No. 803,245. PATENTED OCT. 31, 1905.

C. P. PARNELL.

PLUG OR CONNECTION FOR ELECTRIC LIGHT LINE WIRES.

APPLICATION FILED APR. 19, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

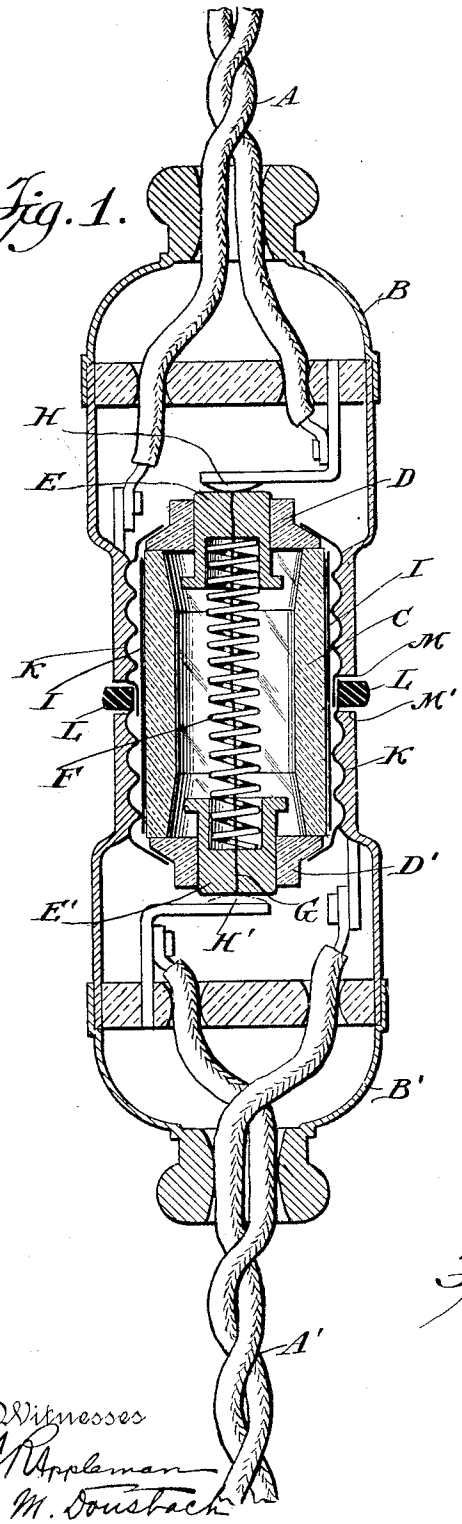
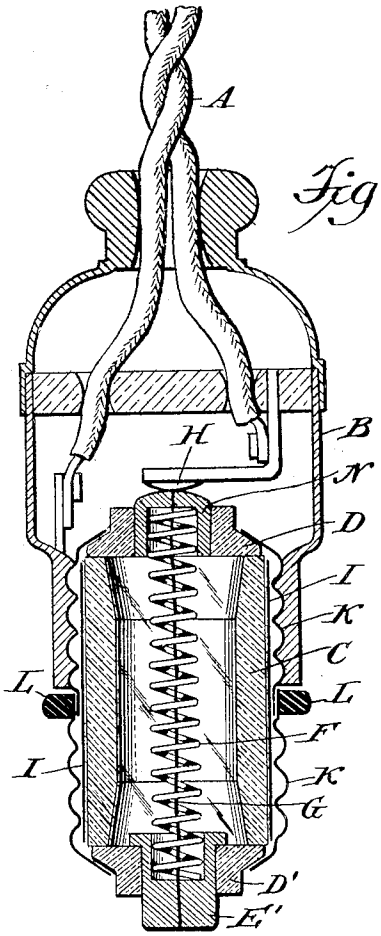


Fig. 3.



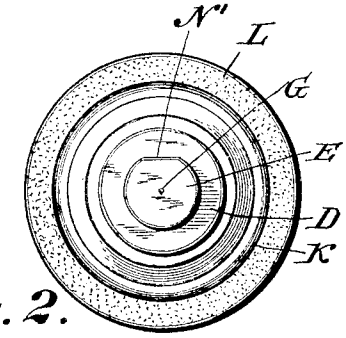


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 4.

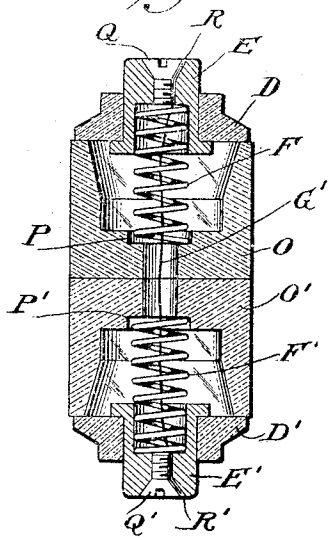


Fig. 6.

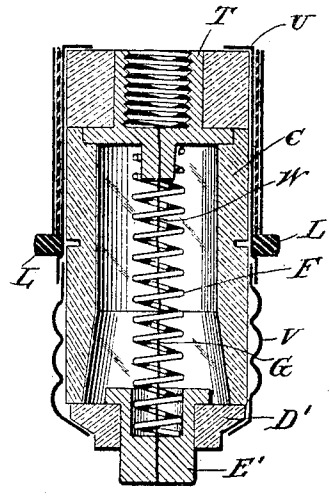
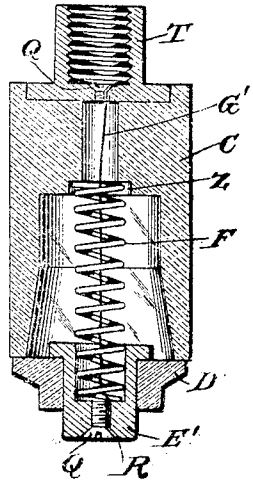


Fig. 7.



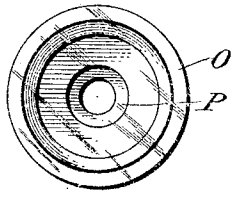


Fig. 5.

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UNITED STATES PATENT OFFICE.

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PLUG OR CONNECTION FOR ELECTRIC-LIGHT LINE-WIRES.

No. 803,245. Specification of Letters Patent. Patented Oct. 31, 1905.

Application filed April 19, 1904. Serial No. 203,850.

To all whom it may concern:

Be it known that I, CHARLES P. PARNELL, a citizen of the United States, and a resident of New Brighton, Staten Island, borough and county of Richmond, city and State of New York, have invented certain new and useful Improvements in Plugs or Connections for Electric-Light Line-Wires, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 illustrates a longitudinal sectional view in which two so-called "Edison" sockets are shown as connected by my improved connecting device. Fig. 2 illustrates a plan view looking at the upper end of the parts shown in section in Fig. 1, the socket-shells being omitted. Fig. 3 illustrates a longitudinal sectional view of the invention as applied to a so-called "Edison" socket, whereby it becomes a plug. Fig. 4 illustrates a longitudinal sectional view of the invention as applied to a fusible plug or coupling, the exterior metal parts being omitted. Fig. 5 illustrates a plan view looking down upon the upper end of the porcelain body of the coupler, as shown in Fig. 4. Fig. 6 illustrates a longitudinal sectional view of the invention as applied to the so-called "Thomson-Houston" plug. Fig. 7 illustrates the invention as applied to a fusible Thomson-Houston plug.

My invention embodies several improvements in the devices in question, among them prominently the following:

First. Under one form of the invention I provide a coupling device whereby two sockets in contradistinction to plugs may be connected together and the line thus extended by the employment of a relatively inexpensive intermediate part. Thus expense is avoided and convenience secured, because the expense of my improved coupler is very much less than that of a plug. Also it frequently hap- that linemen will have with them an abundance of sockets, but no plugs to engage with them, and by the use of my coupler two sockets can be joined, no plug being required. Under the invention also the coupler is provided with safety devices whereby short-circuiting is prevented when connecting or disconnecting, thus obviating liability of shock to the linemen or users of the device.

Second. My coupler whether employed in conjunction with two sockets or incorporated in a plug is provided with yielding devices whereby the contact-points are brought in proper electrical connection with each other, and yet all danger of distortion or fracture of any of the parts is avoided irrespective of the carelessness of the user or undue strain to which the parts may be subjected.

Third. The invention is adapted to both fusible and non-fusible plugs or sockets.

Referring now more particularly to Figs. 1 and 3, in which I show the invention as used for connecting two sockets together, A A′ represent the main-line wires. It will of course be understood that one of the sockets—say the upper one—may be a fixture instead of movable. B B′ are the exterior metallic shells of the sockets. C is a cylindrical or tubular part which may beneficially be made of porcelain. D D′ are two end pieces likewise made of porcelain. E E′ are two thimble-like parts, which may be made of metal, which have recesses in their opposed faces, as shown, within which respectively rest the ends of a spring F. G is the conducting-wire, which passes through the device, preferably through the center of the spring. The spring resiliently supports the two thimbles E E′, so that they may approach one another under pressure, thus preventing all possibility of injury to the socket-contacts H and H′. I is an exterior jacket or sleeve of metal, which incloses the porcelain tubular part C, to which the corrugated or threaded metallic part K is soldered or otherwise attached. L is a rubber ring which encircles the coupler about midway of its length and which in use will be brought up close against the circumferential shoulders M M′ of the two sockets. In this figure I show a space between the corrugated or metal parts K K and the sleeve I just inside the rubber ring L. This is to show the construction merely. As a matter of fact these metal parts are soldered or brazed together at this point, and also the corrugated or threaded metal parts K are soldered to the metallic sleeve which encircles the porcelain center C.

The thimbles E and E′ are preferably flattened, as at N′, (see Fig. 2,) on a part of their periphery, so as to prevent turning.

In order that the general principles of the invention may be appreciated and the subsequent portions of this specification better understood, I will at this point briefly describe the operation of the device as thus far illustrated.

Assume that the lineman has two sockets, but no plug, or that it is desirable for him to use two sockets instead of a plug, and that he wishes to extend the line. He screws one end of the coupler (shown in Fig. 1) into one of the sockets, preferably the one that is not yet connected with the line-wires—say the socket B′—until the rubber ring L brings up against the shoulder M′ of the socket. Thereupon, using this socket, which by the addition of the coupler to it has been transformed into a plug, as such plug, he screws the projecting end of the coupler into the other socket B until contact is made with the electric terminals in the usual manner and the shoulder M is brought in contact with the rubber ring. It will be noted that in screwing the coupler into the sockets when the contact-thimbles E and E′ engage with the terminals H and H′ no harm can arise to any part of the device whether the act of uniting them is carelessly or too powerfully done or not, because as soon as the contact takes place between the thimbles E and E′ and the terminals any further screwing together of the parts will result simply in compressing the spring F to a greater or less extent, the thimbles E and E′ moving through the caps D and D′, respectively. In this way it will be noted the coupler has been conveniently and successfully employed to continue the circuit through the two sockets.

The advantages arising from the employment of the rubber ring L are availed of during the unscrewing or disconnecting of the two sockets, for it will be noted that in unscrewing the parts it will be impossible to foretell whether the coupler will unscrew from the socket B and come away with the socket B′ or whether the socket B′ will unscrew from the coupler, in which latter event the exposed end of the thimble E′ and the exposed thread K on the coupler will present a dangerous feature, because if one should accidentally place his hand or finger upon the projecting parts referred to a short circuit would be established and a shock would result; but the rubber or other insulating ring L being present it may be grasped by the fingers of the person disconnecting the parts in such manner as to insure unscrewing of the coupler from the upper socket B, and as soon as it has receded sufficiently far to break connection between the thimble E and the terminal H the circuit is broken and danger of shock avoided.

Referring now to Fig. 3, it illustrates the invention as applied to an ordinary Edison socket—that is to say, a socket in which one of the contacts consists of a threaded exterior sleeve, the other contact being a centrally-located knob or plate. The construction in view of what has been already stated is obvious, because it is substantially the same as that shown in Fig. 1, excepting that inasmuch as the coupler is never supposed to be removed from the socket-like part B there is no occasion for the sliding thimble which makes contact with the contact-piece H. I therefore usually employ a hollow metallic part N, which is a little simpler and less expensive in construction than the sliding thimbles, and it is rigidly set in the porcelain head or cap D. At the lower end, however, I provide a sliding thimble E′, the same as in the other instance, so that I secure the advantages of resiliency, as heretofore explained.

In Figs. 4 and 5 I show a coupler resembling that shown in Fig. 1, excepting that the exterior metallic parts are not illustrated, but which is so constructed as to be "fusible," so-called. In it I prefer to make the central porcelain part in two pieces O and O′, and I provide a shouldered recess P and P′ in them, respectively, in which the adjacent ends of the spring F F′ rest, so that the spring is, in effect, two springs, there being an intermediate space for breaking the circuit between the two. G′, the same as before, is the conducting-wire, but in this instance it is of the fusible variety, and in order that it may be more conveniently replaced in the event of fusing I connect it with the thimbles E and E′, which may be substantially the same as before, by threaded screws Q and Q′, respectively, by the sides of which two little passages or grooves cut in the metal, of which the thimbles E and E′ are in this instance made, are shown at R R′. It will be readily understood that in the event of very high current, resulting in the fusing of the conductor G′, the circuit will be broken and also that it will be an exceedingly easy and simple matter to replace the conductor by simply unscrewing the little screws Q and inserting a new fusible conductor in an obvious manner.

Referring to Figs. 6 and 7, I show therein a form of my improved coupler adapted to the so-called "Thomson-Houston" fittings—that is to say, fittings in which the exterior contact consists of a flat ring connected with the outside shell or sleeve at or near the outer rim of the fitting, the same being suitably connected in circuit, the other or interior contact being a centrally-located part suitably threaded to engage with an appropriate device for completing the circuit. In these figures the interior circuit is made through a metallic bushing T and the exterior circuit through the sleeve U, transmitted to the socket by the threaded sleeve V. The conductor through the device is shown at W, and the sliding thimble in this instance is marked E′, the same as before, because its construction and operation may be the same. The insulating safety-ring L may be beneficially used in this construction also. Therefore it is lettered L, the same as before. In Fig. 7 I show the parts substantially the same as in Fig. 6, excepting that this being the form in which the fusible

conductor is used it is necessary to make the porcelain part C somewhat different and resembling that shown in Fig. 4, in which the resiliently-acting spring F is contained in a shouldered recess Z substantially the same as the recesses P and P′, (shown in Fig. 4,) and the fusible conductor G′ is or may be connected with the metallic parts by a screw Q, the same as above described.

It will be obvious to those who are familiar with this art that modifications may be made in the details of construction of the parts without departing from the essentials of the invention. Indeed, modifications will be desirable if the invention is to be used in conjunction with lamp-bases or in connection with fittings other than those above referred to. I illustrate and describe it as used in connection with such fittings, because they are by far the forms most extensively used. Nevertheless, since there are other fittings on the market and it will be an easy matter to fit the invention to them, I wish the scope of my protection to extend to them also, since the modifications in the details of construction which may be necessary to adapt the invention to use in connection with them are, as stated, obvious to those skilled in this art.

I claim—

1. A coupler for electric sockets embodying a non-conducting body part, a threaded exterior conductor and an interior conductor, the terminals whereof are yieldingly supported.

2. A coupler for electric sockets embodying a non-conducting body part, a threaded exterior conductor, an interior conductor, the terminals whereof are yieldingly supported, and a non-conducting safety-ring on the exterior conductor.

3. A coupler for electric sockets embodying a non-conducting body part, an exterior conductor threaded at both ends, an interior fusible conductor, the terminals whereof are yieldingly supported.

4. A coupler or plug for electric line-wires embodying a non-conducting body part, a threaded exterior conductor and an interior conductor, the terminals whereof are yieldingly supported.

5. A plug or extension device for electric line-wires embodying a non-conducting body part, a threaded exterior conductor and an interior fusible conductor, the terminal whereof is yieldingly supported.

6. A coupler device for electric line-wires embodying a non-conducting body part, an exterior conducting part, an interior conductor and movable terminals for the interior conductor spring-supported, whereby they are adapted to move under the pressure of the connection.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES P. PARNELL.

Witnesses:

PHILLIPS ABBOTT,

SAMUEL INGBER.