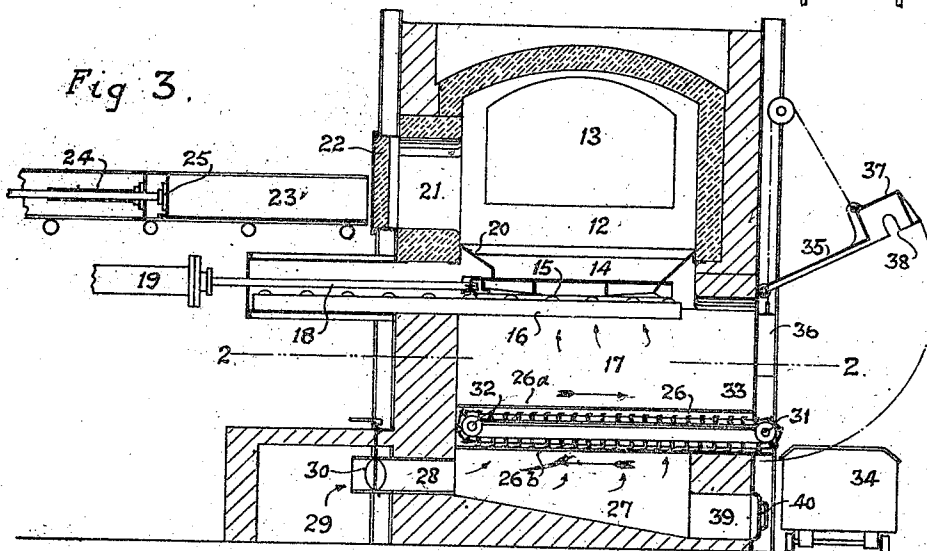
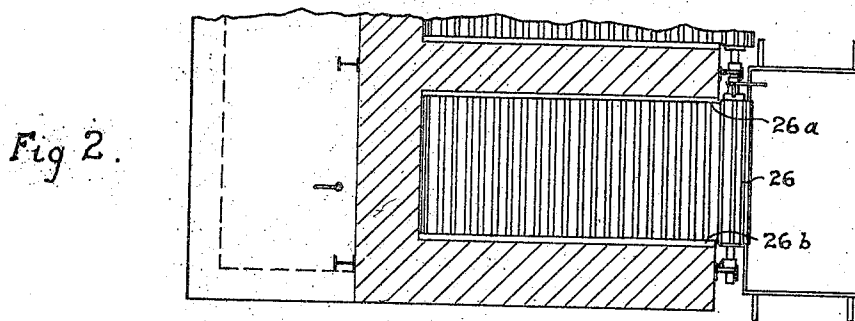
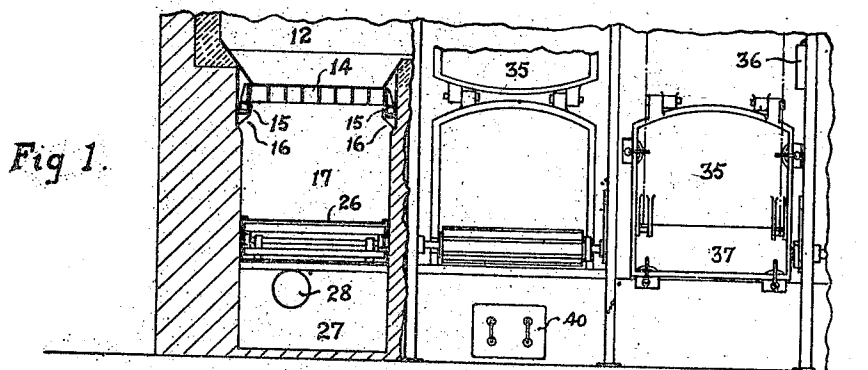


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DESTRUCTOR FURNACE.
APPLICATION FILED OCT. 5, 1910.

1,066,186.

Patented July 1, 1913.



WITNESSES:

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DESTRUCTOR-FURNACE.

1,066,186.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed October 5, 1910. Serial No. 585,388.

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 rear elevation, partly in cross-section, of a destructor furnace in which my invention is employed. Fig. 2 is a sectional plan view, and Fig. 3 is a sectional side elevation.

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 combustion grate being preferably of the type described in the application of E. H. Foster, Ser. No. 539,103, filed January 20, 1910, and J. T. Fetherston, Ser. 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 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 as the grate is retracted or drawn out from under the grate chamber the lower front wall 20 of the latter will scrape off the clinker 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, Ser. No. 541,503, filed Feb. 2, 1910, comprising a pan or receptacle 23, movable into and out of the furnace, on suitably supported 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 passed into the grate chamber through the mouth 21. The pan is then retracted but the wall 25 thereof is held stationary during a part, at least, of such movement, thereby causing the material in the pan to be dislodged over the opposite edge onto the combustion grate.

The bottom of the clinker-pit is formed by a grate 26, upon which the clinker falls as it is dislodged from the moving combustion grate 14. Below the clinker or cooling grate is an air chamber 27, connected at its rear by means of a passage 28 with an air duct 29 through which a current of air is caused to flow by any suitable means, not shown. In the passage 28 is a damper or valve 30 by which the flow of air to the air chamber may be regulated. The clinker-cooling grate 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 110

tion 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.

For the purpose of removing the cooled clinker from the clinker-pit the grate 26, which receives the clinker from the combustion chamber is in the form of an endless belt, traveling over a pair of drums 31, 32, the bars of which the traveling grate is composed being arranged parallel with the axis of the drums and pivotally connected together in any suitable manner, not shown. One of the drums, for example the rear drum 31, may be rotated by any convenient and suitable means, not shown, to actuate the grate, and such rear drum is preferably located outside the mouth 33 of the clinker-pit, so as to cause the grate at such point to overhang the car 34. It will therefore be seen that as the grate travels, carrying the cooled clinker out of the clinker-pit, the clinker will, on reaching the drum 31, drop off into the car, by which it may be carried to the dump. The upper and lower reaches of the belt grate are guided in their proper planes by upper and lower guide rails 26^a, 26^b, at each side of the clinker-pit. It will of course be understood that the movable clinker-cooling grate is not in motion except when it is desired to remove the cooled clinker from the clinker-pit. The mouth of the clinker-pit is at other times closed by a vertically swinging door 35 connected to suitable counter-weights, one of which is shown at 36. The outer portion of the said door is formed as a box 37 to inclose the drum 31 and projecting portion of the grate, the ends of said box being slotted as shown at 38 to accommodate the journals of the drum mentioned. The air chamber 27 may be provided with a clean-out opening 39, normally covered by a movable closure 40.

As will be recognized, the apparatus described is an efficient means for handling and disposing of the clinker for the purpose before mentioned, the clinker being deposited on the clinker-cooling grate expeditiously, and with practically no loss of heat. After the heat of the clinker has been imparted to the air flowing through the same, the clinker is readily delivered to the car, leaving the cooling grate clear and ready for another load from the combustion chamber.

The embodiment described is, as just stated, 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, an air chamber below the clinker-pit, a reciprocating grate between the grate chamber and the clinker-pit, to support the burning material and adapted, when actuated, to discharge hot clinker into the clinker-pit, a belt grate movably mounted between the clinker-pit and the air chamber, arranged to receive the clinker discharged from the grate chamber into the clinker-pit, and adapted, when actuated, to remove the clinker from the clinker-pit, and means for supplying a current of air to the air chamber.

2. In a destructor furnace, a grate chamber having a reciprocating grate mounted therein, a clinker pit substantially below said grate, a belt grate movably mounted in the clinker pit, means whereby said reciprocating grate uniformly distributes masses of hot clinker upon said belt grate and means for supplying a current of air to the underside of the belt grate so the air will be heated upon passing through the hot clinker upon said belt grate.

3. 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 are substantially coextensive with the horizontal dimensions of the aforesaid chambers and located between the grate chamber and the clinker chamber, a receiving chamber for said grate extending outwardly from one of the aforesaid openings and in alinement with said grate, means for withdrawing the grate from the grate chamber into the receiving chamber to discharge clinker from the grate into the clinker chamber, a belt grate substantially coextensive with the horizontal dimensions of said chambers and located between the clinker chamber and the air chamber and in alinement with another of said lateral openings, actuating means for moving the upper surface of said belt grate in the direction of said last mentioned opening to discharge the clinker from the clinker chamber, 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.