

(No Model.)

2 Sheets—Sheet 1.

S. A. ROAKE & F. G. SMITH.
RAILROAD TIE.

No. 515,409.

Patented Feb. 27, 1894.

Fig. 1

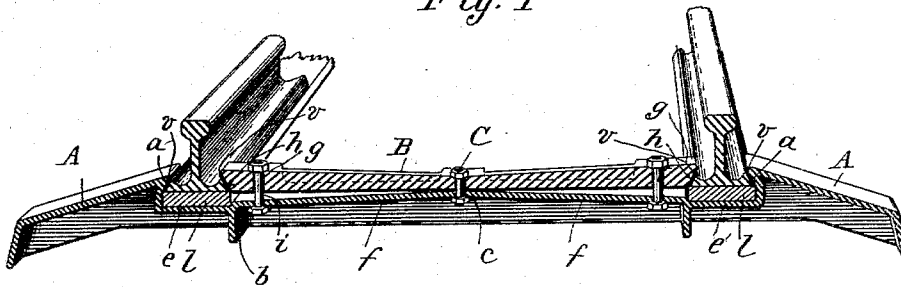


Fig. 2.

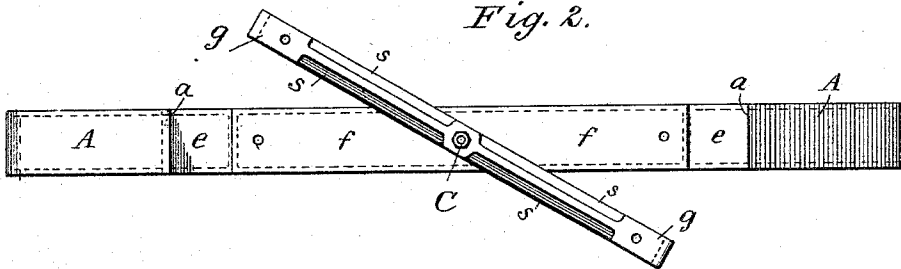


Fig. 3.

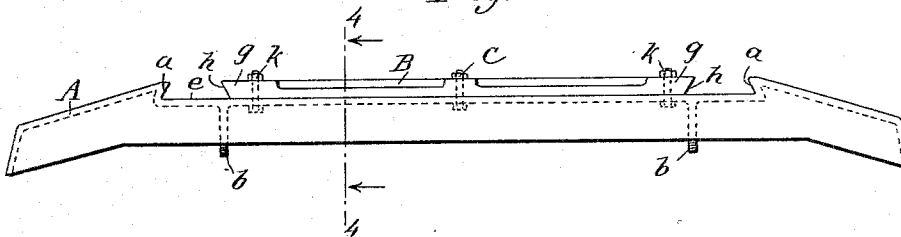


Fig. 4.

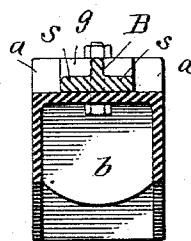
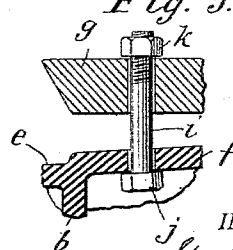


Fig. 5.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

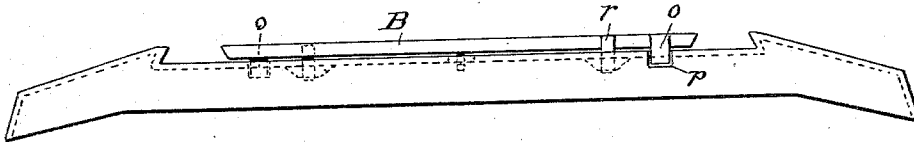


Fig. 7.

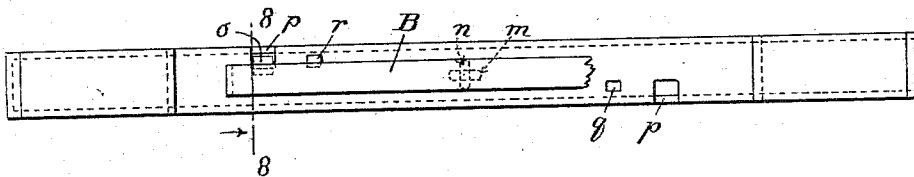


Fig. 11.



Fig. 8.

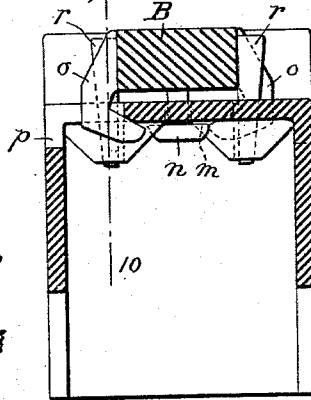


Fig. 9.

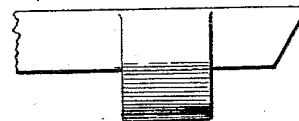


Fig. 10.

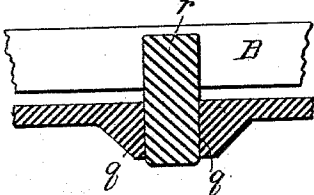
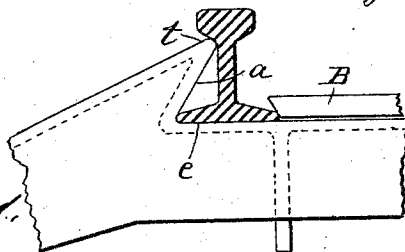


Fig. 12.



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UNITED STATES PATENT OFFICE.

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BRIDGE, NEW YORK.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 515,409, dated February 27, 1894.

Application filed June 23, 1893. Serial No. 478,573. (No model.)

To all whom it may concern:

Be it known that we, STEPHEN A. ROAKE, a resident of Peekskill, and FRANK G. SMITH, a resident of Williams Bridge, Westchester county, State of New York, have invented certain new and useful Improvements in Railroad-Ties, of which the following is a specification.

Our present invention relates to railroad ties and has for its object to produce an improved construction for supporting, bracing and securing the rails. We attain these objects by the mechanism illustrated in the accompanying drawings showing different forms of our invention and in which—

Figure 1 is a view of one form of our invention shown in central transverse, vertical section. Fig. 2 is a top view thereof, with the parts in a slightly different position. Fig. 3 is a side view of a modification. Fig. 4 is a section on line 4—4 of Fig. 3 looking in the direction of the arrow. Fig. 5 is a detail sectional view broken away showing an end of the cross-brace. Fig. 6 is a side view of another modification showing our preferred means for fastening the cross-brace. Fig. 7 is a top view of Fig. 6 partly broken away. Fig. 8 is an enlarged section on line 8—8 of Fig. 7. Fig. 9 is a detail view of an end of the form of cross-brace shown in Figs. 6, 7 and 8. Fig. 10 is a section on line 10—10 of Fig. 8. Fig. 11 is a modified form of pivot fastening. Fig. 12 is a detail view showing a modified form of tie.

A designates a metallic railroad tie which we have shown as an ordinary box casting. This tie is formed on each side with a recess or jog *e* for receiving and bedding the rail. In each recess the wall farthest from the middle of the tie is inclined or beveled as shown at *a* for a portion of its height. The tie has a perforation *c* at its middle and slopes gradually away from the center to the recesses *e* near the ends. This sloping upper surface allows for the adjustment of the cross-brace, as will presently be described, and by reason of its substantially arch shape adds strength to the tie and facilitates the insertion of the tie into its foundation. Flanges or braces *b*, cast in the interior of the hollow tie, assist to support the structure and at the same time

prevent endwise movement of the tie. In Fig. 4 we have shown these braces provided with rounded edges to enter and more firmly hold in the ground. The ends and sides of the tie also serve the same purpose.

It is obvious that we may use a tie made from sheet metal bent up into shape or cut to form the recesses *e*. The cross-brace *B* is pivoted at its center by the bolt *C* passing through the hole *c* in the middle of the tie and has at each end heads *g* having beveled faces *h* to engage the rail and secure it in the recess *e*, which heads *g* are perforated for the passage of the bolt *i*. The bolt *i* (see Fig. 5) passes through the tie and is held from being pulled through by the head *j*. A nut *k* on the other end of the bolt *i* bears against the head *g* and is used to bend the cross-brace and adjust the head vertically. The cross-brace is cut away as at *s* that it may be readily bent to adjust the heads *g* vertically. We have shown a form of rail having the sides of its flange beveled, being specially adapted for use with our improved railway tie, but it is obvious that we may use any suitable form of rail. The rail is bedded on pillow blocks *l* and the brace is bent by means of bolts *i* and nuts *k* until the beveled faces of the heads *g* engage the rail flange and hold it securely in the recess *e*. This pillow block is of insulating material and blocks *u*, *v*, of insulating material are placed between the flange of the rail and the clamping mechanism, all of which serves to insulate the rail from the tie. As the material of the blocks becomes compressed in use, the rail will sink and become loose in its fastenings. To remedy this it will be merely necessary to further bend the brace until the faces *h* and the flanges of the rails are again in engagement, or shimming may be resorted to. The sloping upper surface *f* of the tie *A* allows of great range of vertical adjustment of the heads.

In Fig. 3 we have shown the simplest form of our invention wherein the inclines *a* each form one entire side of the recesses *e*, and the inclined faces *h* of the cross-brace *B*, which is simply a pivoted rigid bar, from the other.

In the modification shown in Figs. 6 to 11 inclusive, which is our preferred form, we have shown as a means of pivoting the cross-

brace an elongated slot *m* cut in the tie and parallel with the sides thereof, and an elongated head *n* on the cross-brace transverse its length. To secure the brace to the tie the head *n* is inserted through the slot *m*, the brace being at right angles to the tie, and upon turning the brace the head *n* will engage the under side of the top plate of the hollow tie and hold the parts together. The pivoted cross-brace is made with tongues *o* on each side which enter holes *p* cut in the tie (see Fig. 6) and take purchase on the under side of the top plate of the tie, and the heads of the cross-brace will clamp the rails as before recited. To insure the clamp remaining in this adjusted position, additional holes *q* are cut in the tie at suitable places in the tie and keys or wedges *r* are driven in to engage and secure the brace against movement. A common railroad spike serves this purpose well. In this structure to allow for the compression of the pillow blocks, the tongues *o* are bent away at an angle slightly greater than a right angle, or else have beveled ends, so that as the wedges are driven home the brace will be turned and the tongues *o* forced farther under the top plate of the tie and the brace forced down to tightly clamp the rails in place.

It will be obvious that if the blocks under each rail should not be equally compressed by traffic, merely turning the brace will not suffice. In order to remedy this defect during use the tongues may be unequally bent or beveled by any suitable means, to compensate for this irregular compression.

It will be seen that by the latter construction we dispense wholly with bolts and nuts, which, unless locked, are liable to become loose when subjected to the severe conditions

of traffic. In Fig. 12 we have shown the side *a* of the recess *e* as prolonged to form a brace *t* for the head of the rail to prevent rolling.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with a tie adapted to receive a rail, of a cross brace to clamp the rail in position, pivoted to swing in a horizontal plane, substantially as described.

2. The combination with a tie adapted to receive a rail, of a cross brace to clamp the rail in position, pivoted to swing in a horizontal plane, and provided with independent means for vertically adjusting each end, substantially as described.

3. The combination with a tie adapted to receive a rail, of a horizontally swinging vertically adjustable cross brace to clamp and hold the rail in position, substantially as described.

4. The combination in a tie having recesses *e* to receive the rail, of a pivoted brace to secure the rail having tongues *o* to enter holes *p* in the tie, and means substantially as described to hold the brace in its adjusted position.

5. A railroad tie having an upper surface inclined away from the center to the ends for a portion of its length, and a horizontally swinging cross-brace pivoted to the center thereof, whereby the ends of the brace may be vertically adjusted substantially as described.

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