

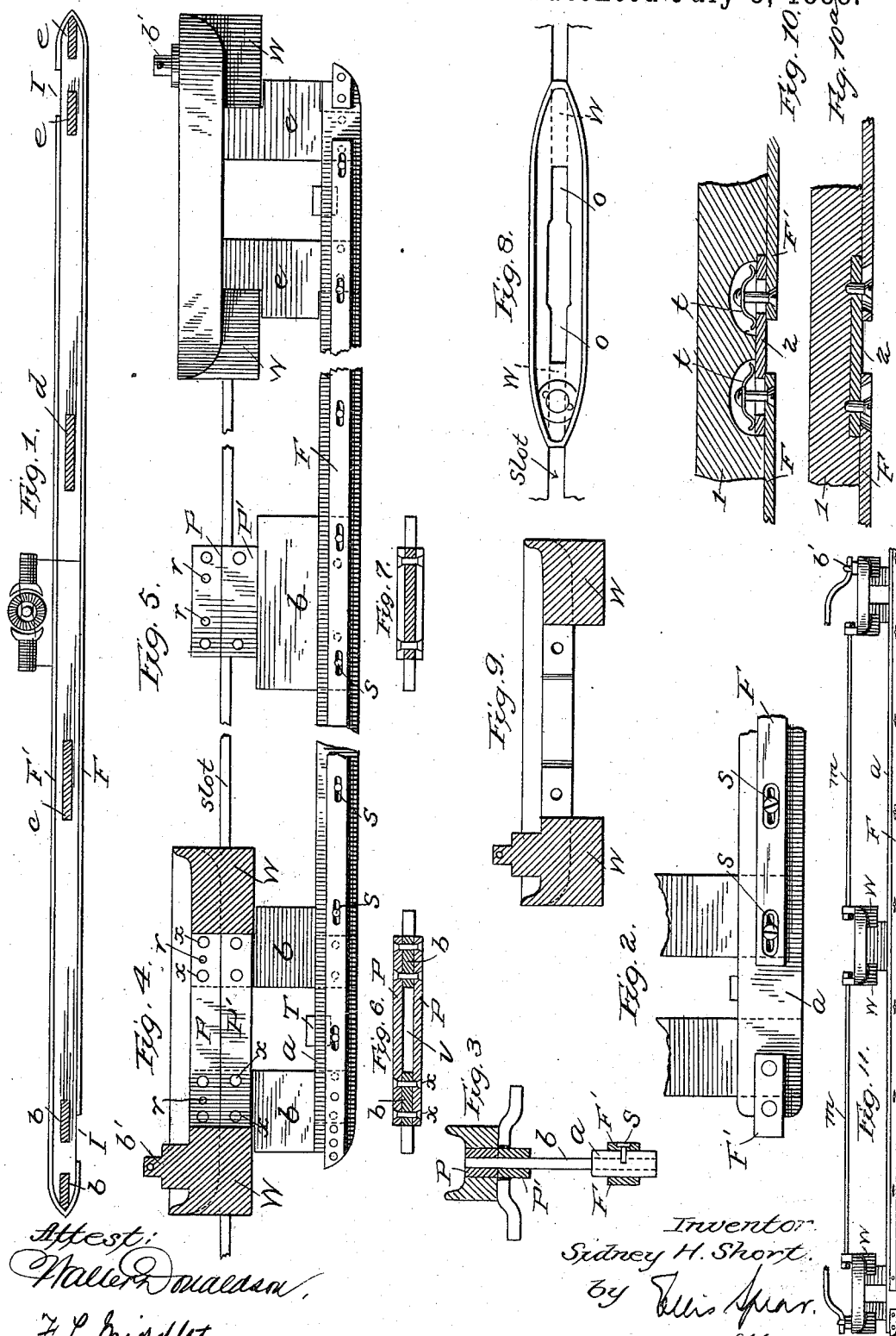
(No Model.)

S. H. SHORT.

CURRENT COLLECTOR FOR SERIES ELECTRIC RAILWAYS.

No. 385,379.

Patented July 3, 1888.



Attest:
Hall & Madsen,
J. L. Middleton.

Inventor
Sydney H. Short.
by *Wm. Spear,*
Atty.

UNITED STATES PATENT OFFICE.

SIDNEY HOWE SHORT, OF DENVER, COLORADO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE UNITED STATES ELECTRIC COMPANY, OF SAME PLACE.

CURRENT-COLLECTOR FOR SERIES ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 385,379, dated July 3, 1888.

Application filed February 19, 1887. Serial No. 228,224. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY HOWE SHORT, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful
5 Improvement in Current Collectors for Series Electrical Railways; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of this invention is to give the
10 details of construction of an improved current-collector, the principle of which is claimed and described in the United States Letters Patent No. 348,477.

The object, further, is to show one method
15 for supporting the collector in the conduit of an electrical-railway track by means of sliding shoes, which slip along on the edge of the slot-iron.

In the accompanying drawings, Figure 1
20 represents the current-collector or "arrow" in top view, with the motor connected with the strips. Fig. 2 shows on a large scale and in side elevation a part of the collector. Fig. 3 shows the collector in cross-section. Figs.
25 4, 5, 6, and 7 show details of insulating-supports for the current-collector. Figs. 8 and 9 show, respectively, a plan and section of the shoes. Fig. 10 shows a section of part of the collector illustrating the strip-joints. Fig. 10^a
30 shows an equivalent section. Fig. 11 shows the attachments for the pushers.

Referring to the drawings, Fig. 1 shows the current-collector or arrow as a long slender laterally-flexible bar of wood, or other non-
35 conducting material, having fastened on its edges or sides long strips of metal F F', to serve as conductors. Two breaks in these metal strips occur at I and I, where the insulating-bar is left unprotected. These strips of metal
40 may be fastened to the insulating-bar in any manner of slip-connections which will allow the strips to slip or move on the bar and the completed bar to bend around curves without making the metal strips buckle. For this purpose
45 screws may pass through slots in the metal strips, as shown at S S S, in Figs. 2 and 5. These allow the strips on both sides to move on the wood, as the strips are free at one end; or, for the same result, the strips of metal may

be cut up into short lengths and provided with
50 slip-joints, such as are shown in Fig. 10. In this figure, 1 is represented as a portion of the insulating-bar, and 2 is a piece of conducting metal set into the bar. This piece of metal is provided with two slotted holes, allowing the
55 bolts S S to pass through it. These bolts are attached to the ends of the sections of one of the metal strips F or F' of the collector, and by means of the springs t t they are held in good electrical contact with the metal block 2
60 and the movement of the ends of these sections F F' secured. Fig. 10^a represents an equivalent form in which the slots are in the strips F or F'.

Four supports for the bar or arrow are
shown in section in Fig. 1, at b, c, d, and e, 65 Figs. 2 and 5 showing their form in side elevation. These supports are made of some good insulator—such as vulcanized-wood fiber or rubber—of the required shape and strength to
70 pass up through the slot of the conduit, then to attach to the supporting device on top of the slot.

Fig. 3 shows the collector in cross-section, a being the insulating-bar, b the insulating support, and F F' the metal strips fastened to the
75 bar a by means of the screws S, passing through slots in the strips.

The details of the insulating-supports for the current-collector are shown in Figs. 4, 5, 6, and 7. Fig. 4 shows one of the end supports, 80 which is made of two parts, b b, fitted into the bar a in any convenient way. The upper ends of these pieces b b are provided with steel plates P P', bolted or riveted, as shown at x x x, Figs. 4 and 6. A space, V, Fig. 6, is left for
85 the conductor or cable from the motor to pass down between the steel plates P P' to the strip-connection T, Fig. 4. The center supports are made in a like manner, except only one piece is used for a support, as shown in Figs. 5 and
90 7. The steel plates are provided as in the end supports. The lower steel plates, P' P', on these insulated supports run in the slot of the conduit, and are made to take all of the wear, as shown by the lines connecting the parts in
95 Figs. 4 and 5, and representing the edge of the slotted conduit. They are made to be removed easily and replaced. The upper plates

are above the slot and do not wear, and are provided with bolts or pins at *rrrr* to attach the supports *b b* to the shoes shown in Figs. 8 and 9. These shoes are simple blocks of hard metal provided with a web, *W W*, extending down into the slot to serve as guides. In the center of these blocks is a slot, *o o*, into which the upper end of the collector support *b b* can pass and be made fast by bolts or pins. The end shoes are provided with a projection, *b'*, which is the attachment for the brushes, as shown in Fig. 11. These shoes are connected together above the slot with rods of iron *m*, as shown in Fig. 11, in order to keep the current-collector or its supports from pulling the shoes. The pull or push which any shoe may receive will be transmitted to all of them through these iron rods, the collector itself simply hanging free in the conduit and being carried along by the mechanism on top of the slot-iron.

I do not herein claim, broadly, the current-collector composed of a bar with contact-strips covering only the length of the bar, that being shown in Letters Patent of the United States No. 348,477, to Short and Nesmith.

I claim as my invention—

1. The current-gatherer for electrical railways, composed of a bar of insulating material provided with contact conducting-strips connected to said bar and adapted to move thereon when the bar is bent, whereby buckling of the strips is prevented, substantially as described.

2. The current-gatherer for electrical railways, composed of a bar of insulating material provided with metallic strips on its sides, strips being bent around the ends of the bar and arranged to leave insulated spaces on the bar between the ends of the strips, said strips being connected to the bar by slipping connections, substantially as described.

3. The combination, with a current-collector consisting of an insulating-bar having metallic contact-strips upon its sides, insulated supports for said bar, a shoe connected with said supports and adapted to travel above the slot of the conduit, guides at each end of said shoe adapted to travel within the slot, and wearing-plates connected on each side of the insulated supports on the line of the slot, above and below the same, substantially as described.

4. In combination, an insulated bar having contact-strips upon each side, shoes for supporting said insulated bar, adapted to travel above the slot of the conduit, guides on said shoes extending into the conduit, and stay-rods *m* between the series of shoes, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIDNEY HOWE SHORT.

Witnesses:

WM. N. BYERS,
RODNEY CURTIS.