April 16, 1935. J. M. G. FULLMAN 1,998,129

ELECTRICAL PLUG

Filed Feb. 25, 1933

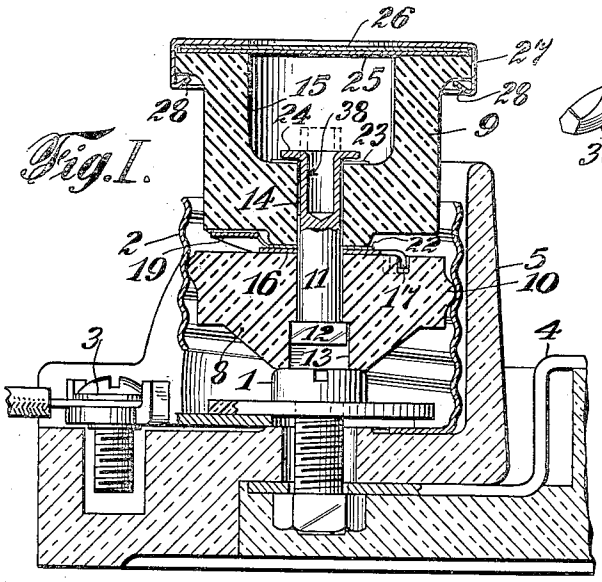

Fig. I.

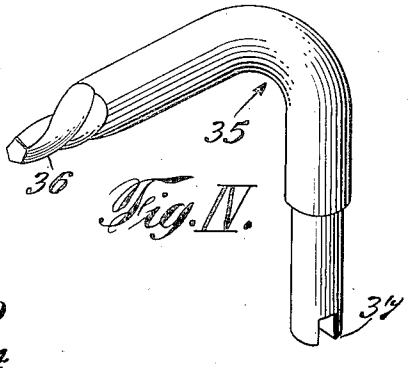

Fig. IV.

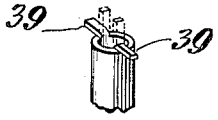

Fig. III.

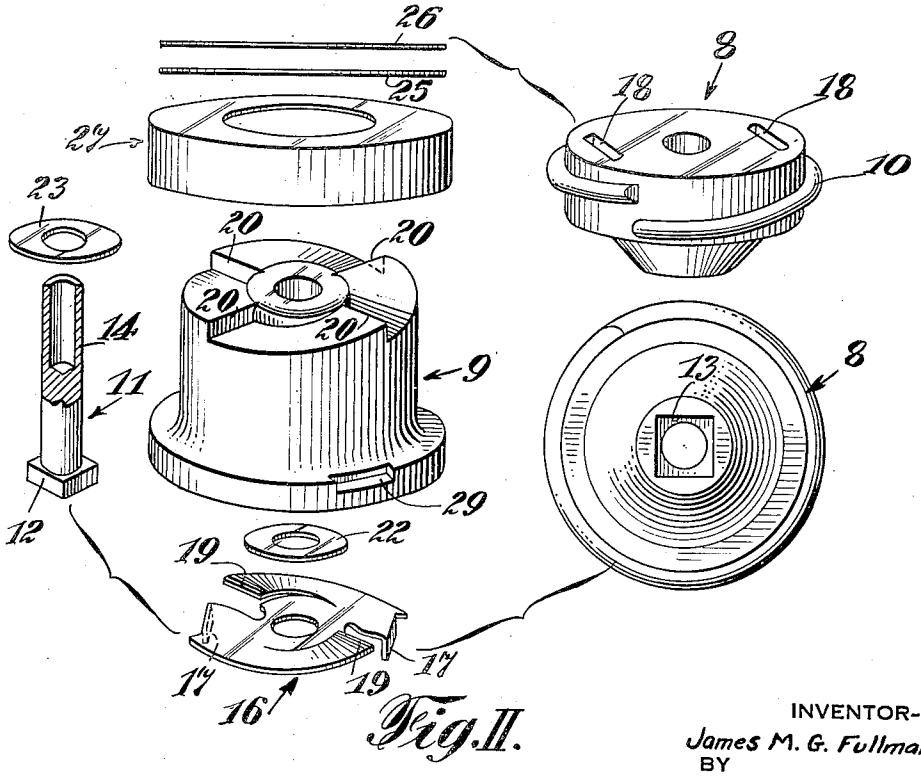

Fig. II.

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1,998,129

ELECTRICAL PLUG

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9 Claims. (Cl. 173—356)

This invention relates to screw plugs for electric sockets. In its broader aspects, the invention is applicable to screw plugs generally, but it is particularly suited to fuse plugs or dummy fuse plugs and hence will be specifically disclosed in that connection.

In many instances it is desired to insert into an electric socket a screw plug which may be readily removed by an authorized person but which is difficult to remove by an unauthorized person. One example is fuse plugs used to protect circuits from overload. It is a matter of common occurrence that when a fuse plug blows out a consumer or uninformed person removes the plug and restores the circuit by placing beneath the burnt out plug a coin, tinfoil, or the like, thus leaving the circuit without protection. If the plug were not removable by the consumer, an authorized person would have to be called, and he would see that the circuit was in proper condition to again have power applied to it and would then install a new fuse of the proper rating.

Another instance in which it is desired to prevent the removal of plugs is where dummy plugs are put into the fuse socket to cut off the supply of current to a particular consumer, sub-tenant, or the like. Such cut-offs can, of course, be made by means of lock switches, but these are relatively expensive and in practice the circuit may not be already equipped with such a device whereas the circuit is always equipped with a fuse socket into which a dummy plug can be inserted.

A general object of the invention is to provide an improved screw plug for electric sockets which can be readily inserted into the socket in the conventional manner and can be readily removed by an authorized person, but which is difficult or impossible of removal by an unauthorized person.

Another object of the invention is to provide a rugged inexpensive plug capable of insertion into an electric socket in the conventional manner and incapable of removal without a special tool of a type not likely to be in the hands of an unauthorized person.

A more specific object of the invention is to provide a dummy fuse plug having an appearance which does not advise the uninitiated that it is a dummy and which can only be removed from the socket by special means which are normally out of view of an observer and are not likely to be discovered by the uninitiated.

The present invention is in some respects an improvement upon the plug disclosed in the patent to Schmidt 1,841,638, January 19, 1932.

Fig. I is a cross sectional view showing a preferred embodiment of the invention in place in a conventional fuse socket.

Fig. II is an exploded view showing the various component parts of the plug.

Fig. III is a perspective view showing a modified flanging of the pivot pin.

Fig. IV is a perspective view showing a special tool for removing the plug from the socket.

In Fig. I there is shown a conventional fuse socket having a center electric contact 1 and a screw threaded shell contact 2. Circuit connection to the socket contacts is adapted to be made through terminal 3 and lead 4 which may be so arranged that it is difficult to wire around the fuse. The supporting structure for the conducting parts of the socket is usually made of some such material as porcelain and the shell contact 2 of the socket is usually embraced by an annular insulating wall 5 which substantially encloses it.

The dummy plug has a nose 8 and an operating head 9 each of which are preferably molded from a suitable insulating material such as fiber, porcelain, a phenol condensation product, or the like. The nose 8 has a screw thread 10 adapted to cooperate with the shell 2 of the socket; and the operating head 9 is superimposed upon the nose 8 and swiveled thereto through a metal pivot pin 11. The pivot pin 11 is provided with a square head 12, which fits in a square aperture 13 in the nose 8, and with a shank 14 which extends upwardly through a central bore in the head 9 and into the recess 15 of the head 9. Interposed between the nose 8 and the operating head 9 is a ratchet disc 16 of spring metal, having depending fingers 17 which engage in slots 18 in the top of the nose 8. The ratchet disc 16 has spring jaws 19 which cooperate with ratchet teeth 20 molded on the bottom of the head 9 to establish a one-way rotative driving connection between the head 9 and the nose 8.

In assembly, the pivot pin 11 is put in place in the nose 8; the ratchet disc 16 and the spacing washer 22 are applied over the pin; the head 9 and a washer 23 are then applied; and the tip of the pivot shank is then treated in some suitable way to secure the parts together without such clamping as would destroy the swivel action. In Figs. I and II the pivot pin 11 is shown provided with a circular bore, and the shank end of the pin is flanged outwardly at 24 by a stamping, pressing, or spinning operation to secure the

parts together. The recess 15 is now covered with a disc of paper or cardboard 25 and a mica disc 26, which are held in place by a metal ring 27 which is secured to the head in any convenient and conventional manner as by pressing fingers 28 into recess 29.

The pasteboard disc 25 prevents an observer from seeing into the recess 15, and this disc may be of such color that in back of the mica disc 26 it gives the appearance of dark colored mica, which is often seen on plug fuses. The plug is inserted into the socket in the conventional manner by grasping the operating head and screwing the nose into the socket, the ratchet disc 16 furnishing the driving connection to the nose 8. However, when an attempt is made to unscrew the plug by grasping the operating head, it can not be done, because the head is swiveled to the nose 8 and the ratchet furnishes no driving connection in the reverse direction. Persons authorized to remove the plug are provided with a tool 35 having a reamer like end 36 provided with left-hand flutes and another end 37 which is slotted. The authorized person merely ruptures the mica and cardboard disc over the recess 15, inserts the fluted end 36 of the tool into the circular bore 38 of the pivot shank and unscrews the plug. It will be noted that even if an unauthorized person ruptures the discs covering the recess 15 there is nothing available in the plug which can be seized (by anything that an unauthorized person is likely to have) for the purpose of unscrewing the plug. It will be further noted that the nose 8 is depressed completely below the top of the socket so that there is no way that the plug can be removed by grasping the upper end of the nose 8.

In Fig. III there is shown a modified form of pivot pin in which the complete annular flange 24 is replaced by a fragmentary flange composed of two diametrically opposed fingers 39 which are bent downwardly when the parts of the plug are assembled. With this construction the fingers 39 may be grasped by the slot in the end 37 of the removal tool to remove the plug.

The present invention may, of course, be embodied in various specific forms and hence the present disclosure is merely illustrative in compliance with the patent statutes and is not to be considered as limiting the scope of the claims.

I claim:

1. A screw plug for electric sockets comprising a threaded nose; an operating head superimposed on said nose; means establishing a rotative driving connection in one direction only between the head and nose to permit the nose to be screwed into the socket by grasping the head; and a pivot pin extending from the nose to the head, the pin making rotative driving connection to the nose and free pivotal connection to the head, the pin being formed to receive a tool to rotate the same for removing the nose from the socket.

2. A screw plug for electric sockets comprising a threaded nose; an operating head superimposed on said nose; means establishing a rotative driving connection in one direction only between the head and nose to permit the nose to be screwed into the socket by grasping the head; and a pivot pin extending from the nose to the head, the pin making rotative driving connection to the nose and free pivotal connection to the head, the pin having a circular bore to receive a reamer-like tool to rotate the same for removing the nose from the socket.

3. A screw plug for electric sockets comprising a threaded nose; an operating head superimposed upon the nose; means establishing a rotative driving connection in one direction only between the head and the nose to permit the nose to be screwed into the socket by grasping the head; a pivot pin having a head making rotative driving connection with the nose and a shank making free pivotal connection with the operating head, the shank end of the pin being enlarged to secure the operating head to the nose and the pin being formed to receive a tool to rotate the same for removing the nose from the socket.

4. A screw plug for electric sockets comprising a threaded nose; an operating head superimposed upon the nose; means establishing a rotative driving connection in one direction only between the head and the nose to permit the nose to be screwed into the socket by grasping the head; a pivot pin having a head making rotative driving connection with the nose and a shank making free pivotal connection with the operating head, the shank end of the pin having a circular bore to receive a reamer-like tool to rotate the pin for removing the nose from the socket, the extremity of the shank being flanged outwardly to secure said nose and operating head together.

5. A screw plug for electric sockets comprising a threaded nose proportioned to be received by, and be completely depressed below the top of, the socket; a recessed operating head swiveled to said nose; means automatically locking the head to the nose upon rotation of the head in one direction while permitting free relative rotation between the head and nose in the opposite direction; a frangible closure covering the recess in the operating head; and means through which said nose may be rotated to remove it from the socket, said means extending from the nose to the recess in the operating head where it is accessible by rupturing said frangible closure.

6. A screw plug for electric sockets comprising a threaded nose; a recessed operating head superimposed on said nose; means establishing a rotative driving connection in one direction only between the head and nose to permit the nose to be screwed into the socket by grasping the head; a pivot pin making rotative driving connection to the nose and free pivotal connection to the head, the pin being accessible through the recess in the operating head and being formed to receive a tool to rotate the pin for removing the nose from the socket; and a frangible closure covering the recess in the operating head.

7. A screw plug for electric sockets comprising a threaded nose; an operating head superimposed upon said nose; a pivot pin extending from the nose to the head, the pin making rotative driving connection to the nose and free pivotal connection to the head, the pin being formed to receive a tool to rotate the pin for removing the nose from the socket; and ratchet means interposed between the operating head and the nose to permit the nose to be screwed into the socket by grasping the operating head.

8. A dummy fuse plug for electric sockets comprising a threaded nose of insulating material; a recessed operating head superimposed on said nose; means establishing a rotative driving connection in one direction only between the head and nose to permit the nose to be screwed into the socket by grasping the head; a pivot pin having a head embraced by the material of said nose and a shank making free pivotal connection to said operating head, the head of said pin being spaced from the surface of the said nose

and the pin being accessible through the recess in said operating head and being formed to receive a tool to rotate the pin for removing the nose from the socket; and a frangible closure covering the recess in the operating head.

9. A dummy fuse plug for electric sockets comprising a threaded nose of insulating material; a recessed operating head superimposed upon said nose; ratchet means establishing a rotative driving connection in one direction only between the head and the nose to permit the nose to be screwed into the socket by grasping the head; a pivot pin having a head embraced by the material of said nose and a shank extending to the recess of said operating head and making free pivotal connection to the operating head, the shank end of the pin having a circular bore to receive a reamer-like tool to rotate the pin for removing the nose from the socket, the extremity of the shank being flanged outwardly to secure said nose and operating head together; and a frangible closure covering the recess in the operating head.

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