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COMPLETE SPECIFICATION.

Improvements in and relating to Rotary Rabbles for Ore-roasting Furnaces.

I, JOHN BROWN FRANCIS HERRESHOFF, of 25, Broad Street, New York City, United States of America, Chemist, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to improvements in the rotary rabbles for ore roasting furnaces of the kind having a series of superposed hearths and hollow revolving stirring rabbles mounted upon a central hollow shaft through which a stream of cooling fluid is caused to circulate in order that these parts may be artificially maintained at a lower temperature than the general temperature of the furnace.

10 When in use I have found on the one hand that the teeth or projections on the rabbles either break off or become worn out prematurely owing to the high temperatures to which they are subjected whilst on the other hand the inner ends of the rabbles projecting into or across the hollow shaft cause a great deal of unnecessary friction and so prevent the efficient circulation of the cooling
15 fluid.

The object of the present invention is to obviate these disadvantages and to this end the teeth or projections are mounted upon sections or plates adapted to be so secured to the rabble arms as to be capable of being readily removed and replaced, and the rabble arms themselves are adapted to be secured to flanges
20 integral with the outer chamber enclosing the central shaft and provided with a pair of apertures in communication the one with the outer chamber and the other with the central shaft. The rabble arms are secured to the flanges in such a manner that the openings in each of the arms will register with the apertures in the corresponding flange and so allow the cooling fluid to pass
25 through the rabble arms and hollow shaft with a minimum amount of friction.

The reduction in the amount of friction is due to the fact that no members, capable of partially reducing the area of the passage conveying the cooling fluid and of consequently increasing the friction, project within said passage.

30 A specific embodiment of my invention is illustrated in the accompanying drawings, in which Figure 1 is a vertical section of an ore roasting furnace provided with my improvements; Figure 2 a vertical section drawn upon an enlarged scale showing one of the stirrer or rabble arms; while Figure 3 is a horizontal section on line 3—3 of Figure 2, and Figure 4 a horizontal section on line 4—4 of Figure 2, and Figures 5 and 6 views taken substantially on
35 lines 5—5 and 6—6 of Figure 2.

The body or frame A of the furnace is provided with a series of superposed floors B, C which are provided with central openings B¹ and peripheral openings C¹. The ore is delivered to the uppermost floor B through chutes D leading from cylindrical chambers E receiving a supply from hoppers F. The
40 ore is fed in the chambers E by means of screw conveyors G mounted upon a shaft G¹, which is driven by means of gearing G². By means of rabble arms, of a type now well-known in the art, the ore is forced laterally inward to the

[Price 8d.]



Improvements in and relating to Rotary Rabblers for Ore-roasting Furnaces.

openings B¹ and outward to the openings C¹ and travels downward while the roasting gases travel upward. Centrally within the structure extends a hollow vertical shaft H closed at the top by a plug H¹. With this shaft is connected rigidly a sleeve J. For example, the bottom of the sleeve may have a flange J¹ bolted to a corresponding flange H² of the shaft, the shaft H being driven by suitable mechanism such as the gearing H³. A gear J² is connected with the upper portion of the sleeve J and serves through the medium of the gear G² to operate the screw conveyors G.

To the sleeve J are secured as by means of bolts and nuts K the rabble arms L. Each of these arms is provided at its inner end with a flange L¹ fitted against a corresponding flange J³ of the sleeve J, and furthermore the rabble arm is divided internally by a partition L² into two channels, of which the upper channel L³ communicates with the interior of the sleeve J by means of an aperture J⁴, while the lower channel L⁴ communicates with the interior of the shaft H by means of a nipple or tube M inserted into a suitable aperture of the shaft and extending therefrom outwardly through a suitable aperture of a sleeve to form a tight joint with the inner surface of the rabble arm. Air is supplied by means of a blower or other suitable device through a pipe N connected with the lower end of the shaft H and this air passes through the several nipples M to the channels L⁴ and L³, cooling the rabble arms and the shaft and finally escapes through the sleeve J and the stationary pipe O connected with the upper end thereof. As shown in the drawings, the lowermost rabble arm L need not be provided with the air circulation means described above.

The projections P carried by the rabble arms are inclined alternately to the left and to the right in adjacent floors so as to alternately force the ore inward and outward on the several floors in the well-known manner. I prefer to attach these rabble projections to movable sections Q, each carrying three or four such projections and provided with suitable means for temporary attachment such as the overlapping hooks Q¹ shown in Figures 3 and 5. These hooks fit over flanges L⁵ of the rabble arms and each section Q may therefore be slid lengthwise of the rabble arm, thus facilitating the insertion and removal of the sections carrying the projections P. Nuts and bolts, as indicated at R, or any other suitable means may be employed for preventing accidental movement of the section Q during the normal operation of the furnace.

I have also indicated in Figure 1, pipe sections S arranged at the centre of the floor C, which pipe sections are overlapped by inverted cups T shown also in Figures 2 and 3. These parts of the furnace are provided for the passage of air through it at the beginning of the operation, but as soon as the ore descends to the successive floors C, it rises above the level of the inverted cups T and forms a seal therefor.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In an ore roasting furnace of the kind hereinbefore set forth, securing the rabble arms to flanges integral with the outer chamber surrounding the shaft, said flanges being provided with a pair of apertures which communicate the one with the outer chamber and the other with the central shaft and which are adapted to register with the passages in the rabble arms, substantially as described and for the purpose set forth.

2. In an ore roasting furnace of the kind hereinbefore set forth, mounting the rabble teeth or projections upon plates adapted to be so secured to the rabble arms as to be capable of being readily removed and replaced, substantially as described and for the purpose set forth.

3. In an ore roasting furnace as claimed in Claims 1 or 2, connecting the driving mechanism with the projecting portion of the hollow shaft and the

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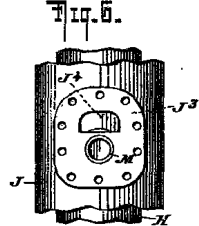
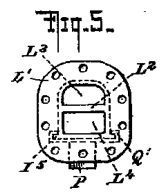
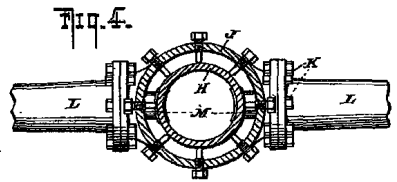
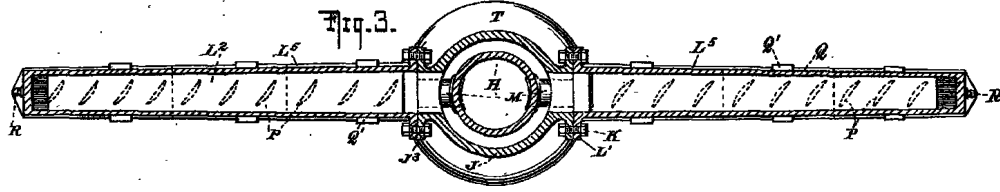
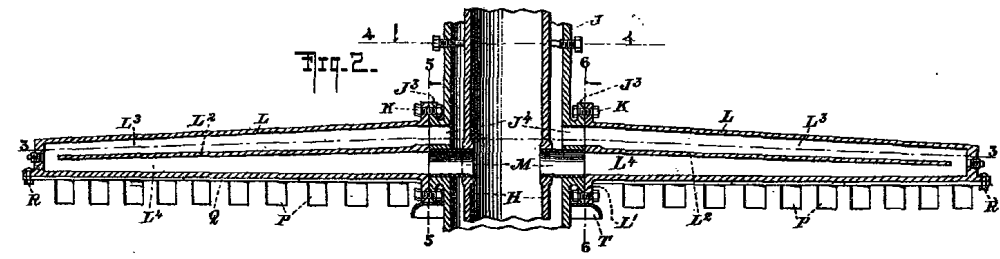
ore feeding mechanism with the projecting portion of the sleeve, substantially as described and for the purpose set forth.

4. An ore roasting furnace constructed and arranged substantially as described with reference to the accompanying drawings.

5 Dated this 22nd day of September, 1910.

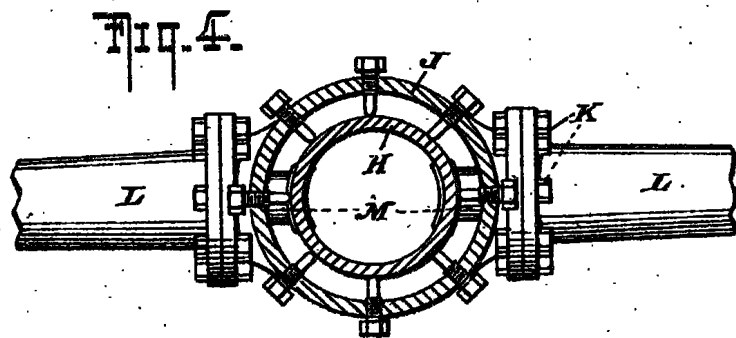
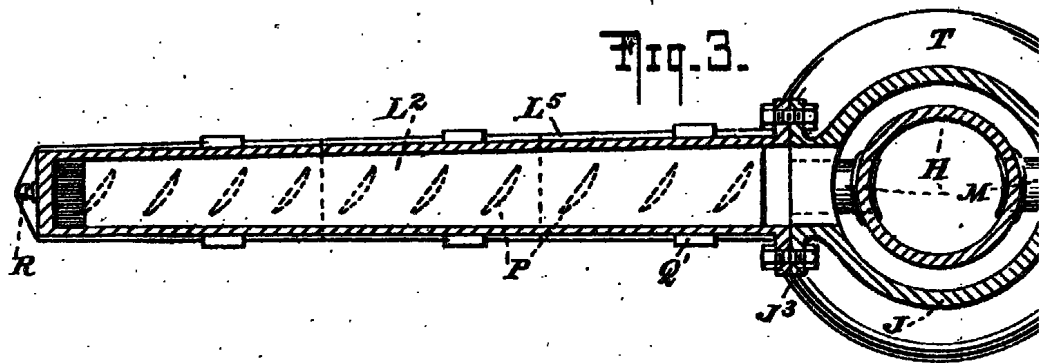
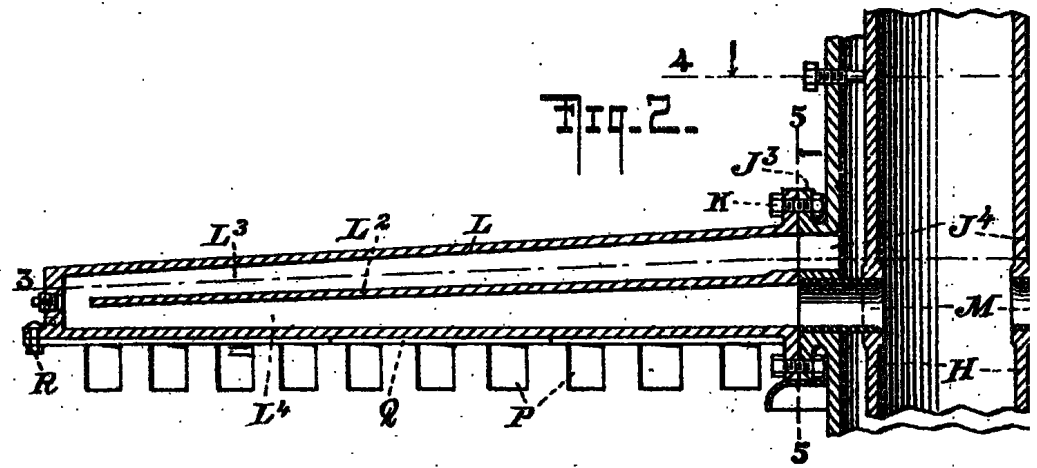
A. M. & WM. CLARK,
Chartered Patent Agents,
53, Chancery Lane, London, W.C.

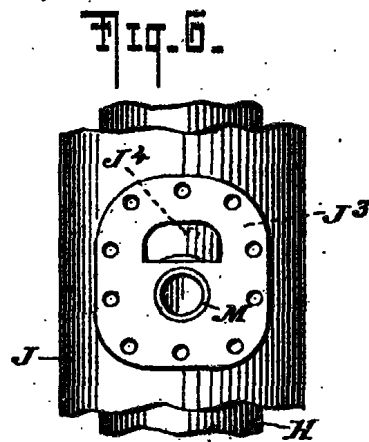
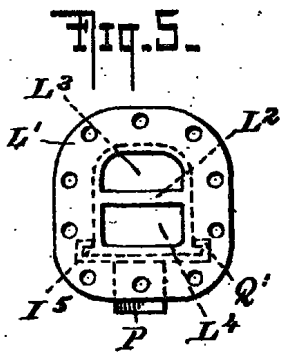
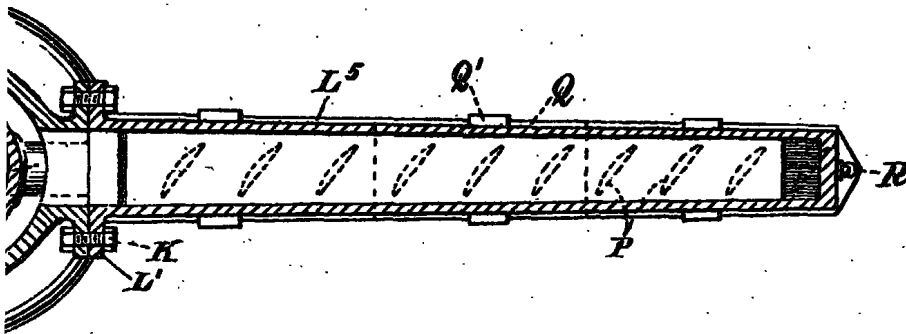
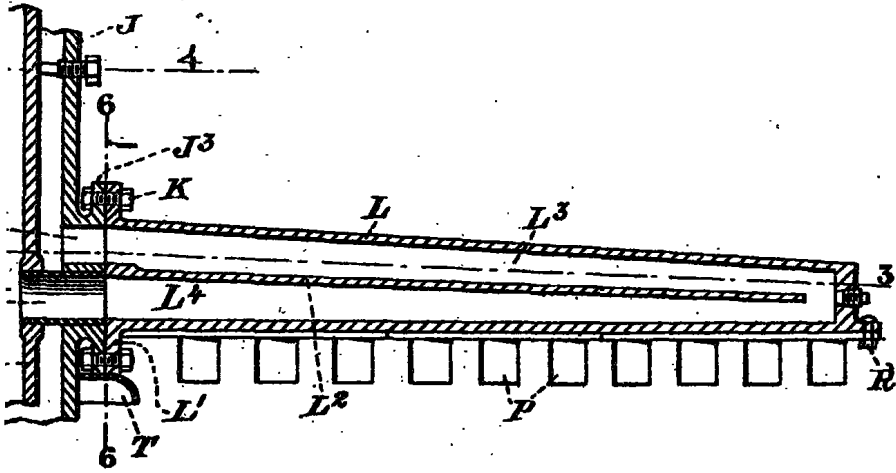
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