

(No Model.)

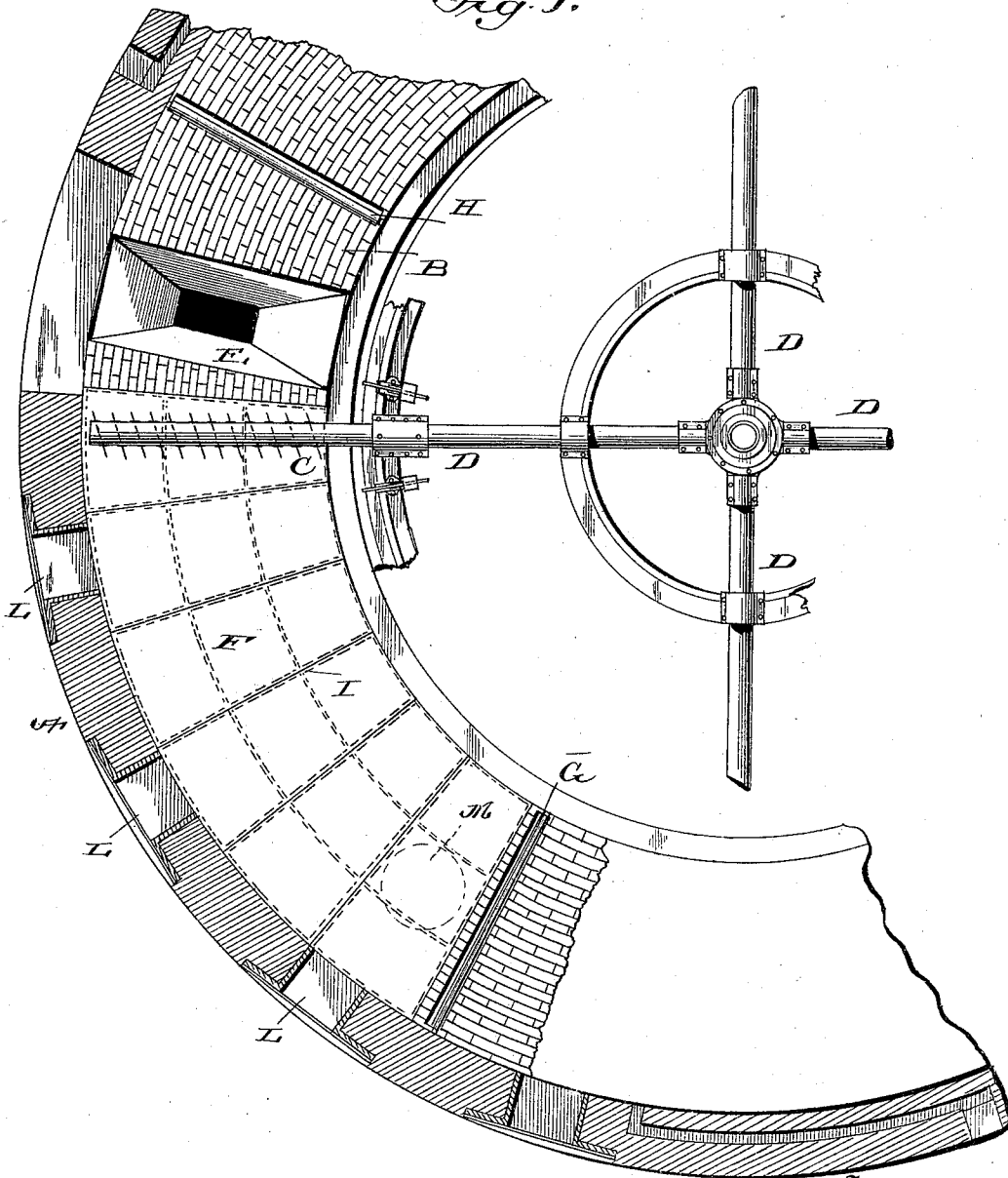
2 Sheets—Sheet 1.

J. ROGER.  
ROASTING FURNACE.

No. 542,715.

Patented July 16, 1895.

Fig. 1.



Witnesses

*John Deane*  
*A Deane*

Inventor

*John Roger*  
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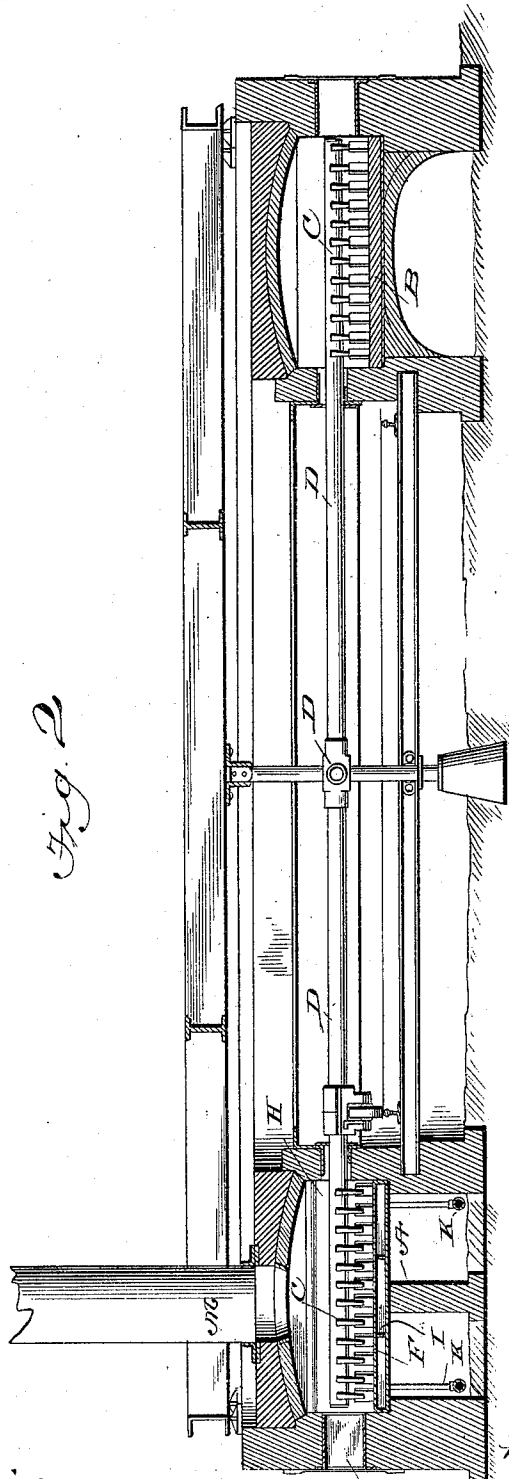
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2 Sheets—Sheet 2.

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ROASTING FURNACE.

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Patented July 16, 1895.



*Fig. 2*

Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN ROGER, OF DENVER, COLORADO.

## ROASTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 542,715, dated July 16, 1895.

Application filed September 27, 1894. Serial No. 524,251. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ROGER, a subject of the Queen of England, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Roasting-Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to roasting-furnaces, and among the objects in view is to provide a roasting-furnace which is provided with a cooling-hearth over which the desulphurized ores are caused to pass during their progressive movement, whereby said ores will be cooled to enable the same to be handled preparatory to any further treatment.

It has heretofore been necessary in order to cool the roasted ores to take the ore from the discharge-point of the furnace in a car and discharge said ore over a cooling-floor and allow it to remain there until sufficiently cool to handle. Such operation necessitates more or less labor and makes the preparation of the ore for further treatment to which it has to be subjected expensive, and my invention is designed to overcome the expense and disadvantage of said method of treatment.

With the various objects in view my invention consists in the novel construction, arrangement, and combination of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a horizontal sectional view of a roasting-furnace of that class known as "turret-furnaces," illustrating my invention as applied thereto. Fig. 2 is a vertical central sectional view thereof.

I would state that my invention is applicable to various classes of furnaces, and although I describe and show my invention in its application to a turret-furnace—that is to say, a furnace constructed in circular form, such as has been patented by R. Pearce on December 27, 1892—yet I do not wish to be restricted in the application of my improvements to that particular style of furnace.

The principle of my invention consists in utilizing a portion or section of the usual roasting-hearth as a cooling-hearth for the

ores, said cooling-hearth being adapted to be cooled in any desired manner and by any suitable means. For instance, it might be cooled by means of cold-air currents or water-sprays, or the hearth or bottom portion may be made of iron, with a water-jacket beneath the same, whereby to absorb the heat. It will therefore be understood that although I show but one arrangement of means for attaining the desired result—*i. e.*, a hearth constructed of cast-iron water-jackets—I intend in practice to employ other means for accomplishing my object without departing from the principle of my invention and without losing any of its advantages.

A indicates a portion of a turret-furnace such as has heretofore been referred to, and B its roasting-hearth, along which the ore is caused to travel by the usual revolving stirrer, agitator, or rabble-blades C, mounted upon radial arms D, which are adapted to be revolved by any desired means.

A portion of the hearth B, preferably adjacent to the discharge opening or hopper E thereof, I reserve for my cooling-hearth, as indicated at F, which section or cooling-hearth is adapted to be separated or cut off from the remaining portion of the roasting-hearth by swinging doors G H, which are adapted to normally hang vertically and cut off the hot gases from the cooling-hearth, and said doors being also adapted to yield to allow for the passage of the agitator or rabble-blades before mentioned.

The cooling-hearth may, as before stated, be constructed and provided with means to effect the cooling of the ores, and as an illustration I show said cooling-hearth as being water-jacketed, as at I, to which cold water may be fed through water-pipes K.

Suitable air-inlet openings L may be arranged to admit cold air to the cooling-hearth, and I also provide a stack M, adjacent to the swinging door G, for the purpose of carrying off the gases which are evolved from the ore after passing the roasting-hearth, and also to create a current of cold air over the cooling-hearth, so as to absorb or carry away a great amount of heat.

It will be obvious that by my invention ores may be more quickly and conveniently handled and at a minimum of expense, and it

will also be obvious that my invention will be applicable to various styles of roasting-furnaces and equally good results obtained.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A roasting furnace having a roasting hearth, swinging doors arranged to divide a portion of said hearth from the remaining  
10 portion and to thereby form a cooling section, and means for cooling said section as described.

2. A roasting furnace having a roasting hearth, revolving agitator or rabble blades,

swinging doors arranged to divide a portion 15 of said hearth from the remaining portion and to thereby form a cooling section, said doors being adapted to normally hang vertically and to swing upwardly to permit of the passage of the said blades, and means for 20 cooling said section as described.

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

JOHN ROGER.

Witnesses:

MARY A. WHEELER,  
JAMES HENDERSON.