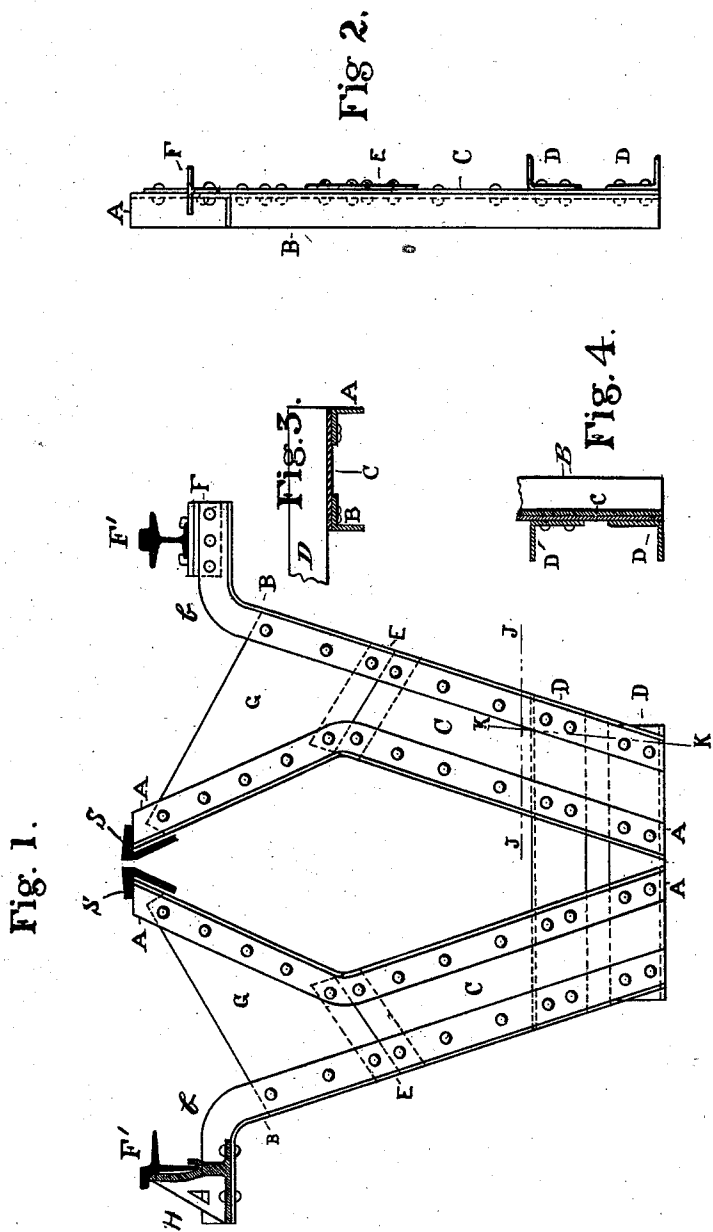


C. A. MARSHALL.

TUNNEL YOKE FOR CABLE RAILWAYS.

No. 402,533.

Patented Apr. 30, 1889.



Witnesses.

Francis P. Reilly
Frank L. Entwistle

Inventor.

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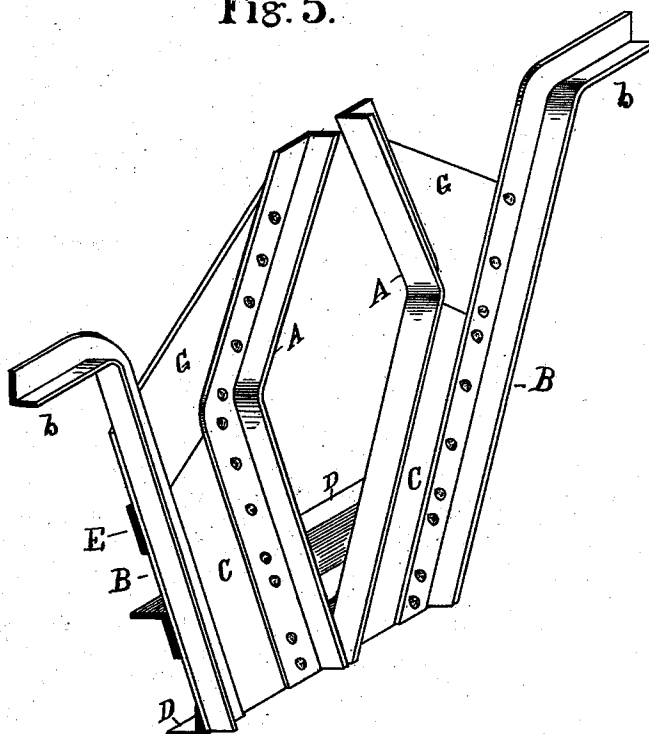
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Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES A. MARSHALL, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO THE
JOHNSON COMPANY, OF KENTUCKY.

TUNNEL-YOKE FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 402,533, dated April 30, 1889.

Application filed October 21, 1887. Serial No. 252,956. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MARSHALL, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Channel-Yoke for the Tunnels of Cable Railways, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to make strong and durable built-up yokes for the tunnels of cable railways, which yokes shall combine great strength with a minimum weight of metal.

The invention will first be described in detail, and then fully set forth in the claim.

In the accompanying drawings, Figure 1 illustrates in front elevation one type or form of built-up yoke. Fig. 2 shows a side elevation of Fig. 1, looking to the left, the slot-rail S and track-rail F' being omitted. Fig. 3 shows a section taken at the line J J through Fig. 1. Fig. 4 shows a section taken at the line K K through Fig. 1, looking to the right. Fig. 5 shows in perspective the yoke illustrated geometrically in Fig. 1.

In said figures the several parts are indicated by letters, as below described.

The whole structure in the several figures being entirely composed of angle metal and plate metal, the interior angles are indicated by the letter A and the exterior angles by the letter B. The arms for supporting the track-rails are indicated by the letter b.

The letters C C indicate plates which form the lower web portions of the structure, and D D the bottom angle pieces or stiffeners.

E E indicate re-enforcing plates, which, by lapping the lower web-plates, C, and upper web-plates, G, at their joints, strengthen said joints.

F indicates a T-bar support for the track-rails, which may be of any desired type or form of rail, two different forms being shown, as indicated by the letter F'.

H, Fig. 1, indicates another form of chair or rail-support for the rail F', thereon mounted, devoid of lower flange. Any type of chair or

other rail-support may be used, as such supports form no part of this invention.

The letters S S indicate the slot-rails, which may be made of any desired form suitable for the purpose, the slot for the passage of the cable-grip being indicated by the space shown between said slot-rails.

In types of yoke shown in Figs. 1 and 5, respectively, it will be observed that the channel form is preserved throughout, which construction imparts great strength to said structures. It is obvious that instead of angle-pieces T-bars may be used; but in such case it is also obvious that the cost of the structure will be much increased.

Practical tests have demonstrated that a structure such as illustrated in Fig. 1 is about as rigid or offers as great resistance to the closing of the slot for the passage of the cable-grip as can be made with a given weight of metal. It will thus be observed that, with the exception of such points as those at which the bottom binders, D D, overlap the two side structures, C G, the shape of the section of metal preserved is that of a channel. That portion of the bottom binders which gives the measure of their whole strength is through the vertical line *xx*. In this, also, is the channel form preserved, so that the measure of the stiffness of the yoke throughout is that of a channel-section, the only point where said section is not preserved being that wherein the bottom binders overlap the side members for purposes of construction.

Having thus fully described my said invention of yokes for cable railways, I claim—

A built-up yoke for the tunnels of cable railways constructed entirely of angle metal and plate metal, so that said yoke presents a channel-section viewed either through its side walls or through the center of its bottom binders or brace, substantially as set forth.

CHAS. A. MARSHALL.

Witnesses:

E. B. ENTWISLE,
W. McLain.