(No Model.)

W. R. SMITH.

RAILWAY TRACK.

No. 563,085. Patented June 30, 1896.

FIG. 1.

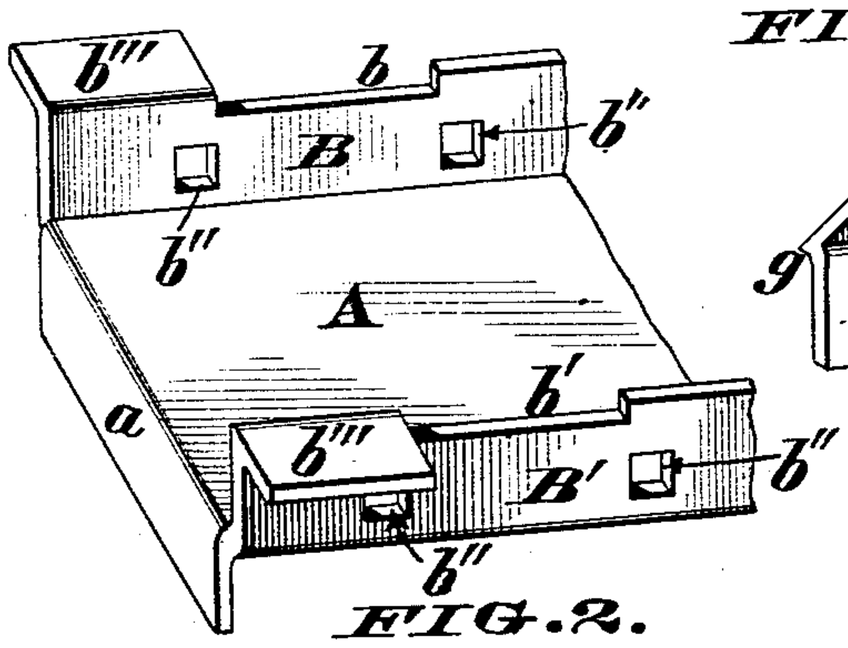

FIG. 2.

FIG. 3.

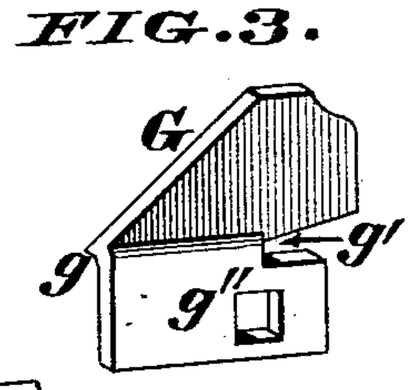

FIG. 3'.

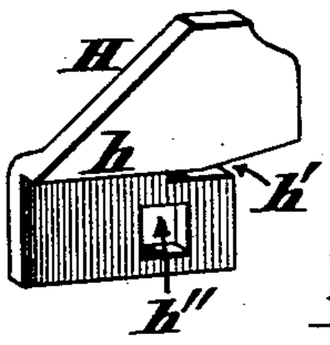

FIG. 4.

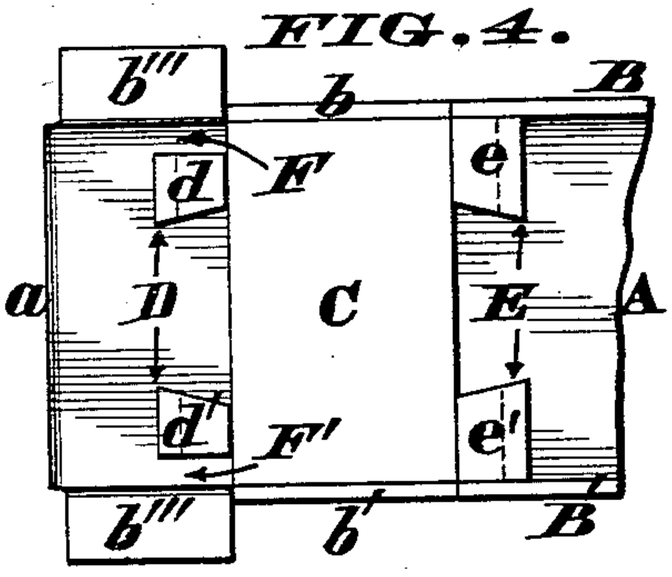

FIG. 5.

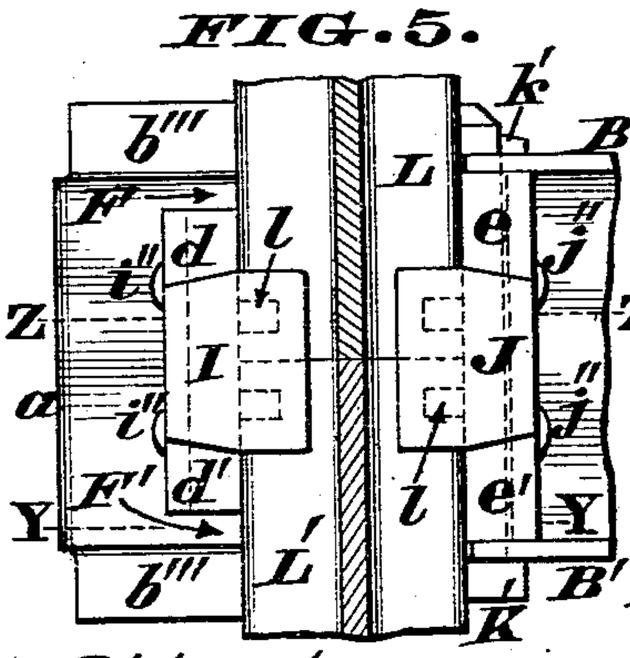

FIG. 6.

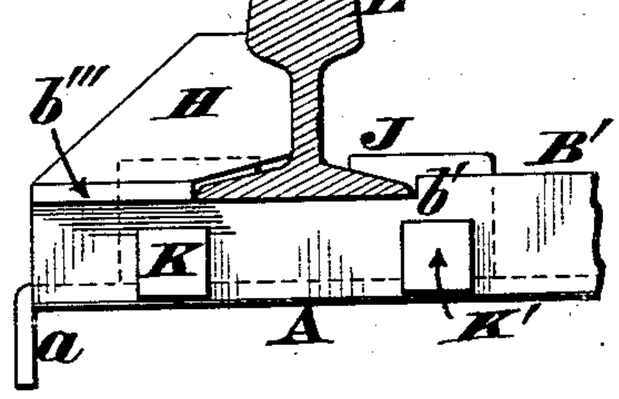

FIG. 7.

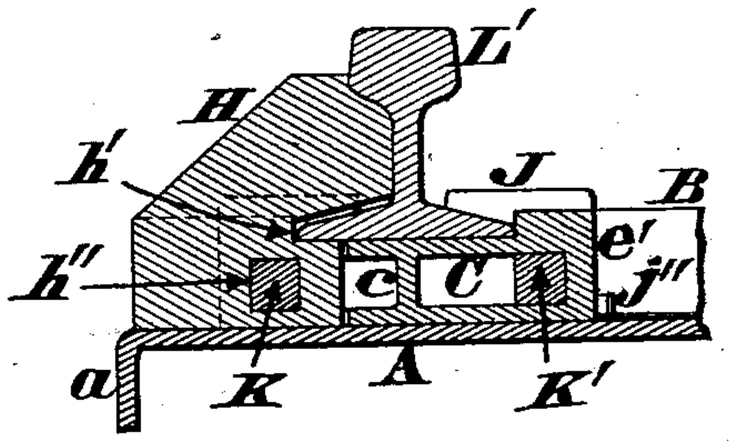

FIG. 8.

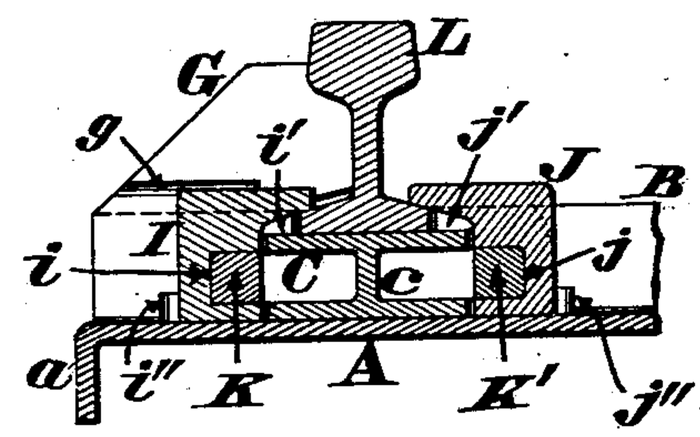

FIG. 9.

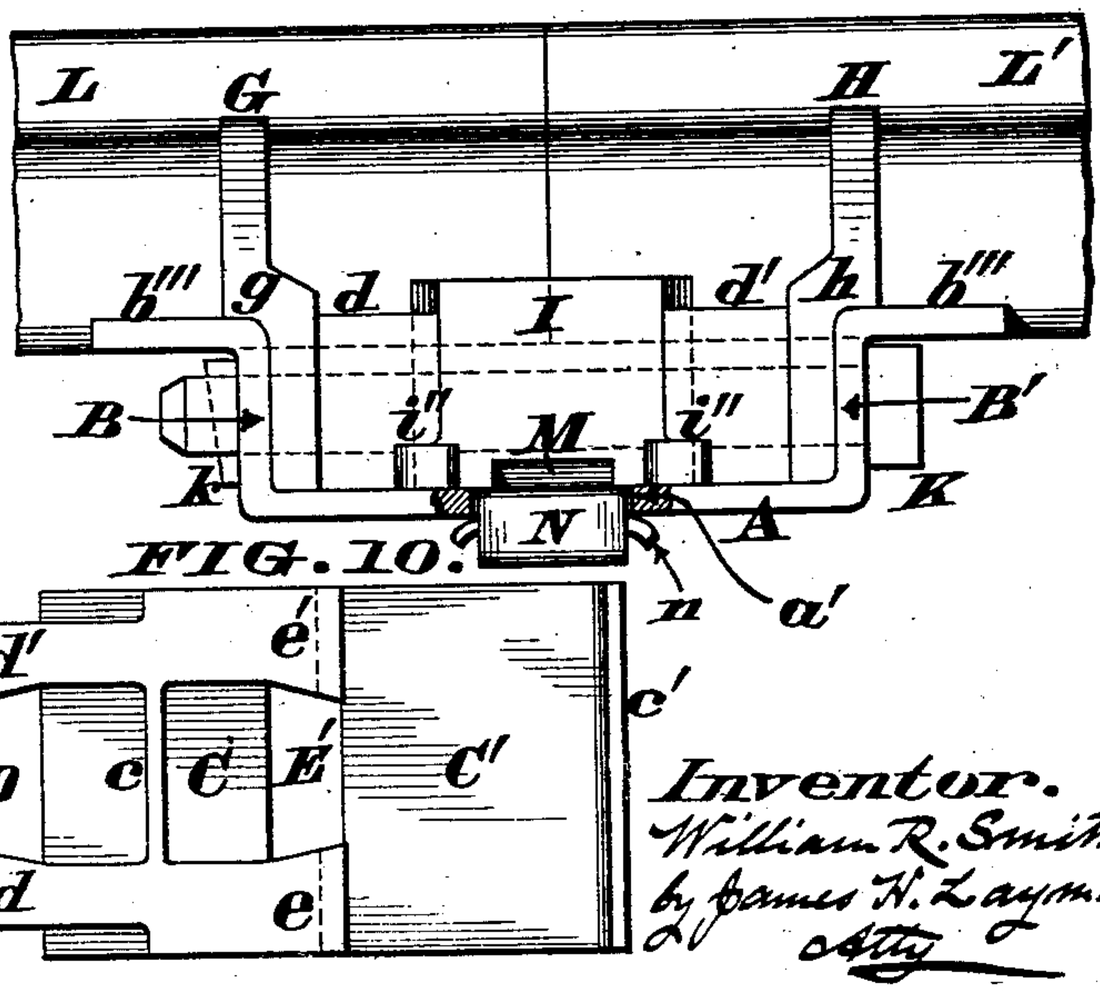

FIG. 10.

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UNITED STATES PATENT OFFICE.

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RAILWAY-TRACK.

SPECIFICATION forming part of Letters Patent No. 563,085, dated June 30, 1896.

Application filed January 13, 1896. Serial No. 575,271. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. SMITH, a citizen of the United States, residing at Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Railway-Tracks; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form a part of this specification.

This invention relates to those railways whose tracks are supported upon metallic cross-ties, and my improvement comprises a novel combination of chair, dovetail clamps, rail-head braces, and non-circular bolts, for securing the rails immovably to the ties, and without employing the customary complicated and expensive system of fish-plates, bolts, nuts, and spikes for this purpose; the details of construction being hereinafter more fully described, and then pointed out in the claims.

In the annexed drawings, Figure 1 is a perspective view of one end of the preferred form of cross-tie used in my present construction of railway-track. Fig. 2 is a perspective view of a chair and a pair of dovetail clamps adapted to be secured within said cross-tie. Figs. 3 and 3′ are perspective views of a pair of rail-head braces to be used in connection with said chair and clamps. Fig. 4 is a plan showing a chair fitted within a tie. Fig. 5 is another plan, but showing a pair of rails supported upon the chair and held in place by the clamps, a bolt passed through the inner clamp, the outer bolt and rail-head braces omitted, and the vertical webs of the rails sectioned. Fig. 6 is a side elevation of the complete arrangement of parts, the rail being sectioned. Figs. 7 and 8 are vertical sections of the complete structure taken, respectively, at the lines Y Y and Z Z in Fig. 5. Fig. 9 is an enlarged end elevation of the cross-tie and its attachments. Fig. 10 is a plan of the under side of a modified form of the chair.

The cross-tie, which is usually rolled to the desired shape, consists of a base-plate A of any suitable length, width, and thickness, and has at its sides vertical flanges B B′, whose upper edges are cut away at *b b′*, to afford a pair of rail-seats, the extreme end of said base-plate being, preferably, bent down at *a* to form an anchor that prevents longitudinal shifting of said tie. Furthermore, each side flange has a pair of square or other non-circular holes *b″*, for a purpose that will presently appear.

b‴ are horizontal flanges projecting outwardly from the vertical flanges B B′, and extending from the rail-seats *b b′* to the end of the tie.

The chair C is a flat plate, sufficiently long to fit snugly between the tie-flanges B B′, and having a central rib *c*, that rests upon the base of said tie, the sides of said chair being cut away, as more clearly seen in Fig. 4, to afford a pair of dovetail mortises D E, flanked by lugs *d d′ e e′*, having channels *d″ e″* in them.

The chair proper is just as wide as the rail-seats *b b′*, and its upper surface is on a level with said seats, but the lugs are carried up somewhat higher than said chair, so as to be flush with the top of the side flanges B B′. Again, the outer ends of the lugs *e e′* are flush with the ends of the chair, so as to bear directly against the inner sides of these flanges B B′, but the other lugs *d d′* are shorter than said lugs *e e′*. Consequently passages F F′ are formed between the outer ends of the lugs *d d′* and the inner sides of the tie-flanges B B′. (See Figs. 4 and 5.) Adapted to fit snugly within these passages are rail-head braces G H, having horizontal ledges *g h*, notches *g′ h′*, and non-circular perforations *g″ h″*.

I J are dovetail clamps capable of being engaged with the mortises D E, and having grooves *i j*, as more clearly seen in Fig. 2.

K K′ are square or other non-circular bolts or pins for the purpose of holding the chair, rail-head braces, and clamps securely within the cross-tie, one end of said bolts being provided with customary heads, while their opposite ends are furnished with keys or other convenient fasteners *k k′*.

L L′ are portions of two abutting rails, and the dotted lines *l*, in Fig. 5, indicate notches in the bases of said rails for the engagement of lugs *i′ j′*, projecting from the under side of the clamps, as represented in Fig. 8. *i‴* and *j‴* are guiding-lugs that confine these clamps to vertical paths while being inserted within their appropriate mortises.

M, in Fig. 9, is a notch in the bottom of clamp I to admit the point of a crowbar when-

ever it is desired to pry said clamp out of the cross-tie.

In assembling the various parts of my improved track, the chair C is first placed within the tie, in the manner seen in Fig. 4, the lugs *d d'* of said chair being in line with the outer ends of the rail-seats *b b'*, while the other lugs *e e'* are in line with the inner ends of said seats. The rails L L' are now applied to the tie and chair, care being taken to have the abutting ends of said rails meet at the center of said chair, as represented in Fig. 5. But no further care is required in laying the rails, because the length of the seats *b b'* and the clearance between the opposing lugs *d e* and *d' e'* is just sufficient to admit the rail-bases. Therefore, as soon as the rails are in position, the clamps I J are engaged with the side mortises D E of the chair, and the rail-head braces G H are inserted within the respective passages F F'. The channels *d'' d''* *e'' e''* of the chair, together with the grooves *i j* of the clamps and perforations *g h* of the rail-head braces, are now in line with the holes *b'' b'' b'' b''* of the tie-flanges, and the bolts K K' being driven through these holes, grooves, and channels, and the keys *k k'* applied to said bolts, the act of securing the rail in place is completed; but the smaller ends of said keys should be bent aside to prevent them working loose. Again, it is advisable to have the bottom of the grooves *i j* slightly above the lower edges of the holes *b'' b'' b'' b''*, in order that the forcible insertion of the bolts may pull the clamps I J down in a very powerful manner, and thus cause them to grasp the rail-bases so securely as to prevent any member of the attachment getting out of place. As the rail-bases now bear against the horizontal flanges *b''' b'''*, it is evident the lower portions of the rails cannot shift toward the end of the tie, neither can the heads of the rail incline outwardly, because said heads are supported by the heavy braces G H, and the latter bear directly upon the thick, vertical sides of said tie. (See Fig. 9.) Therefore it is impossible for the rails to "spread" or to work loose from the tie, no matter how heavy the traffic may be on the road. But if any member of the attachment should wear down by constant use the bolts K K' can be withdrawn, to enable the insertion of filling-pieces at suitable places, and then said bolts can be readily restored to their normal positions.

The above is a description of the most complete form of my railway-track; but it is evident the details of construction may be considerably varied, as, for example, by omitting the flanges *a* and *b''' b'''*. Again, the lugs *i' j'* and notches *l* may be omitted from all the attachments, except those employed near the abutting ends of two rails.

Fig. 10 shows a modified form of chair adapted to be used for supporting a switch-rail, the chair being extended laterally at C', and having a secondary, vertical flange *c'*. The function of the inner mortise is performed, in this chair, by a dovetail slot E', located where the extension-plate C' joins the chair proper, C.

The drawings show the attachments for one end of a tie alone; but those at the other end are merely duplicates of said devices and need no special description.

When the tracks are to be laid around a curve, the ties may gradually widen, from their inner to their outer ends, in which case the outer chairs would be correspondingly longer than the inner ones. Finally, Fig. 9 shows that the base-plate A may be slotted at *a'*, to admit a heavy lug N, projecting from the under side of clamp I, a rod *n* being passed through said lug to hold it in place. By this arrangement the lug will coact with the chair in preventing lateral shifting of said clamp.

I claim as my invention—

1. The combination, in a railway-track, of the metallic cross-tie A, having side flanges B B', provided with rail-seats *b*, *b'*, and a pair of non-circular holes *b''*, *b''*; a chair C, fitting between said flanges B, B', and having dovetail mortises D, E and channels *d''*, *e''*; grooved clamps I *i*, J *j*, engaging with said mortises, and non-circular fasteners K, K', traversing said holes, channels and grooves, in the manner described, and for the purpose stated.

2. The combination, in a railway-track, of the metallic cross-tie A, having side flanges B B', provided with rail-seats *b*, *b'*, and a pair of non-circular holes *b''*, *b''*; a chair C, fitting between said flanges B, B', and having dovetail mortises D, E, and channels *d''*, *e''*; grooved clamps I, J, engaging with said mortises; rail-head braces G, H, having horizontal ledges *g*, *h*, perforations *g''*, *h''*; and non-circular fasteners K, K', that traverse said holes, channels, grooves and perforations, in the manner described, and for the purpose stated.

3. As a new article of manufacture, the railway-chair C, having, at its sides, dovetail mortises D, E, flanked by lugs *d*, *d'*, *e*, *e'*, which lugs project above said chair, and are traversed by channels *d''*, *d''*, *e''*, *e''*, for the purpose described.

4. The clamps I dovetailed into the lugs *d*, *d'*, in the manner described, and having a lug N, passing through a slot *a'*, in the tie-base, and secured by a fastener *n*, for the purpose stated.

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

WILLIAM R. SMITH.

Witnesses:
JAMES H. LAYMAN,
LEO E. KUHLMAN.