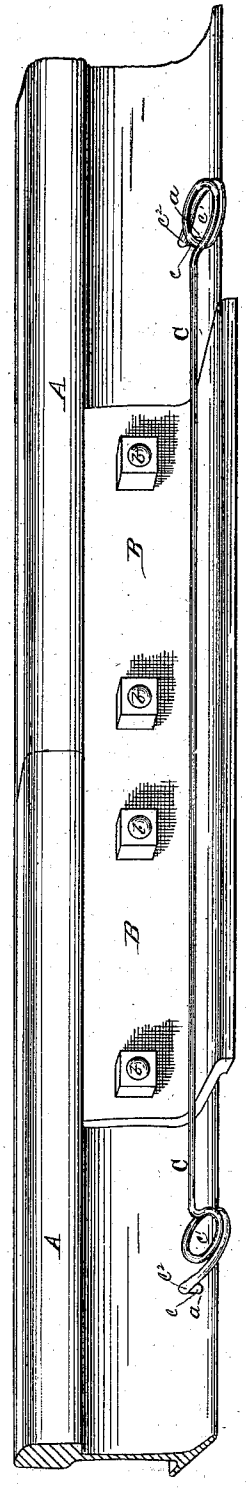
(No Model.)

G. WESTINGHOUSE, Jr.

TRACK CIRCUIT CONNECTOR.

No. 282,250. Patented July 31, 1883.



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TRACK-CIRCUIT CONNECTOR.

SPECIFICATION forming part of Letters Patent No. 282,250, dated July 31, 1883.

Application filed May 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, Jr., a citizen of the United States, residing at Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Track-Circuit Connectors; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, which illustrates by a perspective view my improved circuit-connector applied as in use to make electrical connection between two consecutive rails of a track.

My present invention relates to that class of connectors in which contact is secured by driving pins or equivalent pieces of metal into suitable holes drilled in the rails; and, in general terms, it consists of a continuous or unbroken rod or wire bent near its ends, forming shoulders for driving the ends into holes in the rails, and also being coiled or bent near each such end or shoulder for the purpose of relieving the ends from the effects of vibratory or other movements, and for maintaining the intermediate part of the rod in a given position with relation to the rails, as hereinafter more fully described and claimed.

In another application filed even date herewith I have described and claimed a connecting rod or wire adapted more especially for application to the outside of the track and for connecting the rails near their ends. My present invention is designed for application either to the inside or outside of the track, and the connecting-rod is disposed or arranged with reference to protection from injury by persons working on the track.

In the drawing, A A represent portions of two consecutive rails of a track united by splice-bar B and bolts *b b*. In making electrical connection between such rails I make use of a continuous or unbroken rod or wire, C, of iron, steel, or other suitable metal, which is bent at or near each end nearly at right angles, forming shoulders c^2 c^2, by which the ends *c* may be driven into suitable holes, *a a*, made in the rails. Also, close to each shoulder c^2 the rod or wire is bent or coiled with one or more folds or convolutions, as at *c′ c′*, the purpose of which is to provide for separation and contaction between rails; also, for neutralizing the effect upon the ends *c* of the various vibratory and other movements to which both the rails and the connector are subjected, and also for holding the part of the connector between coils in given position with relation to the rails without slack in such part.

Heretofore in this class of rail-circuit connectors it has been customary to drive pins into suitable holes in the rails, which pins were connected electrically by a wire wound at its ends tightly around and soldered to the pins. Such a connection is good, and answers the purpose intended so long as it remains intact; but various causes are found to be active in use tending to injure or destroy its efficiency. For example, it is difficult in manufacturing on a large scale to remove all trace of acid employed in soldering the wire to the pins, and any which may remain is active in producing corrosion, usually at and near the point where the wire leaves the pins. The wire is thus weakened and injured; also, the wires are subjected in use to more or less vibratory movement, which acts directly upon the points of connection with the pins, producing a marked tendency to crystallization. This also weakens the wire, and is the occasion of frequent breakage; also, the vibrations of the wires and the movements of the rails, acting upon the pins, tend to loosen them in their holes, and thus impair or destroy the requisite character of contact to insure free passage of electric current. These and other like objections or difficulties, characteristic of connectors as heretofore made, are effectually prevented or overcome by my present improvement. For example, the ends *c c* are integral parts of the entire connecting-rod; consequently there are no solder joints to be made, and no injury resulting from the use of acid; also, torsional action due to vibratory movement of the rod will be neutralized by or expended upon the coils *c′ c′*, and will not be transmitted to the ends *c c* to such extent or in such manner as to loosen the latter in their holes; also, by making these coils near each end, where the rods or wires are supported, tendency to crystallization is prevented, the force of the

vibrations being distributed through the coils, instead of being sustained at points of fixed connection; also, provision is made for increasing and reducing the length of the connector as the rails approach or separate under thermal action and under the endwise travel to which they are subjected in use. This is secured by the yielding or spring action of the coils c' c', opening or uncoiling under longitudinal strain, and contracting or recoiling as such strain is reduced. Heretofore provision has been made for endwise movement of the rails by leaving some slack in the connecting-wire to be taken up as required; but slack wires are objectionable, because they necessarily or frequently take positions on or beside the rails, where they are exposed to injury by workmen, and are liable to be broken. In the present invention this source of trouble is obviated, because the rod or connector is kept taut by the coils, and may be placed and held in a position of comparative safety, practically out of the way of spikes, hammers, wrenches, &c. The preferred position for this purpose is illustrated in the drawing—namely, along the upper face of the rail-foot, within the line of spike-heads on one side and away from the face of the splice-bar on the other side.

I do not claim herein, broadly, a connecting-wire coiled or bent at some point in its length to afford spring action, nor a connecting-rod having bent ends integral with the intermediate portion, the same forming part of the separate application above referred to. The present invention has reference more particularly to features of improvement which adapt such a connector to special conditions of use, and by which better protection is secured from dangers to which such connectors are necessarily exposed.

In preparing the ends c for insertion in the holes they may be scaled and galvanized or otherwise fitted to make and preserve good metallic contact with the rails without oxidation; also, the holes a, which receive such ends, may be made in any desired part of the rails, either the head, web, or foot, either on the inner or outer side. I prefer the position shown, however, for the reasons above stated.

I claim herein as my invention—

1. An electric circuit-connector for rail-joints, consisting of metal rod or wire bent near its two ends, forming angles or shoulders for driving, and coiled or folded inside of and near both such shoulders, substantially as and for the purposes set forth.

2. The electric connecting-rod C for rail-joints, the same having in combination spring-coils c' c' near each end, and having its ends c c bent at or near right angles to the plane of the coils, substantially as set forth.

3. The rails A A, having holes a a therein, in combination with electric connecting-rod C, having bent ends c, with angles c^2 c^2, for driving the ends c into the holes a, and having two coils, c' c', in the intermediate part, one coil near each angle c^2, substantially as set forth.

4. The combination of rails A A, splice-bar B, bolts b, and connector C, the latter having two coils, c' c', therein, one near either bent end c, and having the connecting portion between coils in line between the bolt-nuts and the outer edge of the rail-joint, substantially as set forth.

In testimony whereof I have hereunto set my hand.

GEO. WESTINGHOUSE, JR.

Witnesses:
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