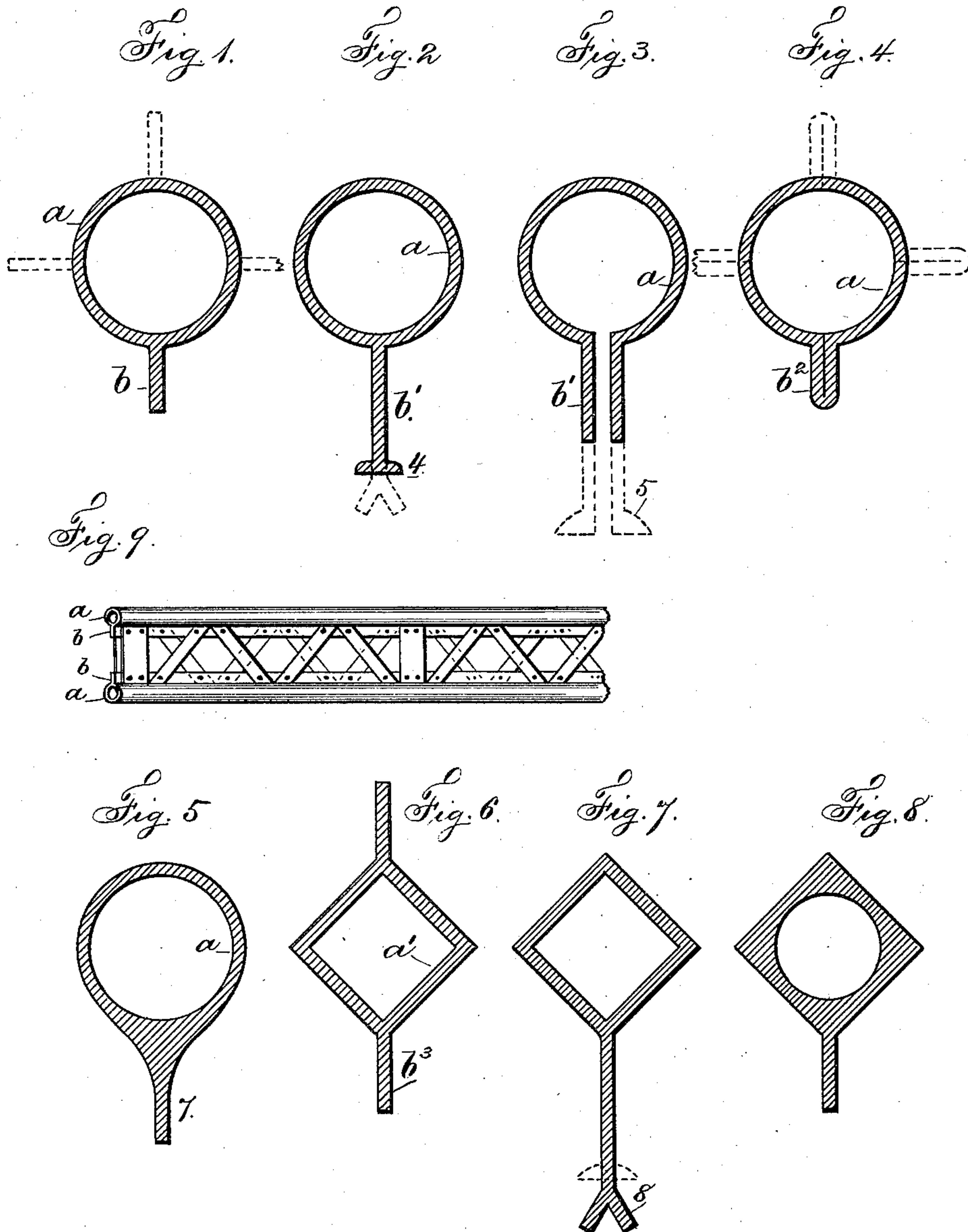


(No Model.)

G. W. DITHRIDGE.
METAL TUBE.

No. 431,203.

Patented July 1, 1890.



Witnesses
Harold Serrell
Chas. H. Smith.

Inventor
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8 6 7 atty.

UNITED STATES PATENT OFFICE.

GEORGE W. DITHRIDGE, OF NEW YORK, N. Y.

METAL TUBE.

SPECIFICATION forming part of Letters Patent No. 431,203, dated July 1, 1890.

Application filed August 28, 1889. Renewed June 4, 1890. Serial No. 354,192. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. DITHRIDGE, of the city, county and State of New York, have invented an Improvement in Metal Tubes, of which the following is a specification.

Weldless metal tubes have heretofore been made and two or more of such tubes have been grouped together and connected with stays and straps to form various horizontal and vertical supports; but such tubes lack strength in a horizontal direction. Tubes or hollow bodies have also been formed of two or more plates curved and having flanged edges, the pieces being riveted together at the flanges, thus forming tubes or hollow bodies; but these are no stronger than their weakest point, namely, the rivets.

My invention is a new article of manufacture; and the same consists of a metal tube having one or more fins or ribs integral therewith and the metal at the junction of the fin with the tube of increased thickness. These tubes and fins are adapted to be grouped together to form horizontal beams or vertical columns or braces, the fins serving as places of attachment for the rivets of the connecting plates or braces.

In the drawings I have represented, Figures 1 to 8 inclusive, cross-sectional views of tubes having one or more fins or ribs made integral therewith; and in Fig. 9 I have represented by an elevation part of a beam or girder having my improved tubes.

Fig. 1 shows a circular tube *a*, having a single fin *b* made integral therewith, the dotted lines representing the positions that might be occupied by other fins. Fig. 2 is a similar view, except that the fin *b'* is made deeper and has a flat foot or flange 4, and instead of this foot 4 the end might be an inverted-V-shaped flange, as shown in dotted lines. Fig. 3 represents a circular tube *a*, having two fins *b'*, made integral therewith, there being an open space between the fins, and in this figure, by dotted lines, I have

shown that the fins may be widened and provided with foot-pieces at 5. Fig. 4 shows a circular tube, the fin *b²* of which is formed by closing in the tube upon itself, and other fins which might be employed are shown by dotted lines. Fig. 5 shows a circular tube with the fin 7 tapering from the tubular body, so that the metal at the junction of the fin to the body is much thicker than the tube or other part of the fin. Fig. 6 represents a square tube *a'*, having two fins *b³*, made integral therewith; and Fig. 7 represents a square tube with a single fin, the edge or flange of which I have shown at 8 as inverted-V-shaped, with a groove on the under side, or the fin might have a straight flange or foot-piece, as shown by dotted lines. Fig. 8 shows a tube which is square upon the exterior surface and round internally and provided with a fin that is integral therewith. Fig. 9 illustrates a beam or car-sill formed from two tubes, the fins of which point toward each other, with diagonal braces riveted to these fins to make up the beam or sill.

The fins being integral with the tubes add greatly to the strength and form convenient places for attaching plates or braces in making up beams or other supports for any desired character of metal-work construction.

I claim as my invention—

1. As a new article of manufacture, a metal tube having one or more fins or ribs integral therewith, and the metal at the junction of the fin with the tube of increased thickness, substantially as set forth.

2. Metal tubes having fins or ribs integral therewith, in combination with connecting-plates secured to said fins to form a sill, beam, or other support, substantially as set forth.

Signed by me this 22d day of August, A. D. 1889.

GEO. W. DITHRIDGE.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.