June 14, 1927. 1,632,014

C. A. P. TURNER

TRUSS FOR BRIDGES AND THE LIKE

Filed April 26. 1924

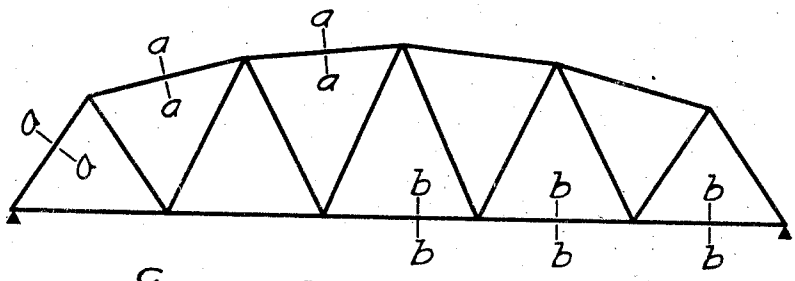
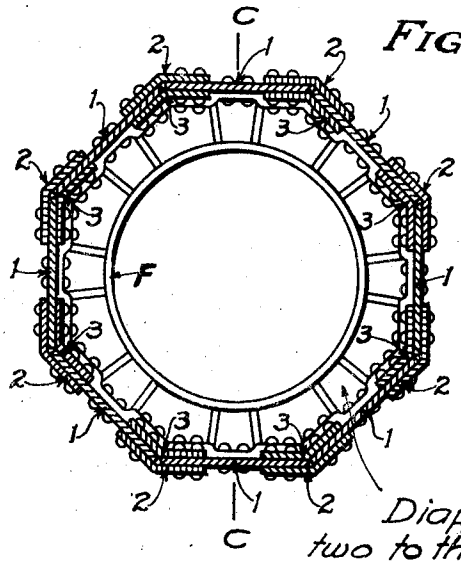
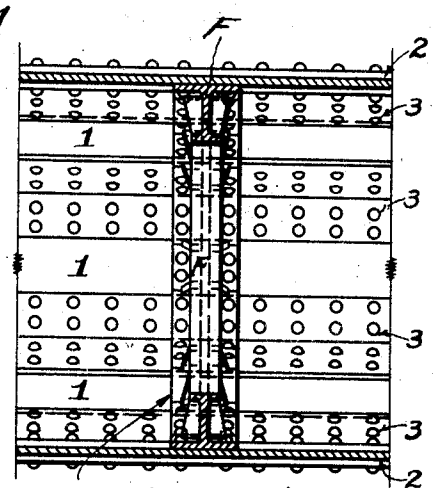


FIG. 1





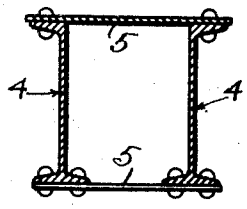
Diaphragms at intervals such as two to three diameters of chord

Section-aa

FIG. 2

Section-CC

FIG. 3



Section-bb

FIG. 4

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Patented June 14, 1927. 1,632,014

UNITED STATES PATENT OFFICE.

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TRUSS FOR BRIDGES AND THE LIKE.

Application filed April 26, 1924. Serial No. 709,203.

The object of my invention is so to construct trusses and in particular the structural members or elements thereof as to diminish the cost of shop work, facilitate making connections at the joints of the frame and obviate buckling and twisting tendencies. My invention consists in whatever is described by or is included within the terms or scope of the appended claims.

I illustrate my invention as embodied in a bridge truss which is one exemplification thereof. In the drawings:

Fig. 1 is a side elevation of a truss shown diagrammatically;

Fig. 2 is a cross section on the line *a*—*a* of Fig. 1;

Fig. 3 is a longitudinal section on the line *c*—*c* of Fig. 2;

Fig. 4 is a cross section on the line *b*—*b* of Fig. 1.

The main compression members, such as the end posts and the top chords of the truss shown in Fig. 1 are tubular and are octagonal in cross-section, and are built up structures whose eight sides are composed of longitudinally extending, similar flat staves or plates connected together at the corners or angles by 135 degree angles 2 on the outer side, and, 3, on the inside, the plates and angles being riveted together. At suitable intervals along its length the octagonal box section or member, thus formed is stiffened by annular or ring-form frames F whose peripheries are octagonal and are of a diameter to fit the interior surfaces of the box and which are riveted thereto. These internal stiffening members or frames are preferably made of cast steel.

An excellent way to manufacture these octagonal box sections is to drill just enough holes in the plates 1 and the angles 2 and 3 to rivet the same to the internal frames F, so that the whole section can then be placed under the drill press for drilling holes for rivets at points between the frame members F, the section being rolled or turned over as the drilling proceeds to present different portions of the periphery in succession to the drills.

As a result of my built-up octagonal member, I secure a most economical distribution of the metal; the avoidance of projecting flanges, as in ordinary column construction which cripple under severe stress; the avoidance of lacing and latticing which add to the weight of the member without increasing strength thereof; and ease of making connection with the member both diagonally for sway bracing and in the vertical plate for web members, and in splicing one section to another, because of the flat-sided octagonal shape. A further advantage which will be appreciated in making a comparison with the columns of the Forth Bridge is the increase of strength due to the longitudinal rib formation at the apices or angles and greater ability to resist buckling. The bottom section of the truss shown in Fig. 1 is, as clearly shown in Fig. 4, composed of two parallel beam shapes 4 each of which is of peculiar construction in that in its lower part it has a cross section of an I-beam and in the upper section the cross section of a channel. This section besides being advantageous of use as a tension member, as in Fig. 1, may also be used as small compression members. It can readily be connected with the truss, as in Fig. 1, and is a more economical construction than the customary one that is formed by riveting six angles to the web. The beams 4 are rolled shapes. They are connected at top and bottom by plates or straps 5.

What I claim is:

1. A truss having a compression member of polygonal cross section, the flat sides of the polygon being formed of longitudinally extending plates, angles that join such plates at their edges and internal braces secured to the compression member at intervals, the exterior of such member being free from outwardly projecting flanges.

2. A truss having a compression member of octagonal cross section the flat sides of the octagon being formed of longitudinally extending plates, angles that join such plates at their edges, and internal braces secured to the compression member at intervals, the exterior of such member being free from outwardly projecting flanges.

3. A structural member having a compression member of a cross section with more

than four flat sides formed of longitudinally extending plates, angles that join such plates at their edges and internal, spaced braces that maintain such cross section.

4. A structural member having a compression member of octagonal cross section the flat sides of the octagon being formed of longitudinally extending plates, angles that join such plates at their edges, and means to maintain such cross section.

In testimony whereof I hereunto affix my signature.

CLAUDE A. P. TURNER.