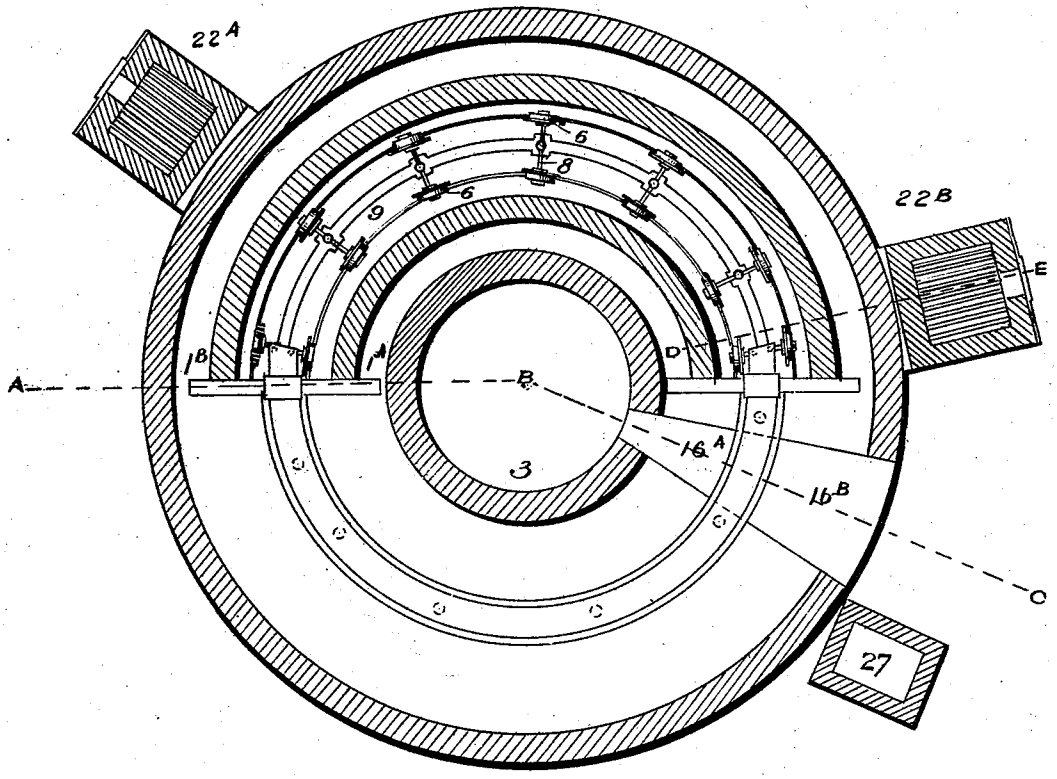
(No Model.) 3 Sheets—Sheet 1.

# J. ROGER.

## ORE ROASTING FURNACE.

No. 574,272. Patented Dec. 29, 1896.

Fig. 1.




Witnesses
F. L. Ouyrand
A. B. Smith

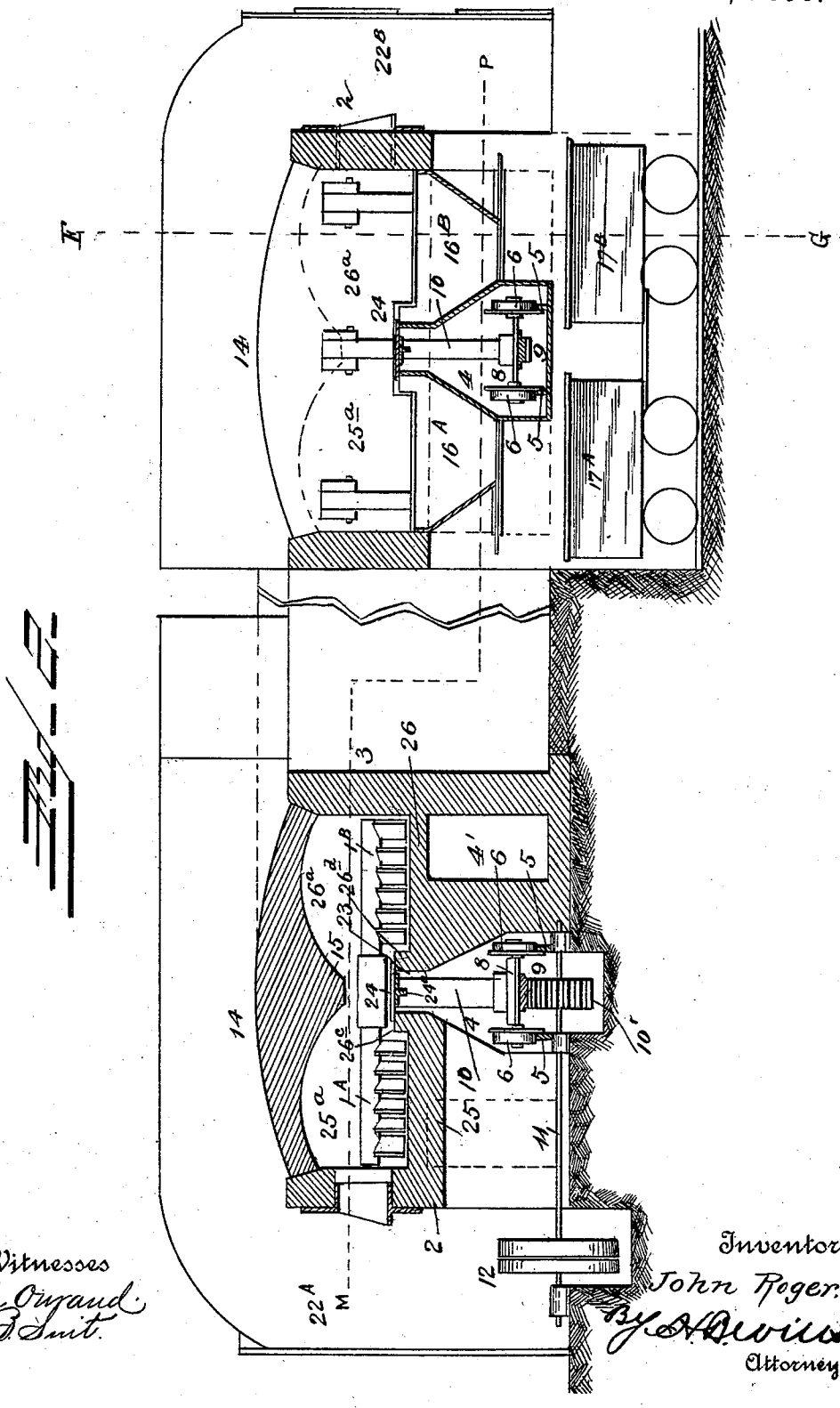
Inventor
John Roger
By F. A. Brewillon
Attorney

(No Model.) 3 Sheets—Sheet 2.

# J. ROGER.

## ORE ROASTING FURNACE.

No. 574,272. Patented Dec. 29, 1896.




Witnesses
F. L. Ozand.
A. B. Smith.

Inventor
John Roger.
By A. Bruce Wilson
Attorney

(No Model.) 3 Sheets—Sheet 3.

# J. ROGER.

## ORE ROASTING FURNACE.

No. 574,272. Patented Dec. 29, 1896.

Fig. 3.

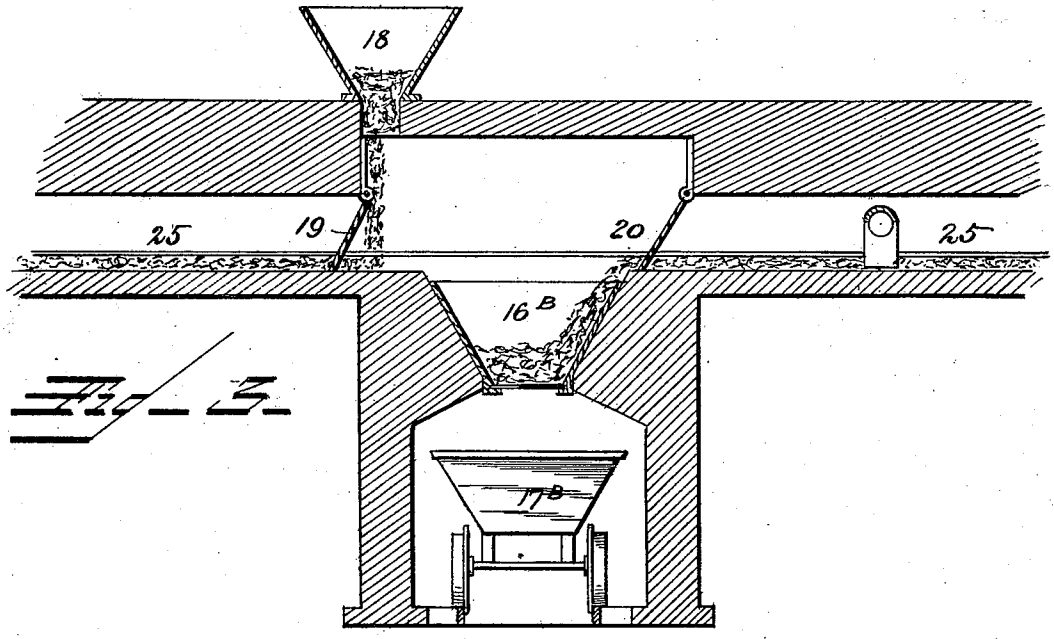
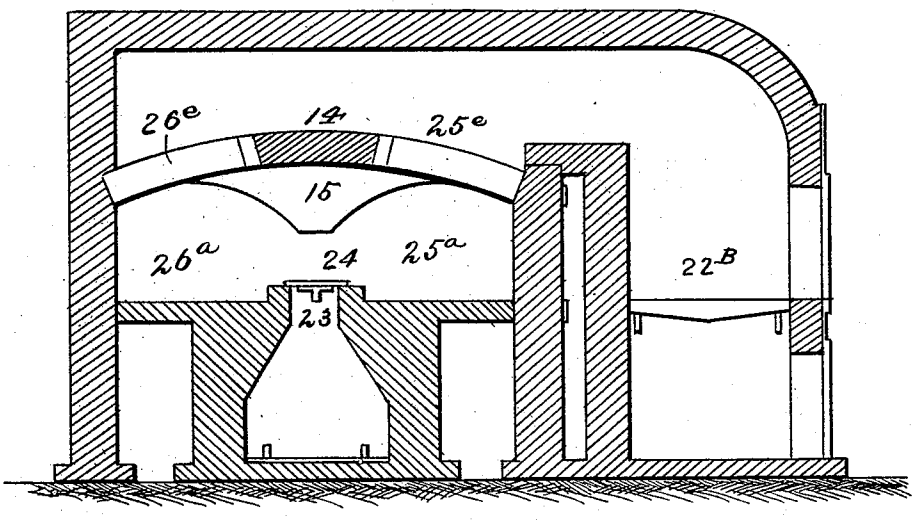



Fig. 4.




Witnesses
F. L. Ouyand
A. D. Smith

Inventor
John Roger
By A. Briesen
Attorney.

# UNITED STATES PATENT OFFICE.

JOHN ROGER, OF DENVER, COLORADO.

## ORE-ROASTING FURNACE.

SPECIFICATION forming part of Letters Patent No. 574,272, dated December 29, 1896.

Application filed August 1, 1895. Serial No. 557,849. (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 Ore-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 relates to ore-roasting furnaces.

The object of the invention is to provide an ore-roasting furnace which will effectively roast the ore, and which shall be simple of construction and comparatively inexpensive to build.

In the accompanying drawings, Figure 1 is a transverse sectional view on line M P, Fig. 2. Fig. 2 is a vertical sectional view on line A B C, Fig. 1. Fig. 3 is a vertical sectional view on line F G, Fig. 2. Fig. 4 is a sectional view on line D E, Fig. 1.

In the drawings the numeral 2 denotes the outer circular wall of the furnace, and 3 the inner concentric circular wall.

14 denotes the roof of the furnace, which extends from wall to wall and is preferably arched. Arranged beneath the arch are the hearths 25 and 26, which are separated by a space 23, which terminates in an annular carriage-chamber 4, provided at its base with a circular track consisting of rails 5. The walls of this chamber 4 are separated from the walls 2 and 3 by spaces 4', which may be filled with any suitable heat-non-conducting material. A carriage is situated within the chamber 4 and consists of the wheels 6 and axles 8. Secured to the axles on their under sides is a circular rack 9, and projecting from the upper side of the axles are standards 10, which carry at their upper ends rabbles or agitators $1^A$ $1^B$, which work, respectively, in the roasting-chambers $25^a$ and $26^a$.

A shaft 11 extends under the hearth 25 and is provided at one end with a pulley 12, by which it may be rotated, and at its other end with a cog-wheel 10', which meshes with a circular rack secured to the carriage. When motion is imparted to this shaft, it is evident that the rabbles or agitators will be revolved in their respective chambers and will thoroughly stir the ore.

$22^A$ and $22^B$ are fireplaces which communicate with the roasting-furnaces through the openings $26^e$ and $25^e$ in the arched roof 14. This roof is provided with a downwardly-curved extension 15, which terminates directly over the space 23, and is for the purpose of confining the greater volume of gases in the roasting-chambers $25^a$ and $26^a$ directly over their hearths. At the point in the circumference of the furnace marked $16^A$ and $16^B$ a feed and discharge mechanism is arranged. The ore is emptied into a hopper 18, from which it falls to the hearth 25 at a point in advance of a swinging door 19, pivoted to the top of the roof and extending to the hearth. When the agitating-arms pass this point, they carry with them a certain amount of ore, swinging the door back into the furnace proper, and after passing the door it will drop behind the arms and close the chamber and prevent a draft. The arms continue to advance around the furnace and finally emerge over the furnace proper by lifting the swinging door 20 and carrying with them a certain amount of ore, which is delivered into a hopper $16^B$. From this hopper it is drawn off into a car $17^B$ for removal. A similar operation takes place on the hearth 26, the ore being discharged from it into the hopper $16^A$ and from that into the car $17^A$.

In order to prevent the escape of heat from the roasting-chambers through the space 23 into the chamber 4, I provide a circular shield 24, which rests and rotates upon annular shoulders $26^c$ and $26^d$ at the adjacent inner edges of the roasting-hearths. This shield is supported from the carriage by posts $24^a$ and effectively closes the opening 23 and prevents the escape of gases therethrough into and out of the carriage-chamber 4. 27 denotes a smoke uptake or flue.

In operation, the fuel having been ignited in the fireplaces, the gases will pass up and into the furnace proper through the arched roof 14, as shown in Fig. 4, and the gases will fill the chamber and the volume will be held over the hearths by the central projection 15.

The gases after passing around the chamber will pass out therefrom through the uptake 27.

Fig. 1 shows one discharge-opening for each hearth, namely, $16^A$ and $16^B$.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of my invention will be readily understood without requiring further explanation. I desire to state, however, that, although I have shown the preferred form by which I carry out the invention, I wish it to be understood that I do not wish to be limited to the construction herein shown and described, and reserve to myself the right to make such changes in construction as suggest themselves to me without departing from the spirit of my invention, such changes, however, to fall within the scope of the claims.

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

1. A roasting-furnace having an outer circular wall, an inner circular wall concentric to the outer wall, a roof extending from one wall to the other, circularly-arranged concentric hearths between said walls, said hearths having a space separating them from each other, said space terminating in a carriage-chamber, spaces separating the walls of the carriage-chamber from the inner and outer concentric walls of the furnace, a downward-curved extension carried by the roof directly over the space between the hearths, a carriage adapted to travel within its chamber, and a circular shield carried by the carriage and resting and rotating upon shoulders of the roasting-hearths and adapted to close the opening separating the hearths, as specified.

2. A roasting-furnace having an outer circular wall, an inner circular wall concentric to the outer wall, a roof extending from one wall to the other, circularly-arranged concentric hearths between said walls, said hearths having a space separating them from each other, said space terminating in a carriage-chamber, spaces separating the walls of the carriage-chamber from the inner and outer concentric walls of the furnace, and a downwardly-curved extension carried by the roof directly over the space between the hearths.

3. The combination with a roasting-furnace, consisting of a circular roasting-chamber, a concentric carriage-chamber beneath the roasting-chamber and communicating with the roasting-chamber through an opening in the hearth of said chamber, a carriage within said carriage-chamber, agitators in said roasting-chamber and supported by said carriage, a shield for covering the opening between the roasting-chamber and the carriage-chamber, said shield being supported by said carriage, a circular rack secured to the carriage, a drive-shaft having at one end a toothed gear engaging said rack and at its other end drive-pulleys, substantially as set forth.

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

JOHN ROGER.

Witnesses:
A. B. KENNEDY,
JAMES HENDERSON.