H. L. CHARLES.

ORE SMELTING FURNACE.

APPLICATION FILED JAN. 23, 1920.

1,394,471. Patented Oct. 18, 1921.

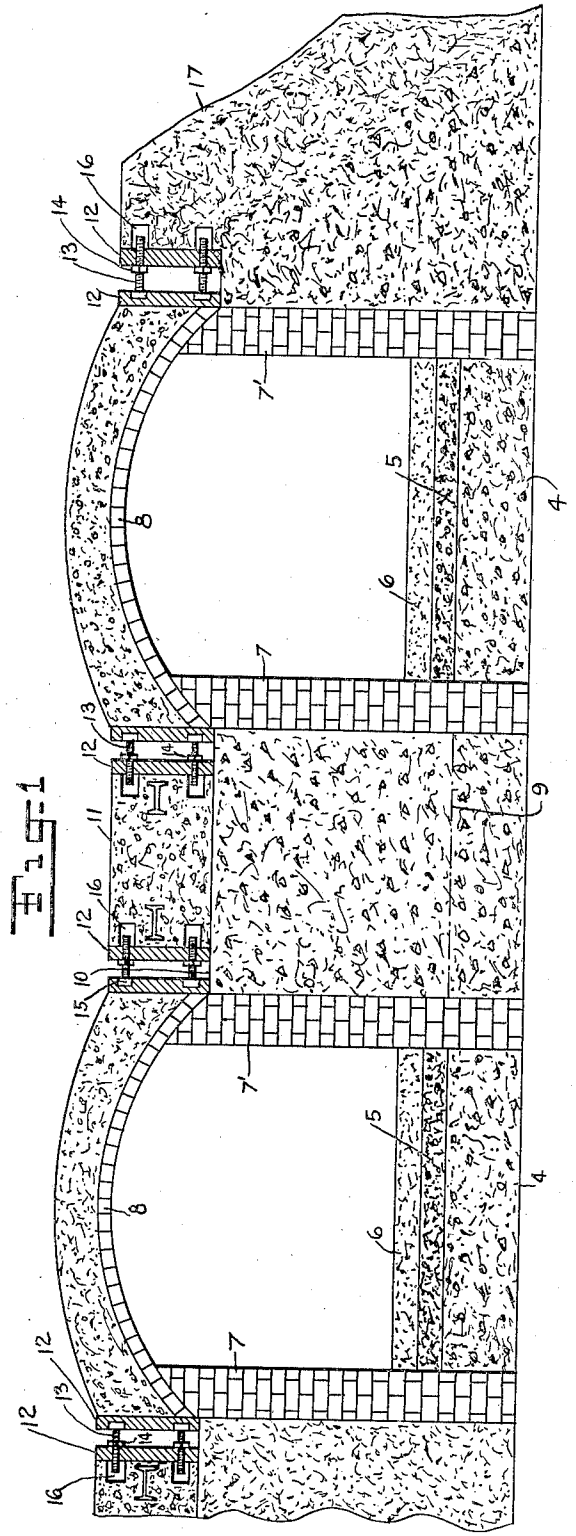


Fig. 1

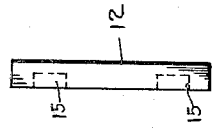


Fig. 3

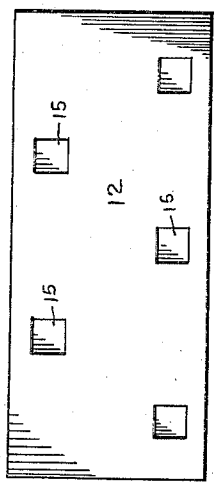


Fig. 2

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ORE-SMELTING FURNACE.

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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 Ore-Smelting 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 the arch roof type of reverberatory smelting furnaces such as are usually provided with buck stays for providing the necessary adjustments for expansion and contraction, but contemplates a different method of adjusting the arch roofs for the purposes stated.

In the accompanying drawings I have illustrated in Figure 1 a cross-sectional view, parts being broken away of a suitable form of reverberatory smelting furnace embodying an application of my invention. Fig. 2 is a plan view on an enlarged scale illustrating one of the abutment plates into which is seated the adjustment screws, and Fig. 3 is an end view looking from right to left at Fig. 2.

4 indicates the bottom of the hearth, 5 the matte or metal and 6 the slag in the furnace. 7—7′ are the side walls and 8 the arch roof. The dotted line 9 indicates the usual floor level which for the purpose of my present invention is preferably raised from the hearth level to a position between the springing points of the arch roof as indicated by the reference character 10 and at the center to the point indicated by the reference character 11. This filling or elevation of the floor level may be formed of any suitable material such as molten slag, concrete, or masonry and the top portions may be provided with suitable screw-threaded plates such as 12 adapted to receive the ends of the screws such as 13 provided, with nuts 14, the rectangular heads of the same being adapted to seat in the recesses 15 shown to better advantage in Fig. 2, the concrete or other material 11 being cut away as indicated at 16 to allow for the clearance of the ends of the screws 13 as shown and the end furnace may be provided with a tapering wall or abutment such as 17 to take up the end thrust of the last arch. When the furnace is started up, the operator by walking along the top of the floor 11, with a suitable wrench loosens up on the nuts 14 sufficiently to allow for the necessary expansion from time to time after the manner in which such adjustments are made upon the buck stays in the usual type of buck stay furnace. This arrangement provides a simple, durable, and strong abutment for the roof arches of the furnaces which can be conveniently manipulated.

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:

1. In combination with a furnace of the class described an abutment between the side walls of adjacent furnaces, and means in combination therewith for varying the width of said abutment adjacent the ends of the arch roofs of said furnaces.

2. In combination with a furnace of the class described an abutment between the side walls of adjacent furnaces, and means in combination therewith for varying the width of said abutment adjacent the ends of the arch roofs of said furnaces, said means comprising abutment plates in combination with screws and bolts therebetween for adjusting the separation of said plates.

3. In combination with a furnace of the class described, an abutment between the side walls of adjacent furnaces, the top of said abutment cut away adjacent the ends of the arch roofs of said furnaces and means in said cut away portion for adjusting the space between said abutment and said arch roofs.

In testimony whereof I hereunto affix my signature.

HENRY L. CHARLES.