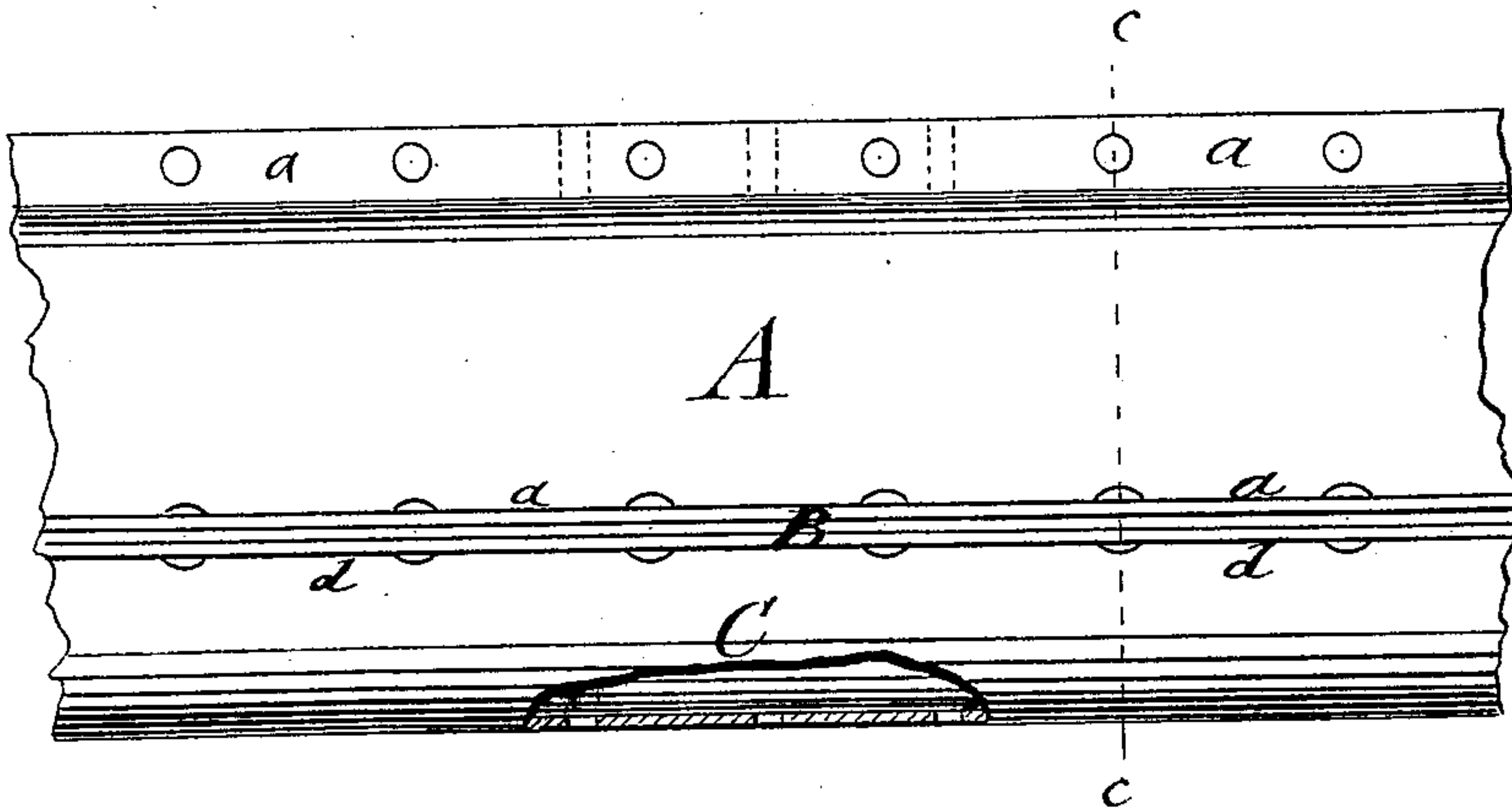


**C. W. WHEELER.**  
**Girders for Iron Bridges.**

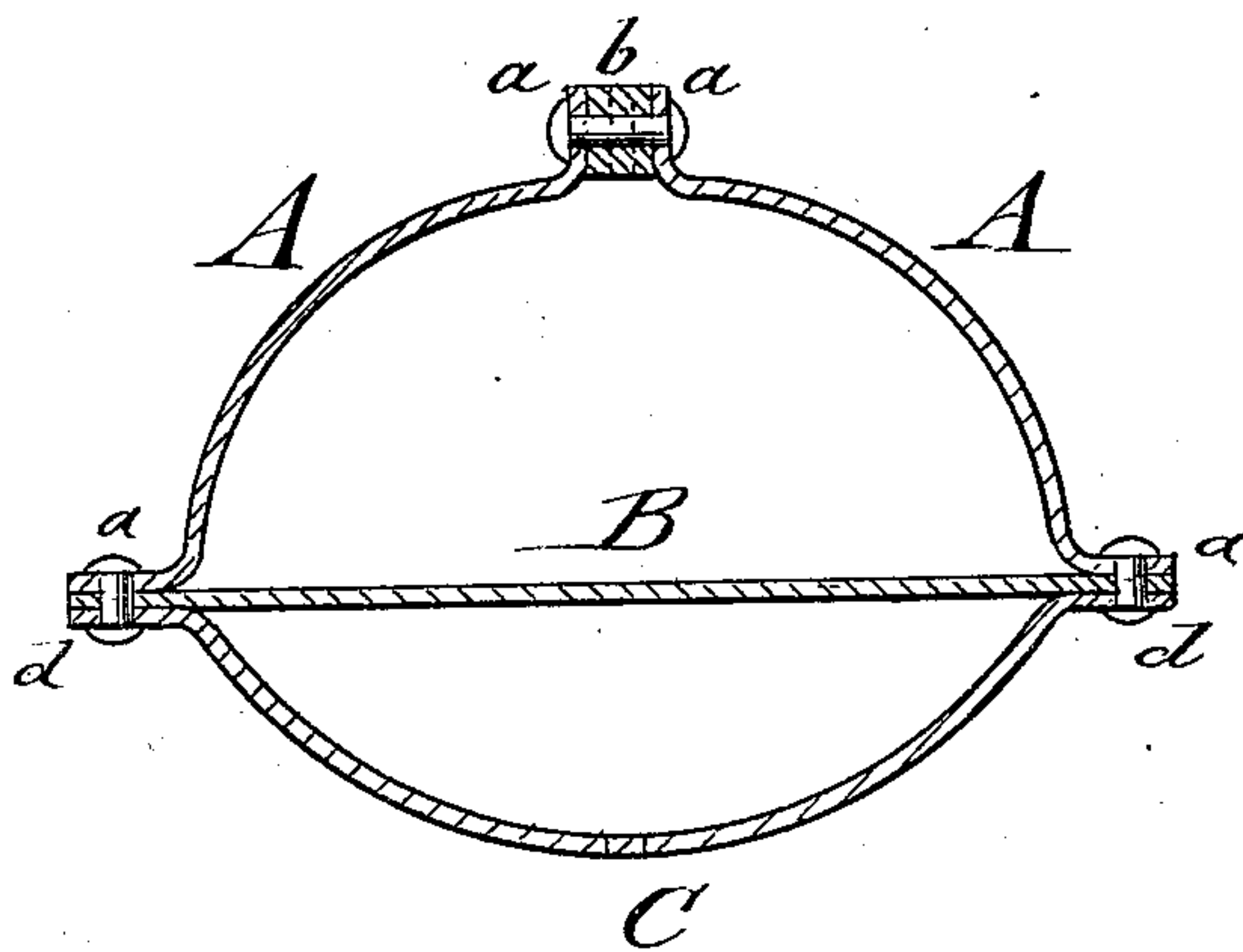
No. 149,965.

Patented April 21, 1874.

*Fig. 1.*



*Fig. 2.*



**WITNESSES:**

*E. Wolff*  
*Pedgwick*

**INVENTOR:**

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**BY**

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**ATTORNEYS.**

# UNITED STATES PATENT OFFICE.

CYRUS W. WHEELER, OF BROWNSVILLE, NEBRASKA.

## IMPROVEMENT IN GIRDERS FOR IRON BRIDGES.

Specification forming part of Letters Patent No. **149,965**, dated April 21, 1874; application filed February 28, 1874.

*To all whom it may concern:*

Be it known that I, CYRUS W. WHEELER, of Brownsville, in the county of Nemaha and State of Nebraska, have invented a new and Improved Tubular Girder for Arch and Truss Bridges, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a side view, and Fig. 2 a vertical transverse section on the line *c c*, Fig. 1, of my improved girder for arch and truss bridges.

Similar letters of reference indicate corresponding parts.

The object of my invention is to construct girders for arch and truss bridges, which require, on account of their simplicity of construction, less riveting, and may, therefore, be manufactured at cheaper rates, combining therewith symmetrical appearance and great strength, without being weakened by the tension and counter rods passing through the same. My invention consists of a tubular girder produced of two quadrantal flanged sections, riveted to a longitudinal strengthening-piece and connected by a stiffening-chord, and a quadrantal lower section of wrought-iron.

In the drawing, A represents the upper quadrantal sections of rolled iron, each section being somewhat larger than the arc of an angle of ninety degrees, and provided with flanges *a*, extending under right angles therefrom. The upper flanges *a* of section A are riveted to an intermediate piece of iron, *b*, of rectangular shape, equal in height to the flanges, so that a slightly-flattened semicircular tube is produced. The lower flanges *a* are riveted to chord or diaphragm B, which forms the lateral connection of the girder, and also to the flanges *d* of the lower quadrantal sec-

tion C. The chord or diaphragm B is made of rolled plate or latticed iron, and intended to give lateral strength to the girder and prevent the upper and lower sections from spreading. The lower section C is also of rolled iron, constructed with a radius equal to the chord of one of the upper sections A, and with flanges *d* extending parallel to chord B, and fitting exactly to it. The lower section also connects the upper section, and gives additional lateral and vertical strength to the girder. The flat circular shape of the girder produces the nearly-square abutting of the flanges, and reduces thereby the cutting or shearing strain on the rivets, which is a main objection in girders of quadrangular cross-section. The intermediate piece *b* admits the passage of tension and counter rods in an arch-bridge, without cutting and weakening the flanges. A tubular girder of great strength is thereby obtained, which requires less material and riveting, and may with advantage be used in the various constructions of arch and truss bridges.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A tubular girder for arch and truss bridges, consisting of two upper flanged quadrantal sections, riveted to a longitudinal strengthening-piece and to a lateral connecting chord or diaphragm, and a flanged lower section of quadrantal shape, constructed substantially as and for the purpose described.

CYRUS W. WHEELER.

Witnesses:

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H. E. GATES,

WILLIAM H. HOOVER.