No. 827,988. PATENTED AUG. 7, 1906.

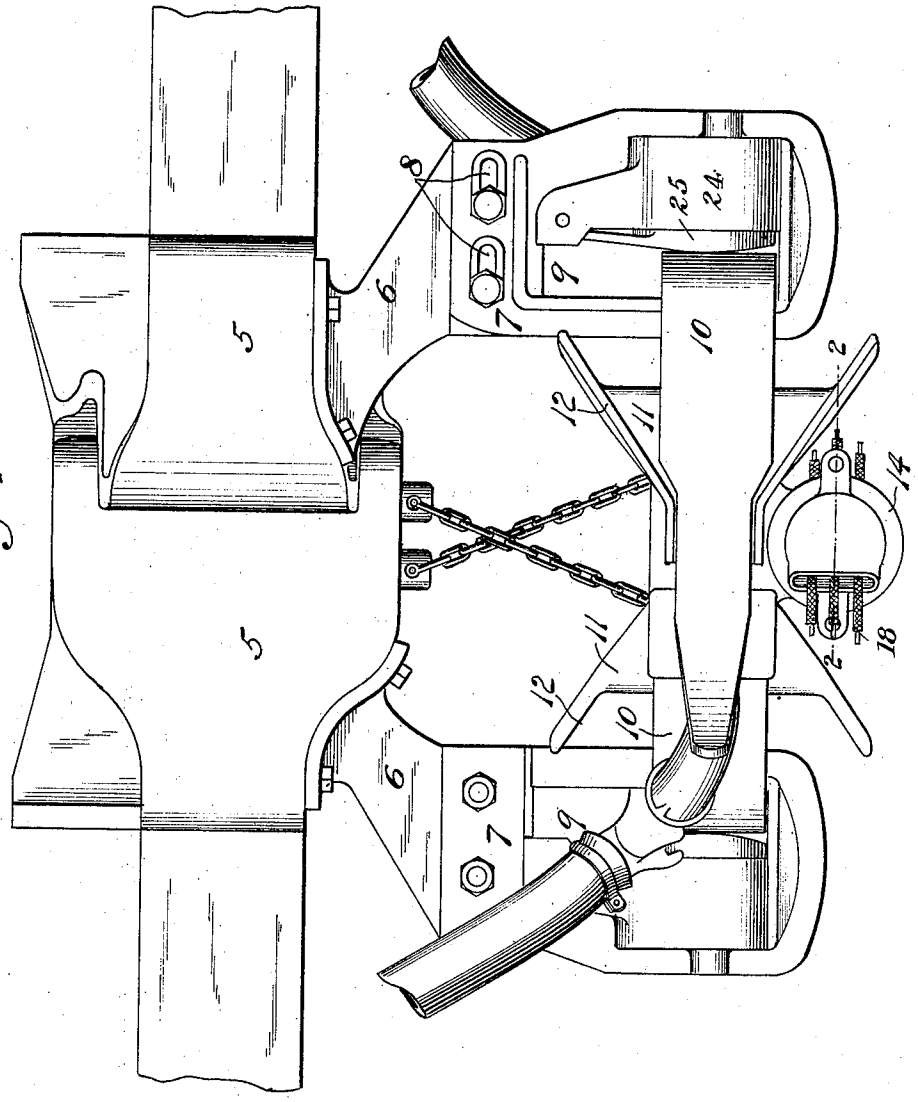
N. F. NIEDERLANDER.

COUPLING APPARATUS FOR ELECTRIC CIRCUITS.

APPLICATION FILED SEPT. 2, 1902.

3 SHEETS—SHEET 1.

Fig. 1



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J. Custer

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Nicholas F. Niederlander

by Paul Synnestvedt

Att'y.

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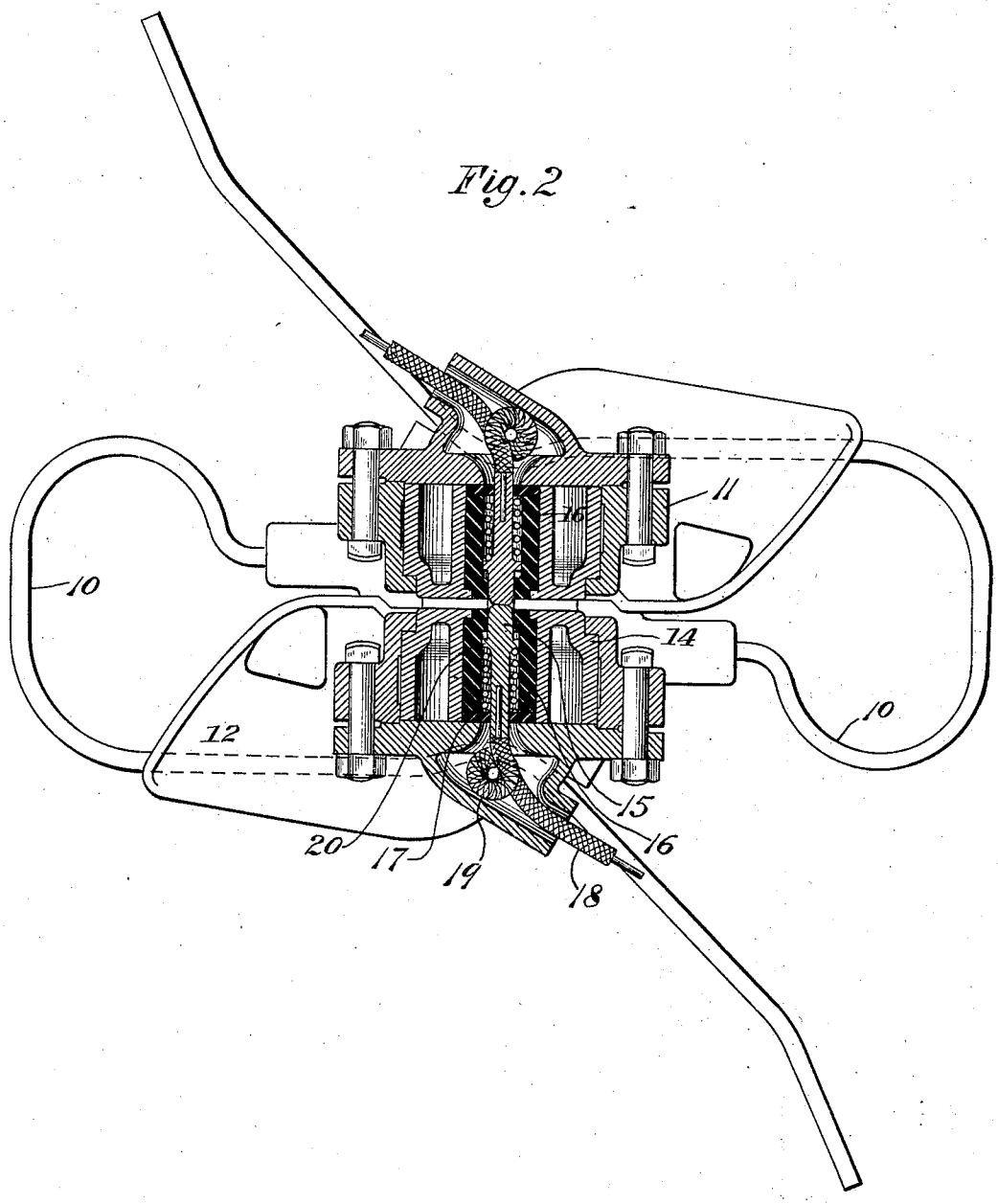
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COUPLING APPARATUS FOR ELECTRIC CIRCUITS.

APPLICATION FILED SEPT. 2, 1902.

3 SHEETS—SHEET 2.

Fig. 2



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3 SHEETS—SHEET 3.

Fig. 3

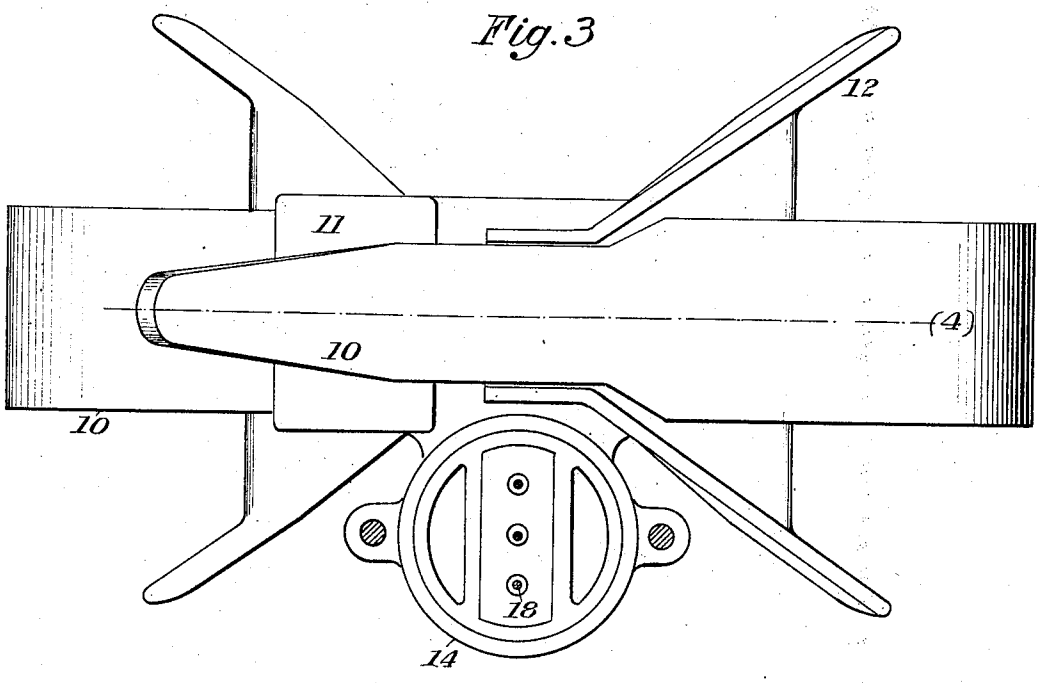
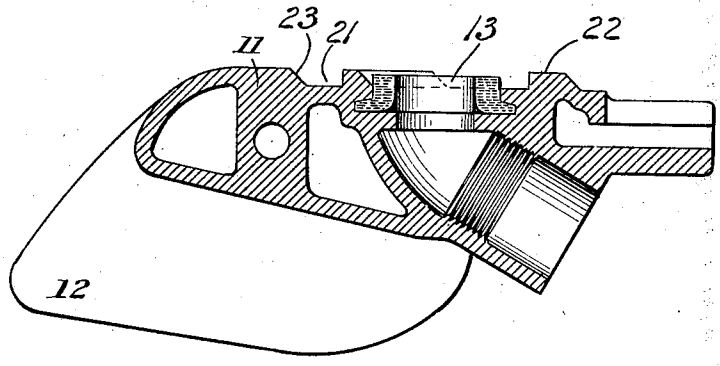


Fig. 4



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UNITED STATES PATENT OFFICE.

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COUPLING APPARATUS FOR ELECTRIC CIRCUITS.

No. 827,988. Specification of Letters Patent. Patented Aug. 7, 1906.

Application filed September 2, 1902. Serial No. 121,775.

To all whom it may concern:

Be it known that I, NICHOLAS F. NIEDERLANDER, a citizen of the United States of America, residing at St. Louis, Missouri, have invented certain new and useful Improvements in Coupling Apparatus for Electric Circuits, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention has reference to coupling apparatus for connecting electrical circuits extending through a train of cars, and for making such couplings automatically, and for permitting the breaking of the same automatically, in order to avoid danger to the trainmen incident to the necessity of going between the cars and connecting or disconnecting such electrical contact connections.

The first of the objects of this invention is the provision of such automatic coupling apparatus for electrical contact connections which will be secure, which will not be interfered with by the elements, which when it comes into contact, will have a kind of rubbing action the one contact bearing against another, so as to make better electrical connection, and which will make an automatic coupling and also an automatic disconnection of the contact with certainty and facility.

In carrying out my invention, I apply as a gathering device, the means used by me in devices heretofore known in the art, as in my Patent No. 582,672, comprising essentially two heads designed to engage with each other by means of contact surfaces which are laterally disposed relative to the heads, that is which are in a plane extending longitudinally of the line of draft of the cars, and in combination with which I use spring devices, or other equivalent means for holding the heads in contact, such spring devices being so disposed that in conjunction with suitable inclined faces on the coupling heads the two are brought into contact automatically when the cars come together, and so guided, that they register properly, so that the contact points will rub one upon another as the two coupler heads slide one past the other into coupling position.

In order that the gathering mechanism referred to, which in itself is not new in this application, may have freedom of vertical movement, as well as freedom of movement laterally to accommodate the different movements of the cars, the heads are mounted as heretofore known by devices having support from a bracket which may be an independent bracket attached to the car itself, or attached below one of the coupler heads of a Master Car Builder's coupler, as shown in the accompanying drawings, the bracket having a vertically disposed slot in which the coupling head is free to move up and down, and within which the head has a freedom of movement laterally to a certain extent, while it is at the same time held in position by means of the yielding resistance 25 disposed in the inner side of the vertical slot.

In order that my invention may be better understood, I will now proceed to describe the same in connection with the accompanying drawings which illustrate it in preferred form, and in which

Figure 1, is a side elevation showing two M. C. B. couplers with automatic coupling apparatus attached to the under side thereof, embodying my improvements.

Figure 2, is a horizontal sectional view of part of the apparatus shown in Figure 1, the section being taken on the line (2), of Figure 1.

Figure 3, is a side elevation of a portion of the apparatus showing a view of the coupler heads interlocked and,

Figure 4, is a partial sectional view taken on the line (4), of Figure 3.

Referring more particularly to Figure 1, it will be seen that to the under side of two M. C. B. coupler heads marked 5, I attach by means of brackets 6, the supporting pieces 7, secured by bolts in slotted openings 8, to the brackets 6, and provided with vertical slots 9, in which are loosely carried the rear portions of the springs 10 held forward by pushers 25 in housings 24 on the bracket, as shown. The forward portions or outer parts whereof, are secured to the head 11, as shown, the heads and springs being arranged to interlock exactly like the heads and springs of my previous devices already known in the art, in which the heads are arranged to carry fluid pressure port openings for airbrake or signal purposes. The head 11, together with the spring 10, and the incline 12 arranged as

shown, all taken together constitute what I shall hereinafter call the gathering mechanism, that is the mechanism whereby the parts of the coupler as they are brought together with the coupling of the cars, are guided or directed, to a position where the several corresponding surfaces and devices automatically come together into proper register. As shown in Figure 4, the main portion of the head 11, carries the arrangement of port openings 13 which may be used for air brake or other fluid conduit throughout the train. Below the central portion of the head, I have arranged what may be termed a sub head or downward extension 14 on each of the half couplings, the sub head being adapted to carry contact connections comprising the electrical contact plug 15, constructed to permit movement of the plug inward and outward, that is laterally relative to the head, means for yieldingly holding the plug in projected position, that is in position for forming electrical contact connection with a companion plug of another half coupler, such means being designated by the numeral 17, and in the drawing shown as a spring within the insulating housing 16, the plug 15 having secured to it an electrical connecting cord or cable 18, said cable being made with a turn as indicated at 19, whereby flexibility or freedom of movement of the plug is secured without the necessity of any sliding electrical contact between the cable and the plug 15. The insulation surrounds the cable 18, as shown up to the end of the plug 15, so that there will be no short circuit within the coupler head or sub head, by contact of the cable with the parts.

When the half couplings are not united, the plug 15 will project outwardly until the shoulders 20, rest upon the inner walls of the insulating housing 16, the amount of projection of the plug 15, being sufficient so that when two companion heads are brought together, the coupling plugs will rub upon each other by the motion of the cars, so as to make a sliding contact which will brighten the surfaces, and introduce less resistance to the current, than if the contact was formed by a mere directly abutting engagement.

The two heads are each formed with a groove 21, (see Figure 4) and a tongue 22, the same being arranged to register with a corresponding groove and tongue on a companion coupler head when the devices are coupled, substantially as already shown in the prior patent heretofore issued to me. By means of the tongues and grooves referred to, when the two adjacent coupler heads come together, the springs opening will permit the two contacting surfaces to slide together, until corresponding tongues come into their proper grooves, when the heads move laterally toward each other under the pressure of the gathering springs and at the same time the plug 15, will be pushed into engagement by the springs 17, and rub their surfaces against each other, so as to make good connections, the rubbing or sliding contact being secured by the inclines 23, formed in connection with the tongues and grooves referred to

The operation of my invention is as follows: When two cars are run together in the act of coupling, the coupler heads slide together, with their corresponding lateral faces in contact, and the springs 10, pass around the opposite coupler heads, in a manner clearly shown in Figure 2, and are brought by means of the guiding surfaces 12, shown in Figure 1, in proper register, so that the contact plugs 15, will come together in the proper place. After the coupling is made the whole device forms practically a continuous or solid head which will secure and maintain satisfactory electrical connections between the contact plugs, regardless of any vibratory or oscillating movement of the cars, or any jerking or stretching, or compression of the coupler devices in the train, since all of such movements are taken care of by the gathering mechanism and the vertically movable mounting of the same already referred to.

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

1. An automatic electric coupler comprising a fixed frame, a head mounted for vertical movement in said frame, a gathering mechanism on the head and a resiliently mounted contact member in said head, the said gathering mechanism being adapted to bring the contact member in engagement with a similar one on a complementary head, by sliding movement thereon, substantially as described.

2. In an automatic electric coupler the combination with supports and gathering mechanism therefor, of a coupling head, a contact plug resiliently mounted therein for movement independent of the head, across the line of draft of the car, and gathering mechanism adapted to connect and disconnect the plug from a similar one on a complementary coupler by a sliding movement thereon, substantially as described.

3. An automatic coupler comprising a coupler head, gathering mechanism therefor, an electrical contact plug, an insulating housing for such plug constructed to permit movement of the plug relative to the head, means for yieldingly holding the plug in position for electric connection with a companion plug of another half coupler, an electric conductor 18 connected to said plug, and flexible electrical connections between said conductor and said plug, substantially as described.

4. In coupling apparatus the combination with an ordinary car coupler of an auxiliary coupler head yieldingly supported thereon

and having vertical play, the same being provided with the air pipe couplings and also with an electric coupling head and automatic gathering means adapted to register the contact point of the electric conductor of another coupler by sliding movement.

5. In an automatic electrical coupler the combination of two coupler heads yieldingly and movably supported in position, and provided with automatic gathering means, each of said heads being provided with spring pressed protruding electrical contact plugs, and means to bring them together in a sliding movement into juxtaposition by means of said gathering devices, substantially as described.

6. In automatic electrical couplers the combination of two subsidiary coupler heads and gathering devices spring-supported to have lateral and vertical play, each of said heads being provided with a spring-pressed protruding electrical contact plug mounted in a housing, whereby the sliding of the two heads into position will make contact between said plugs by sliding movement, substantially as for the purposes described.

7. The combination with a car coupler head, of a depending bracket thereon, a combination air pipe and electric coupler head resiliently mounted in said bracket and having vertical play therein, automatic gathering mechanism for the latter head, and an electric contact plug resiliently mounted within the head.

8. A car coupler having a depending bracket, an auxiliary coupler head resiliently and movably mounted in the bracket, having an air pipe coupling and an electric coupling with a contact plug adapted to engage and disengage by sliding movement on a complementary head, and protruded from the head by a spring, and independently-movable therein.

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Witnesses:
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