Dec. 29, 1931. F. N. CONANT 1,838,808

PLUG FUSE, ADAPTER, AND RECEPTACLE

Filed July 16, 1928

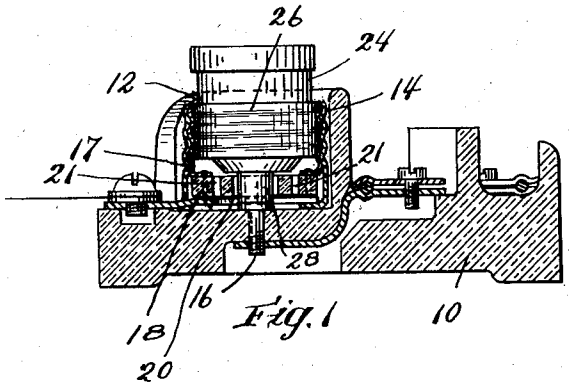


Fig. 1

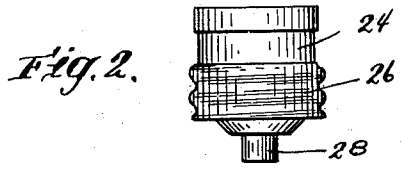


Fig. 2.

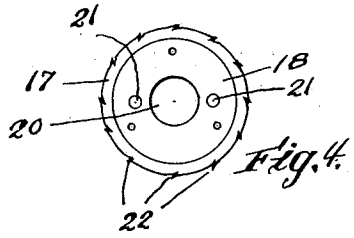


Fig. 4.

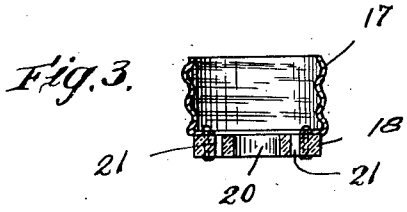


Fig. 3.

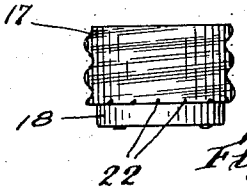


Fig. 5.

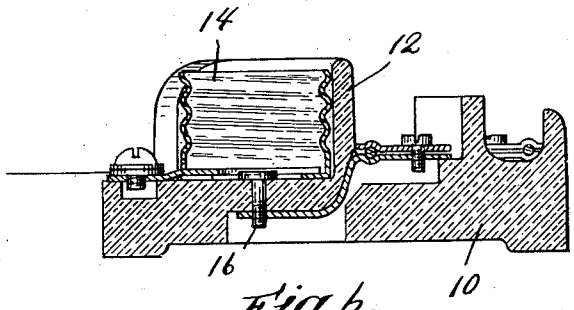


Fig. 6.

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UNITED STATES PATENT OFFICE

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PLUG FUSE, ADAPTER, AND RECEPTACLE

Application filed July 16, 1928. Serial No. 292,965.

This invention relates to electric fuses of the screw plug type and to adapters and bases or receptacles therefor.

When an electric circuit and its conductors become overloaded and the fuse associated therewith blows there is a tendency to replace the blown fuse with one of a larger capacity thereby to carry the overload permanently without blowing. This practice however removes the protection provided by the fuse and permits the conductors to become overheated and do damage.

It is an object of the present invention to provide a fuse of the screw plug type and means adapted for insertion in the fuse base or receptacle for the plug between the fuse plug and the contacts of the base, which means is so arranged as to adapt the base to receive but one type of fuse plug, which plug has a predetermined restricted current carrying capacity, and to prevent the base from receiving a different type of fuse plug having a larger current carrying capacity.

A further object of the invention is the provision of an adapter which is arranged to be received within the usual fuse base and locked irremovably therein and so arranged that it permits a predetermined type of fuse plug only to be received in the base in contact with both terminals thereof.

A yet further object of the invention is the provision of a screw threaded fuse plug which is so small in diameter that it can not fit within the screw threaded terminal of the usual base, and which has a projecting center terminal; and an adapter which can be screw threaded into the base and receive therein the small fuse plug, the adapter having an insulating base provided with an aperture therein through and beyond which the center terminal of the fuse can extend for engagement with the center contact of the base.

When a fuse blows and a replacement fuse is not conveniently available it is common practice to insert a coin or other conducting object in the fuse base. This practice is highly objectionable since it removes the protection provided by the fuse.

It is a further object of the present invention to provide a fuse base with means which will prevent a coin or similar object inserted therein from making effective contact with both of the terminals of the base, although freely permitting the insertion of a special fuse.

A further object of the invention is generally to improve the construction of electric fuses of the screw plug type.

Fig. 1 is a sectional elevation of a fuse and base showing the screw plug fuse and adapter embodying my invention received therein.

Fig. 2 is an elevation of the fuse forming a part of the invention.

Fig. 3 is a sectional view of the adapter forming a part of the invention.

Fig. 4 is a bottom view, and Fig. 5 is a side elevation of the adapter illustrating particularly the means for locking the adapter irremovably within the fuse base.

Fig. 6 is a view of the fuse base, partly in section, without the fuse plug and adapter.

The fuse base illustrated in Figs. 1 and 6 is or can be of any usual or suitable construction and comprises a body 10 of insulating material having an integral apertured boss 12 within which is located a screw threaded shell 14 which forms the outer terminal of the base and a screw 16 which is located at the bottom and in the axial line of the screw threaded shell and constitutes the inner or center terminal of the base.

The adapter forming a part of the present invention comprises a screw threaded shell 17 which is adapted to be screw threaded into the shell 14 of the fuse base. The adapter shell 17 is open at the bottom and is secured to one face of a relatively thick insulating plate 18 which is circular and has a smaller outside diameter than that of said shell 17. Said insulating plate 18 has a central aperture 20 therein which is adapted to overlie the center contact 16 of the fuse base. The adapter, and specifically the blade 18, is provided with a pair of diametrically opposed recesses 21 therein which are adapted to receive the prongs of a suitable wrench whereby the adapter can be screwed tightly into the fuse base. If desired, the wrench may be dispensed with as the adapter can be threaded

first into the fuse plug and then screwed into the base, the fuse plug thus serving as a wrench. Any suitable means can be provided to lock the adapter irremovably within the fuse base. As here shown, the locking means consists of a plurality of resilient projecting teeth 22 which are formed in the lower peripheral portion of the adapter shell and outstand therebeyond and are inclined in a direction which causes them to dig into the shell 14 of the fuse base when it is attempted to unscrew the adapter from the fuse base whereby to prevent such action and to lock the adapter within the shell of the fuse base.

The fuse plug forming a part of the present invention comprises the tubular casing 24 which is composed of insulating material and is provided externally with a screw threaded metal shell 26 which constitutes one of the terminals of the fuse plug. The fuse plug is constructed in general in accordance with common practice except that the shell 26 is so small in diameter that it will be loose in the shell of the fuse base and thus can not be screwed tightly therein. The fuse plug is provided with a center contact or terminal 28 which, in contra-distinction to the usual center contact, is cylindrical and is of relatively long axial extent and, when the fuse plug is screw threaded in the adapter and abuts against the inner face of the insulating plate, which thus constitutes an abutment for the plug, the terminal is adapted to project slightly through the aperture 20 in the insulating plate 18 and below the adapter and thus be in a position to engage the center contact 16 of the fuse base as illustrated in Fig. 1.

When the adapter is screw threaded into the fuse base, it can not be removed readily and thus it conditions the fuse base to receive only the type of fuse plug above described, the adapter being too small in diameter to permit the usual type of fuse plug, for which the fuse base herein illustrated was designed, to be screw threaded therein. Since it is intended that the fuse plug herein described shall be restricted in its current carrying capacity to say not in excess of fifteen amperes, it is apparent that the circuit conductors associated with the fuse base in which the adapter is located can not be overloaded in excess of the current carrying capacity of the particular fuse plug herein described.

Since the insulating plate 18 of the adapter overlies the center contact of the fuse base, it prevents a coin or similar conducting object which may be inserted in the adapter from engaging the center contact and the base and completing the circuit through the fuse base and thus removing the protection intended by the fuse base and the plug.

The aperture 20 in the insulating plate of the adapter is of such diameter as to snugly receive the center contact 28 of the fuse plug and to prevent the insertion of a plug which may have a larger center contact.

I claim:

1. An adapter for plug-type fuses consisting of a metal shell which is both internally and externally screw-threaded and is adapted to have an externally screw-threaded fuse plug screwed thereinto, said adapter having an opening in the bottom thereof and internally-disposed plug-engaging means located above the bottom which limits the extent of insertion of a fuse plug within the adapter.

2. An adapter for plug-type fuses consisting of a metal shell which is both internally and externally screw-threaded and is adapted to have an externally screw-threaded fuse plug screw-threaded thereinto, said adapter having an opening in the bottom and having a plug-engaging abutment which limits the extent of insertion of a fuse plug within the adapter with the center contact of said fuse plug passed through said opening.

3. The combination of an adapter for plug-type fuses consisting of a metal shell which is both internally and externally screw threaded, and has an insulating plate at one end thereof provided with an opening therethrough, and a fuse plug having an externally screw-threaded shell constituting a terminal thereof screw-threaded within said adapter-shell and having a center terminal at its bottom which is located within said opening and projects therebeneath.

4. An adapter arranged for insertion in the screw threaded shell of a plug-type receptacle comprising a screw threaded metal shell which is adapted to be screw threaded within the terminal shell of the fuse receptacle, said shell also having internal screw threads adapted to receive an externally screw threaded fuse plug, said adapter having an insulating plate at one end thereof which has an aperture therethrough located in a position to overlie the center contact of the fuse receptacle.

5. An adapter arranged for insertion in the screw threaded shell of a plug-type fuse receptacle comprising a screw threaded metal shell which is adapted to be screw threaded within the terminal shell of the fuse receptacle, said shell also having internal screw threads adapted to receive an externally screw threaded fuse plug, said adapter having an insulating plate at one end thereof which has an aperture therethrough located in a position to overlie the center contact of the fuse receptacle, said adapter also having locking means which are engageable with the fuse receptacle to hold the adapter engaged therewith.

6. The combination of an electric fuse of the screw plug type having an externally screw threaded metal shell and a center contact of substantial axial length, and an

adapter for said plug having a metal shell which is externally screw threaded for insertion in a screw threaded fuse base and which is also internally screw threaded to receive the metal shell of said plug, said adapter shell having an insulating plate at one end thereof which overlies the end of said shell and is provided with an aperture in which the center contact of said fuse plug is adapted to be located.

7. The combination of an electric fuse of the screw plug type having an externally screw threaded metal shell and a center contact of substantial axial length, and an adapter for said plug having a metal shell which is externally screw threaded for insertion in a screw threaded fuse base and which is also internally screw threaded to receive the metal shell of said plug, said adapter having abutting means which engages the fuse plug and limits its position therein.

8. The combination of an electric fuse of the screw plug type having an externally screw threaded metal shell and a center contact of substantial axial length, and an adapter for said plug having a metal shell which is externally screw threaded for insertion in a screw threaded fuse base and which is also internally screw threaded to receive the metal shell of said plug, said adapter shell having an insulating plate at one end thereof which overlies the end of said shell and is provided with an aperture in which the center contact of said fuse plug is adapted to be located, said adapter also having locking means arranged to hold the adapter attached with a fuse base in which it may be received.

9. The combination of an adapter for plug-type fuses consisting of a metal shell which is both internally and externally screw-threaded, said adapter having an opening in the bottom and having a plug-engaging abutment, and a fuse plug having an externally screw-threaded metal shell threaded in said adapter shell and seated on said abutment, and having a center terminal which is exposed below said abutment.

10. The combination of an adapter for plug-type fuses consisting of a metal shell which is both internally and externally screw-threaded, said adapter having an opening in the bottom and having a plug-engaging abutment, and a fuse plug having an externally screw-threaded metal shell threaded in said adapter shell and seated on said abutment, and having a center terminal which projects from one end of the adapter.

11. The combination of a fuse receptacle having an internally screw threaded metal shell constituting one terminal of the receptacle and a center contact constituting the other terminal of the receptacle, an adapter received in said receptacle having an internally and externally screw threaded metal shell which is screw threaded within the shell of said receptacle, said adapter also having an insulating plate on the inner end thereof which overlies the bottom of said receptacle-shell, and has an aperture therein which overlies the center contact of said receptacle, and a fuse plug having a screw threaded shell which is screw threaded into said adapter shell, said plug also having a center terminal which is extended into the aperture of said adapter plate and is engaged with the center contact of said base.

12. The combination of a fuse receptacle having an internally screw threaded metal shell constituting one terminal of the receptacle and a center contact constituting the other terminal of the receptacle, an adapter received in said receptacle having an internally and externally screw threaded metal shell which is screw threaded within the shell of said receptacle, said adapter also having an insulating plate on the inner end thereof which overlies the bottom of said receptacle-shell, and has an aperture therein which overlies the center contact of said receptacle, and a fuse plug having a screw threaded shell which is screw threaded into said adapter shell, said plug also having a center terminal which is extended into the aperture of said adapter plate and is engaged with the center contact of said base, said adapter having means for locking it within said base.

13. The combination of the usual fuse plug type of fuse base having a screw threaded terminal which is adapted to receive the usual fuse plug and a fuse plug having a screw threaded shell which is so small in diameter that it can not be screw threaded into the terminal of said base, and an adapter which permits the aforesaid fuse plug to cooperate with the aforesaid fuse base having a shell which is externally screw threaded and which fits into the screw threaded shell of said base and which is internally screw threaded and into which the screw threaded shell of said fuse plug can be screw threaded.

14. The combination of a plug-fuse base having a screw-threaded terminal which is adapted to receive the usual fuse plug, an adapter having an externally screw-threaded shell which is screw-threaded in said terminal, said shell also being internally screw-threaded, and a fuse plug having an externally screw-threaded shell which is so small in diameter that it can not be screw threaded into said base-terminal and which is screwed into said adapter-shell, said adapter having an interlocking connection with the screw-threaded terminal of said base by which its removal therefrom is rendered difficult and being free from an interlocking connection with said fuse plug.

In testimony whereof, I have signed my name to this specification,

FRANKLIN N. CONANT.