

No. 688,337.

Patented Dec. 10, 1901.

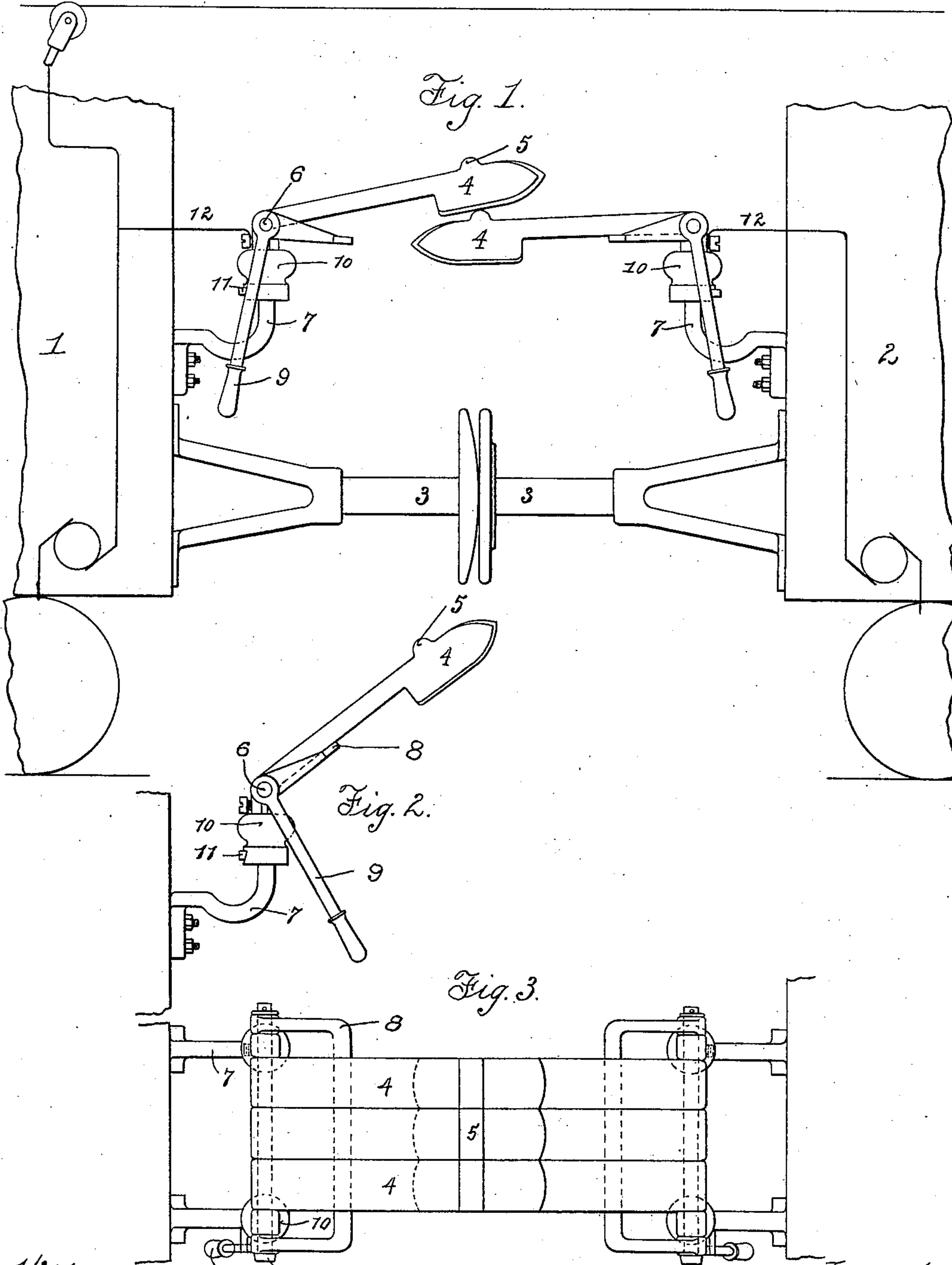
E. B. W. REICHEL.

MEANS FOR ELECTRICALLY CONNECTING RAILWAY CARS.

(Application filed Feb. 19, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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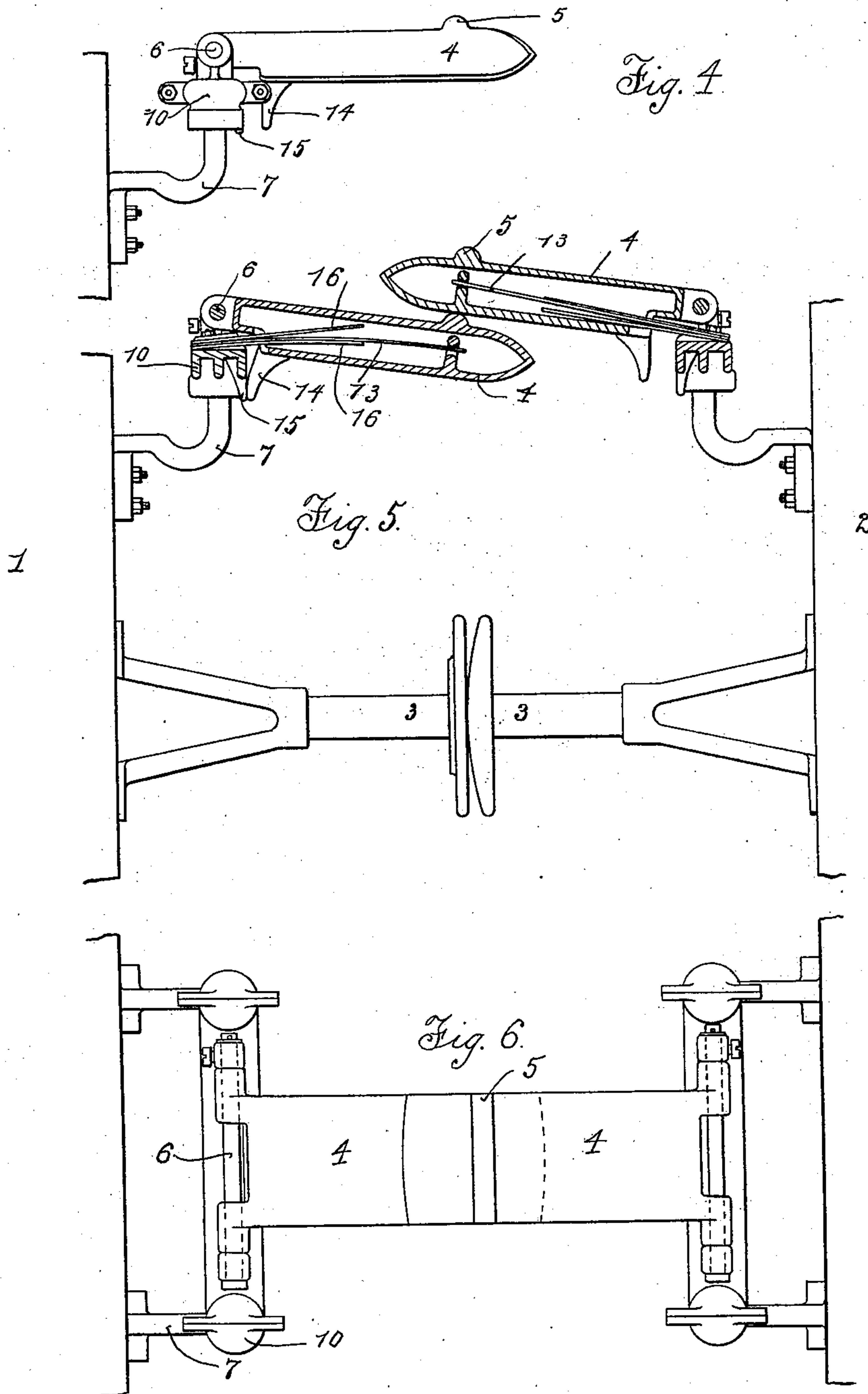
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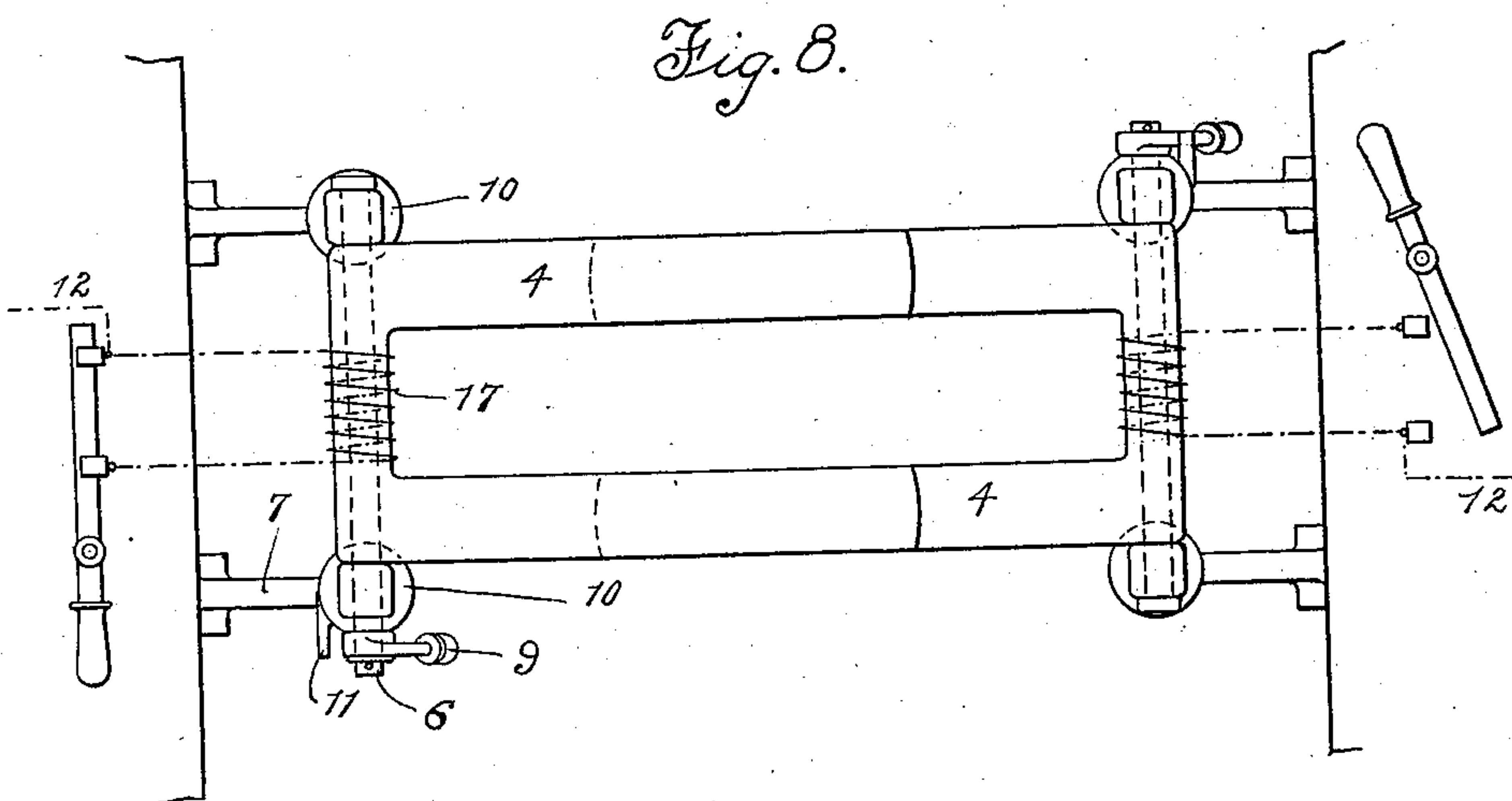
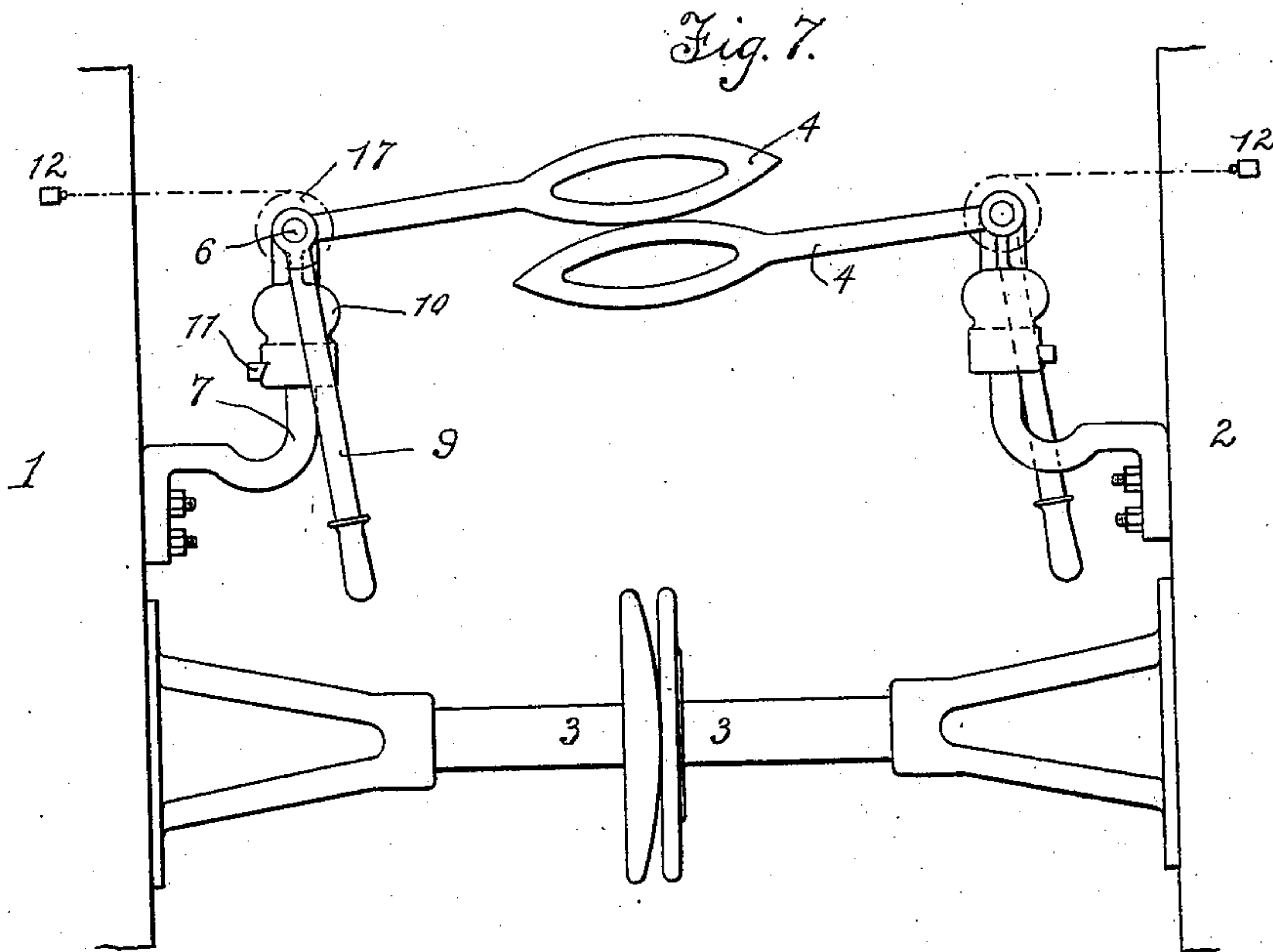
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

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MEANS FOR ELECTRICALLY CONNECTING RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 688,337, dated December 10, 1901.

Application filed February 19, 1900. Serial No. 5,790. (No model.)

To all whom it may concern:

Be it known that I, EMIL BERTHOLD WALTER REICHEL, a subject of the German Emperor, residing at Markgrafenstrasse 94, Berlin, in the Empire of Germany, have invented a certain new and useful Improvement in Means for Electrically Connecting Railway-Cars, (Case No. 334,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electric railways, and more particularly to that class of electric railways in which current for driving electric motors is conducted along several cars of a train, and has for its particular object the provision of an improved form of electric coupling for electrically uniting circuits upon adjacent cars.

Electric car-couplings as at present constructed require a great amount of attention and care and do not provide an efficient coupling under all conditions of service, the jars and vibrations of the cars being occasionally sufficient to cause a rupture of the contact between the couplings. A good contact is therefore not secured at all times; and it is the prime object of my invention so to construct electrical couplings that there will be uniform good contact between them at all times, independent of the relative movement between the cars, and which are insensible to train vibrations and other exacting conditions of service.

My invention also provides means whereby the couplings may be constructed in a very simple manner, so that the time spent in coupling and uncoupling is reduced to a minimum, the uncoupling being preferably in all cases done automatically.

Generally speaking, my invention consists in providing two contact-pieces, one upon each end of a car, which are preferably rotatably mounted about horizontal axles placed transverse to the direction of travel of the cars, these contact-pieces upon coupling assuming positions one about the other, thereby providing a good electrical connection which may be retained under all conditions of service, inasmuch as I preferably construct the

contact pieces of sufficient weight to produce considerable friction between the two. I also preferably make the height of these contact-pieces sufficient to overcome any tendency which the relative change in height between two adjacent car ends may have to raise one contact-piece away from the other.

I will describe my invention more in detail by reference to the accompanying drawings, illustrating the preferred embodiments thereof, in which—

Figure 1 is a side view of my improved coupling, the car ends being indicated diagrammatically. Fig. 2 is a side view of one-half of the coupling in position for being coupled. Fig. 3 is a top view of my improved coupling. Fig. 4 shows another embodiment of my invention, one-half of a coupling being shown in its normal position. Fig. 5 is a side view of the same, two couplings being shown in engagement. Fig. 6 is a top view of the coupling shown in Fig. 5. Figs. 7 and 8 are side and top views, respectively, of another embodiment of my invention.

Like parts are indicated by similar characters of reference throughout the figures.

Referring now particularly to Figs. 1, 2, 3, and 4, I have shown two adjacent cars 1 and 2 as being supplied with my improved coupling, bumpers 3 3 being indicated diagrammatically. I preferably provide one or more contact-shoes 4 at the ends of each car, these contact-shoes being preferably wedge-shaped at their ends and provided with a projection 5 on the upper portion thereof. I preferably rotatably mount these contact-shoes about a horizontal shaft 6, placed, preferably, transversely to the direction of travel of the train, brackets 7 7, mounted at the ends of the cars 1 and 2, being employed for supporting the said shaft. I also preferably rotatably mount a U-shaped frame 8 upon the shaft 6, the said frame being rigidly fastened to a handle 9, disposed angularly thereto. I preferably interpose insulators 10 upon the frame 7, so that there is no electrical connection between the shaft 6 and the car-body, the said insulators being provided with a lateral extension 11, against which the handle 9 is adapted to rest when in its normal position. In this po-

sition the shoes 4 are prevented from rotating below a given distance, inasmuch as their free ends are supported by the frame 8, thereby holding them in positions ready for coupling.

In order to obtain the desired height of the contact-shoes and not to unnecessarily increase the weight thereof, I preferably make them hollow. I preferably use more than one contact-shoe upon the end of each car, so that a break in the contact which might accidentally occur between two contact-shoes will not cause a rupture of the whole circuit, inasmuch as the remaining contact-shoes would remain in electrical connection. I preferably construct these shoes in the form of a wedge, so that they may couple automatically; but I have provided the handle 9, so that one set of the contact-shoes may be preferably raised in the position shown in Fig. 2 when ready for coupling. It will be seen that good electrical contact may be readily maintained between the contact-shoes, inasmuch as the weight thereof is sufficient to create a frictional engagement between them irrespective of the jars and vibrations of the adjacent cars of the train. The closer the center of gravity of the contact-shoes to the line of contact the better will be the electrical connection between them. Circuit connection is established between terminals of the main circuit 12 12 and the shaft 6 in any suitable manner.

In Figs. 4 to 6 I have shown an embodiment of my invention in which I preferably reinforce gravity by means of springs 13 13, which are preferably placed inside the hollow contact-shoes 4 and which are rigidly mounted upon the insulating-frame 7. I preferably so adjust the springs that the contact-shoes occupy normally a horizontal position, being capable of a movement in both directions thereof, the movement in the downward direction being limited by a projection 14 upon the lower surface of the contact-shoe, which engages a corresponding projection 15 upon the insulating-bracket 7. The springs 13 are preferably reinforced by auxiliary springs 16 16, which are brought into action when the two portions of the coupling are in contact. As will be evident from the figure, both contact-shoes are displaced when coupled, a double spring actuating each one to press against the opposite shoe.

In Figs. 7 and 8 I have shown another embodiment of my invention in which gravity is reinforced by magnetic attraction. In this embodiment I preferably construct the contact-shoes 4 as a U-shaped body, about the central portion of which I preferably dispose an energizing-coil 17, which may be supplied with current in any suitable manner either in series or in shunt of the main circuit, the contact-shoe upon one car then furnishing a return path for magnetism of the contact-

shoe of the other car when in engagement. Auxiliary means are provided whereby one coil is preferably made inactive upon coupling, as the energization of both coils would cause a neutralization of the lines of force through the contact-shoes.

While I have shown and described my electric coupling in connection with electric railways, I do not wish to be limited to its use in that particular branch in the art.

While I have herein shown and particularly described preferred embodiments of my invention, I do not wish to be limited to the precise constructions and arrangements shown, as modifications thereof may readily be made by those skilled in the art without departing from the spirit thereof, and

I therefore claim as new, and desire to secure by Letters Patent, the following:

1. Means for electrically connecting railway-cars, comprising a couple of swinging members, one for each car, rests upon which said members can be supported, said members being adapted to come into contact with one another, and one of the same being adapted to slide above the other, the latter resting upon its rest and the upper one tending to descend and thereby to exert a pressure between the two members, substantially as set forth.

2. The combination with the railway-cars, of buffers therefor, and means for electrically connecting the cars, comprising a couple of swinging members, one for each car, said members being adapted to come into contact with one another when the cars come together, supports for said swinging members adapted to permit the members to move, the members being arranged thereupon so as to tend to restore themselves to their original positions, whereby good contact will be retained and the members being also arranged so as to come into contact with one another when the buffers of the car meet, substantially as described.

3. The combination with a pair of connecting members, of means for supporting the same so as to permit their slight displacement upon coming together, and differential springs provided for said members, said springs being arranged to act with greater force as the displacement of the members increases.

4. The combination with a pair of connecting members, of means for supporting the same so as to permit their slight displacement upon coming together, and springs 13, 13 and 16, 16 arranged within said members and connected with the supporting means therefor, substantially as described.

In witness whereof I hereunto subscribe my name this 26th day of January, A. D. 1900.

EMIL BERTHOLD WALTER REICHEL.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.