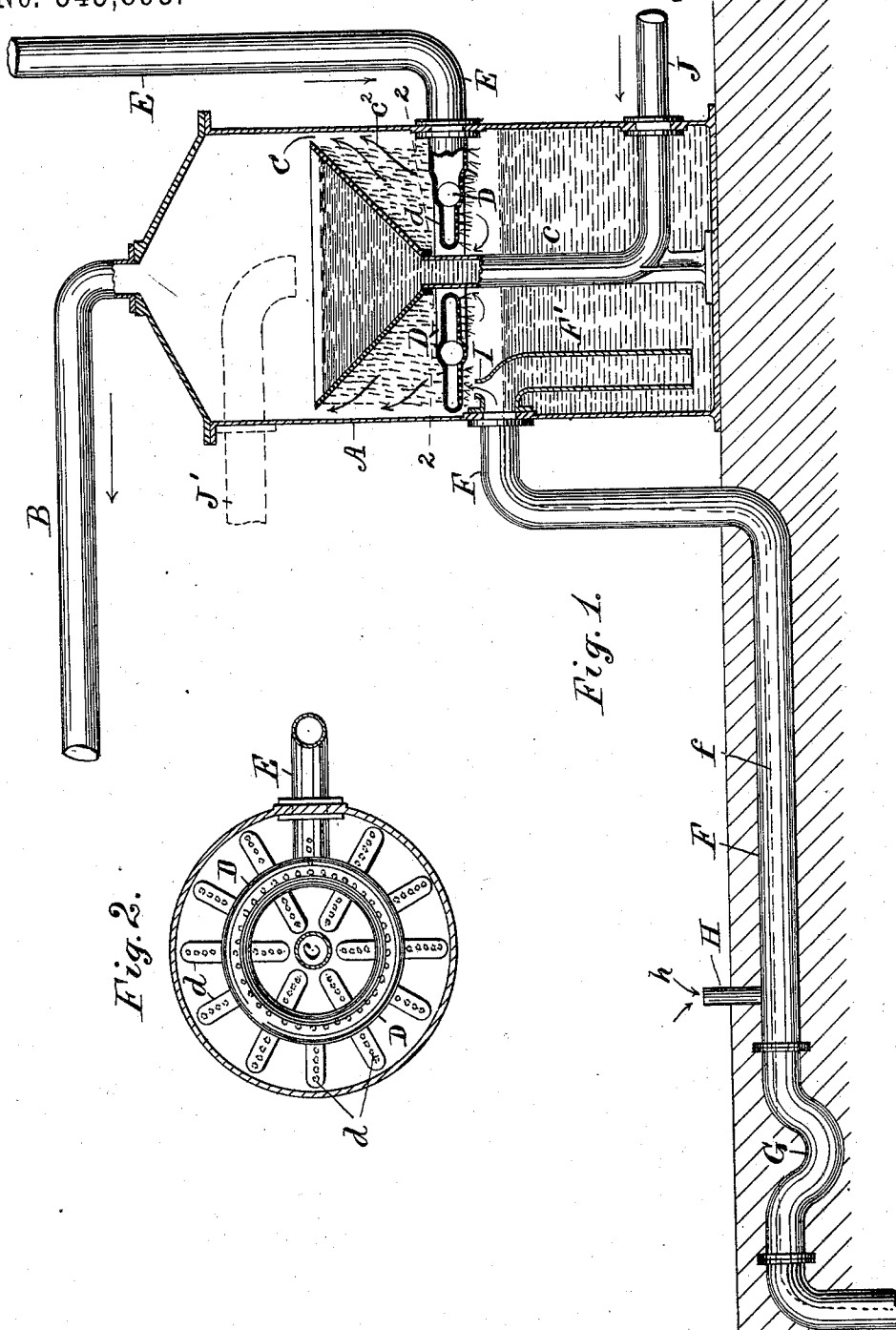


(No Model.)

E. HOLTHAUS.
GAS EXTRACTOR FOR TANK WATER, &c.

No. 545,893.

Patented Sept. 10, 1895.



Attest:
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UNITED STATES PATENT OFFICE.

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

GAS-EXTRACTOR FOR TANK-WATER, &c.

SPECIFICATION forming part of Letters Patent No. 545,893, dated September 10, 1895.

Application filed May 21, 1895. Serial No. 550,085. (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 Gas-Extractors for Tank-Water and Similar Fluids, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of this invention is to furnish an improved means for deodorizing tank-water and extracting the gases from such water and from the condensed vapors which are produced in rendering garbage and animal substances; and the invention consists partly in the mingling of fresh air with a shower of the impure water in an exhausted chamber and partly in the construction herein shown and described.

20 Tank-water is discharged from the tanks used in rendering or extracting grease from animal matter, and the condensed vapors referred to are discharged from "surface condensers," when used to withdraw the steam from the drying apparatus in which animal matter is treated. Where a vacuum pump is used in connection with such condenser, it serves to discharge the impure water uniformly to the gas-extractor described herein, and the tank-water may be supplied uniformly to the extractor by any suitable means.

35 The annexed drawings exhibit, in Figure 1, a side elevation, partly in section where hatched, at the center line of the tank; and Fig. 2 is a transverse section of the tank on line 2-2 in Fig. 1.

In the construction shown an exhausted chamber A is provided, from the top of which the gases are drawn through the vacuum-pipe B by means of a steam-ejector, exhaust-fan, or other suitable means, by which a partial vacuum is maintained within the chamber, and the gases discharged to a furnace for consumption.

45 The tank-water or other foul water is introduced to a spray hopper or sprinkler C within the upper part of the exhausted chamber and is discharged therefrom in a shower, and the gases mingled with the water are freely discharged from the same during the falling of the fluid.

The hopper is shown of funnel shape, with open top and numerous perforations in its sloping sides, and is shown supported by the pipe c, which has a foot to stand upon at the bottom of the chamber. The pipe c is connected by an elbow with the exterior supply-pipe J. Air-pipes are arranged beneath the sprinkler and supplied with fresh air by pipe E.

60 The air-pipes are shown formed of a hollow ring D, having radial pipes d projected therefrom, and the ring connected to the pipe E through the side of the chamber A. The air is discharged from perforations in the lower sides of the pipes, and the air is thus introduced to the tank in numerous jets and escapes past the hopper to the gas-outlet at the top of the tank. By discharging the air from perforations in the bottom of the air-pipe the water is prevented from entering such pipe or obstructing the discharge of the air. The hopper C fills the chamber, excepting the annular passage c' at the margin, through which the air and gases rise, as per arrows c², to reach the vacuum-pipe B, while its sloping sides permit the air and gases to escape easily to such passage. The annular disposition of the air-pipe D permits the ready introduction of the pipe c at the center of the air-pipes. The air, in rising through the shower of impure water, is mingled intimately with the liquid and operates efficiently to deodorize the same and is absorbed by the liquid sufficiently to remove some of the impurities by oxidation.

90 A water-outlet F, having a trap G, is provided to withdraw the water from the chamber and conduct it to a sewer or other conduit. The pipe F connects with the side of the tank at the desired water-level, and an elbow F' may be extended downward from the same, as shown in Fig. 1, to draw the water from the lowest part of the tank. Where the pipe F is extended horizontally a considerable distance to reach the sewer, it may be utilized to still further disengage the gases from the water by inserting an air inlet or pipe H adjacent to the trap G and forming a gas-outlet I from the top of the pipe F or F' within the tank. To secure such disengagement of gases from the water in the pipe F, the latter must be

made of greater capacity than the inlet-pipe to the sprinkler C, as shown in the drawings, so that the water may only partially fill the pipe F, as indicated by the dotted line *f* in Fig. 1, leaving a space above the water in which the gases may pass to the tank. Such space in a horizontal pipe affords a very considerable area for the disengagement of the gases, which is greatly facilitated by the partial vacuum which is formed therein by connection with the exhausted chamber A. The partial vacuum within the chamber operates to draw air into the inlet H, as indicated by the arrows *h*, such air carrying the gases to the gas-outlet I, from which they pass to the pipe B. A pipe is shown extended from outside of the chamber to the bottom of the hopper to supply the impure water thereto; but the water may, if preferred, be discharged into the top of the hopper, as indicated by the pipe J', (shown in dotted lines,) extended through the side of the chamber above the hopper and discharging thereinto. Where the pipe is introduced to the bottom of the hopper, as shown in full lines in the drawings, the air-pipe D is preferably made of annular form, as shown in Fig. 2; but if the water be introduced to the top of the hopper the air-pipes may be disposed in any convenient manner to diffuse the air beneath the hopper, so as to mingle it effectively with the fluid which falls in a shower therefrom.

I am aware that it is old to furnish a supply of air to a shower of water to purify the same; but I am not aware that such operation has ever been performed in an exhausted chamber, where the reduction of pressure operates very powerfully to disengage the gases from the water, and serves not only to draw the purifying-air into the chamber, as by pipe E, but to remove the gases from the water-outlet pipe, where the latter is adapted to such treatment, as in the case of the pipe F, provided with a trap and with an air-inlet adjacent thereto.

Having thus set forth the nature of my invention, what I claim herein is—

1. The gas extractor, consisting of the chamber A having exhaust pipe B connected to the upper part of the same, the perforated sprinkler C sustained in the upper part of the same and supplied at the bottom with the impure water, pipes supplied with fresh air, and perforated upon their lower sides, arranged beneath the sprinkler, and an overflow pipe arranged to discharge the water above a given level, as set forth.

2. The gas extractor for tank water, comprising the chamber A, exhaust pipe B, the funnel shaped sprinkler C supplied with the impure water, air pipes, perforated upon their lower sides, arranged beneath the sprinkler, and supplied with fresh air, and an overflow pipe of greater capacity than the water supply pipe, extended horizontally, and supplied with the air inlet H and gas outlet I, the whole arranged and operated as set forth.

3. The gas extractor for tank water, comprising the chamber A, exhaust pipe B, the funnel shaped sprinkler C supplied with the impure water, the annular air pipe D perforated upon the under side and supplied with air by pipe E, and the overflow pipe F having elbow F', the whole arranged and operated substantially as herein set forth.

4. In a gas extractor, the combination, with the exhausted chamber having a circular perforated hopper supported in the upper part of the same and supplied with the impure water, of the annular pipe D supplied with air as described, and provided with the radial pipes *d*, the pipes D and *d* being arranged beneath the hopper and perforated upon their lower sides, as set forth, and means for drawing the water from the chamber at the desired level, 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.