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Patented Sept. 9, 1902.

C. TURNER.  
RENDERING APPARATUS.

(Application filed Apr. 7, 1902.)

(No Model.)

2 Sheets—Sheet 1.

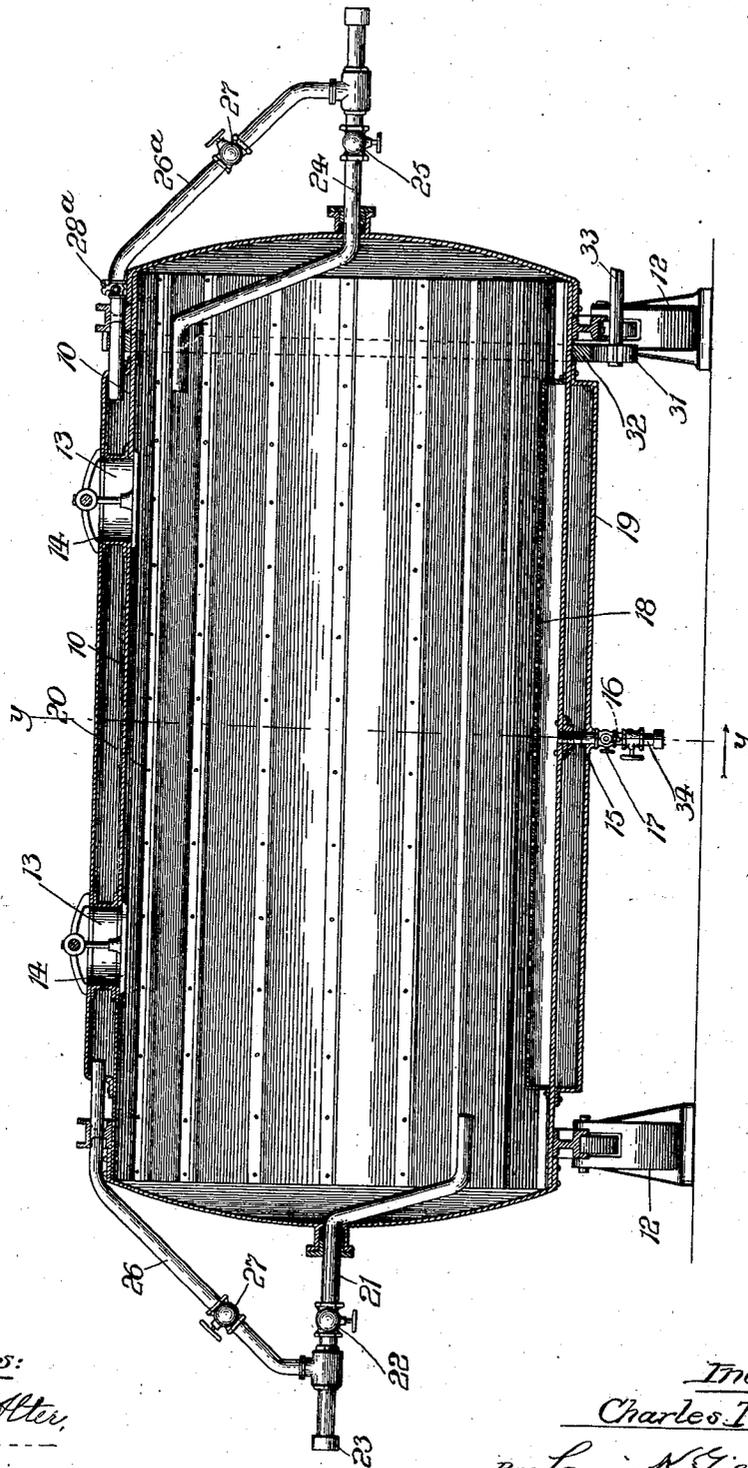


Fig. 1.

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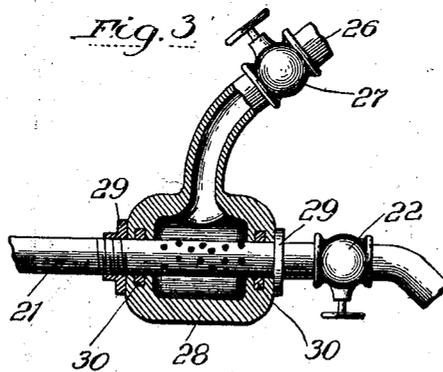
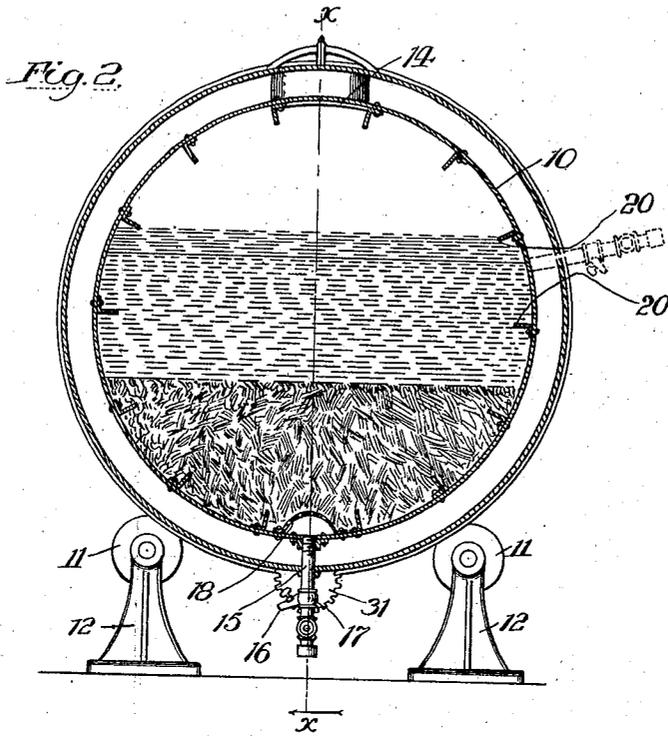
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# UNITED STATES PATENT OFFICE.

CHARLES TURNER, OF CHICAGO, ILLINOIS.

## RENDERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 708,845, dated September 9, 1902.

Application filed April 7, 1902. Serial No. 101,703. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES TURNER, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Rendering Apparatus, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to apparatus for extracting oil from fatty animal matters, and more particularly to that class of rendering-tanks for the extraction of oils from garbage and other refuse.

The objects of the invention are to provide a tank wherein may be carried out the several steps involved in the entire rendering process and to generally simplify and improve apparatus of the character to which the invention relates.

The invention consists of the arrangement and combination of parts hereinafter particularly described, specifically designated in the claims, and which are illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a rendering-tank constructed in accordance with my invention, the section being taken on the line *xx* of Fig. 2. Fig. 2 is a section on the line *yy* of Fig. 1 looking in the direction of the arrow, and Fig. 3 relates to a detail.

In carrying out my invention I provide a horizontally-disposed tank 10, mounted at each end upon a pair of rollers 11, journaled in supports 12, so as to rotate thereon. Man-holes 13 are provided in convenient positions for the introduction and removal of the matter to be treated and are closed by plates 14, secured in the usual manner, and a pipe 15 leads from the tank and is provided with a tap 16, having a valve 17, for drawing off the oil and waste liquid. In order to prevent the material from being forced out through the pipe 15 when the mass is subjected to pressure to extract the resultant liquid in the manner to be hereinafter explained, the mouth of the said pipe is inclosed by a reticulated partition or shield 18, which preferably extends nearly the length of the tank, as shown in Fig. 1. The tank is encircled by a jacket 19, into which steam is introduced for the pur-

pose of drying the refuse after the resultant oil and other liquid extracted therefrom have been drained off, the said refuse being ultimately converted into fertilizer, and in order to prevent the mass from becoming packed in the tank longitudinal strips or flights 20 are secured to the interior thereof and serve to lift up and agitate the material being treated during digesting and drying of the same. The cooking of the material in order to separate the oil therefrom is performed by steam, which is introduced through a stationary pipe 21, entering the tank axially thereof at one end through a suitable stuffing-box and extending downwardly, the end thereof being bent so as to direct the steam through the mass to insure its being thoroughly permeated, and thereby properly cooked. The steam-pipe 21 is provided with a valve 22, and any suitable means may be provided, as the coupling 23, for connecting the pipe with a source of steam-supply. The steam exhausts through a stationary pipe 24, entering the tank at the end opposite to the pipe 21 and provided with a valve 25 and which is similar to the pipe 21, except that its end within the tank extends upwardly. Connections are made with the pipes 21 and 24 for supplying steam to and exhausting it from the space between the jacket 19 and the tank by means of pipes 26 26<sup>a</sup> entering at opposite ends of the jacket and provided with valves 27. The arrangement of the connection between the pipe 26 and the pipe 21 is clearly shown in Fig. 3 and comprises a sleeve or boxing 28, rotatable about the pipe 26, which passes therethrough, the said boxing being held against longitudinal movement by collars 29 on the pipe. The portion of the pipe within the sleeve 28 is reticulated in order to permit the steam to pass there-through into the pipe 26, and a suitable packing 30 is provided in order to prevent the escape of steam from the boxing. The connection between the pipes 26<sup>a</sup> and 24 is in all respects similar to the connection between the pipes 26 and 21 just described, and it will be readily understood that by means of such rotatable connections steam may be supplied to the jacket during the movement of the tank. Motion is imparted to the tank through the medium of a pinion 31, meshing with a gear-

track 32, encircling the tank, and the pinion 31 is secured on a shaft 33, driven by a suitable power mechanism.

In carrying out the rendering process the garbage or other refuse to be treated is introduced through the manholes 13, the covers of which are then secured in place. The valve 27 in the pipe 26 and the valve 22 in the pipe 21 are opened, having been closed, as are also the valves 25 and 27 in the exhaust-pipes 24 and 26<sup>a</sup>. Steam entering the pipe 21 mingles with the mass, which during the rotation of the tank is kept in a loose condition by means of the flights 20, and the flow of steam is continued until the mass has been properly digested, the step being aided by the steam in the jacket 19. The tank is then moved into such position that the pipe 15 will be opposite the floating strata of oil derived from the garbage, as illustrated in dotted lines, Fig. 2, so that the said oil may be decanted through the tap 16. As soon as all of the oil is drawn off, which will be known when the other liquid derived from the mass begins to flow, the valve 17 is closed and the tank rotated, so that the pipe 15 will be at the bottom thereof, as illustrated in Fig. 2. The valve 22 in the pipe 21 being closed and also the valve 27 in the pipe 26<sup>a</sup>, the steam-supply is connected with the pipe 24, the end of which extends into the upper part of the tank and the mass subjected to pressure for the purpose of expressing the refuse liquid therefrom. Under such pressure the refuse liquid will be forced through the mass and the reticulated partition 18 and out through the pipe 15 and tap 16. In case the perforations of the partition 18 become clogged connection may be made by means of an extension 34 of the pipe 15 with a steam-pipe for the purpose of blowing out the same. After the oil and refuse liquid have been drawn off the valve 22 is closed and the valve 27 in the pipe 26 opened, so that steam entering through the coupling 23 will flow into the jacket 19, exhausting therefrom by way of a vent-valve 28<sup>a</sup> in the pipe 26<sup>a</sup> between the tank and the valve 27, which valve is kept closed during this step of the process, and the tank again being rotated the drying of the refuse is effected, the latter being finally removed through the manholes 13 in a dry condition to be used for making fertilizer. In order to draw off the vapors arising during the drying of the mass, a vacuum-pump may be connected up with the coupling on the pipe 24.

While I have described the invention in connection with the rendering of garbage and other refuse, it is to be understood that its use is not restricted thereto and that it is equally applicable to the rendering of packing-house products and other fatty animal matters.

I claim as my invention—

1. In a rendering apparatus, in combina-

tion, a horizontally-disposed rotatable tank having a steam-jacket, a stationary steam-supply pipe entering the tank axially thereof through one end, an exhaust-pipe leading from the opposite end of the tank, a pipe entering the steam-jacket, a rotatable connection between the said pipe and the steam-supply pipe, means for exhausting from the steam-jacket, and a valve-closed outlet for the tank.

2. In a rendering apparatus, in combination, a horizontally-disposed rotatable tank having a steam-jacket, a stationary steam-supply pipe entering the tank axially thereof through one end and extending to near the bottom thereof, an exhaust-pipe leading axially from the opposite end of the tank and extending therein in the opposite direction from the first-mentioned pipe, valves for closing the said pipes, a valve-closed pipe leading from the side of the tank, a reticulated shield located in the tank and over the mouth of the said pipe, a rotatable sleeve on each of the steam supply and exhaust pipes, the portions of the said pipes inclosed by the said sleeves being reticulated, and a pipe leading from each sleeve to the steam-jacket.

3. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a steam-supply pipe, a pipe leading to the steam-jacket, a rotatable connection between the said pipes, and an exhaust for the jacket.

4. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a stationary pipe leading into the tank, a second stationary pipe leading therefrom, pipes entering the jacket, and a rotatable connection between each of the latter pipes and one of the stationary pipes.

5. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a stationary pipe leading into the tank, a second stationary pipe leading therefrom, valve-closed pipes entering the jacket, a rotatable connection between each of the latter pipes and one of the stationary pipes, and a valve in each of the stationary pipes between its rotatable connection and the tank.

6. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a stationary steam-supply pipe entering the tank axially thereof through one end, a stationary exhaust-pipe leading axially from the opposite end of the tank, valves for closing the said pipes, a valve-closed outlet for the tank, a rotatable sleeve on each of the steam supply and exhaust pipes, the portions of the said pipes inclosed by the said sleeves being reticulated, and a valve-closed pipe leading from each sleeve to the steam-jacket.

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