

(No Model.)

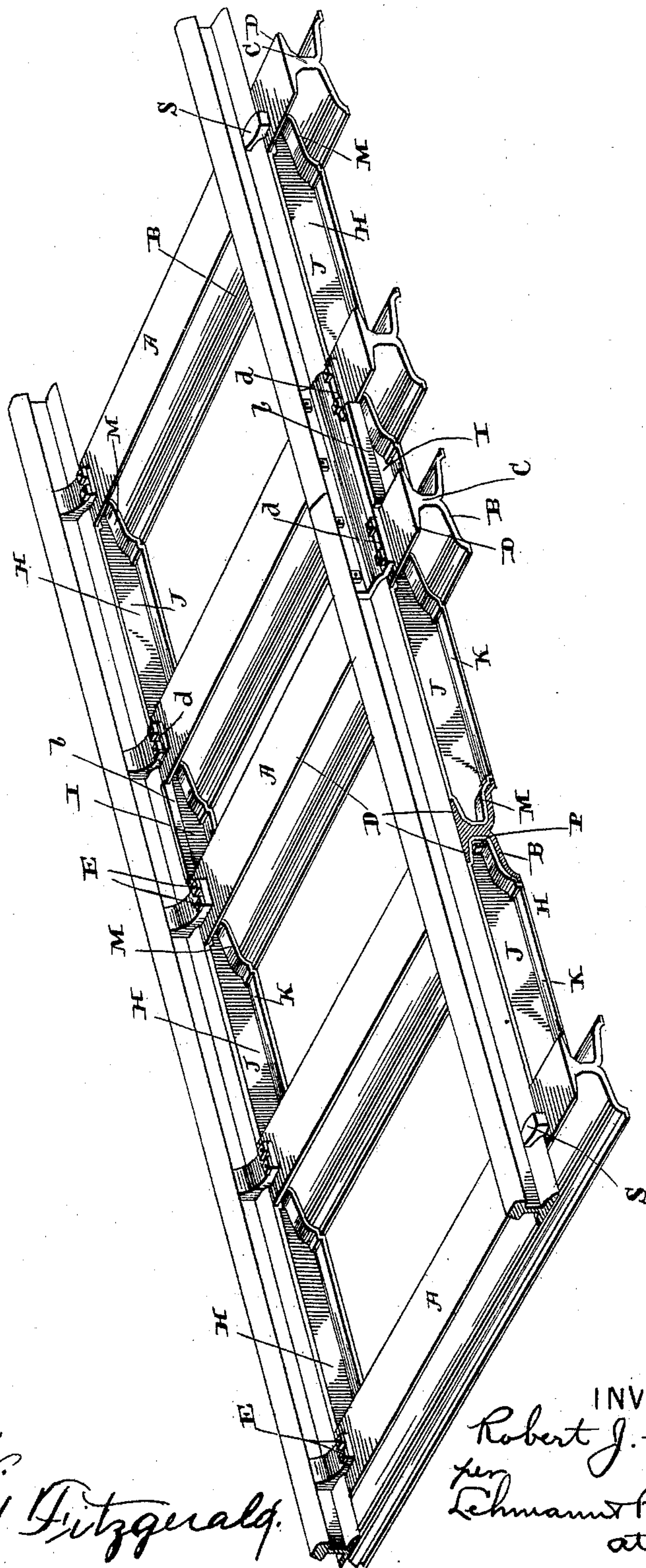
2 Sheets—Sheet 1.

R. J. COLVIN.  
METALLIC RAILWAY TIE AND STRINGER.

No. 474,216.

Patented May 3, 1892.

FIG. 1—



WITNESSES—

*Geo. C. Freck.*

*Roland Fitzgerald.*

INVENTOR—

*Robert J. Colvin*

*per  
Lehmann & Patterson  
attys*

(No Model.)

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FIG. 2.

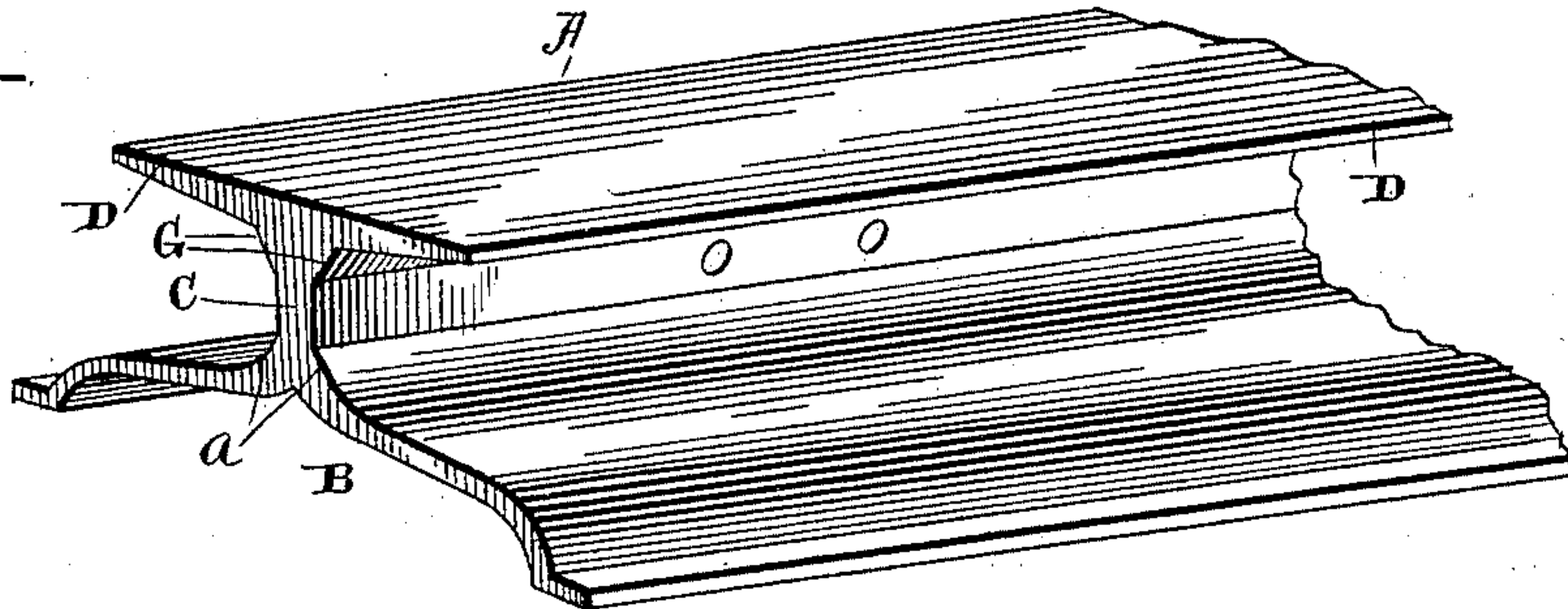


FIG. 3.

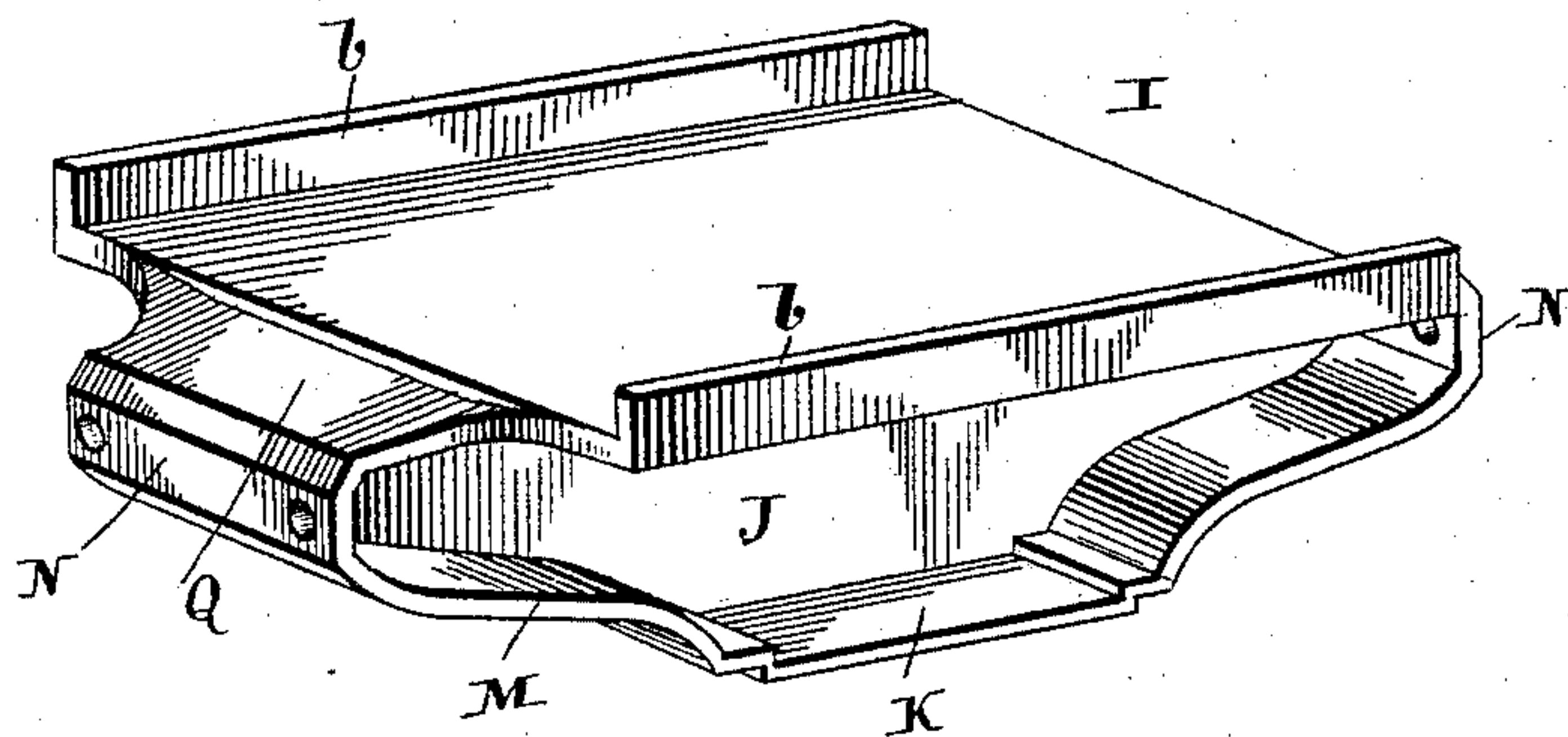


FIG. 4.

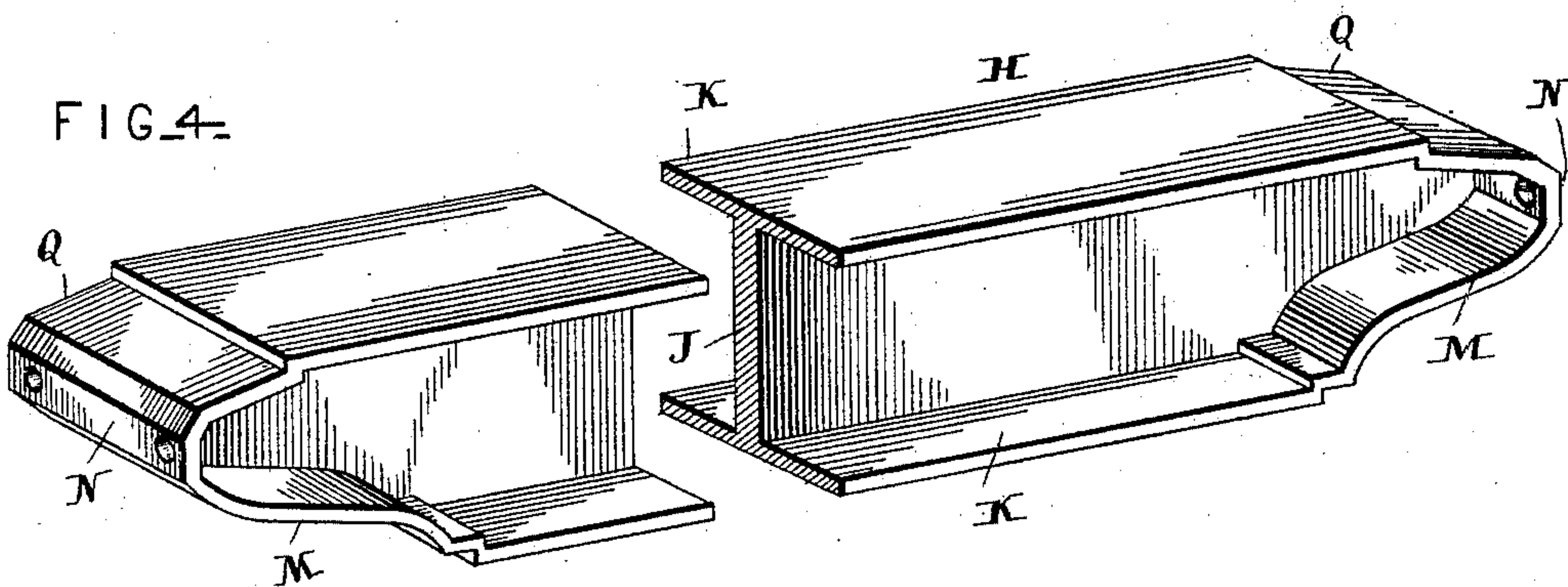
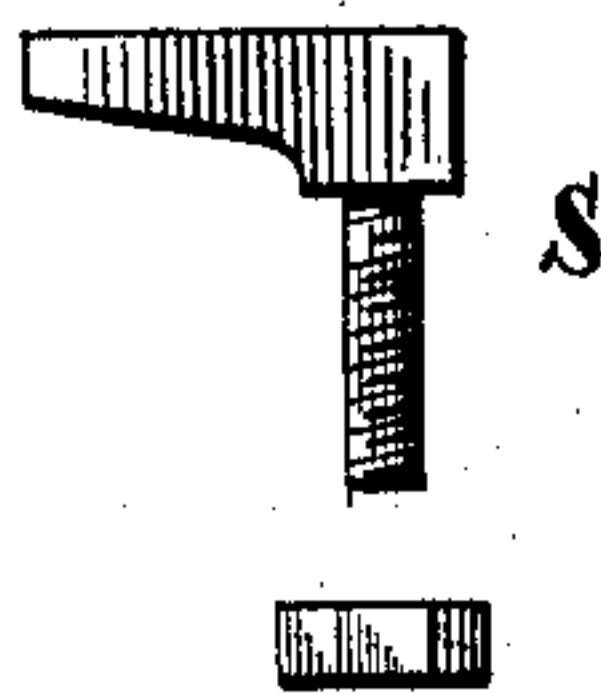


FIG. 5.



WITNESSES

*Geo. C. Freck.*

*Roland Fitzgerald*

INVENTOR.

*Robert J. Colvin*  
*per*  
*Lehmann & Patterson*  
*attys.*



# UNITED STATES PATENT OFFICE.

ROBERT J. COLVIN, OF LANCASTER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO DAVID P. BITNER, OF SAME PLACE.

## METALLIC RAILWAY TIE AND STRINGER.

SPECIFICATION forming part of Letters Patent No. 474,216, dated May 3, 1892.

Application filed September 30, 1891. Serial No. 407,285. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT J. COLVIN, of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Metallic Railway Ties and Stringers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to  
10 the accompanying drawings, which form part of this specification.

My invention relates to an improvement in railway ties and stringers; and it consists in  
15 certain novel features of construction and arrangement of parts which will be fully described hereinafter, and particularly referred to in the claims.

The primary object of my invention is to  
20 produce a metallic tie which is strong and simple in construction and which has sufficient elasticity to meet the requirements of a railway-tie, and which is made of a single piece of metal of the peculiar shape and con-  
25 tour hereinafter shown and described, whereby these results are obtained.

Another object of my invention is to provide a metallic stringer which is placed under the rail and has its ends shaped to correspond  
30 with the adjacent contour of the tie and these ends bolted to opposite sides of the ties by means of bolts which pass through the ties and the ends of the stringers.

Another object of my invention is to give  
35 the sections of the metallic stringers which are under the joints of the rails a peculiar shape that adapts them to receive the fish-plates and to furnish a supporting-base for the lower edges of the fish-plates and for the  
40 meeting ends of the rails, which prevents what is known as "beating" or "hammering" of the ends of the rails, which occurs where the joints are not held firmly against downward movement in relation to each other. In the present  
45 instance I so shape the stringers, and they are supported by the ties in such a manner that the end of one rail cannot sink below the adjacent end of the adjoining rail, and in this manner all hammering of the ends of the  
50 rails is prevented and a very strong and firm joint secured.

A further object of my invention is in the peculiar and particular shape of the ties and stringers, which will be specifically referred to hereinafter.

In the drawings, Figure 1 is a perspective view of a portion of a railway-track, showing my invention applied thereto complete. Fig. 2 is a detached enlarged perspective view of a portion of one of the ties, showing more in  
55 detail the particular shape of the tie. Fig. 3 is a detached perspective view of the short sections of stringers which are placed under the rail-joints. Fig. 4 is a detached perspective view of one of the long stringers which  
60 are placed between the ties. Fig. 5 is a detached view of one of the bolts used to secure the rails to the ties and which is provided with a head like an ordinary railway-spike.

A indicates a metallic tie which embodies  
65 my invention and which is substantially an inverted Y in general contour. These ties consist of the lower portion B, which is in form substantially an expanded semicircle, as shown, and which is so shaped to give an  
70 elasticity to the tie, which is desirable in a railway-tie, as is understood. Extending upward from the center of this spring-expanded circular portion A is a vertical stem or web C,  
75 and formed upon opposite sides of the upper ends of this stem C are the flanges D, which form a wide supporting-base for the rail, as shown, and through these flanges the securing-bolts E are passed for holding the rails in place thereon. The circular portion A has  
80 considerable elasticity, owing to the fact that the supporting-stem C extends upward therefrom and forms what may be termed a "fulcrum" for the opposite sides of the spring portion to expand outward. The weight of  
85 the passing train coming upon the center of the circular portion at only a very small point a greater elasticity is secured than is the case where the rail is rested directly upon the circular portion without the intervention of the  
90 vertical stem C. Owing to this construction the greatest strength is required at the junction of the stem C with the flange D at its upper end and at the junction of the stem with the center of the tie. In order, there-  
95 fore, to meet the necessities of this required additional strength, I provide the stem C with  
100



the strengthening-fillets G at each side thereof immediately under the flanges D, as shown, and which furnishes the required strength to meet the necessities of the case and at the same time does not in any manner impair the elasticity of the tie. So, also, in order to make the tie strong at the junction of the stem and the circular portion A, I thicken the ties at the points *a* at each side of the lower end of the stem, which makes substantially strengthening-fillets at the junction of these parts and which secures the greatest strength where the greatest strain comes, and this without detracting in any manner from the elasticity of the tie. By means of the above construction I produce a metallic tie which is very strong at the points where the strain lies, and yet light to reduce the cost thereof and to secure elasticity.

I here show the ties connected under the rails by means of metallic stringers H and at the points where the rails are jointed with the metallic stringers I. However, it will be understood that these stringers, while preferred, are not necessary or essential to the ties, which can be used without them in the ordinary manner. I do, however, prefer to use the metallic stringers I, which are placed under the joints of the rails for the purpose of supporting them firmly to prevent hammering, as before described. The stringers H consist of a central or web portion J and the flanges K, which extend entirely around the same upon opposite sides, as shown. In this manner a very rigid and strong stringer is produced, while a very light one is thereby obtained. The stringers I differ somewhat from the stringers H, in that the flanges upon their upper edges are made wider and provided with the vertical flanges *b*, against which the outer edges of the lower flanges of the fish-plates rest. In this manner the upper flanges of the stringers I form a supporting-base for the meeting ends of the rails and as a supporting-base for the low horizontal portions of the fish-plates. By means of this construction I produce a very strong and permanent connection or joint for the ends of the rails, as will be readily understood. The under ends of the stringers H and I are provided with the circular portions M, which correspond with the exterior surface of the circular portions A of the ties, as shown, and their ends are provided with the vertical portions N, which fit between the circular portions A and the flanges D, as shown. The flanges N at the ends of the stringers upon opposite sides of the central or web portion J are provided with horizontal perforations through which the securing-bolts P pass. As shown, the perforations made in the adjacent ends of the stringers register with horizontal perforations made in the stem of the tie, so that the ends of two stringers are secured together and to the stem of the tie by means of two bolts which pass through the

flanges N of two stringers and the stem of the ties.

By means of the above-described construction I produce a stringer which is very simple and yet effective and which holds all of the ties securely in their proper relative relation to each other and prevents them from having any lateral movement whatever. The upper and outer edges of the stringers are each provided with the cut-out portions or cavities Q, in which rest the flanges D at the upper ends of the stems of the ties. In this manner a support is provided for the flanges which support the rails, and upon which consequently all of the weight of the train is supported, and upon the stem C of the ties.

The rails are secured upon the ties either by means of the ordinary chairs E, which have bolts passing through the flanges of the stem of the ties, or by means of the bolts S. (Shown in Fig. 5.) These bolts S have their upper ends provided with heads similar to the head of a railway-spike and their lower ends reduced and screw-threaded for the reception of a nut, as shown. I do not limit myself to any particular manner of securing the rails in place, as this forms no part of my present invention and may be held in any desired manner.

In order to lock the nuts on the several bolts to prevent them from becoming unscrewed, I use a plate *d*, which is provided with perforations for the bolts to pass through and which are made sufficiently long to extend beyond the nuts, as shown. After the nuts are screwed to their place and tightened as required the ends of the plates are turned up against the sides of the nuts, as shown. Instead of having the plates long and made to reach over two bolts, smaller plates can be used on the bolts which secure the ends of the stringers to place and have their outer ends turned upward against the nuts after they have been tightened up.

When the ties are used for elevated railways, they will be held in place by means of spikes or chairs engaging the lower flanges *i* of the ties.

Having thus described my invention, I claim—

1. A railway-tie having the shape of an inverted Y and provided with strengthening-fillets at the junction of the stem with the upper cross-flange and the lower U-shaped portion, substantially as specified.

2. A railway-tie comprising a semicircular lower portion, a stem extending vertically from the center thereof, a cross-flange at the upper end of the said stem for supporting the rails, and strengthening-fillets at the junction of the stem with the circular portion and the said cross-flange, substantially as set forth.

3. A metallic tie comprising an expanded semicircular lower portion, a stem extending upward from the center of the exterior of the said circular portion, and a cross-flange at the



upper end of the said stem for supporting the rails, substantially as specified.

4. A metallic stringer for railways, comprising a central vertical web and a laterally-extending flange entirely around its edge upon opposite sides thereof, substantially as set forth.

5. In a railway tie and stringer, a tie, combined with a stringer having its ends adapted to be secured to the ties and its upper edge flush with the upper rail-surface of the tie, the said stringer provided with cavities in its upper ends for the flanges of the tie, substantially as specified.

6. In a railway-track, metallic ties having a semicircular lower portion, a stem extending therefrom, a horizontal flange upon the upper edge of the said stem, combined with a metallic stringer having a curved portion to fit the circular portion of the said tie, and its ends

shaped to fit between the circular portion and the horizontal flange of the tie, and a means for securing the stringer and ties together, substantially as set forth.

7. In a railway-track, a metallic tie having a circular lower portion, a vertical stem extending therefrom, a horizontal flange upon the upper end of the said stem, combined with a metallic stringer having its ends shaped to fit the said tie and provided with lateral flanges which are provided with bolt-holes, and the stem of the tie having bolt-holes, all of which register, and bolts which pass through the said holes, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT J. COLVIN.

Witnesses:

ALLEN S. PATTISON,  
GEO. E. FRECH.