No. 864,208.

PATENTED AUG. 27, 1907.

A. D. STEVENS & W. W. ACHESON.

STILL.

APPLICATION FILED JULY 25, 1906.

3 SHEETS—SHEET 1.

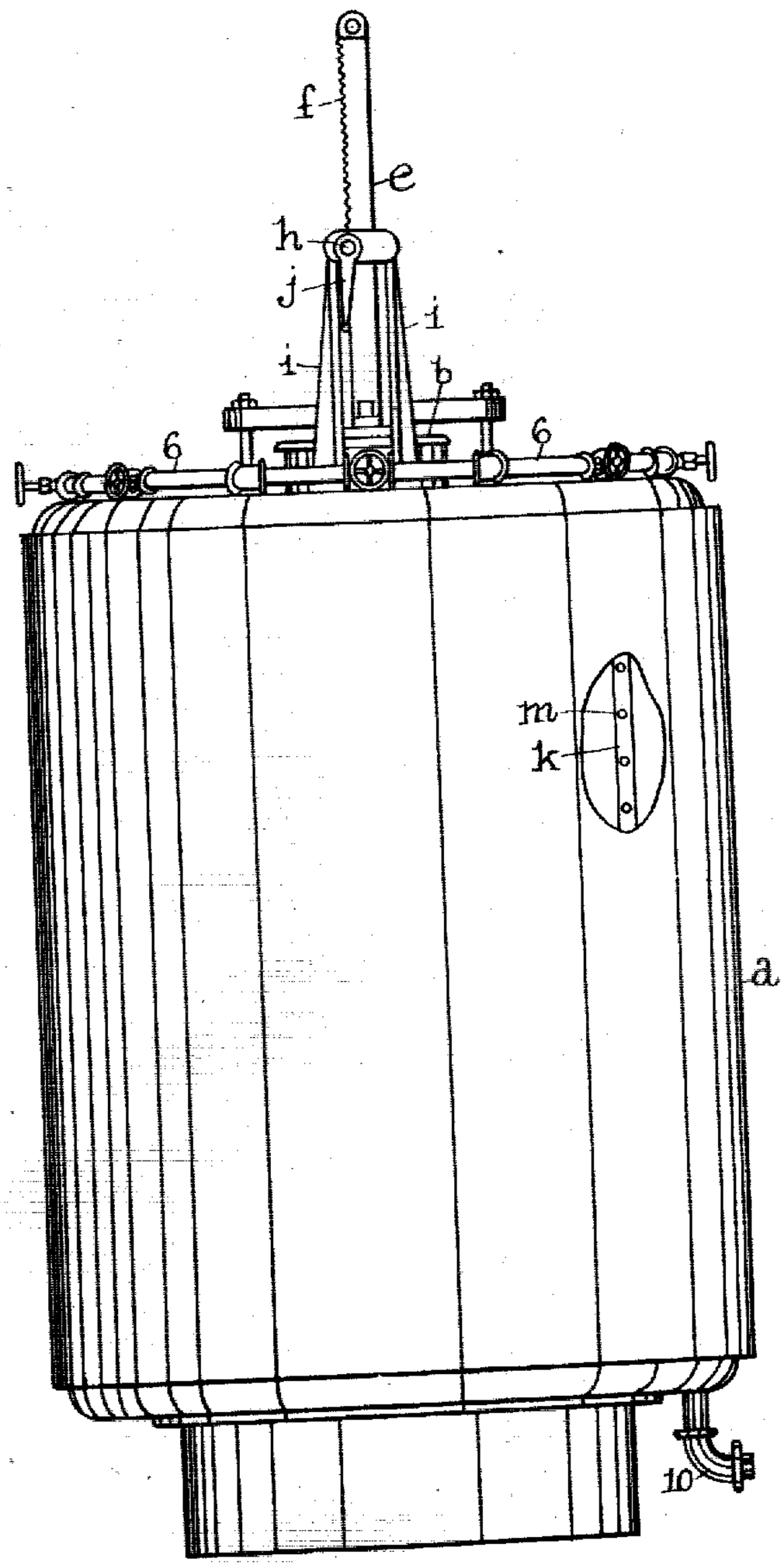

Fig. 1.

Witnesses.
C. H. Lamett
J. Murphy

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Arthur D. Stevens
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3 SHEETS—SHEET 2.

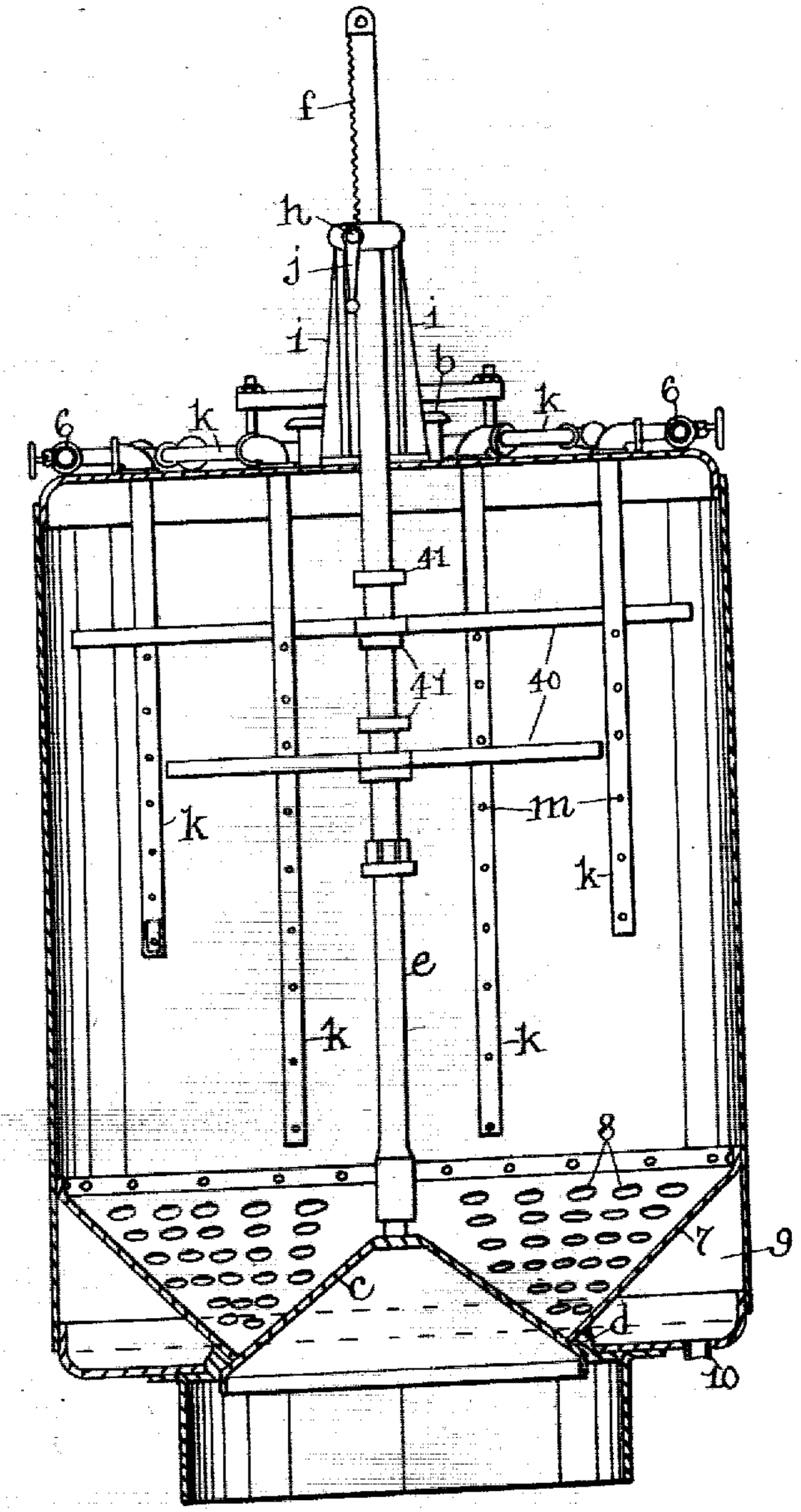

Fig. 2.

Witnesses.
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3 SHEETS—SHEET 3

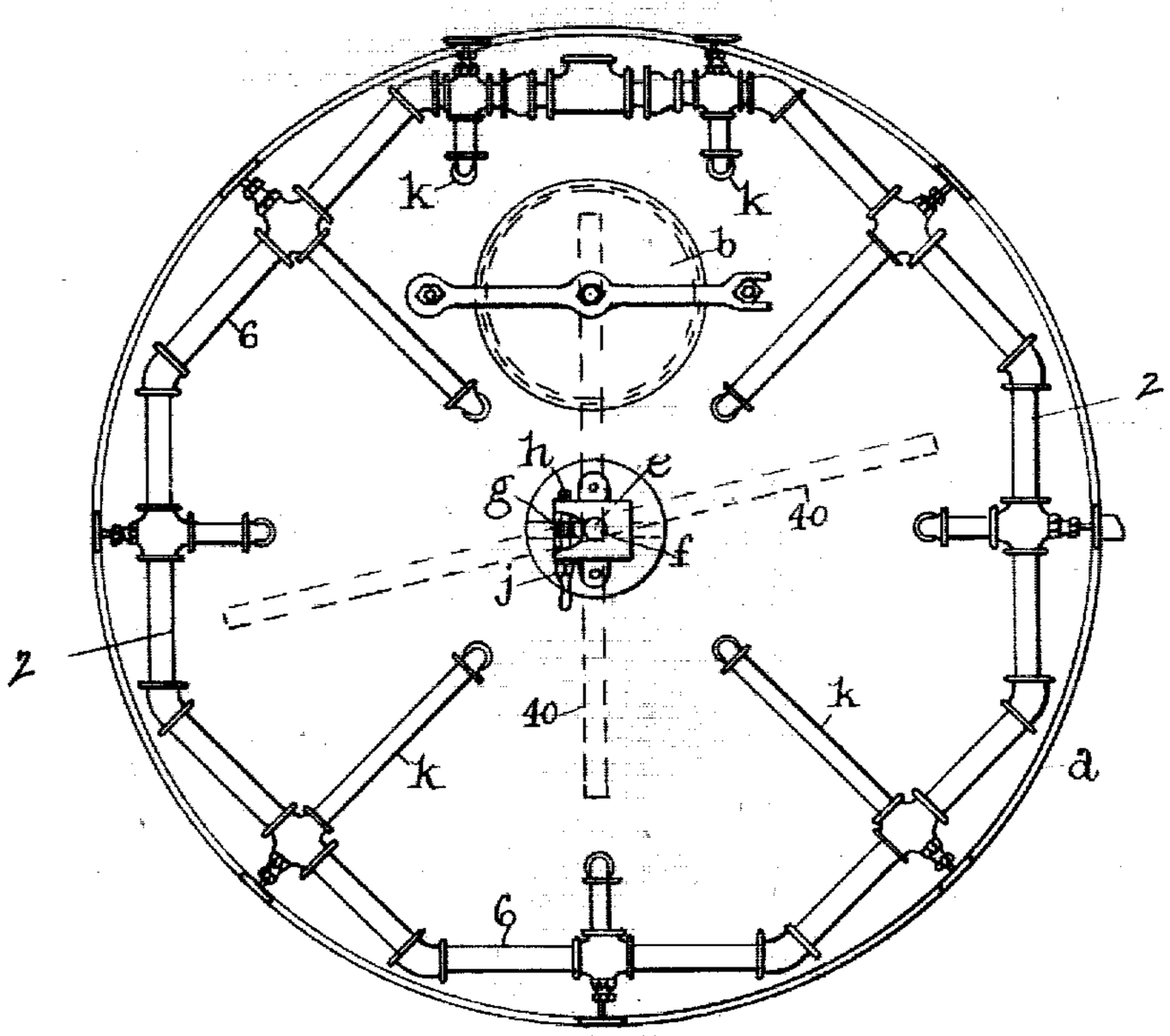

Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

ARTHUR D. STEVENS AND WILLIAM W. ACHESON, OF JACKSONVILLE, FLORIDA, ASSIGNOR TO VICTORIA TURPENTINE MACHINE COMPANY, A CORPORATION OF FLORIDA

STILL.

No. 864,208. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed July 25, 1906. Serial No. 327,741.

To all whom it may concern:

Be it known that we, ARTHUR D. STEVENS and WILLIAM W. ACHESON, both citizens of the United States, and both residents of Jacksonville, in the county of Duval and State of Florida, have invented an Improvement in Stills, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a still for separating oils from fibrous material, and is especially adapted among other uses for the separation of turpentine from wood in comminuted state, such as sawdust, and has for its object to provide a simple and efficient apparatus for the purpose specified.

Figure 1 is an elevation of an apparatus embodying this invention. Fig. 2, a vertical section of the apparatus shown in Fig. 1, and Fig. 3, a plan of the apparatus shown in Fig. 1.

In the apparatus herein shown as embodying this invention, *a* represents a closed vessel or tank, preferably cylindrical in form and provided in its top with an opening for the admission of the sawdust, which opening is normally closed by a cover *b* (see Fig. 3) and is provided in its bottom with a discharge opening or outlet for the waste or treated sawdust, which discharge opening is normally closed by a suitable valve *c*, preferably conical in shape and coöperating with a conical tapering seat *d* to form a substantially fluid-tight joint when the valve is closed.

The valve *c* is normally held to its seat, and for this purpose, it is provided with a valve stem or rod *e* which extends up through the top of the vessel *a*, and is provided above the same with teeth *f* forming a rack bar, with which coöperates a pinion *g* on a shaft *h* supported in an upright *i* erected upon the vessel *a*. The shaft *h* may be provided with a crank or handle *j*. The vessel or tank *a* constitutes a steaming chamber within which the sawdust is subjected to the action of steam, preferably under a substantially low pressure, and said steam is admitted into the vessel *a* by means of a plurality of pipes *k* extended down through the top of the vessel.

The steam pipes *k* are closed at their lower ends and are provided with perforations *m*, and for the best results said pipes are arranged at different points in the vessel so as to more effectively bring the steam into contact with the sawdust, and they may be made of the same length or as may be preferred of different lengths as herein shown, (see Fig. 2). The perforated pipes *k* are connected above the vessel *a* with a common supply pipe 6, which is composed of connected sections arranged to form a substantially circular pipe as represented in Fig. 3, the pipe 6 being connected in practice with a suitable source of steam supply, not shown.

The vessel *a* is provided at its lower end with a conical partition or false bottom 7, provided with suitable perforations or openings 8 and forming with the lower portion of the vessel, a chamber 9 for the reception of the steam and the oils carried off with the same. The conical partition 7 is secured at its upper portion to the tank or vessel *a* and inclines downward toward the discharge mouth or outlet and rests upon the valve seat *d*. The conical valve *c* opens outwardly and in its closed position extends up into the tank or vessel *a*, so as to deflect or shed the liquids toward the downwardly inclined perforated bottom 7. The chamber 9 is provided with an outlet pipe 10.

In operation with the apparatus, the steaming tank or vessel *a* is filled or substantially filled with fresh sawdust, the valve *c* being closed, and steam preferably at a substantially low pressure, is admitted into the said vessel through the perforated pipes *k*, which serve to distribute the steam so that the entire mass of sawdust is exposed to the action of the steam. After the sawdust has been heated to substantially the temperature of the steam, the latter then passes readily through the mass of sawdust. On its passage through the sawdust, the steam carries with it the turpentine, which we believe is mechanically carried along with the steam in the form of very minute drops or globules, inasmuch as the temperature of the steam is kept materially lower than the boiling point of the turpentine. The mixture of steam and particles of turpentine, pass through the perforations in the conical partition 7 into the chamber 9, from which said mixture passes through the pipe 10 into a suitable receptacle not shown. After the turpentine ceases to be given off by the sawdust, the steam is shut off, and the sawdust is discharged from the steaming tank or vessel, which is effected by opening the valve *c*. The discharge of the exhausted or waste sawdust may be facilitated by means of a series of bars or beaters 40, which are loosely mounted on the valve stem or spindle *e* between collars 41 thereon, so that by imparting a reciprocating motion to the valve and its spindle through the handle *j*, pinion *g* and rack bar *f*, the bars or beaters are agitated so as to break up or loosen the mass of sawdust and in this way hasten its discharge through the opening in the bottom of the tank or vessel.

In operation with the apparatus above described, we prefer that the sawdust be subjected to the action of steam at a temperature materially lower than the boiling point of turpentine, as by so doing a superior product is obtained, inasmuch as the spirits are pure and in their natural state or condition as they exist in the tree, owing to the fact that they are not contaminated by the heavier oils, such as creosote, etc., which are obtained when the wood is subjected to a temperature sufficiently high to effect a distillation as ordinarily practiced, and which heavier oils serve to

adulterate and sometimes color the spirits of turpentine, which necessitates redistillation in order to obtain clear spirits.

By treating the wood fiber to steam at a substantially low temperature, preferably at about ten or fifteen pounds pressure, a purer and clearer turpentine is obtained, which does not require to be distilled.

Claims.

1. In an apparatus of the character described, in combination, a tank or vessel provided with an inlet for the material to be treated and with a discharge orifice in its bottom for the waste or treated material, a valve to close said discharge orifice, a stem attached to said valve and extended up through said tank or vessel, means cooperating with said valve stem above the vessel to open and close said valve, a plurality of perforated steam pipes extended into said tank or vessel, a plurality of arms mounted on said valve stem within the tank or vessel, a perforated false bottom within the tank or vessel forming a fluid chamber below the same, and an outlet for said fluid chamber, substantially as described.

2. In an apparatus of the character described, in combination, a steaming tank or vessel provided with an inlet for the material to be treated and with an outlet in its bottom for the waste or treated material, a conical perforated partition inclined toward said outlet and cooperating with said tank or vessel to form a fluid chamber around said outlet and between said partition and the bottom of said vessel, an outwardly opening conical valve to close said outlet having its apex extended into said vessel and provided with a stem extended up through said vessel or tank, means for reciprocating said stem and valve, and a separate outlet for said fluid chamber, substantially as described.

3. In an apparatus of the character described, in combination, a steaming tank or vessel provided with an inlet for the material to be treated and with an outlet in its bottom for the waste or treated material, an inverted conical perforated partition secured within said vessel and cooperating with said outlet, a valve to close said outlet having a stem extended up through said vessel or tank, bars or arms loosely mounted on said valve stem, and means on said valve stem to effect movement of said bars or arms, substantially as described.

4. In an apparatus of the character described, in combination, a steaming tank or vessel provided with an inlet for the material to be treated and with an outlet in its bottom for the waste or treated material, an inverted conical perforated partition downwardly inclined toward said outlet, a conical valve to close said outlet opening outwardly and having its apex extended into said tank or vessel above the bottom of the said partition and having a stem extended up through the vessel above its top, and means to reciprocate said stem and valve, substantially as described.

5. In an apparatus of the character described, in combination, a steaming tank or vessel provided with an inlet for the material to be treated and with an outlet in its bottom for the waste or treated material, a perforated false bottom in said vessel forming a liquid chamber, a valve to close said outlet, a valve stem extended up through said tank or vessel and provided with rack teeth above the vessel, a pinion engaging said rack teeth, means to rotate said pinion and produce rapid reciprocations of said valve stem, and means within the said vessel movable with the valve stem for loosening the material therein, substantially as described.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

ARTHUR D. STEVENS.
WILLIAM W. ACHESON.

Witnesses:
J. T. MANIER,
FREDERICK TILLEY.