(No Model.)

R. OLP.

CHEESE VAT HEATER.

No. 505,413. Patented Sept. 19, 1893.

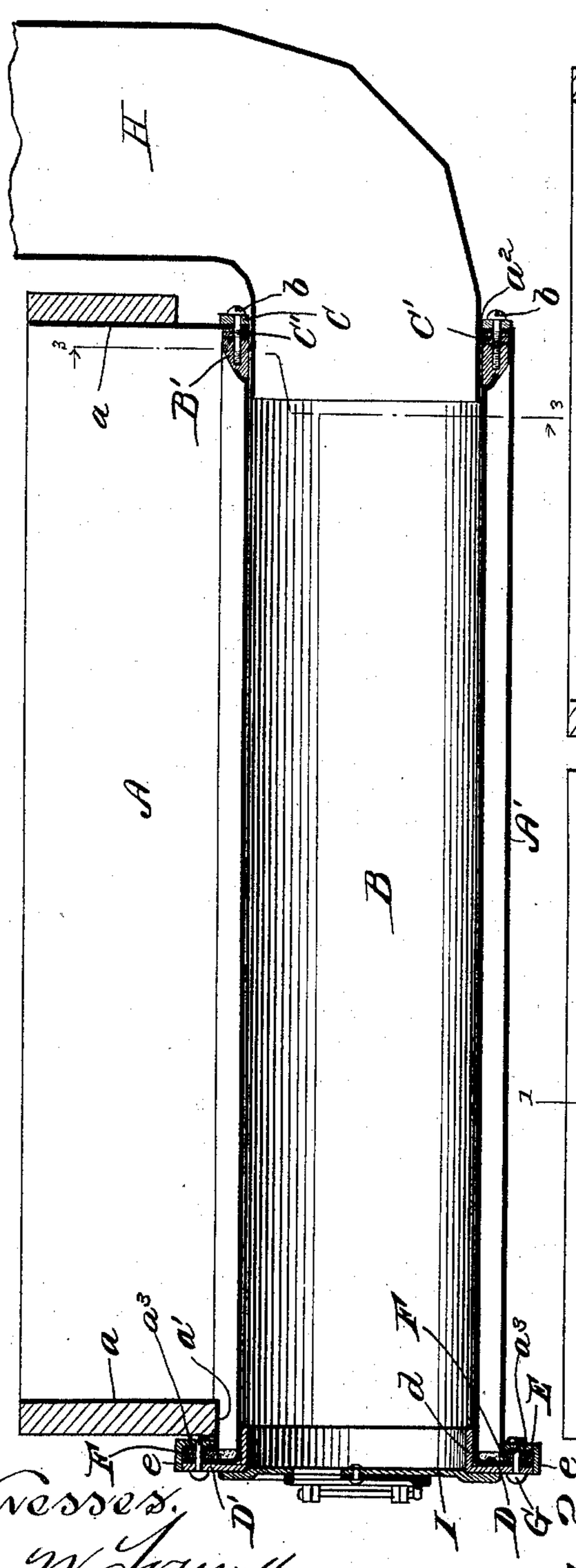

Fig. 1.

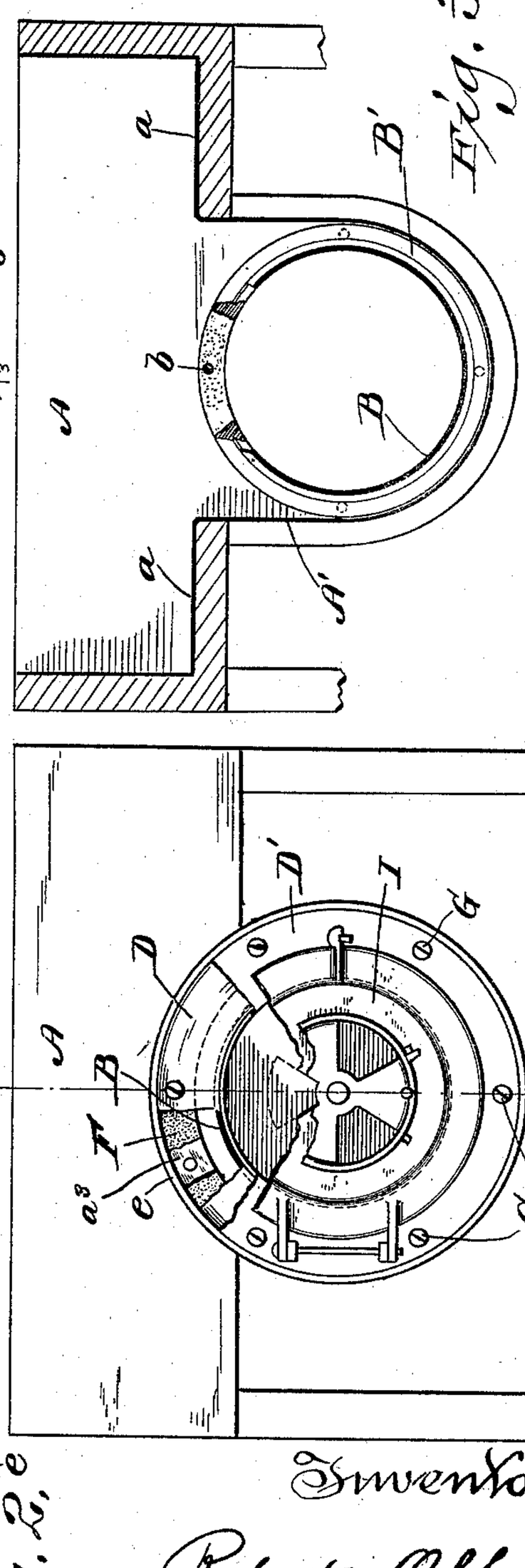

Fig. 3.

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

ROBERT OLP, OF MANITOWOC, ASSIGNOR TO GOTTLIEB H. SIMON, OF KIEL, WISCONSIN.

CHEESE-VAT HEATER.

SPECIFICATION forming part of Letters Patent No. 505,413, dated September 19, 1893.

Application filed April 17, 1893. Serial No. 470,573. (No model.)

To all whom it may concern:

Be it known that I, ROBERT OLP, a citizen of the United States, and a resident of Manitowoc, in the county of Manitowoc, and in the State of Wisconsin, have invented certain new and useful Improvements in Cheese-Vat Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in heaters for cheese vats and consists in the matters hereinafter described and pointed out in the appended claims.

In the accompanying drawings illustrating my invention: Figure 1 is a vertical longitudinal sectional view of a device embodying my invention taken on line 1—1 of Fig. 2. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse sectional view of the same taken on line 3—3 of Fig. 1.

Referring by letter to the drawings, A represents as a whole, the outer vat or tank, which is of the ordinary construction, provided with a depending trough A′ for water, and in which the vat or tank for the milk is suspended in the ordinary manner. It has been common in devices of this kind to locate in the trough A′, a tubular heater, which extends from end to end of the outer tank or vat A, and is provided at one end with a firing door and at the other communicates with a smoke pipe. It has been common in such structures to permanently join the ends of the tubular heater to the metallic lining of the outer vat or tank, by soldering or riveting said parts together. Much difficulty has been experienced in keeping devices so constructed water tight from the fact that in case the wall of the tubular heater is rusted through or accidentally perforated, so as to necessitate repairing, it is very difficult to properly repair said tube while in position in the vat, and on account of the soldered or riveted joints between the said tube and the lining of the vat, it is very difficult to remove the tube in order to enable it to be repaired.

It is the object of my present invention to remedy this defect by arranging the heater tube in such a manner in the vat, that when it is in place, the joint between it and the metal lining of the vat will be perfectly tight and secure, and at the same time, the heater tube may readily be detached and removed whenever it is necessary to do so either for the purpose of repairing it, or for any other reason. To this end I provide suitable apertures a' and a^2 in the front and rear walls of the metallic lining a of the vat A, the one a' at the front end being preferably of somewhat larger diameter than the one a^2 at the rear end as shown in Fig. 1 of the drawings.

The tubular heater B is made of substantially the same diameter as the aperture a^2 in the rear wall of the vat, and is provided with an annular ring or flange B′ of a sufficient thickness to permit it to be drilled and tapped for the reception of bolts or screws $b\,b$, and a ring C is conveniently fitted to the outside surface of the end wall of the lining a, and a suitable packing ring C′ is interposed between the flange B′ and the end wall of the lining a, the bolts or screws $b\,b$ being passed through the ring C, wall a and packing ring C′, and into the flange or ring B′ so as to form a water tight joint between this end of the heater tube and the metal lining of the vat. The front end of the heater tube is flanged out as at D and a facing ring D′ having an annular flange d is fitted to said end of the heater tube, and arranged with said flange d extending somewhat into the front end of said tube.

The metal lining a is formed into a forwardly projecting collar around the aperture a' at the front end of the vat which collar is flanged out as at a^3 and arranged to engage with the front face of the ring E, as shown in Fig. 1, and a suitable packing ring F is interposed between the flanged end of the heater tube and said flange a^3 on the forwardly projecting collar of the lining a. The ring E has a horizontal rim or flange e flush with the facing ring D′.

The several parts are secured together by means of suitable bolts G G, passed through ring D′, flange D, packing ring F, flange a^3 and ring E, so as to form a water-tight joint between the heater tube and the lining of the vat.

A suitable smoke pipe H is fitted into the open rear end of the heater tube, and a door I is hinged to one side of the front ring D′ in the manner shown.

By my improved construction, the heater

tube is rendered readily removable from the vat by simply taking out the bolts or screws *b b* and G G, the said tube being readily drawn outward at the front of the vat, and the ring or flange B′ passing freely through the aperture *a′* in the front end of the vat.

By the peculiar construction of the heads of my device as described and illustrated in the drawings, the fastening bolts and screws are not exposed to contact with the water, and hence all liability to rust is avoided, while at the same time the packing is cooled by the water.

When the heater is in place within the vat, the joints between the same are perfectly secure and water tight but by making said heater removable, it may be readily taken out for repairing or other purposes and replaced again in position without any liability of injury to either the heater tube or the metal lining of the vat.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cheese vat, the combination with an outer tank or vat provided with a metallic lining having a longitudinal trough in its bottom, said lining being provided with apertures of different diameters at opposite ends of said trough and the lining flanged outwardly at the front aperture, of a removable heater tube having annular flanges or rings upon its opposite ends of correspondingly different diameters, the smaller one of said flanges or rings being of such size as to pass freely through the larger aperture, the rear flange or ring of the heater being made thick and drilled or tapped for the reception of fastening screws, a packing ring interposed between this rear flange and the adjacent end wall of the lining, another ring on the outside of said rear wall, screws passing through said rings and rear end wall into the thick rear flange of the heater, a facing ring having a horizontal annular flange within the front end of the heater tube and a vertical annular flange fitted against the front flanged end of said heater tube, a packing ring between the flanged ends of the heater and lining and an exterior ring against this lining flange, there being an annular space between the heater tube, and the lining and packing-ring, at this point, and exterior fastening bolts uniting these parts, whereby the packings and joints are always cooled by contact with the water in the vat, while the fastening screws and bolts are never exposed to contact with the water, substantially as set forth.

2. In a cheese vat, the combination with an outer tank or vat provided with a metallic lining having a longitudinal trough in its bottom, said lining being provided with apertures of different diameters at opposite ends of said trough and the lining flanged outwardly at the front aperture, of a removable heater tube having annular flanges or rings upon its opposite ends of correspondingly different diameters, the smaller one of said flanges or rings being of such size as to pass freely through the larger aperture, the rear flange or ring of the heater being made thick and drilled or tapped for the reception of fastening screws, a packing ring interposed between this rear flange and the adjacent end wall of the lining, another ring on the outside of said rear wall, screws passing through said rings and rear end wall into the thick rear flange of the heater, a facing ring fitted to the front flanged end of the heater and having a horizontal annular flange within the latter, an exterior ring fitted against one surface of the outwardly flanged portion of the lining adjacent to the front aperture, and having a horizontal flange inclosing and flush with the outer surface of the facing ring, a packing ring interposed between the front flanged end of the heater tube and the adjacent outwardly flanged portion of the lining, there being an annular space between the heater tube, and the lining and packing-ring, at this point, and fastening bolts passed through and uniting the facing ring, heater flange, packing ring, lining flange and exterior ring, all substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Manitowoc, in the county of Manitowoc and State of Wisconsin, in the presence of two witnesses.

ROBERT OLP.

Witnesses.
JAMES P. NOLAN,
C. A. GIELORD.