

(No Model.)

R. S. MERRILL.
PROCESS OF RENDERING.

No. 539,438.

Patented May 21, 1895.

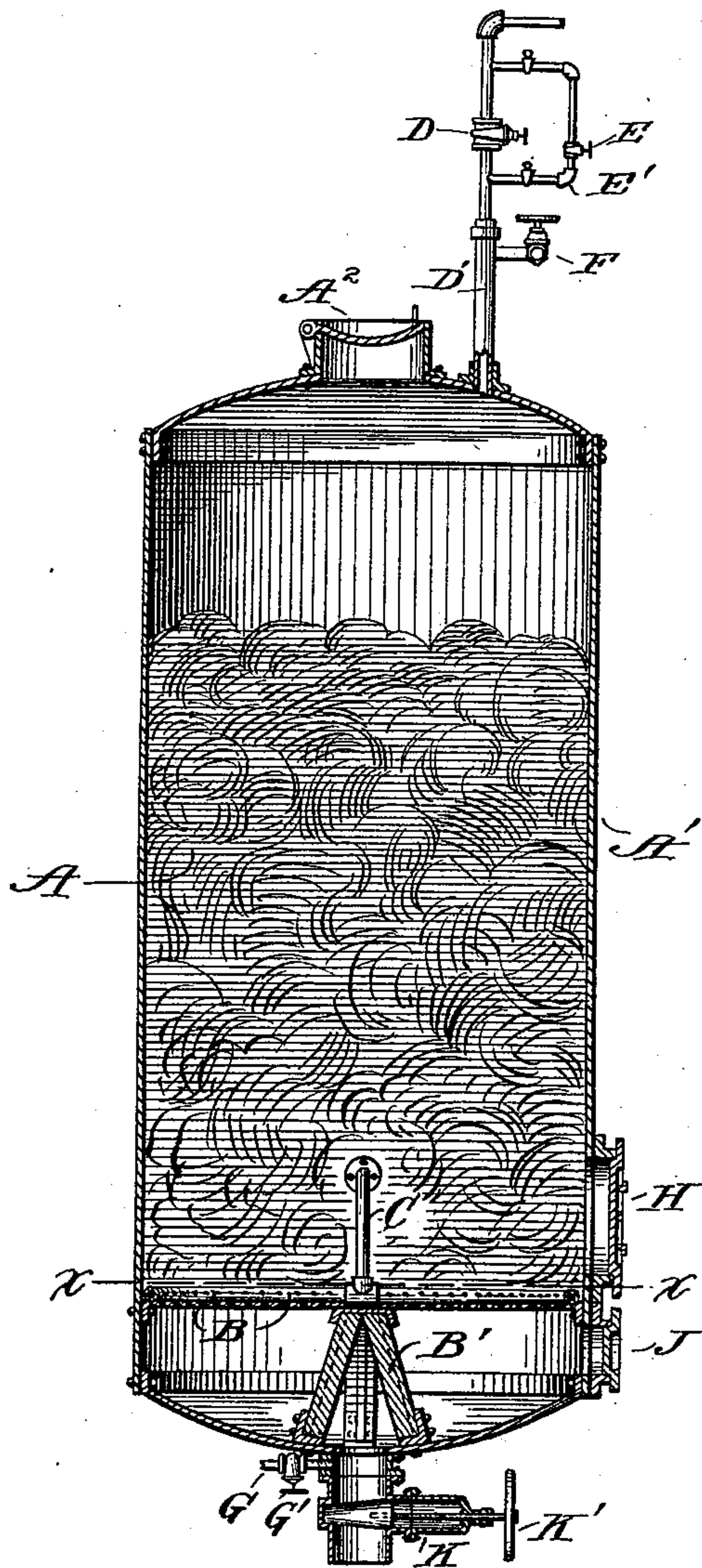


Fig. 1.

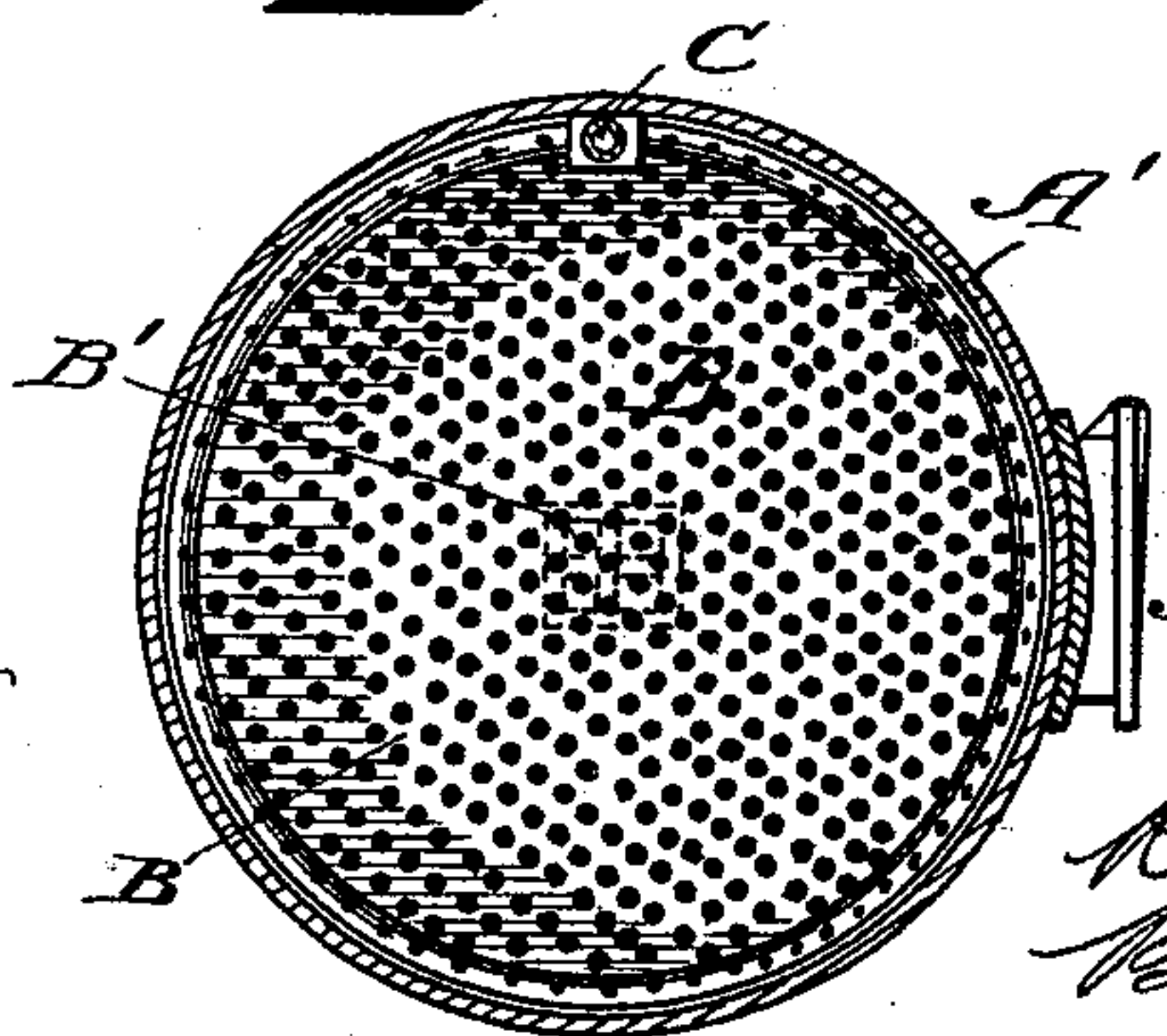


Fig. 2.

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UNITED STATES PATENT OFFICE.

RUFUS S. MERRILL, OF WAKEFIELD, MASSACHUSETTS.

PROCESS OF RENDERING.

SPECIFICATION forming part of Letters Patent No. 539,438, dated May 21, 1895.

Application filed September 18, 1894. Serial No. 523,376. (No specimens.)

To all whom it may concern:

Be it known that I, RUFUS S. MERRILL, of Wakefield, county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Process of Rendering Tallow and other Substances Containing Grease; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a new and useful process of rendering tallow and other substances containing grease, and it consists of certain novel steps hereinafter described and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 represents a vertical central section of the digester in which my process is carried out. Fig. 2 is a cross-section through the digester on the line *xx*, Fig. 1.

Like letters of reference refer to like parts throughout the several views.

The material, such as garbage for instance, is introduced into the digester *A'* through an opening in the top of said digester normally closed by a door *A²*, and said material is indicated in the drawings by letter *A*. This material is suspended in the digester on a perforated plate *B* located a suitable distance from the bottom of the digester, and is supported in place by being riveted to the sides of the digester and supported at its center by suitable braces *B'* extending from the bottom of the digester to the center of the perforated plate, or it may be supported in any other desirable way, in order to stand the downward pressure thereon, as will be hereinafter explained. After the material has been introduced and the cover *A²* closed, steam is introduced into the digester through the pipe *C*, which is perforated and located preferably on top of the perforated plate *B*, as shown in Figs. 1 and 2.

In the beginning of the operation the valve *D* in the pipe *D'*, leading from the top of the digester, is left open in order to create a circulation of steam and raise the contents of the tank to steam temperature, and after this has taken place the valve *D* is closed and the valve *E* in the by-pass *E'* is opened and remains so during the entire treatment, in order to keep up the circulation of steam and tem-

perature of the contents and prevent the pressure in the digester from becoming dangerously high. The steam and vapors passing off through the pipe *D'* from the digester are led to a deodorizing condenser.

When the treatment of the material is finished all the valves in the pipe *D'* are closed excepting the pipe *F*, which is in direct communication with the steam in the boiler, and at the same time this valve is opened the valve *G'* in the outlet discharge pipe *G* for water and grease is also opened. The live steam coming from the boiler into the top of the tank through the pipe *D'* produces a pressure on the top of the contents of the tank, and as the contents of the tank are solid, like water, to the steam, it produces a pressure on the material which acts as a solid piston, and as the plate *B* is full of holes and the valve *G'* is open there is no upward pressure on the material, so that the water and grease will be pressed out through the mass of material through the holes in the plate *B*, and out through the pipe *G*. After this operation has been completed the tankage is removed through the door *H*, and if still containing any water and grease is placed in suitable presses and the water and grease pressed out.

K represents a hand hole in the bottom of the digester, and it is closed by a suitable gate valve *K'*. Through this opening the digester may be flushed and any solid matter which may come through the perforated diaphragm can be removed.

J represents a suitable door located on the side of the digester below the diaphragm, through which access may be had to the bottom of the digester below the said diaphragm, for repairing or any other desired purposes.

In this process the steam entering through the pipe *C*, when condensed by contact with the material, passes through the perforations of the said plate and a new supply of steam is constantly kept in contact with the material to be treated, suspended on the perforated plate *B*, so that the material is in this way suspended in a steam temperature constantly during the required number of hours to carry out this process. All the condensed water and fats find their way through the perforations in plate *B* to the bottom of the tank and out through pipe *G*, which may be opened

from time to time to lead off the water and grease.

By actual practice I find that by suspending the material in a steam temperature it produces much better results than by the old process of boiling the material with hot water, for the reason that as fast as the grease is separated, hot steam comes in contact with the unrendered part of the material, and as the bulk of the material being treated is constantly decreasing and new surfaces are constantly being presented to the action of the steam, the steam pressure on the top of the material presses out the grease and water and leaves the material in the tank in a comparatively dry state, whereas, in the old system of boiling, after the process of cooking is finished the material is dumped out of the digester into a suitable receiving tank in a sloppy condition, full of water and grease, while by this process when removed from the digester after the pressure has been applied the material is comparatively dry.

It will be understood that the apparatus which I have shown in the drawings simply represents one form of apparatus by which the process herein described may be carried out.

While I have described the material to be treated as suspended in a steam temperature under pressure, it will be understood that this is simply a preferable way of treating the material, as the old process of boiling the material in contact with steam and hot water could be used, if desired, as the first step of this process, and it will be further understood that while I have described the pressing of the material on top by steam pressure to force

out the oil and water, this is only a preferable way of pressing, as any elastic pressure such as air, vapor, gas or any pressure which is capable of being compressed and giving back that pressure, by which I mean that if a pressure of fifty pounds is put to a square inch, that pressure would give back fifty pounds, or if you should open a vent in a vessel it would force out through that vent fifty pounds to the square inch.

I disclaim the use of static pressure in connection with my invention, and by static pressure I mean pressure applied by hand to a piston or screw, which is an old and common way of pressing materials in rendering tanks, or any other pressure which is solid, like hydraulic pressure.

Having thus ascertained the nature of my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

The process of treating tallows and other substances containing grease which consists, first—in suspending the material in a steam atmosphere to the action of steam under pressure, second—in shutting off the said supply of steam under pressure, and third—in subjecting the said material on top to a steam pressure to force out the water and grease.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 11th day of September, 1894.

RUFUS S. MERRILL.

Witnesses:

LOUIS MCMAHN,
JNO. C. WILSON.