

C. PFAUL.  
ORE ROASTING FURNACE.  
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989,868.

Patented Apr. 18, 1911.

Fig. 1

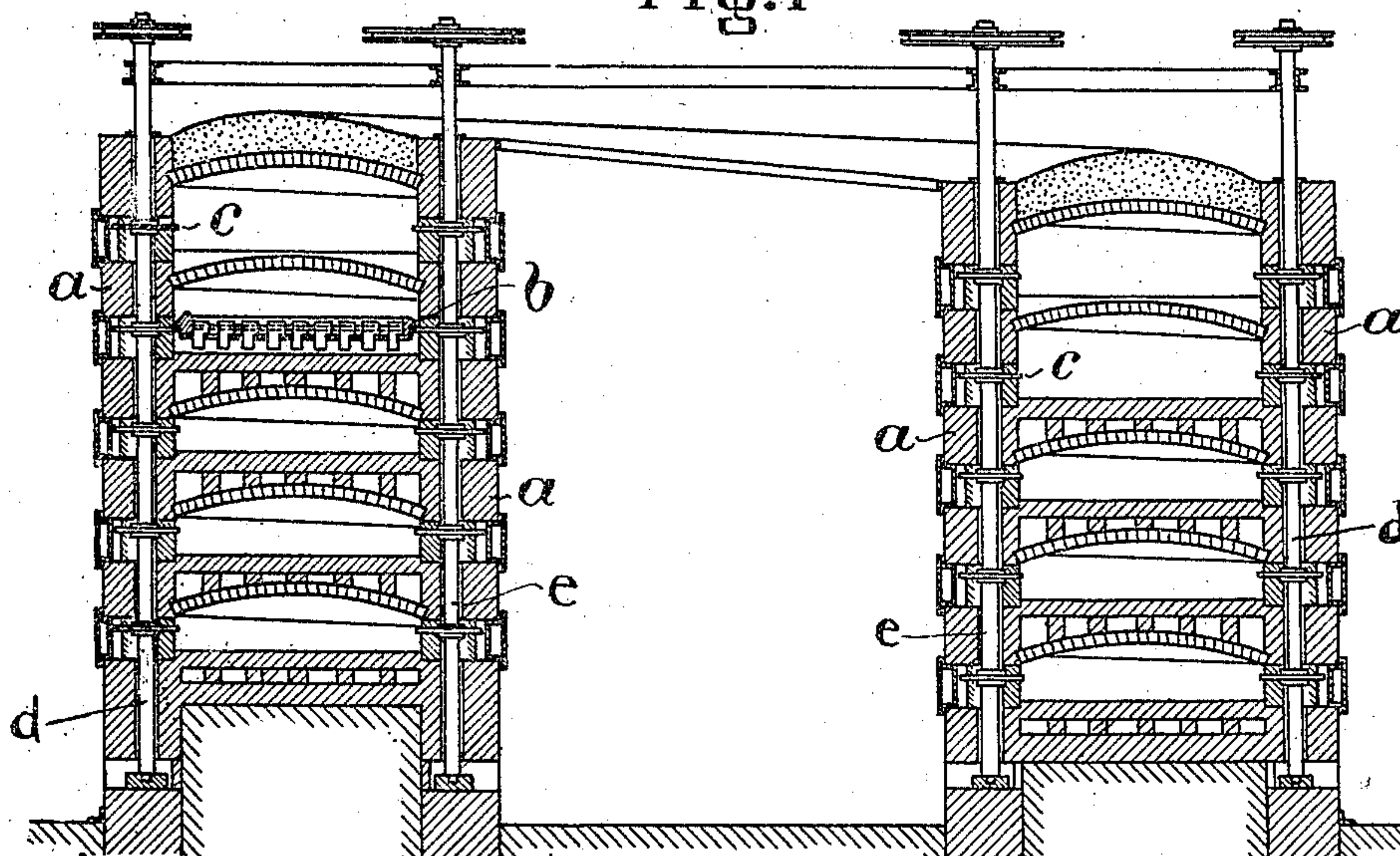
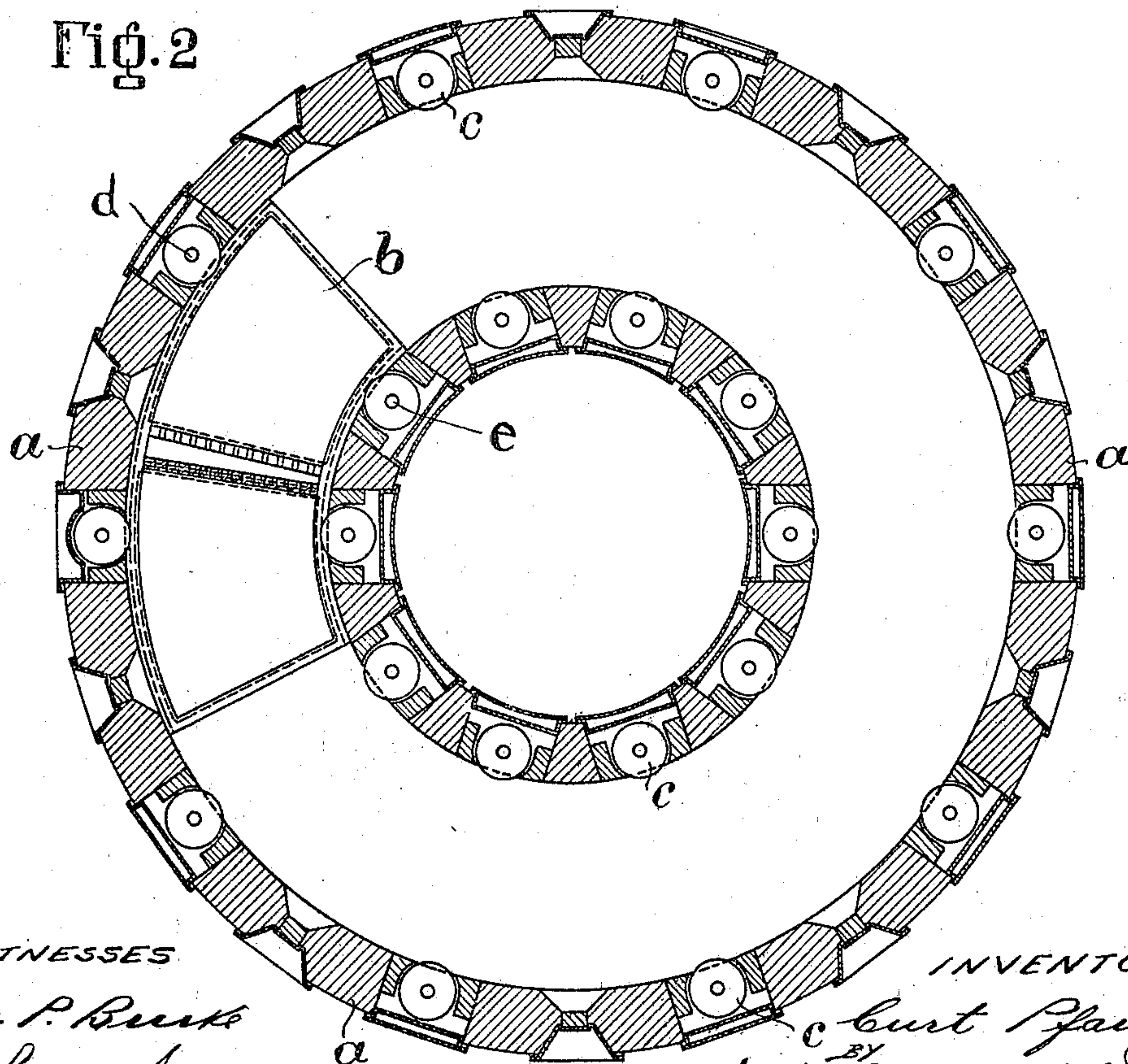


Fig. 2



WITNESSES

W. P. Brink  
John C. Sanders

INVENTOR

C. Curt Paul  
BY  
Wm. H. H. H. H.  
1171



# UNITED STATES PATENT OFFICE.

CURT PFAUL, OF BLASEWITZ, DRESDEN, GERMANY.

## ORE-ROASTING FURNACE.

989,868.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed November 25, 1910. Serial No. 594,130.

*To all whom it may concern:*

Be it known that I, CURT PFAUL, subject of the King of Prussia, residing at Blasewitz, Dresden, Germany, have invented new and useful Improvements in Ore-Roasting Furnaces, of which the following is a specification.

The invention relates to an annular mechanical roasting or heating furnace for blende, pyrite, waste or coloring-matter with helical bed and helical rake parallel thereto.

Reference is to be had to the accompanying drawings forming a part of this specification and in which the invention is shown. Figure 1 represents a vertical section and Fig. 2 a horizontal section of the furnace.

The novelty of the invention as compared with known types of annular mechanical roasting or heating furnaces with helical beds consists in the fact that the frame-like rakes —*b*— are carried by the rollers —*c*— bedded in the walls of the annular furnace —*a*— being thus moved parallel to the helical bed. The vertical shafts *d* and *e* upon which the rollers —*c*— are mounted are so arranged in the walls of the furnace that the rollers themselves are essentially situated within the walls thereof, only a part of their circumferences extending into the interior of the furnace and projecting into the ways in the frame —*b*—. The frame —*b*— is simultaneously supported by at least three of the rollers —*c*—. By turning the rollers —*c*— in a given direction, by any suitable means, the rake and the material to be roasted is moved in a downward direction parallel to the surface of the helical base. The return movement of the rake is accomplished in any suitable manner as, for example, by reversing the movement of the rollers. The special advantage of this construction as compared with others is that no iron parts remain constantly in the heated interior of the furnace, for as the rollers —*c*— are in continual motion, each part of the circumference remains within the furnace only a very short time and at once returns into the cooler furnace-wall and there-

fore does not reach nearly so high a temperature as if it remained constantly within the furnace itself. The shafts *d* and *e* of the rollers —*c*— are themselves protected against the high temperature of the furnace by reason of their being embedded in the wall thereof, and being moreover constantly revolving they do not always present the same surface in the direction of greatest heat. No part of the rake itself remains constantly within the heat-zone of the furnace as it proceeds along the whole bed from one end to the other. On reaching the end of its movement and coming there into a relatively lower temperature which does not affect the solidity of the iron, it may remain stationary awhile so as to keep it at a moderate temperature and so protect it from wear and breakage.

The furnace can without difficulty be constructed on a very large scale, thus making all parts easier of access and enabling it in case of a break-down in the machinery to be served by hand, which in many cases is imperative.

Compared with those constructions in which the beds are arranged in various stages one above the other and in which the material treated falls from one stage to the other, the present invention possesses the important advantage of avoiding the excessive dust occasioned thereby as the material is nowhere freely precipitated. A further advantage is that the rake does not pass out of the furnace as in many other types of construction, the injurious effects of the entrance of air into, or the exit of harmful gases from the interior of the furnace is excluded. As the up and down movement of the rake is accomplished by purely mechanical means and as the whole of the machinery is extremely simple, the costs of working are much reduced.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

In an annular furnace, in combination, inner and outer walls, a helical bed posi-

tioned between said walls, a rake adapted to travel along said bed, a plurality of rollers operatively mounted within said walls, each of said rollers extending inwardly from said walls to engage said rake, and means for rotating said rollers.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

CURT PFAUL.

Witnesses:

PAUL ARRAS,  
CLARE SIMON.