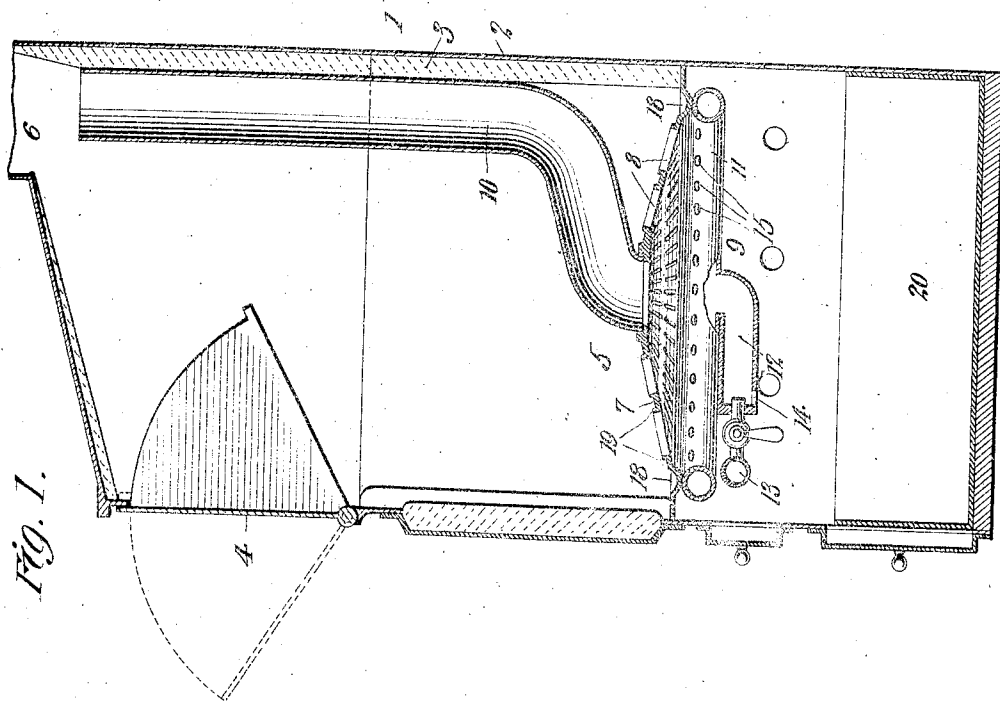
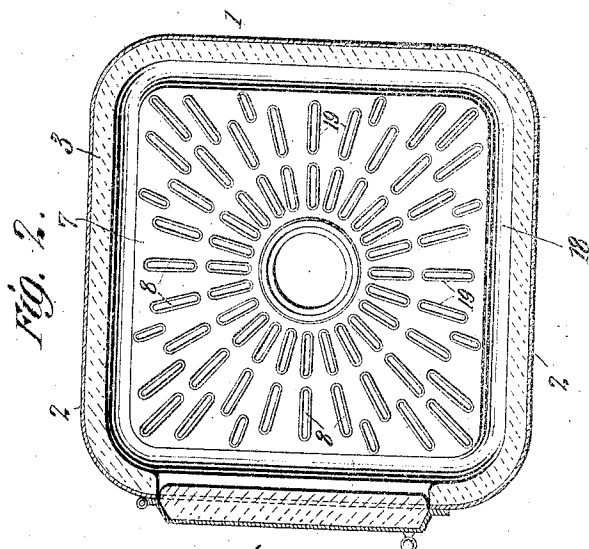


O. M. SHANNON.
GARBAGE CREMATORY.
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Witnesses:

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GARBAGE-CREMATORY.

964,568.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OSCAR M. SHANNON, a citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Garbage-Crematories, of which the following is a full, clear, and exact description.

This invention relates to crematories or furnaces adapted to burn and dispose of refuse of various sorts.

Almost every form of human activity is attended by the production of more or less waste or refuse material, which must be disposed of. As examples may be mentioned the refuse and litter from office buildings and hospitals, the scraps and garbage in private dwellings, and the useless rubbish and shavings and general refuse of many manufacturing processes. Such material is ordinarily carted away, but as most of it is combustible, a considerable economic saving would result by burning it where it originated. Burning the refuse avoids first, the trouble of storing it up for subsequent removal, second the expense of subsequent removal and carting, and third, the unsanitary evil, and in some cases actual danger, of retaining and storing unwholesome waste and garbage for periods of greater or less duration in residences. If the garbage can be burned easily, quickly and cheaply on the premises where it is produced, it is evident that this method must supersede in many cases the usual plan of carting it away to a point of cremation or disposal.

In the drawings: Figure 1 is a vertical sectional view of a garbage crematory embodying the principles of my invention; and Fig. 2 is a horizontal or transverse sectional view of the same.

Referring to the drawings in which like parts are designated by the same reference sign, 1 designates the body or casing of a furnace. This may be constructed of the usual metallic shell 2 lined with fire brick or refractory composition 3 and having a door 4 through which garbage or refuse is fed. I have illustrated a hinged hopper-like door capable of closing tightly in normal use, but adapted to be drawn open to form a sort of receiving chute for the garbage and material, when desired. The furnace has a central consumption chamber 5 in which the combustion of the garbage takes place. This

consumption chamber communicates with the chimney flue 6 and has a grate 7 preferably of thin heat conducting metal, on which the material rests during its combustion. In these aspects as thus far described, the furnace resembles any ordinary coal burning furnace, it being evident that a natural draft is created upwardly through the openings 8 of the grate, through the burning mass of garbage, and into the chimney flue. In burning paper waste and very combustible litter, no other provision than the foregoing will be necessary. Ordinary garbage, however, is less combustible than paper waste and could not be consumed in this simple way in the absence of other means for promoting the combustion. For example, wet rags, vegetable refuse, and the dirt and dust of sweepings demand special treatment. In accordance with my present invention, I provide means for initially starting and subsequently promoting the action of the furnace. This means is not only adapted to secure the efficient combustion referred to, but is further adapted to prevent any interference in the working due to clogging of the grate or the dripping of considerable quantities of water from the garbage, or even the packing solid of the entire garbage mass in the consumption chamber.

I provide a burner 9, preferably a gas burner, beneath the grate 7 against which the flame of the burner is directed. This burner is not arranged directly beneath the holes of grate 7, being located out of vertical alinement with said grate openings, but the flame is nevertheless caused to pass across the entire under surface of the grate and upwardly through the grate openings if these are not clogged up by the garbage. In order to secure these results I provide a special flue pipe 10 exclusively for the burner flame and this burner flue pipe or opening is laterally offset with respect to the burner or other flame producing means. This insures a flow of the hot flame and gases entirely across the lower exposed portion of the grate. In traversing this underside of the grate the burner flame is of course sucked up through the grate openings if these are not clogged. These flames, sucked through the openings 8 of the grate in this way, thread themselves upward through the interstices of the garbage mass, igniting those portions which are freely combustible, and drying,

oxidizing and incinerating the less combustible portions. The heat from the burner flames is increasingly augmented by the heat from the garbage masses, which are first dried and partly carbonized, thereupon igniting and furnishing an intense heat from their own combustion. If in the progress of the action the garbage mass settles down on the grate and clogs up the openings thereof, the burner gases still have a free path of escape through the flue 10 until the combined heat of the burner and the combustion of the glowing garbage has restored the natural draft through the grate openings.

As practical features of construction I have illustrated a perforated burner tube 11 of circular transverse section and generally square outline corresponding to the shape of the furnace or grate. I prefer to make the burner in two U-shaped halves or sections, abutting together to form a square or rectangle. At some point along the length of each of these halves or sections and beneath the same, there is formed an extension 12 in which a gas pipe 13 delivers, the extension having an air inlet 14 thereby constituting a Bunsen burner. The burner perforations 15 are located on an upper inside zone or face of the burner tube so as to direct the flames radially inward beneath the grate as much as possible. The flue pipe 10 extends from the central portion of the grate in this construction, thereby causing the burner flame to uniformly traverse the entire under portion of the grate. The flue is shown bent to one side in the drawing, but may extend straight upward if desired. I do not, of course, desire to be limited or restricted to a gas or to a Bunsen burner. Any fire or fuel bed which produces a flame, will answer, the only important requirements being those first referred to relating to the location of the burner with respect to the grate openings and with respect to the flue pipe for the burner gases.

It will be observed in the drawings that the grate does not have a flat upper surface, but presents an inclined face to the garbage which rests thereon. Every point of the grate therefore drains in a definite direction outwardly toward a common peripheral gutter 18. Around each hole 8 of the grate there is formed a flange 19 which effectively prevents any fluid streams on the grate surface from finding an exit through said grate openings. The water and drippings from wet garbage are thereby mostly carried to the gutter. This is found to be practically advantageous because water and fluid which collect in the gutter are readily evaporated by the close proximity to the burners, while any water that happens to pass through the openings in the grate will fall into the pit below and not lodge upon and thus choke the burner. If desired, an outlet may be

provided for the gutter 18, but it will be found in practice that such outlet is unnecessary, the evaporation taking care of any liquid which collects in the gutter.

Below the grate 7 there is the usual ash pit or pan 20 to collect the comminuted incinerated products of combustion which escape through the grate openings. In ordinary use the combustion will be found so complete as to reduce almost all garbage to this condition. The composition of the flue gases depends only on the temperature attained in the furnace, and if this is reasonably high, as it always is, nothing will escape except steam, air and carbon dioxide, none of which are in the least objectionable in the atmosphere.

I regard this crematory furnace as successful mainly on the ground that it incinerates the garbage without throwing off noxious gases and that by reason of the flue 10 or its equivalent the flame or source of heat can never be suppressed. I regard the successful combustion as due to the fact that I have virtually combined a furnace and a retort in one. The device constitutes a retort in the sense that it has a chamber heated by an exterior burner or fire. This action is real and not merely theoretical since the grate is of thin heat conducting metal and actually becomes red hot in use. But besides being in every sense a retort, the present crematory is also a furnace since the flame passes through the mass and furthermore it is a furnace in which the air supply is heated, which as is well known, always produces a far more intense and thorough combustion than when the air supply is cold.

What I claim is:—

1. In a garbage crematory, a chamber adapted to receive garbage, a grate at the bottom of said chamber, an exit flue communicating with the space below the grate, and a gas burner having jets impinging against the grate at points remote from the exit flue, whereby the flame and products of combustion travel across the under face of the grate in direct contact therewith.

2. In a garbage crematory, a chamber adapted to receive garbage, a grate at the bottom of said chamber, an exit flue communicating with the space below said grate, and a gas burner shielded by the grate from any drippings and having jets impinging against the grate at points remote from the exit flue, whereby the flame and products of combustion travel across the under face of the grate in direct contact therewith.

3. In a garbage crematory, a chamber adapted to receive garbage, a grate at the bottom of said chamber, a chimney flue communicating with said chamber, a supplemental flue connecting the chimney flue with the space below the grate, and a gas burner having jets impinging against the

grate at points laterally remote from the opening of said supplemental flue into the space below the grate.

4. In a garbage crematory, a chamber adapted to receive garbage, a grate having an inclined upper face throughout its area and located at the bottom of said chamber, an exit flue communicating with the space below the grate, and a gas burner having jets impinging against the grate at points remote from the exit flue, whereby the flame and products of combustion travel across the under face of the grate in direct contact therewith.

5. In a garbage crematory, a chamber adapted to receive garbage, a grate having

upwardly flanged perforations and located at the bottom of said chamber, an exit flue communicating with the space below the grate, and a gas burner having jets impinging against the grate at points remote from the exit flue, whereby the flame and products of combustion travel across the under face of the grate in direct contact therewith.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

OSCAR M. SHANNON.

Witnesses:

WALDO M. CHAPIN,
WILLIAM C. LARY.