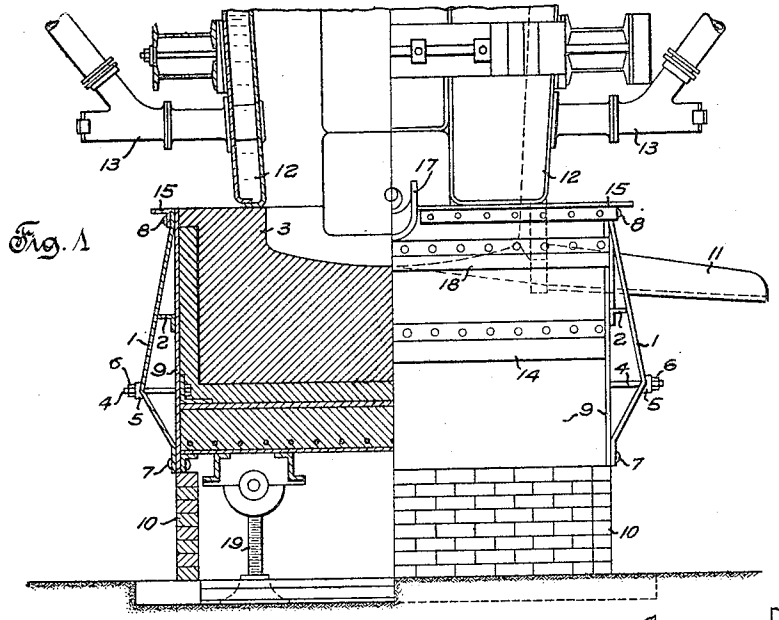
C. A. FISCHER.

TRUSS.

APPLICATION FILED DEC. 5, 1914.

1,225,232. Patented May 8, 1917.

Fig. 1



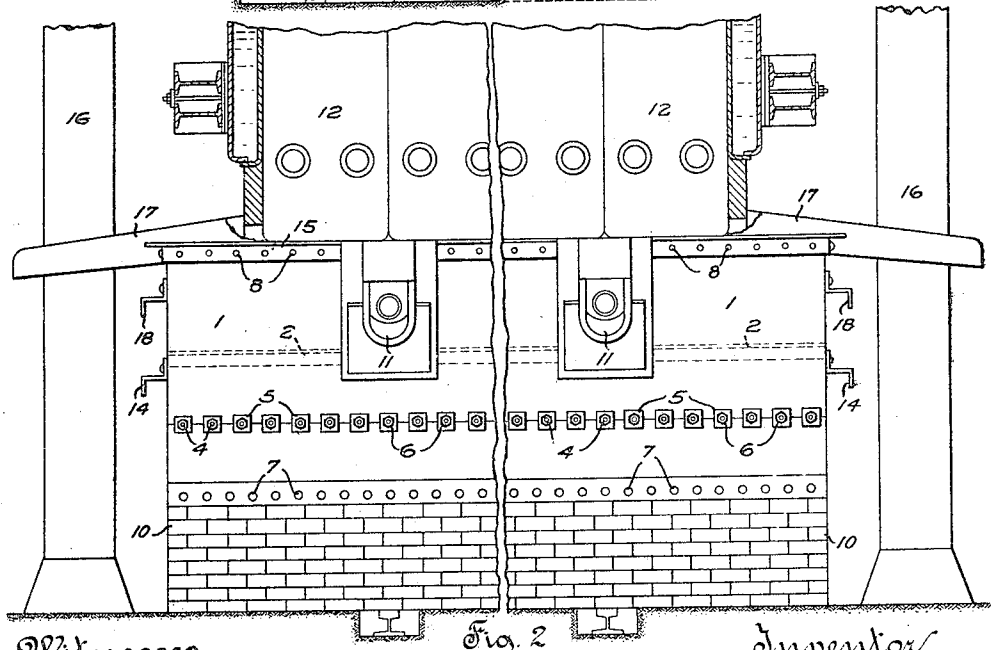


Fig. 2

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES A. FISCHER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS MANUFACTURING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF DELAWARE.

TRUSS.

1,225,232. Specification of Letters Patent. Patented May 8, 1917.

Application filed December 5, 1914. Serial No. 875,993.

To all whom it may concern:

Be it known that I, CHARLES A. FISCHER, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Trusses, of which the following is a specification.

This invention relates to improvements in the construction of furnaces and particularly to devices for trussing or bracing the crucibles of smelting furnaces.

An object of the invention is to provide a truss or brace for furnace structures, which is simple in construction and efficient in operation. One of the more specific objects is to provide a truss or stay plate which may be readily formed of sheet metal and which will effectively brace the structure to be supported, along its entire length. Another object is to provide a truss which may be readily removed from the supported structure and renewed if desired. A further object is to provide a truss which may be furnished as an article of manufacture in completed form and ready for attachment to the structure to be supported.

A clear conception of an embodiment of the invention may be had by referring to the drawing accompanying and forming a part of this specification in which like reference characters designate the same or similar parts in the various views.

Figure 1 is a fragmentary, part sectional end view of a copper smelting furnace and crucible.

Fig. 2 is a fragmentary, part sectional front view of a copper smelting furnace and crucible.

The crucible 3, which is formed of suitable refractory material, is normally supported upon a brick wall or foundation 10 and may be removed for renewal of its lining by means of jack screws 19, upon removal of the foundation 10. The outer end walls of the crucible 3, which are relatively short, are ordinarily braced by means of flat metal plates 9 having Z-bars 14, 18, secured thereto and forming cross-supports therefor. The front and rear side walls of the crucible are provided with flat sheet metal plates 9, having rivet holes formed therethrough along their upper and lower edge portions. The plates 9 have substantially plane surfaces and are cut away at points adjacent the matte discharge spouts 11 which extend from the bottom of the crucible 3.

The truss plates 1, which are preferably formed of sheet metal, are bent longitudinally at portions intermediate their ends, and have rivet holes adjacent their edges which match with the rivet holes in the adjacent plates 9. The lower edges of the truss plates 1 are riveted directly to the plates 9 and to structural elements forming part of the crucible 3 by means of rivets 7. The upper edges of the plates 1 are secured to the plates 9 by means of rivets 8, which rivets also secure the angle bars 15 to the upper outer edge surfaces of the truss plates 1. The truss plates 1 are provided at their bent portions with a series of bolt holes through which the bolts 4, which also pass through alined openings in the adjacent plates 9, pass. The headed ends of the bolts 4 engage structural elements embedded in the crucible 3 and rigidly secure the mid portion of the truss to these elements. The outer free ends of the bolts 4 are screw-threaded and are provided with square collars 5 which surround the bolt ends and fit the adjacent surfaces of the plates 1. The collars 5 are held in place against the plates 1 and the bolts 4 are placed under tension, by means of the nuts 6. The angle bars 2 extend longitudinally of the trusses and are secured to the plates 9 so as to coact with intermediate portions of the truss plates 1. By rigidly securing the lower portion of the truss to the crucible 3 by means of the bolts 4 and rivets 7, the upper portion of the truss serves as a cantaliver support for the upper wall of the crucible.

Above the crucible 3 is mounted the smelting furnace which is surrounded by the usual water jackets 12 and has slag discharge spouts 17 leading therefrom. The twyers 13 are adapted to inject air or other oxidizing agent into the furnace through the jackets 12. The struts 16 are of the usual form and support structural elements not shown, at the upper end of the furnace.

With the furnace in normal operation, a suitable blast is injected through the twyers 13 and the slag is removed from the furnace through the discharge spouts 17. The metal is discharged from the crucible 3 through the spouts 11.

It will be observed that formation of the

truss of longitudinally bent sheet metal plates 1, provides a simple, cheap and effective structure for supporting the side walls of the crucible. With the nuts 6 properly screwed in place and with the edges of the plates 1 riveted to the adjacent edges of the plates 9 by means of the rivets 7, 8, the mid portions of the bent plate 1 are placed under compression, thus acting as struts and causing the edge portions thereof to exert inward pressures against the crucible walls. The angle bars 2 form suitable supports for preventing inward bending of the upper portions of the plates 1 and also serve to distribute the retaining forces acting upon the plates. The use of continuous truss plates also provides rigid integral supports for the entire crucible walls, thereby positively preventing possibility of local distortion of the walls.

It should be understood that it is not desired to be limited to the exact details herein shown and described, for obvious modifications may occur to a person skilled in the art.

It is claimed and desired to secure by Letters Patent,—

1. In combination, a truss comprising, a bent continuous member, means connecting the edges of said member remote from the bend, and means for causing the portions of said member adjacent said bend to serve as struts, means for rigidly securing one portion of said truss, and an abutment engaging a second portion of said truss whereby a third portion serves as a cantaliver.

2. In combination, a truss comprising, a bent member, means connecting the edges of said member remote from the bend, and tension means urging the bent portion toward said connecting means, means for rigidly securing one portion of said truss and an abutment engaging a second portion of said truss whereby a third portion serves as a cantaliver.

3. In combination, a truss comprising, a longitudinally bent continuous plate, a second plate connecting the longitudinal edges of said bent plate, and a series of bolts urging the bent portions of said first plate toward said second plate, means for rigidly securing said truss at said bolts, and an abutment engaging said truss at a longitudinal edge on one side of said securing means whereby the portion of said truss on the opposite side of said securing means serves as a cantaliver.

In testimony whereof, the signature of the inventor is affixed hereto in the presence of two witnesses.

CHAS. A. FISCHER.

Witnesses:
W. H. LIEBER,
J. J. KANE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."