July 15, 1924 1,501,563

J. H. LAWRENCE

WALL FOR BOILER FURNACES

Filed April 1, 1921

Fig. 1.

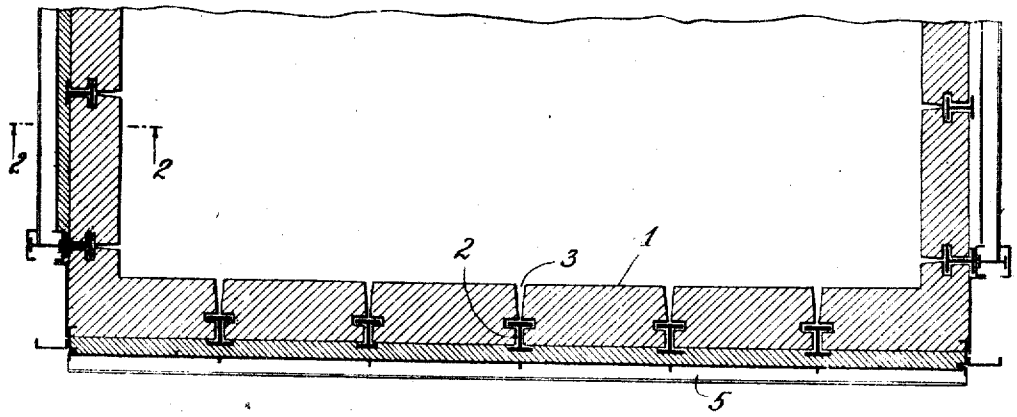


Fig. 3.

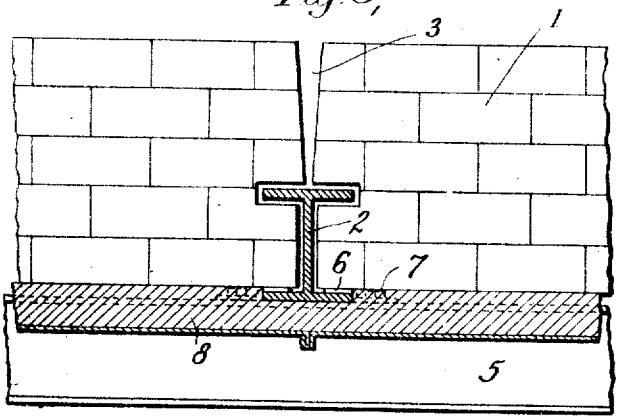


Fig. 2.

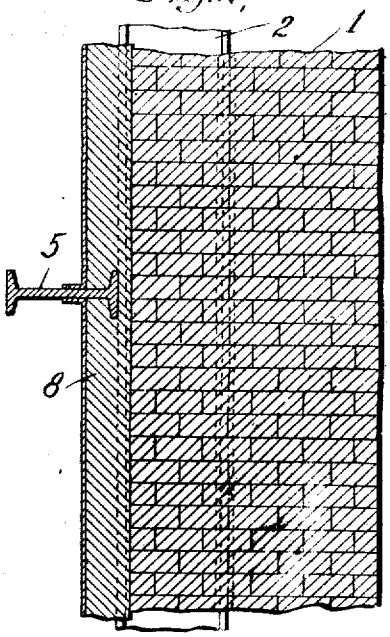
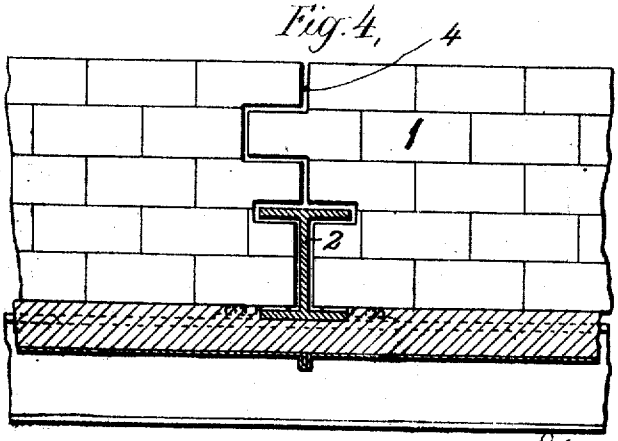


Fig. 4.



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UNITED STATES PATENT OFFICE.

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WALL FOR BOILER FURNACES.

Application filed April 1, 1921. Serial No. 457,599.

To all whom it may concern:

Be it known that I, JOHN H. LAWRENCE, citizen of the United States, and resident of the city, county, and State of New York, have invented certain new and useful Improvements in Walls for Boiler Furnaces, of which the following is a specification.

My invention aims to provide a wall especially designed for the furnaces of water tube boilers, and applicable also to other furnace walls, and a particular advantage of which is in taking care of expansion caused by the high temperatures.

The accompanying drawings illustrate embodiments of the invention.

Fig. 1 is a horizontal section of a front wall and two end walls of the furnace embodying the invention;

Fig. 2 is a vertical section of the same on the line 2—2;

Fig. 3 is a plan of a portion of a stretcher course on an enlarged scale;

Fig. 4 is a similar view of another arrangement embodying the invention.

The invention can be applied to any one or to all of the walls of the furnace and is particularly applicable to water tube boiler furnaces because of the comparatively great height to which such walls are carried. Such walls are exposed on their inner faces to the hot gases of the furnace and tend to expand longitudinally and vertically and to be greatly distorted, the expansion being greatest on the inside. My invention is intended to permit this expansion without destruction or breaking of the wall.

Referring to the embodiment of the invention, the walls are built up of any usual or suitable material, such as the bricks shown, and are divided horizontally into sections 1 between the outer portions of which are I-beams 2 or similar structural members lying partly between the sections of the brickwork and extending outside of the same, with its outer flanges bearing against the outer faces of the sections of the wall. These members tend to prevent the walls from projecting inward. A narrow space is provided between the brickwork and the I-beams around the inner flange of the latter and at the sides thereof, so that the brickwork is free to move both vertically and longitudinally with respect to the I-beams but is held against transverse horizontal movement inward.

A space is also left between the adjacent faces of the successive sections 1 of the wall. Tapered spaces 3 may be left, as shown in Figs. 1 and 3, by properly cutting the faces of the bricks. Or as shown in Fig. 4, a space 4 may be left which follows the overlapping ends of the bricks in each horizontal course. Or openings of various other shapes may be provided.

When the furnace walls are heated the openings 3 (or 4) will close or partly close due to the greater expansion on the inside of the wall.

One or more of the walls may also be braced by means of horizontal beams 5 fastened to the vertical beams by means of suitable clips 6 and bolts 7, and a layer of insulating material 8 may be applied to the outer face of the wall and covered by a casing 9 of sheet metal. Various other known or suitable constructions may be adopted for the outside construction.

Though I have described with great particularity of detail certain embodiments of my invention, yet it is not to be understood therefrom that the invention is restricted to the particular embodiments disclosed. Various modifications thereof in detail and in the arrangement of the parts may be made by those skilled in the art without departure from the invention as defined in the following claims.

What I claim is:

1. A boiler furnace wall built of brickwork in sections with vertical structural members in the outer portion of the wall and with spaces between the inner portions of the adjacent ends of such sections.

2. A boiler furnace wall built of brickwork in sections with vertical structural members in the outer portions of the wall and with spaces between the inner portions of the adjacent ends of such sections, such spaces being flared at their inner ends.

3. A boiler furnace wall built in sections with spaces between the inner portions of the adjacent ends of such sections, and with vertical structural members between such sections and spaced therefrom, so as to permit longitudinal and vertical expansion of such sections independently.

In witness whereof, I have hereunto signed my name.

JOHN H. LAWRENCE