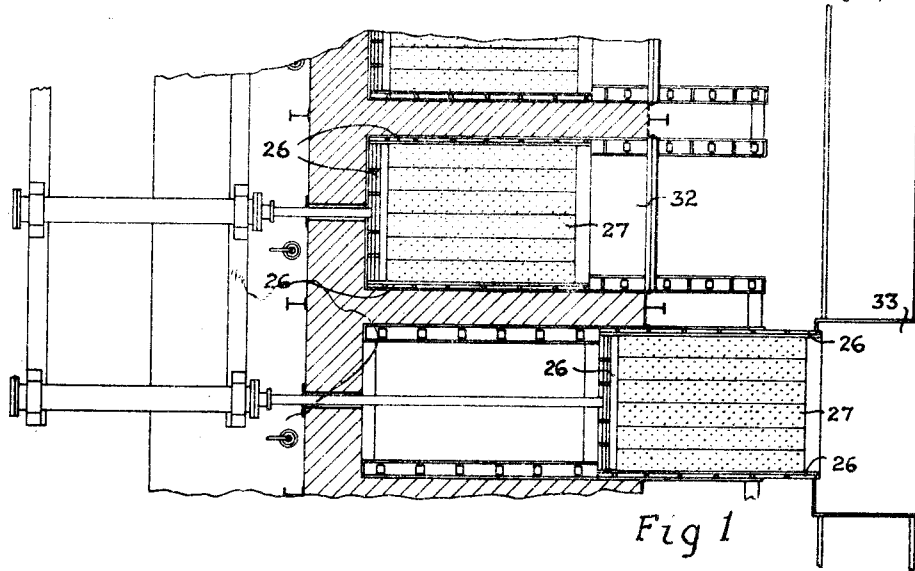
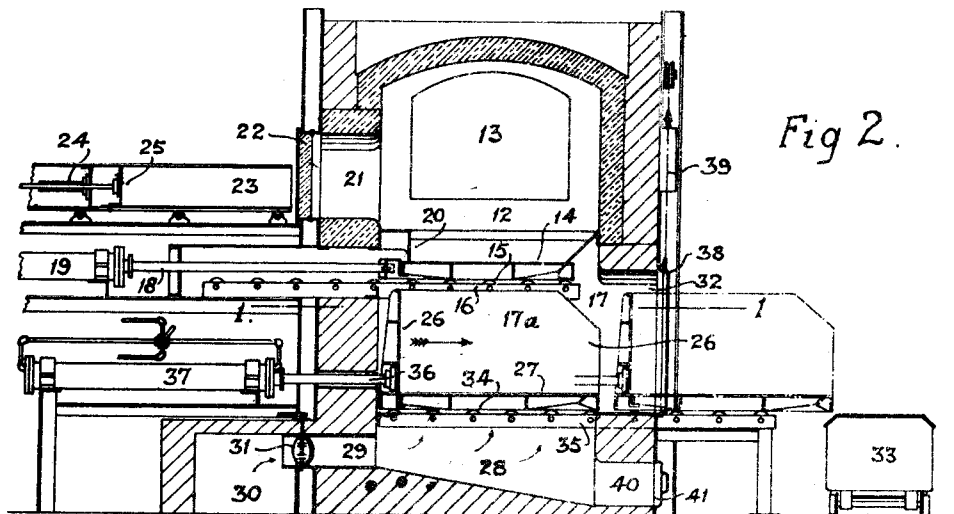


P. D. CANHAM.
DESTRUCTOR FURNACE.
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1,066,185.

Patented July 1, 1913.



WITNESSES:

Bert B. Sandman
William B. Johnson

INVENTOR

Percy D. Canham

BY

Sturges D. Dunham
Assoc. ATTORNEY

UNITED STATES PATENT OFFICE.

PERCY D. CANHAM, OF NEW YORK, N. Y., ASSIGNOR TO POWER SPECIALTY COMPANY,
OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

DESTRUCTOR-FURNACE.

1,066,185.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PERCY D. CANHAM, a subject of the King of Great Britain, residing at New York, county of Richmond, and State of New York, have invented certain new and useful Improvements in Destructor-Furnaces, of which the following is a full, clear, and exact description.

In the operation of so-called "destructor" furnaces the material consumed is, in general, refuse, such as household and city waste, wet and dry, inflammable and non-inflammable, and is of low calorific value. This makes it specially important that the furnace operate with the highest efficiency, making the greatest possible amount of the heat available for useful purposes, with the least possible loss. To this end it is desirable that the heat remaining in the clinker, after the combustible material has been consumed, be utilized. The usual way of utilizing such heat is to employ it for heating the air which supports the combustion, and it is to this method of utilization that my present invention generally relates, its chief object being to provide improved means for handling the clinker in a convenient and expeditious manner, and for disposing of it in such way as to cause its heat to be rapidly and efficiently imparted to the air furnished to the burning mass on the combustion grate or in the grate chamber.

To this and other ends the invention consists in the novel features of construction and combinations of elements hereinafter described, and more particularly set forth in the claims.

A convenient and effective embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional plan view, on line 1—1 of Fig. 2, of a destructor furnace in which my invention is employed. Fig. 2 is a sectional side view.

The furnace illustrated comprises a series of grate chambers, one being shown at 12, arranged side by side and each communicating with the adjoining chambers through suitable openings, one of which is shown at 13, so that the products of combustion can flow from one chamber to the next, in succession, finally reaching the stack or outlet flue, not shown. The bottom of each grate chamber is formed by a grate on which the burning of the refuse takes place, each com-

bustion grate being preferably of the type described in the application of E. H. Foster, Serial No. 539,103, filed January 20, 1910, and J. T. Fetherston, Serial No. 541,504, filed February 2, 1910. In grates of this type, as illustrated, the grate, for example that shown at 14, is slidably mounted on anti-friction rollers 15, journaled in rails, as 16, at the sides of the clinker-pit 17 near the top thereof. Connected to the movable combustion grate is the plunger 18 of a suitable fluid-pressure ram 19, by which the grate may be actuated. In the present form the ram is in front of the furnace, and the lower front wall 20 of the grate chamber is substantially vertical, so that as the grate is retracted or drawn out from under the grate-chamber such vertical wall will scrape the clinker off and into the clinker-pit below.

The mouth 21 of the grate chamber is provided with a vertically movable door 22, preferably connected with suitable counterweights, not shown, and in front of the chamber mouth is a charging apparatus of the type described in the application of J. T. Fetherston, Serial No. 541,503, filed February 2, 1910, comprising a pan or receptacle 23, movable into and out of the furnace, on suitable supporting rails and rollers, by means of a fluid pressure ram the plunger of which is shown at 24.

To charge the furnace the pan is filled with the material to be burned and is advanced into the grate-chamber. The pan is then retracted, but the wall 25 thereof is held stationary during part, at least, of such movement, thereby causing the material in the pan to be dislodged over the opposite edge, on to the combustion grate.

In each clinker-pit is a box grate or clinker box 17^a, having vertical walls 26, preferably imperforate, extending well up toward the combustion grate, and a perforated grate-bottom 27, the rear of the box or receptacle formed by said walls and bottom being open, as shown in Fig. 2. This box-grate receives the clinker as it is dislodged from the moving combustion grate 14. Below the clinker-box or box-grate is an air-chamber 28, connected at its rear, by means of a passage 29, with an air duct 30 through which a current of air is caused to flow by any suitable means, not shown. In the passage 29 is a damper or valve 31, by which the flow of air to the air-chamber can

be regulated. The clinker-box being covered with lumps or pieces of clinker of various sizes, it will be seen that the air, flowing up through the grate openings and the clinker, will be highly heated before reaching the combustion grate; the result being that the combustion on the latter grate is more rapid and thorough than would be the case if the air were supplied cold or only moderately heated.

The clinker-box 17^a is movable bodily out of the clinker-pit 17 through the rear opening 32, and when in its outermost position its open rear portion overhangs the car 33 into which the cooled clinker is scraped and by which it is carried to the dump. Such outermost position of the box is shown in Fig. 1, and in dotted lines in Fig. 2. To make the clinker-box or cooling receptacle conveniently and easily movable it is mounted on anti-friction rollers 34 journaled in rails 35 on the sides of the clinker-pit at the bottom thereof, and for the purpose of actuating the receptacle it is connected to the plunger 36 of a fluid-pressure ram 37, arranged below the ram 19 which actuates the combustion grate 14. The mouth 32 of the clinker-pit is provided with a suitable door or closure 38, movable vertically and connected with suitable counterweights, one of which is shown at 39. The air-chamber 28, below the cooling receptacle and clinker-pit, may be provided with a clean-out opening 40, normally covered by a removable closure 41.

The apparatus described will be seen to be an efficient means for handling and disposing of the clinker for the purpose before mentioned, the clinker being deposited in the cooling receptacle expeditiously and with practically no loss of heat. After the heat of the clinker has been imparted to the air flowing through it the receptacle is carried bodily out of the clinker-pit and the clinker scraped off into the car, as already described.

The embodiment illustrated is, as just stated, efficient, and is also simple in construction and convenient in operation, but it is to be understood that the invention may be embodied in other forms without departure from its proper spirit and scope as defined by the appended claims.

I claim:

1. In a destructor furnace, in combination, a grate-chamber in which the combustion takes place, a clinker-pit below the grate-chamber and having an opening at one end, rails mounted below the clinker-pit, a clinker-cooling receptacle movably mounted on said rails and in line with said opening, and comprising a grate-bottom and upwardly extending walls, one end of said receptacle being open, means for discharging hot clinker from the grate-chamber into the

cooling receptacle, an air chamber below the clinker-pit formed by a continuation of the latter, means for delivering a current of air to the air chamber whereby air flowing to the grate-chamber will be highly heated in passing through the hot clinker in the cooling-receptacle, and power-actuated means for moving the cooling receptacle bodily out from under the grate chamber and through the opening at the end of the clinker-pit, to permit convenient removal of cooled clinker from said receptacle through the open end thereof.

2. In a destructor furnace, in combination, a grate-chamber in which the combustion takes place, a clinker-pit below the grate-chamber, an air chamber below the clinker-pit, means for withdrawing the grate to discharge hot clinker from the grate chamber into the clinker-pit, a movable grate between the clinker-pit and the air chamber, means for actuating said grate to remove clinker from the clinker-pit, and means for supplying a current of air to the air chamber.

3. In a destructor furnace, in combination, a grate-chamber in which the combustion takes place, a clinker-pit below said grate-chamber and having an opening at one end, rails mounted below the clinker-pit, a clinker-cooling receptacle movably mounted on said rails and in line with the opening at the end of the clinker-pit, said cooling receptacle being substantially coextensive with the clinker pit, means for discharging hot clinker from the grate chamber into said cooling receptacle, an air chamber below the clinker-pit formed by a continuation of the latter, and means for delivering a current of air to the air chamber, whereby air flowing up through the hot clinker in the cooling receptacle will be heated before entering the grate-chamber, and actuating means for moving said clinker cooling receptacle bodily through said opening to permit convenient removal of cooled clinker therefrom.

4. In a destructor furnace, in combination, a grate chamber in which the combustion takes place, a clinker-pit below said grate chamber and having an opening at one end, a stationary air chamber below said clinker-pit, rails mounted below the clinker-pit and extending through and beyond said opening, a clinker cooling receptacle movably mounted on said rails through the opening, said receptacle being substantially coextensive with the contour of the clinker-pit and defining the lower end of the same and the upper end of the stationary air-chamber, means for discharging hot clinker from the grate chamber into the cooling receptacle, and means for delivering a current of air to the air chamber.

5. In a destructor furnace, in combination, a grate-chamber in which the combustion

takes place, a clinker-pit below said grate chamber and having an opening at one end, a stationary air chamber located below said clinker-pit, rails mounted below the clinker-pit, a clinker cooling receptacle movably mounted on said rails being substantially coextensive with the contour of the clinker-pit and defining the lower end of the same and the upper end of the stationary air-chamber, reciprocating means for discharging hot clinker from the grate-chamber into the cooling receptacle, and means for delivering a current of air to the air chamber.

6. A destructor furnace comprising walls defining consecutively, grate, clinker and air chambers in substantially vertical alinement with each other, said walls provided with a plurality of lateral openings, a furnace grate the horizontal dimensions of which is substantially coextensive with the horizontal dimensions of the various chambers and located between the grate chamber and clinker chamber, a receiving chamber for said grate

extending outwardly from one of the afore-said lateral openings and in alinement with said grate, means for withdrawing the grate into the receiving chamber to discharge clinker from the grate into the clinker chamber, a clinker grate substantially coextensive with the horizontal dimensions of said chambers and located between the clinker chamber and air chamber and in alinement with one of said lateral openings, actuating means for moving said grate bodily out from under the grate chamber and through said opening in the side of said clinker chamber to permit convenient removal of cooled clinker from said grate, and means for supplying a current of air to the air chamber.

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

PERCY D. CANHAM.

Witnesses:

M. LAWSON DYER,
BERT. R. SANDMAN.