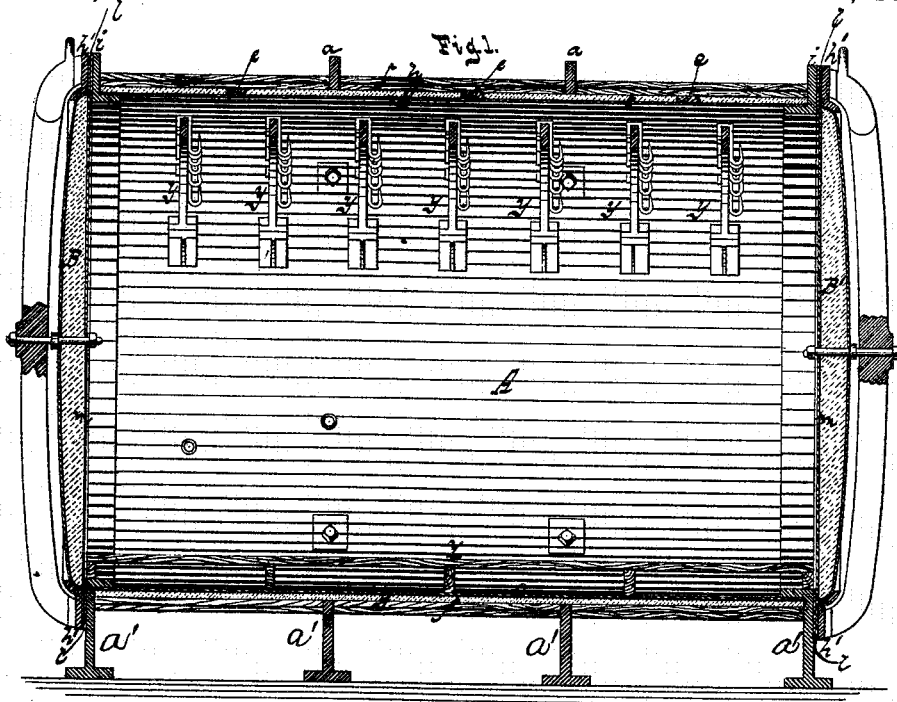
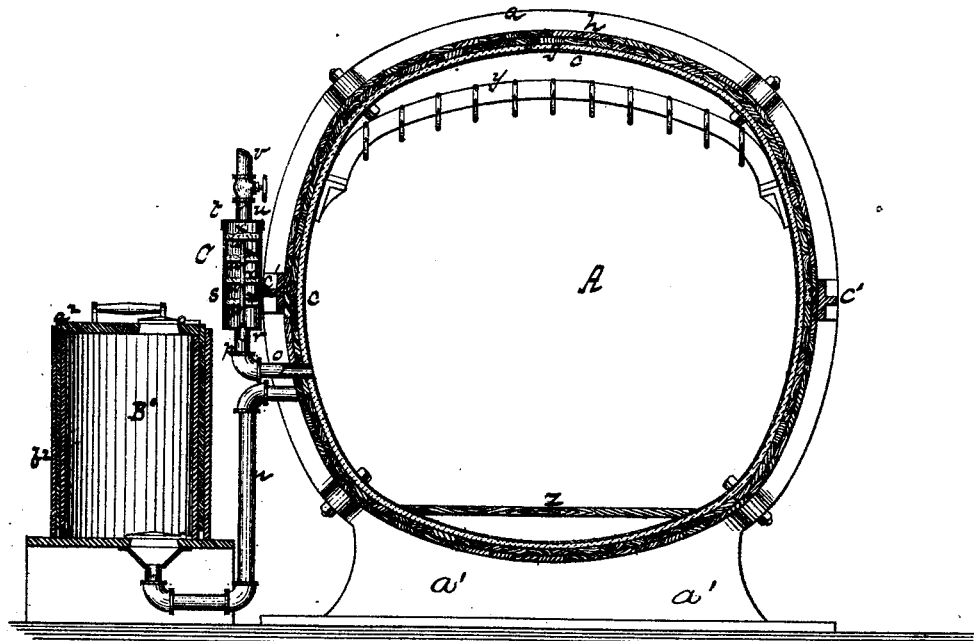


Fig. 2.



Witnesses.

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2 Sheets—Sheet 2.

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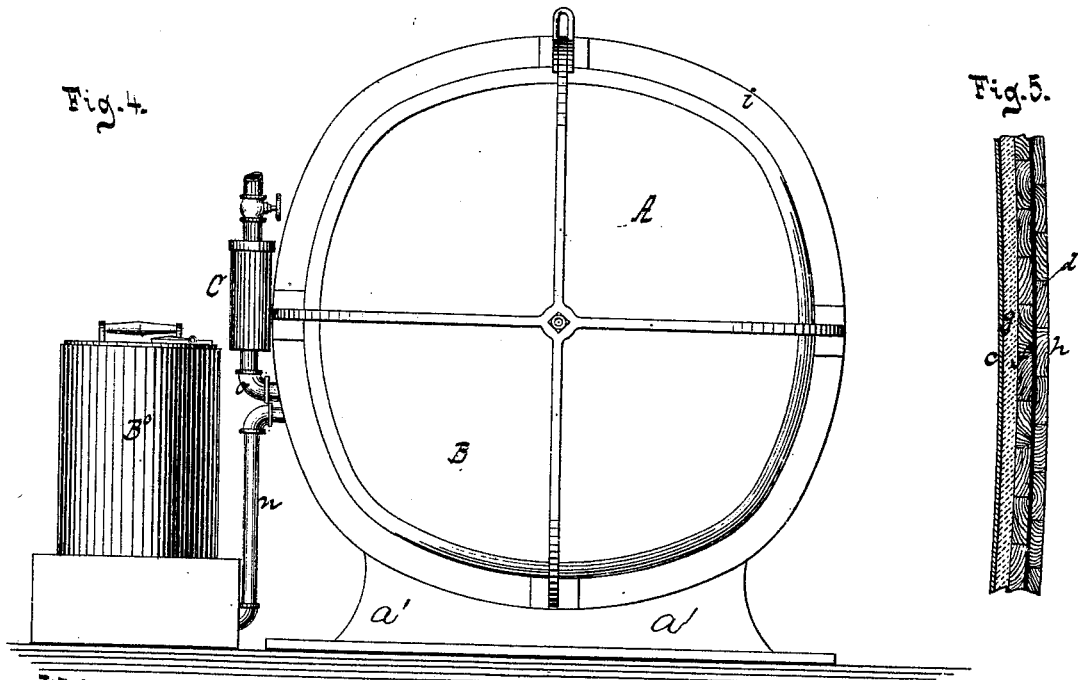
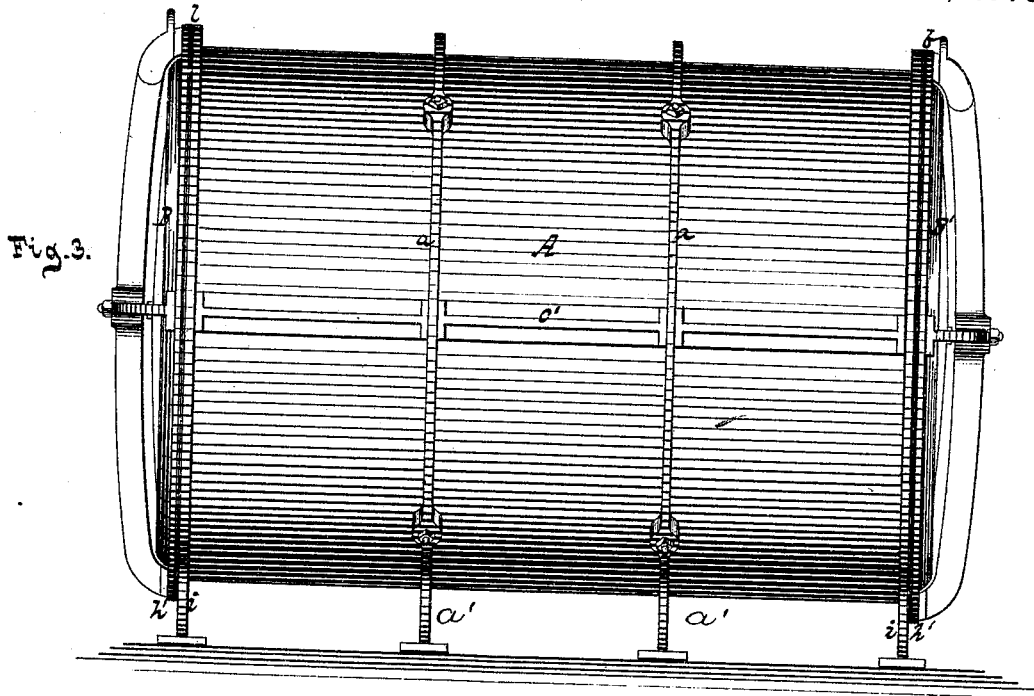
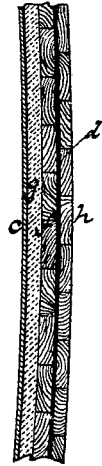


Fig. 5.



Witnesses.

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# UNITED STATES PATENT OFFICE.

ALOIS THOMA, OF HOBOKEN, AND CHRISTIAN EURICH, OF JERSEY CITY HEIGHTS, NEW JERSEY.

## IMPROVEMENT IN APPARATUS FOR PRESERVING FOOD.

Specification forming part of Letters Patent No. 182,971, dated October 3, 1876; application filed April 27, 1876.

*To all whom it may concern:*

Be it known that we, ALOIS THOMA, of Hoboken, and CHRISTIAN EURICH, of Jersey City Heights, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Refrigerators, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is a transverse section. Fig. 3 is a side elevation. Fig. 4 is an end view. Fig. 5 is a sectional view of one of the sides of our refrigerator on a larger scale than the previous figures.

Similar letters indicate corresponding parts.

This invention consists in the combination, with a hermetically-closed cooling-chamber, of a filtering-vessel, and of an air-exhauster composed of an inverted cup, which works in a vessel partly filled with liquid, said filtering-vessel being constructed of a cylinder containing a series of perforated trays, which are covered with loose cotton, and being connected to a reservoir containing air, the temperature of which has been reduced to from 30° to 40°, so that when the cooling-chamber has been filled with meat or other article, and the cup of the air-exhauster is raised, the air from the cooling-chamber and from the articles contained therein is exhausted, and by opening the communication with the filtering apparatus pure cold air is caused to enter the cooling-chamber, and to penetrate and cool the articles contained therein. The sides of our cooling-chamber are composed of several layers of boards, paper, and metal, with an intermediate layer of pulverized pumice-stone or other bad conductor of heat, and they are strengthened by metallic hubs, so as to render them air-tight and capable of resisting the pressure of the atmosphere.

In the drawing, the letter A designates our cooling-chamber, which is composed of an inner layer, *c*, of boiler-iron, and which is, by preference, made in such a form that its cross-section is composed of four segments of ellipses joined together, whereby the chamber is rendered sufficiently strong to resist the external pressure of the atmosphere when the

air from its interior has been exhausted, and, furthermore, a chamber is obtained which, with a comparatively small circumference, is capable to receive a large quantity of meat or of other articles. The ends B B' of the chamber A serve as doors, and they are handled by means of a crane. The external surface of our chamber, together with its heads, is coated with a solution of india-rubber, and its interior with a solution of shellac, so that the apparatus can be readily cleaned with water. The chamber is strengthened by hubs *a*, which are held in position by screws extending through the inner wall *c*, of boiler-iron. To these hubs are connected feet *a*<sup>1</sup>, to support the chamber. Braces *c*', Fig. 3, prevent the hubs from shifting laterally. Between the inner walls *c* and the hubs *a* are supports *e*, of hard wood, Fig. 1, and on these supports are secured boards *f*', leaving a space, *g*, Fig. 5, which is filled with pulverized porous slake of pumice-stone mixed with a weak solution of water-glass, or with any other suitable bad conductor of heat. The boards *f* are coated on their outer surface with a layer, *d*', of water-proof varnish, on which is pasted a layer of paper, also coated with a water-proof varnish, and the whole is enveloped in a jacket, *h*, of boards, which are coated with a good, light oil-paint. On the ends of the body *c* are secured flanges *i*, and similar flanges *h'* are formed on the heads B B', and by placing between these flanges a gasket, *l*, of rubber, the joints between the heads and the body are rendered air-tight. On the flanges *h'* are secured plates *m*, and the spaces *f'* between these plates and the heads B B' are filled with pulverized pumice-stone mixed with a weak solution of water glass. By these means the sides as well as the ends of the chamber A are transformed into superior insulators for heat and cold. A pipe, *n*, connects the interior of the chamber A with an air-exhauster, B<sup>o</sup>, and another pipe, *o*, serves as a connection between said chamber and a filtering apparatus, C.

The filtering apparatus is constructed as follows: On the body *c* is secured an elbow-pipe, *p*, the flanged end *r* of which supports the sheet-metal cylinder *s*, which is closed by a cover, *t*. From this cover extends a pipe,

*u*, which connects, by a hose, *v*, with the reservoir containing the cold air or gas which is to be introduced into the chamber A. In the cylinder *s* are situated a series of traverses, *w*, which support the filters *x*. These filters consist of loose cotton, or any other suitable material, inclosed between disks of wire-gauze.

The air-exhauster B° is constructed like an ordinary gas-holder of an open-bottomed cylinder, *a*<sup>2</sup>, inverted into a tank, *b*<sup>2</sup>, filled partially with water or other suitable liquid. If the cylinder *a*<sup>2</sup> is raised up, the air from the chamber A rushes into said cylinder, and the warm air which fills the pores of the meat or other article in said chamber is thereby drawn out. By providing the cylinder *a*<sup>2</sup> with a suitable valve in its top, and by means of a stop cock or valve in the pipe *n*, the air drawn into said cylinder can be discharged. By lowering the cylinder and repeating the operation the rarefication of the air in the chamber A can be carried on to the desired degree. When this has been done the pipe *n* is closed, and the communication between the pipe *u* and the reservoir containing cold air is opened, and as this cold air passes through the filters into the chamber A it becomes purified and deprived of all matter capable of producing putrefaction. The purified cold air, on reaching the chamber A, fills the pores of the meat or other articles contained therein, and said articles are rapidly cooled to their cores.

Instead of introducing cold air into the chamber A, we have also used carbonic-acid or other gases—such, for instance, as a mixture of carbonic acid or nitrogen which is obtained from the gases evolved by a slow combustion of charcoal—said gases being completely burned by means of a liberal supply of atmospheric air.

In the interior of the chamber A are secured metallic arches *y*, provided with hooks, from which the meat or other articles can be suspended. Said chamber may be provided with a floor, *z*, of boards.

Our apparatus can be used with particular advantage for transporting meat over large distances. In this case the chamber A is secured directly to the platform of a railroad-

car, and after the meat has been cooled by means of air the air is again exhausted, and cold carbonic acid is let into the chamber. In transporting meat over very large distances it is desirable to provide for additional cooling by means of ice or cooling-mixtures during the time of transportation.

Our apparatus can also be used with advantage for shipping meat to distant countries. In this case the chambers A are made of convenient size, so that the same, after having been filled with meat, can be readily transported on board of vessels, the meat having been cooled and charged with carbonic acid immediately after its introduction in the chamber. After the vessel has reached its point of destination the carbonic acid is exhausted, and cold air of from 42° to 46° is let into the chamber, and after a few hours the meat is ready to be sold.

Our apparatus can also be used with advantage for the transportation of fruits or vegetables.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a closed chamber, A, of a cylinder, C, containing a series of open-bottomed trays containing loose cotton, and of an exhauster, B', the cylinder C being connected to the chamber A by a pipe, *o*, and the exhauster B' being in communication with said chamber by a pipe, all substantially as and for the purpose shown and described.

2. A refrigerating-chamber, A, constructed of a layer, *c*, of sheet metal, with flanges *i* to support the heads B B' and the plates *m*, in combination with supports *e*, fastened to the layer *c* and sustaining the boards *f*, jacket *h*, and the hubs *a*, which are provided with feet *a*<sup>1</sup>, all constructed and operating substantially as shown and described.

In testimony that we claim the foregoing we have hereunto set our hands and seals this 20th day of April, 1876.

ALOIS THOMA.

CHRISTIAN EURICH. [L. S.]

Witnesses:

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E. F. KASTENHUBER.