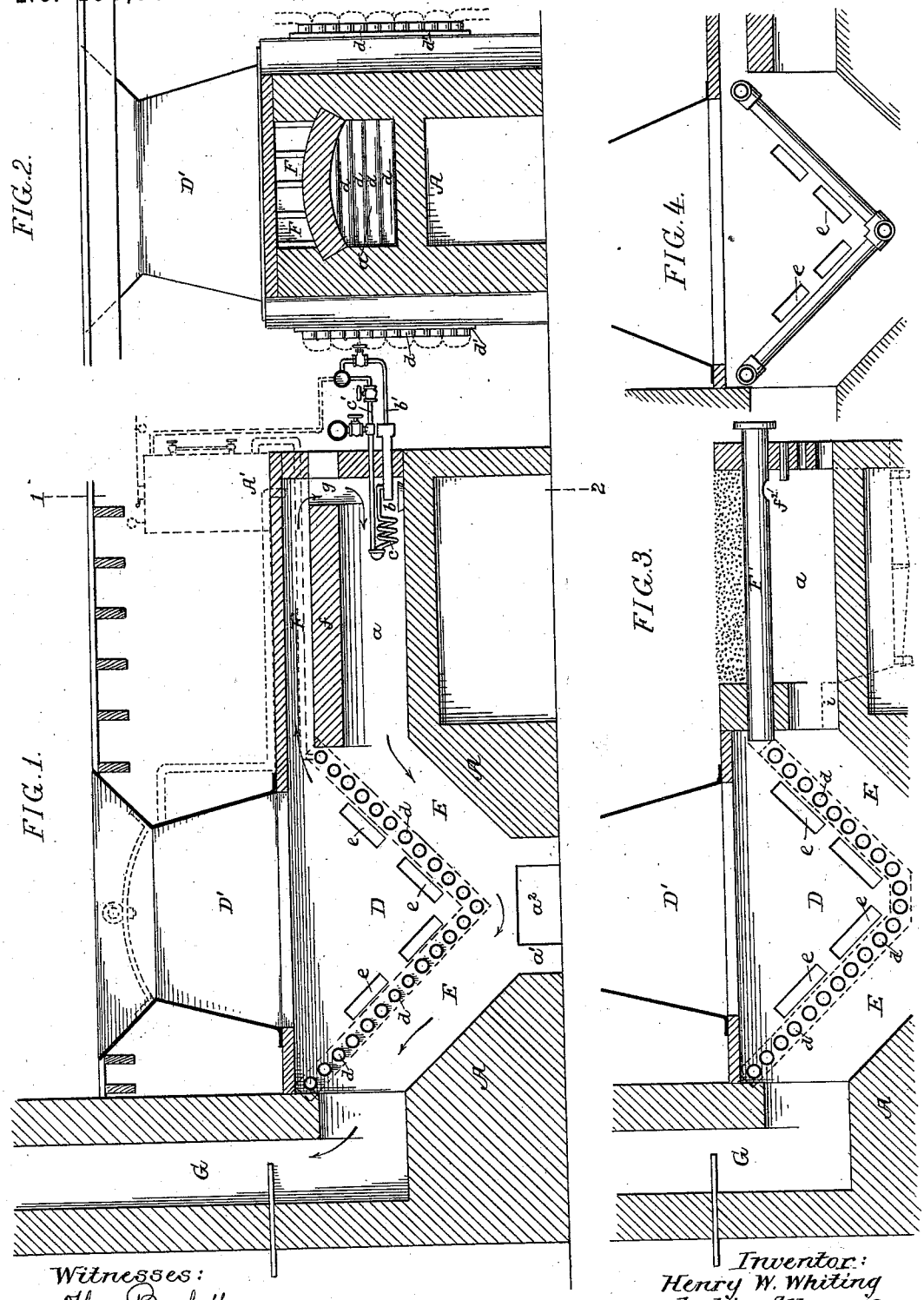
(No Model.)

H. W. WHITING.

REFUSE FURNACE.

No. 408,559. Patented Aug. 6, 1889.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY W. WHITING, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ALBERT E. PETERSON, OF SAME PLACE.

REFUSE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 408,559, dated August 6, 1889.

Application filed March 7, 1889. Serial No. 302,258. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. WHITING, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Refuse-Furnaces, of which the following is a specification.

The object of my invention is to construct a furnace for burning refuse matter—such as garbage—in which the gases that escape from the burning garbage are utilized.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of my improved furnace. Fig. 2 is a transverse section on the line 1 2, Fig. 1; and Figs. 3 and 4 are views of modifications.

A is the foundation of the furnace, *a* being the combustion-chamber, in which is the hydrocarbon-burner *b*, of any of the well-known forms. I prefer, however, to use the burner made in accordance with Patent No. 306,887, granted to me on the 21st day of October, 1884, and reissued on the 9th day of March, 1886, No. 10,699.

I will first describe the general construction of the burner. In front of the burner proper *b* is a coil or generator *c*, through which passes the oil and steam. By this generator or coil the oil and steam are heated to a high degree and made into a gas before entering the main burner *b*. Steam can be admitted into the pipe if necessary, as shown by dotted lines.

b' is the air and superheated-steam pipe, and *c'* is the oil-pipe.

E is the body of the furnace, of the peculiar form shown in Fig. 1, and in this portion of the furnace are a series of transverse tubular grate-bars forming a tapered bottom for the chamber D, which contains the garbage or other matter to be burned. This chamber D is supplied with a hopper D', which I prefer to carry up to the floor above, so that the refuse matter can be dumped from a cart or wheelbarrow into said hopper, which is provided with a suitable lid, as shown in Fig. 1, to prevent odor from escaping.

The tubular bars *d* preferably extend across the furnace, as shown in Fig. 2, and are secured to tie-plates *d'* at each end. The tubes are open at each end to allow for the free passage of air through the same. The tubes may, however, be joined by return-bends, and one end of the series connected to a water-inlet tube, as shown by dotted lines in Fig. 2, while the other is connected to a boiler or steam-dome, as shown at A', the steam from this dome being utilized in connection with the burner *b*. In one or both sides are a series of holes *e*, for the insertion of a slice-bar for cleaning the grates *d*.

Directly above the combustion-chamber is a passage F, separated from said combustion-chamber by a partition *f*. In front of the furnace is an opening *g*, to allow for communication between the passage F and the combustion-chamber.

G is a smoke-stack, which is provided with a suitable damper. In the bottom of the main chamber E of the furnace A is a depression *a'*, which receives any refuse matter which may fall between the bars, which can be readily removed through the door a^2 at the side of the furnace.

The garbage, as before remarked, is dumped into the hopper D', and the products of combustion pass around the garbage in the direction of the arrows, Fig. 1, drying and burning the same. A portion of the gas generated by the burning of the garbage is carried through the passage F into the combustion-chamber, where it mingles with the other gases in the furnace.

A tube may extend from the body of the hopper to the point *g* of the furnace, as shown by dotted lines in Fig. 1, where circumstances permit.

In Fig. 3 I have shown the passage F formed of a series of tubes F', which have openings f^2, communicating with the combustion-chamber in the same manner as the passages above described.

In some instances the grate may be composed of a series of inclined parallel tubes, as shown in Fig. 4, and the upper transverse tubes connected with a boiler and the lower tube with an inlet-pipe.

In place of the oil and oil-burner shown and described, a coal or wood furnace may be employed, as shown by dotted lines in Fig. 3, in which case it is preferable to have a wall *i*, over which the products of combustion pass.

I claim as my invention—

1. The combination, in a garbage-furnace, of the combustion-chamber *a*, and the main chamber E, and garbage-chamber D, and grates separating the chambers E and D, with a flue connecting the garbage-chamber with the front of the combustion-chamber, substantially as and for the purpose described.

2. The combination, in a garbage-furnace, of the combustion-chamber and the main chamber with the garbage-chamber above the main chamber, having a tapered bottom formed of a series of transverse tubes, substantially as described.

3. The combination, in a garbage-furnace, of the combustion-chamber and the main chamber with the garbage-chamber having a tapered bottom composed of a series of tubes communicating with each other, and with a water-supply pipe and a steam-dome, substantially as described.

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

HENRY W. WHITING.

Witnesses:
HENRY HOWSON,
HARRY SMITH.