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STOKER AIR CONTROL

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My present invention relates to stokers, and more particularly to an improved apparatus for distributing and regulating the flow of air to the fuel bed in automatic stokers.

In stoking apparatus, and particularly automatic stoking apparatus of the types in use at the present day and with the type of fuel necessarily employed therewith, it becomes essential for the proper economical working of the apparatus to provide oxygen containing fluid, such as air, to the fuel bed in proportion to the depth of fuel in the bed at any point throughout the length thereof, and with the fact that the difference in the thickness of the fuel bed on the grate at the receiving end or inlet end and at the dumping or exit end is continually increasing.

In my copending application, Serial No. 627,065, filed March 23, 1923, Patent No. 1,598,001, I have described and claimed an improved apparatus for regulating the flow of air to the fuel bed in automatic stokers and the present invention is to be considered as a division of such application, the form of apparatus herein described and claimed having been disclosed in said copending application.

The object of my invention, therefore, is an improved apparatus for regulating and predetermining the amount of air passing through a plurality of superimposed tuyère blocks comprising a tuyère and into and through the fuel bed.

In the accompanying drawings illustrating the preferred embodiment of my invention:

Fig. 1 is a longitudinal section through the center of a row of tuyère blocks comprising a tuyère showing my invention associated therewith;

Fig. 2 is a fragmentary longitudinal section on an enlarged scale of a pair of tuyère blocks assembled;

Fig. 3 is a plan view of the structure shown in Fig. 2;

Fig. 4 is a perspective view of one of the blocks used with a tuyère shown in Figs. 1, 2 and 3;

Fig. 5 is a perspective view of a different form of block than that shown in Fig. 4, and Fig. 6 is a plan view of a tuyère block showing a modified manner of attaching the filling blocks thereto.

Referring to the drawings, 10 designates a foundation on which are mounted spaced fuel troughs 11 (but one of which is shown), these fuel troughs constituting supports for the tuyères and 12 designates a portion of the brick masonry enclosing the stoker apparatus, a channel iron 13 extending across the furnace and acting as a support for the front ends of the fuel troughs 11, a plate 14 closing the space extending between the side walls of the furnace, the base 15 and the channel iron 13. Between adjacent fuel troughs and on the upper edge of such troughs is placed a tuyère. The tuyère, base and apparatus just described form practically a wind or pressure chamber 18, and extending upward through the base 10 is an air supply pipe 16 provided with a damper 17 operated in any suitable manner and by means of which the supply of air to the wind or pressure chamber is controlled. Referring now particularly to Figs. 2 and 3, there are shown a plurality of tuyère blocks in superimposed relation and designated generally by the numeral 18. Each tuyère block consists essentially of a floor plate 19, provided with upstanding portions 20 adapted to engage with the under face of the floor plate 19 on the next upper adjacent tuyère block 18 and on its under face with a downwardly extending projection 21 adapted to fit into a corresponding perforation 22 in the next lower adjacent floor plate 19 of the tuyère block 18, and at its extreme forward end is provided with a downwardly and forwardly extending member 23 that extends into a perforation 24 near the forward end of the next lower adjacent floor plate. Further, each floor plate 19 is provided with a plurality of perforations 26, the line of which perforations approximately follows the contour of the forward end of the block.
This construction enables me to build up a tuyère consisting essentially of a plurality of spaced blocks which, were no other means employed, would allow a flow of air thru the space between the adjacent spaced blocks and into the fuel bed. To regulate the flow of air in accordance with the depth of fuel at any point along the length of the tuyère, I provide a plurality of pillow blocks 27 or 28, each of which is provided with a downwardly extending projection 29 or 30 respectively, which projections are of a size and shape to be inserted into the perforations 26 in the floor plates 18 of the tuyère block. The perforations 26 are numerous enough and so spaced that by plugging into a predetermined number of such perforations, one or the other of the downwardly extending members 29 or 30, I am enabled to block off a predetermined amount of the space between adjacent tuyère blocks 18 and in this manner regulate and predetermine the available cross section between tuyère blocks through which air may flow.

Referring now to Fig. 6 wherein is shown a modified form of tuyère block and means for regulating the amount of air flowing through adjacent blocks, 31 designates the plate, the extreme rearward portion of which is provided with a plurality of parallelly arranged perforations 32 extending transversely of the block and in such perforations I may fit blocks either of the type shown in Fig. 4 or of the type shown in Fig. 5 and in this manner predetermine the open spaces between adjacent blocks and those regulating the amount of air that may pass from the wind chamber 16 through the tuyère and into the fuel bed.

Having thus described my invention, what I claim as new is:

1. An apparatus for controlling the admission of air from the fuel bed into a stoker, which comprises, in combination, a fuel trough, tuyères arranged along the length of said trough at each side thereof comprising separable tuyère blocks, and means associated with but separable from the tuyère blocks for predetermining the amount of air passing through the tuyères.

2. In an automatic stoker, a tuyère comprising a plurality of tuyère blocks arranged parallel to each other in stacked relation, each tuyère block comprising a floor plate and means removably attached to each floor plate and extending between said floor plate and the next adjacent upper plate for partially closing the space between said plates and thereby predetermining the amount of air passing through each tuyère and between adjacent plates.

3. In an automatic stoker, a tuyère comprising a plurality of tuyère blocks arranged parallel to each other in stacked relation, each tuyère block comprising a floor plate and means removably attached to each floor plate and extending between adjacent floor plates for partially closing the space between adjacent floor plates to thereby predetermine the amount of air passing through each tuyère between adjacent floor plates.

4. In an automatic stoker, a tuyère comprising a plurality of tuyère blocks arranged parallel to each other in stacked relation and in an inclined plane, each of said tuyère blocks comprising a plate or floor and means removably mounted on each plate and extending between said plate and the next adjacent plate of the next adjacent tuyère block whereby the space between adjacent plates of adjacent tuyère blocks is partially closed and the amount of air passing through each tuyère between adjacent plates is predetermined.

In testimony whereof, I have signed my name to this specification.

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