F. GIRTANNER.

FURNACE ARCH.

APPLICATION FILED MAR. 13, 1911.

1,068,581.

Patented July 29, 1913.

2 SHEETS—SHEET 1.

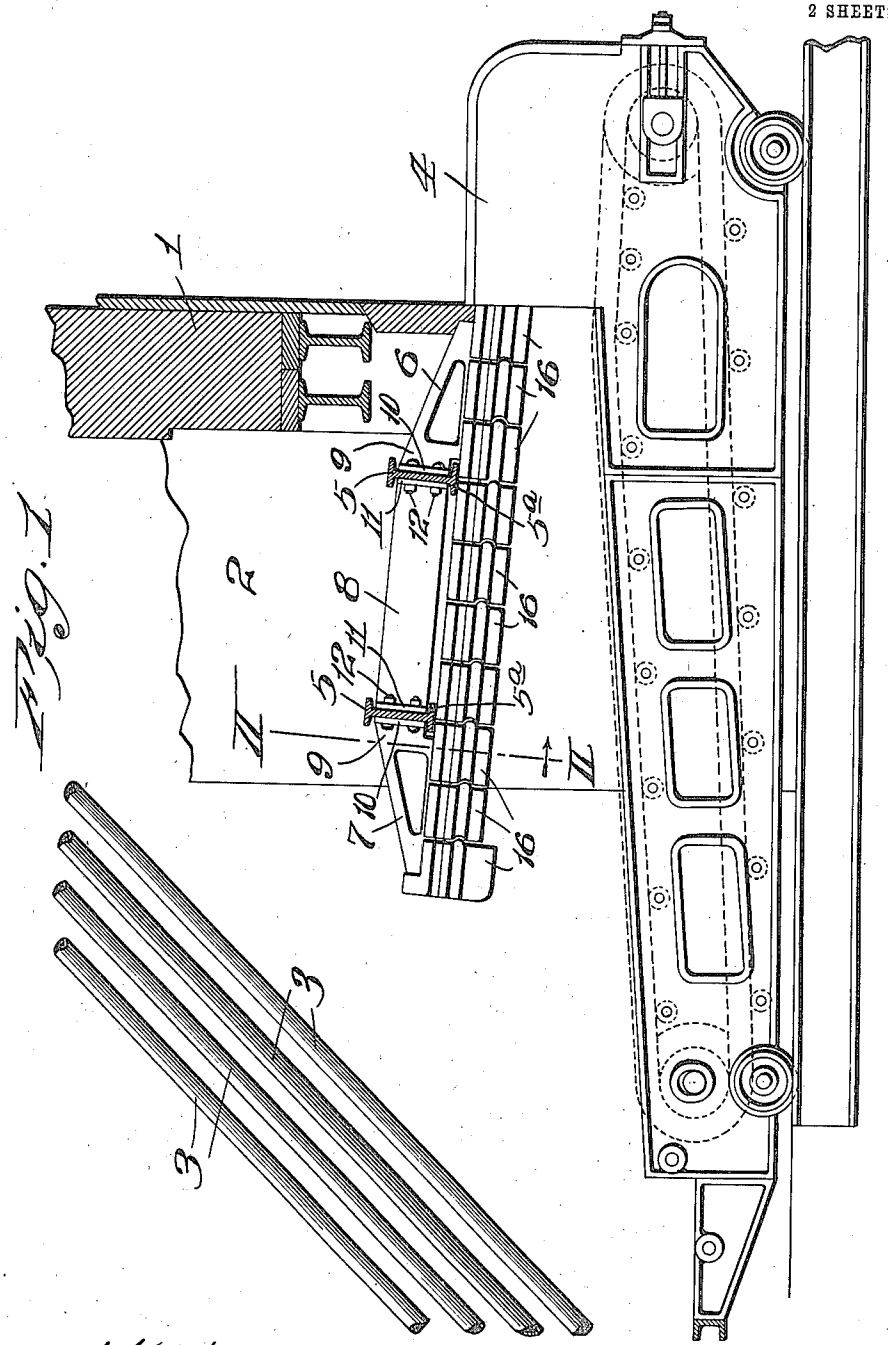


Fig. 1.

Witnesses:
F. G. Fletcher.
M. C. Hammond

Inventor:
Frederick Girtanner.
By Knight Bros
Attys.

F. GIRTANNER.

FURNACE ARCH.

APPLICATION FILED MAR. 13, 1911.

1,068,581.

Patented July 29, 1913.

2 SHEETS—SHEET 2.

Fig. 2.

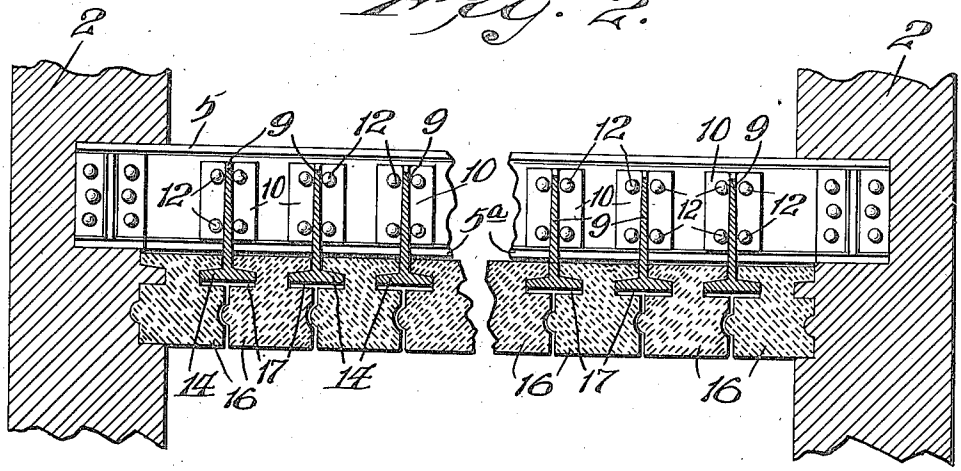


Fig. 3.

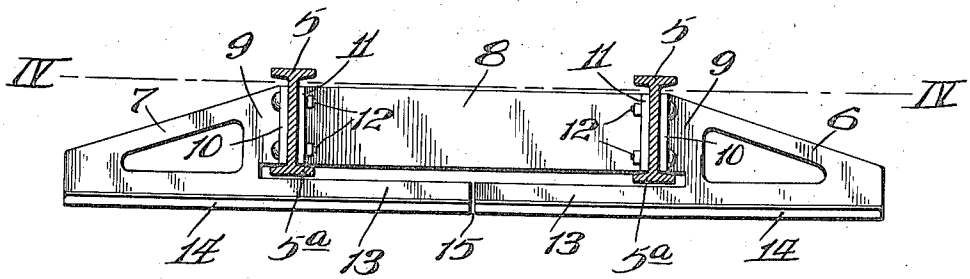
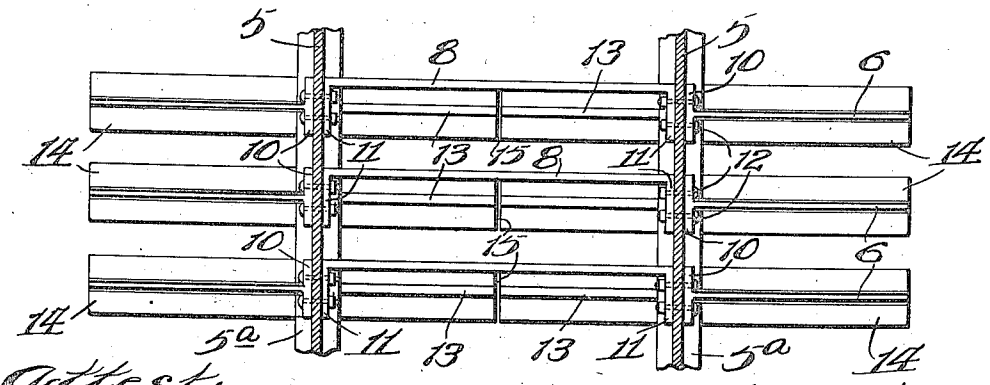


Fig. 4.



Attest:

W. G. Fletcher.

M. E. Wannum

Inventors:

Frederick Girtanner.

By Knight Bros.

Attys.

UNITED STATES PATENT OFFICE.

FREDERICK GIRTANNER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO LACLEDE-CHRISTY CLAY PRODUCTS COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

FURNACE-ARCH.

1,068,581. Specification of Letters Patent. Patented July 29, 1913.

Original application filed January 8, 1910, Serial No. 537,035. Renewed January 21, 1911, Serial No. 603,922. Divided and this application filed March 13, 1911. Serial No. 614,029.

To all whom it may concern:

Be it known that I, FREDERICK GIRTANNER, a citizen of the United States of America, and a resident of St. Louis, Missouri, have invented certain new and useful Improvements in Furnace-Arches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to furnace arches in general, but is more especially serviceable in connection with flat top arches, such as that contemplated in my application, Serial No. 537,035, which was filed January 8, 1910, and renewed, January 21, 1911, under Serial No. 603,922, and of which the present application is a divisional application on the specific embodiment shown in Figures 5 and 6 of said parent application.

The primary object of the present invention is to provide an improved furnace top wall comprising a comparatively permanently located tile supporting means which is more or less inaccessible, and readily replaceable tiles which can be renewed as desired. Toward the attainment of this object, my invention contemplates the provision of flanged beams which are rigidly held spaced apart by means of stiffeners or spacing members, and tile supporting brackets carried by said beams.

Other and further objects will appear in the specification and be specifically pointed out in the appended claims, reference being had to the accompanying drawings exemplifying the invention, and in which—

Fig. 1 is a vertical longitudinal section through a furnace equipped with the improved arch; Fig. 2 is a transverse vertical section on line 11—11, Fig. 1; Fig. 3 is a side view of one of the tile supporting brackets, the tiles being removed therefrom to show the main supporting beams in vertical section; Fig. 4 is a horizontal section on the line IV—IV, Fig. 3.

Referring now in detail to the drawings, 1 represents the front wall, and 2 the side walls of a furnace equipped with the improved arch.

3 are the boiler tubes.

4 represents the chain grate frame of any preferable construction.

5 represents the main beams seated firmly in the side walls 2 of the furnace and extending transversely of the furnace from one side wall to the other. These main beams 5—5 are preferably of a form having flanges 5^a along their lower edges.

Suitable means for supporting longitudinally arranged rows of tiles in pursuance of the objects of my invention are provided by a plurality of truss-like structures, each comprising a pair of oppositely disposed end brackets 6 and 7 seated respectively upon the outer flanges of the beams 5 and a central brace 8. The inwardly projecting arms 9 of the brackets 6 and 7 are provided with flanges 10 which are connected to the flanges 11 of the brace 8 by means of bolts 12 which draw the flanges 10 and 11 securely against the webs of the beams 5. It will be seen, therefore, that the brace 8 of each tile suspension structure has a multiple function in that it spaces the beams 5 and acts as a stiffener thereto, and at the same time has stresses transmitted directly thereto by the bolts 12 and through the webs of the beams 5.

Each of the ends 6—7 is provided with extensions 13 which approximately meet centrally of the arch structure. Ends 6—7 and extensions 13 are provided with lower flanges 14, so that a continuous bracket from front to rear is provided, suitable for supporting the fire brick or tiles.

It will be noted that the main beams 5 are located at about approximately the center of the lower edge of the ends 6—7 so that the tiles carried by each end 6 or 7, or their aggregate load, are distributed equally on either side of the center or point of support. The load being balanced thus, the greatest possible efficiency of material is obtained, permitting a lighter construction. Hence, we have a structure in which the load is evenly balanced on and equally distributed between the main supporting beams by reason of approximately one-half of the entire weight of all the tiles being loaded onto the outer flange of each beam 5. In other words, the load represented by a line of fire brick or tile supported by the ends 6—7 is divided up into four parts, one on each side of each of the main supporting beams 5.

In the aforesaid application, the idea of dividing up the load on a pair of main supporting beams by dividing up the bracket into a plurality of parts is described, but in

that case applicant elected, in his more specific claims, to protect a different specific construction of divided bracket. In the present case, it is desired to protect the specific construction shown herein, wherein the ends 6—7 of a bracket have lower edges which extend continuously from their outer ends to the center of the bracket, the brace, or central portion 8, of the bracket being disconnected from the inwardly extending extensions on the ends 6 and 7.

The fire brick or tiles 16 may be of any suitable form, such as shown in the drawings, wherein grooves 17 are formed in the side faces of the firebricks or tiles to engage flanges 14 in the usual way to protect the metallic structure from heat, as is customary.

I claim:

1. In a device of the class described, main supporting beams, a bracket member having a portion resting against and secured to one of said supporting beams, said bracket member being provided with a tile-carrying portion, said portion extending transversely of and located below said beam, a similar bracket located in the same plane as the first named bracket and having a portion similarly resting against and secured to another of said beams, said beams being spaced apart, said bracket members being secured to opposite sides of said beams, and each having an extremity of their tile-carrying portions adjacent when in assembled relation.

2. In a device of the class described, main supporting beams, a bracket member having a portion adapted to rest against and be secured to one of said supporting beams, said bracket member being provided with a tile-carrying portion, said portion extending transversely of and located below said beam, said tile-carrying portion being approximately bisected by the plane of said beam, a similar bracket member similarly located with respect to another of said supporting beams and lying in the same plane as said first named bracket, said bracket members each having an extremity of their tile-carrying portion adjacent when in assembled relation.

3. In a device of the class described, main supporting beams, a bracket member having a portion adapted to rest against and be secured to one of said supporting beams, said bracket member being provided with a tile-carrying portion, said portion extending transversely of and located below said beam, a similar bracket located in the same plane as the first named bracket and having a portion similarly adapted to rest against another of said beams, said bracket members each having an extremity of their tile-carrying portions adjacent when in assembled relation, and a spacing member extending between said beams located above said bracket-carrying portions.

4. In a device of the class described, main supporting beams, a bracket member having a portion adapted to rest against and be secured to one of said supporting beams, said bracket member being provided with a tile carrying portion, said portion extending transversely of and located below said beam, a similar bracket located in the same plane as the first named bracket and having a portion similarly adapted to rest against another of said beams, said bracket members each having an extremity of their tile carrying portions adjacent when in assembled relation, and a spacing member extending between said beams located above said bracket carrying portions, said spacing member being secured to said supporting beams and to the adjacent beam contacting portions of said bracket members.

FREDERICK GIRTANNER.

In the presence of—
J. B. MEGOWN,
M. C. HAMMON.