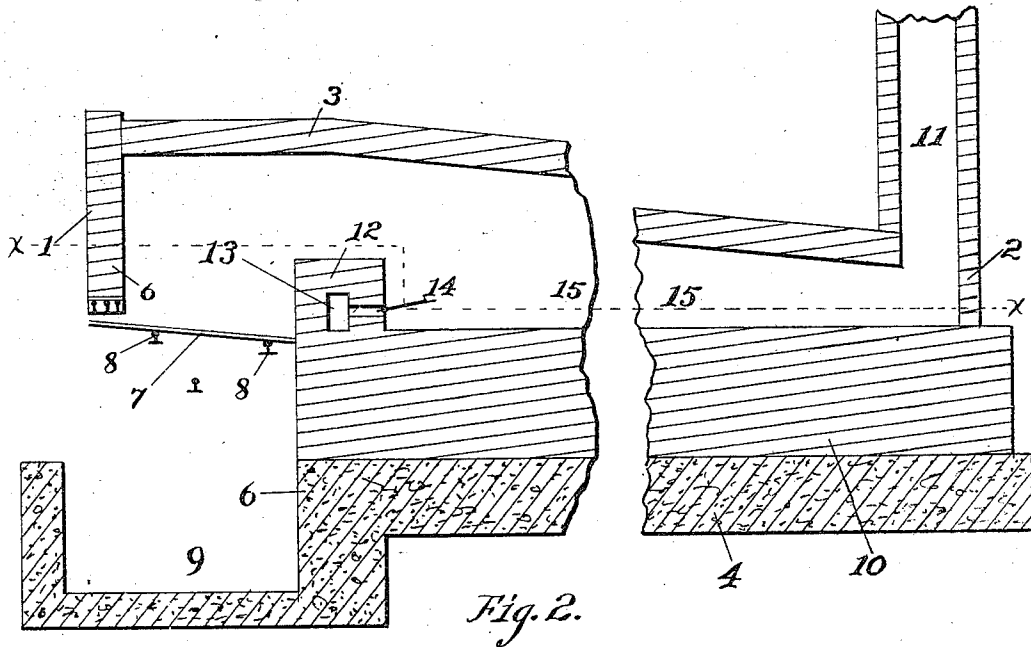
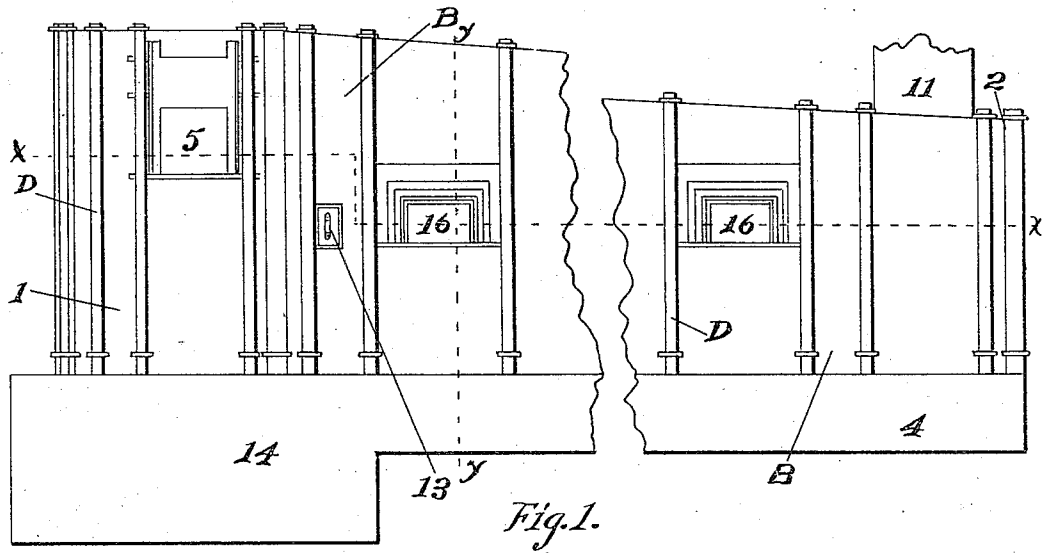


G. G. VIVIAN.
SINTERING FURNACE.
APPLICATION FILED NOV. 13, 1909.

948,981.

Patented Feb. 8, 1910.

2 SHEETS—SHEET 1.



Witnesses
E. N. Simpson
J. A. Phillips

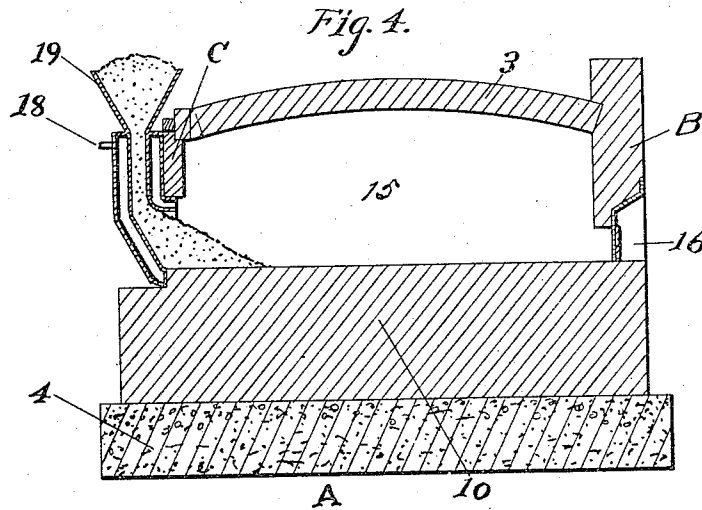
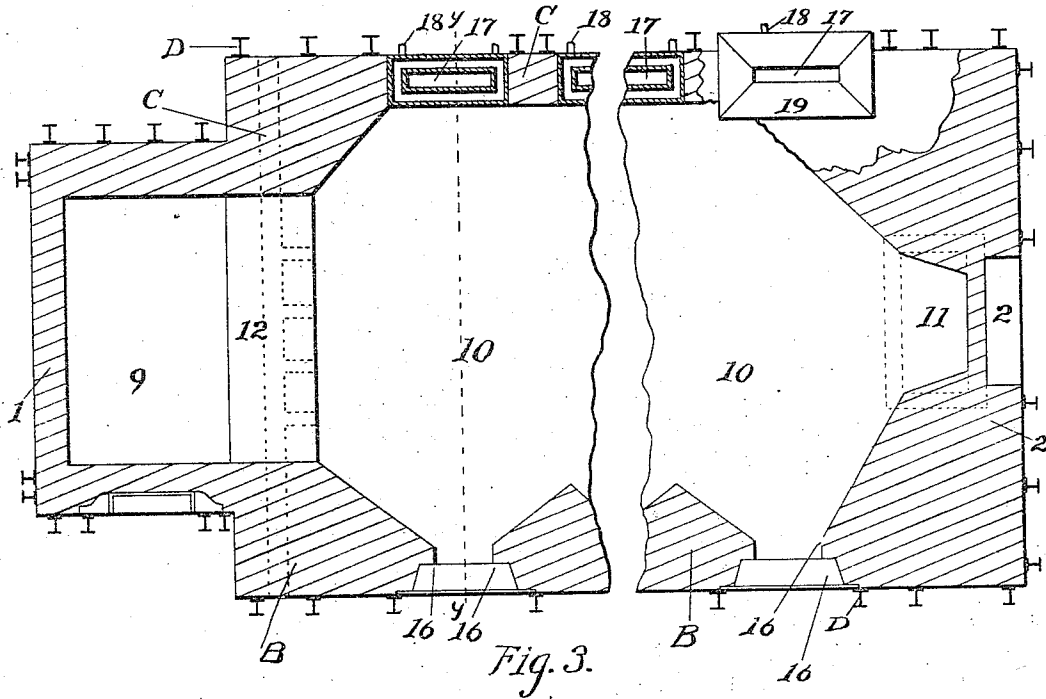
George G. Vivian
Inventor
by J. M. Thomas
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UNITED STATES PATENT OFFICE.

GEORGE G. VIVIAN, OF TINTIC, UTAH.

SINTERING-FURNACE.

948,981.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed November 13, 1909. Serial No. 527,919.

To all whom it may concern:

Be it known that I, GEORGE G. VIVIAN, a citizen of the United States, residing at Tintic, in the county of Juab and State of Utah, have invented certain new and useful Improvements in Sintering-Furnaces, of which the following is a specification.

The object of my invention is to provide a furnace economical in cost of construction and operation; in which material may be given a sintering treatment. So arranged that the chemical changes or action taking place in the material under treatment may be controlled and arrested at any time. Also one in which material with or without heat elements may be treated. I attain these objects by the furnace illustrated in the accompanying drawings in which similar characters of reference indicate like parts, throughout the several views.

Figure 1, is an outside elevation, medial portions cut away. Fig. 2, is a vertical, longitudinal section, medial portions cut away. Fig. 3, is a horizontal section, on line *x x* Fig. 1, medial portions cut away. Fig. 4, is a transverse vertical section, on line *y y* Fig. 1.

In my furnace, A is the foundation, B and C are the side walls which are suitably supported by I beams D.

1 is the front end wall, 2 is the rear end wall, 3 is the roof and 4 the bottom.

At the front end 1, is provided a fuel feeding door 5, and in the same end is fitted the fire box 6, which consists of grate bars 7, suitably supported on I beams 8, beneath which is the ash pit 9. A horizontally placed hearth 10, is built extending from the said fire box 6, to rear or other end of the furnace. The surface of which hearth is on one plane. At the rear end of the furnace is built the flue 11, leading to the stack. On the front end of the hearth 10, is the bridge wall 12, in which is formed a horizontal air conduit 13, with passage ways 14, therefrom into the heat chamber 15 of the furnace. This air conduit 13, extends through each side wall, and is fitted with doors or dampers, the purpose of said conduit and passage ways is to more readily and perfectly control the heat applied to material under treatment, and to control the chemical or other changes taking place in said material.

In side wall B, are fitted openings 16 through which the attendants work and ma-

nipulate the ore under treatment. Opposite said openings 16, in the side wall C, are fitted ore chutes 17. Said ore chutes are water jacketed by allowing water to circulate around the chutes by means of pipes 18, one of which is ingress and the other egress. Each chute is fitted with an ore hopper 19.

The operation of my sintering furnace is as follows: Fire is started in the fire box and the material to be treated is fed into the hoppers 19, which are kept filled at all subsequent steps of the treatment, which material will by gravity assume the position shown in Fig. 4. In this way the materials act as dampers for said ore chutes. When the fire has generated sufficient heat to sinter the material, the attendant will open one of the doors 16, and by means of rabbles, gently draw and spread some of the material over the hearth and in this manner proceed from door to door, covering through said openings all of said hearth. When sufficient heat has been absorbed by the material so spread, one or more of the doors 16 is opened, and the material is removed. If it is desired that the material when treated shall be in small lumps, or chunks, the material is spread in even mass on the floor, and allowed to chill, and may then be easily broken or crushed. If the material under treatment carries heat elements, either incorporated or mixed therein such as sulfid ores, and more heat should be thereby induced or supplied than was desired, air may be supplied through conduit 13, and passage ways 14, to diminish or control such heat or chemical action. The doors 16 enable the attendant to quickly remove the material from the furnace when the required amount of heat has been applied. The said conduit 13, and the passage ways 14, with the ease and rapidity with which the material may be removed from the heat chamber 15, in my furnace, enable the attendants to sinter sulfid ore and other similar material without consuming but little of the heat elements in such material, thus leaving such ore in condition for readily feeding into blast or other furnace, and also to retain in such ore the greater portion of the heat elements therein for use as fuel in subsequent smelting operation.

Having thus described my furnace, I desire to secure by Letters Patent and claim—

1. In a furnace of the class described, a fire box, a heat chamber, and a flue, a hearth

whose upper surface is in one plane, water jacketed chutes in one side of said furnace, working doors in the other side of said furnace opposite said ore chutes, a bridge wall, a cold air conduit therethrough extending through each side wall, passage ways leading from said conduit rearwardly over said hearth, as and for the purpose described.

10 2. In a furnace of the class described, a fire box, a hearth whose upper surface is level, a flue opening from said hearth, end and side walls, and a roof over said hearth forming a heat chamber, a bridge wall on
15 one end of said hearth, a conduit in said bridge wall extending through said side walls, passage ways leading from said conduit rearwardly into said heat chamber, water jacketed ore chutes opening on said
20 hearth, working openings in the side walls opposite said ore chutes, as and for the purpose described.

3. In a furnace of the class described, consisting of end and side walls, and roof with
25 a flue leading therefrom, a fire box, a horizontally placed hearth, a bridge wall on one

end thereof, an air conduit in said bridge wall extended through said side walls, passage ways leading from said conduit opening over said hearth, water jacketed ore chutes in one wall, doored openings opposite thereto in the other wall, as and for the purpose described.

4. In a furnace of the class described, a fire box, a hearth whose upper surface is level, a flue opening from said hearth, four walls and a roof over said hearth forming a heat chamber, a bridge wall on one end of said hearth, a conduit in said bridge wall, extending through two of said walls, passage ways leading from said conduit rearwardly into said heat chamber, water jacketed ore chutes opening on said hearth, working openings in the walls, as and for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE G. VIVIAN.

Witnesses:

G. B. BLAKELY,
JOS. F. SIMMONS.