

No. 620,715.

Patented Mar. 7, 1899.

P. MINICH.
CONNECTOR FOR ELECTRICAL CONDUCTORS.

(Application filed Dec. 5, 1898.)

(No Model.)

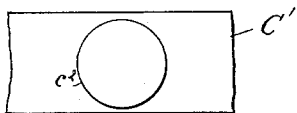
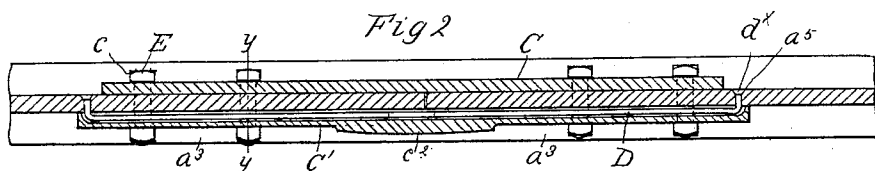
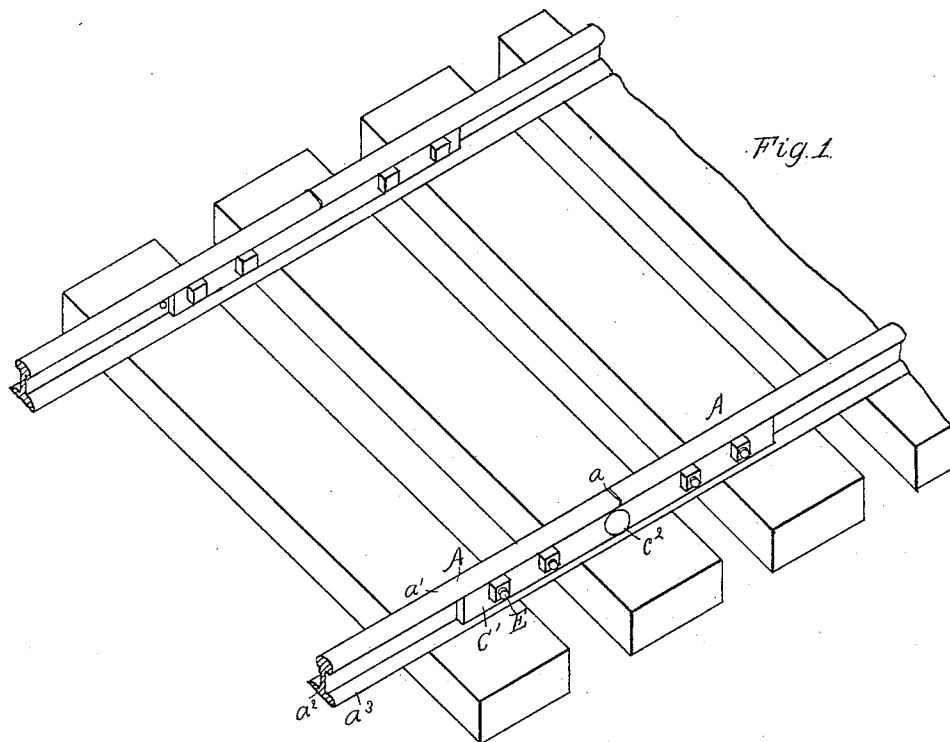


Fig. 5.

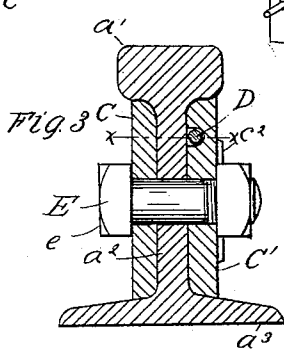


Fig. 3.

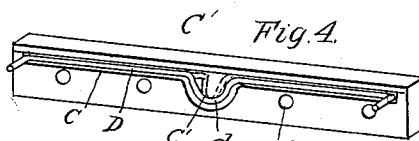


Fig. 4.

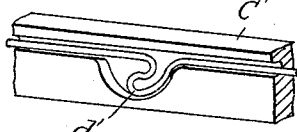


Fig. 6.

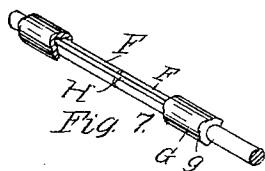


Fig. 7.

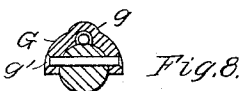


Fig. 8.

Witnesses

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CONNECTOR FOR ELECTRICAL CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 620,715, dated March 7, 1899.

Application filed December 5, 1898. Serial No: 698,289. (No model.)

To all whom it may concern:

Be it known that I, PETER MINICH, a citizen of the United States, residing at Independence, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Connectors for Electrical Conductors; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention is designed to connect electrically the separate meeting ends of conductors of electricity and particularly the track-rails employed as conductors in electric railways, to prevent accidental or unauthorized displacement of the connector, and, second, to accommodate the connector to the alternate contraction and expansion of the conductors.

The invention consists in the novel construction and combination of parts, such as will be first fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of broken portions of the track-rails of a railway-track at the junction of separate rails, shown connected with the cross-ties, also showing the fish-plates and the improved connector. Fig. 2 is a horizontal sectional view of one of the track-rails, taken upon the line xx of Fig. 3, showing the fish-plates and recesses and the upward connector. Fig. 3 is a vertical sectional view of the track-rail, taken upon the line yy of Fig. 2. Fig. 4 is a detail view of the inner side of one of the fish-plates, showing the recess and groove and the connector therein. Fig. 5 is a detail broken portion of the fish-plate, showing the projection on the outer side of the plate at the junction of the rails. Fig. 6 is a detail broken view of the fish-plate, showing the recess in the inner side and a part of the connector in a folded position in the recess. Figs. 7 and 8 are perspective and cross-sectional views, respectively, of the meeting ends of conducting-rods, showing my invention in a modified form.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings, A A represent separate T-rails upon one side of the track, arranged endwise in position and secured to cross-ties B, and a the junction or meeting-point of said rails.

a' represents the upper flange or tread of the rail, a^2 the body of the rail, and a^3 the lower flanges or base.

C represents the fish-plate on the inner side of the body a^2 of the separate rails A A, and C' the fish-plate on the outer side of said body, the ends of which plate C' extend a short distance beyond the lines of the ends of plate C. The thickness of plate C' exceeds that of plate C, and in the inner side portion of said plate C', a short distance below the line of the upper edge, is a groove c , extending the length of said plate. In the central portions of said plate C', opposite the junction a of the rails A A and extending from the lines of the groove c downwardly in the direction of the lower edge of plate C', is a recess or depression c' , the sides of which describe opposite curved lines, and upon the outer side of said plate is a corresponding extension c^2 , which strengthens the part of the fish-plate which is made weak by the recess. Beneath the groove c are the openings c^3 for the clamping-bolts.

In the groove c is placed the connector D, which consists of a copper wire of suitable size and length, the central portion of which wire is bent downwardly in a single curved line, and a loop d , formed in said wire and extended within the recess c , and the opposite ends of said wire extended in opposite directions and inserted in the groove c . The plate C, containing the connector or wire D, is placed in position against the outer side of the body a^2 of the separate rails A A and one end of the wire inserted within the opening a^3 , which is made in the body a^3 of one rail A, opposite one extreme end portion of the plate C', and which end of said wire extends a short distance beyond the surface of the inner side of said body a^2 and is upset or flattened, as at d^x . The other end of the wire D extends through an opening a^5 in the body a^2 of the other rail A and opposite the extreme end of the plate C' and the end flattened in the same manner. The fish-plate C, which is

shorter in length than plate C', is placed against the inner side of the body a^2 of the rails A A and the clamping-bolts E extended through the openings c^3 in plate C' and also through openings registering therewith in the body a^2 of rails A and the fish-plate C and nuts e , fitted to said bolts, clamping the fish-plates to the separate rails in the usual manner.

10 The current of electricity, passing from one rail A to the other rail A in line therewith, which in electric railways are employed as return-conductors, passes through the connector D, the bent or extensible portion d of which
15 in recess c' is placed therein, when the meeting ends of the rails A A are in contact and arranged in position with the opposing sides of the loop d drawn toward and near each other from the sides of the recess c' , as seen in dotted lines in Fig. 4, and when contraction of the
20 rails occurs from cold the sides of the loop are drawn in the direction of the sides of the recess c' , the obvious expansion of the rails A A closing the joint of the rails and the sides of the loop being consequently moved toward each other, thus providing for an unbroken extensible conductor of the current, the length of the loop d being sufficient to allow for the
25 variable width between the ends of the rails occasioned by contraction thereof. Instead of the loop d the central portion of the wire may be arranged in folds, as at d' in Fig. 6, and placed in the recess c' in plate C' to accommodate an excess in the length of the connector when the contraction of the rails is
30 liable to be greater than usual, the sides of the recess facilitating the unfolding of the folded parts of the conductor.

In Figs. 7 and 8 the connector is shown applied to separate conducting-rods, the degree of contraction in which is very slight, but sufficient, however, to break or interrupt the continuity of the current and weaken their utility as conductors of electricity. In this
45 modification F F represent the separate rods, which are held in position by a semicircular plate G, which plate is provided with a groove g on its inner side portion, in which groove the connector H, which consists of a straight
50 piece of wire, is inserted, the ends of the wire being inserted in openings in each rod F F and secured in the same manner as described in the connection of the wire connector D with the track-rails in Fig. 1. The plate G
55 is secured to each rod by bolts g' passing through the sides of plate G and rod at right angles to the line of the groove g . The re-

cess, as in Fig. 1, may be employed in the modification when desired.

The invention as applied to track-rails in particular is a safeguard from unlawful removal of the connector and consequent stoppage of the electric cars, it being observed that the fish-plate must be removed in order to reach the connector. The grooved plate C' prevents corrosion of the connector, and especially in underground circuits. The connector D is applied to the track-rails upon the other side of the railway-track in like manner as shown and described upon the one side of the track.

Having fully described my invention, what I now claim as new, and desire to secure by Letters Patent, is—

1. In a railway the combination with separate endwise-meeting track-rails, of fish-plates upon both sides and secured to the body of said rails, unequal in length, one of said fish-plates having a longitudinal groove and a recess at the junction of said rails, an electrical connecting-wire connected at the sides with the respective rails at each end of the fish-plate having said groove and having an intermediate loop in the said recess of said fish-plate.

2. In a railway, the combination with separate endwise-meeting track-rails, having a suitable transverse opening in each rail, of fish-plates unequal in length upon opposite sides of and secured to the body of said rails, one of said fish-plates having a longitudinal groove and a recess communicating with and below the line of said groove, and opposite in position to the junction of said track-rails, and an electrical connecting-wire in the said groove, having a looped portion within said recess in said plate, and the ends of said wire in the respective transverse openings in said track-rails.

3. As a new article of manufacture a fish-plate for track-rails having a longitudinal groove therein, and a recess communicating with said groove and having its sides extending below the line of said groove in oppositely-curved lines adapted to facilitate the unfolding of an extensible folding conductor of electricity and an extension upon the opposite side of the fish-plate to that having said recess.

PETER MINICH.

Witnesses:

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JOHN T. MARSHALL.