(No Model.) 2 Sheets—Sheet 1.

E. HOLTHAUS.

APPARATUS FOR TREATING GARBAGE.

No. 533,897. Patented Feb. 12, 1895.

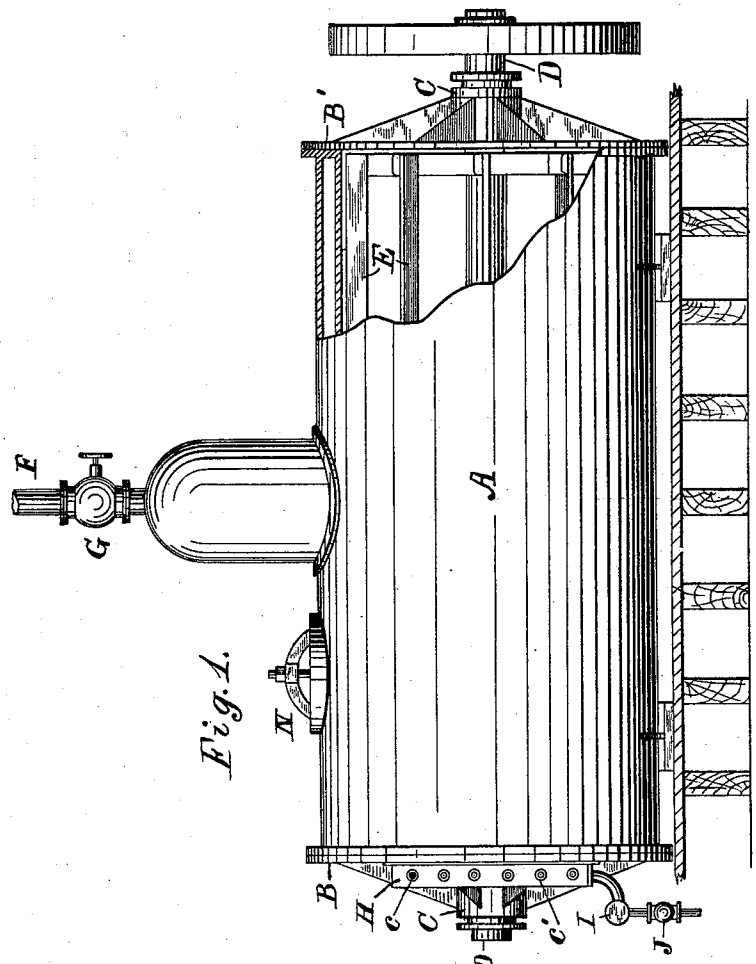

Fig. 1.

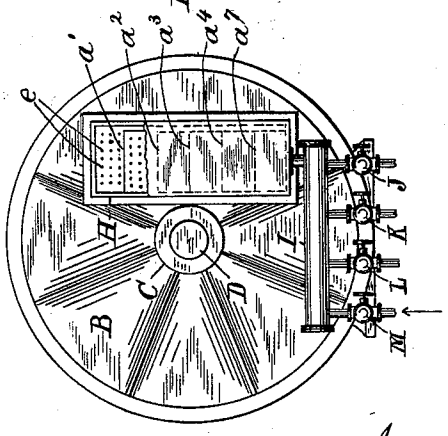

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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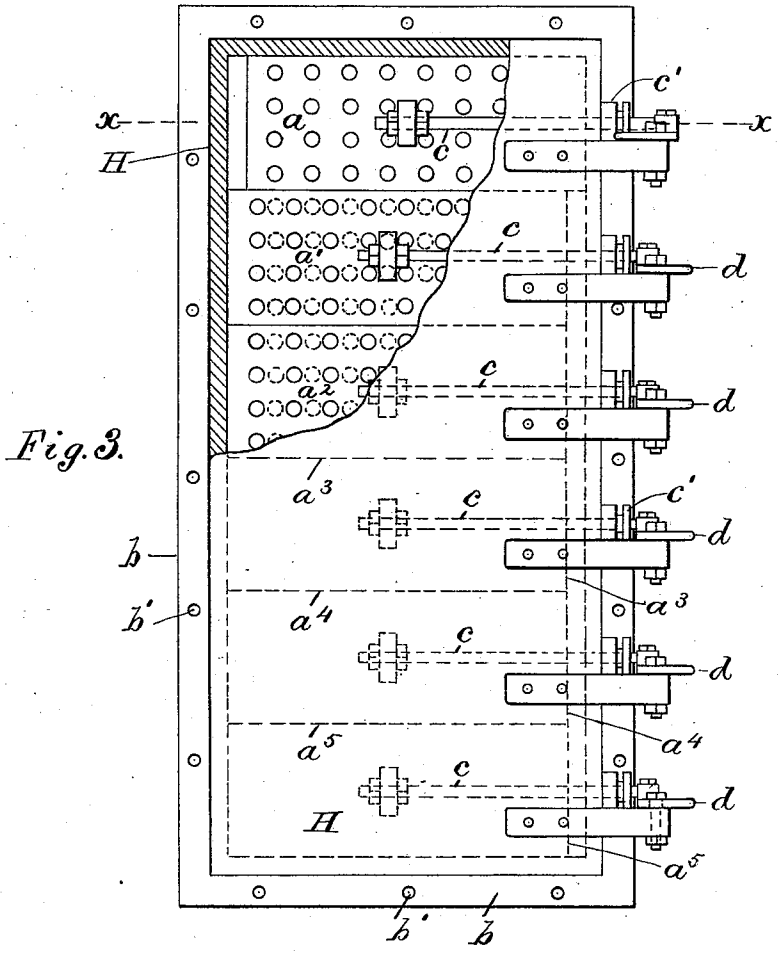

Fig. 3.

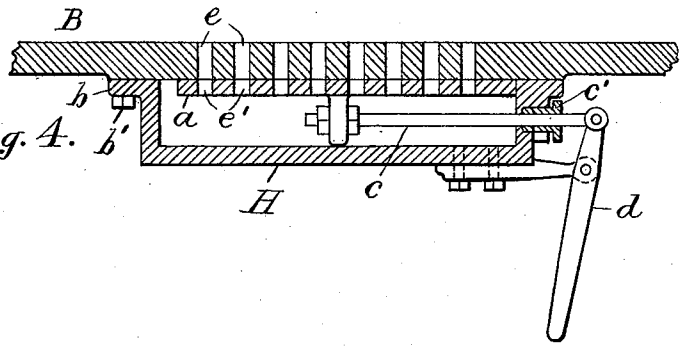

Fig. 4.

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UNITED STATES PATENT OFFICE.

EMIL HOLTHAUS, OF CANARSIE, NEW YORK, ASSIGNOR TO CYRUS C. CURRIER, OF NEWARK, NEW JERSEY.

APPARATUS FOR TREATING GARBAGE.

SPECIFICATION forming part of Letters Patent No. 533,897, dated February 12, 1895.

Application filed August 21, 1894. Serial No. 520,885. (No model.)

To all whom it may concern:

Be it known that I, EMIL HOLTHAUS, a citizen of the United States, residing at Canarsie, Kings county, New York, have invented certain new and useful Improvements in Valve-Gearing for Garbage-Treating Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This improvement relates to that class of garbage treating apparatus in which the garbage is heated in a rendering vessel while it is agitated by a revolving scraper, and mixed with a certain proportion of water to cook or distil the grease from the garbage. At a suitable stage in the process the grease which floats upon the surface of the water is removed by opening successively a series of outlets, and the present invention consists in a chamber common to a vertical series of slide valves and communicating with a vertical series of ports, the slide valves being provided with lever handles to open them instantaneously. Each slide valve is made of suitable size to cover a considerable number of ports, and the movement of the single valve is thus adapted to produce a very free and quick discharge from the garbage receptacle. The chamber is provided with suitable pipe connections to draw off the grease and water separately, and for supplying the chamber with steam, water or acid, as may be required in the treatment of the garbage. The chamber and its series of valves thus furnish a communication between any of such pipes and different parts of the cylinder at different heights.

It is now common to connect the garbage cylinder or receptacle with a condenser to produce a vacuum therein, and the steam connection to the valve chamber furnishes a means of holding the valves tightly upon their seats when a vacuum is thus used, and furnishes also a means of blowing into the cylinder any obstructions which may accumulate in the valve ports.

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

Figure 1 is a side elevation of the apparatus in section at the center line where hatched. Fig. 2 is an end elevation of the same with the shell of the valve chamber partly broken away and one of the valves removed to show the ports. Fig. 3 is a front elevation of the valve chamber and valves detached from the cylinder head, with a part of the chamber broken away to expose the valves; and Fig. 4 is a transverse section of the same on line x, x, in Fig. 3.

A designates the cylinder; B, B′, the removable heads provided with stuffing boxes C through which the shaft D of the scraper E is extended.

I prefer to arrange the cylinder, which serves as a garbage receptacle, in a horizontal position, and to draw the fluids from the head at one end of the same, as the variations in level which are required between the different outlets or discharge passages, are thus very much less than is required in a vertical cylinder.

The cylinder is connected by a pipe F and cock G with a condenser to maintain a vacuum therein. The head B is provided with numerous ports or holes e arranged in a vertical series and covered by a valve chamber H, which is secured removably upon the head by flange b and bolts b'. The series of ports extends, as shown in dotted lines in Fig. 1, equally above and below the center of the cylinder to draw off the grease at any desired level.

Six sliding plates a, a', a^2, a^3, a^4, a^5, are arranged in a vertical series within the valve chamber, and are provided with independent valve rods c extended through stuffing boxes c' in the side of the chamber and attached at their outer ends to hand levers d. The plates constitute slide valves which are formed with holes e' adapted to open or close the contiguous ports or holes e in the head B, by a slight movement of the valve plates.

Thirty-two ports are shown in the cylinder head beneath each of the valve plates; and each plate is correspondingly formed with thirty-two holes adapted to register with the ports. A movement of the plate sufficient to open one of the ports thus opens thirty-two of the same, and produces a very free and rapid discharge from the garbage receptacle.

The chamber H is of rectangular form and of suitable width to permit a movement of the slide valves sufficient to close the ports e, or to open the same at pleasure, as shown in Fig. 4. In Fig. 2, the upper slide valve is re-

moved from the chamber to clearly exhibit the ports *e*, and the valve below such ports is shown moved to the left to close the ports, as represented in Fig. 4. The slide-valve plate then contacts with the right hand wall of the chamber, and when the hand-lever moves the valve in the opposite direction, the plate is arranged to contact with the opposite wall of the chamber when the ports are fully closed. The hand-levers enable the operator to open or close the valve instantly, and the adjustment of the slide-valves to the walls of the chamber, as just described, limits the stroke of the valve without any attention upon the part of the operator.

The lowest part of the chamber H is shown connected with the header I, having an outlet cock J to discharge water, a branch with outlet cock K to discharge grease, a branch with inlet cock L to supply steam, and a branch with inlet cock M to supply acid, water, or other solvents.

In practice the garbage is treated by introducing it through a man-hole, as N and supplying a suitable proportion of water or solvent thereto through the cock M and chamber H. The material is then agitated by the stirrer E while it is cooked by heat in a steam jacket, or steam introduced from the cock L through any of the slide valves. The cocks leading to and from the header are closed during such operation, and when the material is sufficiently cooked the grease cock K is opened and the upper slide valve *a* is opened to draw off the supernatant grease. The fluid discharged from the header is observed, and if water succeeds the flow of grease the valve *a* is instantly closed by manipulating the corresponding lever *d*. If only grease flows through the valve *a*, the succeeding valve *a'* is opened and the flow is watched in a corresponding manner; and so on with each of the valves until the grease is wholly withdrawn from the cylinder. The grease cock K is closed and the water cock J is then opened, and the remaining valves of the series are opened to draw off the water. If the ports *e* become clogged by the material during discharge of the water, the water is turned off and steam is admitted temporarily through the cock L, which drives the material out of the ports back into the cylinder. The chamber and all its valves may thus be used in connection with any of the cocks with which the header is provided, and forms a common communication between any of the same and the interior of the cylinder at various levels. In like manner the ports *e* may be connected at various levels, with the inlet cock L or M, to introduce steam, water, or solvents to the upper or lower part of the receptacle. A cock may be provided at the bottom of the receptacle, to drain the same; but any moisture below the ports *e* is commonly discharged by heating the material to dryness. Such cock is not claimed herein.

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

1. In an apparatus for treating garbage, the combination, with the rendering vessel, of a head provided with several distinct series of ports at different levels, a chamber applied to cover in common all the series of ports, and a series of slide valves inclosed within such chamber and having each a series of holes corresponding to one of the series of ports, and adapted each to open simultaneously such series of ports, and provided with separate lever handles, substantially as herein set forth.

2. In an apparatus for treating garbage, the combination, with the rendering vessel, of a head provided with distinct series of ports at different levels, and a series of slide valves having each a series of holes corresponding to one of the series of ports, the chamber H fitted detachably over the valves and wholly inclosing the same and the valves being provided with stems extending outside of the chamber, substantially as herein set forth.

3. In an apparatus for treating garbage, the combination, with the horizontal cylindrical garbage receptacle A, of the head B provided with distinct series of ports at different heights, a series of slide valves having each a series of holes corresponding to one of the series of ports, the chamber H fitted detachably over the valves and wholly inclosing the same and provided with outlets for grease and water, and the valves having stems projected outside of the chamber and provided with levers for actuating the valves separately, substantially as herein set forth.

4. In an apparatus for treating garbage, the combination, with the garbage receptacle A adapted for connection to a condenser to produce a vacuum therein, of the head B having ports at different heights, the series of slide valves applied to the ports, the chamber fitted detachably over the valves and provided with a steam connection to press the valves upon their seats, and the valves being provided with the stems extending outside of the chamber, and with means for actuating said stems independently, as and for the purpose set forth.

5. In an apparatus for treating garbage, the combination, with the garbage receptacle, of a valve chamber connected thereto at different levels by suitable ports, a series of slide valves applied to such ports at different levels, with hand levers for moving them independently, a header pipe connected with the lower end of the chamber, and connections with separate cocks for drawing grease and water from such header pipe, substantially as herein set forth.

6. In an apparatus for treating garbage, the combination, with the cylinder A, of the head B provided with the series of ports and having the valve chamber H secured detachably thereto, the series of slide valve plates rest-

ing one upon another over the ports within such chamber, and provided with valve stems and hand levers for moving them independently, the header I connected with the lower part of such chamber, and connections with suitable cocks for drawing oil or water from the header and for supplying the same with steam, water or acid, substantially as set forth.

7. In an apparatus for treating garbage, the combination, with the rendering vessel, of a head provided with distinct series of ports at different levels, a chamber arranged to cover in common all the series of ports, and a series of slide valves inclosed within such chamber and having each a series of holes corresponding to one of the series of ports, and separate cocks connected to such chamber to place such series of valves in connection with separate discharge or supply pipes, substantially as herein set forth.

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

EMIL HOLTHAUS.

Witnesses:
THOMAS S. CRANE,
L. LEE.