My invention consists of certain novel parts and combinations of parts particularly pointed out in the claims.

The following is a description of an apparatus for ventilating a furnace wall embodying my invention in the form at present preferred by me, but it will be understood that various modifications and changes may be made therein without departing from the spirit of my invention and without exceeding the scope of my claims:

My present application is a division of my prior application, Serial No. 303,671, which was filed in the Patent Office on or about June 12, 1919, Patent Number 1,510,680, October 7, 1924.

My invention will best be understood by reference to the accompanying drawings in which, Figure 1 is a vertical section through a furnace wall construction embodying my invention; Fig. 2 is a side elevation of the wall shown in Fig. 1 and taken from the interior of the furnace; Fig. 3 is a sectional taken on the line 3–3 of Fig. 1, and Figs. 4 and 5 are detail sectional views illustrating modifications of the construction for anchoring the supplemental wall in position.

Like reference characters indicate like parts throughout the various views.

In accordance with the invention covered by my present application, the furnace wall, which I have indicated generally at 10°, comprises a main wall 10° and a supplemental wall 10°, which protects the lower portion of the main wall. The supplemental wall is supported, in whole or in part, on the wind box 12° of the forced blast underfeed stoker 11°, while the main wall is supported on the ventilating box 31. The sides of the ventilating box may be formed of channel irons 32, the flanges of which project inwardly, as indicated, the ends of the boxes being closed by flanged plates 33 (see Fig. 3). The ventilating boxes may be secured at their ends to columns 34 or, if the boxes are made in sections, they may be supported on a number of struts.

In order to cool the supplemental wall 10° and the lower portion of the main wall 10°, the supplemental wall is provided with openings 35 into which project pipes 36 connected to the ventilating box 31, the passages in the wall thus furnishing communication between the ventilating box and the interior of the furnace chamber. Similarly, the lower portion of the main wall 10° is provided with openings 37, L-shaped in form, into which project pipes 38, as best shown in Fig. 2, the pipes being connected to the ventilating boxes 31. The ventilating box in this case is connected by a pipe 39 to the air chamber 40 of the stoker. The said pipe preferably lies wholly within the setting, as indicated in Fig. 3.

In order to tie or bind the supplemental wall to the ventilating box, and hence to the main wall, the ends of the pipes 36 are provided with flanges 41, which engage corresponding notches 42 formed in the walls surrounding the opening 35, the notches preferably being sufficiently wide to provide a limited amount of movement between the ventilating box and wall and thereby provide for expansion and contraction. In the construction shown in Fig. 3, the ends of the pipes are split and bent outwardly, while in Fig. 4 a flange 41° is formed integral with the end of the pipe 36 and engages a notch 42° in the wall. In the construction shown in Fig. 5, the flange 41° is formed on a sleeve or thimble, which is secured at the end of the pipe, the flange engaging a notch 42° formed in the wall.

The pipes 36 and 38 are surrounded by grouting or other material, as indicated in Fig. 1.

In accordance with my invention, the supplemental wall may readily be renewed without disturbing the main furnace wall. Such a construction is particularly advantageous where a forced blast underfeed stoker of the character illustrated is used, and where there is present a swirling or vortex action of the gases produced through the effect of the forced blast which enters through the tuyères near the front of the furnace and the form of the fuel bed resulting from the underfeed method of supplying the coal, which causes the depth of the fuel bed to be greater a short distance from the wall than it is directly against and near the front wall. Where such a swirling or vortex action of the gases is produced, it is likely to result in the erosion of the lower portion of the furnace wall. Where a single front furnace wall is used, the erosion of the lower portion of the wall leads to serious difficulties because of the difficulty of renewing the lower portion of
the wall without disturbing the remainder thereof. The supplemental wall which is used in accordance with my invention, protects both the ventilating box and the lower portion of the main wall and, in case of erosion, may readily be renewed.

I claim:—

1. In combination, a furnace wall comprising a main wall and a supplemental wall, a stoker comprising a wind box, a ventilating box communicating with said wind box, each of said walls being provided with passages for conducting air from said ventilating box to the interior of the furnace chamber.

2. In combination, a ventilating box, a furnace wall disposed adjacent said box and formed with ventilating passages, tubes extending from said ventilating box into said passages, the wall being formed with notches surrounding said openings and the tubes being provided with projections engaging said notches.

3. In combination, a ventilating box, a furnace wall disposed adjacent said box and formed with ventilating passages, tubes extending from said ventilating box into said passages, the wall being formed with notches surrounding said openings and the tubes being provided with projections engaging said notches, the arrangement being such that said projections have play within said notches whereby the wall is anchored to the box with a limited amount of movement between the two.

4. In combination, a ventilating box formed in sections, a furnace wall disposed adjacent said box and formed with ventilating passages, tubes extending from said ventilating box into said passages, the wall being formed with notches surrounding said openings, and the tubes being provided with projections engaging said notches.

5. A furnace wall construction comprising a main wall and a supplemental wall, a ventilating box disposed beneath the main wall and forming a support therefor, the supplemental wall being disposed between the ventilating box and the furnace chamber.

6. A furnace wall construction comprising a main wall and a supplemental wall, a ventilating box disposed beneath the main wall and forming a support therefor, the supplemental wall being disposed between the ventilating box and the furnace chamber and being formed with passages for conducting air from said ventilating box to the furnace chamber.

7. A furnace wall construction comprising a main wall and a supplemental wall, a ventilating box disposed beneath the main wall and forming a support therefor, the supplemental wall being disposed between the ventilating box and the furnace chamber, and means for securing said supplemental wall to the ventilating box, both the main wall and the supplemental wall being provided with ventilating passages, and means for conducting air from said ventilating box to said passages.

8. A furnace wall construction comprising a main wall and a supplemental wall provided with ventilating passages, a ventilating box disposed beneath the main wall and serving as a support therefor, the supplemental wall being disposed between the ventilating box and the furnace chamber, and air nozzles secured to the ventilating box and extending within said passages, said nozzles being formed with projections engaging said supplemental wall whereby the supplemental wall is secured to the ventilating box.

9. A furnace wall construction comprising a main furnace wall, a ventilating box located beneath said wall, and a supplemental wall located between said ventilating box and the furnace, each of said walls being provided with ventilating passages communicating with said ventilating box for cooling both of said walls by the air from said box, and associated means for anchoring said supplemental wall to said ventilating box.

10. In a furnace, a forced blast underfeed stoker, a front furnace wall structure comprising a main furnace wall, a ventilating box located beneath said wall, a readily removable supplemental wall located between said ventilating box and the furnace, and means for supplying cooling air to said ventilating box, each of said walls being provided with ventilating passages communicating with said ventilating box for cooling both of said walls by the air from said box.

11. In a furnace, a forced blast underfeed stoker, a front furnace wall structure comprising a main furnace wall, a ventilating box located beneath said wall, a readily removable supplemental wall located between said ventilating box and the furnace and supported on the wind box thereof, and means for supplying cooling air to said ventilating box, each of said walls being provided with ventilating passages communicating with said ventilating box for cooling both of said walls by the air from said box.

12. A furnace wall construction comprising a main wall, a supplemental wall located on the furnace side of the main wall for protecting the lower portion of the main wall from the heat of the furnace, said supplemental wall being provided with openings for admitting air to the furnace and for cooling the wall, and pipes or ducts for admitting air to the openings, said pipes or ducts being constructed and arranged to hold the supplemental wall in alignment.

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