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2,047,227

FIREBRICK WALL CONSTRUCTION

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Fig. 1.

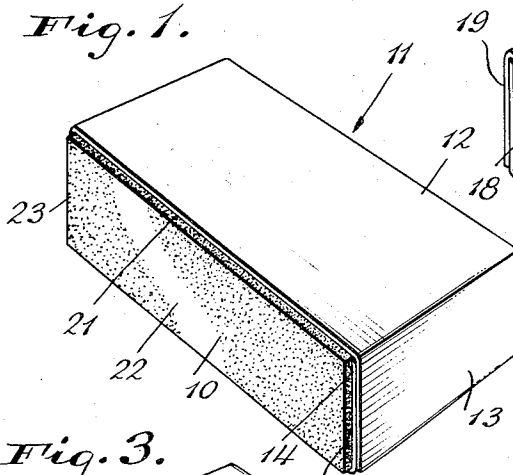


Fig. 2.

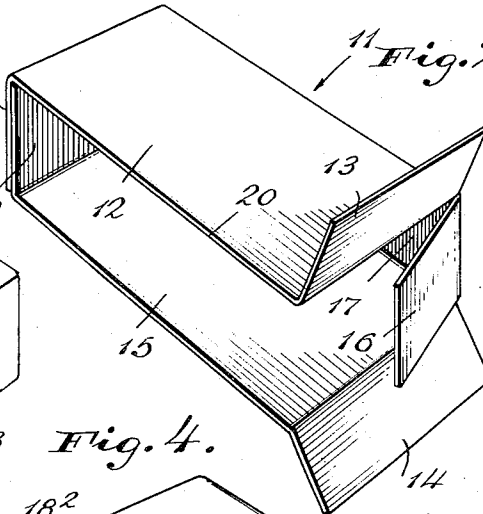


Fig. 3.

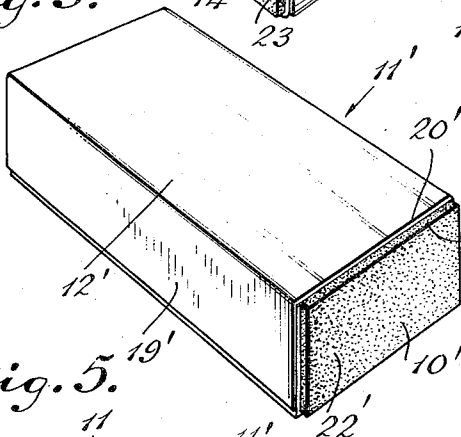


Fig. 4.

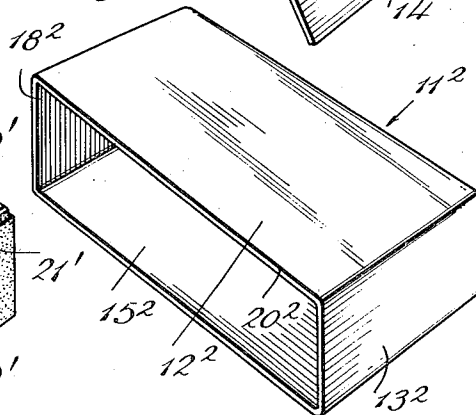
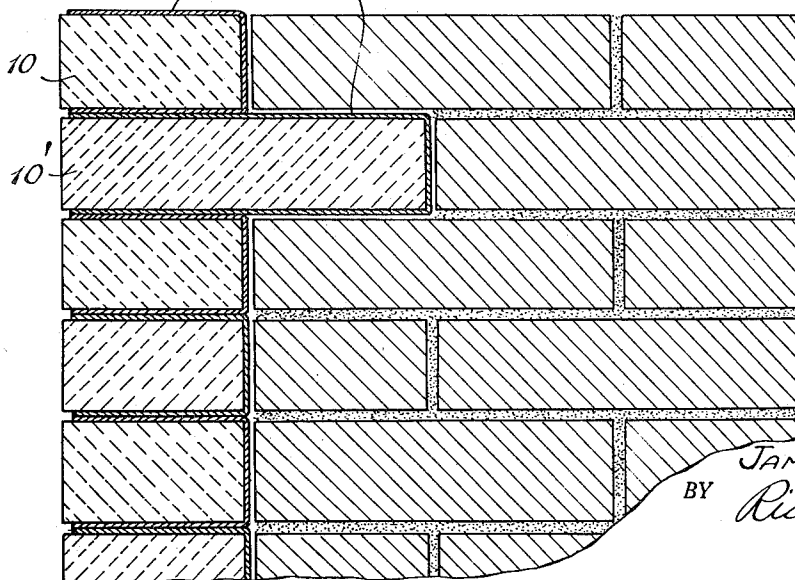


Fig. 5.



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FIREBRICK WALL CONSTRUCTION

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Application September 17, 1934, Serial No. 744,319

9 Claims. (Cl. 72—102)

The present application relates to an improved fire-brick wall construction.

In fire-brick walls of usual construction the fire bricks are directly placed in contact with one another, and during the heating and cooling of the furnace walls considerable contraction and expansion will occur, which will not be accommodated in the wall construction.

As a result high and destructive pressures will often be created, causing a short lived period for such walls and a relative rapid destruction of the component bricks making up such walls.

Spacing means have been tried between the various brick elements making up these walls, but these spacing elements are often of the same brittleness or heat expansion properties as the bricks making up the walls themselves, with the result that such spacing means will contribute to the destruction of the wall and to the decreased life period, and, moreover, will permit the escape of hot combustion gases through the walls of the furnace.

An object of the invention is to provide an improved fire-brick wall construction in which expansion and contraction of the wall with alternate heating and cooling of the wall will be most readily accommodated throughout usage without the creation of destructive pressures.

In accomplishing this invention it has been found most satisfactory to employ an indestructible compressible and expansible spacer material between the various fire bricks making up the wall and it is a further object of the present invention to utilize such spacer materials and position and arrange them in respect to the joints between the bricks that the fire wall will be substantially gas-tight and will prevent the escape of gases from the furnace enclosure into the body of the wall structure.

In accomplishing these objects it has been found most satisfactory to enclose each brick, except the face thereof toward the source of heat, in an enclosure of a sheet asbestos material, and this enclosure may be extended not only to the bricks in the facing closest to the fire but also to those next to this most internal wall of fire bricks.

It has been found most satisfactory to provide a removable box-like enclosure of molded or folded construction for the brick which may be readily removed therefrom or positioned therein prior to the assembly of the bricks in the wall and it has been found most desirable to have the elastic enclosure stop a slight distance short

of the face of the brick exposed to the flame of the fire.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawing shows a preferred embodiment of the inventive idea.

In the drawing:

Figure 1 is a top perspective view illustrating one fire brick enclosed with the proper sort of an insulating casing.

Figure 2 illustrates the casing removed from the brick.

Figure 3 is a top perspective view illustrating the casing applied to a brick whose end face is to be exposed to the flame.

Figure 4 illustrates a molded casing, and

Figure 5 is a vertical cross section illustrating a wall construction.

Referring to Figs. 1 and 2, the brick structure 10 is provided with the box-like enclosure 11 which has the walls 12, 13, 14, 15, 16, 17, 18, and 19.

In the preferred construction the edge of the box indicated at 20 is spaced as indicated at 21 on Fig. 1 from the exposed face 22 of the brick, see Fig. 1.

The casing of asbestos material may be molded as shown in Fig. 4 or folded out of one piece, as indicated in Fig. 2, and in the construction of Fig. 2 the cross-joint faces of the brick indicated at 23 are enclosed by a double or triple layer of asbestos material as indicated at 13, 14, and 16 at one side and at 18 and 19 at the other side.

In addition, to asbestos sheet material, other indestructible materials of the same expansion qualities may be employed, a preferred thickness of the casing material being $\frac{1}{4}$ to $\frac{1}{2}$ of an inch. The thickness of the material will vary, depending upon the type of refractory used.

In Fig. 3 is shown an end face brick 10' which is provided with a cover 11'. The edge of the cover 20' is spaced as indicated at 21', from the exposed face 22' of the brick. The box is folded slightly differently than in Figs. 1 and 2, but is provided with the same number of folds, as indicated at 12', 19' and so forth.

In Fig. 4 is shown a molded casing which may be conveniently prepared out of finely divided asbestos, and a binder, this casing being provided with the corresponding sides 12², 13², 15², and 18². The edge 20² is also caused to terminate short of the edge of the brick. The portions of the casing covering cross joints may be of increased thickness.

In Fig. 5 is shown how a wall may be conveniently constructed of bricks provided with the casings of Figs. 1 to 4. As indicated, the bricks 10 and 10' are shown with their front faces exposed to the flame and unprotected, and with their side and back sides covered by the asbestos surfaces 11 and 11'.

It is apparent from the description that the applicant has provided an improved furnace wall which may be utilized in boiler furnaces and re-tort structures and that the joints of the fire bricks will compensate for expansion under high temperatures.

It is usually better to have a plurality of layers of material at the edges of the bricks since their expansion is greater longitudinally than laterally and this greater expansion will be accommodated by the added layers or thickness.

An important advantage of the present invention lies in the features that warping and uneven expansion of the bricks will be accommodated by the casing material thus maintaining a gas-tight wall. The fire-brick walls will not bulge and the component bricks will not leave cracks or become loose permitting the furnace gases to escape.

What is claimed is:

1. A fire-brick wall construction in which the individual brick members thereof are enclosed in thin sheet expansible fibrous fire-proof casings, said casings taking the form of boxes which are readily removable from the individual bricks; said brick members in said wall construction being separated only by said casings, which casings are pressed together by the adjacent bricks to form a substantially gas tight construction.

2. A fire-brick wall construction in which the faces of the bricks not exposed to the flame are encased in thin sheet asbestos casings, said casings taking the form of boxes which are readily removable from the individual bricks; said brick members in said wall construction being separated only by said casings, which casings are pressed together by the adjacent bricks to form a substantially gas tight construction.

3. In a fire-brick wall construction, the pro-

vision of a plurality of fire-proof thin sheet fibrous casings for each of the bricks to cover all the faces not exposed to the flame, the cross-joint faces being provided with a plurality of layers.

4. The construction of claim 3 in which the sheet material is asbestos.

5. A fire-brick wall construction in which the faces of the brick other than the face toward the fire are enclosed in a folded sheet of asbestos forming an open box, said box preferably having double thickness of asbestos at the lateral sides of the brick.

6. In a fire brick wall construction, the provision of a plurality of box-like sheet fibrous asbestos casings to be placed upon and enclose the side, top and bottom and rear faces of the brick, and to leave the face of the brick toward the flame uncovered, one of said casings being provided for each of said bricks in said wall construction, the casing terminating a slight distance short of the face of the brick exposed to the flame and the lateral sides of the brick being provided with an increased thickness of asbestos, said casings taking the form of boxes which are readily removable from the individual bricks; said brick members in said wall construction being separated only by said casings, which casings are pressed together by the adjacent bricks to form a substantially gas tight construction.

7. The construction of claim 6 in which the box is molded of sheet asbestos.

8. The construction of claim 6 in which the box is formed by folding together a sheet of asbestos which has been suitably cut, the flaps of said sheet being folded over the ends of the brick to form a plurality of layers thereon.

9. In a fire brick wall construction, the provision of a plurality of brick members and a plurality of removable box like sheet fibrous asbestos casings close-conforming to at least the sides, top and rear faces of each of the bricks and being pressed together by the weight of said bricks so as to form a substantially gas tight wall construction.

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