P. B. TAYLOR.

GARBAGE PRESS.

APPLICATION FILED MAR. 10, 1909.

952,221.

Patented Mar. 15, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

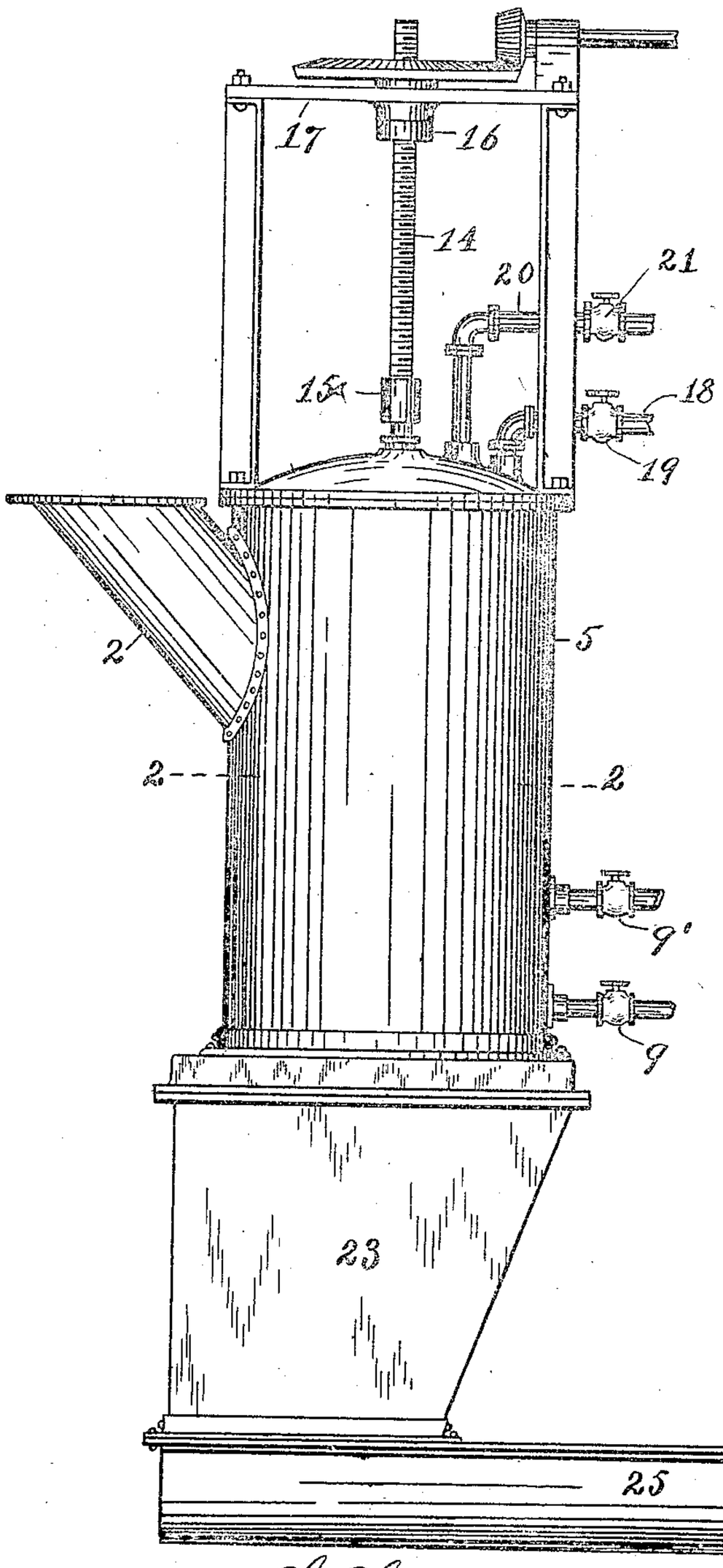
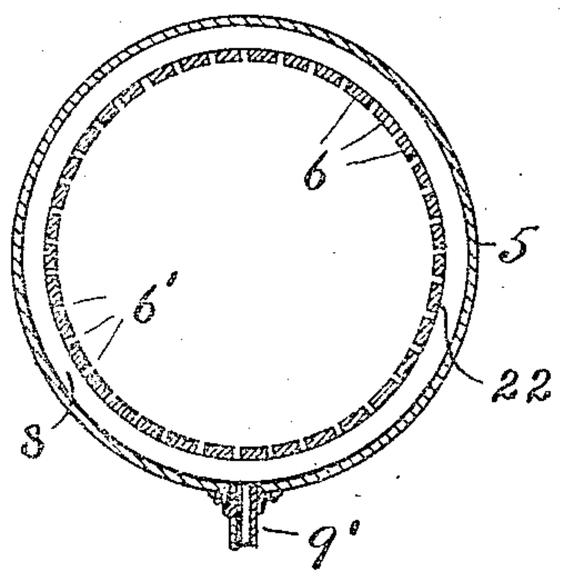


Fig. 2.



Witnesses:
L. Lee.
J. W. Greenbaum.

Inventor.
Percy B. Taylor, per
Thomas L. Crane, Atty.

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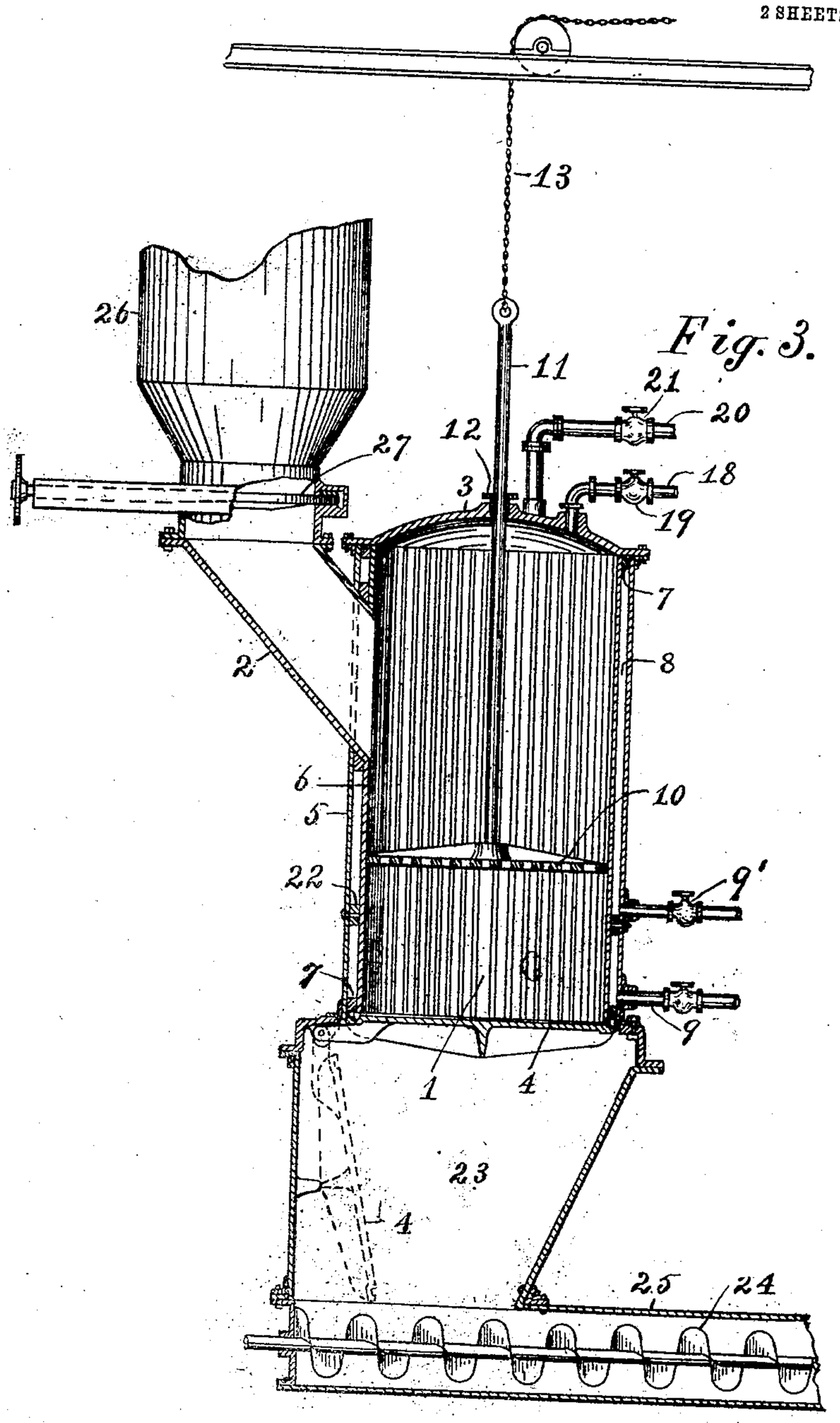

Fig. 3.

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UNITED STATES PATENT OFFICE

PERCY B. TAYLOR, OF NEWARK, NEW JERSEY, ASSIGNOR TO ESTATE OF CYRUS C. CURRIER, OF NEWARK, NEW JERSEY.

GARBAGE-PRESS.

952,221. Specification of Letters Patent. **Patented Mar. 15, 1910.**

Application filed March 10, 1909. Serial No. 482,509.

To all whom it may concern:

Be it known that I, PERCY B. TAYLOR, a citizen of the United States, and a resident of 800 Broad street, Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Garbage-Presses, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to that class of garbage presses in which an upright cylinder containing a piston is used to compress the material and the cylinder has a permeable lining through which the liquid is discharged during the pressing operation. Such lining forms an annular chamber around the pressing chamber, and has an outlet with a cock at its bottom, and the invention consists in providing a ring in such annular chamber to divide the same near its lower end, and in the use of a hinged door applied to the entire bottom of the pressing chamber with a tight hopper beneath such door into which it can be dropped to discharge the entire contents of the press simultaneously to a conveyer for transporting them to a drier or other destination. A system showing this combination is illustrated in my application No. 482,508, filed March 10, 1909, with title Sealed system for garbage disposal.

The present invention will be understood by reference to the annexed drawing, in which—

Figure 1 is a side elevation of the press with connections extended therefrom for receiving the garbage and delivering it by air-tight connections; Fig. 2 is a cross section on line 2—2 in Fig. 1; and Fig. 3 is a vertical section where hatched, in the plane of Fig. 1.

The press comprises a cylindrical chamber 1 having a chute 2 connected with one side near the top for admitting the garbage, and provided with a tight cover 3, and a hinged door 4 at the bottom. The shell 5 of the press is lined with vertical staves 6 with interspaces 6′ through which the liquid may be expressed, the staves being held at a little distance from the casing by spacing-rings 7 to form an annular chamber 8 for the reception of the expressed liquids. A pipe and cock 9 serve to drain this chamber at the bottom.

The pressing is effected by a perforated piston-plate 10 which may operate merely by its own weight, as shown in Fig. 3, in which case it is provided with a rod 11 extended through a stuffing-box 12 upon the cover, and connected with a chain 13 or other suitable means for raising it and holding it raised when required. The chute 2 is connected with the side of the casing so that the piston may be raised above the inlet of the chute to permit the material to enter below the piston. This arrangement avoids the removal of the cover and the piston to insert a charge in the press, and thus avoids any escape of vapors from the press during the charging of the chamber 1.

If preferred, the piston may be depressed by force, as shown in Fig. 1, by a screw 14 connected with the top of the rod by a coupling 15 and driven by gearing upon a rotary nut 16 mounted in a bearing 17 above the top of the cover. The cover is provided with a steam-inlet-pipe 18 having a cock 19, and with a gas-outlet-pipe 20 having a cock 21. A ring 22 divides the chamber 8 near its lower end and an outlet-pipe with a cock 9′ is applied to the chamber just above the ring.

A hopper 23 is shown connected to the bottom of the press of sufficient size to drop the door 4 to discharge the solid material at the close of the pressing operation, and a conveyer 24 is shown inclosed in a tight casing 25 which may be connected with a tightly inclosed drier or any agency in which the material may be treated without exposure to the atmosphere, or by which it may be conducted to a furnace for consumption under a boiler. The door is shown in dotted lines in its lower position when open. It will be observed that the door when dropped opens the entire bottom of the pressing chamber so as to discharge the entire contents of the press simultaneously to the hopper, from which it is delivered by the conveyer. This class of door supports the material more firmly than any other, and thus permits any desired pressure whether of steam or of weight to be exerted upon the material in the press.

In Fig. 3, the lower end of an ordinary digester 26 is shown, having its outlet connected with the chute 2 upon the shell of the press, and such outlet provided with a gate 27 which may be tightly closed while the press is in operation. The closing of

such gate and the door 4 at the bottom of the press serves to make the inclosure air tight and thus prevent any escape of effluvia during the pressing operation.

The press is operated in the following manner: The door 4 is closed and the piston 10 is raised to the top of the press, and a charge of the material, which is preferably boiled in a digester before pressing, is fed into the press-chamber 1 through the chute 2. The gate 27 is then closed and the charge is allowed to settle for some time before the piston is lowered, and this brings much of the fluid constituents to the surface from which they run off between the staves into the chamber 8. The valve 9′ is then opened and the liquid is run off to a settling tank or other suitable tight receptacle. After all the free liquid has run off, the piston is allowed to descend and rest upon the remaining mass, and steam of about 60 lbs. pressure is introduced by the valve 19 which not only forces the piston down hard upon the mass and thus helps to press it, but also passes through the perforations in the piston and into the mass of garbage, which it penetrates because of the outlet afforded by the bottom valve 9. The pressure and action of the steam operates to force the remaining grease into the chamber 8 below the ring 22, from which it drains to the settling-tanks or other receptacle through the valve 9. The piston during this operation prevents the boiling up of the mass, at the same time allowing steam to pass through the perforations and through the mass under treatment, which is the most effective means of extracting the grease. After the mass has been subjected to the steam for a suitable time, the steam is cut off by closing the valve 19, the piston is raised to the top of the press, and the door 4 is opened and the residue of the material is dropped into the conveyer 24 which delivers it through its tight-casing 25 to any desired point. During the pressing operation, the cock 21 for the escape of gas is kept closed to maintain pressure within the press; but at suitable times this gas-cock is opened to permit the vapors and gases to escape to a suitable receptacle, as a condensing-tank, where the vapors may be condensed and from which the gas may be led to the furnace of a boiler to be disposed of by combustion.

The operation with the screw 14, shown in Fig. 1, would be the same as just described, except that the movement of the piston would be graduated to correspond with the escape of the liquid from the material, so as to descend in the same degree that the material shrank through the removal of the liquid. With the screw, more of the liquid may be expressed and the residue discharged from the press in a somewhat drier condition.

From the above description it will be readily understood that the material is placed in the press and operated upon, and the liquid and solid ingredients effectually separated and delivered from the press without any exposure to the atmosphere.

The constructive features of the press may be altered, and its connection for receiving and discharging the material may be varied without departing from the invention, the essential features of which are the perforated piston and the casing lined with staves and having a chamber outside the same from which the liquid may be drawn.

Although this press was devised particularly for the pressing of garbage, it may be used for any other purpose in which a press is desired from which volatile or offensive vapors cannot escape during the pressing operation. It will also be observed that the method of operation involves the subjection of the material in a tightly closed receptacle to steam heat and pressure, and when desired to mechanical pressure, such as is afforded by the weight of the piston or a screw forcing it upon the material.

Having thus set forth the nature of the invention what is claimed herein is:

1. The garbage press, consisting of the casing 5 having the lining of staves 6 with annular chamber 8 around the staves, means for drawing off the expressed liquid from such chamber, a chute having inlet upon the side of the casing near the top with a gate to close such inlet, a downwardly swinging door at the bottom of the casing for discharging the pressed material, the hopper 23 extended from the bottom of the casing inclosing the door and a piston with means for raising it above the inlet of the chute.

2. The garbage press, consisting of the casing 5 having the lining of staves 6 with annular chamber 8 around the staves, a pipe and cock for drawing off the expressed liquid from the bottom of the chamber, a ring dividing the chamber horizontally above such pipe, a pipe and cock connected with the chamber above such ring, a chute having inlet upon the side of the casing near the top with a gate to close such inlet, a tight door at the bottom of the casing for discharging the pressed material, and a piston with means for raising it above the inlet of the chute.

3. The garbage press consisting of the casing 5 having a tight cover on top provided with the steam-inlet-pipe 18 and the stuffing-box 12 and having a lining of staves 6 with annular chamber 8 around the staves, a pipe and cock for drawing off the expressed liquid from the bottom of the annular chamber, a ring dividing the chamber horizontally above such pipe, with a pipe and cock connected to such chamber above the said ring, a chute for supplying the ma-

terial to the casing near the top, a downwardly swinging door at the bottom of the casing for discharging the pressed material, the hopper 23 extended from the bottom of the casing, inclosing the door, and a piston having rod fitted to the stuffing-box and provided with means for raising it above the inlet of the chute, as and for the purpose set forth.

4. The garbage press consisting of the casing 5 having on top the tight cover 3 provided with the stuffing-box 12 and the steam-inlet-pipe 18 and having a lining of staves 6 with annular chamber 8 around the same and the outlet-pipe 9 for drawing off the expressed liquid from the bottom of the chamber, a downwardly swinging door at the bottom of the casing for discharging the pressed material, the hopper 23 extended from the bottom of the casing and inclosing the said door, and a piston having numerous perforations and a rod fitted to the stuffing-box, the steam supplied by the pipe 18 operating through the perforations in the piston to cook the material underneath the same and to force the liquid therefrom to the outlet-pipe 9.

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

PERCY B. TAYLOR.

Witnesses:
MARIE T. BELKE,
BENJ. NEWMAN.