

(No Model.)

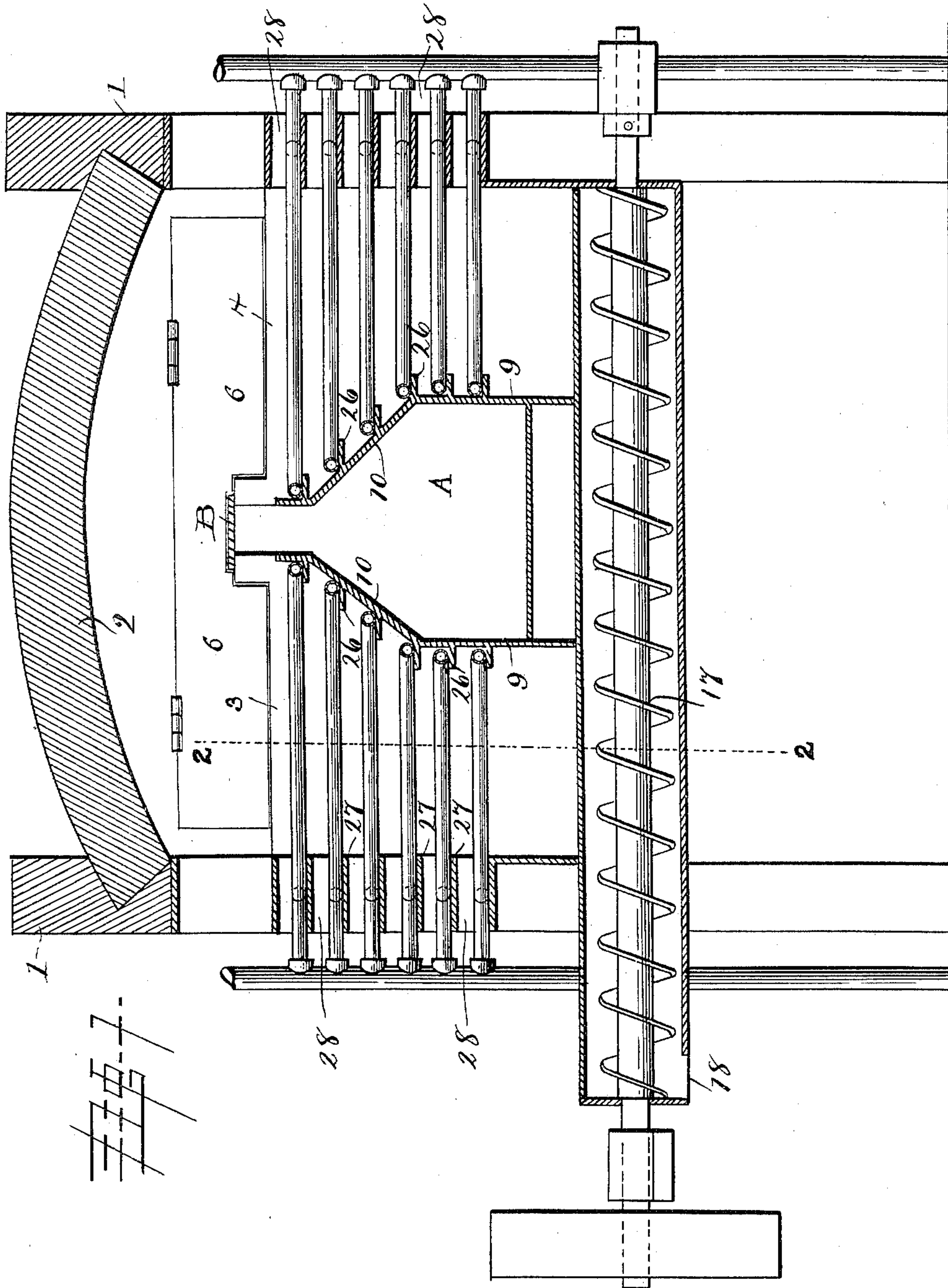
3 Sheets—Sheet 1.

J. ROGER.

COOLING CHAMBER FOR ORE FURNACES.

No. 600,293.

Patented Mar. 8, 1898.



Witnesses  
W. E. Bowen  
J. H. Wilson

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Attorney

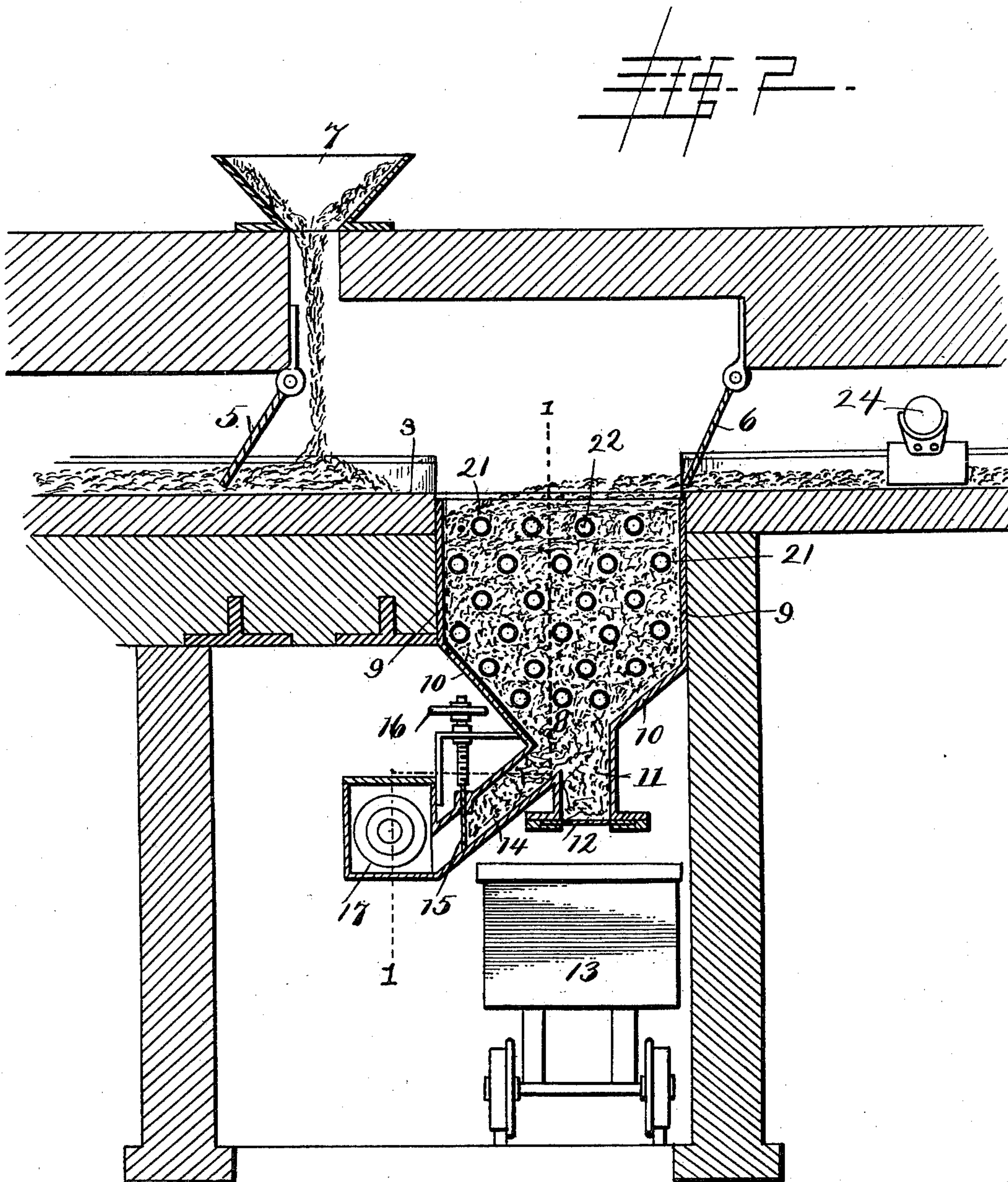
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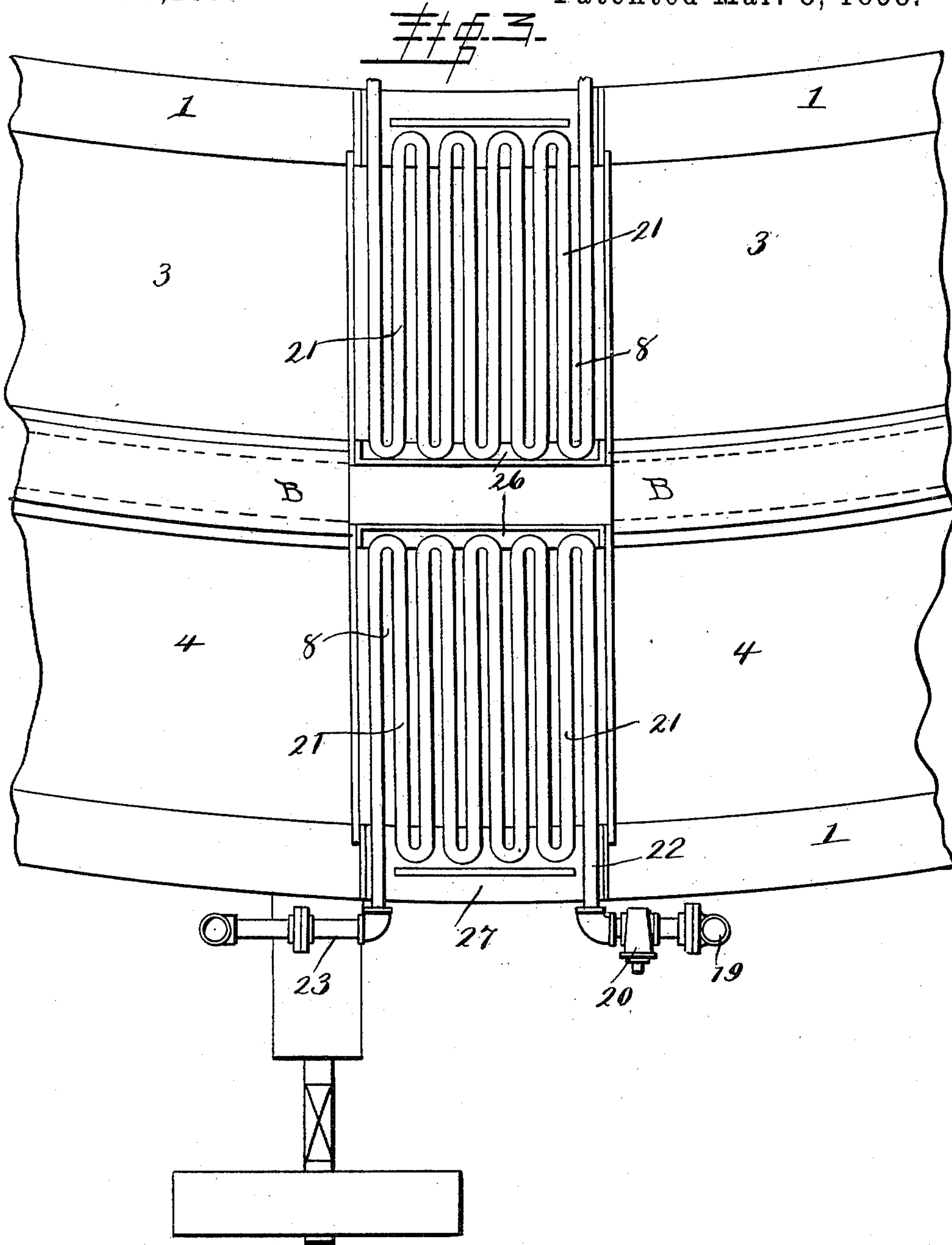
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# UNITED STATES PATENT OFFICE.

JOHN ROGER, OF DENVER, COLORADO.

## COOLING-CHAMBER FOR ORE-FURNACES.

SPECIFICATION forming part of Letters Patent No. 600,293, dated March 8, 1898.

Application filed June 26, 1897. Serial No. 642,514. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ROGER, a subject of the Queen of Great Britain, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Cooling-Chambers for Ore-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 a novel form of cooler for ore-roasting furnaces, and more particularly to that class of furnaces for which Letters Patent No. 574,272 were granted to me on the 29th day of December, 1896; and the object is to provide a means for economically and expeditiously cooling the roasted ore as it comes from the furnace, so that the same may be conveniently handled immediately.

To this end the novelty consists in the construction, combination, and arrangement of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a longitudinal section of my improved cooling-chamber, taken on the broken line 1 1 of Fig. 2. Fig. 2 is a transverse section on the broken line 2 2 of Fig. 1. Fig. 3 is a top plan view of the cooler.

The general construction of the furnace proper is the same as that shown in the patent above referred to and to which reference is hereby made for a fuller description of the details of construction not claimed in the present application.

1 1 represent the walls, 2 the arch of the furnace, and 3 4 the circular concentric hearths. Beneath the arch and between the hearths is arranged an annular chamber A, in which a carriage (not shown) travels to operate the rabblers in the same manner as that described in my prior patent above referred to.

B denotes the annular shield, which covers the mouth of the carriage-chamber A, which travels with the rabblers and prevents the escape of heat from the roasting-chamber.

5 represents a door leading into the roasting-chamber, and 6 a corresponding door leading out of the said chamber.

7 represents the hopper through which the ore is fed to the hearths.

8 represents the cooling-chambers, one of which is located in the path of each hearth, as shown. Each chamber is provided with parallel walls 9 9 and a converging bottom 10 10, which terminates in a vertical chute 11, provided with a gate 12, through which the ore in the chamber 8 may be discharged into a car 13. An inclined chute 14, provided with a gate 15, controlled by a hand-wheel 16, is also connected with the lower end of the chamber 8, and it communicates with a horizontal conveyer 17, so that the ore may be fed by gravity from the chamber 8 through the chute 14 to the conveyer 17 and discharged at the opening 18 outside of the furnace.

19 represents a water-inlet main provided with the usual control-valve 20, and 21 21 represent a horizontal series of parallel manifolds extending into the cooling-chamber, their inlet ends 22 communicating with the inlet-main 19 and their opposite ends with the outlet-main 23, so that a continuous current of cold water will circulate through said manifolds in the cooling-chamber. These manifolds are preferably arranged as shown in Fig. 2, wherein the parallel sections of one manifold are arranged to "break joints" with the corresponding sections above and below it, so as to form a comparatively tortuous passage for the roasted ore as it passes through the cooling-chamber and cause every particle of the ore to come in contact with the manifolds.

26 represents brackets which support the inner ends of the manifolds, and 27 represents the supports for the front ends of said manifolds, the intervening spaces 28 allowing the withdrawal of the manifolds from the cooling-chamber when necessary for repairs.

The operation is as follows: The ore to be treated is fed into the hopper 7, where it falls by gravity on the hearth and is carried by the action of the rabble 24 through the door 5 into the roasting-chamber 25, whence it emerges through the door 6 and into the cooling-chamber 8, where the calcined ore comes in contact with the manifolds and its tem-



perature reduced to such a degree that it may be immediately handled conveniently.

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. The combination with the furnace provided with the circular concentric hearths arranged in the same horizontal plane of the cooling-chamber 8 located in the path of said hearths, a series of parallel manifolds 21 arranged in different horizontal planes in said chamber and in the path of the ore, the parallel sections of one manifold being vertically arranged intermediate the parallel sections of the adjoining manifold, so as to form a com-

paratively tortuous passage for the roasted ore as it passes through said cooling-chamber, a valved inlet-pipe 19 and a valved outlet-pipe 23 having common connections with said manifolds, substantially as and for the purpose set forth.

2. An ore-roasting furnace, comprising outer and inner concentric circular walls, the connecting-arch and the circular concentric hearths arranged in the same horizontal plane, the cooling-chamber located in the path of said hearths, a series of manifolds arranged in different horizontal planes, in said chamber, the parallel sections of one manifold being vertically arranged intermediate the parallel sections of the adjoining manifold, substantially as and for the purpose set forth.

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

JOHN ROGER.

Witnesses:

JAMES HENDERSON,  
GEO. H. ANGELL.