

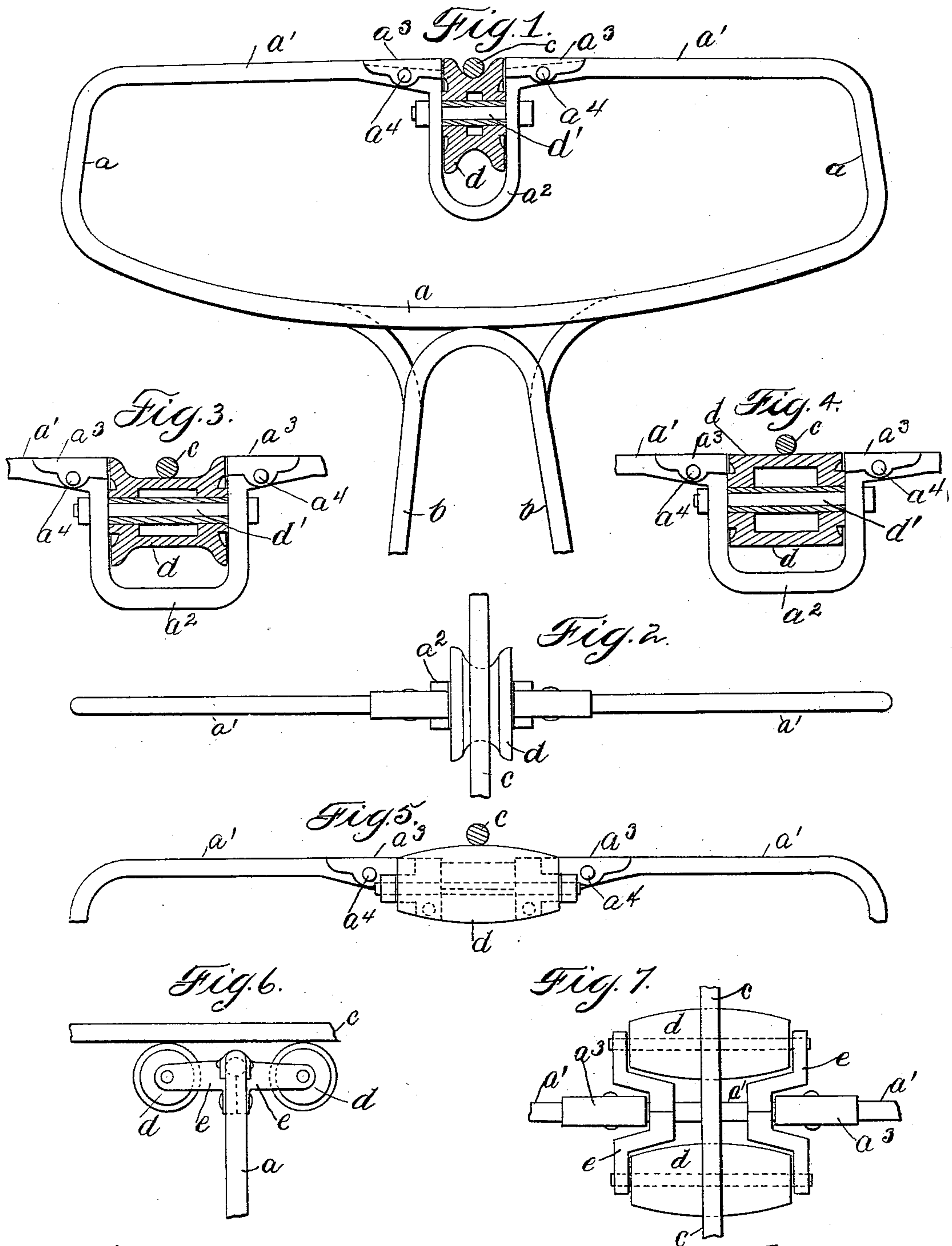
(No Model.)

E. B. W. REICHEL.

CONTACT DEVICE FOR ELECTRICALLY PROPELLED VEHICLES.

No. 555,263.

Patented Feb. 25, 1896.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## CONTACT DEVICE FOR ELECTRICALLY-PROPELLED VEHICLES.

SPECIFICATION forming part of Letters Patent No. 555,263, dated February 25, 1896.

Application filed August 15, 1895. Serial No. 559,323. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL BERTHOLD WALTER REICHEL, a subject of the Emperor of Germany, residing at Gross-Lichterfelde, near Berlin, Germany, have invented new and useful Improvements in Contact Devices for Electrically-Propelled Vehicles, (Case No. 656,) of which the following is a specification.

This invention relates to contact devices for electrically-propelled vehicles, such as railway-cars, and has for its object to provide a contact of this character which combines in itself the advantages of the ordinary revolvable trolley-wheel contact and of contacts having a laterally-extended contact-surface presented to the line conductor, whereby the trolley-wheel contact adapts itself to all practically straight portions of the conductor along comparatively straight portions of the track on which the car or vehicle travels, while the laterally-extended portions of the contact-surface, arranged preferably one at each side of the trolley-contact, are adapted to make contact with laterally-irregular portions of the line conductor at curves or switches of the track. The line conductor is adapted to slip automatically from the trolley-contact surface either to the right or left hand upon corresponding adjacent laterally-extended portions of the contact device and back again to the trolley-wheel, whereby electric connection between the line conductor and the electromotor on the car or vehicle is maintained without requiring attention of the motorman or guard and irrespective of lateral irregularities of the line conductor or of swaying of the vehicle.

The invention also includes certain minor details of construction of the contact device, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, and in which similar letters indicate corresponding parts in the several views.

Figure 1 is a front view of the head or outer portion of the contact device embodying my invention, the trolley-wheel and line conductor being in vertical section. Fig. 2 is a

detail plan view thereof. Figs. 3 and 4 are detail transverse views, partly sectional, showing modified forms of the trolley-wheel. Fig. 5 is a front view of another modified form of the device with the line conductor in cross-section. Fig. 6 is a detail side view in the plane of the line conductor, and Fig. 7 is a detail plan of parts shown in the two preceding views.

With reference first to Figs. 1 and 4 of the drawings, the laterally-extended head or outer portion *a* of the contact device is mounted upon arm *b*, which may have any approved pivotal connection with a railway car or vehicle, permitting the contact device to swing longitudinally relatively to the line conductor *c* or both longitudinally and transversely to said conductor.

In the preferred construction the outer transverse bar *a'* of the contact device is bent inward at the center to form a loop *a<sup>2</sup>* which is open at the top. Within this loop is journaled on a transverse pivot or bearing *d'* a peripherally-grooved contact-surface in the form of a revolvable trolley *d*, which fits quite closely at the sides to the adjacent walls of the loop *a<sup>2</sup>* to prevent slipping of the conductor between the trolley and said side walls. At its largest diameters this trolley-contact surface coincides or is about level with the outer faces of the side surfaces *a' a'* of the contact or with detachable portions *a<sup>3</sup> a<sup>3</sup>* thereof which are held to the parts *a' a'* at or next the opposite sides of the trolley *d*. These detachable parts *a<sup>3</sup> a<sup>3</sup>* are designed to take the greater wear incident to the running of the line conductor *c* from the trolley *d* to either the right or left hand contact-surface *a' a'* or back again from said surface to the trolley. The parts *a' a'* are bent or inclined downward toward the sides of the trolley *d* to give room for the detachable parts *a<sup>3</sup> a<sup>3</sup>*, the upper surfaces of which are level with the outer contact-surfaces of the parts *a' a'* and the larger peripheries of the trolley *d*. The detachable parts *a<sup>3</sup> a<sup>3</sup>* may be held to the depressed portions of the parts *a' a'* by rivets *a<sup>4</sup>* or by bolts, screws or in any other approved manner. These



portions  $a^3 a^3$  of the contact-surfaces may be readily renewed at any time when worn out by sliding contact with the line conductor, whereby the durability of the whole contact device is lengthened.

The modification shown in Fig. 3 is similar in all respects to the construction first described, except that the revoluble trolley  $d$  has a greater lateral dimension and therefore allows some little lateral play of the line conductor on the revolving-trolley surface before the conductor slips from the trolley to the sliding contacts  $a^3 a'$  at either side of it.

In Fig. 4 the revoluble trolley  $d$  is not peripherally grooved, but has a cylindrical form or is of like diameter throughout, and its periphery is level with the sliding-contact surfaces  $a^3 a'$  at either side of it. Hence the line conductor  $c$  will slide freely from the revolving trolley  $d$  onto either side sliding contact and back again onto the trolley.

In Figs. 5, 6 and 7 of the drawings is shown another modification in which are used a pair of revolving trolleys  $d d$ , each of which has a laterally-convexed periphery and both of which are journaled in a suitable frame comprising a couple of bearings  $e e$ , bolted or otherwise fixed to the outer or head portion  $a'$  of the contact-frame, to which also the detachable portions  $a^3$  of the laterally-extended sliding contact  $a' a'$  are fixed. These parts  $a^3$  extend inward beyond the outer ends of the convexed trolleys  $d d$ , and the outer faces of the parts  $a^3 a^3$  are about level with the extremities of these trolleys. Hence the line conductor  $c$  will readily ride onto the revoluble central trolleys  $d d$  from either of the laterally-extended sliding-trolley surfaces  $a' a^3$  and back again from them to the central trolleys, as the lateral disposition of the line conductor may require. I may also use but one of the longitudinally-convexed trolleys  $d$  with substantially the same results, and in this case the bearings  $e$  would be cut off at the front or rear of the head  $a'$ , as indicated by dotted lines in Fig. 7 of the drawings.

On straight or nearly straight portions of the line conductor the revoluble contact  $d$  will automatically take the conductor and will have rolling contact therewith substantially like the ordinary pole-trolley; but when the contact device on a traveling vehicle or car reaches any laterally-irregular portion of the line conductor—as, for instance, at curves, where the conductor has few suspension wires or devices—the sliding contacts  $a' a^3$  at either

side of the trolley will maintain contact with the line conductor.

Laterally-extended sliding contacts heretofore used have the best effect and are most durable when the line conductor is sustained in a laterally sinuous or winding course, so as to have constantly-changing portions of the contact slide along the conductor and not bring the wear on the contact device at one or nearly the same place. It is, however, more convenient and less unsightly to have the line conductor as nearly straight as possible, or as nearly parallel as may be with the central line of all comparatively straight portions of the track on which the vehicle travels. Hence it will be seen that by combining the ordinary revolving trolley and one or more laterally-extended sliding-contact surfaces in one contact device I provide for the running of the vehicle or car along straight portions of a line conductor which take the trolley with minimum friction of contact, and when the curves of the track are reached the laterally-irregular line conductor is at liberty to automatically leave the trolley and take a laterally-extended surface portion of the contact and will slide thereon until the trolley again takes the line conductor. Hence electrical connection between the conductor and the electromotor on the vehicle or car will be maintained automatically with the least possible wear and tear of the contact device and the line conductor and without requiring the attention of the motorman or guard on the vehicle.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a horizontally-extending frictional contact device, of a central revoluble contact; substantially as described.

2. A contact device for electrically-propelled vehicles, made with a revoluble trolley-contact surface, and one or more laterally-extended sliding-contact surfaces having detachable or renewable portions next the side or adjacent peripheral edges of the trolley-contact surface.

In testimony whereof I affix my signature in the presence of two witnesses.

EMIL BERTHOLD WALTER REICHEL.

Witnesses:

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GUSTAV STENZEL.