

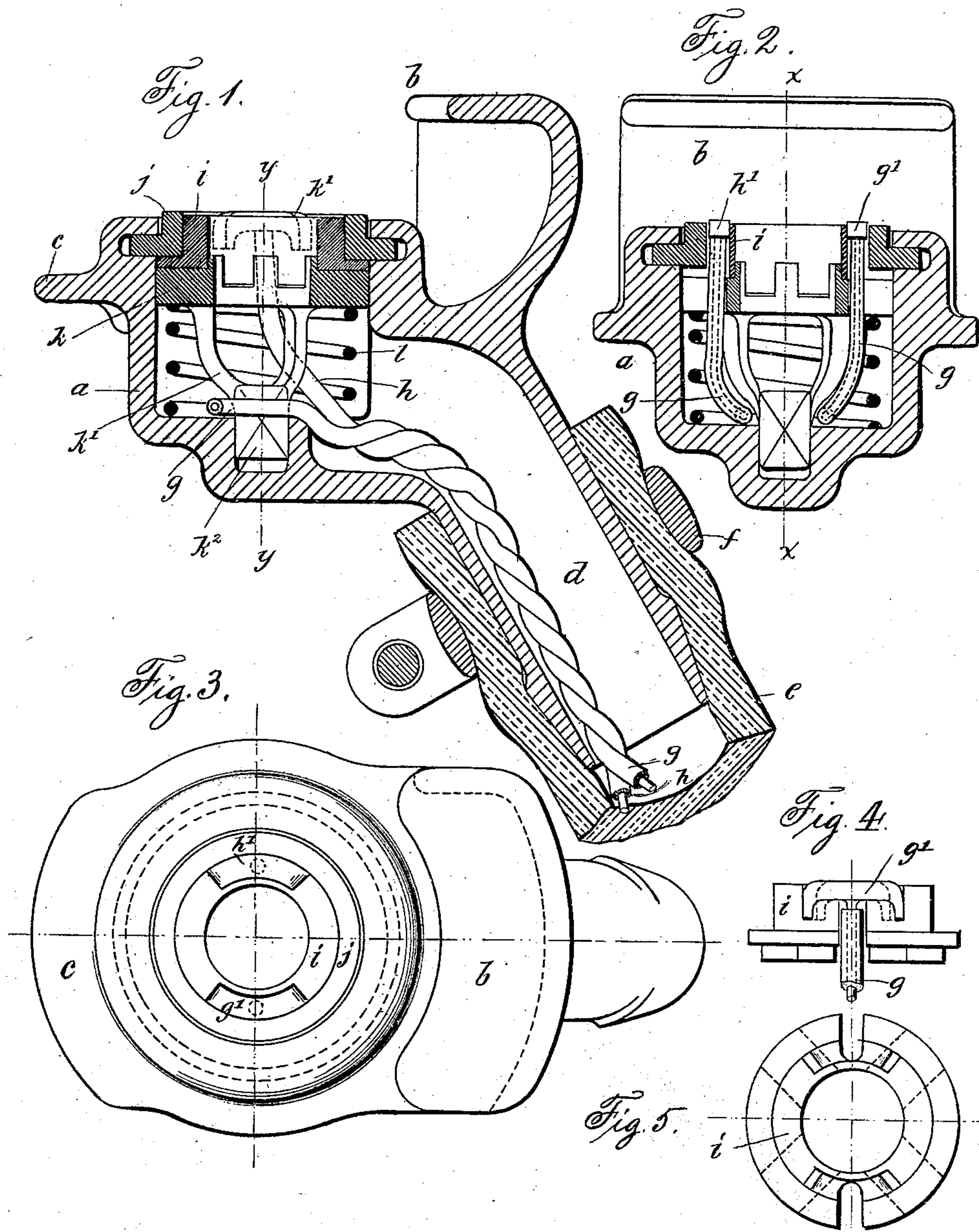
(No Model.)

J. F. CARPENTER.

COUPLING FOR ELECTRO PNEUMATIC BRAKE SYSTEMS.

No. 370,605.

Patented Sept. 27, 1887.



Witnesses  
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# UNITED STATES PATENT OFFICE.

J. FAIRFIELD CARPENTER, OF BERLIN, GERMANY.

## COUPLING FOR ELECTRO-PNEUMATIC-BRAKE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 370,605, dated September 27, 1887.

Application filed April 8, 1887. Serial No. 234,193. (No model)

*To all whom it may concern:*

Be it known that I, J. FAIRFIELD CARPENTER, a citizen of the United States, residing at Berlin, Prussia, in the Empire of Germany, have invented certain new and useful Improvements in Couplings for Electro-Pneumatic-Brake Systems, of which the following is a full, clear, and exact description.

This invention relates to couplings for the air-pipes of air-brake systems for railway-cars, and more particularly to such couplings which comprise as an essential element of the brake-system electric conductors carried through the air-pipes for use in operating the valves of the brake system, though, obviously, the electric conductors may be otherwise employed.

The invention consists in a coupling in which like halves are united end for end, with interposed packing carried by each half of the coupling, and containing the contacts of the electric conductors, all as hereinafter more particularly set forth and claimed.

In the accompanying drawings, in the several figures of which like parts are similarly designated, Figure 1 is a longitudinal section taken in the plane of line *xx* of Fig. 2. Fig. 2 is a cross-section taken in the plane of line *yy* of Fig. 1. Fig. 3 is a plan. Fig. 4 is a side elevation, and Fig. 5 a plan, of the inner packing-ring in which the contacts are placed, with the contacts in place in the former.

The casting *a* of each half—the two halves being duplicates—has a hook, *b*, rising from one side above the mouth, and a lip, *c*, standing off from the opposite side below the mouth, by which the said halves are united end for end, the openings or ports in said halves being in such ends, and each casting has a tubular shank, *d*, projecting therefrom at an angle to receive the air tubes or hose *e*, which latter may be attached thereto by a clamp, *f*. By bringing together the halves of the coupling, port for port, at about right angles to their hooks and lips, and then rotating them, the halves are united.

The electric circuit wires or cables *g* *h* are carried through the air-tubes, and terminate in contact-points *g'* and *h'*, which are arranged, by preference, at diametrically-opposite points in a rubber or other insulating ring, *i*, placed in the mouth opening or port of the coupling. This arrangement of the contacts reduces to a

minimum the liability to short-circuiting by the intervention of water, dust, or other electrically-conductive substance. Special attention is drawn to the position of the contact-points, both with reference to each other and to the coupling mouth-piece. They are in the only place (outside of the center of the coupling) where two separate contacts joining independent lines of wire can possibly meet each its own counterpart in coupling up with a corresponding mouth-piece. At any other point in the circle in whose circumference they are placed—notably at the opposite sides—they would cross the wires if coupled up. The ring *i* is surrounded, and the contacts thus held in place, by a second rubber or equivalent ring, *j*, the contacts projecting slightly beyond these rings and the mouth of the coupling halves, so that when the ports of the halves are brought together there is a positive, forcible, rubbing meeting of the contacts. The rubber ring *j* also subserves the purpose of an air-packing for the meeting faces of the coupling halves. The two rings *i* *j* may also be made as one piece without altering the scope of this invention.

The rings *i* and *j* are retained in place and forced outwardly by an annular follower, *k*, acted upon by a spring, *l*, the said follower having the integral spider *k'*, terminating in a square head, *k''*, which is seated in a socket in the shell, so as to prevent the rotation of the contacts. In addition to the tendency of the spring *l* to project the rings and contacts outwardly, and thus keep the coupling, when united, in good working order, the air-pressure in the pipes will operate in the same direction, owing to the leakage of the air back of the rings.

The form of shell shown and the devices for connecting the coupling, while preferred, are not to be understood as of the essence of the invention herein. Still, they are believed to be novel and useful.

Whether the coupling described be supplied with the electrical devices specified or whether used without them, it is by reason of its peculiar construction of great value, in that it affords a sinuous path devoid of sharp angles for the passage of the air from one car to another. This is of considerable moment in overcoming the friction necessarily produced where



the coupling is of such a nature that the air has a distinctively angular path in passing through the coupling. Efforts have been made to provide a coupling where the path of the air will be practically straight, and examples of such may be found in what are known as "butt couplings," whether the joint be in a plane perpendicular to the axis of the coupling pipe or shank or at an angle thereto; but, so far as I am aware, such butt-couplings have had extraneous connecting devices for uniting the couplings—that is to say, the coupling devices are not stationary, rigid, and integral with respect to the coupling as a whole. It is obviously of vast advantage to have all the parts of the coupling integral, and couplings now in use, as a rule, are so made.

What I claim is—

1. A coupling for electro-pneumatic-brake systems, comprising contacts for the conductors embedded in or surrounded by insulating packing-rings for the meeting ends of the couplings at the most remote possible points, substantially as described.

2. A coupling having air-packing in its mouth, combined with an interior insulating-ring, electric contacts interposed between them, and a spring-follower acting upon such rings, substantially as described.

3. In an electro-pneumatic-brake coupling, electric conductors, terminal contacts thereon, non-conducting packing-rings surrounding them, a non-rotating follower, and a spring acting thereupon in conjunction with the air-pressure to keep the parts in effective operative position, substantially as described.

4. The within-described air-brake hose-coupling composed of two like halves having the end openings or ports, the inverted-L-shaped hooks *b*, rising from one side above the mouth, lips *c*, standing off from the opposite side below the mouth, and shanks *d*, standing off at an angle, all being integral, and air-packing in said ports, the halves being adapted to be connected by the interlocking of their hooks and lips, and forming a sinuous passageway devoid of sharp angles for the flow of air, substantially as set forth.

5. A coupling for electro-pneumatic brake-systems, having contact-points for the electrical conductors embedded in and insulated by the usually-employed packing ring or rings of the coupling, such contact-points being situated at the most remote possible points radially from the center of said mouth-piece, but within the mouth-piece, substantially as described.

6. A coupling for electro-pneumatic-brake systems having contact-points for the electrical conductors embedded in and insulated from the coupling proper by the packing ring or rings in the mouth of the coupling, such contacts being situated at the most distant points possible from each other, combined with an independent conductor for each contact-point, whereby only the proper conductors are brought into contact with each other by the act of joining the couplings, substantially as described.

7. In a coupling for electro-pneumatic brakes, the electrical contact-points situated at the most remote points possible from the center of the air-brake coupling, combined with the usual rubber packing-ring, which packing-ring is interposed between the metal of the coupling and the contact-points, and subserves the additional purpose of insulating the said contact-points from the coupling and from other conductors in the mouth-piece or half, substantially as described.

8. In a coupling for electro-pneumatic brakes, contact-points and the usual packing-rings by which said points are insulated within the mouth-piece, and radially so far distant from one another and the center or axis of the coupling that a distinct rubbing contact is secured between said contact-points, under air-pressure, in joining or separating the coupling, substantially as described.

In testimony whereof I have hereunto set my hand this 5th day of April, A. D. 1887.

J. FAIRFIELD CARPENTER.

Witnesses:

R. FURMISCH,  
C. D. HAND.