(No Model.)

D. J. CARTWRIGHT.

PLUG AND RECEPTACLE FOR ELECTRICAL PURPOSES.

No. 530,066. Patented Nov. 27, 1894.

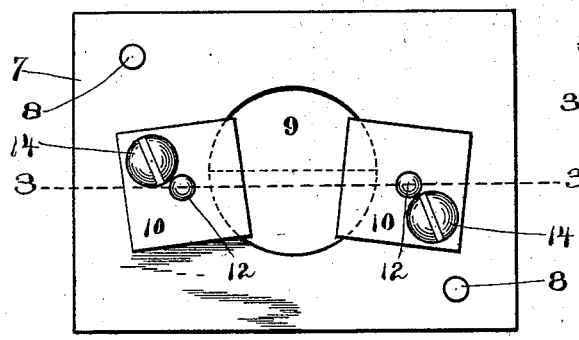

FIG. 2.

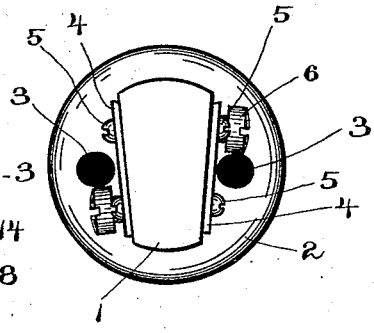

FIG. 1.

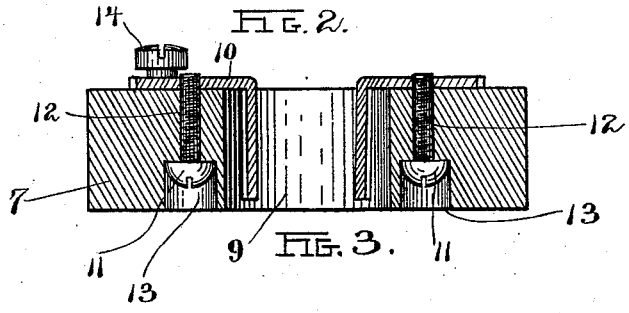

FIG. 3.

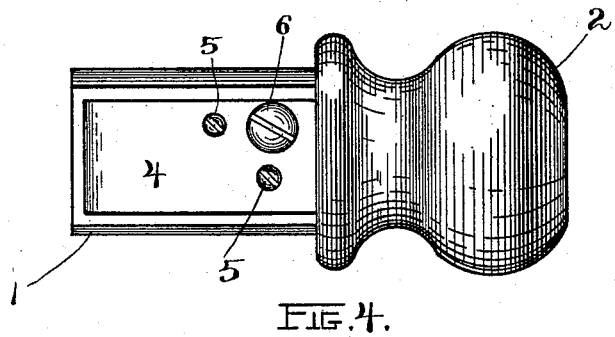

FIG. 4.

Witnesses -
Harry M. Reyst.
Arthur J. Randall.

Inventor -
David J. Cartwright
by Macleod Calver & Randall
his Attorneys.

UNITED STATES PATENT OFFICE.

DAVID J. CARTWRIGHT, OF BOSTON, MASSACHUSETTS.

PLUG AND RECEPTACLE FOR ELECTRICAL PURPOSES.

SPECIFICATION forming part of Letters Patent No. 530,066, dated November 27, 1894.

Application filed January 24, 1894. Serial No. 497,945. (No model.)

To all whom it may concern:

Be it known that I, DAVID J. CARTWRIGHT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Plugs and Receptacles for Electrical Purposes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to the electrical devices which are known as plugs and receptacles or sockets. In the use of devices of this class it sometimes occurs that at the moment at which the plug is introduced into the receptacle or socket it is held in such position that the poles of the electrodes thereof are reversed relatively to the position which they should occupy, and hence the said poles do not become properly associated with those of the electrodes in the receptacle or socket.

My invention has for one of its objects to obviate all liability of the plug to become placed in the receptacle or socket in an improper or reversed position; and it has for another of the objects thereof to provide a plug and receptacle or socket of improved character and construction.

The invention will first be fully described with reference to the accompanying drawings, in which latter is represented the best embodiment of my invention which I have so far devised, and then will be particularly pointed out and distinctly defined in the claims at the close of this specification.

In the said drawings, Figure 1 is a view in end elevation of a plug embodying my invention, the same being represented as it appears when looking at the end thereof which is inserted into the receptacle or socket. Fig. 2 is a view in plan of the receptacle or socket which is intended for use in connection with the plug of Fig. 1, it being constructed in accordance with my invention. Fig. 3 is a view of the receptacle or socket in section on the line 3—3 of Fig. 2. Fig. 4 is a view of the plug aforesaid in side elevation.

The plug is formed of any suitable material. At 1 is shown the inner or working end thereof. At 2 is the handle thereof. At 3, 3 are the holes through the said handle for the passage of the conducting wires. At 4, 4 are conducting plates or electrodes on the opposite sides of the body 1 of the plug. At 5, 5 are the screws by means of which the said plates or electrodes 4, 4, are secured to the body 1, and at 6, 6, are the binder screws by means of which the ends of the conducting wires, after emerging from the holes 3, 3, are united to the plates 4, 4. At 7 is the body-portion or block of the receptacle or socket, the same being constructed of incombustible material, such, for example, as slate, porcelain, or the like. At 8, 8 are holes therethrough for the passage of the screws which hold it to its support. At 9 is the hole for the reception of the inner or working end 1 of the plug. At 10, 10 are metal strips or plates secured to the said body or base by screws 11, 11, and forming electrodes. The plates or strips 10 10 are each bent into L-shape, one arm or portion thereof resting against the outer face of the body or block 7, as indicated clearly in Figs. 2 and 3, and the other end extending into the hole 9. The inwardly projecting arms or portions of the plates or strips 10 occupy positions at opposite sides of the holes 9, the free ends thereof converging slightly toward each other. In the embodiment of the invention which is represented in the drawings, the said hole 9 is circular and the surfaces of the said inwardly projecting arms occupy substantially the positions of chords of the circle. The said surfaces, however, are not parallel, but are located at a slight angle with reference to each other, so that the space between them is slightly tapering, it being wider at one end thereof than at the other. To secure this position of the plates or strips 10, the holes which are made in the outer arms thereof for the reception of the threaded stems of the securing screws 11, 11 are formed at midwidth of the said arms, measuring the latter from side-edge to side-edge thereof, and the said screws 11, 11 are passed through holes 12, 12 which are formed in the body-portion or block on a line to one side of and parallel with a diameter of the hole 9, as clearly indicated in Fig. 2. The two plates 10, 10 are identical with each other in form and construction, and in consequence of being made of one and the same pattern each of them is permitted to be used on either side of the hole 9. This facilitates and cheapens the production of the said plates or strips, since they are made

all alike. The formation of the holes 12, 12 on a line to one side of and parallel with a diameter of the hole 9 secures, as will be obvious, the oblique position of the inner portions or surfaces of the said plates or strips, and the symmetrical disposition or arrangement of the said surfaces with relation to each other and to the hole 9. The heads of the screws 11, 11 are sunk in recesses 13, 13 at the rear side of the body or block 7. At 14, 14 are the binding screws which are connected with the plates or strips 10, 10. The inner or working portion 1 of the plug corresponds in shape in cross-section with the transverse space between the inwardly extending arms of the plates or strips 10, 10, and is therefore somewhat wedge-shaped in cross section.

As will be obvious the plug can be inserted into the receptacle or socket only when it is presented in the right position relatively thereto, and can never become reversed through mistake or inadvertence. The distance between the strips 10, 10 is just sufficient to allow the plug with its plates or electrodes 4, 4, to be forced into the space between them, although the form of the plug and the position of the inwardly projecting arms of the plates or strips 10, 10 facilitates the entrance of the plug into the said space. The elasticity of the free ends of the said arms causes them to bear firmly against the plates 4, 4, on the plug, thereby securing perfect sliding contact.

It is to be observed that the lateral edges of the inwardly extending arms of the plates or strips 10, 10 normally stand close to the wall of the hole 9 through the body or block 7. As a result of this it follows that lateral strain exerted upon the plug and acting to tilt the same laterally in either direction cannot cause the inner end of the plug to bend the inner ends of the strips 10, 10 so as to impair the contact between the said strips and the plates 4, 4 on the plug. In some prior forms of receptacles or sockets, it has occurred frequently that the lateral strain upon the plug has operated to cause the inner ends of the arms of the said plates or strips to become permanently bent in directions away from the plug, thereby impairing the contact. This cannot occur in my receptacle or socket, inasmuch as but a slight lateral movement of the inner end of either strip is permitted before the said end brings up against the wall of the hole 9 and then all further movement is prevented.

The sides of the working end or body of the plug between the side edges of the plates 4, 4 are rounded to fit the curvature of the portions of the wall of the hole 9 which extend between the side edges of the opposite plates or strips 10, 10. The working end or body of the plug with the plates 4, 4 thereon is intended to fit snugly into the space bounded by the inwardly turned arms of the plates or strips 10, 10, and the said portions of the curved wall of the hole 9. One advantage of having this space and the working end of the plug somewhat tapering or wedge-shaped in cross-section lies in the fact that any lateral strain on the plug causing it to press more strongly against one of the plates or strips 10, 10 will operate to cause the plug to bear in the direction of the larger side of the opening. This will result in the larger side of the plug taking a bearing against the solid portion of the body or block 7 at the large side of the space in which the plug fits, thereby causing the pressure to be resisted by the block 7 itself and in a measure relieving the plates or strips 10, 10.

My invention is particularly serviceable for use in connection with portable arc-lights on low potential circuits which are employed in theatrical work. In such cases it is customary to have a number of receptacles or sockets connected with the wires in the building and located in different places. These lights require to be somewhat frequently manipulated from the various points, and this may be done with the use of my invention without the danger which ordinarily exists of putting the plug in a reversed position into the desired one of the sockets, and thereby sending the current through the light or lights in a reversed direction. It is serviceable also in volt-meter switch-board work, where it obviates all danger of the current being sent in a reversed direction through the volt-meter; also, for use in connecting vats for electroplating and electrotyping. Here it prevents a reversal of the current and resulting abstraction or removal of the metal which would occur instead of the desired addition or plating. It is particularly useful, also, in storage battery work where the batteries are charged in multiple and discharged in series, each group of batteries being provided with one plug and two receptacles, one of the latter serving for discharging and the other for charging.

I claim as my invention—

1. In combination, a plug having a working portion or body which tapers in cross-section, and electrodes applied to the converging sides thereof, a block formed with a cavity therein constituting a socket for the reception of said working portion or body of the plug and electrodes secured to said block and occupying positions in the cavity at opposite sides thereof at an angle to each other corresponding with that of the sides of the body of the block to receive between them the latter and its electrodes, substantially as described.

2. In combination, the plug having a working portion or body tapering in cross-section, electrodes applied to the converging sides thereof, a block having the circular hole therethrough, and the L-shaped strips 10, 10 having the outer arms thereof attached to one face of the said block and the other arms extended into the said hole, the surfaces of the latter arms standing at an angle to each other

corresponding with that of the sides of the plug and the free ends of such arms converging toward each other, substantially as described.

3. In combination, the plug having the working portion or body thereof formed tapering in cross-section, with electrodes applied to the converging sides thereof and with the intermediate portions of the same curved as described, the block having the circular hole formed therethrough, and the L-shaped strips 10, 10 having the outer arms thereof attached to one face of the said block and the other arms extended into the said hole, the surfaces of the latter arms standing at an angle to each other corresponding with that of the sides of the plug and the free ends of such arms converging toward each other, substantially as described.

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

DAVID J. CARTWRIGHT.

Witnesses:
MILAN F. STEVENS,
CHAS. F. RANDALL.