

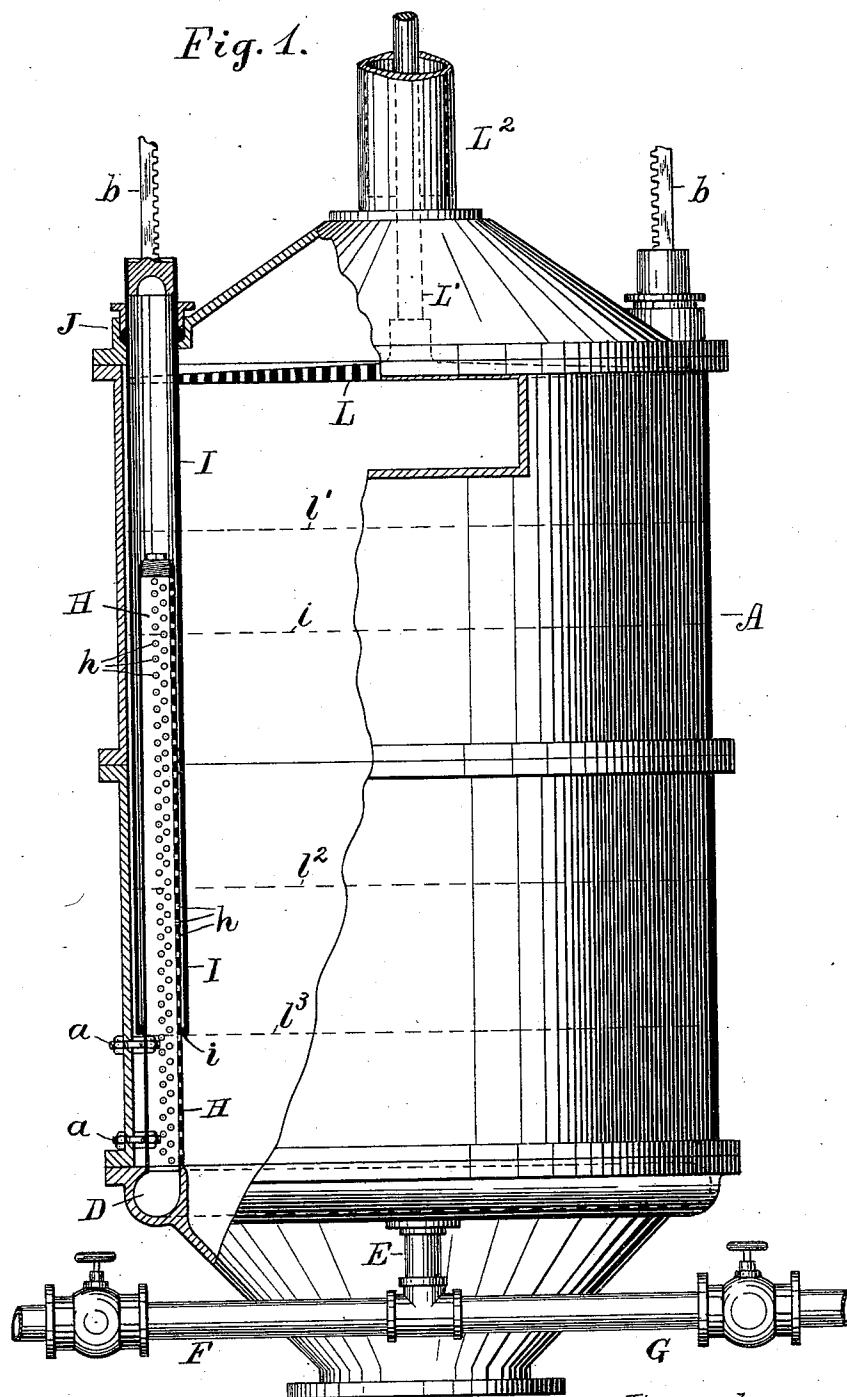
(No Model.)

2 Sheets—Sheet 1.

C. C. CURRIER.
RENDERING TANK.

No. 565,436.

Patented Aug. 11, 1896.



Attest:
L. Lee,
Edw. F. Winsley,

Inventor.
Cyrus C. Currier, per
Thomas S. Croome, Atty.

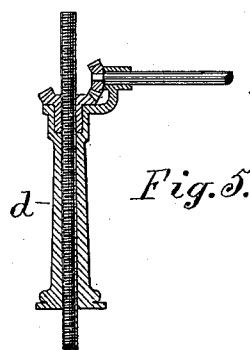
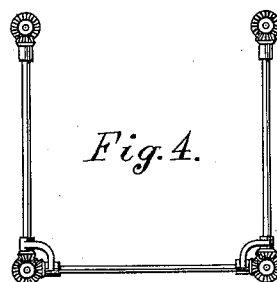
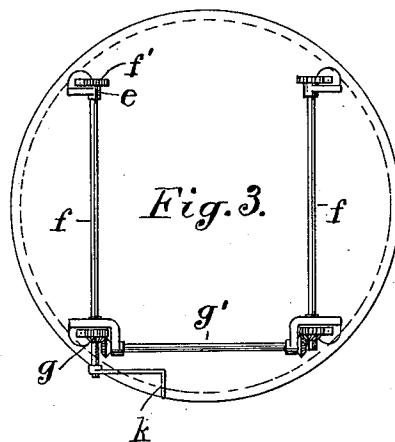
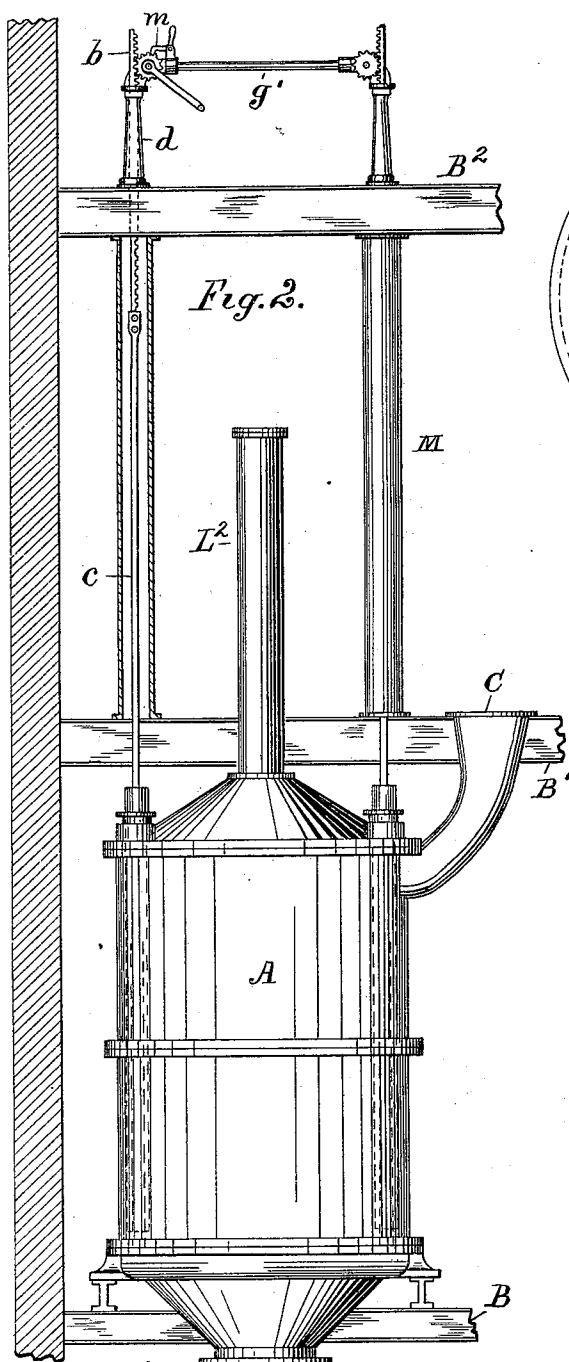
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UNITED STATES PATENT OFFICE.

CYRUS C. CURRIER, OF SUMMIT, NEW JERSEY.

RENDERING-TANK.

SPECIFICATION forming part of Letters Patent No. 565,436, dated August 11, 1896.

Application filed April 22, 1896. Serial No. 588,627. (No model.)

To all whom it may concern:

Be it known that I, CYRUS C. CURRIER, a citizen of the United States, residing at Summit, county of Union, State of New Jersey, have invented certain new and useful Improvements in Boiling or Rendering Tanks, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of rendering-tanks in which perforated stand-pipes are projected upward within the tank, and connected with a steam-pipe for cooking the material, and a waste-pipe for drawing off the fluid from the rendered mass. Such stand-pipes are shown in Emil Holthaus's patent, No. 507,222, issued October 24, 1893, for improvement in rendering-tanks; but it has been found in practice that where the perforations were exposed to the material during the rendering or boiling operation they were liable to be clogged, so as to drain the material very imperfectly at the close of such operation.

In the present invention I provide a tubular cover fitted to the exterior of the stand-pipe, with means for raising the same during the draining operation, to expose the perforations. The movable cover which I apply may be used to expose a greater or less proportion of the holes at the lower end of the stand-pipe to admit more or less steam, as may be found requisite in each case for properly cooking the material.

It has been found in practice that the introduction of steam at the lower part of the rendering-tank suffices for the treatment of the entire charge, and the covering of the upper portion of the stand-pipe does not therefore prevent the proper use of the same during the cooking operation.

In the annexed drawings I have shown the rendering-tank provided with four stand-pipes, and have shown alternative devices for raising the covers when required.

Figure 1 is an elevation of the rendering-tank in section at the center line where hatched, showing one of the stand-pipes and its movable cover in section. Fig. 2 is an elevation of the rendering-tank with part of a building and gearing for actuating rack-bars connected with the tubular covers. Fig.

3 is a plan of the gearing for such rack-bars. Fig. 4 is a plan of suitable gearing for use with elevating-screws, and Fig. 5 is a sectional elevation of one of the rotary nuts and its connected gearing. Figs. 1 and 5 are upon a larger scale than Figs. 2 to 4, inclusive.

A designates the rendering-tank, with tapering bottom, which in practice is provided with a gate at the lower end.

B, B', and B² represent three floors of a building in which the tank may be mounted, with a hopper C upon the floor B' for filling the tank. The tank is represented with an annular channel D, formed around the lower part, with an inlet-nozzle E, which is connected, respectively, with a steam-pipe F and an outlet-pipe G for the tank-water.

Four stand-pipes H are shown connected with and projected upward from the channel D adjacent to the wall of the tank, and formed with perforations *h* upon their inner sides. A portion of the stand-pipe near its lower end is attached to the wall of the tank by bolts *a*, which permit of its convenient removal when required for repairs or renewal. The tubular cover I is shown fitted through a stuffing-box J upon the top of the tank and extended downward over the stand-pipe to the upper bolt *a*, leaving a portion of the holes *h* permanently uncovered to admit steam for cooking the material. The tube I is fitted loosely to the exterior of the stand-pipe and provided with a snugly-fitting bushing *i* at the lower end.

The dotted line *l* in Fig. 1 designates the level to which the tank is charged in treating garbage, the hopper being then tightly closed. The line *l'* indicates the level of the water which is added to cook the same, and the line *l²* represents the level of the solid matter which remains in the tank at the close of the rendering operation, after the tank-water is drawn off.

L designates a perforated piston fitted within the tank and actuated by a hydraulic plunger L', which operates to press the material down to the level *l²*, all the fluid above that level being discharged through the stand-pipes during such pressing operation. The piston is shown in Fig. 1 penetrated by the tube I, and the piston is, in practice, notched

to pass the cover upon each of the stand-pipes, so as to move up and down freely past such covers.

A hydraulic cylinder L^2 is shown in the drawings, but no fluid connections for operating the piston in the same, as such constructions are already well known and form no part of the present invention. The piston is notched upon the edges to pass loosely over the tubes I .

The tubular covers I are arranged as shown in Fig. 1 during the rendering operation, thus protecting all of the holes h above the top bolt a until the cooking is concluded. The pipe F is then closed to cut off the supply of steam, and the pipe G opened to draw off the tank-water which stands above the line l^2 . The covers upon the stand-pipes are then raised, and as the holes in the same are entirely open the fluid passes out with the utmost freedom and is discharged through the annular channel D and pipe G . The piston L is then forced downward upon the material, the fluid in the same passing upward through the holes in the piston and escaping through the perforations in the stand-pipes, so as to leave the material in the driest possible condition. The material is then in readiness for discharge from the bottom of the tank.

The tubular covers I may be raised and lowered by any suitable means, either separately or together, rack-bars connected by suitable gearing being shown in Figs. 2 and 3 for raising them simultaneously.

To avoid obstructing the floor B' where the garbage is dumped and fed into the hopper C , the connecting-gearing is shown mounted upon the upper floor B^2 , and the rack-bars b are connected with the tubes I by straight rods c . Hollow columns M are arranged between the floors B' and B^2 to surround and protect the rods c . Each of the rack-bars is guided by a stand d , having a bearing e for a pinion-shaft f , and the said shafts are connected together by miter-gears g and a cross-shaft g' . Two pinions f' are secured upon each of the pinion-shafts to actuate two of the rack-bars, and a crank k serves to rotate all the shafts and thus raise and lower the rack-bars as required.

In Fig. 2 a pawl or latch m is shown hinged upon one of the bearings of the shaft g' , and is fitted to the teeth of one of the pinions g to lock the same when adjusted, and thus prevent the tubular covers from being forced upward by the steam-pressure which is employed during the cooking operation.

Screws may be connected with the tubular covers I instead of rack-bars, and raised and lowered by rotary nuts connected by suitable gearing. Such an arrangement is shown in Fig. 4, where the screws o are shown provided each with a rotary nut p , which would be sustained upon the top of the stand d . The nuts are shown formed with bevel-teeth upon their

periphery and connected by gearing like the pinions f' in Fig. 3.

One of the nuts and screws is shown with the stand d in Fig. 5. Any other arrangement of gearing may be employed to raise and lower the tubular covers simultaneously, or the covers may be raised and lowered independently, if preferred.

During the boiling of the material the ebullition tends to separate a great many of the fibrous particles, which, if the perforations of the draining-pipes are open, become fixed in the same and thus clog them, so that when they are required for draining off the tank-water they are prevented from operating. Where the pipes are used, as in the construction shown in the drawings, for the double purpose of introducing the steam and drawing off the tank-water, a certain portion of the holes h must be uncovered during the cooking operation; but such holes are, during the draining operation, entirely surrounded by the solid matter, and the tank-water floats above the same and may thus be readily drawn off through the upper perforations of the same pipes.

Where my invention is applied to pipes which are used for drainage only, the perforations would all be preferably closed by the movable cover during the rendering operation.

The invention is adapted for use in tanks for rendering garbage, animal matters, or any substances which first require cooking and afterward draining.

Although I have shown the stand-pipes close to the shell of the tank in the drawings, I do not limit myself to such arrangement, as the invention may be applied to the stand-pipes if projected upward within the tank at any suitable point to apply the sliding tubular cover.

Having thus set forth the nature of my invention, what I claim herein is—

1. The combination, with a rendering-tank having one or more perforated stand-pipes H extended upwardly from the bottom and connected with a suitable discharge-pipe to withdraw the tank-water, of a piston movable vertically in the tank and notched at the edges to clear such stand-pipes, and having a piston-rod extended through the top of the tank, and a tubular cover fitted to each of such stand-pipes and extended upwardly through the top of the tank and provided with means for raising and lowering such cover or covers, as and for the purpose set forth.

2. A rendering-tank provided with the perforated stand-pipes H connected with a suitable discharge-pipe, stuffing-boxes J upon the top of the tank, the tubular covers I fitted to the exterior of the stand-pipes and extended through the stuffing-boxes, and means for raising and lowering the covers simultaneously, as and for the purpose set forth.

3. A rendering-tank provided with a perforated stand-pipe H connected with a suitable discharge-pipe, a stuffing-box J upon the top of the tank, the tubular cover I fitted to the exterior of the stand-pipe and extended through the stuffing-box, a rack *b* attached to the tubular cover, a pinion *f'* with means for turning the same to raise and lower the cover, and means, as the latch *m*, to lock the rack and pinion when adjusted, as and for the purpose set forth.

4. The combination, with a rendering-tank, of a stand-pipe projected upward within the tank and connected at the bottom with a steam-supply and a discharge-outlet for the tank-water, the stand-pipe having perforations near the bottom for supplying steam to

the material, and perforations at a higher level for draining off the tank-water, and the tube I fitted to the exterior of the stand-pipe and arranged to cover the draining-perforations during the rendering operation, and means for raising the tube to uncover the draining-perforations at the close of the rendering operation, substantially as herein set forth.

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

CYRUS C. CURRIER.

Witnesses:

F. C. FOSTER,
THOMAS S. CRANE.