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MASON'S ACCESSORY FOR REPAIRING FURNACE ROOFS

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1 Claim. (Cl. 110--99)

The present invention relates generally to the masonry art and more particularly to apparatus in the form of a mason's accessory for use in repairing furnace roofs.

Although not restricted thereto, the apparatus of the invention is especially suitable for use in repairing basic refractory roofs of open hearth furnaces and in such use it will be described.

As is well known, open hearth furnace roofs constructed of basic refractory have a tendency to buckle upwardly when the furnace is operating. As a result, the area of the roof adjacent the skewback channels or side frame members of the roof is subjected to abnormal stress forces and the refractory brick in this area frequently deteriorate prematurely and require replacement.

Prior to my invention, the replacement of the deteriorated refractory brick in the area of the roof under stress necessitated shutting down the furnace for prolonged periods during which brick masons manually removed and replaced each of the bricks in the affected area one by one. This replacement operation took place while the interior of the furnace was hot so that the brick masons were subjected to hot and hazardous working conditions. Since the furnace interior was hot the replacement bricks had to be suspended by rods or wire. This made the replacement operation still more time consuming.

It is, accordingly, an object of my invention to provide a mason's accessory for use in replacing burned-out portions of an arched furnace-roof sprung between spaced skewback channels whereby a plurality of replacement bricks can be positioned and supported in a burned-out area of the furnace roof adjacent the skewback channels without the use of hanger rods or wires.

This and other objects will become more apparent after referring to the following specifications and attached drawings, in which:

FIGURE 1 is a perspective view showing the accessory of the invention installed in an open hearth roof;

FIGURE 2 is a top plan view of the accessory of the invention installed in an open hearth roof; and

FIGURE 3 is a perspective view of the accessory of the invention.

Referring more particularly to the drawings reference numeral 2 designates the front wall of an open hearth furnace having an arched roof 6 one side of which is supported between a skewback channel 8 as shown in FIGURE 1. A skewback 10 made up of refractory skew bricks is supported on the bottom flange 12 of channel 8 and extends longitudinally of the top of the wall 2. Pairs of opposed vertical posts or buckstays 14 connected by tie rods 16 are spaced along the walls 2. The roof 6 is made up of a plurality of basic refractory brick. Some types of basic open hearth roofs also include upstanding metal roof plates aligned in spaced transversely extending rows along the length of the roof.

Although I have shown only one skewback channel, it will be understood by those skilled in the art that a similar skewback channel is disposed along the top of the rear wall (not shown) of the furnace. The arched roof 6 is sprung between the skewback channels.

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The construction thus far described is conventional and is not claimed as my invention which will now be described in detail.

The apparatus of my invention, which is designated generally by reference numeral 18, is preferably fabricated from a single piece of sheet metal into a trough-like form having a bottom 20 and spaced side wall 22. The top and both ends of the trough-like form are open, as best shown in FIGURE 3.

At their forward ends 24 the lower edges of the side walls project beyond the bottom 20 and extend at an oblique angle to the bottom so as to render the forward end of the accessory capable of fitting and resting on the lower flange 12 of the skewback channel 8, as best shown in FIGURE 1.

Projections 26 extend from the upper edges of the side walls 22 at their rearward ends 28 and are adapted to rest on the roof 6, as shown in FIGURE 1.

In operation, when a section of the furnace roof in the area adjacent one of the skewbacks is to be repaired, the deteriorated brick is removed from the section and the accessory of the invention is inserted into the void created by removal of the brick with the obliquely cut forward ends 24 of the side walls 22 resting on the lower flange of the skewback channel 8. The projections 26 rest on the portion of the roof adjacent the burned-out section as shown in FIGURE 1. Then the accessory is filled with refractory skew and roof bricks S and R, respectively, disposed similarly to the bricks in the remainder of the roof. After the accessory has been thus positioned and filled with brick, heat from the interior of the furnace causes it to fuse with and become an integral part of the roof.

When used to repair the type of basic open hearth roof having upstanding roof plates, the side walls 22 of the accessory replace the upstanding plates on either side of the burned-out area of the roof. When the accessory of the invention is used to repair a roof having upstanding plates, it is so dimensioned that its inside width is approximately equal to the distance between pairs of adjacent roof plates. If the roof area to be repaired extends beyond a section between a pair of roof plates, more than one accessory can be used.

While one embodiment of my invention has been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claim.

I claim:

A mason's accessory for use in replacing burned-out portions of an arched furnace-roof sprung between spaced skewback channels which comprises a trough of sheet metal having a bottom and spaced side walls but open at the top and the ends, adapted to be fitted into an opening in said roof adjacent one of said channels, said side walls having their lower edges at one end extending beyond the end of said bottom and at an oblique angle thereto whereby to engage a flange of said one of said channels, said side walls having projections from their upper edges at their other ends extending beyond said bottom wall and spaced upwardly therefrom adapted to rest on the roof adjacent said opening.

References Cited in the file of this patent

UNITED STATES PATENTS

1,773,359	Hilliard	Aug. 19, 1930
2,753,711	Weber	July 10, 1956