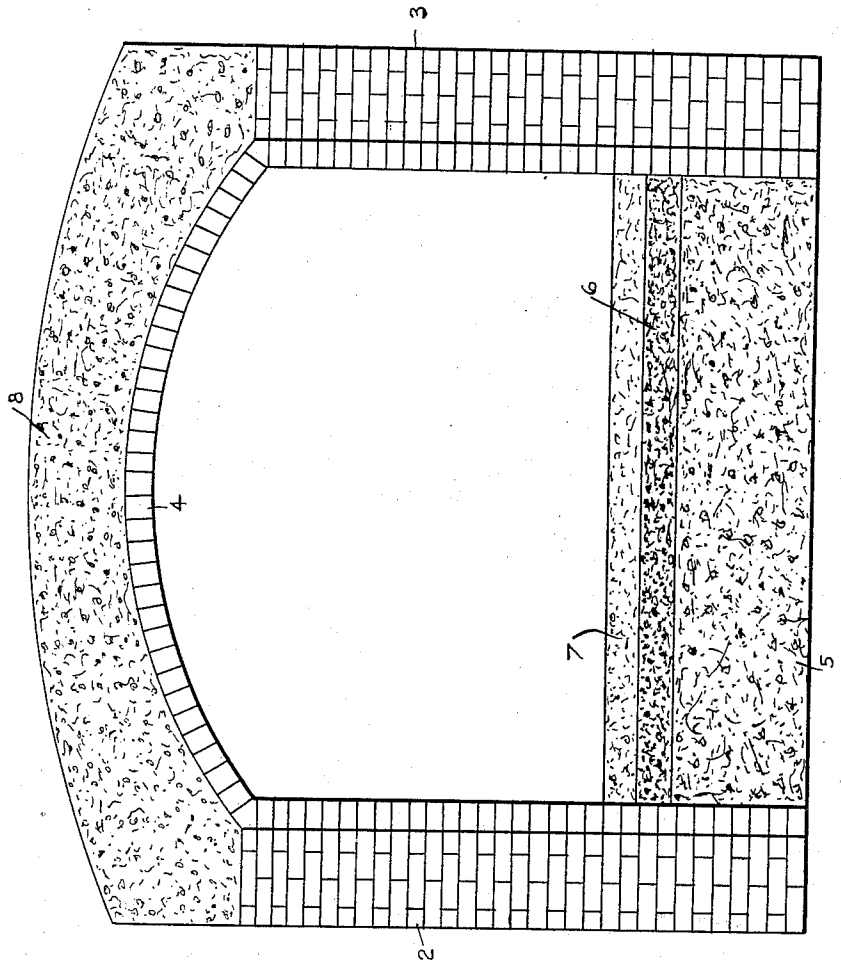
H. L. CHARLES.

FURNACE.

APPLICATION FILED JAN. 23, 1920.

1,394,470. Patented Oct. 18, 1921.



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FURNACE.

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Application filed January 23, 1920. Serial No. 353,392.

To all whom it may concern:

Be it known that I, HENRY L. CHARLES, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in smelting furnaces and more particularly has reference to and is illustrated in the accompanying drawing in its application to the arch or top structure of a reverberatory type of smelting furnace. In furnaces of this kind, due to the intense heat of the gases, the refractory bricks forming the roof or arch are burned away from time to time, thus requiring the shutting down and rebuilding in order to continue operations. I have found that by forming a monolithic arch above a brick arch or roof, that after the same has set and baked sufficiently during the operation of the furnace that even though the brick arch burns away, the monolithic arch will remain for a considerable time, thus prolonging the life of the furnace.

In the accompanying drawing I have illustrated in transverse view part of a reverberatory furnace embodying an application of my invention.

2—3 indicate the side walls, and 4 the arch of refractory brick forming the top of the furnace. 5 indicates the silica bottom of the hearth, 6 the matte or metal, and 7 the slag. 8 indicates my improved monolithic arch which is preferably formed from the highest refractories such as are well known in the refractory brick making art such as silica, milk of lime, fire clay, magnesite, chromite, etc. This arch replaces the usual brick arch which may be from one to two feet thick, whereas my monolithic arch is preferably from two to six or more feet thick and is preferably made thicker at the springing points or sides and thinner at the center as shown. This provides a stronger arch and one which will more easily hold its shape. The increased thickness at the sides will also retain the heat inside the hearth to better advantage whereas in the brick arch the points between the brick open up as the roof disintegrates from the hot gases of the furnace.

In forming the arch, the material is secured in position much the same as concrete would be and is allowed to set, and afterward baked from the intense heat of the furnace, thus forming a uniform integral highly refractory block or slab in the form of an arch best designed to meet the conditions set forth.

Of course it will be understood that various modifications may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

I claim:

The method of forming the roof of a furnace of the class described consisting in molding an integral structure of highly refractory material over the fire brick arch of the furnace, allowing the same to set, and baking the same with the furnace gases.

In testimony whereof I hereunto affix my signature.

HENRY L. CHARLES.