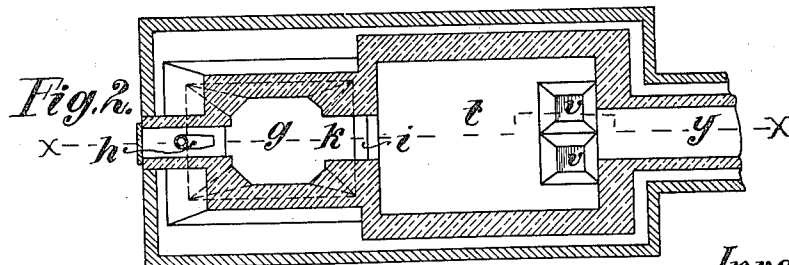
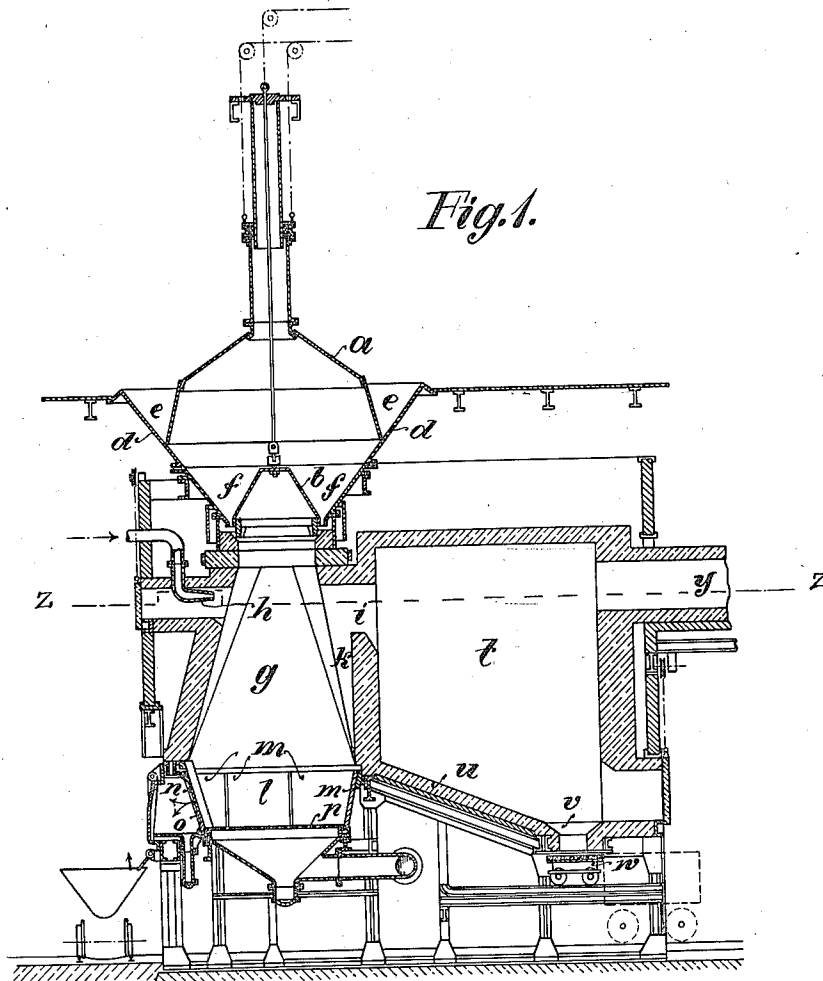


O. UHDE.
PROCESS FOR DESTROYING REFUSE.
APPLICATION FILED JULY 27, 1911.

1,059,787.

Patented Apr. 22, 1913.



Witnesses:

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UNITED STATES PATENT OFFICE.

OTTO UHDE, OF HAMBURG, GERMANY.

PROCESS FOR DESTROYING REFUSE.

1,059,787.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed July 27, 1911. Serial No. 640,871.

To all whom it may concern:

Be it known that I, OTTO UHDE, a subject of the German Emperor, and resident of Hamburg-on-the-Elbe, German Empire, have invented a certain new and useful Process for Destroying Refuse, of which the following is a specification.

Processes are already known which separate the refuse before the filling of the furnace into coarse and fine refuse, and then deliver each kind into a separate furnace, and also processes in which the separating of the refuse takes place after the delivery into the furnace itself, and then the burning of the coarse and fine refuse is effected separately but in the same furnace. In both cases fixed or movable grates or sieves are made use of for the dividing purposes. The division inside the furnace with the above-mentioned means is always complicated by the frequent and difficult clearing of the grate to remove stoppages which occasion interruptions of the combustion. Moreover such devices placed within the furnace are exposed to very rapid deterioration.

The process hereinafter described together with the devices for carrying it into effect is invented to avoid the drawbacks above mentioned by the combination of the dividing of the refuse during the filling of the furnace over smooth imperforate sloping surfaces during the filling process together with the screening effect of powerful air currents during the combustion process, effecting the division of the coarse and finer parts of the refuse into two combustion spaces placed one behind another and otherwise separated from each other but united through one and the same fixed delivery mechanism, with the combustion devices into a single apparatus.

In the accompanying drawing, Figure 1 is a vertical section on line $x-x$ of Fig. 2 illustrating a preferred form of mechanism in carrying the process into effect. Fig. 2 is a section on line $z-z$ of Fig. 1.

The shaft of the upwardly tapering primary furnace g with the grate l and the perforated hearth plate p together with the secondary chamber t with the sloping imperforate hearth u form the combustion spaces for the coarse and fine rubbish. The grate l is surrounded at the sides by the plates m which may be water-cooled, and by the doors or plates n o . In the upper part of the shaft g is provided the air blast

h and the opening i through which the shaft g is in communication with the chamber t . The opening i is prolonged in the shaft g nearly to the grate l in the channel shaped cavity k . Upon the shaft g is placed the double bell delivery mechanism. This consists of the hopper d and the bells a and b , which form together with the hopper d the tapering delivery channels e and f . The bells a and b can be raised and lowered independently of one another as shown in Fig. 1, so that an aeration of the refuse lying in the channels e and f can be effected consecutively.

The working of the device is as follows: The channel e is filled with refuse. Thereupon by raising the bell a the refuse is partially divided into coarse and fine refuse and delivered into the channel f . After the lowering of the bell a the channel e is again filled with refuse. The bell b is then drawn up, which causes an increase of the division into coarse and fine refuse and the separate delivery of the coarse and fine refuse respectively on to the grate. The grading or separating of the refuse into coarse and fine portions is effected in the mechanism shown while the refuse is passing down the inclined sides of the hopper and bells, the coarser particles rising to the surface and moving more rapidly than the finer particles, which are retarded by friction along the inclines. The bell b is then lowered, the channel f again filled with refuse through raising the bell a , and thereby the shaft g is closed at the top. Through the perforated plate p there passes at the same time, from the blast pipe r a powerful air current into the charge of refuse covering the grate l . By this means the fine refuse or the largest part thereof is separated from the charge and is carried up in the shaft g under guidance of the channel shaped cavity k toward the opening i . At the height of the opening f the fine particles of refuse are caught by the blast of air passing out of the nozzle h and carried into the chamber t where they fall down in a wide and thin layer upon the bed u . The portion of the charge left behind on the grate l is ignited by the burning particles of clinker which have been left behind for this purpose on the clearance of the residues of the previous charge, and is there consumed. The fine particles falling upon the unperforated bed u are burned to ashes in the chamber t which

is heated by the previous charge. The gases pass away through the flue *y*. Through the opening *v* provided with damper *w* the residues are removed.

5 Having thus fully described my invention, what I claim is:

1. A process for the combustion of refuse consisting in grading said refuse as to the size of its particles, delivering it into
10 a primary combustion zone and treating it from below with air under pressure which carries up the finer particles into the path of a cross blast by which said particles are driven into a secondary combustion zone,
15 said coarser particles being consumed in said primary combustion zone.

2. A process for destroying refuse which

has been separated into coarse and fine particles and delivered into a primary combustion zone, consisting in directing an air
20 blast from below into said refuse to carry up the finer particles of the refuse into the path of a cross air blast by which they are driven into a secondary combustion zone to complete their destruction, the coarser
25 particles being consumed in the said primary combustion zone.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTTO UHDE.

Witnesses:

ANDREW W. PENTLAND,

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