

(No Model.)

J. L. CUTLER.
POROUS COOLER.

No. 539,727.

Patented May 21, 1895.

Fig. 1.

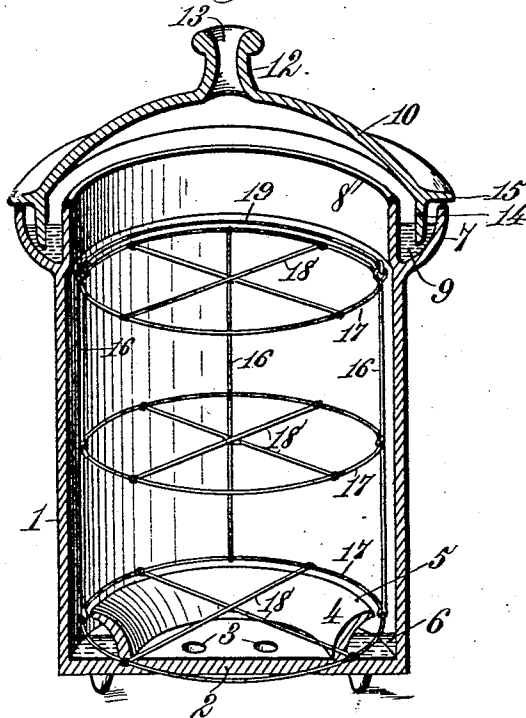
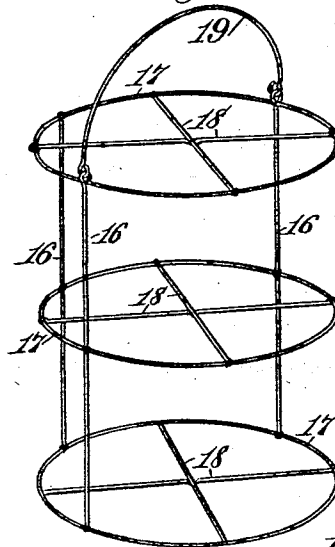


Fig. 2.



Witnesses.
Phel Crutt.

Dennis Sumby.

Inventor.
James L. Cutler.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

JAMES L. CUTLER, OF PIKETON, ASSIGNOR OF ONE-HALF TO EDWIN GOODER,
OF CINCINNATI, OHIO.

POROUS COOLER.

SPECIFICATION forming part of Letters Patent No. 539,727, dated May 21, 1895.

Application filed March 6, 1895. Serial No. 540,738. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. CUTLER, a citizen of the United States, residing at Piketon, in the county of Pike and State of Ohio, have invented new and useful Improvements in Porous Coolers for Perishable Articles, of which the following is a specification.

This invention relates to that class of portable, domestic, or household coolers or refrigerators for perishable articles which are composed of porous material, such as pottery ware, and wherein the refrigerating effect results from the evaporation of water contained within a part of the cooler or refrigerator.

The objects of my invention, concisely stated, are to improve porous coolers or refrigerators of the character alluded to; to avoid the employment of double walls for the cover and body of the cooler, whereby the efficiency of the apparatus is increased; to provide novel means whereby all available space in the cooler can be utilized; to provide a new and improved construction which facilitates access to the contents of the cooler and enables the articles to be conveniently placed therein or removed therefrom; to insure rapid evaporation of the water; to promote the efficiency of the apparatus by a novel construction, whereby the water imbibed is divided or separated into small particles, each of which comes in contact with air permeating the porous material; to construct the single wall body of the cooler integral with a single wall bottom which holds water and admits air, whereby the cost of manufacture is largely diminished, the number of separate parts is materially reduced, and the usefulness of the cooler is promoted; and to provide a convenient, economical and very satisfactory cooler or refrigerator wherein all the parts are easy of access and can be readily cleaned, the construction being such that many perishable articles, such as butter, milk, meats, vegetables, &c., can be kept quite cool and fresh without the employment of ice, or other expensive refrigerating mediums.

To accomplish all these objects my invention involves the features of construction and the combination or arrangement of parts hereinafter described and claimed, reference be-

ing made to the accompanying drawings, in which—

Figure 1 is a vertical central sectional view of a porous cooler or refrigerator constructed in accordance with my invention, the wire dish-carrying frame being arranged therein; and Fig. 2 is a detail perspective view of the dish-carrying frame.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring first to Fig. 1 of the drawings, wherein the numeral 1 indicates the body of the cooler, which is formed integral with a bottom wall 2, having centrally arranged air-inlet orifices 3, and external feet or legs by which the bottom of the cooler is sustained at some distance from the floor or other support. The bottom wall 2 is formed integrally with an outwardly flaring annular flange 4, which extends upwardly from the bottom and is curved in such manner that its upper edge 5 lies in proximity to the internal surface of the vertical wall of the body 1. The flaring, annular flange 4 surrounds the air inlet orifices 3, and the parts are so constructed and arranged as to provide an annular water reservoir 6, the side and bottom walls of which are formed by the side wall and bottom wall of the body 1 and the flaring annular flange 4.

The upper end of the cooler is formed integral with a curved, annular flange 7, which lies at some distance below the top edge 8 of the body 1, for the purpose of providing an annular water reservoir 9 around the upper end portion of the body of the cooler or refrigerator.

The cover or lid 10 is approximately hemispherical and at its center it is formed integral with an upwardly projecting handle 12, having a passage 13 therethrough for the entrance of atmospheric air into the cooler or refrigerator. The cover or lid is formed at its outer edge portion with an approximately perpendicular flange or rim 14, and a lateral, horizontally-projecting rim 15, adapted to rest upon the upper, horizontal edge of the curved flange 7, so that the cover or lid is supported through the medium of the rim 15 and the flange 7. The rim 15 is annular and extends

entirely around the cover or lid, and when this rim rests upon the upper horizontal edge of the flange 7, the approximately perpendicular flange or rim 14 extends to or near the bottom of the water reservoir 9. The projection of the flange or rim 14 into the body of water, in connection with the rim 15, resting on the upper edge of the flange 7, makes a practically air-tight joint.

The water in the reservoir 9 is, by imbibition, conveyed to all parts of the cover or lid, since the latter is composed of porous pottery ware, such as porous clay, burned only sufficient to make it strong and substantial.

The body 1 of the cooler, with its curved, annular flange 7, annular flaring flange 4, and bottom wall 2, is also composed of porous pottery ware, such as porous clay, which, like the cover or lid, is only burned sufficient to give it the necessary strength.

The water imbibed from the water reservoirs 6 and 9 is separated into comparatively small particles, and each particle comes in contact with air which permeates the porous material. The reservoir 9 is of such dimensions that it will hold a sufficient quantity of water to supply the cover or lid and upper part of the body 1 with water for, say twenty-four hours. The reservoir 6 is designed to supply water for vaporization in the lower part of the body 1. The orifices 3 provide for the ingress or egress of air.

Inasmuch as all articles of pottery ware are necessarily of comparatively small size, owing to the difficulty of turning or molding bodies of very large dimensions, and also owing to the liability of breakage which occurs in handling and shipping large pieces, and as it is not practicable to make porous coolers or refrigerators of the character described as large as ordinary, domestic refrigerators made of wood, it is very important to utilize all available space within the cooler. In order to accomplish this useful result, I provide a special frame adapted to be inserted into and removed from the cooler, and so constructed that it will carry and support the articles to be cooled, or dishes or vessels upon or in which the articles are placed.

The improved carrying frame is shown in position in Fig. 1, and separate from the cooler in Fig. 2. The frame comprises three vertical wires 16, to which are secured three horizontally arranged wire rings 17, provided with crossing wires 18, adapted to support the articles to be cooled, or the dishes or vessels upon or in which the articles are placed. The upper end of the carrying frame is provided with a pivoted bail 19, adapted to swing down upon the uppermost ring when not in use. The bail provides very simple means for lifting the frame out of the cooler, and for returning it thereinto whenever occasion demands, whereby any desired article carried by the frame can be removed without the necessity of handling any article above or below the one which it is desired to remove.

The improved carrying frame enables me to utilize all available space within the interior of the cooler, so that the latter can be made comparatively small.

In preparing the cooler for practicable use, the reservoirs are supplied with water, and this water, by imbibition rapidly permeates and saturates the entire body of the cooler and the cover or lid thereof. The evaporation immediately commences, and obviously the drier and warmer the surrounding atmosphere, the more rapid will be the vaporization. The generation of vapor requires heat, and this is absorbed from the nearest objects, in consequence of which the cooler and its contents will, as the heat is abstracted or absorbed, become proportionately colder. The vapor is of about the temperature of the water from which it rises, and the vapor will become colder as the cooler becomes colder, until the minimum low temperature is reached.

In my improved construction, I employ the smallest possible surface covered with a solid body of water, and so arrange the parts that the water, while it permeates and saturates all parts, is so divided into minute particles that the atmosphere permeating the porous material constantly reaches and acts on each separate particle of water, thereby producing a very rapid vaporization and the desired degree of cold.

In my invention a single wall is employed for the body of the cooler, and a single wall for the cover or lid, whereby the water in the porous single wall is divided into such small particles, and the atmosphere, as well as the water, so permeate all the parts, that a very large surface is exposed to the atmosphere, thus inducing rapid evaporation, both inside and outside the cooler. By providing the lid or cover with the perpendicular flange, which approximates the bottom of the reservoir 9, the flange and cover will imbibe and evaporate as long as there is any water in the reservoir. Therefore the specific construction of the reservoir, flange and cover in the combination described is advantageous and important.

The upper edge of the flaring, annular flange 4 terminates at some little distance from the internal surface of the body of the cooler, in order to provide a space sufficient for supplying the reservoir 6 with water, and also to enable the reservoir to be cleaned whenever necessary. The peculiar construction of flaring, annular flange also provides a large vaporizing surface.

The improved construction induces a perfect imbibition of water to all parts without the objectionable feature of a solid body of water in the walls of the body 1 or cover or lid 10.

Having thus described my invention, what I claim is—

1. A porous cooler or refrigerator, consisting of a single wall body of porous material, provided at its upper end with an annular

water reservoir and having a bottom wall provided with an upwardly-projecting flange to constitute a surrounding water reservoir in the bottom of the body, and a porous cover or lid having a pendent flange or rim entering the water reservoir at the top portion of the body and serving, by imbibition, to saturate the entire cover or lid, substantially as described.

2. A porous cooler or refrigerator, consisting of a single wall body of porous material, provided near its upper end with a surrounding flange to constitute a water reservoir, and having a bottom wall formed integral with an upwardly-projecting flange to provide a water reservoir in the lower end of the body, a porous cover or lid having an approximately perpendicular flange or rim, extending to or near the bottom of the upper reservoir, so that as long as any water remains in the reservoir it will be imbibed and conveyed to all parts of the cover, and a laterally projecting rim to rest upon the flange near the upper end of the body, and a carrying frame insertible into and removable from the body and adapted to carry the articles to be cooled, substantially as described.

3. A porous cooler or refrigerator consisting of a porous body, provided at its upper end with a surrounding water reservoir and having a bottom wall provided with air inlet orifices, an upwardly projecting flange surrounding such air inlet orifices and constituting one wall of the water reservoir in the

lower end of the body, and a cover or lid having a handle containing an air passage and a pendent flange or rim to enter into the water in the upper reservoir, and serving, by imbibition, to saturate the entire cover or lid, substantially as described.

4. A porous cooler or refrigerator, consisting of a single wall body of porous material, formed integral with a curved, upwardly projecting flange 7 near its upper end, bottom wall 2 with air orifices 3 and flaring annular flange 4 rising from said bottom wall, and a porous cover or lid 10 provided with the pendent flange or rim 14, laterally projecting rim 15 and handle 12, containing air passage 13, substantially as described.

5. A porous cooler or refrigerator, consisting of a porous body 1, formed integral with the curved flange 7, bottom wall 2 and flange 4 extending upwardly from the bottom wall, a cover or lid formed integrally with the pendent flange or rim 14, lateral rim 15 and handle 12 containing air passage 13, and a wire-carrying frame insertible into and removable from the cooler and provided with a plurality of supports for the articles to be preserved, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES L. CUTLER.

Witnesses:

E. GOODER,

J. H. MOORMAN.