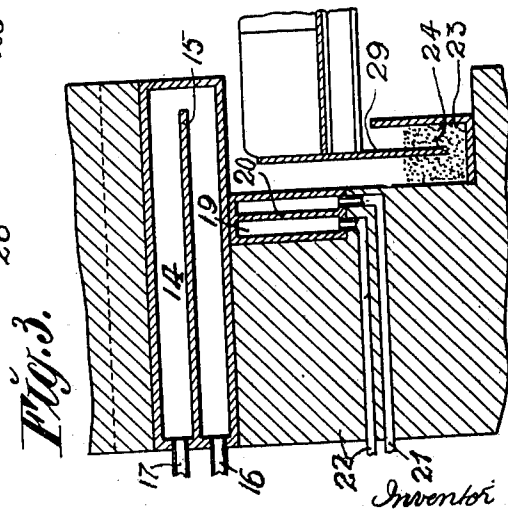
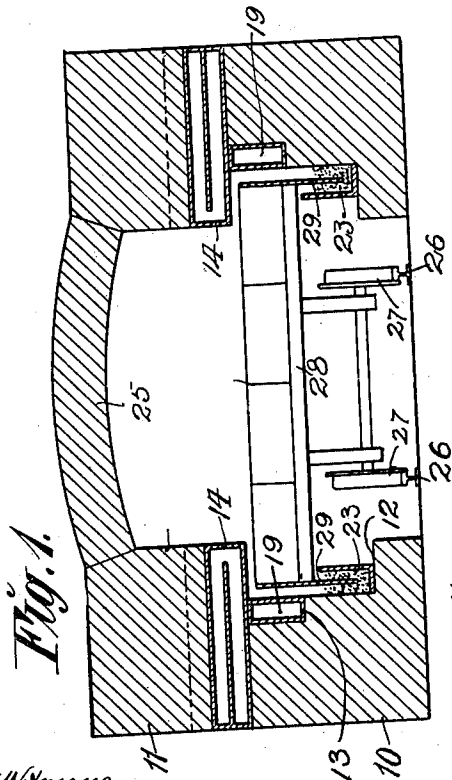
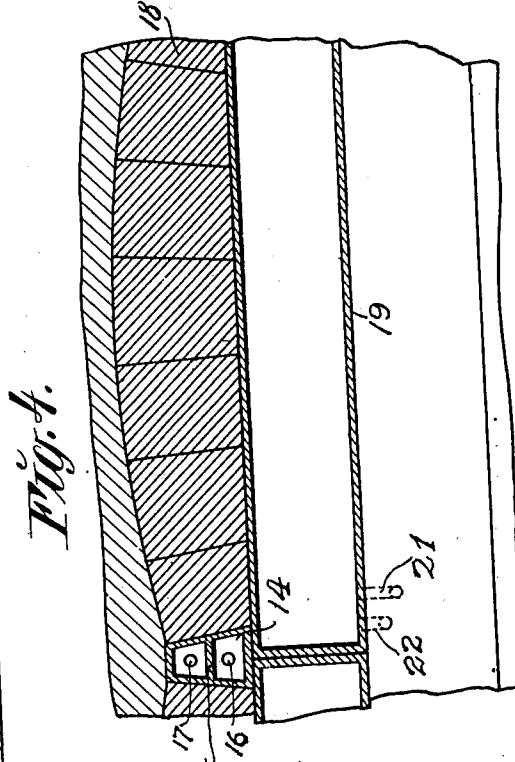
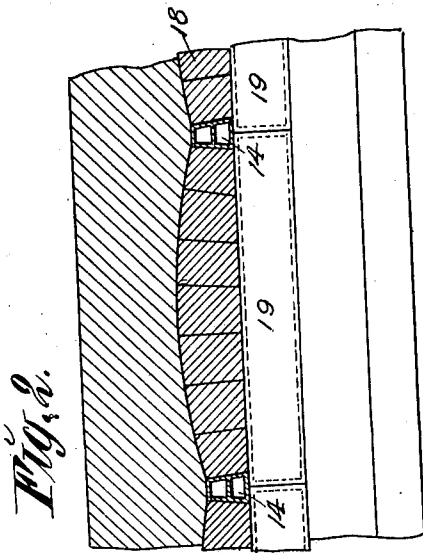


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TUNNEL FURNACE.
APPLICATION FILED AUG. 25, 1910.

Patented Jan. 28, 1913.

1,051,634.



Witnesses
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ARTHUR RAMÉN, OF HELSINGBORG, SWEDEN.

TUNNEL-FURNACE.

1,051,634.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed August 25, 1910. Serial No. 578,967.

To all whom it may concern:

Be it known that I, ARTHUR RAMÉN, a subject of the King of Sweden, residing at Helsingborg, in the Kingdom of Sweden, have invented new and useful Improvements in Tunnel-Furnaces, of which the following is a specification.

Heretofore, so far as I am aware, in tunnel furnaces employed for the burning of ore briquets at high temperatures and for other similar purposes, the wagons or movable hearths used to support the material to be treated in the furnace, have been comparatively short-lived, due to the rapid disintegration of the stone covers and linings necessarily employed in these movable hearths. This rapid disintegration of the covers and linings of the hearths is due to the extreme temperatures to which these movable hearths are subjected, with the resultant expansion and contraction of the covers and linings.

The object of my invention is the provision of a tunnel furnace in which ample means are provided for protecting the sides of the movable hearths from being subjected directly to the high temperatures maintained within the furnace through which the hearths pass, thereby prolonging the life of the hearths. To this end I employ a furnace having parallel side walls in which are provided overhanging portions beneath which the sides of the hearths pass in traveling through the furnace, means placed at suitable intervals in these overhanging portions of the side walls and extending transversely through the same for cooling the overhanging portions thereof. I may also employ means extending longitudinally of the side walls and assisting in supporting the overhanging portions thereof and adapted for cooling the said overhanging portions of the side walls and also the sides of the movable hearth, in passing through the furnace although this last named means is not essential to my invention and I make no claim thereto.

In the drawing, Figure 1 is a vertical cross section illustrating one form of my invention. Fig. 2 is a longitudinal section of the same, and Figs. 3 and 4 are sections on a larger scale, illustrating details of the invention.

Referring to the drawing, the tunnel furnace made in accordance with my invention,

preferably comprises parallel side walls, the lower portion of each of which is indicated at 10 and the upper portion at 11. The lower portion 10 of each side wall on its inner face is provided with a shelf or ledge 12, and at a higher elevation with a similar shelf or ledge 13. At suitable intervals between the lower portion 10 and the upper portion 11 of each side wall, I employ hollow tiles or bricks indicated at 14, each of which is provided with a central partition 15 extending longitudinally from one end to a point adjacent to the other end, dividing the brick into upper and lower chambers. As shown in Fig. 3, the lower chamber is provided with an inlet 16 and the upper chamber with an outlet 17, by means of which a liquid or other cooling medium may be circulated continuously through the hollow tile.

The tiles 14 are preferably formed with inclined sides being wider at the bases than at the tops, so as to assist in supporting the brickwork construction indicated at 18, extending between them. It will be understood that the inner portions of the hollow tiles 14 and the brickwork construction 18 are both made of fireproof material and extend over the shelves 12, 13, so that the thickness of the upper portion of the wall is practically the same as that of the lower portion.

Placed on the shelf 13, in each of the side walls of the furnace and extending substantially the entire length of each wall, I may employ a series of hollow tiles or bricks 19, and when used, as shown in Fig. 2, each one of these hollow tiles 19 preferably extends from the center of one hollow tile 14 to the next hollow tile 14, and furthermore the hollow bricks 19 assist in supporting not only the hollow bricks 14, but also the brickwork construction 18. As shown in Fig. 3, each one of these hollow bricks 19 may be provided with the central partition 20, extending from one end thereof to a point adjacent to the opposite end, and furthermore each one of these hollow bricks may be provided with an inlet 21 and an outlet 22, by means of which a cooling medium may be circulated through each hollow tile 19.

On the shelf 12 in each of the side walls of the furnace, a trough is formed by the face of the wall and an angle iron 23 or other device, the bottom of which trough is

filled with sand or other similar material. The upper portion of each side wall is connected by an arch 25, which as will be understood, incloses the fire-place of the furnace and completes the inclosure through which the movable hearths pass.

As is usual, between the side walls 10, a track is employed, the rails forming the track being indicated at 26. Each movable hearth comprises a truck 28 provided with wheels 27 adapted to run on the rails 26. The body of the truck is covered with a suitable lining of stone or other material, and the sides 29 of each truck, which are preferably made of sheet metal, extend below the truck body and into the troughs containing the sand 24.

As will be apparent from the forms of tunnel furnaces illustrated in the drawing, the overhanging portions of the side walls are of sufficient extent to pass over the sides of the movable hearths as the same travel through the furnace, and also that in traveling through the furnace, the sides of the movable hearths come into close proximity

to the outer surface of the hollow tiles indicated at 19.

I claim as my invention:

In tunnel furnaces having a movable hearth and a brick-work construction partly overhanging the movable hearth, the combination of hollow supporting devices in the said brick-work construction lying at right angles to the longitudinal direction of the tunnel furnace, and means for cooling said supporting devices, the said brick-work construction including longitudinal arches of fireproof material extending between the said supporting devices which have inclined sides to form abutments for the said arches substantially as and for the purposes set forth.

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

ARTHUR RAMÉN.

Witnesses:

AXEL EHRNER,
HOWARD NESTROM.