No. 624,048.

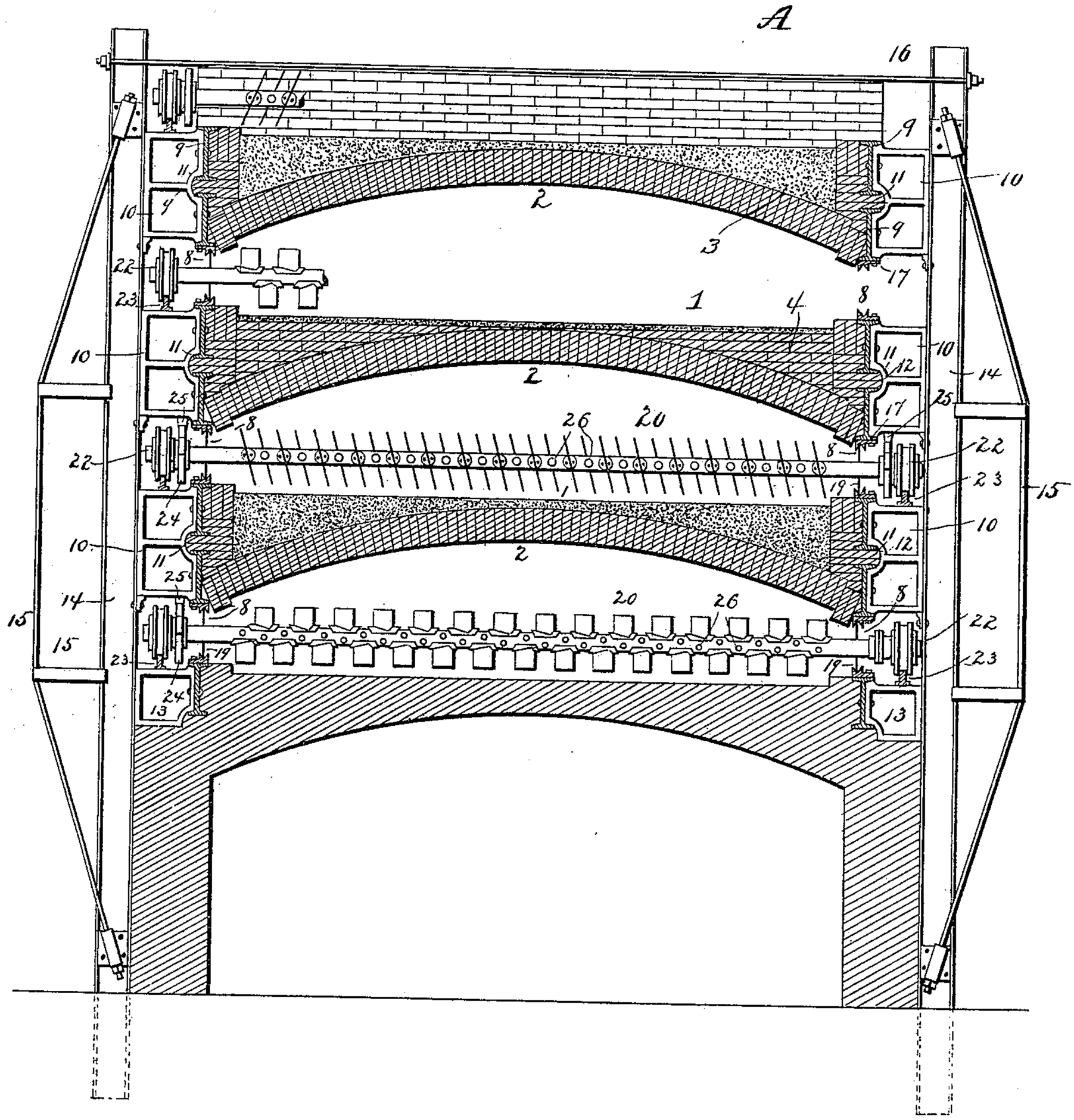
Patented May 2, 1899.

H. A. KELLER.

ROASTING FURNACE.

(Application filed Feb. 19, 1896.)

(No Model.)



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UNITED STATES PATENT OFFICE.

HERMANN A. KELLER, OF BUTTE, MONTANA.

ROASTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 624,048, dated May 2, 1899.

Application filed February 19, 1896. Serial No. 579,914. (No model.)

To all whom it may concern:

Be it known that I, HERMANN A. KELLER, a resident of Butte city, in the county of Silver Bow and State of Montana, have invented certain new and useful Improvements in Roasting-Furnaces; and I do hereby 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 an improvement in roasting-furnaces; and it consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claim.

The accompanying drawing is a sectional view of a furnace exemplifying my invention.

A represents a roasting-furnace comprising a vertical tier of hearths or floors 1, preferably having arched roofs 2. The space over the arched roofs 2 may be filled with loose silicious material 3 to form the hearth above, or instead masonry 4 could be employed. I prefer, however, to use loose sand. The sand is put in on first starting the furnace just as ore would be. Then all superfluous sand is raked out, after which the ore is fed continuously, thereby forming ridges over the sand. The object of this loose silicious material (which is refractory) is twofold—first, to replace more expensive fire-brick, and, secondly, should excessive heat agglomerate any ore it is easy for the rakes to carry such lumps out of the furnace, as they have no chance to adhere to a solid hearth.

The series of hearths will be made to communicate successively at alternate ends and the bottom hearth will be made to discharge the ore in the usual manner. Both longitudinal walls of the furnace are made with elongated slots 8, communicating with the respective hearths, and each slot is preferably made about fourteen inches wide. The upper and lower walls of the slots 8 are formed by I-beams 9, there being two such I-beams located in the masonry of the furnace-wall between each two hearths. Castings 10 are securely bolted to the I-beams 9 and project laterally therefrom, each casting being made between its upper and lower edges with a recess 11, into which portions of the masonry between the I-beams project, as at 12. The lower casting 13 of each set is preferably made half the width or thickness of the castings 10 and rest in recesses made therefor in the base portion of the furnace. The castings 10 are also securely bolted to vertically-disposed beams 14, having brace-rods 15, and the vertical beams at one side of the furnace are connected with those at the other side by means of tie-rods 16. To the edges of the I-beams, which form the walls of the slots 8, plates 17 are attached, and these plates may be made with recesses for the reception of curtains 19, of sheet metal or of any other desired material and construction, which serve to normally close said slots, but permit the ends of the rakes to project through said slots. Rakes 20 may be revolubly mounted at their ends on trucks 22, which run on tracks 23, located on the castings 10 13, said trucks being thus located exteriorly of the furnace-wall, and they may be propelled in any suitable manner to cause the rakes to move over the hearths. Each rake may be provided at one end with a star-wheel 24, adapted to engage a stop 25 on the castings 10 when the rake reaches one or the other end of its movement. By this means the rakes will be given a partial turn at each end of their movement, so as to bring the rake-teeth into operative position when the rake is to move forward or move them out of contact with the ore on the hearths when the rake is to move backwardly over the hearth to the starting end thereof. Each rake is made hollow or tubular and provided with numerous perforations 26, through which air can escape upon the hearths for cooling purposes.

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

A roasting-furnace having a hearth made of loose silicious material, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HERMANN A. KELLER.

Witnesses:
E. S. PASSMORE,
R. A. KUNKEL.