No. 749,507. PATENTED JAN. 12, 1904.

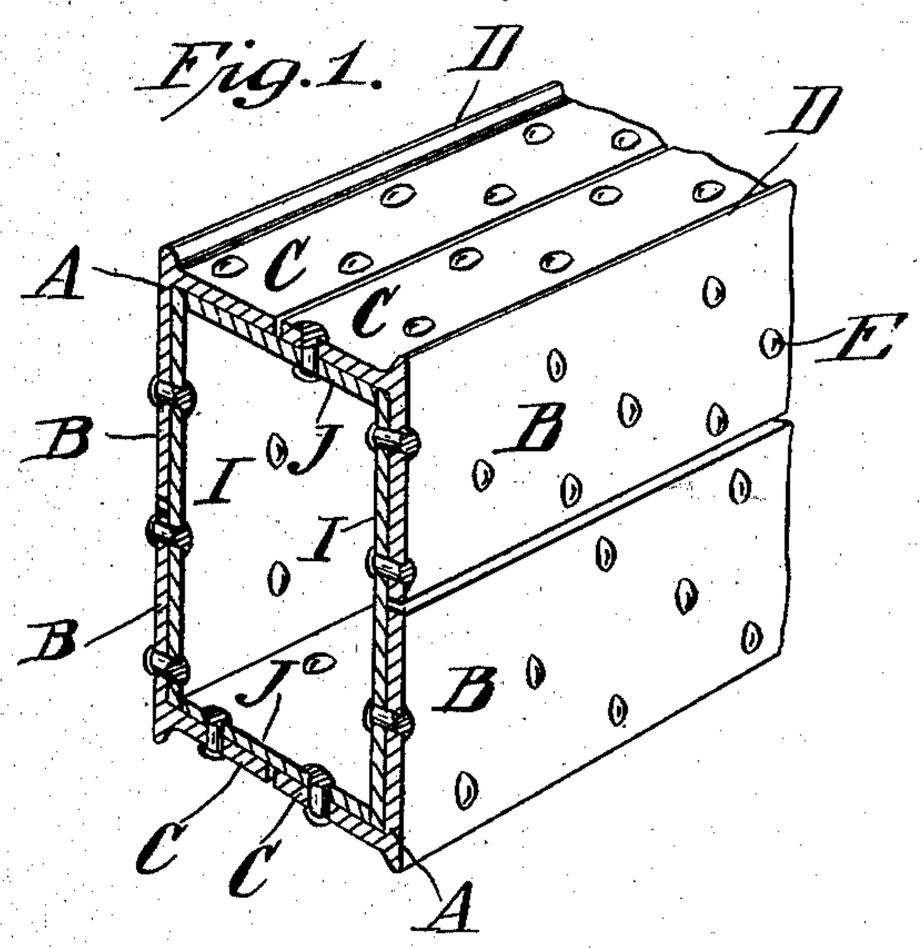
G. A. WEBER.

COMPOSITE STRUCTURE.

APPLICATION FILED SEPT. 1, 1903.

NO MODEL.

Fig. 1.



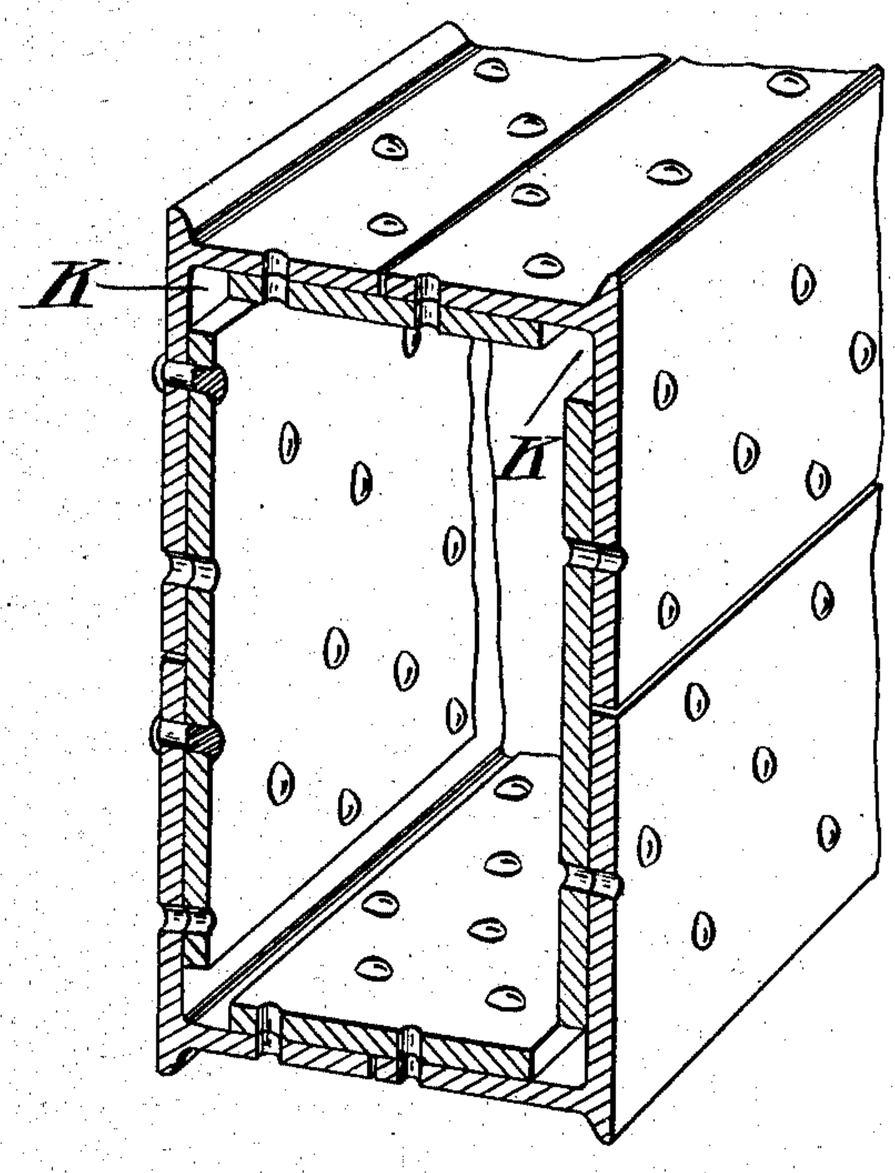


Fig. 2.

Witnesses
C. Mitchell
A. L. O'Brien

George A. Weber
Inventor
By Dickerson Brown
Racquet & Bonney
Attys

No. 749,507. Patented January 12, 1904.

UNITED STATES PATENT OFFICE.

GEORGE A. WEBER, OF NEW YORK, N. Y., ASSIGNOR TO WEBER RAILWAY JOINT MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF WEST VIRGINIA.

COMPOSITE STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 749,507, dated January 12, 1904.

Original application filed February 10, 1903, Serial No. 142,731. Divided and this application filed September 1, 1903. Serial No. 171,563. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. WEBER, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Composite Structures, of which the following is a specification accompanied by drawings.

This invention relates to built-up metal structures, but more particularly to composite girders, such as box-girders and the like.

The objects of the invention are to improve upon the construction of such composite structures and increase their strength, with simplicity of parts.

Another object of the invention is to enable the different parts of the structure to be changed, since the girders are formed from interchangeable sections or elements.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of a composite structure embodying the features of construction, combinations of elements, and arrangement of parts substantially as hereinafter fully described and claimed in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view in transverse section of a form of composite box-girder embodying the invention. Fig. 2 is a perspective view in transverse section of a modification of the girder.

In the form of box-girder illustrated in Fig. 1 angle-plates A are assembled to form a rectangular box-like structure. Each angle-plate consists of the base B and flange or upright C. At the juncture of the bases B and upright C are longitudinally-extending strengthening ribs or fillets D. These fillets form an important element in the structure, for they aid in strengthening the beam and increase its stiffness and ability to withstand the strains met with in the utilization of beams of this character.

The angle-plates are assembled to form a rectangular box-like structure, and the flanges C and bases B are shown suitably secured to interior plates I and J. Suitable means may be used for securing the plates together, as shown in this instance rivets E being utilized for this purpose. As shown, strengthening ribs or fillets D of the angle-plates extend along the corners of the girder and add to the depth of the girder. The interior plates I and J may extend along the whole of the interior of the box-girder, as shown in Fig. 1, or they may be constructed as shown in Fig. 2, in which case spaces K are left at the corners of the girder to make the structure lighter without sacrificing a material amount of strength. In other respects the girder shown in Fig. 2 is like that shown in Fig. 1.

The integral strengthening rib, bead, or fillet D, which is formed at the meeting-line of the base and flange at each angle-bar, is provided, as shown in the drawings, with a portion which is oblique to both parts of the angle and also forms a continuation of the outside face of the flange or upright C and the adjacent edge of the base B. It is intended that the fillet D and oblique portion shall be of such proportions as to afford all the strength necessary to prevent the deflection of the base and flange at their juncture, thereby increasing the strength and stiffness of the beam when the angle-bars are assembled as described.

Obviously the invention may be embodied in different forms, and therefore, without limiting the invention to the construction shown and described, I claim and desire to obtain by Letters Patent the following:

1. A box-like beam or girder, composed of a plurality of angle-plates, each having a base, and a rib or strengthening-piece at the outside of the juncture of the base and flange, said angle-plates being united substantially throughout their length by interior plates and rivets or like devices, there being but one plate in the width of the beam for each side

portion of the box-beam, said plates being arranged over the meeting ends of the angle-plates, for substantially the purposes set forth.

2. A box-beam, comprising a plurality of angle-plates, each having a base, a flange, and a strengthening rib or fillet extending along the outside of the juncture between the base and flange, the sides and ends of the box-like structure being formed by the bases and flanges of the angle-plates, with reinforcing-plates suitably securing the bases and flanges together within the structure, thereby forming walls of double thickness, spaces being left at the corners of the box-beam between adjacent reinforcing-plates, whereby lightness is obtained without sacrifice of strength, for substantially the purposes set forth.

3. A box-like beam or girder, composed of a plurality of angle-plates, each having a base, a flange, and a rib or strengthening-piece extending along the outside of the juncture between the base and flange, said angle-plates being united by plates and rivets or like devices to form the girder, there being but one plate in the width of the beam for each side portion of the box-beam, said plates being arranged over the meeting ends of the angle-plates, for substantially the purposes set forth.

4. A box-like beam or girder, composed of a plurality of angle-plates, each having a base, a flange, and a rib or strengthening-fillet at the juncture between the base and the flange, the said rib or fillet being provided with a portion oblique to both the base and flange, and forming a continuation of the outside face of the flange to the edge of the adjacent end of the base, said angle-plates being united by plates and rivets or like devices to form the girder, spaces being left at the corners of the box-beam between adjacent plates, whereby lightness is obtained without material sacrifice of strength, for substantially the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE A. WEBER.

Witnesses:

E. VAN ZANDT,

A. L. O'BRIEN.