

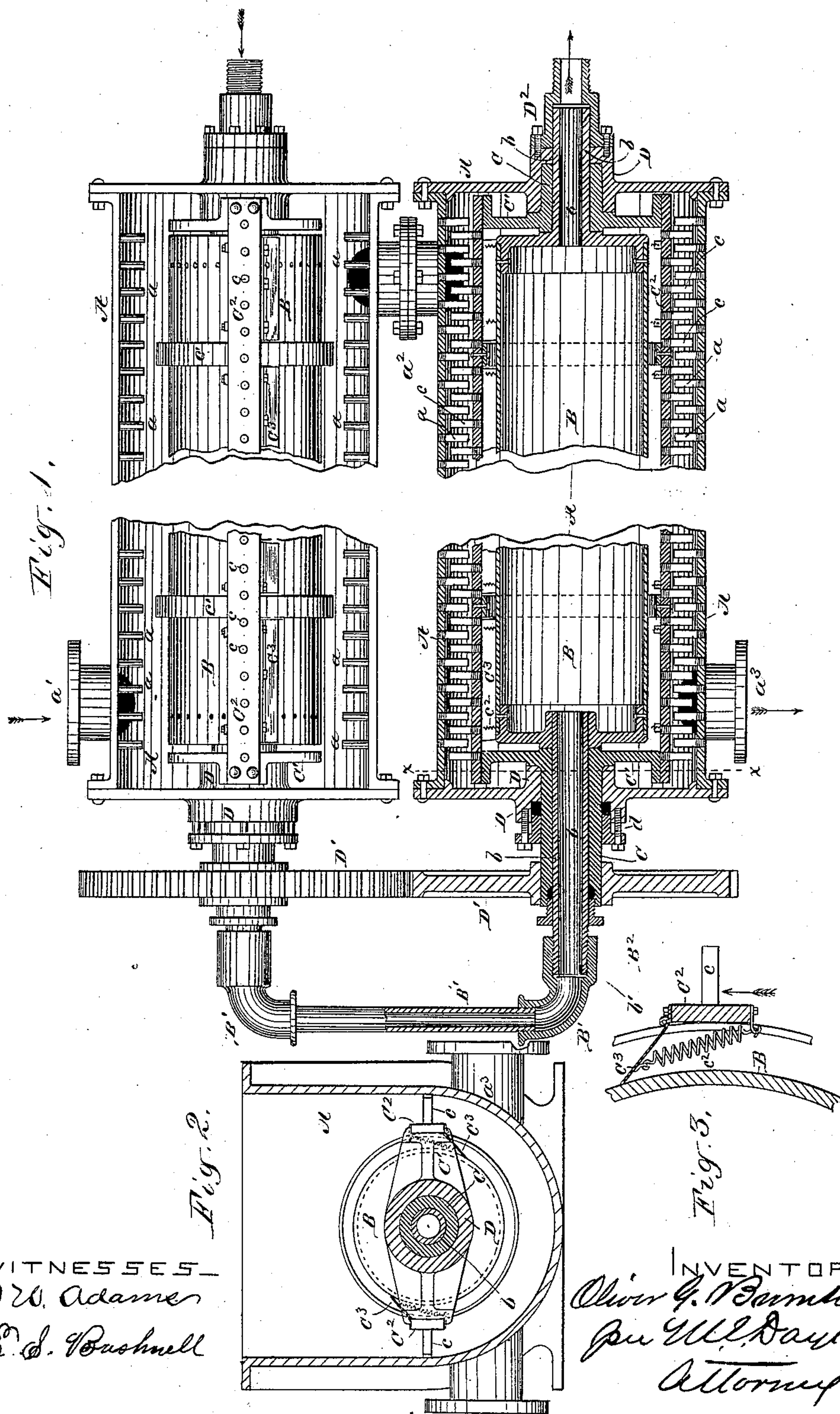
(No Model.)

O. G. BURNHAM.

LARD COOLER.

No. 287,362.

Patented Oct. 23, 1883.



WITNESSES
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UNITED STATES PATENT OFFICE.

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LARD-COOLER.

SPECIFICATION forming part of Letters Patent No. 287,362, dated October 23, 1883.

Application filed November 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, OLIVER G. BURNHAM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lard-Coolers; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in apparatus for cooling lard and similar substances; and it consists in the several matters hereinafter set forth, and pointed out in the appended claims.

In the drawings, Figure 1 is a plan view, partly in horizontal section, of my improved apparatus. Fig. 2 is a vertical transverse section, and Fig. 3 is a detail in vertical section.

A represents a deep trough-shaped vessel, having a semi-cylindrical bottom, and usually, but not necessarily, open at the top.

B is a hollow, preferably non-rotating, smooth-surfaced metal cylinder mounted in the trough A, concentrically with the curved bottom of the latter, by means of hollow central supporting-shafts *b*.

C C are hollow or tubular hubs surrounding the shafts *b*, and fitted in suitable bearings, D, in the ends of the trough. Each hub C is provided with two lateral and oppositely-projecting arms, C', arranged to intervene between the ends of the cylinder B and those of the trough A, as clearly seen by reference to Fig. 1 of the drawings. The ends of the arms C', at one end of the trough, are connected with those of the corresponding arms at the other end by bars C², which they support in position parallel with the surface of the cylinder, and at a short distance therefrom. Said bars are provided with a series of outwardly-projecting pins, *c c*, whose free ends proximate the curved surface of the trough when the bars are revolved. From the inner surface of the trough A, a corresponding series of pins, *a a*, project inwardly, being arranged in position to allow those on the bars to pass between them.

To the bars C², and preferably on their advanced edges, are hinged inclined metal scrapers C³, whose free margins bear closely upon the surface of the cylinder B. Said scrapers are held forcibly against the cylinder by means

of springs *c*², which may be of the coiled construction shown, or of flat form, and applied and connected in any suitable manner. Said springs are preferably connected detachably at one end, or are otherwise removable, so as to relieve the scrapers of their pressure, and thus permit the scrapers to be lifted when desired. Said scrapers are intended to extend substantially the entire length of the cylinder, so as to act upon its entire surface. As shown, transverse annular braces *c'* are employed to additionally support the bars C² one from the other, and the scrapers are made in sections terminating at these braces. The scrapers may, however, extend beneath these annular braces, if desired.

At one or both ends of the machine the hub C extends beyond the bearing D in the trough A, and is provided with a pulley or gear wheel D', by which the arms C' and bars C² may be revolved about the cylinder B. In the present case but one hub is so extended through the head of the trough or its bearing D, and at the opposite end the head or bearing is contracted over the outer extremity of the hub, and provided with a cap, D², beneath which a suitable packing may be inserted. Said cap may be made to so closely embrace the adjacent end of the shaft *b* of the cylinder as to hold the latter from rotation, or other means may be provided for this purpose. The cap D² is tubular to form a continuous passage with the interior of shaft *b*, and is provided with a screw-thread, so as to serve as a coupling for a hose or pipe for the admission or egress of water to or from the cylinder. The opposite shaft, *b*, of the cylinder extends beyond the hub C and connects with a pipe or hose.

As here shown, two entirely similar apparatuses are connected, the cylinders having communication by a pipe, B', and the trough interiors by a pipe, *a*².

In the operation of the machine a current of cold water is maintained through the cylinder or cylinders B. The lard or other substance to be cooled is supplied to the trough through the pipe *a'*, and finds egress through the pipe *a*², which is usually connected with a pump for the forcible withdrawal of the lard. The latter is cooled by contact with the surface of the cylinder. As fast as cooled it is scraped

off and forced outward by the scrapers C³, attached to the revolving bars C², and its place is taken by that which is uncooled. The intercurrent pins *a* and *c* thoroughly mix the lard removed from the cylinder by the scrapers with that exterior thereto, and the whole mass is rapidly and uniformly reduced in temperature. The agitation and mixing described also prevent the mass from granulating in the act of cooling.

Two machines constructed and connected as shown and properly operated are usually sufficient to promptly effect the cooling of a mass of lard or similar substance from the high temperature at which it leaves the rendering-tank to the desired temperature for packing in tierces; but one or any desired number, connected as shown, may be employed, and the speed with which the lard is carried through the machine or machines may be varied at the outlet, in accordance with the effect desired or produced.

I claim as my invention--

1. The combination, with an exterior trough and a central non-rotating hollow cylinder provided with hollow shafts *b*, for the admission and discharge of water, of a bar, C², sup-

ported from and revolving about said shaft, a scraper attached to said bar, and a series of intercurrent-pins secured oppositely to the trough and to the said bar, substantially as described.

2. The combination of the trough A, having a semi cylindrical bottom, and provided with inwardly-projecting pins *a*, a central non-rotating hollow cylinder, B, provided with hollow shafts *b*, for the admission and discharge of water, revolving arms C', one pair of which is connected with a hub, C, embracing the shaft *b*, and has bearing in the head of the trough, bars C², secured to the arms C', and provided with outwardly-projecting pins *c*, scrapers C³, attached to said bars, springs arranged to bear the scrapers upon the surface of the cylinder, and means for revolving the arms C', attached to the projecting hub C, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

OLIVER G. BURNHAM.

Witnesses:

M. E. DAYTON,

PETER J. ELLERT.