

No. 807,650.

PATENTED DEC. 19, 1905.

J. E. YORK.
MANUFACTURE OF TIE PLATES.

APPLICATION FILED JUNE 23, 1903.

2 SHEETS-SHEET 1

FIG. 4.

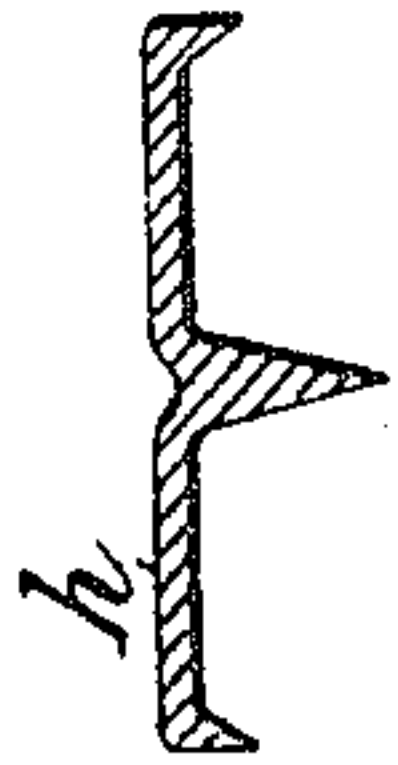


FIG. 3.

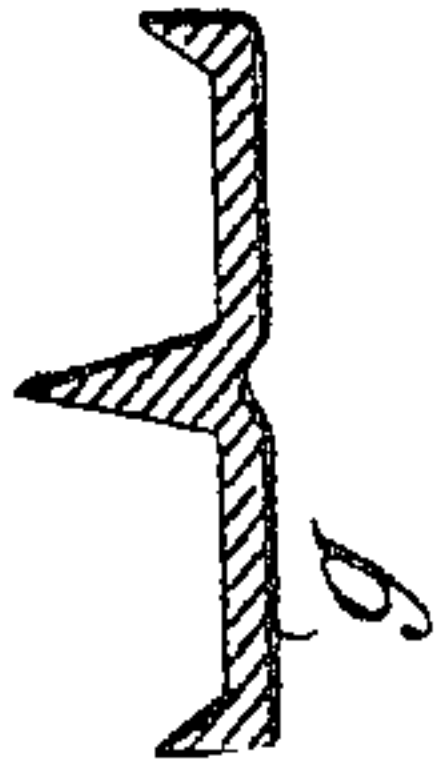


FIG. 5.

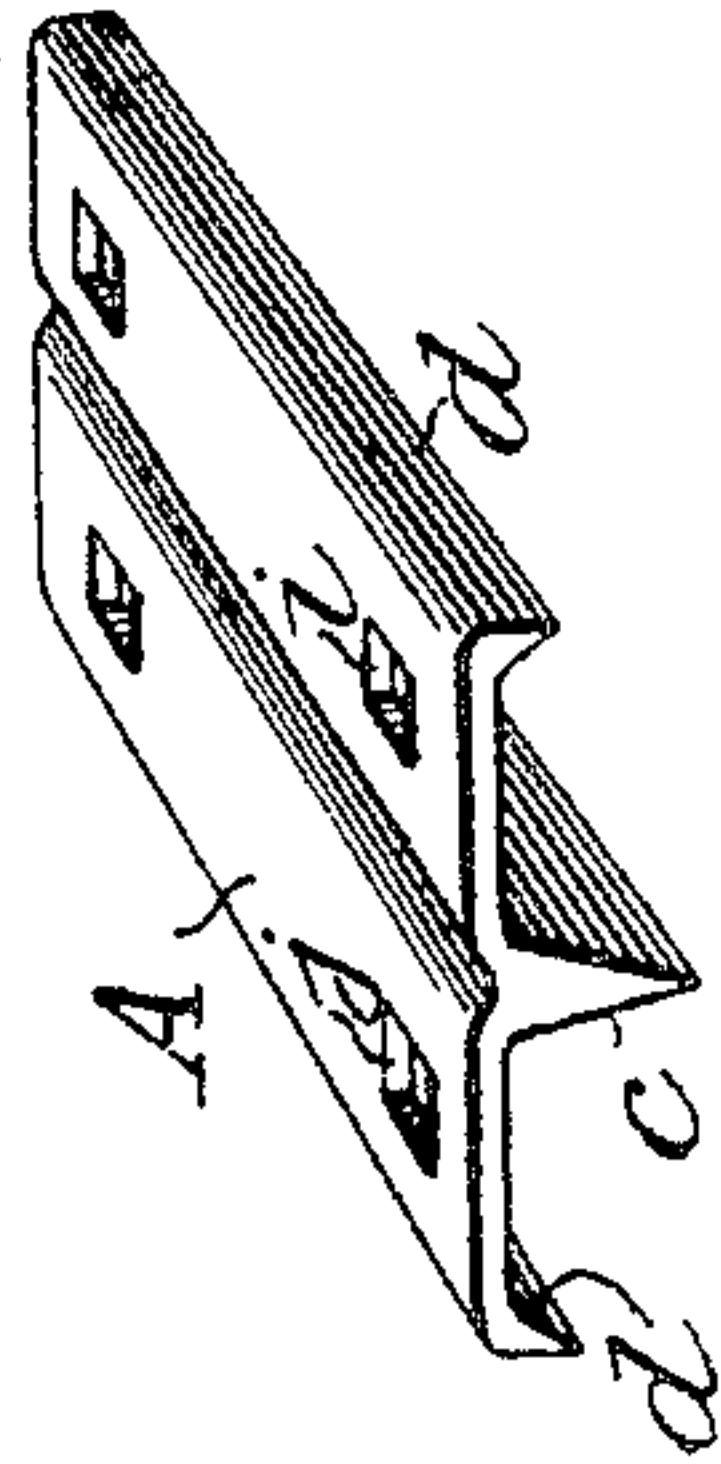


FIG. 9.

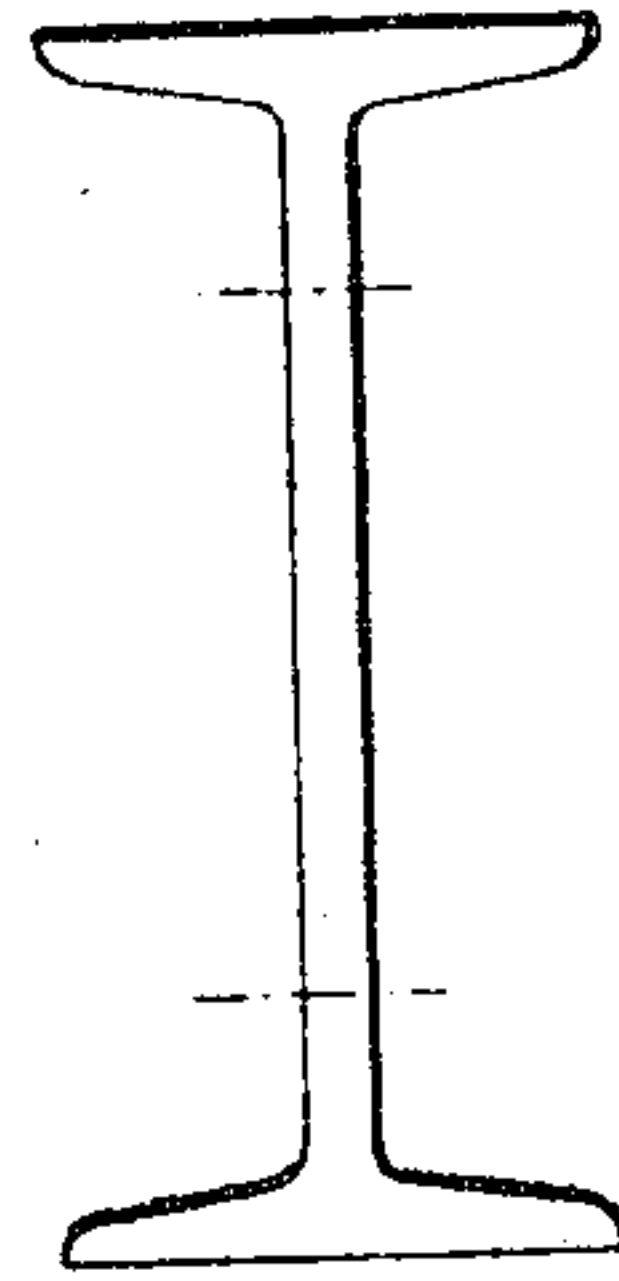


FIG. 2.

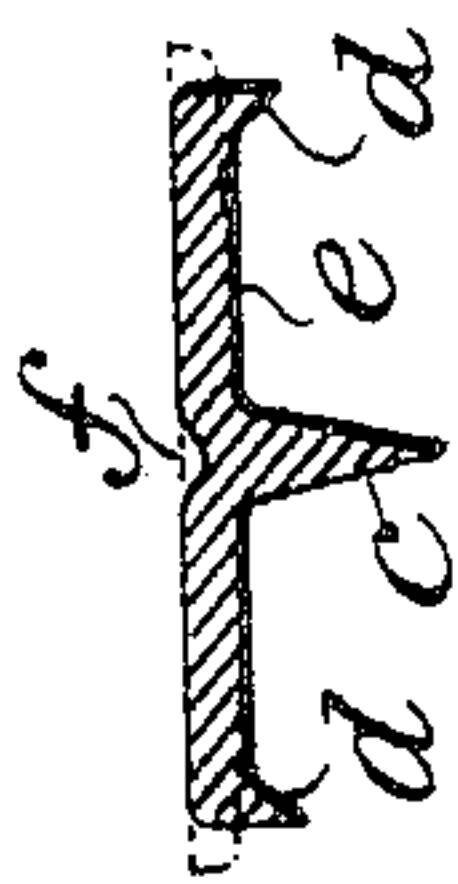


FIG. 1.

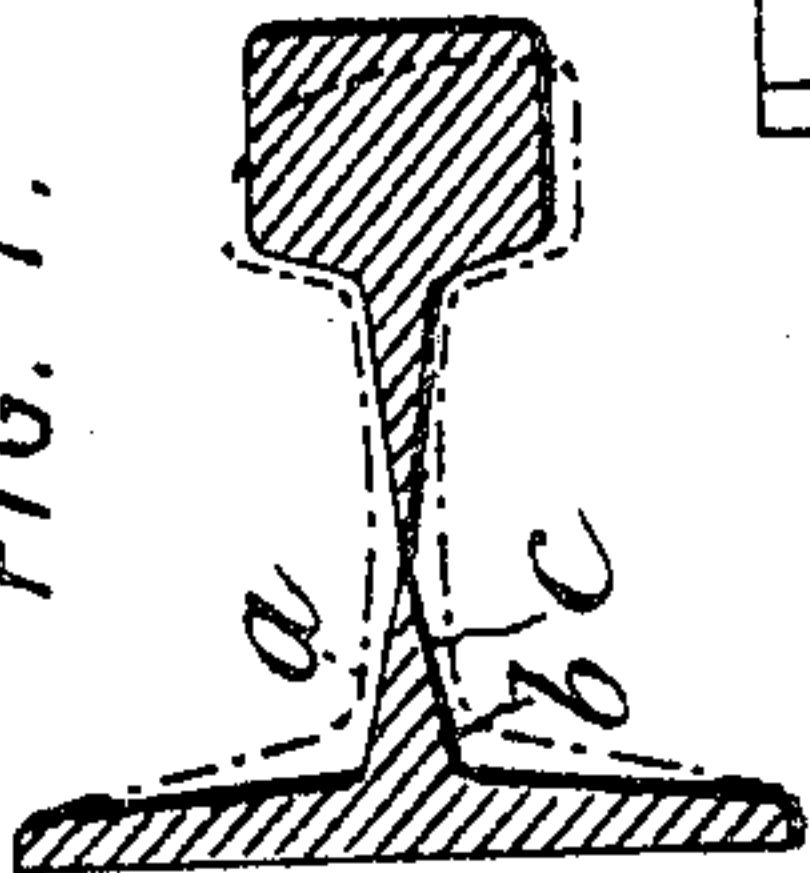


FIG. 6.

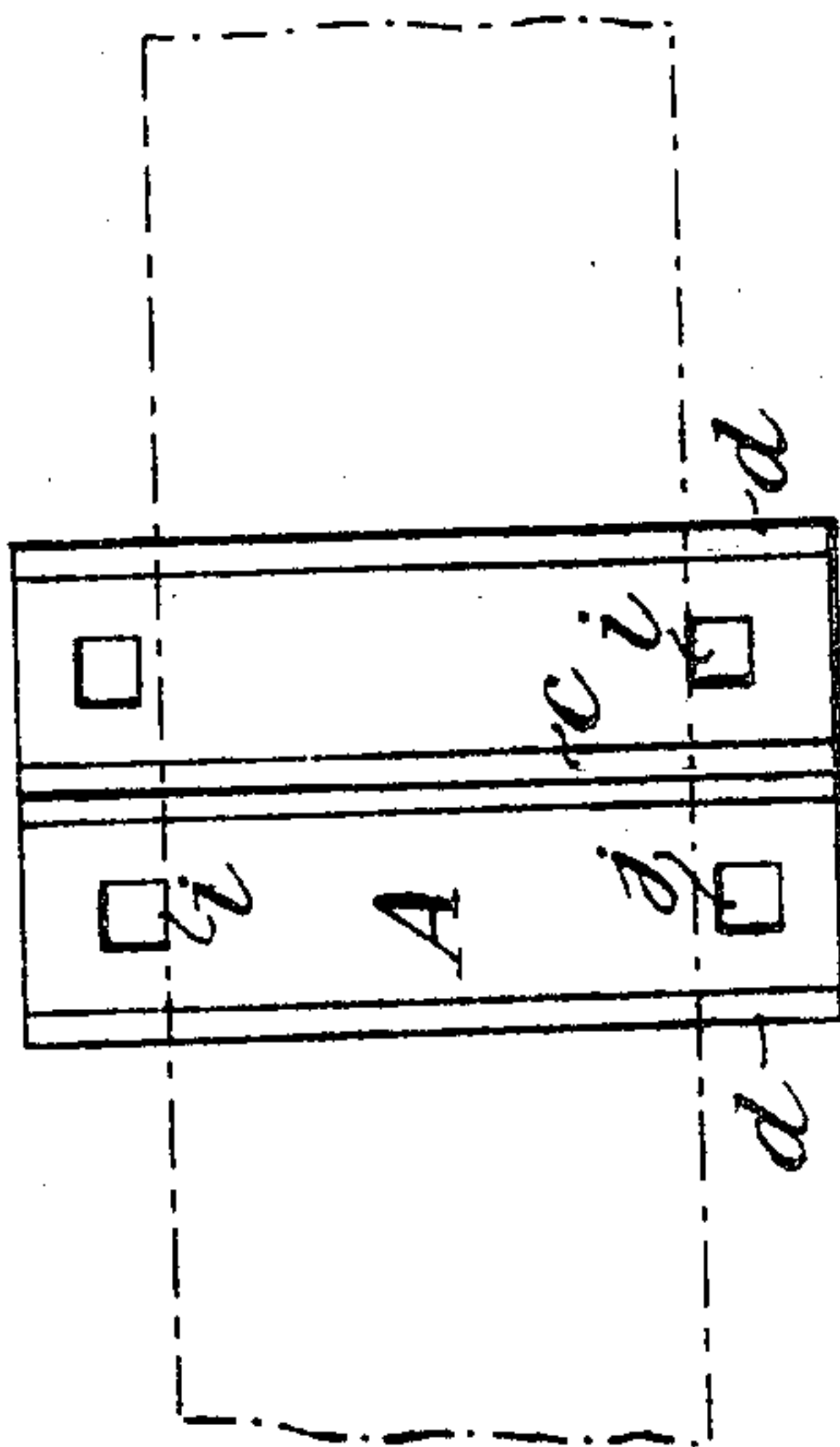
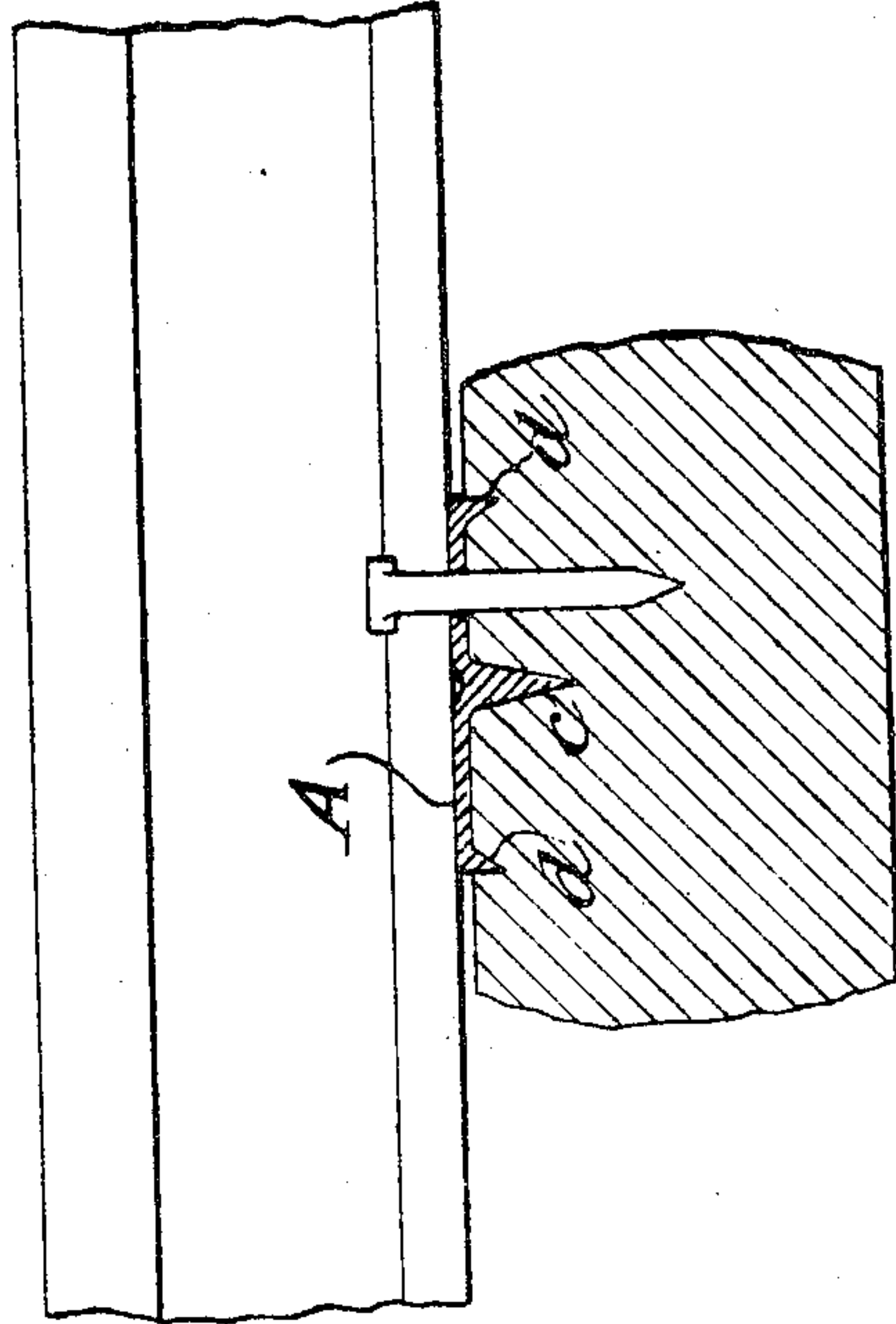


FIG. 7.



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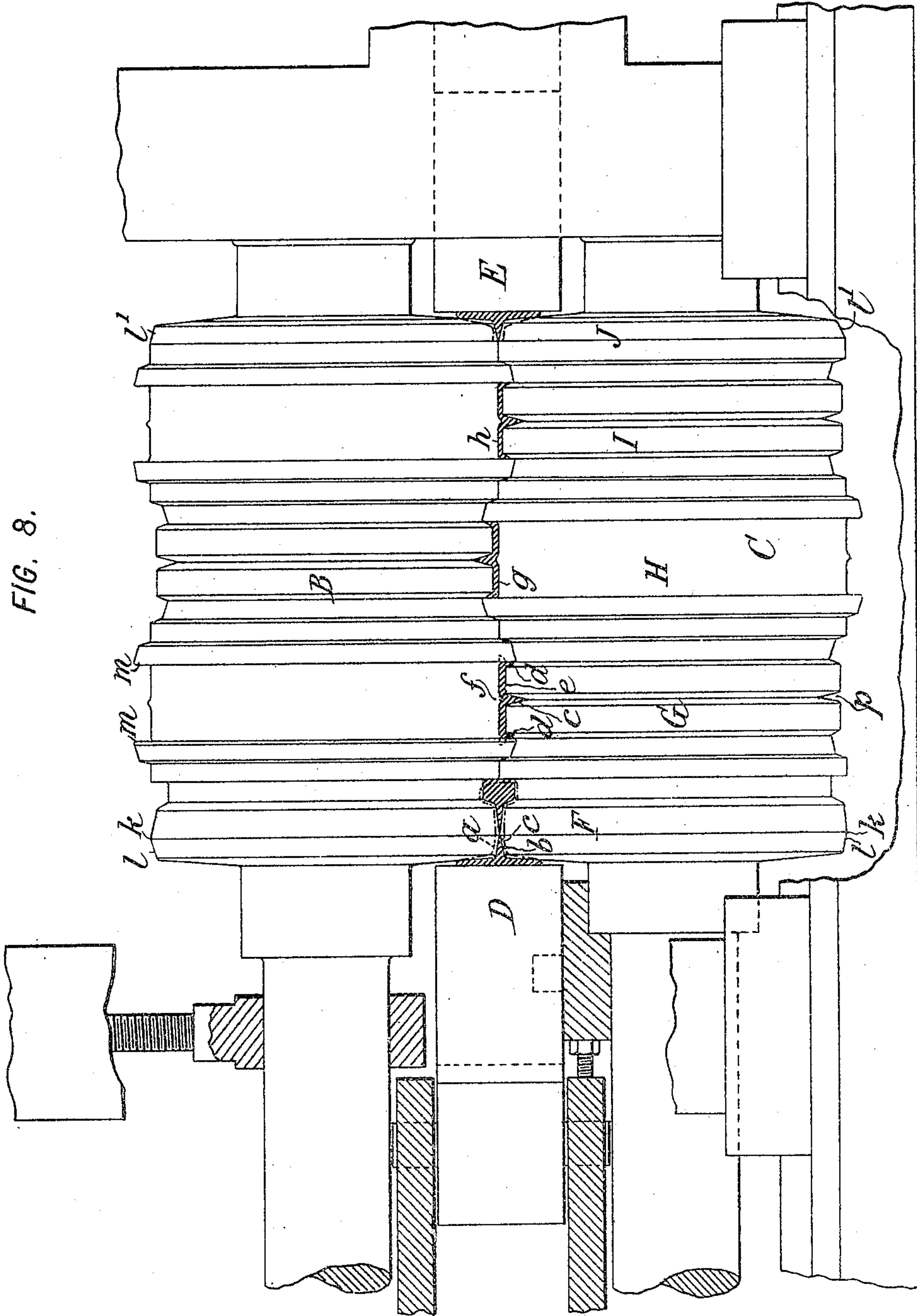
Arthur C. Orson

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2 SHEETS—SHEET 2.



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MANUFACTURE OF TIE-PLATES.

No. 807,650.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed June 23, 1903. Serial No. 162,807.

To all whom it may concern:

Be it known that I, JAMES E. YORK, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in the Manufacture of Tie-Plates, of which the following is a specification.

This invention relates to the process of producing a railway-tie plate.

The object of my invention is to utilize old rails, beams, flange-sections, and other forms of structural steel or iron for the manufacture of tie-plates, so as to produce the latter cheaply.

I will describe my invention with reference to the accompanying drawings as applied to the making of tie-plates from old railway-rails or T-rails.

Figures 1, 2, 3, and 4 are transverse sections showing successive stages of the rolling operation. Fig. 5 is a perspective view of the completed tie-plate. Fig. 6 is an inverted plan thereof. Fig. 7 is a section showing a fragment of a railway-track, illustrating the use of the tie-plate. Fig. 8 is an elevation of the rolls used in producing the tie-plates. Fig. 9 is a cross-section of an I-beam, illustrating the application of my invention.

Using old railway-rails I first cut the rail in two, so as to sever the flange with a portion of the web from the head and upper part of the web. Preferably the rail is heated and passed through a roll, which reduces it from approximately the dotted outline *a* in Fig. 1 to the outline *b*. Preferably this operation also rolls to an edge the portion of the web which remains attached to the flange. This web portion is designated *c*. Then this flange portion of approximately T-section is put through a roll-pass, whereby the outer edges of the flange are turned down or in the same direction as the rib *c*, thereby forming flanges *d d*, this operation being shown by the outline *e* in Fig. 2. By the same rolling operation a crease *f* is formed opposite the rib *c*. Ordinarily the plate will at this stage be too thick to be suitable as a tie-plate, and accordingly it has to be rolled down as many times as are necessary to reduce it to the desired thickness. Figs. 3 and 4 show the products of successive rolling operations through suitable passes. There may be more or fewer of these rolling operations, as may be necessary.

The outline *g* shows the section in Fig. 3 and *h* shows that in Fig. 4, the latter being the final section. The plate is then cut across into suitable lengths to make tie-plates of preferably substantially the proportions shown in Fig. 6. These plates are then punched with suitably-arranged holes *i i* and *j j* to receive the spikes. The resulting tie-plate is shown in Fig. 5. It consists of a flat plate A, rolled from the rail-flange, having on its under side a deep middle rib *c* and side flanges *d d*, each of these being brought to a sufficiently sharp edge to adapt them to sink into the wood of the tie. Through the plate are punched the holes *i j*.

Fig. 7 illustrates the mode of use of this tie-plate. Its rib *c* and flanges *d d* are forced down into the tie, so that the plate lies flat against the top of the tie. The rail is placed on the plate and spikes are driven through the appropriate hole *i* or *j* (depending upon the width of the rail-flange) to spike the rail to the tie.

A characteristic feature of my tie-plate is the middle rib *c*, which, being driven down into the tie at its middle, where it is strongest, serves to increase the hold of the tie-plate upon the tie and also to stiffen the plate, permitting a lighter and thinner plate of my construction to do the work of a heavier plate of the kind heretofore made.

Fig. 8 illustrates the preferred construction of rolls for rolling the tie-plate. B and C are the upper and lower horizontal rolls. D and E are side rolls turning on vertical axes. The respective rolls are shaped to form passes F, G, H, I, and J. The pass F is adapted to receive the railroad-rail and is characterized by cutting or swaging edges *k k* on the respective rolls, which act to cut through the web of the rail, and by inclined portions *l l*, which act to reduce the portion of the web attached to the flange to an edge to form the rib *c*. It is in this pass that the rail is reduced from the section *a* to the section *b* of Fig. 1. The pass G reduces the metal from the section *b* to the section *e* of Fig. 2. One of the rolls has flanges or collars *m m*, which act to turn down the outer edges of the flange to form the flanges *d d*. To perform this operation, the section *b* is entered while the roll B is lifted, after which the roll is lowered and the rolls started, so that the section in entering the pass has its edges turned down. The

roll C has a deep groove *p* to receive the middle rib *c*. The plate is then put through the passes H and I, (of which there may be a greater or less number, according to the extent of reduction in thickness required.) In the rolls shown the pass I is the finishing-pass. These passes serve not only to thin the plate, but to perfect its shape and sharpen, if need be, the ribs *c* and flanges *d d*.

10 The severed head with a portion of the web attached resulting from the first pass F may be variously utilized. For example, it may be rolled down into rods, T-iron, angle-iron, or other desired shapes.

15 Instead of proceeding as thus far described I may first, if desired, shear off the head of the rail while cold and then heat the flange portion, in which case the pass F is not used; but instead the flange portion is put through the pass J, which is like the pass F, except that the grooves for the head and the cutting edges *k* are omitted, the swaging-inclines (here lettered *l'*) for bringing the middle rib to an edge being retained. The section thus rolled 25 is then put through the passes G, H, and I successively.

30 The function of the rolls D and E is to reduce the flange of the rail and urge it forward at the same surface speed as the web and head, thereby preventing any distortion in the metal and causing the section to emerge in straight condition from the rolls. They also support the outer face of the flange and prevent any

bulging of the metal at the center thereof during the rolling of the middle rib through the pass F or J. 35

My invention is not limited to the making of tie-plates from old rails. I may work from any form of structural iron or steel which affords as a starting-point a substantially T-shaped section. For example, I may use old I-beams, cutting them, as indicated in Fig. 9, so as to utilize the flange portions for my purpose, leaving the intervening web portion to be rolled down into plates, bars, or rods. 45 I may thus use old girder-rails, such as are employed on street-railways.

What I claim is—

In the manufacture of tie-plates from old rails, beams, &c., the process which consists 50 in cutting off the base with a portion of the web by rolling said portion of the web to a tapered edge to form a T with a wedge-shaped rib while supporting the outer face of the base at the central point opposite the web by a vertical roll to prevent bulging of the base and to lengthen the base simultaneously with the lengthening of said rib. 55

In witness whereof I have hereunto signed my name in the presence of two subscribing 60 witnesses.

JAMES E. YORK.

Witnesses:

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FRED WHITE.