

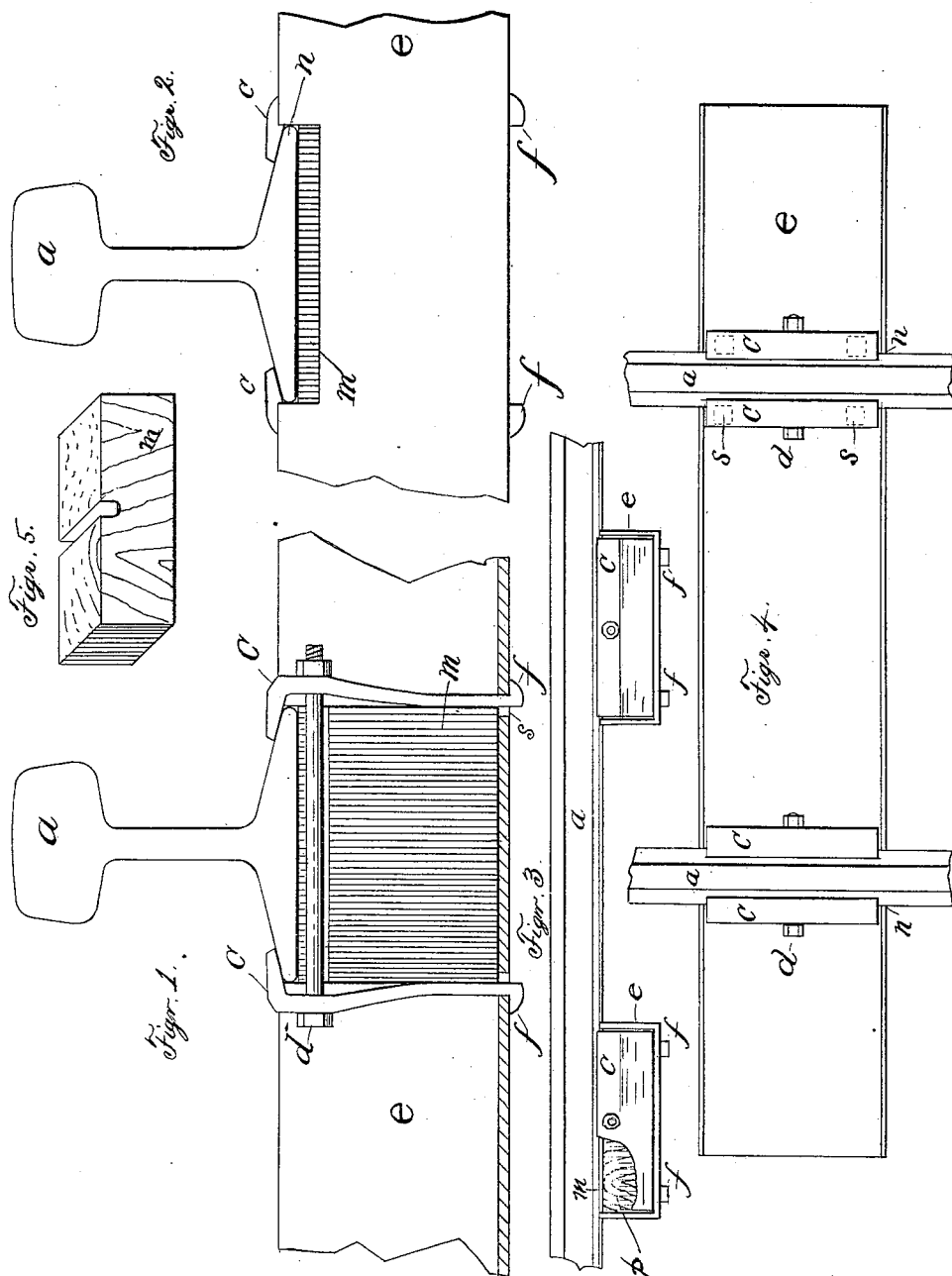
(No Model.)

2 Sheets—Sheet 1.

H. SHULTZEN.  
METAL RAILWAY TIE.

No. 386,356.

Patented July 17, 1888.



Witnesses.  
L. Horatio  
A. Knus.

Inventor.  
Harry Shultzen.  
By  
Alexander M. Kachko  
att.

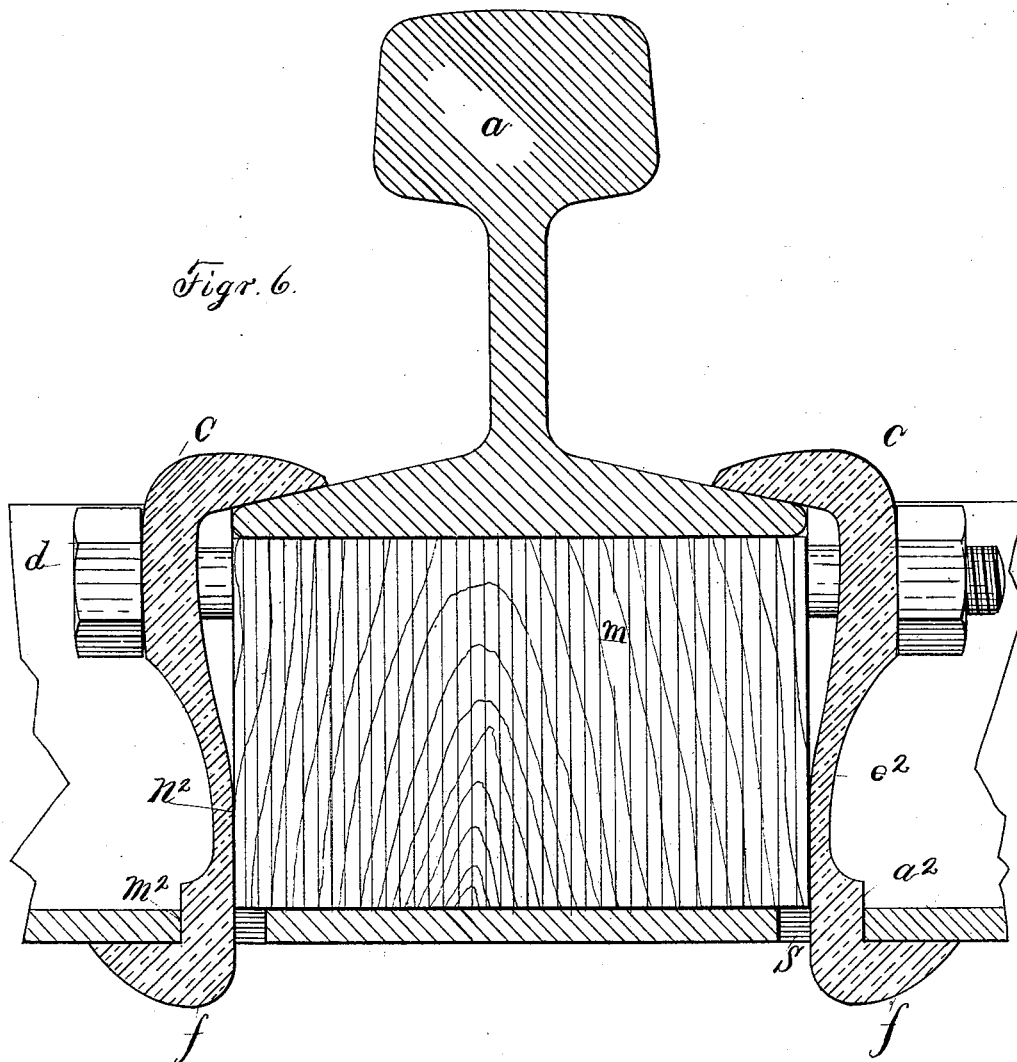
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WITNESSES:

*L. M. Graham.*  
*E. Peckles.*

INVENTOR.

*Henry Shultzen.*  
BY *Ally Melhado.*

ATTORNEY.

# UNITED STATES PATENT OFFICE.

HENRY SHULTZEN, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE STANDARD METAL TIE AND CONSTRUCTION COMPANY, OF NEW JERSEY.

## METAL RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 386,356, dated July 17, 1888.

Application filed December 30, 1887. Serial No. 258,539. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY SHULTZEN, of Elizabeth, in the county of Union and State of New Jersey, have invented a new and useful  
5 Improvement in Metal Railway-Ties, of which the following is a specification.

This invention relates to metal railway-ties, and has for its object to construct a railway tie or sleeper of metal in its most advantageous  
10 form and secure the rails thereto by means of adjustable fastenings, with an intermediate packing between the rails and tie to act as a cushion to rest upon, and thus destroy metal contact.

15 It also has for its object to provide a metal tie that can be used as a gage in laying track, all as will be hereinafter explained.

In the accompanying drawings, which form a part of this specification, my invention is  
20 fully illustrated in various figures with similar letters of reference to indicate corresponding parts as follows:

Figure 1 represents a vertical longitudinal section through the center of the tie *e*, or  
25 rather a part thereof, showing the rail *a*, clamps *c c*, and cushion *m*, all in transverse section. Fig. 2 represents a side elevation of a part of the tie, showing the manner in which the rail  
30 *a* rests upon the cushion *m* without coming in contact with the tie, except where the side of the rail-base touches the sides of the slot *n*, which is to regulate and maintain the gage and keep the rails from spreading. Fig. 3  
35 represents a reduced side elevation of the rail *a*, showing two ties, *e e*, in position with one of the clamps *c* broken away, as shown at *p*, to exhibit the rail resting upon the wood packing *m*. Fig. 4 represents a top or plan view  
40 of a complete tie with the rails *a a* in position and secured thereto by the clamps *c c* and bolt *d* within the slot *n*. Fig. 5 represents a perspective view of the packing-block *m*, and Fig. 6 represents a full-size vertical transverse  
45 section with the clamps *c c*, rail *a*, and block *m*, to show the manner in which the clamps are hooked to the tie and the manner in which they take fulcrum against the bottom of the tie and exert a supporting force against the  
50 rail.

The tie *e* is rolled of any suitable metal, preferably steel, in the form of a channel-beam, an end view of which is shown at *e*, Fig. 3. The sides of the tie are cut away to form slots or depressions to receive the rail-base, as  
55 shown in Fig. 2. These slots are the exact width of the rail-base, but are cut sufficiently deep to fall below the upper surface of the packing-block *m*, so as not to have any contact with the bottom of the rail. The slots  
60 above described form the gage of the road and keep the rails from spreading. They also act as a gage-tool in laying track, as will be hereinafter explained. In the bottom of the tie,  
65 directly under the sides of the slots above referred to, are four (4) square holes provided to receive the clips *f* of the clamps *c*, as shown by the dotted line *s s*, Fig. 4.

The packing-block *m* is made the requisite  
70 length to fit crosswise in the channel of the tie, as shown at *m*, Fig. 3. The width of the block is exactly the same as that of the slot *n* and rail-base, as shown in Figs. 1 and 6. The  
75 depth of the block is the same as that of the channel in the tie less the thickness of the edge of the rail-base, as shown in Figs. 1, 2, and 6.

The form of the clamp *c* is preferably like that shown in Figs. 1, 3, and 6, with the jaws on the upper part of the clamps beveled to fit  
80 the rail-base, and the upper body portion extending away from the packing, so that when the jaws are closed toward each other the rail will be forced downward. The bottom of each  
85 clamp is provided with two hooks or clips, *f f*, which stand in a reverse direction to that of the jaws. These clips are the requisite size to pass through the holes *s* by lowering the clamp on its side and entering the point of  
90 the clips *f* first and then raising the clamp. In this manner the clips are hooked under the bottom of the tie, as shown in Figs. 1, 2, 3, and 6. The particular formation of these  
95 clamps and their triple service of exerting a compressing force against the packing-block *m*, grasping the rail at the same time, but with an independent force, and also their tendency to exert an expanding force against the nut and bolt head, are best illustrated in  
100 Fig. 6. It will be seen from this illustration

that the lower portion of the clamps *c*, as shown at *a*<sup>2</sup>, is somewhat heavier than the curved body or spring portion *e*<sup>2</sup>, its thickness being a little greater than the distance from the side of the packing-block *m* to the outer edge of the hole or slot *s*, so that when the clamps are inserted in place and raised to an upright position they will compress the packing-block *m*. The bearing-points, against which they exert their force when being clamped together, are as shown at *m*<sup>2</sup> *n*<sup>2</sup>—that is, inwardly against the packing *m* and outwardly against the bottom of the tie—so that when the bolt *d* is inserted and the nut screwed sufficiently tight thereon the packing-block *m* and clamps *c* *c* will be held firmly together and rigid to the bottom of the tie, whether the jaws of the clamps are on the rail-base or not. The body portion of the clamps are made quite thin, as shown at *e*<sup>2</sup>, so that they will spring and allow the jaws to be forced toward each other after the body portion has firmly grasped the packing-block *m*. Thus the jaws can be closed down upon the rail-base with any desired degree of firmness or rigidity.

The great advantage of this character of clamp is the fact that the packing-block *m* is always held firmly in place independent of the rail; also, that the tops of the clamps *c* exert a spreading force against the head of the bolt *d* and nut, thus holding the same in position, so that the clamps would not become loose and rattle should the packing become worn and allow the rail to sink slightly away from the jaws of the clamps. There is of course no limit to the force which can be brought to bear upon the rail-base by the jaws of the clamps *c* by means of the bolt *d* and nut.

It will be readily understood that a fastening of this character makes the tie, rail, and clamps practically one solid structure, with the block *m* held firmly between them and acting as an intermediate packing to give the requisite surface for the rail to rest upon, also to destroy the metal contact.

It will also be seen that should the block *m* become slightly compressed by long use it would in no wise interfere with the firmness of the clamps and packing-block, and there could be no disagreeable results arising from loose clamps or bolts and the liability of the same to become displaced and free the rail, because a slight turn of the nut on the bolt *d* would again firmly secure the rail should it become slightly loose, as above described.

I would mention that the block *m* can be made of any desirable surface best adapted to the conditions of the road-bed, &c. The present illustration represents wood with its grain running vertically, which is thought to be the most serviceable and desirable packing at present known. The wood is saturated with oil, which makes it almost indestructible, and its cheapness commends it to favor.

Either paper, vulcanized fiber, or leatheroid could be used probably with good results, and in some cases a block of granite might be advisable; but I prefer wood treated with oil and inserted as above described.

When constructing railroads, the ties are laid on the new-made road-bed the requisite distance apart. The rails are then placed in position in the slots. As soon as this is accomplished the rails must necessarily be in line, and the ties must necessarily be parallel with each other and at right angles to the rail. Thus the first great difficulty in track-laying, paralleling the ties, also paralleling and lining the rails, is entirely obviated. After the ties are thus in position with the rails, the block *d* is slid under the rail and the clamps *c* adjusted to the rails and packing-block by means of the bolt *d* and nut, as above described. The slots *n* will always keep the rails from spreading or moving in either direction. Thus the gage is always maintained under any and all conditions, and the clamps *c* will hold the rails firmly seated in the packing-block *m* with a vise-like rigidity.

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

1. The combination of a metal tie and the clamps *c*, constructed with hooks or clips, as *f* *f*, standing in a reverse direction to the jaws, packing-block *m*, and bolt *d*, as described and specified.

2. A packing-block, as *m*, constructed of wood with its grain running in a vertical direction, in combination with a metal tie and adjustable spring clamps provided with the clips *f* *f*, standing in a reverse direction to the jaws, for holding the rail in position on the said block against its end grain, the said clamps so constructed as to exert a force against the sides of the block independent of the force applied to the rail-base, whereby the said block is completely boxed and prevented from splitting or spreading under pressure.

3. In combination with a metal railway-tie, the clamp *c*, constructed with a jaw on its upper side adapted to engage with the rail-base, its body portion made thin and curved, so as to throw its upper portion outward, its lower portion being suitably engaged with the bottom of the tie, so that the clamp will have a fulcrum-foundation, as shown at *m*<sup>2</sup> and *n*<sup>2</sup>, Fig. 6.

In testimony that I claim the foregoing improvement in metal railway-ties, as above described, I have hereunto set my hand this 14th day of December, 1887.

HENRY SHULTZEN.

Witnesses:

T. HOUSETON,  
A. KUNZ.