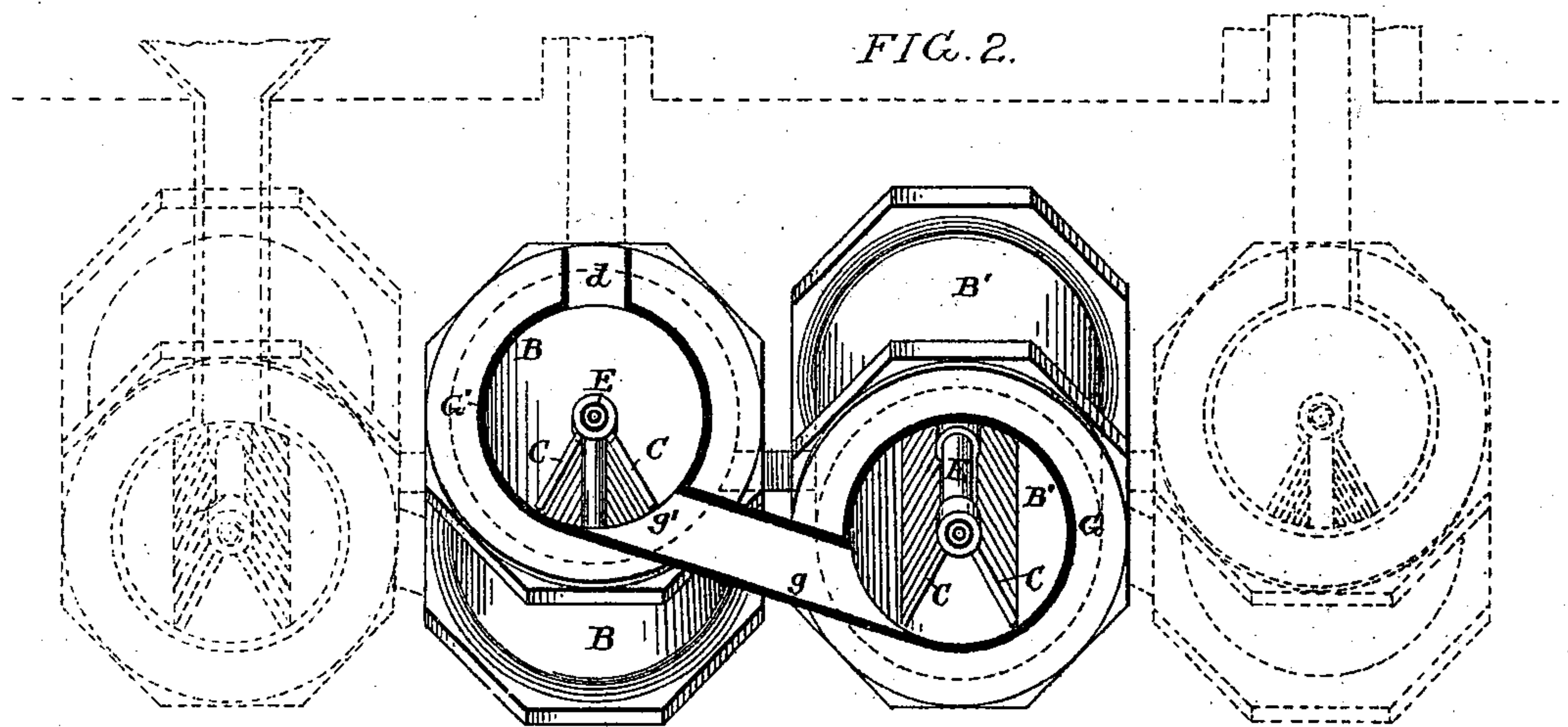
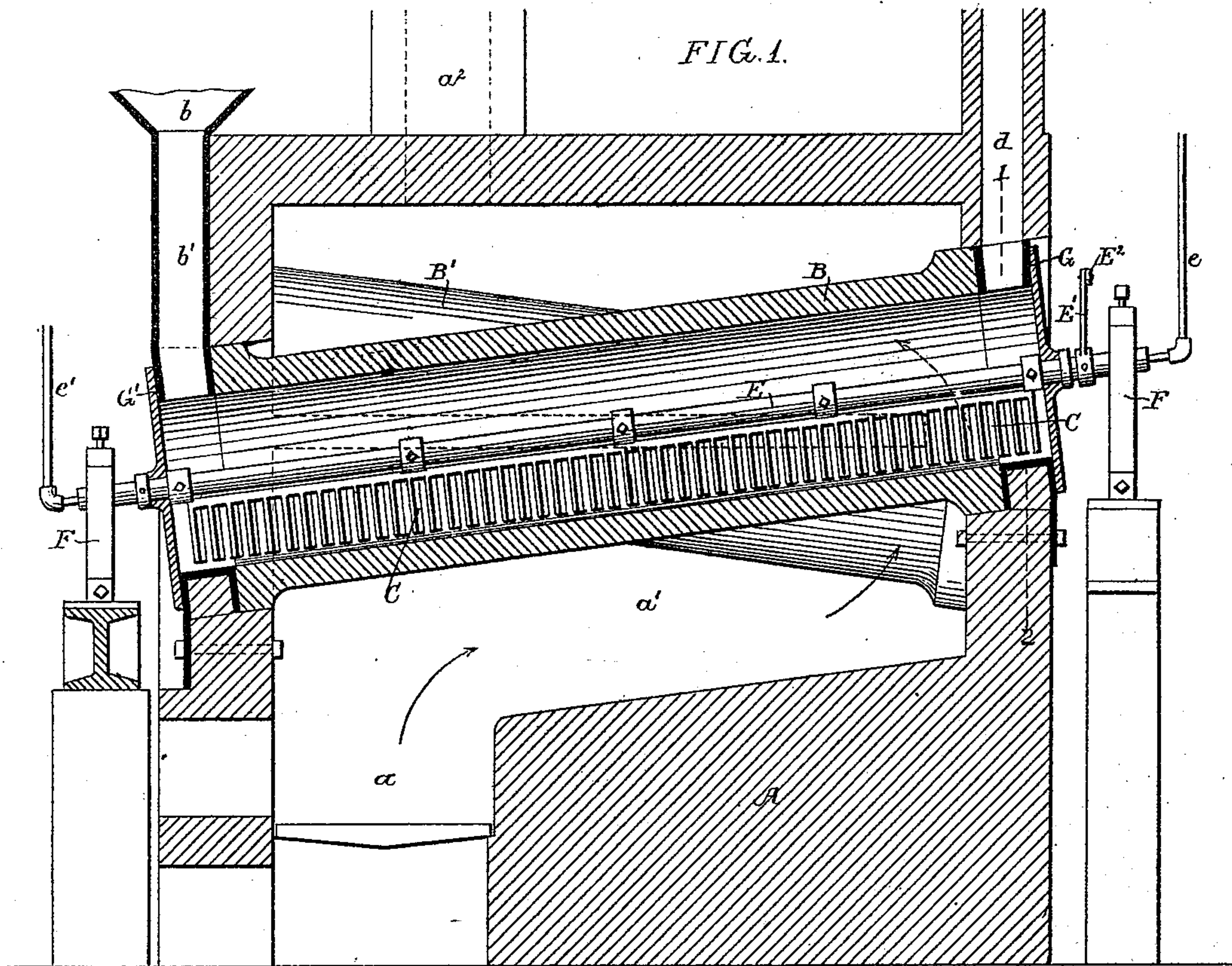


(No Model.)

T. WALKER & J. F. CARTER.
ORE ROASTING FURNACE.

No. 516,783.

Patented Mar. 20, 1894.



Witnesses:
William A. Farr
T. D. Goodwin

Inventors:
Thomas Walker &
John F. Carter
by their Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

THOMAS WALKER AND JOHN F. CARTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO JOHN A. BARHAM AND JOSEPH A. VINCENT, OF SAME PLACE.

ORE-ROASTING FURNACE.

SPECIFICATION forming part of Letters Patent No. 516,783, dated March 20, 1894.

Application filed May 23, 1893. Serial No. 475,281. (No model.)

To all whom it may concern:

Be it known that we, THOMAS WALKER and JOHN F. CARTER, both citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Ore-Roasting Furnaces, of which the following is a specification.

The object of our invention is to construct a furnace for roasting ores; our invention being a modification of the arrangement described and claimed in the application for patent filed by us on December 14, 1892, Serial No. 455,165; the main feature of the invention being the arrangement of the retorts so that the material can be fed through the retorts and from one retort to the other without dusting. This object we attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1, is a sectional view through the furnace, showing two retorts. Fig. 2, is a sectional view on the line 1—2, Fig. 1, with the furnace body omitted, in order to more readily illustrate the retorts.

A is the body of the furnace.

a is the fire box, and a' the combustion chamber in which are arranged the retorts B, B', the products of combustion passing out through the stack a^2 . The retorts, as will be seen in the drawings, are inclined and the material is fed up each inclined retort by the vibrating blades C mounted on a shaft E. In the present instance we arrange two sets of blades as shown in Fig. 2, so as to spread the ore under treatment in a thin layer. On the end of the shaft E is an arm E' connected by a rod E² to power vibrating mechanism so that the shaft and blades will be vibrated, thus spreading the ore laterally over the surface of the retort, as well as feeding the ore forward through the retort. The shafts E are tubular and are connected at one end to a water supply pipe e , and at the opposite end to an outlet pipe e' . Suitable valves may be arranged in these pipes for controlling the supply of water, and to prevent back pressure. The shafts E are supported in suitable bearings F mounted preferably outside the furnace.

The retorts rest upon the foundation wall of the furnace, and are so built in that they can be readily removed by drawing them through one end of the furnace. In the front and rear walls of the furnace are castings G, G', which form continuations of the retorts, and in which are the inclined passages g for the ore under treatment. While these structures are made of cast metal, they may be made of wrought metal, fire clay, or other suitable material. The ore as it is fed up the inclined plane of one retort, reaches the mouth g' , of the inclined passage g , and slides down this inclined passage to the retort B', where it is conveyed up either to the point of discharge when two retorts are used, or to another inclined passage to flow into a third retort, and so on, depending upon the number of retorts in the furnace.

We have shown by dotted lines in Fig. 2, a furnace having four retorts, the inlet being in this instance at one side of the furnace, and the outlet at the opposite side.

The inlet as shown in Fig. 1, is through a hopper b and passage b' , and the flow of material into the furnace may be controlled by any suitable feeding mechanism.

The fume exits d are preferably formed in the walls of the furnace, and, as shown, in the present instance communicate with the highest point of each retort. Thus it will be seen that we are enabled to feed the material slowly through the retorts, and carry the material from one retort to the other without dusting, and without passing through the fumes.

We claim as our invention—

1. The combination in a furnace, of the casing or body, retorts arranged side by side at an incline therein, the alternate retorts being inclined in opposite directions, and an inclined passage forming communication between successive retorts so as to allow the material to flow from one retort to the other, without dusting, substantially as described.

2. The combination in an ore roasting furnace, of retorts, arranged side by side and inclined alternately in opposite directions, retort heads one of which has an inclined pas-

sage forming a communication between the retorts for the passage of ore, and feeding mechanism arranged in said retorts, substantially as described.

- 5 3. The combination in an ore roasting furnace, of retorts inclined alternately in opposite directions, a passage connecting the upper end of one retort with the lower end of the next retort, and mechanism for feeding
10 the ore from the lower to the upper end of each retort, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS WALKER.

JOHN F. CARTER.

Witnesses to the signature of Thos. Walker:

HENRY JUNKIN,

R. CAMPION.

Witnesses to the signature of J. F. Carter:

HENRY HOWSON,

WILLIAM D. CONNER.