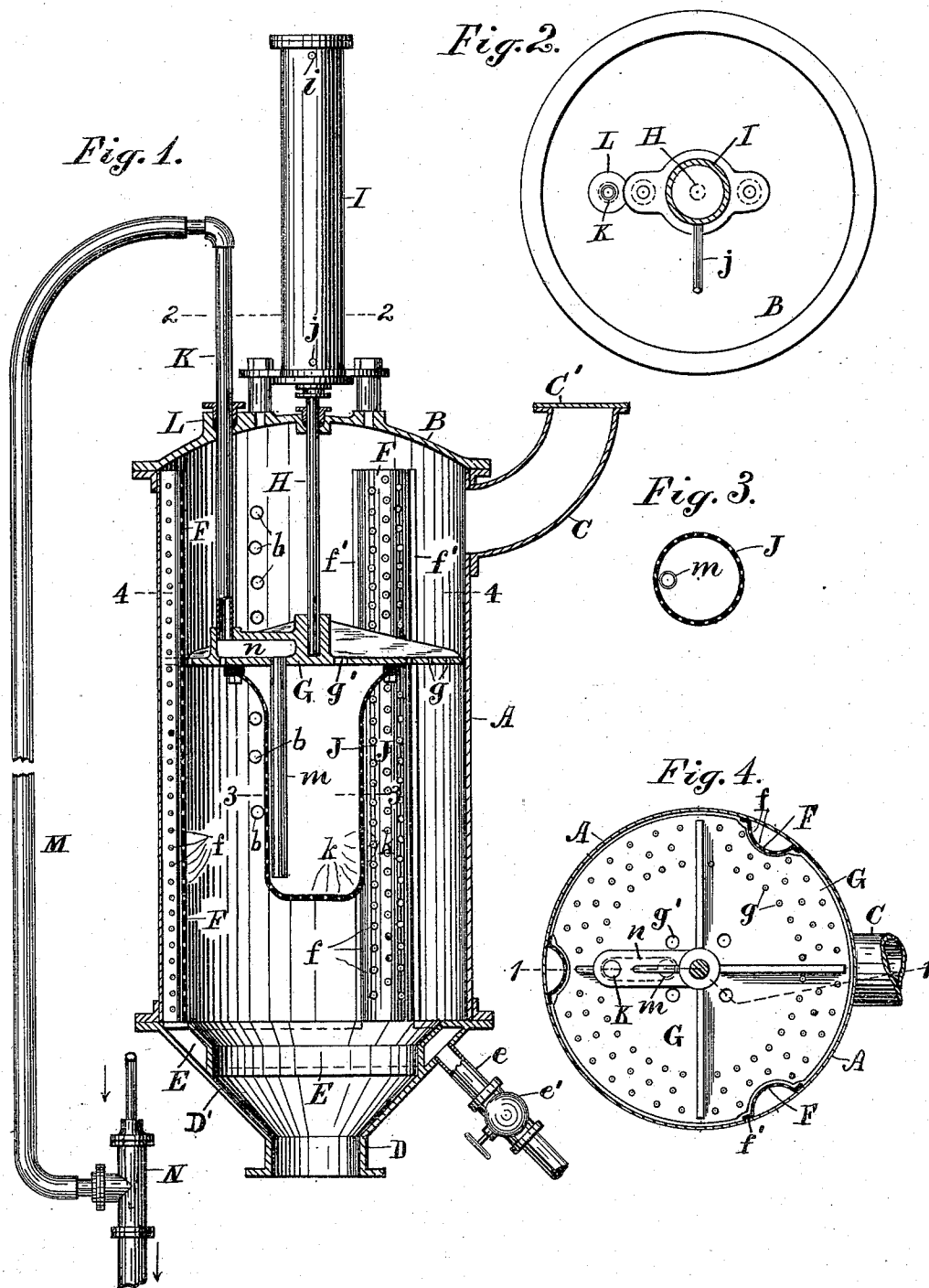


(No Model.)

E. HOLTHAUS.
RENDERING APPARATUS.

No. 545,892.

Patented Sept. 10, 1895.



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UNITED STATES PATENT OFFICE.

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RENDERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 545,892, dated September 10, 1895.

Application filed March 28, 1895. Serial No. 543,465. (No model.)

To all whom it may concern:

Be it known that I, EMIL HOLTHAUS, a citizen of the United States, residing at Canarsie, Kings county, New York, have invented certain new and useful Improvements in Rendering-Tanks with Pressing and Draining Appliances, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of this invention is to furnish a more effective means of expressing the liquids from the refuse which is treated in rendering-tanks. Heretofore it has been common to provide a piston for pressing the material at
15 certain stages of the treatment to express the grease or water, and such liquids have heretofore been discharged from the upper side of the piston by any suitable means. The upward movement of the piston after the pressure
20 of the material tends, if any liquid remains upon the upper side of the piston, to suck it back again into the mass of the material, and the present invention is intended to prevent such reabsorption of the liquid and to furnish
25 a more effective means of discharging the liquid from the mass during the pressing operation. Heretofore it has been common to provide the wall of the tank with upright perforated pipes detached from the wall, or
30 with a single internal perforated shell to introduce steam or water into the material at different heights and also to drain off the liquid when desired; but such means are not wholly adequate to drain the liquid from the
35 central portions of the mass, where the rendering-tank is capable of containing a large body of material.

In the present invention a perforated trunk is projected from the lower side of the piston,
40 and when the material is compressed by such piston such trunk enters the central portion of the mass and permits the liquid to escape through the perforations to its interior. Suitable connections are provided for removing
45 the liquid from the interior of the trunk, and the invention includes such trunk and connections, and also an improved construction for the shells or screens which are applied to the wall of the tank.

50 In the annexed drawings, Figure 1 shows a rendering-tank provided with my improve-

ments, the view being shown in vertical section where hatched on line 1 1 in Fig. 4. Fig. 2 is a plan of the same in section on line 2 2 in Fig. 1. Fig. 3 is a cross-section of the trunk
55 on line 3 3 in Fig. 1, and Fig. 4 is a cross-section of the tank on line 4 4 in Fig. 1.

The tank is shown as a vertical cylinder A, with cover B, filling-nozzle C, and outlet D, which in practice would be furnished with a
60 suitable gate to close the same. The outlet is shown connected with the tank by a funnel D', within the upper part of which an annular steam and water connection E is provided, in communication with the segmental
65 shells F, which are formed with perforations *f* and secured vertically by flanges *f'* to the inner wall of the tank. Only three of the shells are shown in the drawings, but four or
70 more would be used in practice. The annular connection E is supplied with a pipe *e*, having cocks *e'*, and this pipe would be further connected with steam and water supplies to inject steam or water from the shells into the
75 material and with a waste-pipe to draw off the tank-liquor from the shells when required. The annular connection E is shown cast in the side of the funnel D', but a circular bent pipe may be employed and suitably connected with the shells F and the pipe *e*. Grease-
80 cocks, which are common in such constructions, are indicated at different heights upon the tank by the circles *b*.

The piston G is attached to rod H, which is extended through a stuffing-box in the cover
85 into a hydraulic cylinder I. By the attachment of the rod H to a hydraulic piston and suitably introducing the liquid at ports *i* and *j* upon the hydraulic cylinder the piston may be raised and lowered and the material within the tank subjected to the desired pressure.

The trunk J is a perforated tube attached to the under side of the piston and closed at the bottom, with numerous perforations *k* of
95 suitable size to drain the liquid from the central part of the material, which in practice lies between the piston and the outlet D. The trunk is preferably made of such a length as to penetrate nearly to the bottom of an average charge of material when compressed. A
100 siphon-pipe K is extended from the piston

upward through a stuffing-box L upon the cover and connected by flexible hose M with a steam-siphon N, which is only shown in a diagrammatic form. In practice the siphon N would discharge to a tank-water receiver. The piston is formed near the periphery with small holes *g*, which permit the expressed liquid to escape upwardly, while larger holes *g'* permit the water above the piston to fall into the trunk and thus pass out by the siphon-pipe. The pipe K is connected through a passage *n* with a tube *m*, extending downward inside the trunk nearly to the bottom. The pipes K and *m* furnish a connection for removing the liquid from the trunk whatever the position of the piston, as the pipe *m* extends to the bottom of the trunk and thus draws off any water that may penetrate therein. The formation of a passage in the body of a piston may be avoided by making the pipes K and *m* continuous, with a suitable bend at the top side of the piston.

The operation of the device is as follows: The piston is raised close to the cover, the material to be rendered is inserted through the nozzle C, and its cover C' is tightly secured. Water, if desired, is then introduced through the shells F from the pipe *e*, and steam is then supplied to the pipes *e* and forced into the material from the shells and the material cooked for the desired length of time. The grease which rises to the surface of the material is then drawn off through grease-outlets *b* and the piston G forced downward to express the water from the material to deliver it from the return tank in as dry a condition as possible. The pipe *e* is at this time connected with a tank-water receiver, and the material when under compression then discharges its liquid through the walls of the trunk and through the perforations *g* in the piston, that which escapes through the piston entering the shells F through their perforations and passing to the tank-water receiver. A vacuum being formed by any suitable means in the pipe K, the liquid which enters the interior of the trunk is also raised through the cover of the tank and discharged to the tank-water receiver. The trunk is perforated upon its bottom and lateral walls, and the liquid in the center of the material is thus discharged with the utmost freedom. By making the shells F of segmental form and fixing them upon the wall of the tank the wall is utilized as a part of the channel in which the steam and water circulate, and the largest amount of straining or filtering surface is secured with the smallest amount of material.

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

1. In a rendering apparatus, the combination, with a vertical cylinder having inlet at

the top and outlet at the bottom, of a piston and means for forcing the same downward therein, a perforated trunk projected downward from the piston and a pipe connection extended from the interior of the trunk through the cover of the cylinder, substantially as herein set forth.

2. In a rendering apparatus, the combination, with a vertical cylinder having inlet at the top and outlet at the bottom, of a piston having a trunk projected downward therefrom, with small perforations outside the line of the trunk and larger apertures opening into the top of the same, a stuffing box upon the cover of the cylinder, and suitable pipe connection extended from the interior of the trunk through the stuffing box upon the cover, substantially as herein set forth.

3. In a rendering tank, the combination, with the vertical cylinder A having an inlet at or near the top for the material, of the funnel D' at the bottom provided with the outlet D, the perforated segmental shells F attached vertically by their flanges *f'* to the walls of the tank, an annular chamber connecting to the bottoms of the shells, and the pipe *e* projected into such annular connection and provided with the cock *e'*, to connect such shells, in common, with a steam or water supply, substantially as herein set forth.

4. In a rendering apparatus, the combination, with the rendering tank having one or more perforated shells with steam and water connections at the bottom, of a perforated piston with perforated trunk from its lower side, a stuffing box upon the cover of the tank, and a pipe connection extended from the interior of the trunk through the stuffing box, substantially as herein set forth.

5. In a rendering apparatus, the combination, with an upright rendering tank having a perforated movable piston with perforated trunk projected from its under side, and a stuffing box in the cover of the tank, of a pipe extended from the interior of the trunk through the stuffing box, and connected with a steam siphon to draw the liquid from the trunk, substantially as set forth.

6. In a rendering apparatus, the combination, with the rendering tank having perforated segmental shells attached to its inner wall, of a piston fitted movably to the tank with means for reciprocating the piston, the said piston being notched adjacent to the shells and guided thereby in its reciprocations, substantially as herein set forth.

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

EMIL HOLTHAUS.

Witnesses:

L. LEE,

EDW. F. KINSEY.