F. P. RUDDER.

REFUSE DESTRUCTOR.

APPLICATION FILED AUG. 26, 1907.

986,594. Patented Mar. 14, 1911.

3 SHEETS—SHEET 1.

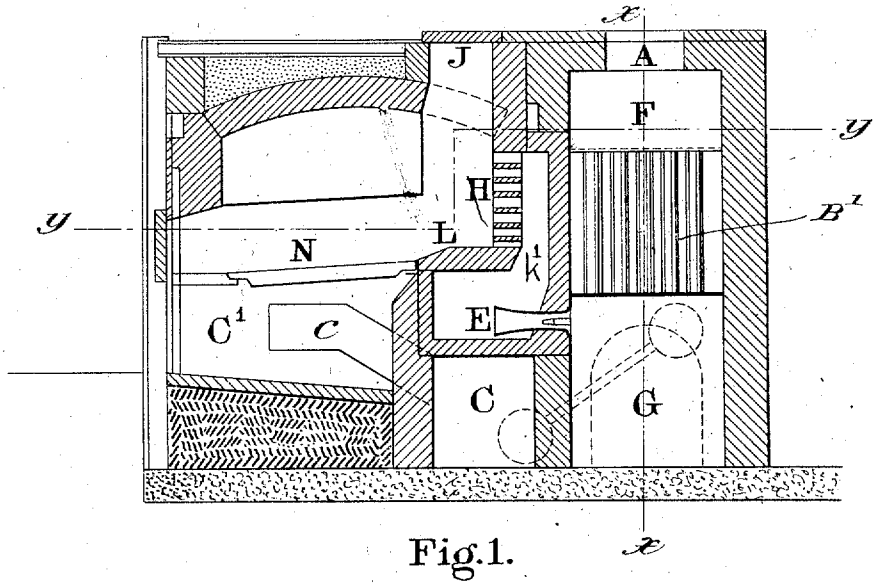

Fig.1.

WITNESSES.

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3 SHEETS—SHEET 2.

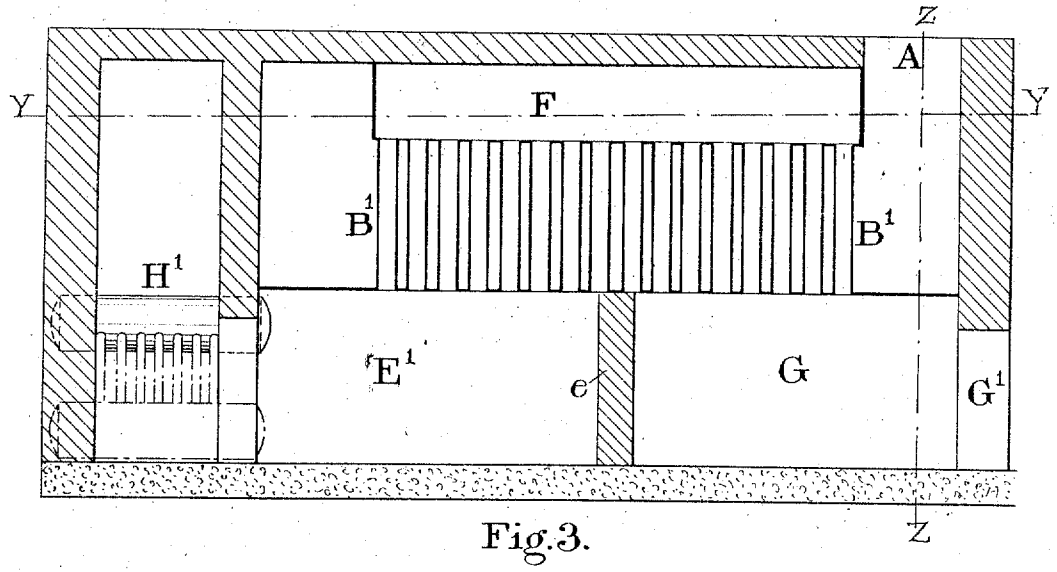

Fig.3.

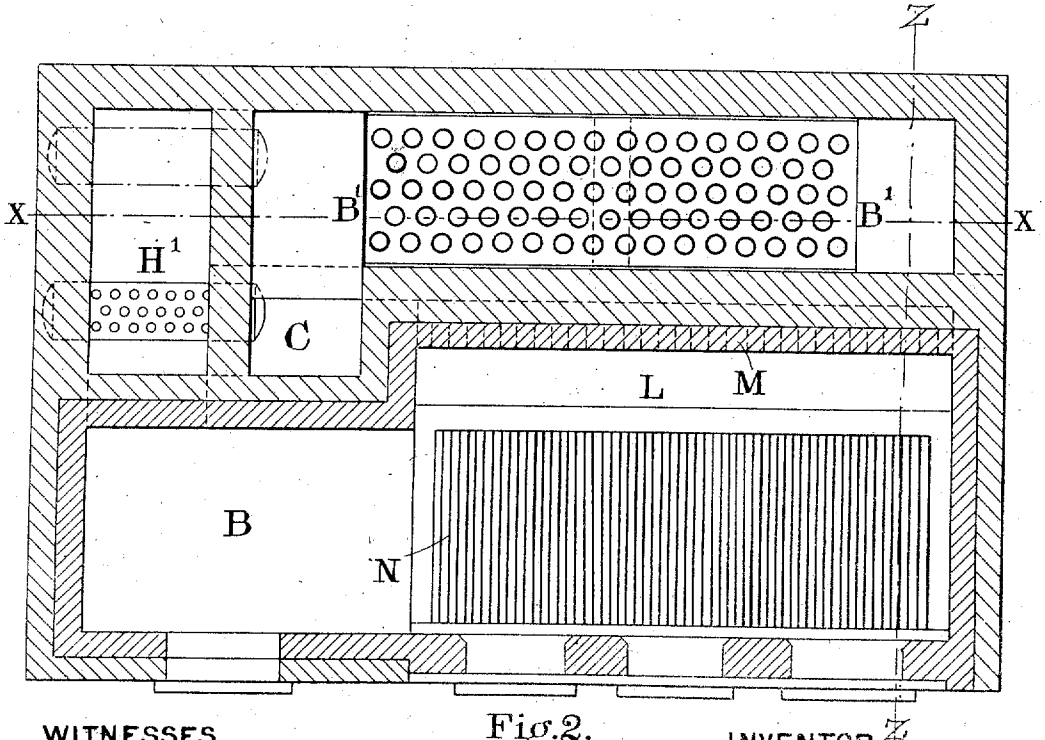

Fig.2.

WITNESSES.

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3 SHEETS—SHEET 3.

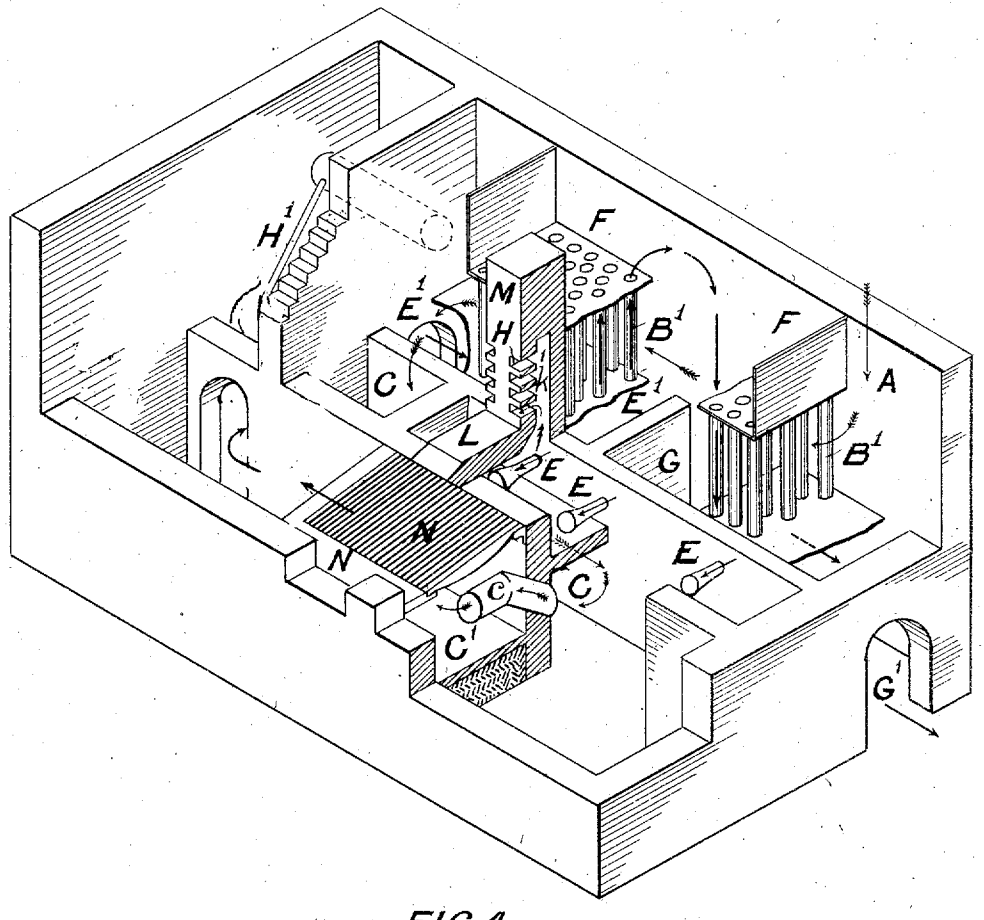

FIG. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

FRANK PERCY RUDDER, OF DERBY, ENGLAND.

REFUSE-DESTRUCTOR.

986,594. Specification of Letters Patent. Patented Mar. 14, 1911.

Application filed August 26, 1907. Serial No. 390,126.

To all whom it may concern:

Be it known that I, FRANK PERCY RUDDER, British subject, and resident of Derby, county of Derby, England, have invented certain new and useful Improvements in Refuse-Destructors, of which the following is a specification.

This invention relates to refuse destructors of the type referred to in my previous application for patent Serial No. 386098 filed on the 29th day of July 1907, and is designed to provide a neat and compact arrangement of furnace for consuming comparatively wet refuse.

In the specification of the prior application referred to means are described for driving off the whole or a large portion of the moisture contained in the refuse before it is passed to the bright part of the fire, and the present application relates to a special construction of destructor in which the prior invention is incorporated.

The invention will be fully described with reference to the accompanying drawings.

Figure 1. is a vertical section on line *z—z* Figs. 2 and 3. Fig. 2. is a horizontal section on the line *y—y* Figs. 1 and 3. Fig. 3. is a vertical section on line *x—x* Figs. 1 and 2. Fig. 4 is a perspective sectional view of the furnace.

Toward one end of the structure a grate N composed of fire bars is constructed which may if desired be divided into two or more separate grates by low walls or divisions which extend above the dividing walls of the ashpits C'. Behind the fire bars is arranged a drying plate or table L, such as described in the specification of the prior application, to receive the fresh or wet refuse through which the hot products of combustion are directed through the openings H in the wall M. At the other end of the struture from the grate N is formed the combustion chamber B which communicates by means of a passage through the wall with the boiler H' from which the products of combustion (see the plain arrow Fig. 4) pass into the chamber E' behind the grate, through the tubes at one end of the air heater B' into the chamber F and then through the tubes at the other end of the air heater into the chamber G and away by the passage G' to the chimney.

The air to aid combustion (see the feathered arrow Fig. 4) enters by the inlet A and becomes heated by passing through the air heater B', after leaving which it passes downward to the main passage or duct C and thence through the branches *c* to the ashpits C'.

The refuse to be burned is fed into the furnace by doors J arranged above the drying plate or table L. For drying the wet refuse a portion of the hot products of combustion from the chambers E' and G are forced by means of blowers E into the duct *k'* leading to the openings H in the wall M.

If desired the boiler H' may be omitted and the furnace used solely for crematory purposes. In the case where it is desired to employ the destructor solely for destroying the refuse or where the caloric efficiency of the refuse is not sufficient to heat a boiler, the latter may be omitted.

What I claim as my invention and desire to protect by Letters Patent is:—

1. In a refuse destructor the combination of a grate; a refuse drying plate; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate, and means for directing products of combustion into contact with the refuse upon said drying plate, and then returning said products to the grate.

2. In a refuse destructor the combination of a grate; a refuse drying plate; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate, and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate, and then returning said products to the grate.

3. In a refuse destructor the combination of a grate; a refuse drying plate; a boiler; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate, the boiler and the air heater; means for conducting the heated air to the grate, and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate, and then returning said products to the grate.

4. In a refuse destructor, the combination

of a grate; a refuse drying plate; a combustion chamber; a boiler; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate, the combustion chamber, the boiler and the air heater; means for conducting the heated air to the grate, and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate and then returning said products to the grate.

5. In a refuse destructor, the combination of a grate; a refuse drying plate at one side of and adjoining the grate; an air heater; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate, and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate and then returning said products to the grate.

6. In a refuse destructor the combination of a grate at one end of the structure; a refuse drying plate at one side of and adjoining the grate; a combustion chamber at the other end of the structure; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate, the combustion chamber and the air heater; means for conducting the heated air to the grate, and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate and then returning said products to the grate.

7. In a refuse destructor, the combination of a grate; a refuse drying plate; a flue providing communication between the grate and a smoke duct; an air heater adapted to be heated by the products of combustion located at the back of the structure in the flue; means for conducting the heated air to the grate; and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate and then returning said products to the grate.

8. In a refuse destructor, the combination of a grate; a refuse drying plate; a combustion chamber; a boiler at one side of and adjacent to the combustion chamber; an air heater adjacent to the boiler adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate, and then returning said products to the grate.

9. In a refuse destructor, the combination of a grate; an ashpit; a refuse drying plate; a combustion chamber; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate, the combustion chamber and the air heater; a smoke duct; a duct extending from the air heater downward between the walls of said communication means and said combustion chamber and along the bottom of the structure between the walls of said communication means and said smoke duct and of the ashpit, and communicating with the ashpit for conducting the heated air to the grate, and means for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate, and then returning said products to the grate.

10. In a refuse destructor, the combination of a grate; a refuse drying plate; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate, and a duct for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater, into contact with the refuse upon said drying plate, and then returning said products to the grate.

11. In a refuse destructor the combination of a grate; a refuse drying plate; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate; a perforated wall adjoining the refuse drying plate to conduct a drying agent thereto, and means for directing through said perforated wall products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate, and then returning said products to the grate.

12. In a refuse destructor, the combination of a grate; a refuse drying plate; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; means for conducting the heated air to the grate; a perforated wall adjoining the refuse drying plate, and a duct for directing products of combustion before they pass through the air heater and products of combustion that have passed through the

air heater through the perforations in the wall into contact with the refuse upon said drying plate, and then returning said products to the grate.

13. In a refuse destructor, the combination of a grate; a refuse drying plate; an ashpit; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; hot air passage for conducting the heated air to the grate; a perforated wall adjoining the refuse drying plate; the walls of said communication means between the grate and the air heater, of the air heater and of the ashpit, the perforated wall, the refuse drying plate and the top of the hot air passage forming a duct for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater through the perforations in the wall into contact with the refuse upon said drying plate, and then returning said products to the grate.

14. In a refuse destructor, the combination of a grate; a refuse drying plate; an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; a smoke duct; means for providing communication between said communication means and said smoke duct and the drying plate and blowers for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater into contact with the refuse upon said drying plate, and then returning said products to the grate.

15. In a refuse destructor, the combination of a grate; a refuse drying plate; an ashpit, an air heater adapted to be heated by the products of combustion; means for providing communication between the grate and the air heater; hot air passage for conducting the heated air to the grate, a perforated wall adjoining the refuse drying plate; the walls of said communication means between the grate and air heater, of the air heater and of the ashpit, the perforated wall, the refuse drying plate and the top of the hot air passage forming a duct for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater through the perforations in the wall into contact with the refuse upon said drying plate, and then returning said products to the grate, and blowers in the wall of the duct to induce said products of combustion to pass into and through said duct and into contact with the refuse upon said drying plate and then to return to the grate.

16. In a refuse destructor, the combination of a grate at one end of the structure; a drying plate at one side of and adjoining the grate; an ashpit underneath the grate; a combustion chamber at the other end of the structure; a boiler at one side of and adjacent to the combustion chamber, an air heater adapted to be heated by the products of combustion located at the back of the structure and adjacent to the boiler; flues providing communication between the grate, the combustion chamber, the boiler, the air heater and a smoke duct; a hot air passage extending from the air heater downward between the walls of the flue and of the combustion chamber and along the bottom of the structure between the walls of the flue and of the ashpit and communicating with the ashpit for conducting the heated air to the grate; a perforated wall adjoining the refuse drying plate; the walls of the flue, of the air heater and of the ashpit, the perforated wall, the refuse drying plate and the top of the hot air passage forming a duct for directing products of combustion before they pass through the air heater and products of combustion that have passed through the air heater through the perforations in the wall into contact with the refuse upon said drying plate, and then returning said products to the grate, and blowers in the wall between the flue and the duct to induce said products of combustion to pass into and through said duct and into contact with the refuse upon said drying plate and then to return to the grate.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

FRANK PERCY RUDDER.

Witnesses:
I. OWDEN O'BRIEN,
H. BARNFATHER.