Oct. 2, 1928. 1,686,017

M. V. LOVETT

RENDERING APPARATUS

Filed July 28, 1924

Fig. 1.

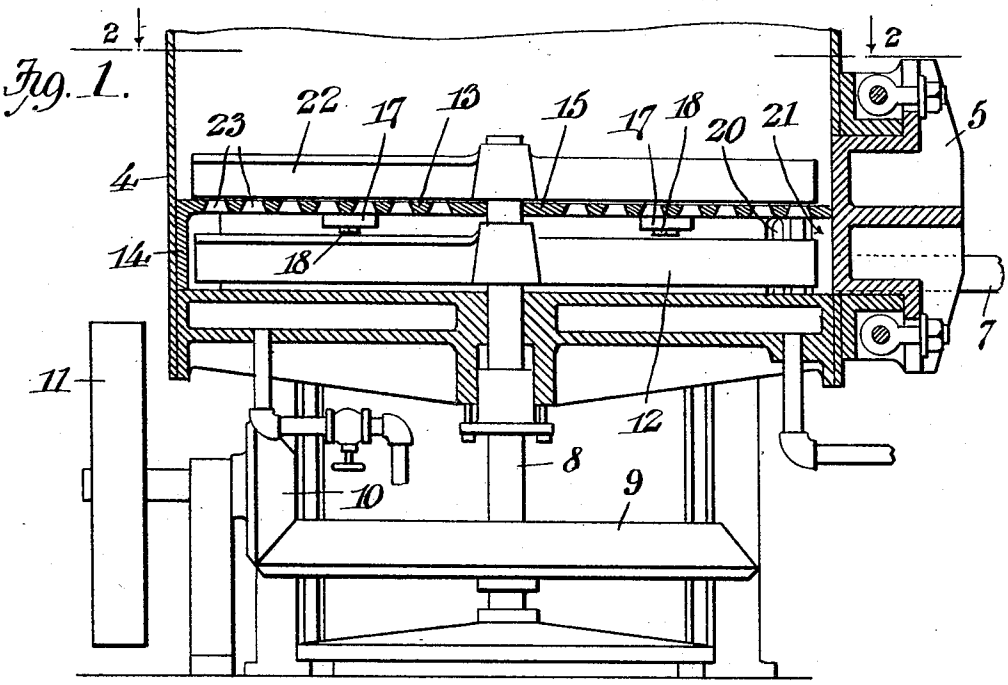


Fig. 2.

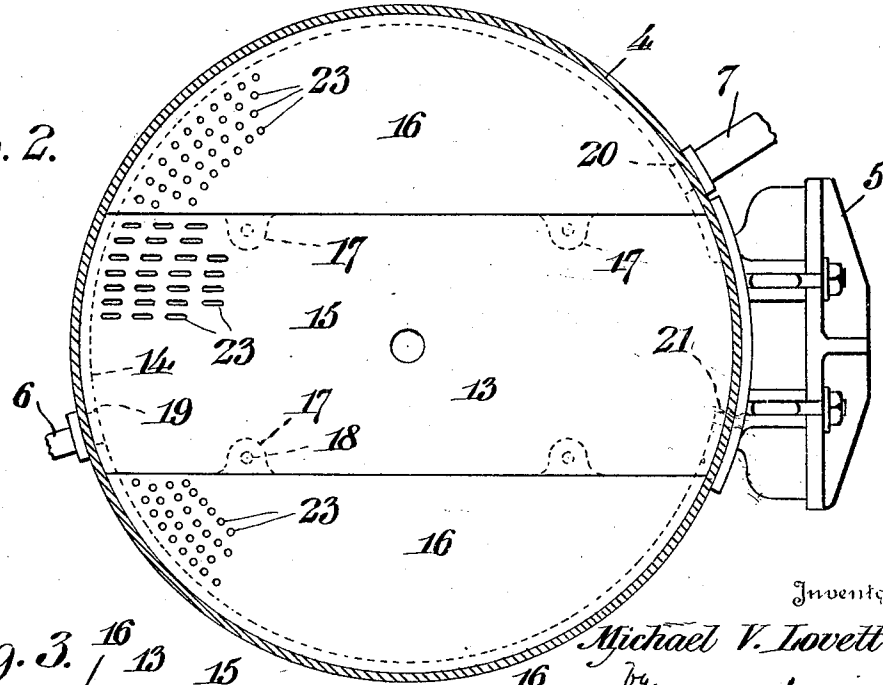
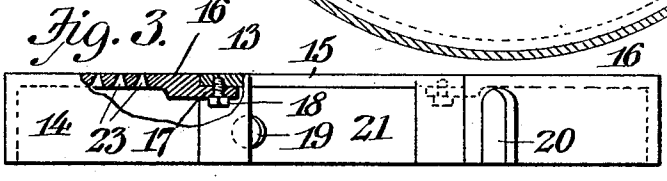


Fig. 3.



Inventor
Michael V. Lovett,
By Dwight B. Gallt
Attorney

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MICHAEL V. LOVETT, OF CASTANEA, PENNSYLVANIA.

RENDERING APPARATUS.

Application filed July 28, 1924. Serial No. 728,777.

This invention relates to a rendering apparatus for extracting fat from animal matter, and more particularly to apparatus of this class in which the processes of extracting the fat and drying the residuum are successively performed in the same tank or vessel.

A further object of the invention is to provide a rendering apparatus involving means of an improved nature for keeping the oils and greases in the tank separated from the solids during the rendering process; which structure permits of the materials being thoroughly cooked and dried without danger of overheating or burning.

A still further object of the invention is to provide an attachment for application to standard rendering apparatus, wherein the several objects of the invention may be attained, and which requires no alteration in the construction of the standard rendering apparatus, or in its installation or operation.

A further and particular object of the invention is to provide means whereby several treatments or rendering operations upon materials of different nature and requiring differing treatments may be carried on in one rendering apparatus, without change of the structure of the same or in its operation.

With these objects in view, together with others which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings, and more particularly pointed out in the claims.

In the drawings:

Fig. 1 is a fragmentary view of the lower part of a standard or well known type of rendering apparatus, and illustrating the application thereto of a device constructed in accordance with my invention.

Fig. 2 is a sectional view taken substantially upon the line 2—2 of Fig. 1; the agitator being removed, and

Fig. 3 is a front elevation, parts in section, of the sub-bottom of the tank removed from the latter.

In carrying out the invention, the tank 4 which receives the material to be treated is arranged upright, and may be substantially similar to the structure shown in the Wannenwetsch et al. Patent, No. 735,987, and which is to be charged or filled by introducing the material through an opening or door (not shown) at the upper end of the tank. The lower part of the tank is equipped with a door 5 closing an opening providing an outlet for the tank, and through which the cooked materials are to be discharged. Connected with opposite sides of the tank, near its bottom, are steam inlet pipes, one of which is indicated at 6, for the introduction of steam to the interior of the tank, while 7 represents a drain for the tank fats.

Extending up into the tank from the bottom thereof is an agitator shaft 8, driven through the gears 9—10 from a suitable power wheel 11, and this shaft has connected thereto an agitator or stirrer 12, designed in standard rendering apparatus to break up the stock and to produce a circulation of the materials in the tank. The structure thus far described is well known in the art.

The improvement herein to be disclosed resides in the provision of separate compartments in a tank of this kind, so arranged that the liquids, such as greases and oils, will be kept separate from the solids and may be easily drained off when required, or left in the tank during the operation without becoming readily mixed with the solids. The compartment for treatment of the solids is equipped with an agitator 22 so that such materials may be kept constantly in a state of agitation during the cooking operation. The agitators in both compartments serve as ejectors for the materials therein when it is desired to remove the same after treatment.

To this end, a diaphragm or partition wall 13 is arranged in the tank above the bottom thereof and covering the agitator 12. This wall is of equal diameter with the tank and forms a sub-floor for the latter. The wall may be secured in the tank in any preferred manner, however, it has been found expedient to provide the wall with a depending flange 14 to rest upon the bottom of the tank, and this flange is of sufficient depth to maintain the wall spaced a proper distance above the bottom and to house the agitator 12. To facilitate applying this sub-floor to the tank, the said wall or floor is made in three sections; a middle section 15, and side sections 16, all shaped so as to fit together in the tank and to form a solid sub-floor therein. The side sections are provided at their inner edges with inwardly projecting ears 17 to underlie and

support the adjacent edges of the middle section, and through which bolts or screws 18 may be inserted to engage and anchor in the middle section. The outer edges of the several sections are provided with the flange members 14, as shown, the same forming a substantially continuous supporting flange for the sub-bottom or floor in its entirety when the said sections are properly assembled. Certain portions of the flanges may be apertured or cut away to permit of steam being admitted to the under compartment from the exterior of the tank, or to enable the tank to be drained of oils and greases. For instance, the flange portion at the rear of the section 15 is apertured as at 19 to register with the steam inlet 6, while a portion of the flange of one of the side sections 16 is cut away as at 20 to permit of unimpeded flow of liquids beneath the sub-floor to the drain pipe 7.

The flange portion at the forward end of the middle section 15 is cut away as indicated at 21 directly opposite the discharge opening closed by the door 5, so that materials in the under compartment may be discharged through said door. It will be observed in this connection that the sub-floor is positioned about half way between the top and bottom of the discharge opening of the tank, so that solids on the top of said sub-floor may be discharged through said doorway.

The shaft 8 extends upwardly through the central portion of the sub-floor, and is provided at its upper protruding end with an agitator 22 to stir and act upon solids in the compartment above the sub-floor. This agitator is similar in all respects to the agitator 12, and just clears the upper surface of the wall 13. Both of the agitators, it will be understood, are fixed to the shaft 8 so as to rotate therewith.

The partition or wall 13 is made foraminous, so that liquids may drain from the upper compartment to the lower, and as the wall is formed of metal plate, the latter is perforated as at 23. The perforations in the middle section 15 may be elongated, while those in the outer sections are circular, and all of the said openings are preferably beveled from the under side of the plate to prevent clogging of the passages and to facilitate cleaning of the partition.

In operation, the stock or material to be rendered is cut and washed and introduced into the tank through the filling opening in the usual manner. With the discharge door closed, as will be understood, the rendering operation, proceeds, steam or heat being applied while the agitators are kept in motion. The greases and liquids rendered will settle and pass into the under compartment through the openings in the partition. At a proper time, the valve (not shown) in the drain pipe 7 will be opened to draw off the settled liquids. At such time, the solids in the upper compartment have cooked thoroughly, however, should further treatment be required the operation may be continued until the material has reached the desired degree of cooking. When the operation is complete, the discharge door 5 is opened and the rotating agitator throws out the cooked material, while the lower agitator discharges through the same door any dry matter that may have accumulated in the lower compartment. In instances where it is required to dry blood, the same is fed in as usual and the agitators are set in motion. Such of the liquid as passes through to the lower compartment will be stirred by the lower agitator, while the upper agitator will create a constant and violent agitation and circulation of the contents of the upper compartment. When the tank contents has reached the desired degree of dryness, the door is opened and the agitators set in motion, whereupon the contents of both compartments will be discharged through the outlet. In the production of crackling, it has been the method heretofore to transfer the materials thereof to another machine to be kept hot until removed for the purpose of being pressed into cakes. With the machine above mentioned such operations are unnecessary, as the present machine will house the material in proper heated condition after the free oils and greases have been drawn off and until ready for the compressing operation. In maintaining the materials in this dry heated condition, it will be understood that no steam will be introduced to the tank itself, but merely to the jacket beneath or surrounding the tank.

From the foregoing, it will be seen that I have provided means of decidedly simple nature for properly treating all kinds of materials to be operated upon in rendering apparatus, without changing the standard apparatus in any particular, and without altering its operation. The sub-floor bottom herein referred to is preferably of relatively heavy metal. The perforations therein may be of one size or shape or they may vary accordingly as necessity and efficiency in operation may require. This sub-floor, furthermore, may be of more or less reticulated construction, or may be slatted if desired, without departing from the spirit of the invention herein disclosed. It will be understood, furthermore, that minor changes in the details of the construction, and the manner of assembling the several parts and associating them together, may be resorted to, if desired, without departing from the invention as defined by the claims.

Having thus described my invention, I claim:

1. In a rendering apparatus, the combination with a tank having a discharge opening;

of a sub-bottom within said tank disposed in a horizontal plane extending substantially midway through said opening, and agitators in said tank one above and one below said sub-bottom and both disposed relatively close to said sub-bottom.

2. In a rendering apparatus, the combination with a vertical tank having a discharge opening in the side thereof, of a flange-supported sub-bottom disposed within said tank at a level substantially midway between the top and bottom of said opening, the supporting flange being cut away from that portion of the sub-bottom adjacent to the said opening, and agitators in said tank one above and the other below said sub-bottom, each of the agitators being disposed respectively at a level between the lower and upper edges of said openings.

3. In a vertically arranged rendering tank, a sectional perforated sub-bottom, comprising a middle and end sections having abutting edges, ears projecting from the end sections and underlying the abutting edges of the middle section, bolts passing through said ears and said middle section to hold said sections together, flanges depending from the outer edges of all of said sections to form a support for said sub-bottom, and a part of the flange on one of said sections cut away to form an entry way beneath said sub-bottom.

In testimony whereof I affix my signature.

MICHAEL V. LOVETT.