

JOHN M. REID.

Improvement in Furnaces for Smelting, Fusing, and Roasting Ores.

No. 125,143.

Patented April 2, 1872.

Fig. 1.

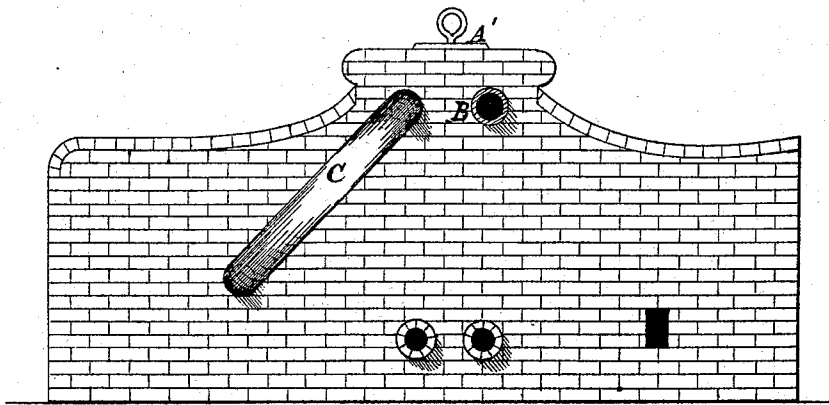
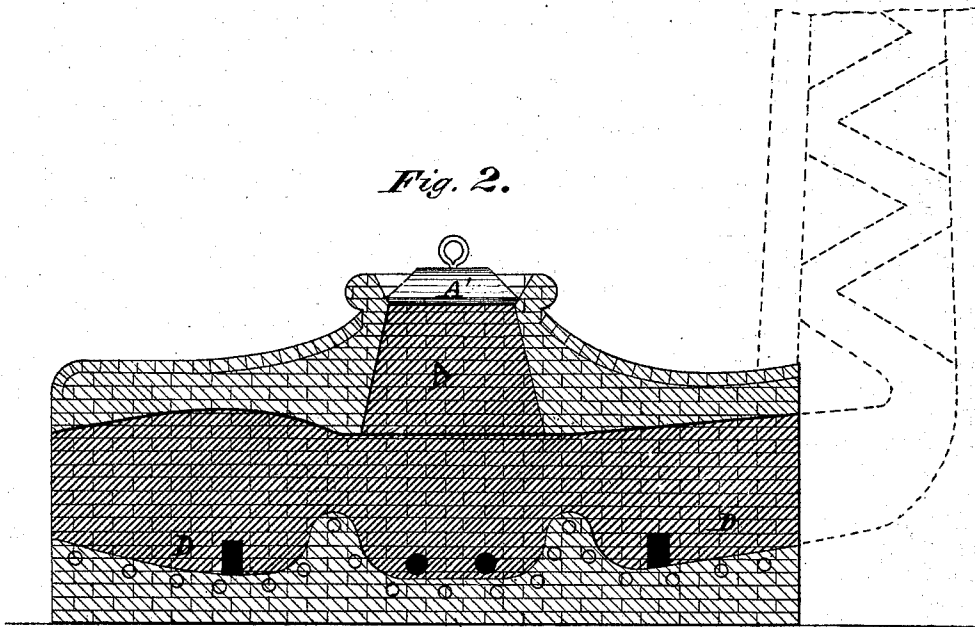


Fig. 2.



Witnesses:

O. E. Duff

T. C. Brecht

Inventor:

John M. Reid

UNITED STATES PATENT OFFICE.

JOHN M. REID, OF ALLEGHENY CITY, PENN., ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO M. RIDDELL AND H. McDONALD, OF SAME PLACE.

IMPROVEMENT IN FURNACES FOR SMELTING, FUSING, AND ROASTING ORES.

Specification forming part of Letters Patent No. 125,143, dated April 2, 1872; antedated February 12, 1872.

SPECIFICATION FOR FURNACES.

Specification describing certain Improvements in Furnaces, invented by JOHN M. REID, of the city of Allegheny, and county of Allegheny, State of Pennsylvania.

This invention of mine relates to improvements in furnaces, more particularly designed for smelting, fusing, and roasting vitrescent matter, metals, metallic oxides and compounds, decomposing and utilizing refuse and other earthy matter; also applicable to steam-boilers, and generally for every purpose where heat may be required; readily understood, worked, and quite distinct from every other known economical method, reference being made to accompanying drawing making part of this specification, in which—

Figure 1 is an outside elevation of so much of my improved furnaces as illustrates their construction. Fig. 2 is a longitudinal vertical section thereof.

Like letters of reference indicate like parts in each.

Every kind of fuel—viz., gaseous, liquid, plastic, mixed, and solid—can be used in these furnaces, but more particularly designed for bituminous or soft coals.

To enable others who may wish to make and use my improvements I will proceed to describe their construction, viz.: The furnaces may be built of any suitable materials, shapes, and sizes, single, double, or more together, as may be desired, though only two are shown together in the present drawing.

The upper part of the fuel-chamber A is by preference hopper-shaped, as shown, for convenience in feeding fuel, and when desired the mouth may be closed with movable cover A'. For supplying air to the fuel I make holes at every desired place, below, above, or at the point of combustion. The heated gases may be conveyed, by a bent pipe, C, from the upper part of the fuel-chamber A into the hearth D to be ignited for increased heat.

Fire is made at bottom, and fuel supplied, as shown, or otherwise, while the products of combustion are drawn or forced into a series or succession of hearths or chambers, so arranged that such products be utilized in smelting, roasting, fusing, puddling, boiling, decomposing, and utilizing refuse and other earthy matter at pleasure without grate-bars, and exhausted as much as possible before making their final escape.

A current may be kept up by height and construction of smoke-stack or chimney relative to the chamber A, but by preference from machinery to draw, exclude, or force air and other supporters of combustion to fuel at pleasure.

The fires have a tendency to liberate or distil volatile matter at a high temperature, for which separate passages are made (with suitable valves or dampers, not shown), thereby enabling operators to use the carbonaceous matters by themselves or together with the volatile. The volatile or gaseous matters may be conveyed through pipes B to some other part stored for immediate and future use, and ignited with other fuel to be decomposed together or separately at pleasure. Whatever amount of oxidation or heat the matters under treatment may require they can have it, and be taken out by openings most suitable. Water can be economized by circulating under the chambers and hearths, keeping them cool when desired.

What I claim as my invention, and desire to secure by Letters Patent, is—

The method of arranging, constructing and working furnaces for distilling, controlling, commanding heat, for the purposes set forth, as herein shown and described.

JOHN M. REID.

Witnesses:

O. E. DUFFY,
T. C. BRECHT.