April 19, 1932. W. HUPPERT 1,854,842

ELECTRIC PLUG

Filed March 16, 1929

Fig. 1.

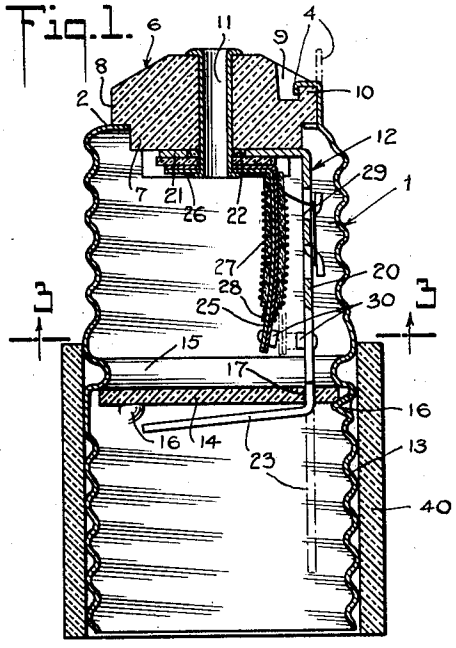


Fig. 2.

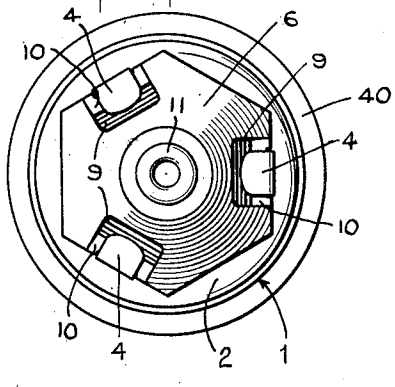


Fig. 3.

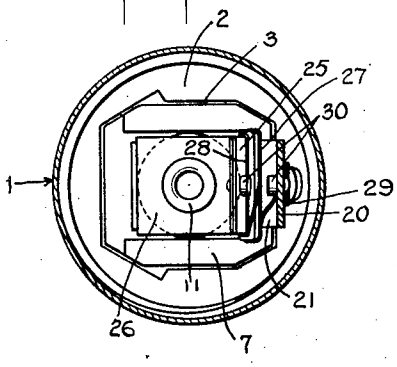
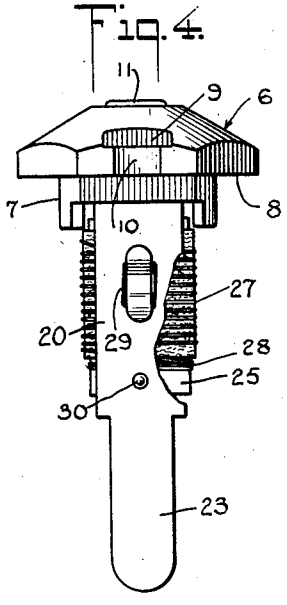


Fig. 4.



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UNITED STATES PATENT OFFICE

WILLIAM HUPPERT, OF NEW YORK, N. Y.

ELECTRIC PLUG

Application filed March 16, 1929. Serial No. 347,721.

My invention relates to electric fittings of the screw plug type, including in some cases a thermo-flasher contained in the plug.

One principal object of the invention is to provide a plug structure which is very simple, and arranged for easy and rapid assembly. Another object is to provide a thermo-flasher which is assembled as a unit with an insulator which also carries the center contact of the plug and is inserted and secured in the plug shell in a simple and effective way.

The characteristics and advantages of the invention are further sufficiently explained in connection with the following detail description of the accompanying drawings, which illustrate certain representative embodiments of the invention. After considering these examples, skilled persons will understand that many variations may be made without departing from the principles involved, and I contemplate the employment of any structures that are properly within the scope of the appended claims.

Fig. 1 is an axial section of a plug structure embodying the invention in one form;

Fig. 2 is a top plan;

Fig. 3 is a section at 3—3 of Fig. 1; and

Fig. 4 is a right-side elevation of the insulator and thermo-flasher assembled as a unit and ready for insertion in the plug shell.

Disregarding the thermo-flasher, described hereinafter, the plug comprises a threaded shell 1 which may be as usual except for its structure or formation at the upper end (as viewed in Fig. 1). At the upper end the sheet metal composing the shell is turned in as at 2 and cut to form a polygonal, or preferably a substantially square aperture 3, with a plurality (in the present example, three) insulator-retaining fingers 4 projecting from the aperture-margin. When the shell is ready to receive the insulator presently described, the retaining fingers extend straight up in line with the lower portions thereof, as shown in dotted lines in Fig. 1.

To co-operate with the shell I provide an insulator 6 of any suitable moldable composition. This has at its lower or inner end a polygonal formation 7 to correspond with the aperture 3 in the shell; that is, in the present case the formation 7 of the insulator is substantially square to enter and be held against rotation by the shell aperture formation. Above the inserted portion 7 is a flange 8 resting on the shell flange 2. This flange or outer portion of the insulator may have almost any form but conveniently it is polygonal, providing flat peripheral faces above which are formed, on the upper or outer face of the insulator, axially directed sockets 9 set inward from shoulders or flanges 10. The insulator is centrally apertured, and any suitable metal center contact member such as 11 is inserted in the aperture and this may in turn be connected to any other device, the circuit of which is to be completed by contact with the shell 1, such for example, as a member of the thermo-flasher later described.

The insulator is inserted in the shell in a manner easily understood from the drawings, and is secured by bending the end portions of the retaining fingers 4 over the flanges 10 and down into the socket formations 9, thereby firmly retaining the insulator in position by very simple means.

In one form the plug structure includes a thermo-flasher 12, assembled as a unit with the insulator and its center contact, and quickly and easily inserted in the shell structure, the assembly being completed by the act of clenching the fingers 4 and one other operation performed on a part of the thermo-flasher, as later explained. The thermo-flasher plug provides a simple and economical means for inserting a thermo-flasher in any desired circuit, such, for example, as that of a lamp, by screwing one portion of the plug into any screw socket and then screwing the lamp into the outer or socket portion of the plug structure, as will appear.

When a thermo-flasher is included the shell 1 is extended to provide an outer threaded portion 13, which is dimensioned to act as a socket, to receive any standard lamp or screw plug. An insulating disk 14 is secured within the metal sleeve at a point intermediate the threaded portions 1 and 13 or at the bottom (inward end) of the socket portion 13. Disk 14 must be of smaller diameter than the interior of the lower shell portion in order to

permit insertion and it is retained in position by an impressed annular bead 15 in the shell against which one side of the dished edge rests and impressed lug formations 16 engaging the opposite side of the disk edge at three or more spaced points around its periphery. The disk has a slot 17, near one edge, for purposes to be explained.

The thermo-flasher 12 may be of any suitable type. In the present example it includes as a principal feature a conducting and contact strip 20 of fairly stiff, but bendable, spring metal. This has a base portion 21 apertured to fit around the center contact 11 which may be in the form of a solid or a hollow rivet, and may be definitely located and spaced by an insulating washer 22. For securing the parts of the thermo-flasher to the insulator 6, the center contact 11 is preferably in the form of a hollow rivet, to provide for ventilation and cooling. The strip 20 also has an end portion 23 of reduced width, to pass through slot 17 in disk 14, and this end portion remains straight, as shown in Fig. 4 and in dotted lines in Fig. 1, after assembly of the insulator and thermo-flasher and until the thermo-flasher is inserted in the plug structure, after which the portion 23 of strip 20 is bent up angularly, adjacent disk 14, as shown in solid lines in Fig. 1, to form the center contact of the socket portion of the plug structure. The movable or thermal element 25 of the flasher consists of duplex metal as usual in such devices. It has a portion 26 insulated from the base of strip 20 and apertured to receive the center contacts, and in electrical contact therewith. The parts of the thermo-flasher are secured to the insulator 6 by the clenching of the tubular rivet. The thermal strip 25 has insulated thereon the heating winding 27, one end of which is electrically connected to the thermal strip at 28 and the other end is connected to strip 20 at 29. The respective strips carry contacts 30 for making and breaking the heating circuit. The operation of such devices is well understood in the art.

The "socket" portion, 13, of the shell may be inserted in a protecting sleeve 40 of fibre or other suitable insulating material, which may have a tight friction fit on the shell, or be otherwise secured thereto.

The complete unit, consisting of the insulator 6 and the thermo-flasher, is inserted in the socket structure and secured by the clenching of fingers 4 and bending of part 23 of strip 20 as above explained.

I claim:—

1. An electric socket plug structure comprising a threaded shell provided with a non-circular aperture at its inner end, the material of the shell laterally of the aperture extending beyond the edge of the aperture, retaining fingers projecting from said shell adjacent to said aperture, an insulator body comprising a portion conforming generally to the contour of said aperture, and adapted to be received therein, said insulator body further comprising portions extending laterally of said first named portion and adapted to abut that part of the shell laterally disposed to said aperture when said first named portion is positioned within said aperture, said insulator body being provided with recesses on a face opposite said first named portion, said recesses being adapted to receive said retaining fingers when they are bent, a center contact passing through said insulator body disposed within said threaded shell and provided with a perforation, the outer end portion of said threaded shell forming one terminal of the socket an insulating disk disposed in said outer end portion of said shell and a conducting strip secured to said center contact adjacent said first named portion of said insulator body and disposed and having a length to pass through an aperture in said insulating disk to allow the free end thereof to be bent over the outer face of said insulating disk to serve as the center contact of the socket of the plug.

2. An electric socket plug structure comprising a threaded shell provided with an aperture at its inner end, the material of the shell laterally of the aperture extending beyond the edge of the aperture, retaining fingers projecting from said shell adjacent to said aperture, an insulator body comprising a portion adapted to be received within said aperture, said insulator body further comprising portions extending laterally of said first named portion and adapted to abut that part of the shell laterally disposed to said aperture when said first named portion is positioned within said aperture, said insulator body being provided with recesses on a face opposite said first named portion, said recesses being adapted to receive said retaining fingers when they are bent, a center contact passing through said insulator body, disposed within said threaded shell, the outer end portion of said threaded shell forming one terminal of the socket, an insulating disk disposed in said shell, and a conducting strip secured to said center contact adjacent said first named portion of said insulator body and disposed and having a length to pass through an aperture in said insulating disk to allow the free end thereof to be bent over the outer face of said insulating disk to serve as the center contact of the socket of the plug.

3. An electric socket plug structure comprising a threaded shell provided with a polygonal aperture at its inner end, the material of the shell laterally of the aperture extending beyond the edge of the aperture, retaining fingers projecting from said shell adjacent to said aperture, an insulator body comprising a polygonal portion conforming generally to the contour of said aperture,

and adapted to be received therein, said insulator body further comprising portions extending laterally of said first named portion and adapted to abut that portion of the shell laterally disposed to said aperture when said first named portion is positioned within said aperture, said insulator body being provided with recesses on a face opposite said first named portion and disposed adjacent to the midpoint of the polygonal sides of said body, said recesses being adapted to receive said retaining fingers when they are bent, a center contact in the form of a hollow member passing through said insulator body, the outer end portion of said threaded shell forming one terminal of the socket, an insulating disk disposed in said shell to form two separate compartments therein, and a conducting strip secured to said center contact adjacent said first named portion of said insulator body and disposed and having a length to pass through a perforation in said insulating disk to allow the free end thereof to be bent over the outer face of said insulating disk to serve as the center contact of the socket of the plug.

4. A combined socket plug and thermo flasher comprising a threaded shell provided with a non-circular aperture at its inner end, the material of the shell laterally of the aperture extending beyond the edge of the aperture, retaining fingers projecting from said shell adjacent to said aperture, an insulator body comprising a portion conforming generally to the contour of said aperture, and adapted to be received therein, said insulator body further comprising portions extending laterally of said first named portion and adapted to abut that part of the shell laterally disposed to said aperture when said first named portion is positioned within said aperature, said insulator body being provided with recesses on a face opposite said first named portion, said recesses being adapted to receive said retaining fingers when they are bent, a center contact passing through said insulator body disposed within said threaded shell and provided with a perforation, the outer end portion of said threaded shell forming one terminal of the socket, an insulating disk disposed in said shell, a conducting strip secured to said center contact adjacent said first named portion of said insulator body and disposed and having a length to pass through an aperture in said insulating disk to allow the free end thereof to be bent over the outer face of said insulating disk to serve as the center contact of the socket of the plug, and a thermo-flasher assembled on the inner end of said insulator body and comprising a bendable spring metal element secured to the under side of said insulator body by said center contact and adapted to cooperate with said conducting strip to make and break the circuit.

5. A combined socket plug and thermo flasher comprising a threaded shell provided with an aperture at its inner end, the material of the shell laterally of the aperture extending beyond the edge of the aperture, retaining fingers projecting from said shell adjacent to said aperture, an insulator body comprising a portion adapted to be received within said aperture, said insulator body further comprising portions extending laterally of said first named portion and adapted to abut that part of the shell laterally disposed to said aperture when said first named portion is positioned within said aperture, said insulator body being provided with recesses on a face opposite said first named portion, said recesses being adapted to receive said retaining fingers when they are bent, a center contact passing through said insulator body disposed within said threaded shell, the outer end portion of said threaded shell forming one terminal of the socket, an insulating disk disposed in said shell, a conducting strip secured to said center contact adjacent said first named portion of said insulator body and disposed and having a length to pass through an aperture in said insulating disk to allow the free end thereof to be bent over the outer face of said insulating disk to serve as the center contact of the socket of the plug, and a thermo flasher assembled on the inner end of said insulating body and comprising a bendable spring metal element secured to the under side of said insulator body by said center contact and adapted to cooperate with said conducting strip to make and break the circuit.

In testimony whereof I have signed this specification this 8th day of March, 1929.

WILLIAM HUPPERT.