(No Model.)

T. B. MOORE & J. G. HODGSON.

RAILROAD TIE AND FASTENING.

No. 484,036. Patented Oct. 11, 1892.

Fig. 1.

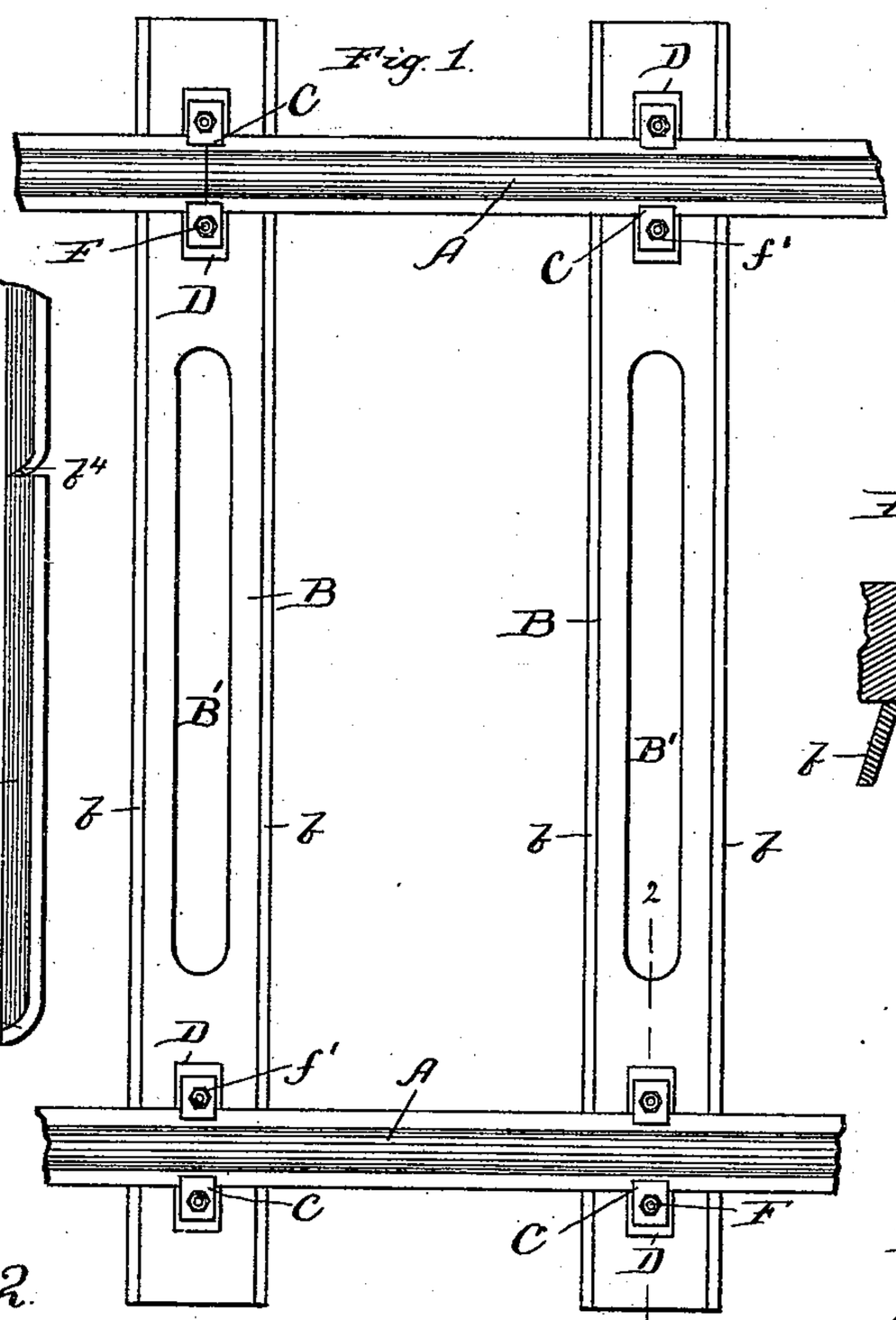


Fig. 3.

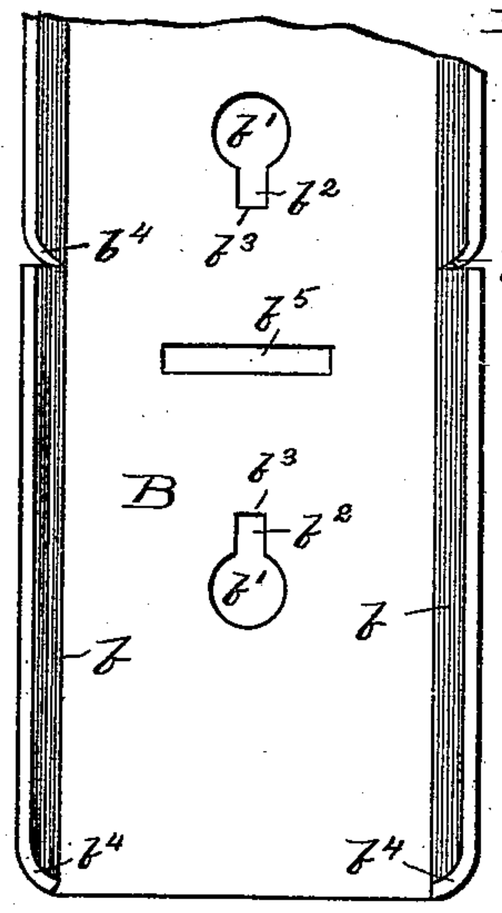


Fig. 8.

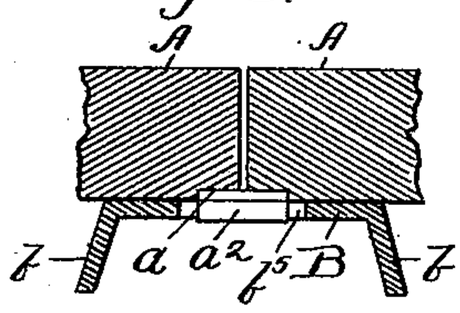


Fig. 2.

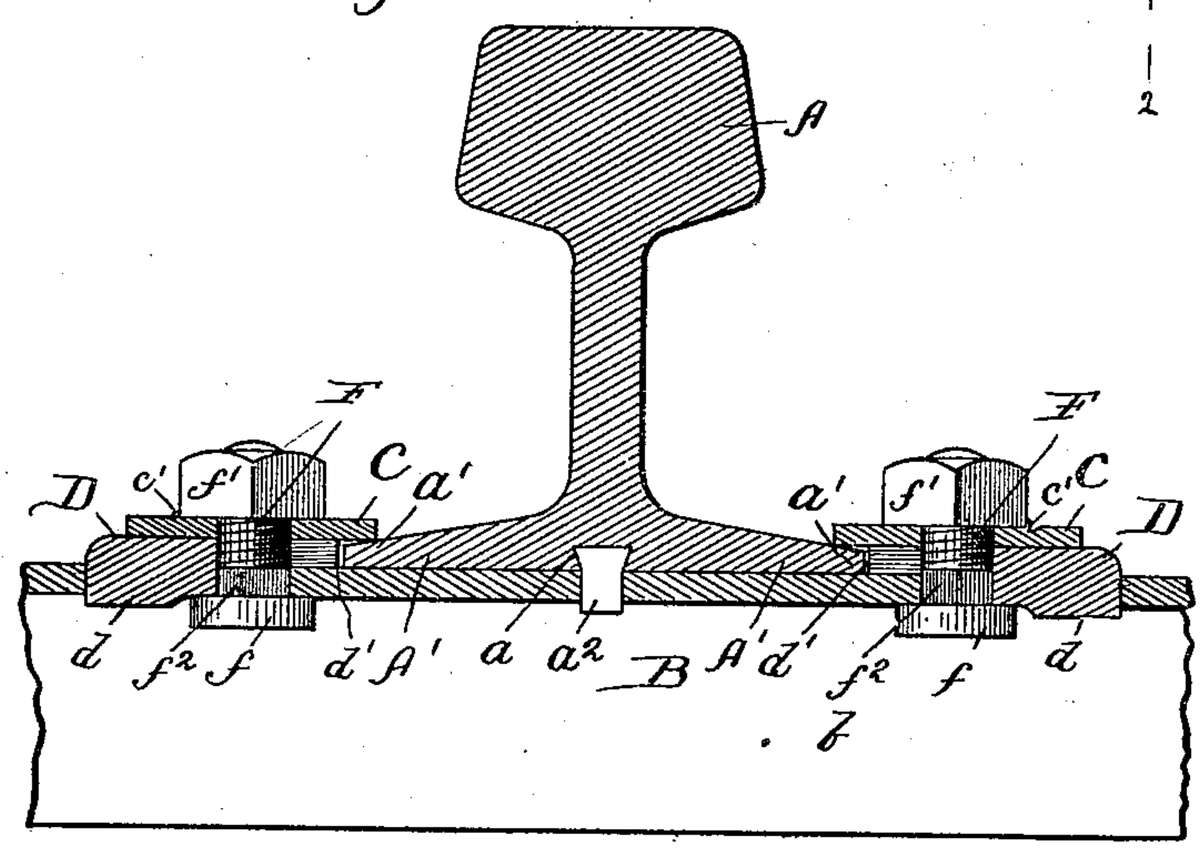


Fig. 4.

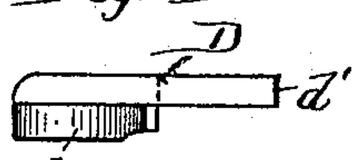


Fig. 5.

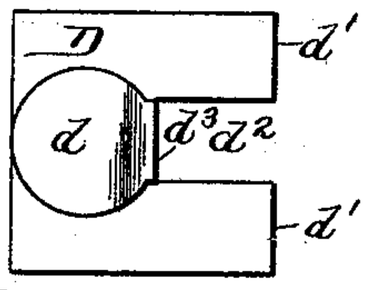


Fig. 6.

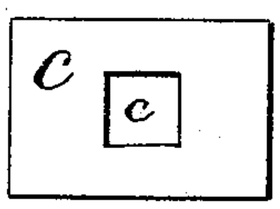
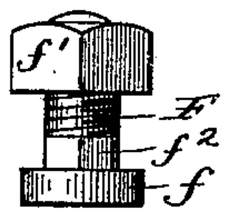


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS B. MOORE, OF PHILADELPHIA, PENNSYLVANIA, AND JOHN G. HODGSON, OF MAYWOOD, ILLINOIS.

RAILROAD-TIE AND FASTENING.

SPECIFICATION forming part of Letters Patent No. 484,036, dated October 11, 1892.

Application filed February 26, 1891. Serial No. 382,900. (No model.)

To all whom it may concern:

Be it known that we, THOMAS B. MOORE, of Philadelphia, Philadelphia county, Pennsylvania, and JOHN G. HODGSON, of Maywood, Cook county, Illinois, citizens of the United States, have invented a new and useful Improvement in Railroad-Ties and Fastenings, of which the following is a specification.

Our invention relates to railroad-ties and fastenings for securing the rails in place on the ties, and more particularly to improvements upon the railroad-tie and fastenings heretofore patented to said Thomas B. Moore in Letters Patent of the United States No. 375,763, dated January 3, 1888.

The object of our improvement is to provide a fastening or device of a simple, strong, and durable construction by which the rails may be securely and rigidly fixed to the tie, so that they cannot move or spread, and whereby at the same time the rails may move longitudinally on the tie to compensate for expansion and contraction without danger of loosening or injuring the fastening device.

Our invention consists in the novel devices and novel combinations of parts and devices herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout all the views, Figure 1 is a plan view of a device embodying our invention. Fig. 2 is an enlarged cross-section on line 2 2 of Fig. 1. Fig. 3 is an enlarged detail plan view of the tie. Fig. 4 is a detail side elevation; and Fig. 5 a detail bottom view of the check-plate, the front square end of which abuts against the edge of the rail and serves to hold the rail rigidly in place from lateral movement. Fig. 6 is a detail plan view of the clamp-plate, which fits flat upon the check-plate or pedestal shown in Figs. 4 and 5, and which serves, in connection with the clamp-bolt, to hold the check-plate or pedestal in place and to hold the rail down in place on the tie. Fig. 7 is a detail view of the bolt. Fig. 8 is a vertical sectional view at the junction of two rails.

In the drawings, A A represent the railway-rails, and B the metal tie. The tie B is made or preferably made in the form of a channel-bar with its sides or flanges *b* slightly inclined outward. The channel-bar tie B may be made of rolled steel, and is preferably provided with an opening B′, through which the ballast may be tamped under the tie and between the side flanges *b*. This opening B′ also serves to lighten the tie, and the metal cut out may also be used for forming the clamp-plates C, which should also be made of steel.

D is the check-plate or pedestal, and F is the clamp-bolt, having a head *f*, preferably round, and a screw-threaded nut *f′*

The tie B is provided with openings *b′*, one on each side of each rail A, through which the head *f* of the bolt F may be inserted. The tie B is further provided with a non-circular slot b^2 to receive the non-circular portion f^2 of the bolt F to prevent the bolt from turning in the tie. The non-circular portion f^2 of the bolt F is preferably square, and the slot b^2 fits the same and corresponds thereto in shape. The slot b^2 communicates with the opening *b′*, through which the head *f* of the bolt is inserted, so that after the bolt is thus inserted head first through the tie it may be slipped toward the rail A into the slot b^2.

The check-plate or pedestal D is provided with a lug or projection *d* on its under side or bottom which corresponds in size and shape to the opening *b′* in the tie B. The lug or projection *d* fits in the opening *b′* in the tie, thus serving to close the opening, and at the same time the check plate is given a large and firm bearing in and upon the tie, so that there can be no danger of breakage. The check-plate is further provided with a square end *d′*, which abuts square against the edge *a′* of the rail-flange, so that the rail is thus held securely in place against lateral displacement. The check-plate D is further provided with a slot or opening d^2, through which the bolt F passes. The depth of this slot or opening d^2 should be such in respect to the slot b^2 in the tie B that the back wall or edge d^3 of the slot d^2 will press the square portion f^2 of the bolt F snugly against the back wall or edge b^3 of the slot b^2 in the tie B when the check-plate D is inserted in place in the tie,

so that the bolt F will be held snugly in place and can have no lateral movement in the slot b^2 or opening b'. This effectually prevents the natural jars and vibrations of the rail A when in use from causing any tendency to loosen or displace the clamp-plate C or the bolt. The clamp-plate C is furnished with a hole or opening c, through which the bolt F passes. This hole c may be round or square, but of whatever shape it should in size fit the bolt, so that the clamp-plate may have no motion in respect to the bolt.

The check-plate or pedestal D is or should be made slightly thicker than the portion of the rail-flange a', upon which the clamp-plate C fits, so that the threaded bolt F will not clamp the plate C too firmly against the rail-flange, or so firmly as to prevent the necessary longitudinal movement of the rail in respect to the tie under the contracting and expanding effects of changes in temperature.

As the check-plate D is by our invention in use subjected to no bending or breaking strains, but simply to crushing strains, it may be made of cast metal, which is a matter of great importance in respect to cheapness of manufacture in producing the check-plate with the necessary lug or projection d, which fits in the opening b' in the tie.

The clamp-plate C, which must necessarily be adapted to withstand bending or breaking strains in order to hold the rail firmly in place, is simply a plain plate which may be very cheaply made of steel. To lock the nut f' from turning, a spur or tooth c' may be thrown up with a suitable tool on the surface of the clamp-plate C after the nut is screwed on.

To prevent any tendency of the tie B from moving longitudinally on the ballast bed of the road, we provide the tie B with internal or external lips or projections b^4. These lips may be preferably formed or cut and formed out of the body of the channel-bar. The most convenient way is simply to turn the corners of the flanges b inward, as indicated in the drawings. They may, however, be turned outward, and similar lips may be formed either in the top or sides of the bar along its length, as indicated in the drawings.

In operation, the ties and rails being in place, the bolt F is inserted head first through the opening b' in the tie. Then the bolt is slipped along into place in the slot or opening b^2, the head of the bolt thus getting a firm bearing on the under face of the tie. The check-plate or pedestal D is then put in place, the clamp-plate C applied, and the nut f' finally screwed on and locked against unscrewing by forming the locking projection or tooth c' in the face of the plate C.

By making the fastening device C D or instrumentality which holds the rails in place on the tie in two separate pieces we are enabled to produce that portion which is subjected to the crushing strain of cast metal and the part which is subjected to a bending or breaking strain of steel or wrought metal, and thus materially cheapen the cost of manufacture, while at the same time the strength, durability, and efficiency of the device are increased as a whole and provision also made for the longitudinal movement of the rail on the tie to accommodate expansion and contraction or when necessary for other purposes.

The rails A A, it will be observed, are held rigidly in place on the ties, so that they cannot move laterally or spread apart by the entire crushing strength of the check-plate or pedestals D, as one end of each of the plates D abuts directly against the rail, while its other end abuts directly against the tie B at the back edge or wall of the opening or recess b' therein. The thickened end or projection d of the check-plate D, which projects through and abuts against the tie B, is clearly shown in Fig. 2. As an additional security against lateral displacement of the rail and to give greater strength to the fastening, especially where the track is laid on curves and where the rails are subjected to great lateral strain, we provide the rails A with one or more pins a^2, preferably of steel or wrought-iron, driven securely into suitable holes or recesses a, formed in the bottom of the rail, and which lugs or pins fit in corresponding slots b^5 in the ties B. The slot b^5, extending transversely across the tie, should be made long enough to permit of the necessary longitudinal movement of the rail in contracting or expanding. The pins or lugs a^2 may be secured at intervals along the length of the rail, one or more in each rail. The rail A is further provided at its ends with a similar key or pin a^2, which fits in the slot b^5 in the tie, and thus serves to secure the abutting ends of the rails together and in part answer the function of a fish-plate. The keys a^2 may be fitted in dovetail slots a, cut in the end of the rail, as indicated in the drawings. It gives additional strength to employ a single key a^2 wide or long enough to fit in the ends of both rails, though separate keys may of course be employed.

We claim—

1. The combination, with tie B, having opening b' and slot b^2 communicating therewith, of rail A, check-plate D, fitting on said tie, slightly thicker than the extreme flange of the rail, clamp-plate C and bolt F, having head f, adapted to pass through said opening b' and engage said tie around said slot b^2, one end of said check-plate abutting against the flange of the rail and its other end abutting against the tie at said opening or recess therein, said check-plate being made slightly thicker than the extreme flange of the rail to admit of the longitudinal movement of the rail on the tie due to expansion and contraction, said check-plate D having a slot or opening d^2 for said bolt to pass through and said bolt being fixed in position by the surrounding walls of said slot b^2 in the tie, and said

slot d^2 in the check-plate, and said clamp-plate C being fixed in position by said bolt, substantially as specified.

2. The combination, with metallic tie B, having opening b' and slot b^2 communicating therewith, one on each side of the rail, of check-plate D, having lug or projection d fitting in said opening b' and abutting at its other end against the flange of the rail and provided with a slot or opening d^2, having edge or wall d^3, adapted to fit against the clamping-bolt, clamp-plate C and clamping-bolt F, having a head f, adapted to pass through said opening b', but not through said slot b^2, furnished with a non-circular or square portion f, fitting in said slots b^2 and d^2 in the tie and check-plate, respectively, and embraced between the opposite back walls of said slots and thus fixed in position, substantially as specified.

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