(No Model.)

A. B. FITCH.

RAILWAY TIE.

No. 410,236. Patented Sept. 3, 1889.

Fig. 1.

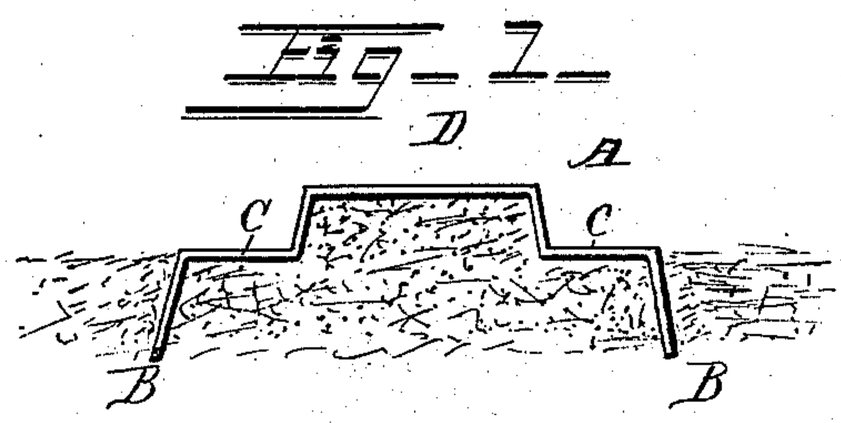


Fig. 2.

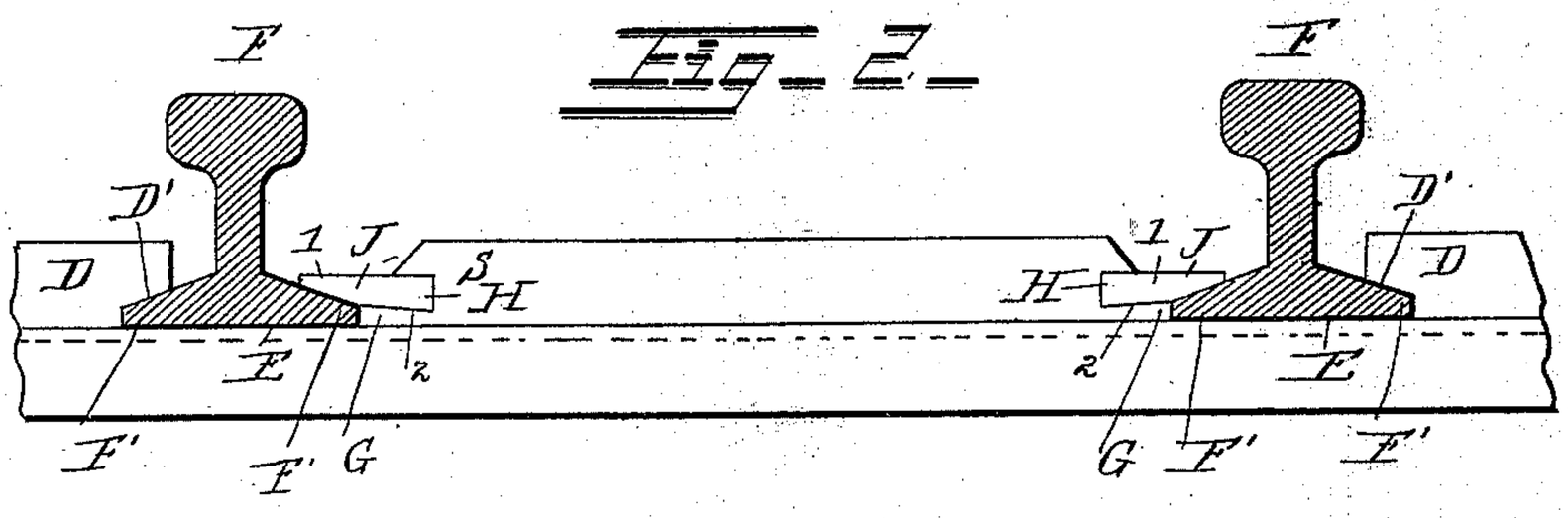


Fig. 3.

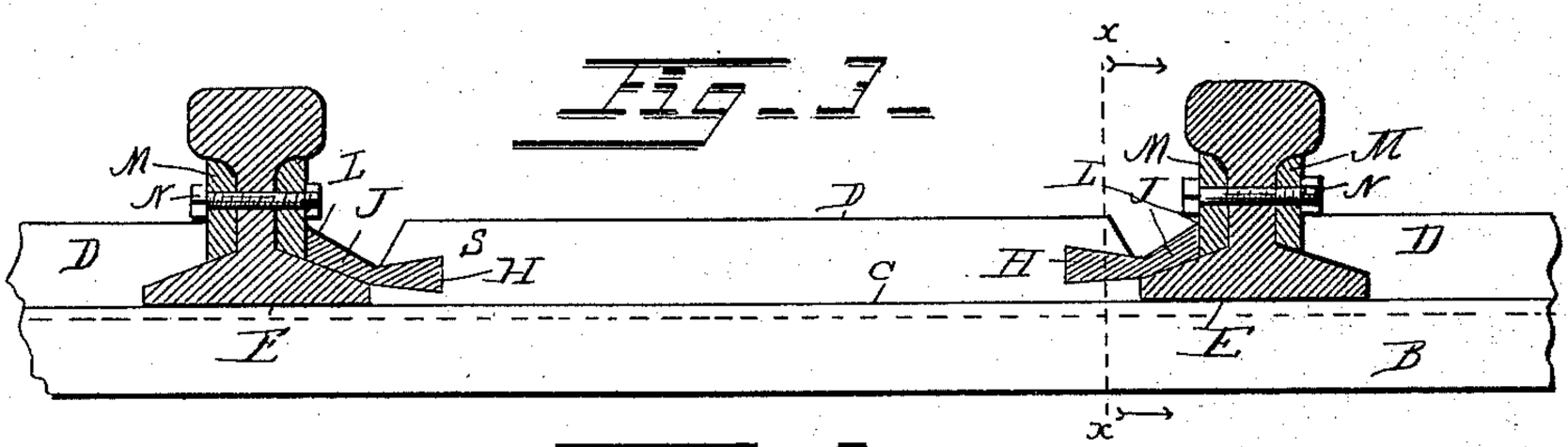
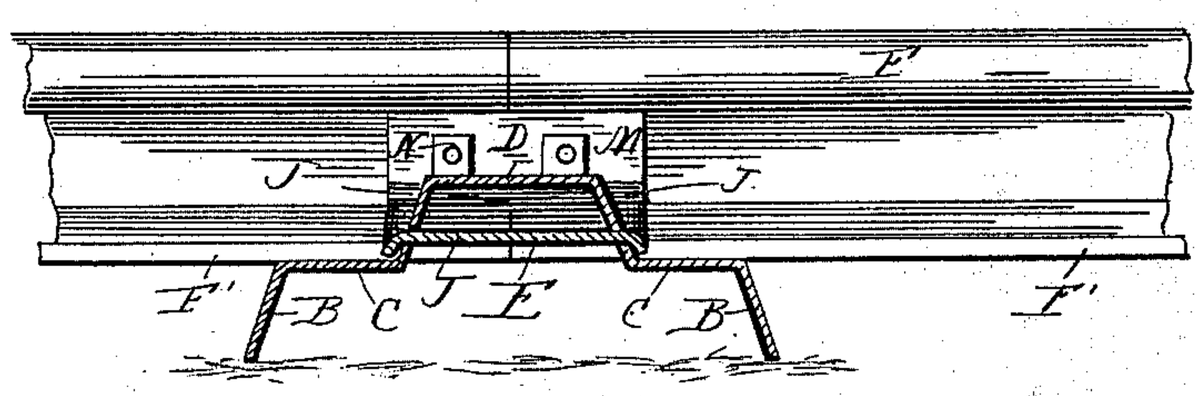


Fig. 4.



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RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 410,236, dated September 3, 1889.

Application filed February 4, 1889. Serial No. 298,573. (No model.)

To all whom it may concern:

Be it known that I, ALVAH B. FITCH, a citizen of the United States, residing at Franklin Grove, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in Railway-Ties; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in metallic railway-ties and means for attaching the rail thereto; and it consists more especially in a novel conformation of the tie, provided with an upward central projection, and recesses formed therein for the reception of the locking-keys.

The object of my invention is to provide a metallic tie which shall contain in itself, and integral therewith, means for securing the rail and the usual fish-plates, where the latter are necessary.

In the drawings, Figure 1 is an end elevation of the tie. Fig. 2 is a side view of the tie intermediate the end of the rails, with the rails F in cross-section, showing the mode of attaching the latter to said tie. Fig. 3 is a like view of the tie at the ends of the rails, with the rails F in cross-section, and exhibits the method of interposing and fastening the usual fish-plates. Fig. 4 is a section on the line *x x* in Fig. 3.

A is a metallic tie, preferably constructed of steel, and which can be either rolled or cast. The tie A consists of the lateral downwardly-extending and somewhat divergent flanges B, upon which are imposed the inwardly-extending horizontal rail-rests C. Upon the base-plates or rail-rests C is centrally formed the upwardly-projected end rail-cap D and central rail-cap S. An interval E, between the adjacent ends of the caps D and S, is provided, of sufficient width to receive the bottom of the rail F, which latter, when in position, rests upon the base-plates C. In the adjacent end of the outer cap D is formed a recess D′, for the reception of the adjacent flange F′ of the rail F. The inner or opposite cap S has an abrupt wall G at the lower portion of its outer end, against which the adjacent flange F′ of the rail F rests when the opposite flange F′ thereof has been inserted within the recess D′. In the sides of the inner cap S, and at the outer end thereof, are formed horizontal dovetailed recesses H, the lower walls of which are about on the same horizontal plane with the contiguous edge of the flange F′.

J is a locking plate or key adapted to be inserted endwise within the recess H and to extend laterally over the adjacent flange F′. The upper surface 1 of the key J is horizontal, while the lower surface 2 thereof is slightly beveled upward at its inner side to conform to the downward slope of the surface of the contiguous flange F′, Fig. 2.

The method just described of locking the rail F in place has reference to the ties intermediate the ends of the rail. At the ends of the rail the tie or ties are of the same conformation and furnished with the same recesses as heretofore described; but in order to provide for the interposition of the usual fish-plates a different form of locking-key is provided, as shown in Fig. 3. The end key J therefore has, in addition to the conformation before referred to of the intermediate keys J, an inner lateral shoulder or imposed flange L, between which and the vertical center of the rail F is interposed the usual fish-plates M, which shoulder L assists the key J in holding said fish-plate in position. The inner edge of the key J is dovetailed conformable to recess H, to prevent said key sliding upon the rail-flange F′. The keys should be of malleable steel or iron, and the inner lower corner thereof bent down nearly to the plate C when made. The inner lower corner of the other end of said key is bent in like manner after insertion, and the key thus held from casual removal. For withdrawal of the key one bent corner can be readily raised with a chisel or bar, and the key then driven out. Said fish-plates are attached in the usual mode to the rail F by transverse bolts through said fish-plates and the vertical center of said rail in the usual manner. The rigid seats furnished the fish-plates by the

outer cap D upon one side and the re-enforced key J upon the other practically convert the joint into a continuous rail when said plates are properly bolted. The key J can be driven after the bolt-nuts are seated, and will hold the latter from turning loose or off.

In the description aforesaid reference has been had to but one point of junction between the tie A and rail F; but it will be understood that the parallel rail F is seated in the same manner, and that the opposite end of the inner cap S is provided with the same conformation as that shown in the drawings and described herein. The recesses D′ and H being integral with the tie A, absolute security is thereby afforded against lateral displacement of the rails, and the recess D′ in itself preventing the spreading of the track new track can be laid rapidly and used for construction and other slow trains without keys or fish-plates.

The objection to a solid metallic tie, like that to a stone tie, consists in the fact that there is not sufficient resiliency, and in the use of said solid ties injury is inflicted upon the rolling-stock, for the reason that said ties yield in no degree to the necessary concussion incidental to the passage of trains. Again, in the use of solid ties, the supporting-point being absolutely unyielding, the tendency has been to allow the rail to bend slightly downward between the supporting-point thereof, thus producing unevenness in the crest of the rail.

In my invention the tie A, while sufficiently solid for all practical purposes, has, by reason of its hollow base, a slight elasticity or ability to yield in a vertical plane in response to the concussion aforesaid. It is intended that the vacancy in the under surface of the tie A shall be filled with dry gravel when the tie is placed in position, or said gravel will become dry from exposure, and as said tie protects said underlying gravel from moisture, such gravel base will remain dry and sufficiently compact to afford the necessary support for said tie and yet not become so indurated as to be entirely unelastic. The divergent character of the flanges B will gather and retain beneath said tie all of the filling and make the latter more permanent than when exposed to alternate moistening and drying and the shaking out of said filling by the jar of passing trains, as is the case with flat-bottomed ties.

The advantages of a metallic tie over a wooden one are well known to those familiar with the construction and operation of railways, and I believe that in my invention I have provided a metallic tie which in practical use will fully meet all the necessary requirements. When the ties A are in place, the interval between them will be filled with gravel or other suitable filling to about the plane of the base-plates C, in which condition the flanges B, being embedded in such filling, will serve to hold said tie from lateral oscillation or movement.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a railway-tie, the combination of the base-plates C, exterior cap D, provided with the recess D′, interior cap S, provided with recess H, and the key J, provided with the flange or ledge L, substantially as shown, and for the purpose described.

2. The combination of the downwardly-divergent flanges B, the horizontal base-plates C, exterior cap D, provided with recess D′, adapted to fit the outer rail-flange, interior cap S, provided with recess H, a suitable key J, provided with a level upper surface 1 and a lower beveled surface 2, and adapted to be received and held in said recess H, and rail F, provided with flanges F′, substantially as shown, and for the purpose described.

3. The combination of the tie A, provided with lateral flanges B, base-plates C, outer cap D, provided with recess D′, inner cap S, provided with recess H, rail F, provided with flanges F′, and key J, provided with flange L, substantially as shown, and for the purpose described.

4. The combination of the tie A, provided with the lateral flange B, base-plates C, outer cap D, provided with recess D′, inner cap S, provided with recess H, rail F, provided with lateral flanges F′, key J, provided with flange L, fish-plates M, and transverse bolts N, substantially as shown, and for the purpose described.

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

ALVAH B. FITCH.

Witnesses:
GEO. W. LIPE,
LOUIS TROTHROW.