(No Model.) 2 Sheets—Sheet 1.

S. C. C. CURRIE.

ELECTRIC CIRCUIT COUPLER.

No. 398,769. Patented Feb. 26, 1889.

Fig. 2.

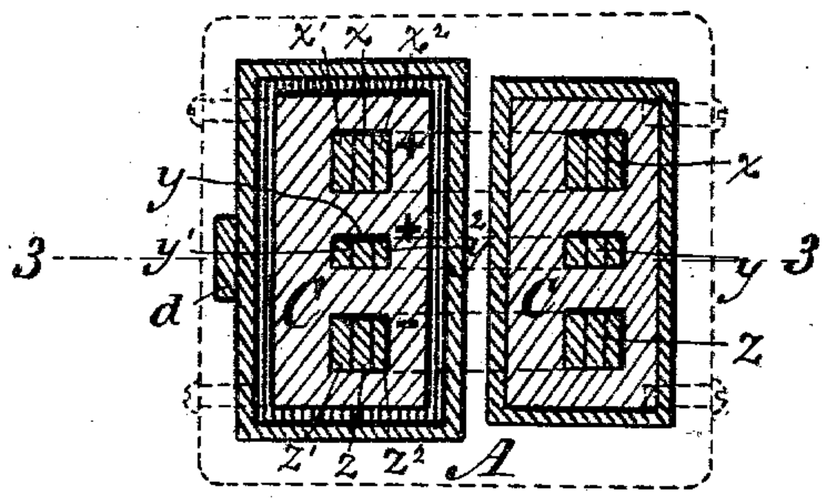


Fig. 3.

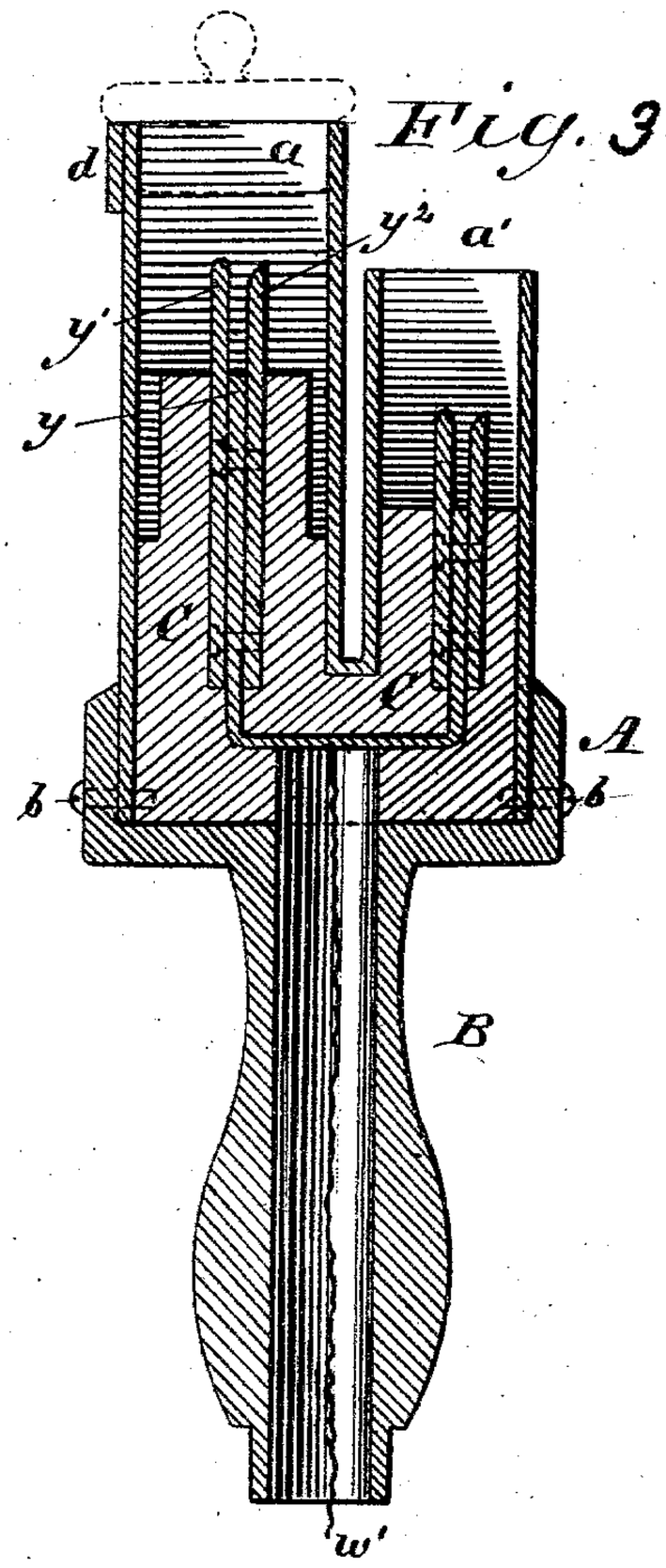
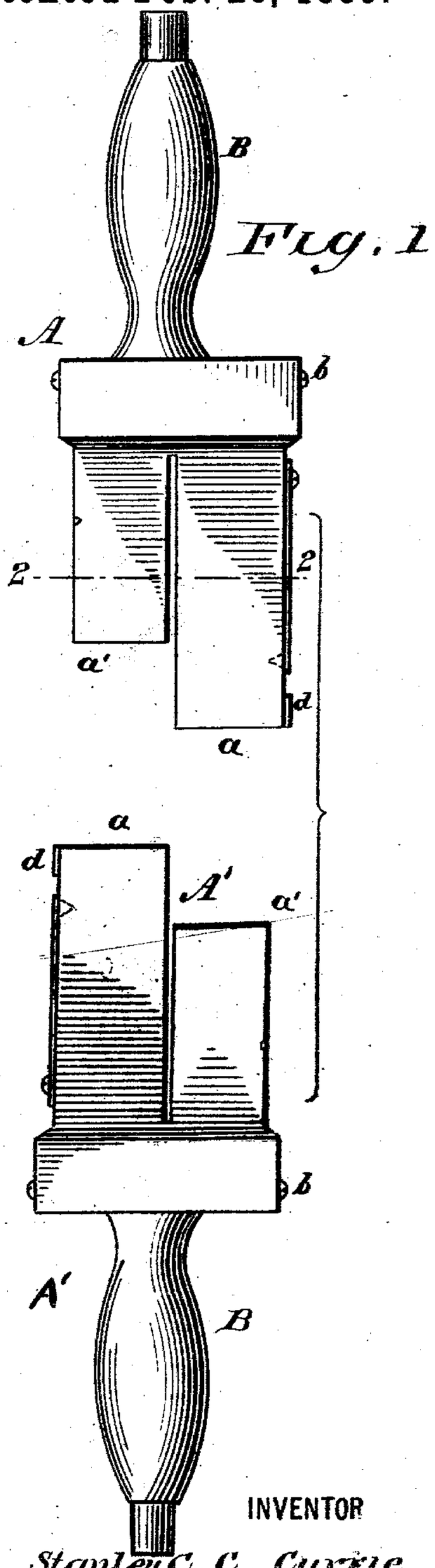


Fig. 1



WITNESSES

H. C. Fennan.
O. L. Fennan

INVENTOR

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(No Model.) 2 Sheets—Sheet 2.

S. C. C. CURRIE.

ELECTRIC CIRCUIT COUPLER.

No. 398,769. Patented Feb. 26, 1889.

Fig. 6.

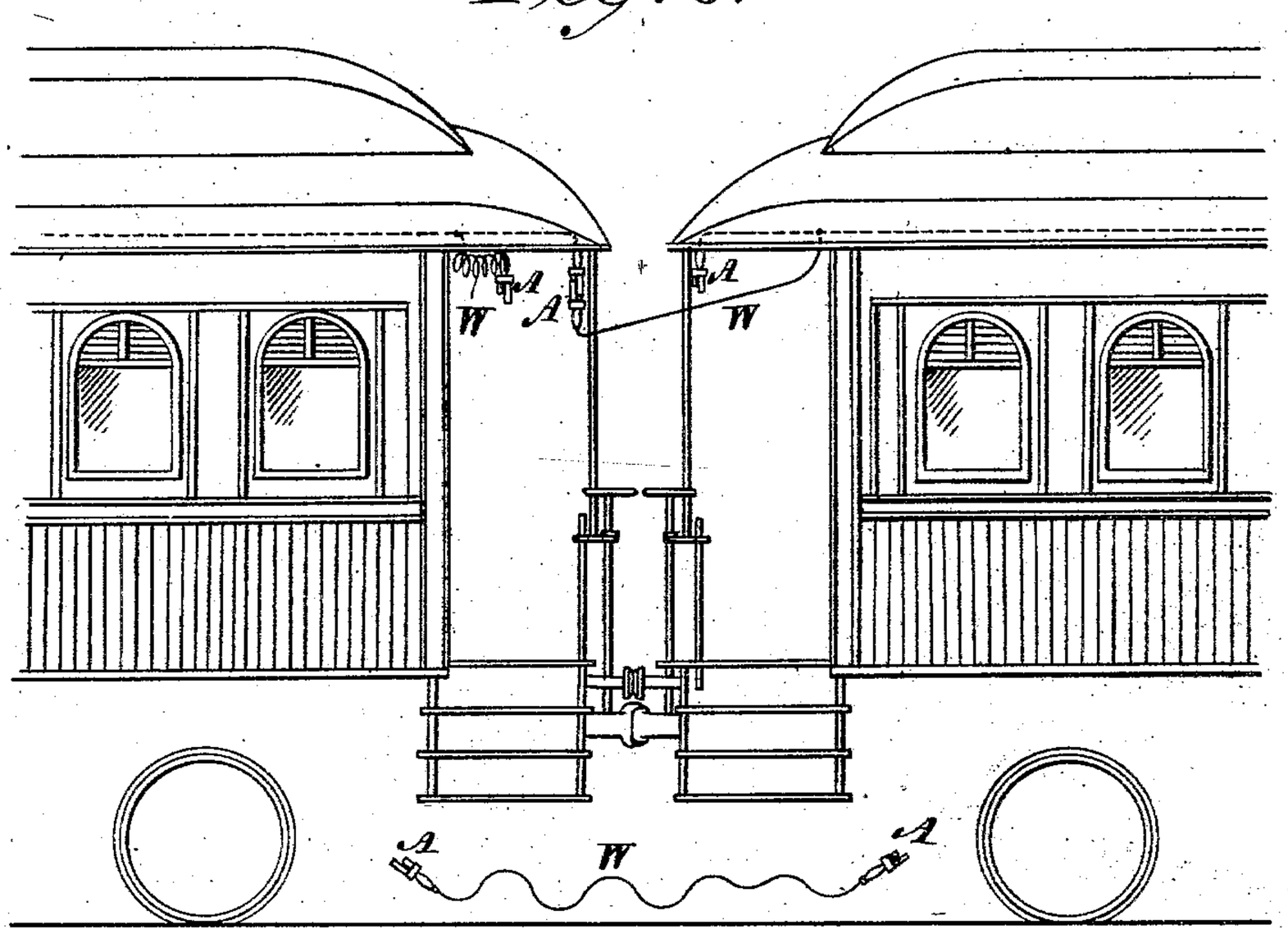


Fig. 5.

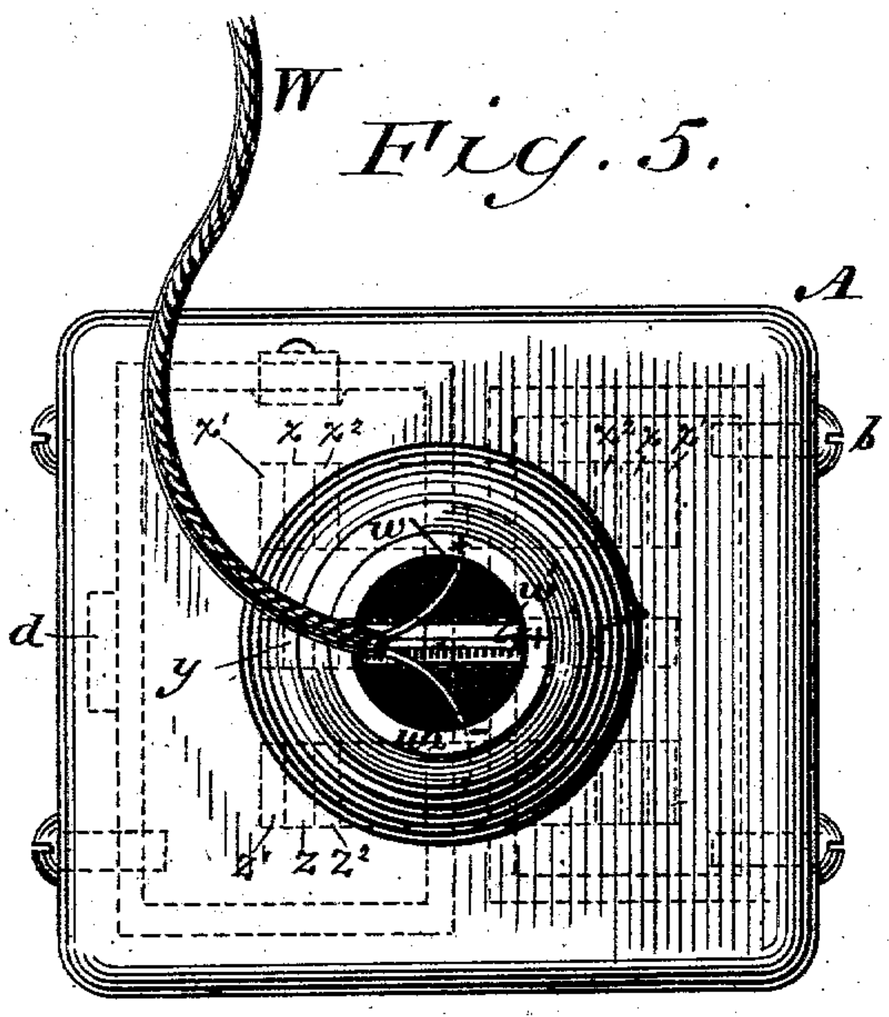
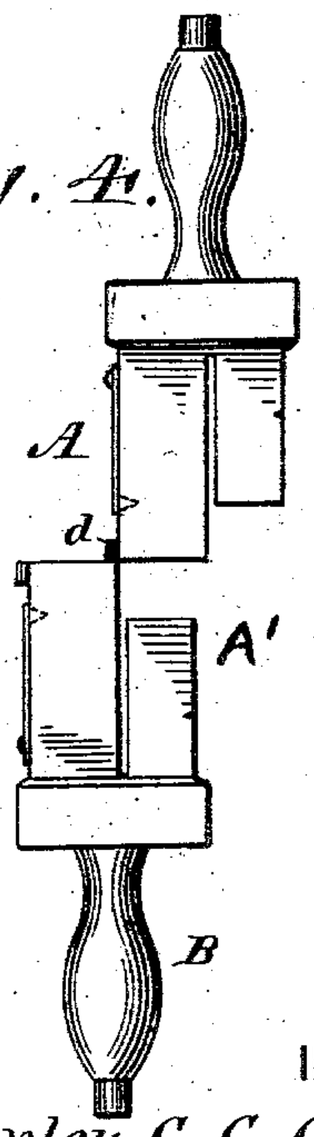


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

STANLEY C. C. CURRIE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE UNITED ELECTRIC IMPROVEMENT COMPANY, OF GLOUCESTER CITY, NEW JERSEY.

ELECTRIC-CIRCUIT COUPLER.

SPECIFICATION forming part of Letters Patent No. 398,769, dated February 26, 1889.

Application filed September 29, 1888. Serial No. 286,715. (No model.)

To all whom it may concern:

Be it known that I, STANLEY C. C. CURRIE, a subject of the Queen of Great Britain, now a resident of the city and county of Philadelphia, in the State of Pennsylvania, have invented new and useful Improvements in Electric-Circuit Couplers, of which the following is a specification.

My invention relates to electric-circuit couplers of the class in which the circuit is opened or closed simply by separating or uniting the members of the couplers. Its objects are to enable this result effectually and quickly to be attained, in the dark as well as in the light, without liability to connect circuits of wrong polarity, and at the same time not only to insure effective electrical contact, but also securely to protect the circuits and their connections from injury. These ends I attain by securing the circuit connections or terminals in their respective protecting cases, frames, handles, or stocks in such manner that they can only be connected in proper relation.

It is advisable in lighting cars by electricity that their circuit should extend throughout the train. This involves the provision of means for rapidly connecting and disconnecting the circuits between the cars. As it is preferable, in my opinion, to employ more than two circuits—and it is essential of course that circuits of like polarity only should be connected—to do this effectively and rapidly under the well-known conditions of railway traffic requires a special organization of apparatus to event mistakes from carelessness or negligence while preserving the convenience and simplicity essential to practical success. The contacts must be good, sure, and effective, readily made or broken, and at all times protected from dirt, wet, or danger of outside conducting-surfaces—such, for instance, as car-roofs, which are usually of metal, railings, supports, chains, and instruments employed about the car.

The subject-matter claimed is hereinafter specifically designated in the claims at the end of this specification.

My invention is especially adapted for use in connection with apparatus for lighting railway-cars by electricity—such, for instance, as that shown in United States Letters Patent No. 383,502, granted to Timmis and Currie, May 29, 1888—in which three circuit-wires are shown. My invention is shown in such an organization in the accompanying drawings, which represent only such parts of the apparatus as are essential to the illustration of the subject-matter herein claimed.

The details of the apparatus, with the exceptions herein specified, being well known, need not be particularly described, and may be varied in usual well-known ways within certain limits without departure from the spirit of my invention.

Figure 1 represents a view in elevation of a pair of the coupling cases or handles; Fig. 2, a transverse section therethrough on the line 2 2 of Fig. 1; Fig. 3, a longitudinal section therethrough on the line 3 3 of Fig. 2; Fig. 4, a diagram showing means of preventing improper connection of the couplers. Fig. 5 is an end view of the coupler, showing the cable entering the handle; Fig. 6, a side view of the adjacent ends of two cars, showing my improved circuit-coupler in position.

Each coupler consists of two separate handles, A A′, each the counterpart of the other, each handle consisting of two casings, *a a′*, of dissimilar size, and of such shape and dimensions that the smaller casing of one handle fits easily into the larger one of the other. These casings may be of any suitable shape—round, oval, or polygonal—in cross-section. In the drawings they are shown as oblong. They are also preferably made of metal. The casings are secured, preferably, by screws *b*, or other detachable connections, in a tubular handle, B, through which the circuit-wires *w w′ w²* pass. Each of these wires is connected with its respective forked or U-shaped conductor *x y z*, having contact-pieces *x′ x² y′ y² z′ z²* therefrom, parallel to each other and to the bore of the casing, so as to permit the opposing contacts of opposite handles readily to interlock with each other to insure good electric contact. To facilitate this inter-locking, the mouths of the casings, as well as the

ends of the contacts, may be made flaring—as usual, for instance, in car-couplings. The wires, conductors, and contact-pieces are secured in proper insulating material, C, in the casing in well-known ways. By this organization it will be seen that each casing of each handle contains an interlocking terminal of like polarity, so that there are two opposing contacts of like polarity in each handle for each circuit, thus insuring good and ample contact-surface.

In Fig. 3, for instance, the upper and middle contacts, *x y*, are positive, while the lower one, *z*, is negative, and the larger casing, A, is on the left of the observer. Now, by making all the connections in the same relative order in all the casings and cars the circuits must necessarily be properly completed when the contacts are made, as it is impossible for the inside connections to make contact without the larger casing overlapping the smaller. In order to prevent the smaller casing from being inserted in the larger one of the opposite handle while turned half round, as shown in Fig. 4, which would produce a short circuit, a fin, rib, stop, or projection, *d*, is formed on the outer side of each of the larger casings, which shoves the smaller case to one side when wrongly inserted and prevents its entrance.

A removable spring-plug, like a gun-tompion, for instance, may be inserted in the mouth of each casing to protect the contact when not in use.

I prefer to employ four couplers to each car, as shown in Fig. 6, two at each end, directly opposite each other, and attached to the projecting roof of the car.

One coupling might be attached to the car, while its counterpart might be attached to the projecting end of a cable, W, inclosing the conductors, as shown on the upper side of Fig. 6; or two handles might be connected by a flexible cable, W, of conductors, one at each end, to interlock with corresponding handles on the car, as shown on the lower side of Fig. 6. The handles may be held together when interlocked by spring-connections, as shown, such, for instance, as those used in the well-known air-brake coupling.

Having thus fully described the construction and operation of my improved electric-circuit coupler, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the circuit-terminals and the cases of different lengths and widths, inclosing the terminals and insulated therefrom, substantially as hereinbefore set forth.

2. The combination, substantially as hereinbefore set forth, of the handle, two dissimilar cases secured thereto, insulating material, and circuit-terminals of different polarities similarly arranged in each case and projecting from the insulating material, but protected by the case.

3. The combination, substantially as hereinbefore set forth, of two handles, two dissimilar cases secured to each handle, each case being adapted to interlock with the corresponding one of the opposite handle, insulating material in each handle, circuit-terminals of different polarities similarly arranged in each case, projecting from the insulating material and protected by the case.

4. An electric-circuit coupler, consisting of the combination, substantially as hereinbefore set forth, of the circuit-terminals and two dissimilar cases, arranged side by side, inclosing the circuit-terminals and extending beyond their outer ends.

5. The combination, substantially as hereinbefore set forth, of an electrical conductor projecting from a car, a handle connected therewith, two dissimilar cases connected with the handle, insulating material therein, circuit-terminals projecting from the insulating material but protected by the case, and a corresponding handle carrying dissimilar cases, and circuit-connections on the adjacent car.

6. The combination, substantially as hereinbefore set forth, of the dissimilar overlapping cases, the symmetrically-arranged interlocking circuit-connections, and a stop, *d*, which prevents interlocking except with the connections in the proper relation, as set forth.

In testimony whereof I have hereunto subscribed my name.

STANLEY C. C. CURRIE.

Witnesses:

MORRIS R. BOCKINS,

FRANCIS D. LEWIS.