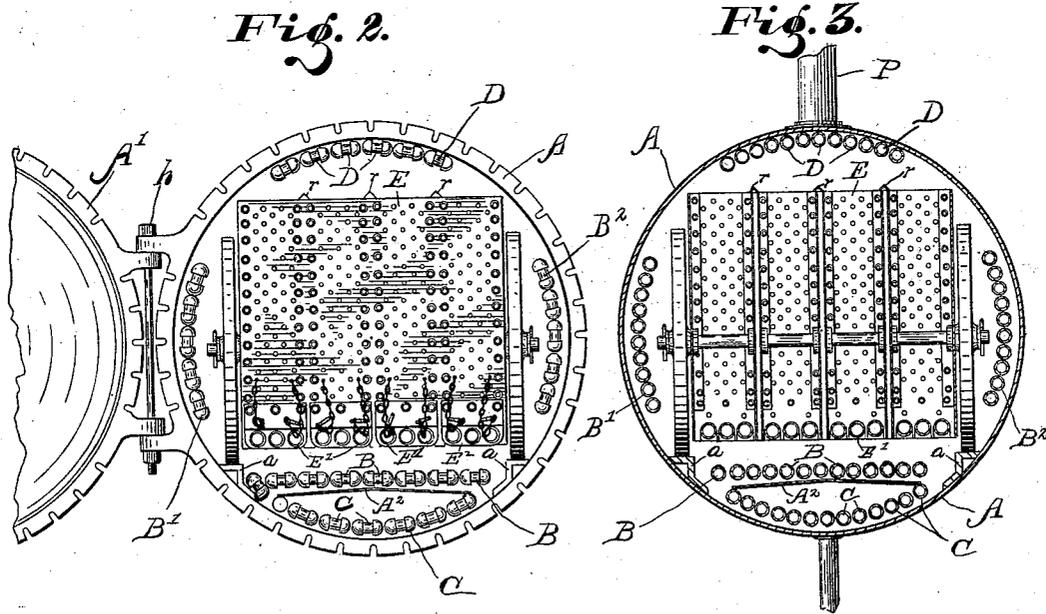
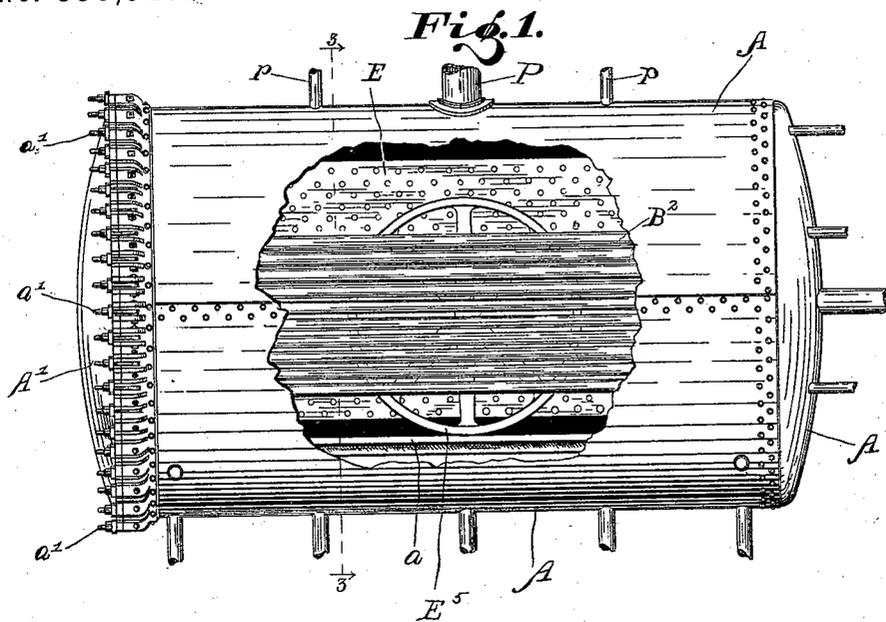


F. G. WISELOGEL.

EXTRACTOR AND EVAPORATOR FOR GARBAGE, &c.

No. 533,940.

Patented Feb. 12, 1895.



WITNESSES:

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FREDERICK G. WISELOGEL, OF INDIANAPOLIS, INDIANA.

EXTRACTOR AND EVAPORATOR FOR GARBAGE, &c.

SPECIFICATION forming part of Letters Patent No. 533,940, dated February 12, 1895.

Application filed September 26, 1894. Serial No. 524,194. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. WISELOGEL, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Extractors and Evaporators for Garbage, &c., of which the following is a specification.

The object of my said invention is to produce an apparatus for extracting grease, &c., from garbage, and for evaporating and drawing off the extracting agent to a condensing apparatus where it may be prepared to be used again.

It consists mainly in the construction of the car which carries the garbage and in which it is treated.

It also consists in some improvements in the construction and arrangement of the retort.

An apparatus embodying my said invention will be first fully described, and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of the tank forming the outer casing of my improved extractor and evaporator, with the side broken open to show the interior; Fig. 2, an end elevation with the door swung open, and showing a fragment of the door; Fig. 3, a transverse sectional view of the structure as seen from the dotted line 3 3 in Fig. 1; Fig. 4, a view, partly in end elevation, and partly in section, of the car separately, on an enlarged scale, and Fig. 5 a detail sectional view of the front corner of the car and immediately adjacent parts, including a fragment of the door, the pipe coils being omitted.

In said drawings the portions marked A represent the exterior casing of the retort of said apparatus, B B' B² C and D the coils of pipe therein, and E the car containing the matter to be treated.

The retort casing A is in form a large cylinder, having various ingress and egress pipes for the steam, vapors, grease and other products, and one end has a large door A' which covers the entire end, and which is adapted to be swung back and forth on a hinge-rod *h*

or other suitable hinge, but is held closed by means of numerous latch bolts *a'* around the edge, which, when loosened, can be swung back, and which, when it is desired to hold said door closed, can be swung into place and tightened up, making a perfectly tight joint. It is opened for the insertion and removal of cars of garbage, as will be presently explained. Inside it is provided with a track *a* for the car, and near the bottom it has a roof-like shield or plate A² beneath which the extracting agent may flow, and where, by being subjected to heat, it may be evaporated and driven up, either to be condensed and drop on to the mass in the car, and its use thus continued in the same operation, or driven away to a receptacle and collected for subsequent use, according to the circumstances of the case, and as will be presently further explained. Said shield or plate A² prevents the extracting agent (usually a hydrocarbon, such as benzine) from rising in fumes through the car and the matter therein being treated, but instead drives said fumes off to the sides of the apparatus, where they rise up, alongside the car, to the top of the apparatus, above the car, where they may be condensed and precipitated on top the material in the car in continued use; or when not to be used further at the time, led off through pipes to some suitable receptacle.

The coils of pipe B B' and B² are steam pipes by which steam heat is supplied to the apparatus, which heat operates, either through a fluid or directly, upon the material in the car which is being treated. The coil of pipe C below the plate A² is also a steam pipe, and is for the purpose of evaporating the hydrocarbon from the liquid matter which collects at the bottom of the tank, when that operation is desired, and may also be employed to assist in heating the apparatus generally. The coil of pipe D at the upper side of the apparatus, above the car, is intended for a cold water coil, by means of which, upon occasion, the hydrocarbon vapors or fumes may be condensed. The operation of the various coils will be explained hereinafter more in detail.

The car E is composed of several cells (four are shown) separated by open spaces, which spaces are covered by roof-like covers *r*, said cells being held apart by stay-bolts sur-

rounded by collars e , as shown most plainly in Fig. 4. All the iron plates from which this car is formed contain a large number of perforations, so that air, steam, liquids and vapors may freely pass through. The bottom of the cells are made up of removable perforated pipes E' , carried preferably by removable plates E^2 , which in turn are supported in housings E^3 secured to the ends of the car, by pins e^2 , so that by removing said pins said pipes and their supporting plates can be easily removed and the contents of the car thus discharged. If desired, steam or other pipes might be connected to the ends of these pipes E' , and liquids or vapors driven through them and through their perforations into the mass of matter being treated, but this will ordinarily not be necessary. The car as a whole is carried by an axle E^4 on wheels E^5 , and on said axle are collars e^4 , by which the car is held from movement thereon. The axle is preferably made stationary, while the wheels revolve.

The operation of my said invention is generally substantially as follows: The material to be treated is put into the cells of the car, and when these are filled the car is run into the retort or extractor composed of the casing or cylinder A and its various coils and attachments. The door A' is closed and bolted tight. If the material is to be treated chemically, benzine, or such other solvent as is used, is first introduced into the retort until it covers the car and contents. Steam is first turned on to the coil C at the bottom of the retort, just enough to heat but not to vaporize the solvent. After standing awhile in this condition, the entire solution is drawn off through the pipes at the bottom of the retort (shown most plainly in Fig. 1), preferably into suitable evaporators, where the solvent is evaporated out of the grease, and, after passing through suitable condensers, is allowed to flow back into a storage tank, whence it may be taken and used over again. If by this first operation the extracting is not completed to the extent desired, the solvent is carried back to the extractor and thrown on top of the material in the car and allowed to pass through it to the bottom. At the same time water is turned on the condenser coil D at the top of the retort, and steam into the evaporator coil at the bottom. As the solvent passes through the mass it takes the fatty matter with it, and falling on the deflecting plate A^2 flows down the same to the bottom of the retort, where it strikes the hot pipe of the coil C , when the hydrocarbon or solvent is again vaporized the vapors or fumes following the sides of the retort and car to the top, where, striking the cold coil D , they condense again, and, falling on the mass in the car, the solvent passes down through as before; and this operation is kept up until all the fatty matter is dissolved and taken out of the material. This done, the water is shut off the condenser

coil D , the valves of the escape pipes p on top of the retort are opened, and the vapors or fumes will pass through these pipes, which are connected to condensers, where the solvent is condensed and allowed to flow back into the storage tank as before. Steam is then turned on all the pipes, except the condenser coil D , and all benzine, or other solvent, and moisture, is driven off by the heat thus applied. Grease, &c., being freed of the solvent, is drawn off from the bottom of the tank A by means of the pipes at that point into suitable receptacles. The heating is then continued, and when all the moisture is driven off through the large escape pipe P at the top of the retort, the steam is shut off; the retort opened; the car taken out; another put in, and the operation repeated. The finished load is wheeled to such place as is designated for the dried stuff, the pipes E' at the bottom of the car withdrawn, and the material allowed to fall out by its own gravity.

If the material to be treated is of such nature as not to warrant the expense of hydrocarbon treatment, hot water is pumped into the retort instead, and steam turned on all the coils except the condenser coil on top, and the whole mass brought to a boil, and, under a moderate pressure, is allowed to stand for a suitable length of time. The gas produced by the operation being at all times allowed to pass through the main pipe P (which is connected to a suitable condenser and retort) all microbe and disease germs that may be present in the material under treatment are effectually destroyed. Such grease as may be extracted and is floating on the water, is drawn off, and all the water is drawn off or entirely evaporated, the valve in the main pipe P is opened full, and all the vapors and gases pass through it and through the condensers and retorts to beneath the boilers or elsewhere as before explained.

If the material to be treated is such as would float on the liquid in the retort during the first part of the operation above described, covers of similar material as the car sides may, of course, be provided, to hold it in the cells, as will be readily understood.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in an extractor and evaporator for garbage, &c., of a retort composed of a large cylinder or tank having a door at one end, the heating coils within said retort, the heating and evaporating coil C , the condenser coil D , suitable ingress and egress pipes, a plate or shield A^2 between the coils B and C , and a suitable car for carrying the matter to be treated, substantially as shown and for the purposes set forth.

2. The combination, in an extractor and evaporator, with the retort, of a car composed of cells built up of perforated plates, with open spaces between the cells, whereby the

material to be treated is divided into thin vertical layers, substantially as and for the purposes set forth.

3. The combination, in an extractor and evaporator, with the retort, of a cellular car for carrying the material to be treated composed of perforated plates, and a bottom formed of perforated removable pipes, substantially as shown and described.

4. The combination, in an extractor and evaporator, of a car formed in cells composed

of perforated plates, the cells being separated by open spaces, perforated removable pipes forming the bottoms of said cells, and hanger plates carrying said pipes.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 21st day of September, 1894.

FREDERICK G. WISELOGEL. [L. s.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.