Nov. 6, 1951 J. S. BOBST 2,574,241

TRUSS OR BEAM FOR METALLIC BUILDING STRUCTURES

Filed Dec. 3, 1946 2 SHEETS—SHEET 1

Fig. 1.

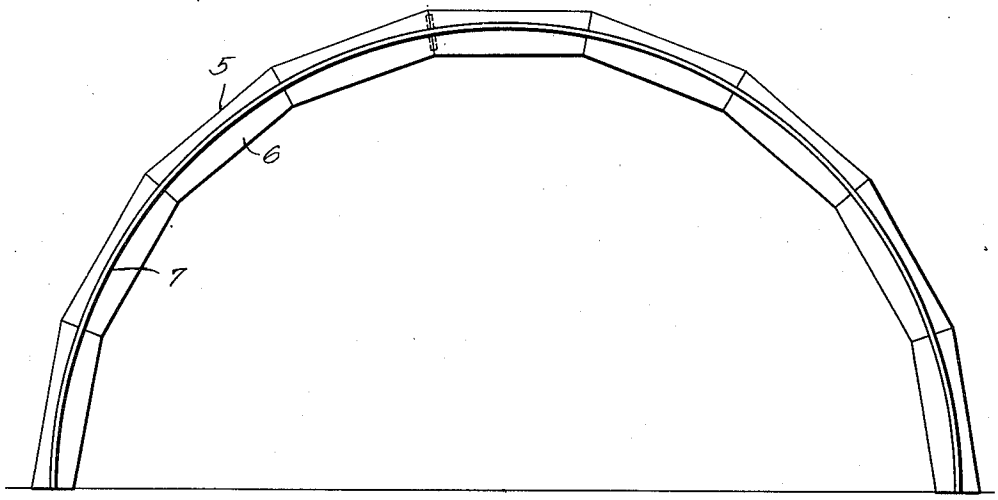


Fig. 2.

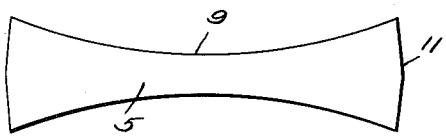


Fig. 3.

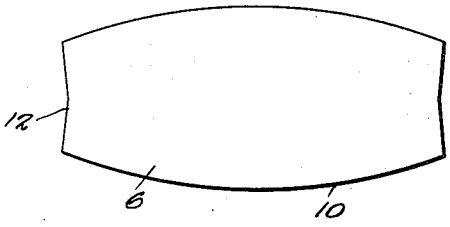
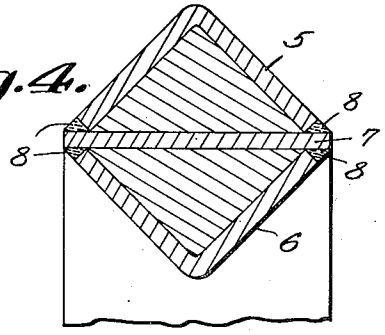


Fig. 4.



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TRUSS OR BEAM FOR METALLIC BUILDING STRUCTURES

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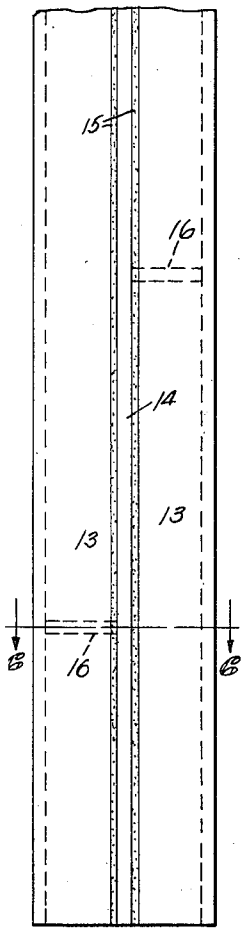


Fig. 5.

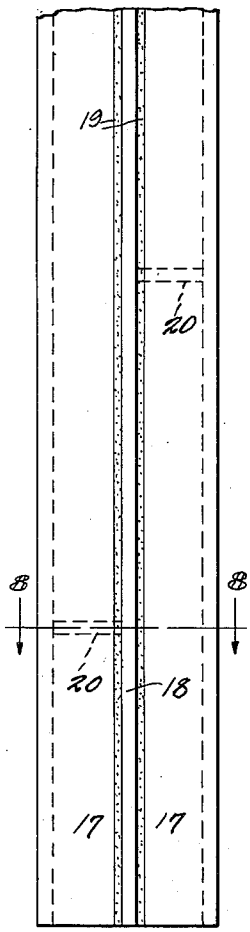


Fig. 7.

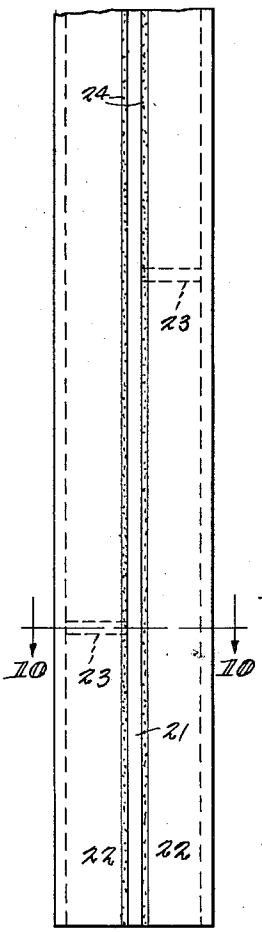


Fig. 9.

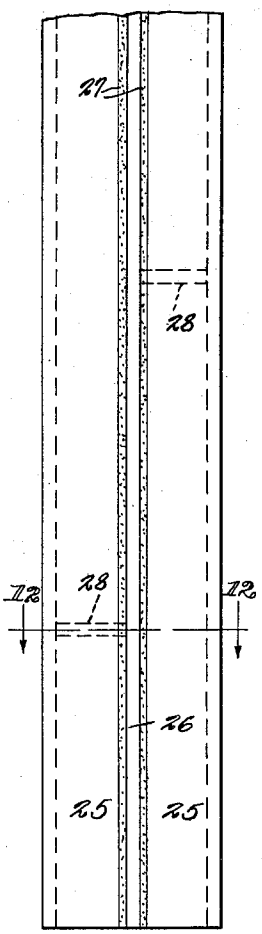


Fig. 11.

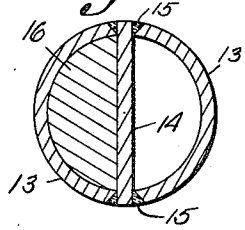


Fig. 6.

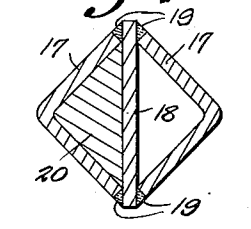


Fig. 8.

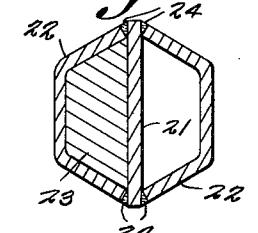


Fig. 10.

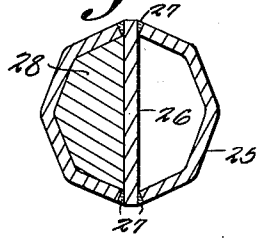


Fig. 12.

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UNITED STATES PATENT OFFICE

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TRUSS OR BEAM FOR METALLIC BUILDING STRUCTURES

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Application December 3, 1946, Serial No. 713,663

2 Claims. (Cl. 189—37)

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This invention relates to truss or beam construction designed for use in metallic buildings, bridges or the like.

The primary object of the invention is to provide a truss or beam constructed of angle bar material wherein the angles or flanges of the angle bar material are so arranged with respect to each other, that the strain or stress directed thereto, will be distributed transversely of the angles or flanges, providing a structure which is exceptionally strong, but comparatively light in weight.

Another object of the invention is to provide a truss or beam which will be braced throughout its length against strain and stress in all directions, and one which will be hollow to reduce the cost of production to the minimum.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawing

Figure 1 is an elevational view illustrating trusses or beams, constructed in accordance with the invention, as used in the formation of an arc to support various building structures.

Figure 2 is a side elevational view of a blank out of which is formed one of the trusses or beams.

Figure 3 is a side elevational view of a blank out of which is formed a modified form of beam, the ends of adjacent beams being constructed to closely fit each other.

Figure 4 is a transverse sectional view through one of the beams.

Figure 5 is a plan view of one form of truss or beam.

Figure 6 is a sectional view taken on line 6—6 of Figure 5.

Figure 7 is a plan view of a modified form of truss or beam.

Figure 8 is a sectional view taken on line 8—8 of Figure 7.

Figure 9 is a plan view of a further modified form of truss or beam.

Figure 10 is a sectional view taken on line 10—10 of Figure 9.

Figure 11 is an elevational view of a still further modified form of the invention.

Figure 12 is a sectional view taken on line 12—12 of Figure 11.

Referring to the drawings in detail, the truss or beam as shown by sheet 1 of the drawings, embodies upper and lower angle bar members 5 and 6 respectively, the angle bars being arranged

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with their free edges disposed adjacent to each other as shown by Figure 4.

The adjacent free edges of the flanges or angles of the angle bars used in the construction of the truss or beam, are separated by the elongated plate 7, which plate is of a width so that side edges thereof extend slightly beyond the free edges of the angle bars, providing pockets for the reception of welding material indicated at 8, securing the angle bars and plate 7 together, throughout the lengths thereof.

The upper and lower edges of the truss or beam may be curved as indicated at 9 in Figure 2 of the drawings, or curved as indicated at 10 in Figure 3 of the drawing, the ends of one truss or beam being outwardly bulged as at 11, to fit within the recess 12 formed in the adjacent end of the adjacent beam, when they are laid end-to-end as shown in Figure 1 of the drawings.

In the form of the invention as shown by Figure 5 of the drawings, the truss or beam comprises a pair of semi-tubular sections 13 which are positioned with their edges adjacent to each other, and disposed on opposite sides of a plate 14 which extends throughout the length of the truss or beam, the free edges of the tubular sections 13 being beveled to provide pockets with the plate 14, for the reception of welding material 15, thereby securing the sections 13 and the plate 14, together, the plate 14 acting to strengthen the truss throughout its length.

Positioned within the truss or beam, and arranged in staggered relation with respect to each other throughout the length of the beam on opposite sides of the plate 14, are half round gusset plates 16 which have their straight edges resting against the plate 14, while the curved edges thereof engage the inner surfaces of the semi-tubular sections 13, bracing the tubular sections.

In the form of the invention as shown by Figures 7 and 8 of the drawings, the truss or beam is constructed of angle bar sections 17, the adjacent edges thereof resting against the elongated plate 18 which separates the angle bar sections 17, there being provided pockets at the ends of the angle bar sections to accommodate the welding material indicated at 19 which secures the angle bar sections together.

In this form of the invention, triangle gusset plates 20 are positioned within the angle bar sections, in a manner as shown by Figure 8 of the drawings, thereby bracing the truss or beam throughout its length.

A still further modified form of beam is shown by Figures 9 and 10 of the drawings, and in this form of the invention, the angle bars are of substantially channel bar construction, the adjacent free edges thereof resting against the elongated plate 21, the channel bar sections being indicated by the reference character 22.

Gusset plates 23 are shaped to fit between the plate 21 and inner surfaces of the sections 22 to brace the sections 22. Welding material indicated at 24 secures the sections 22 and plate 21 together. In cross section, the truss or beam is hexagonal as clearly shown by Figure 10.

The beam or truss as shown in Figures 11 and 12, comprises sections 25 which have their edges resting against the elongated plate 26 where they are welded to the plate by means of welding material indicated at 27. Gusset plates 28 are also used in this form of the invention to brace the hollow structure against lateral strains directed thereto. In cross section, this form of truss or beam is octangular.

From the foregoing, it will be seen that I have provided a truss or beam for use in metallic building structures, which will be exceptionally strong and durable, due to the fact that flanges or angles of the angle bar material of which the trusses or beams are constructed, are so disposed that strains or stresses will be directed thereto, transversely of the flanges lending strength and durability to the trusses or beams.

It will also be seen that because of the arrangement of the gussets, which in each case are fixedly mounted in position by welds or any other suitable means, the tubular structures will be braced against collapsing under strains directed to the sides of the trusses or beams.

What is claimed is:

1. A truss construction comprising an elongated longitudinally curved plate; a plurality of upper angle bar members overlying said plate and arranged longitudinally of said plate, said upper members being bowed transversely and having their opposite longitudinal edges rigidly secured to the opposite longitudinal edges of said plate, the longitudinal edges of said upper members being longitudinally curved concavely; and lower angle bar members respectively disposed opposite the upper bar members and underlying said plate, the lower members being transversely bowed in a direction opposite that in which the upper members are bowed transversely, said

lower members having their respective opposite longitudinal side edges longitudinally and convexly curved and rigidly secured to said plate.

2. A truss construction including an elongated arcuate plate of horizontal flat cross sectional configuration; a plurality of upper truss members extending from end to end of and overlying said plate, said upper truss members being aligned longitudinally with said plate and being disposed in end to end relationship, each of said upper truss members being L-shaped in cross section and having their respective opposite longitudinal edges curved concavely from end to end of the respective upper truss members, said longitudinal edges of the upper truss members being in contact from end to end thereof with the opposite longitudinal edges of said plate and being rigidly secured to the longitudinal edges of said plate; and lower truss members underlying said plate and disposed in end to end relationship, said lower truss members being of L-shaped cross sectional configuration to define in cooperation with the respective upper members a truss of square cross sectional shape, the lower truss members having their respective longitudinal edges curved convexly from end to end thereof and in longitudinal contact with the respective opposite longitudinal edges of said plate, the longitudinal edges of the lower truss members and of said plate being fixedly secured.

JOSEPH S. BOBST.

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