

(No Model.)

2 Sheets—Sheet 1.

P. NOBLE.  
CABLE RAILWAY.

No. 444,581.

Patented Jan. 13, 1891.

Fig. 1.

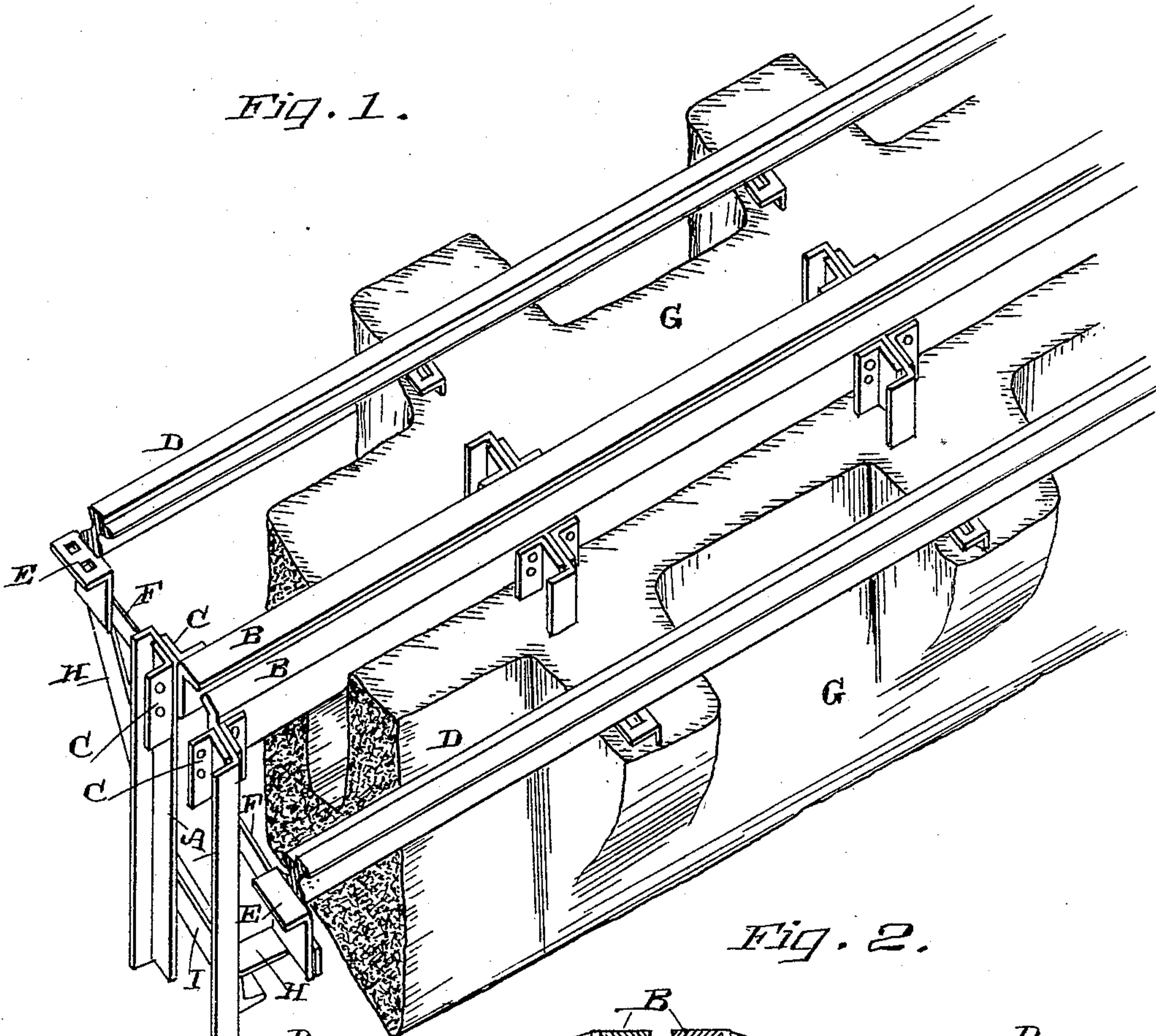
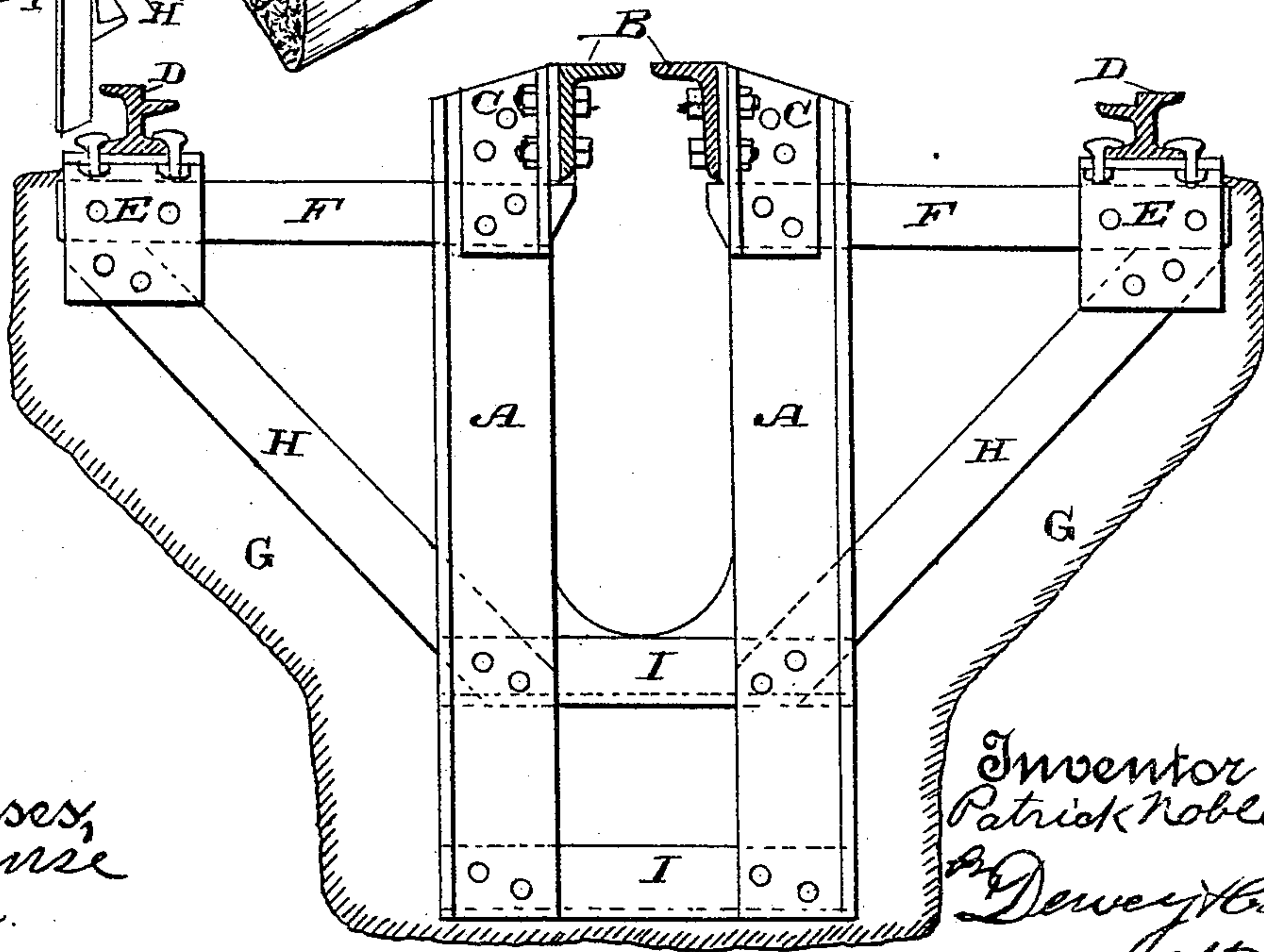


Fig. 2.



Witnesses,  
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Inventor,  
Patrick Noble  
By Dewey & Co.  
Patents

(No Model.)

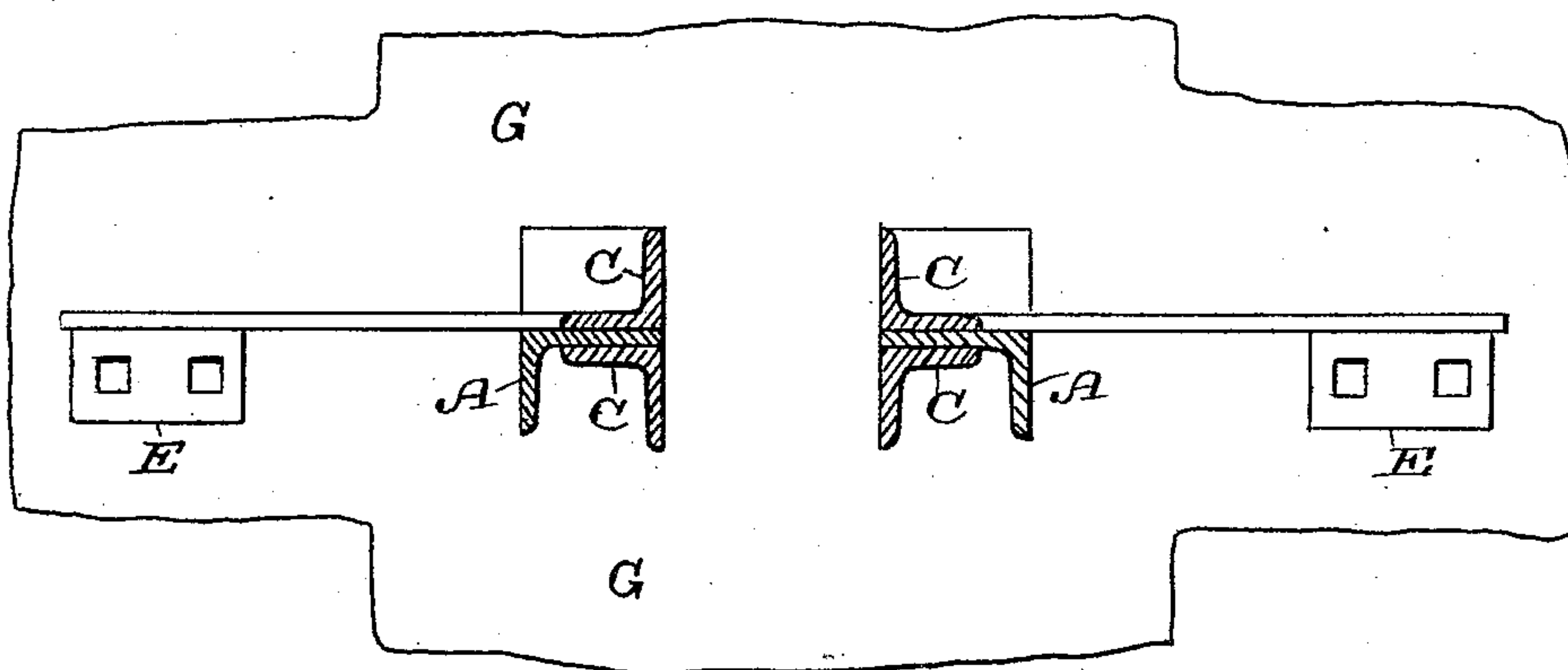
2 Sheets—Sheet 2.

P. NOBLE.  
CABLE RAILWAY.

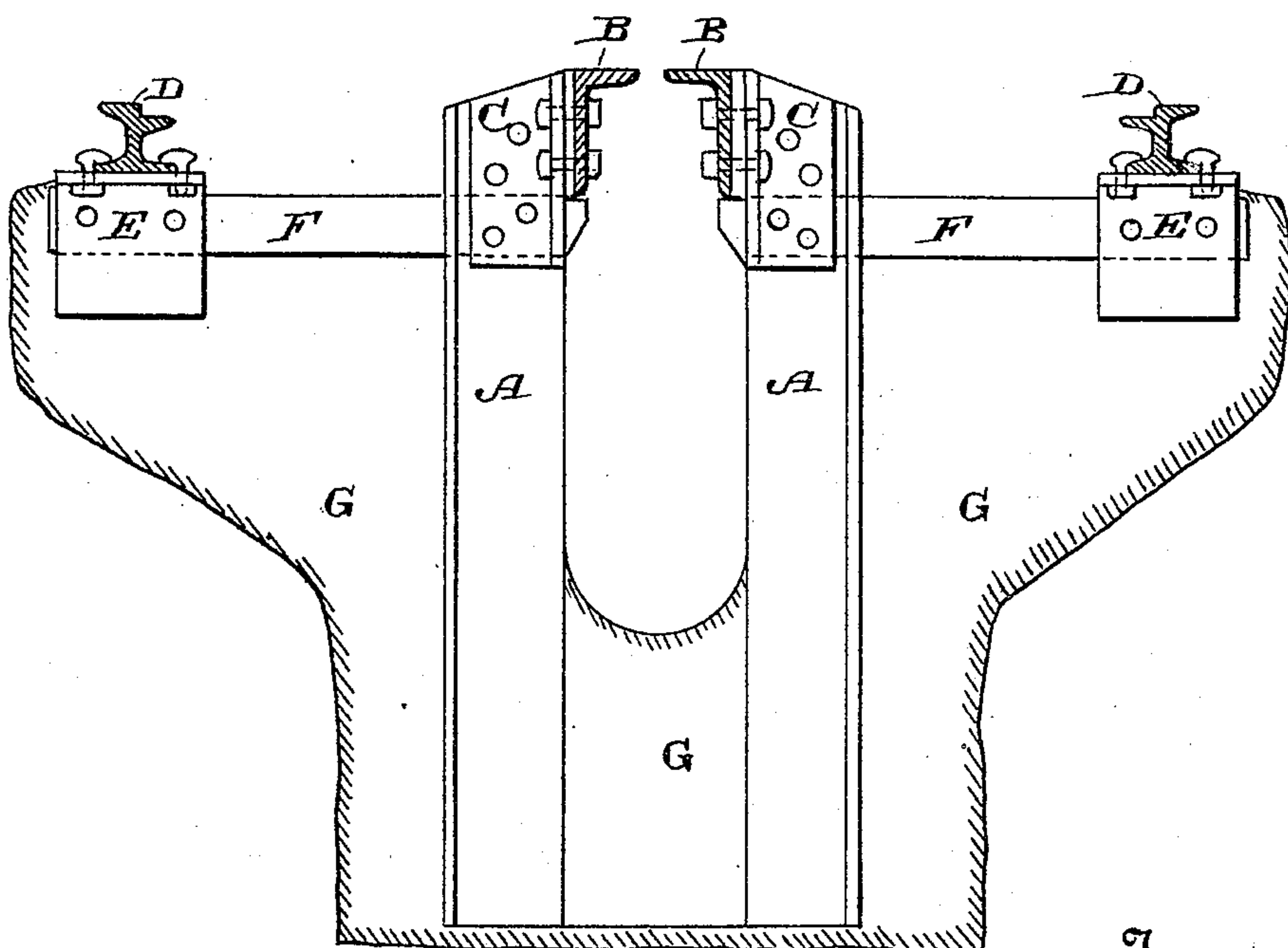
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*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

PATRICK NOBLE, OF SAN FRANCISCO, CALIFORNIA.

## CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 444,581, dated January 13, 1891.

Application filed October 24, 1890. Serial No. 369,232. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK NOBLE, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Cable Railways; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in cable-railway construction; and it consists in the novel construction of the yokes or frame-work by which the rails and slot-irons are supported and united, as will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a section of the railway, showing my invention. Fig. 2 is a transverse section showing the construction. Fig. 3 is a plan view of the same in section. Fig. 4 is a transverse section showing a modification.

In the construction of cable railways it is customary to unite the lines of track upon which the wheels travel and the parallel irons between which the slot is formed through which the grip-shank passes from the cars by iron yokes made in various ways, said yokes being strongly braced and stayed, so as to maintain the tracks and slot-irons in their relative position. In the ordinary construction these yokes are quite expensive, and my invention is designed to reduce the expense of this construction. Each yoke is made as follows: A A are two angle-iron bars made of sufficient length, so that when set up vertically they will extend from approximately the level of the top of the slot-irons to the bottom of the trench in which the cable tube or tunnel is formed. B B are the slot-irons, which are secured to these vertical angle-irons by angle-pieces C C, bolted to the sides of the slot-irons and also to the vertical angle-irons A. The slot-irons B B are also shown in the present case as being made of angle-iron of sufficient thickness to give the necessary rigidity. D D are the rails upon which the cars run, and these are bolted or secured to the chairs E, which chairs are in turn secured to the ends of horizontal bars F. These bars F have their inner ends adapted to support the lower edges of the slot-iron and bolted to the verti-

cal angle-iron bars A, so that the two bars are united together. These frames are set transversely to the line of the track at short intervals, and are solidly embedded in the concrete which forms the continuous tube or channel in which the rope or cable travels. For cheap construction these are all the parts that are employed, and a continuous body of concrete G is filled into the trench, so that the vertically-arranged angle-irons A and the bars F, which connect these irons with the chairs upon which the track rests, are entirely embedded in the concrete. The flanges of the angle-irons A, which are parallel with the line of the cable tube or tunnel, are of sufficient width, so that a considerable quantity of concrete surrounds them, and the transverse flanges are of such width that a considerable body of the concrete lies between the first-named flanges and the inner sides of the tube or tunnel, which is formed of the concrete. This body of concrete is of sufficient thickness to hold the vertical angle-irons A firmly in place after the concrete is set, and the whole forms a rigid and immovable structure which is sufficient for all the traffic of cars.

To increase the strength of yoke, chairs E, which support the tracks, may be connected with the lower part of the vertical angle-irons A by diagonal braces H, which are firmly riveted to both, and taken in connection with the horizontal connecting-bars F they form a strong triangular frame.

In order to still further strengthen the structure, I have shown one or two bars I, which extend horizontally between the uprights A, to which they are strongly bolted or riveted below the line of the bottom of the concrete tube or tunnel, so that when the concrete is filled in around the structure or frame-work these irons are all embedded in the concrete and form with it a solid and unyielding structure, which is capable of resisting any strain which is liable to come upon it. By this construction I greatly cheapen the road-bed and reduce the expense very materially, while producing a strong and permanent way.

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

1. In a cable railway, the vertical angle-iron



bars, the slot-irons and connecting angle-plates by which they are secured to the vertical bars, the tracks and chairs or supports to which they are secured, and the horizontal  
5 connecting-bars F, in combination with a body of concrete in which said frame-work is embedded, said concrete having a channel formed through the center and between the  
10 angle-iron bars, substantially as herein described.

2. In a cable railway, the combination of the vertical angle-iron plates having the inner plane edges upon each side of the tube or tunnel and adjacent thereto, and the angular  
15 portion which lies parallel with said tunnel at a distance from its sides, slot-irons secured to the upper ends of said plates by angle-irons bolted thereto, horizontal bars extending outwardly from the upper ends of the vertical  
20 angle-iron plates and having the chairs by which the track-rails are supported bolted to their outer ends, the inner ends bolted to the vertical angle-plates and extending inwardly so as to support the lower edges of the slot-  
25 irons, and a body of concrete surrounding and embedding said iron frame-work having a tube or tunnel formed in the central portion and between the vertical angle-iron plates, substantially as herein described.

3. In a cable railway, the vertical angle- 30 iron plates having the angular portion parallel with the central tube or tunnel and at the greatest distance therefrom, slot-irons and angular plates by which said irons are bolted or united with the vertical angle-plates, hori- 35 zontal bars having their inner ends riveted to the vertical plates and extending inwardly beneath the lower edges of the slot-irons, the outer ends secured to chairs upon which the track-rails are secured, diagonal 40 braces extending downwardly and inwardly from these chairs and having their lower ends united to the lower portion of the vertical angle-plates, one or more transverse bars uniting the lower ends of said angle-plates, 45 and a body of concrete embedding said iron frame-work and having a tube or tunnel formed centrally and between the inner edges of the angle-plates and forming a bond around the vertical angular portion of said plates, 50 substantially as herein described.

In witness whereof I have hereunto set my hand.

PATRICK NOBLE.

Witnesses:

S. H. NOURSE,  
H. C. LEE.