May 5, 1925. 1,536,717

H. KREKEL

METALLIC BUILDING STRUCTURE

Filed April 11, 1922 2 Sheets-Sheet 1

Fig. 1.

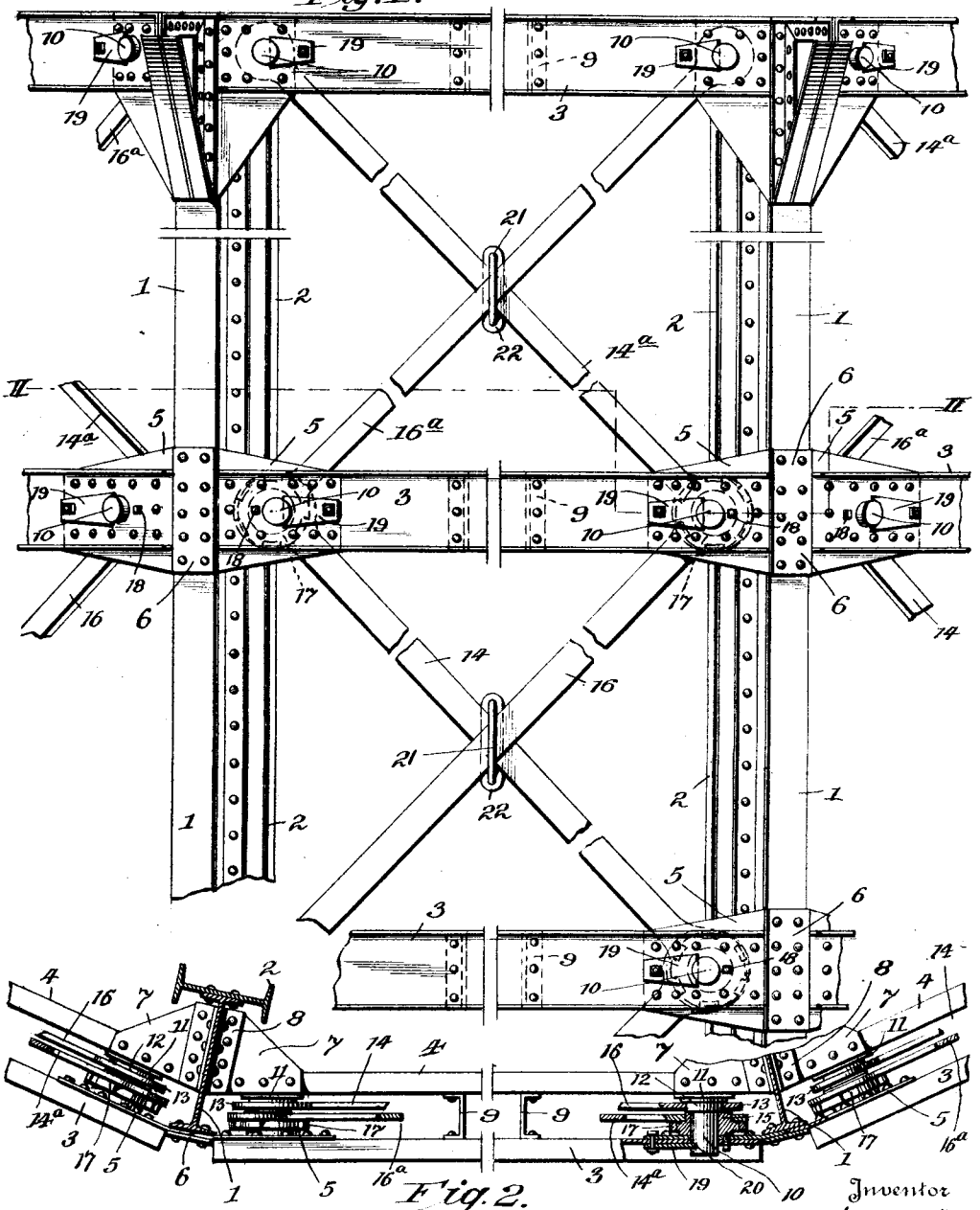


Fig. 2.

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2 Sheets-Sheet 2

Fig. 3.

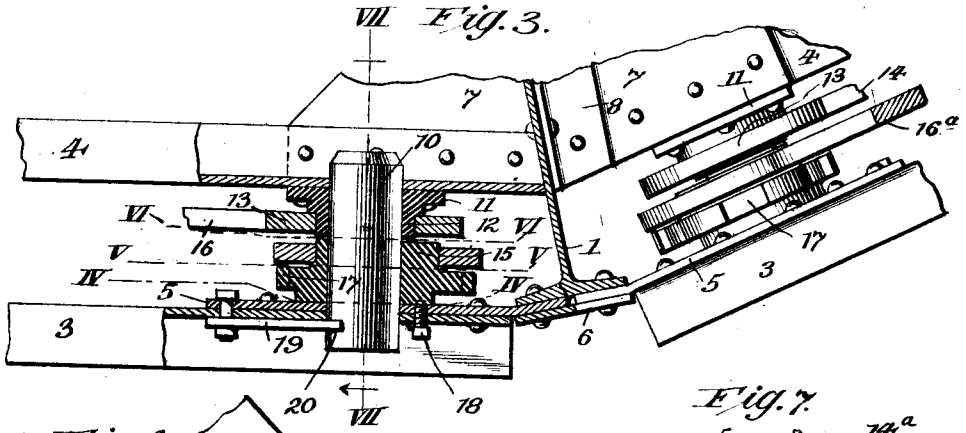


Fig. 4.

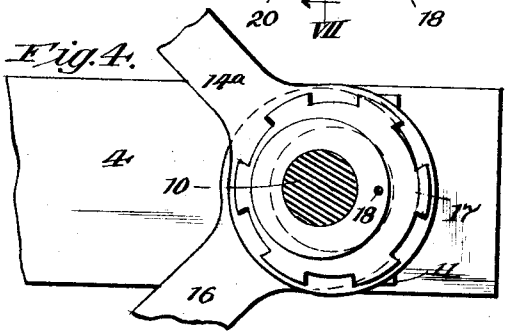


Fig. 7.

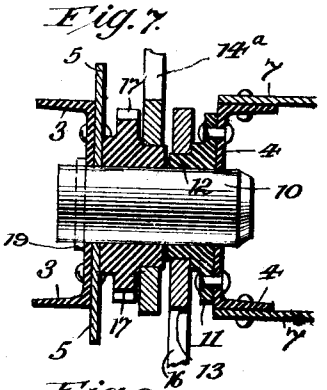


Fig. 5.

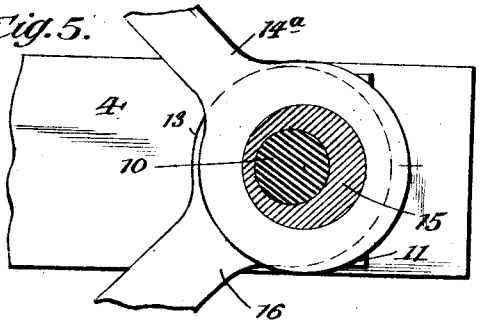


Fig. 6.

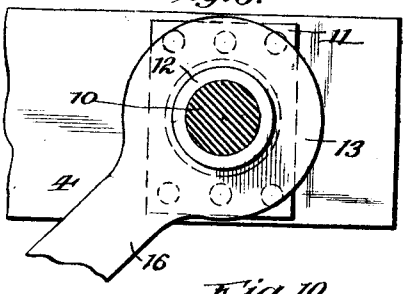


Fig. 8.

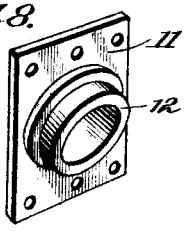


Fig. 9.

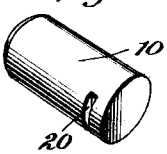
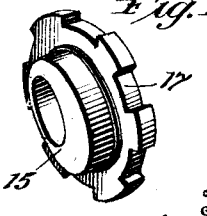


Fig. 10.



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1,536,717

UNITED STATES PATENT OFFICE.

HUBERT KREKEL, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE BARTLETT HAYWARD COMPANY, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

METALLIC BUILDING STRUCTURE.

Application filed April 11, 1922. Serial No. 551,589.

To all whom it may concern:

Be it known that I, HUBERT KREKEL, a citizen of the United States, residing at Baltimore and State of Maryland, have invented certain new and useful Improvements in Metallic Building Structures, of which the following is a specification.

This invention pertains to an improved metallic building structure, and the method of assembling the same. While the invention is of general application where a series of column-like members are interconnected by a series of struts, it is especially advantageous for use in connection with the building and erection of the guide frames of gas holders, and particularly so where the structure is large and the parts necessarily heavy.

The main object is to provide means for facilitating the positioning and assembling of the parts, and more particularly the eye bars employed to brace the structure, and likewise to provide means whereby said bars may be placed under proper tension—in other words, to equalize the tension between the various bars throughout the structure and consequently through the structure as a whole.

This invention is illustrated in connection with a guide frame of a gasometer or holder and in the drawings—

Fig. 1 is a side elevation of so much of the framework as is necessary to an understanding of the invention;

Fig. 2 a transverse horizontal section taken on the line II—II of Fig. 1;

Fig. 3 a sectional plan view on the same section line, showing, upon a somewhat larger scale, two of the eye bars attaching and adjusting means;

Figs. 4, 5 and 6, vertical sectional views taken on the section lines IV—IV; V—V; and VI—VI of Fig. 3, respectively;

Fig. 7 a transverse vertical sectional view on the line VII—VII of Fig. 3; and

Figs. 8, 9 and 10, perspective views, respectively, of the bearing flange, the supporting pin, and the eccentric take-up element.

In the drawings, 1 denotes the vertically disposed columns shown as being produced from I-beams, the inner flange of which bears against the web of a second I-beam 2, said members being riveted or otherwise secured together. Beams or shapes 2 form the guides against which the bearing rollers of the tank (not shown) bear. The columns thus formed are interconnected throughout the structure by horizontally disposed struts, each strut being composed of two channel shaped channel elements 3 and 4. The outermost channel 3, at each end thereof, has a plate 5 riveted thereto, the ends of the plates, see more particularly Fig. 3, being bent so as to take a fair bearing against the outer face of the outer flange of the member 1. The adjacent ends of such plates are overlaid with a plate 6, and said plate and the ends of plates 5 are riveted to each other and to the flanges of the beam shaped column. The inner strut elements 4 are of a length to fit between the webs of the adjacent members 1, and gusset plates 7, riveted to the flanges of said elements and to angle irons 8, which in turn are riveted to the webs, are employed to secure the inner strut elements in place. Spacer elements 9, Fig. 2, will also preferably be secured between the strut elements 3 and 4.

Where a columnar structure, interconnected at intervals by strut or girth element, as they may be termed, is built up to any considerable height, as is now done in the construction of large capacity gasometers, it becomes essential to stiffen the same against lateral deflection or tipping, or, in other words, to prevent what may be termed weaving of the parts. To this end I provide cross bracing, employing for that purpose eye bars which extend diagonally from one strut to another, the ends of said bars being preferably anchored or secured to the struts adjacent their connection to the columns. Such bars are of considerable weight and consequently are not easy of placement; moreover they should all be under substantially equal tension. To secure ready placement and substantially equal tension the following described means is employed. The eye bars are alike in form and construction, as is also the means employed to secure the ends

thereof in palce,—hence the various parts and elements are similarly lettered throughout.

Formed in the vertically disposed faces of each of the component members 3 and 4 of the struts, adjacent each end thereof (and also in the member 5) are oppositely disposed openings adapted to receive a pin 10, one end of which is preferably tapered to facilitate its placement. Said pin also passes through a supporting and bearing member, see Fig. 8, comprising a plate-like element 11, having a shouldered collar 12 extending outwardly therefrom. The plate-like member or base is securely riveted to the strut element 4 and the collar thereof is adapted to receive and support one eye 13 of one of the eye-bars 14. The pin has mounted on it, adjacent the strut element 3, an eccentric bearing member 15 adapted to receive an eye of a second eye bar 16, said member 15 likewise having formed integral therewith (see Fig. 10) an outwardly extending notched flange 17, adapted to receive a spanner wrench by which the eccentric collar may be turned. A set screw 18 (see Fig. 3) threaded through the strut member 3 and plate 5, takes into the eccentric and prevents the same from turning after it has been brought to its desired adjusted position. A lock plate 19, one end of which takes into a notch 20 in the pin 10, is bolted to the strut and prevents movement of the pin after it is finally positioned.

In assembling, as the columns and struts are erected, the eye-bars 14 and 16, say the lower pair in Fig. 1, are put in place, the eye at the upper end of each bar being slipped over the collars 12 and the pins 10 temporarily positioned. After the next sections of the columns are erected and tied together by the horizontal strut, and it becomes necessary to place the next pair of eye bars, one of the pins is withdrawn and the eye at the lower end of the bar, say 14^a, with the eccentric bearing sleeve placed therein, is passed between the strut elements in line with the pin receiving opening. The pin is then reinserted, passing through the eccentric and the fixed bearing collar 12 upon which latter the eye of the lower and previously positioned eye-bar rests. The pin is then secured in place by the locking plate 19. Similarly, the eye-rod 16^a is positioned, both of said rods 14^a and 16^a being secured in place at their upper ends by pins passing therethrough and through the struts.

In Fig. 1 the uppermost strut of the structure is shown, and at this point the supporting collar may be omitted, if desired; throughout the lower portion of the structure, however, the collars and eccentrics are present. After the eye-rods are positioned they may be readily placed under tension by simply turning the eccentrics and locking the same by turning in the set screw 18. U-bolts 21 and plates 22, cooperating therewith, may be placed at the point of crossing of the eye-bars to tie the same together.

What is claimed is,—

1. In a metallic building structure, the combination of a pair of vertical columns; cross struts connecting the same at intervals, said struts being produced from two spaced elements; a pair of eye-bars extending diagonally across the space formed by two adjacent struts; and means for securing said eye-bars in position, comprising a pin passing through alined openings formed in the spaced strut elements adjacent the ends thereof, a fixed collar secured to the inner face of one of said strut elements in line with the opening in the element to which it is secured, and adapted to receive and sustain the eye of one of the eye-bars, an eccentric mounted upon the pin and adapted to be rotated thereabout, said eccentric receiving the eye of the opposite eye-bar, and means for securing said eccentric in its adjusted position.

2. In a metallic building structure, the combination of a pair of columns; a pair of struts connecting said columns, each of said struts comprising a pair of horizontally spaced elements; a pair of eye-bars extending diagonally and in crossed relation between the opposite corners of the struts; means for securing the lower eyes of said bars to the lowermost strut; and a bearing block for the upper eye of each of the bars, said blocks being secured upon the inner face of one of the elements of the upper strut and serving as a support for the eye, and a pin extending through each of said blocks and the strut elements.

3. In a metallic building structure, the combination of a plurality of columns; a plurality of struts arranged in spaced relation and connecting said columns; a pair of eye-bars arranged in diagonal relation between each pair of struts; means attached to the struts adjacent the columns for supporting the upper ends of the eye-bars; and means associated with the means aforesaid for holding the lower ends of the eye-bars next above and placing the same under tension.

4. In combination with a pair of columns; a strut member connecting the same, said strut being composed of two horizontally spaced elements; and a bearing for an eye-bar adapted to be connected to said strut, said bearing comprising a plate having a collar extending outwardly therefrom, the plate being secured to the inner face of one of the strut elements, and the collar being of such size as to pass through the eye of the bar, and a pin extending through the strut elements and the collar and plate.

5. In combination with a pair of columns;

a strut member connecting the same, said strut being composed of two horizontally spaced elements; and bearings for eye bars comprising a plate having a collar extending therefrom, the plate being secured to the inner face of one of the strut elements, the collar being of such size as to pass through the eye of the bar, a pin extending through the strut elements and the collar and plate, and an eccentric mounted on the pin and rotatable thereabout for receiving the eye of a second eye-bar.

In testimony whereof I have signed my name to this specification.

HUBERT KREKEL.