H. P. HASTINGS & F. C. SMITH.

ELECTRIC PLUG.

APPLICATION FILED JULY 30, 1915.

1,277,071. Patented Aug. 27, 1918.

Fig. 4.

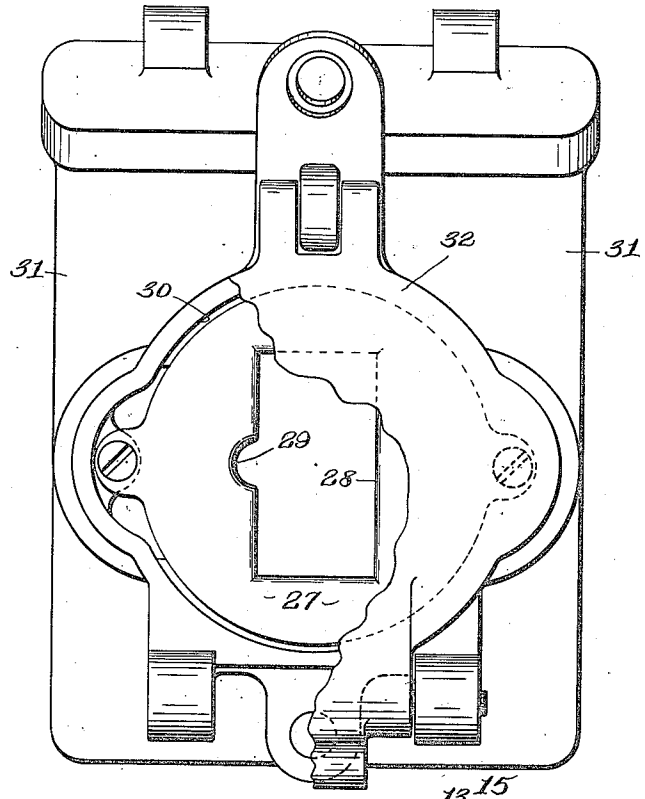


Fig. 1.

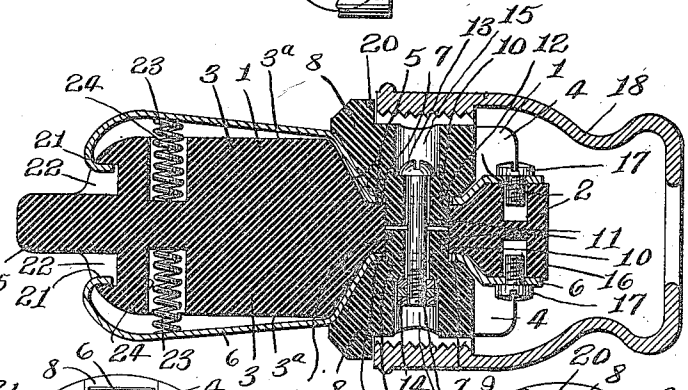


Fig. 3.

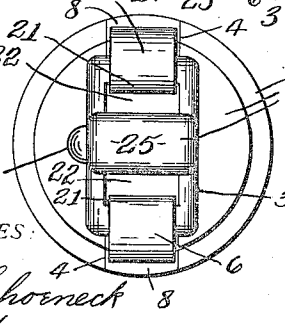
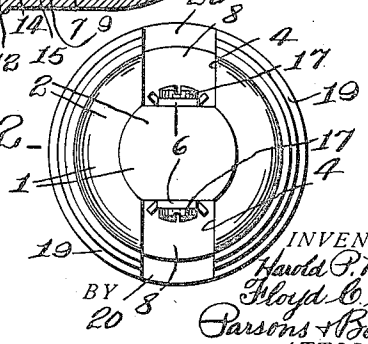


Fig. 2.



WITNESSES:

C. C. Schoeneck

Chas. H. Young.

INVENTORS

Harold P. Hastings

Floyd C. Smith

BY

Parsons & Bodell.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HAROLD P. HASTINGS AND FLOYD C. SMITH, OF SYRACUSE, NEW YORK, ASSIGNORS TO CROUSE-HINDS COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

ELECTRIC PLUG.

1,277,071. Specification of Letters Patent. Patented Aug. 27, 1918.

Application filed July 30, 1915. Serial No. 42,760.

To all whom it may concern:

Be it known that we, HAROLD P. HASTINGS and FLOYD C. SMITH, citizens of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Electric Plug, of which the following is a specification.

This invention has for its object an electric plug by which electric connection can be made in a circuit in which a socket is connected to receive the plug, which plug is particularly simple and compact in construction, and the invention consists in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings, in which like characters designate corresponding parts in all the views.

Figure 1 is a longitudinal sectional view of this plug.

Figs. 2 and 3 are opposite end elevations thereof, the cap being removed in Fig. 2.

Fig. 4 is an end elevation of the socket for receiving the plug and the box in which the socket is located, the cover of the box being partly broken away.

This plug comprises, generally, a body of insulation having grooves therein, terminals extending lengthwise of the body and having portions extending into the grooves, means for clamping said portions of the terminals into the grooves, the ends of the terminals remote from the clamping means being movable radially relatively to the body, and a cap for the portion of the body to which the terminals are clamped.

1 designates the body which includes a head 2 and a noncircular portion 3 projecting in advance of the head and being of less diameter than the head. The projecting portion 3 of the body is formed with lengthwise surfaces 3^a over which the terminals, to be described, lie, and the head 2 is formed with a plurality of grooves 4 extending lengthwise thereof and alined with the surfaces 3^a, the bottoms of the grooves converging inwardly at 5 from the rear ends of the surfaces 3^a.

6 designates the terminals which extend lengthwise of the surfaces 3^a and have portions 7 extending into and lying upon the bottoms of the grooves 4 and on the converging surfaces 5 thereof. The grooves 4 are here shown as located diametrically opposite each other as the plug is designed for a two-wire system, but the plug may be provided with other terminals 6 when adapted for other systems, as a three-wire system, or when the plug has more than one pair of terminals. The terminals are clamped to the head 2 of the body 1, and the means for clamping the terminals comprises blocks 8 of insulation fitting into the grooves 4 and pressing against the portions 7 of the terminals 6, and a clamping member, as a screw 9, extending transversely through the blocks, the portions 7 of the terminals and the interposed portion of the body 1.

As here shown, the body 1 is formed with an enlarged transverse passage 10 which opens at its opposite ends into the grooves 4 through the bottoms thereof, and the blocks 8 are formed with plugs 11 extending into the passage 10 and through perforations 12 in the portions 7 of the terminals.

The head 13 of the screw and the nuts 14 turning on the screw are located in counterbores 15 formed in the blocks 8, thus both terminals are held in position by a single fastening member common to both, and this fastening member is insulated from the terminals and the cap, to be described, by the blocks. The rear ends of the terminals overlie a central projection or boss 16 provided on the head 2 and are provided with binding devices 17, these binding devices being located partly in the rear ends of the grooves 4, as seen in Fig. 1.

Preferably, the bottoms of the grooves near the rear ends thereof diverge outwardly so that the terminals 6 are provided with depressed portions at the points where they are clamped to the body 1.

The head 2 is preferably threaded, and a cap 18 threads on the head against an annular flange 19 at the front side of the head near the point where the head joins the projecting portion 3. The blocks 8 are formed with shoulders 20 at their advance ends which conform to the flange 19. The blocks, however, terminate short of the rear ends of the grooves 4 so that spaces are provided for the binding devices 17.

Portions of the terminals 6 overlying the surfaces 3^a are normally tensioned to flare outwardly and are inturned at 21 at their

free ends and curve around the front end of the plug and extend into recesses 22 which permit and limit the radial movement of the free ends of the terminals when the plug is being inserted in, or removed from, its socket. Coiled springs 23, interposed between the inner sides of the terminals 6 and the bottoms of radial sockets 24 in the body, normally tend to hold the advance ends of the terminals 6 outwardly and to resist compressing movement inwardly when the plug is being inserted in the socket, these springs 23 acting to hold the terminals 6 snugly against the terminals in the socket.

The body 1 is also provided at its advance end with a point 25 extending in advance of the advance ends of the terminals 6, and said body is also formed with the lengthwise rib 26 on one side thereof which enters a correspondingly shaped groove in the socket, so that the plug must always be inserted in one position in the socket. Hence, owing to the rib 26, terminals of the socket and the plug of like polarity must always be brought into engagement. In other words, the plug cannot be reversed.

27 designates the socket having an opening 28 for receiving the projecting portion 3 of the plug, the opening having a groove 29 on one side thereof for receiving the rib 26. The socket is provided with suitable terminals, not shown, with which the terminals 6 coact. Said socket is here shown as arranged in a cylindrical entrance 30 projecting from one end of the box 31 in which is located an electrical appliance, usually a fuse plug block not shown, and the advance end of this entrance is provided with a hinged cover 32.

This plug is particularly advantageous in that it is composed of but few parts which are assembled in a particularly simple and compact manner.

What we claim is:—

1. An electric plug comprising a body including a head at one end formed with lengthwise grooves therein, and a portion projecting in advance of the head, terminals extending lengthwise of the body and having portions lying on the bottoms of the grooves, a single fastening member for holding the terminals in position, said member extending transversely through the portion of the terminals lying in the grooves and the interposed part of the head, and means for insulating the terminals from the fastening member, substantially as and for the purpose described.

2. An electric plug comprising a body formed with a head at one end having lengthwise grooves in opposite sides thereof, and a portion projecting in advance of the head, terminals extending along the body and having portions in the grooves, the portions of the terminals in the grooves being formed with holes therethrough, insulating blocks located in the grooves and overlying the terminals, and a fastening member extending through the blocks and the holes in the terminals and the interposed part of the body, substantially as and for the purpose specified.

3. An electric plug comprising a body including a head formed with lengthwise grooves therein, and a portion projecting in advance of the head, terminals extending lengthwise of the body and having portions on the bottoms of the grooves, means for holding the terminals in position, said means extending transversely through the portions of the terminals lying in the grooves and the interposed part of the body, means for insulating the terminals from the former means, and a cap on the head and covering the grooves, the terminal insulating means also insulating the terminals from the cap, substantially as and for the purpose set forth.

4. An electric plug comprising a body including a head formed with lengthwise grooves therein, and a portion projecting in advance of the head, the head having a peripheral annular flange at its advance end, terminals extending lengthwise of the body and having portions lying on the bottoms of the grooves, means for holding the terminals in position including blocks of insulation lying in the grooves, and fastening means extending through the blocks into the body, and a cap on the head abutting against the flange, substantially as and for the purpose described.

5. An electric plug comprising a body formed with a head, and a portion projecting from the head of less dimension in cross-section than the head, the head having a peripheral flange where it joins the projecting portion, the projecting portion being formed with lengthwise surfaces and the head being formed with grooves alined with said surfaces, terminals overlying said surfaces and having portions extending into the grooves, blocks of insulation fitting in the grooves and overlying the portions of the terminals therein, a fastening member extending transversely through the blocks, the terminals and into the head, and a cap threading on the head and bearing against said flange, substantially as and for the purpose specified.

6. An electric plug comprising a body comprising a head at one end, the head being formed with lengthwise grooves on opposite sides thereof and with a transverse passage opening into the grooves through the bottoms thereof, the body also including a portion in advance of the head, terminals extending lengthwise of the projecting portion of the body and having portions deflected into the grooves and lying on the bottoms

thereof and formed with openings alined with the ends of the transverse passage, blocks of insulation located in the grooves and formed with plugs extending into the transverse passage and through the openings of the terminals, and a fastening member extending transversely through the blocks and said plugs, substantially as and for the purpose set forth.

7. An electric plug comprising a body including a head formed with grooves, and a projecting portion in advance of the head, and terminals extending lengthwise of the periphery of the projecting portion of the body and having portions lying in the grooves, the terminals having binding devices near the rear ends of the grooves, substantially as and for the purpose described.

8. An electric plug comprising a body including a head formed with grooves and a projecting portion in advance of the head, terminals extending lengthwise of the projecting portion of the body and having portions lying in the grooves, and blocks of insulation located in the grooves and terminating short of the rear ends of the grooves, the terminals having devices extending into the parts of the grooves unfilled by the blocks, substantially as and for the purpose specified.

9. An electric plug comprising a body including a head at one end, and a portion projecting in advance of the head, the head being formed with grooves in opposite sides thereof, terminals extending lengthwise of the body and overlying the projecting portion of the body, and the grooves having their bottoms extending inwardly from the surfaces of the projecting portion of the body over which the terminals lie, blocks of insulation located in the grooves, portions of the blocks of insulation forming continuations of the head of the body at the point where the terminals enter the grooves, and the head joins the projecting portion, and means for holding the blocks of insulation and the terminals in position on the body, substantially as and for the purpose set forth.

10. An electric plug comprising a body formed with a radially extending recess in one end face, a terminal extending lengthwise of the body, and means for clamping the terminal to the body near the end remote from the recess, the other end of the terminal being turned backwardly into said recess, the portion of the terminal beyond the point at which it is clamped to the body being movable radially, and the recess permitting and limiting said radial movement, substantially as and for the purpose set forth.

11. An electric plug comprising a body formed with a lengthwise surface and with a head formed with a groove at one end of said surface, a terminal extending lengthwise of the body and overlying said surface and having a portion extending into said groove, a block of insulation fitting in the groove and overlying the portion of the terminal therein, and a fastening member extending transversely through the block, the terminal and the body, substantially as and for the purpose described.

12. An electric plug comprising a body formed with a plurality of lengthwise surfaces and with grooves alined with said surfaces and extending into the body and located at corresponding ends of said surfaces, terminals extending lengthwise of said surfaces and having portions extending into the grooves, and means for clamping the terminals in the grooves, substantially as and for the purpose specified.

In testimony whereof we have hereunto signed our names at Syracuse, in the county of Onondaga and State of New York, this 28th day of June, 1915.

HAROLD P. HASTINGS.
FLOYD C. SMITH.