April 24, 1956 A. PERRAULT ET AL 2,743,425

SAFETY LOCK FOR ELECTRIC PLUGS

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Fig. 1

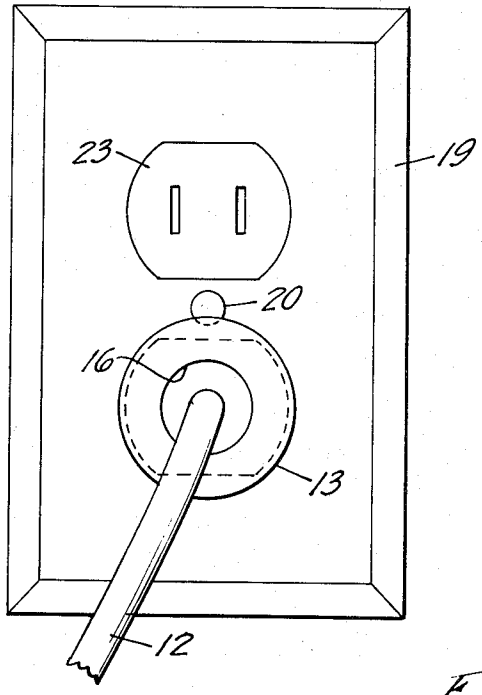


Fig. 2

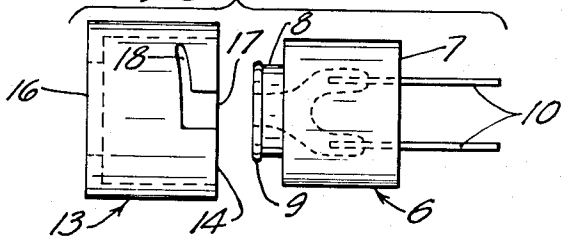


Fig. 3

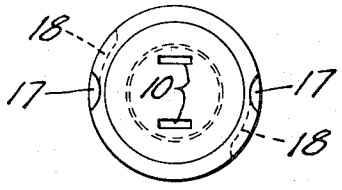


Fig. 4

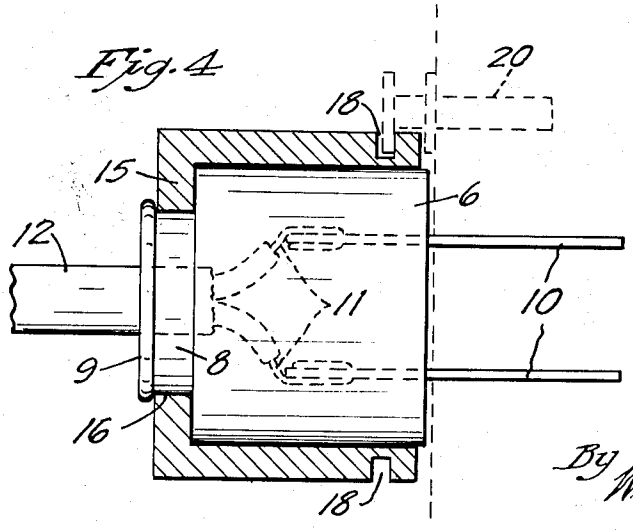
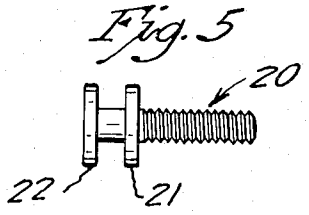


Fig. 5



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SAFETY LOCK FOR ELECTRIC PLUGS

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1 Claim. (Cl. 339—90)

This invention relates to electric plugs. More specifically it relates to an electric plug having inherent safety features.

New electrical devices such as television sets and the like, are frequently seriously damaged as the result of poor electrical contact between the conducting elements of the male plug and the receptacle through which the electric current is being supplied to the device. It has been found that, frequently, television sets and other electrical devices, will burn out as a direct result of such a poor contact and that the poor contact is frequently caused by the male plug being partially withdrawn from the receptacle. This partial withdrawal is often the result of someone tripping on the electric cord leading from the device to the male plug, or attempted moving of the device to a distance from the receptacle greater than the length of said cord, or the cord being pulled on by a child, household pet, or in some other manner. Such a poor connection causes the supply of current reaching the device to have substantial damaging results to the more sensitive parts thereof.

In addition to the above the conventional plugs, currently in use today, can be readily removed by infants and small children. Thereafter the receptacle is accessible to them for the insertion of metal objects such as hair pins and the like with consequent extreme danger to the infant. Our invention is directed toward eliminating these hazards.

It is a general object of our invention to provide a new and improved electric safety plug of cheap and simple construction and of high efficiency.

A more specific object is to provide an electric safety plug which will positively prevent itself from being accidentally partially withdrawn from the receptacle and thereby causing large variations in the amount of current passing therebetween with consequent danger to the electrical device connected with the safety plug.

Another object is to provide an electric safety plug having inherent locking means therein for positively locking the male plug to the receptacle after its insertion therein to preclude the two from becoming separated unintentionally.

Another object is to provide an electric safety plug which can be readily used in conjunction with a standard receptacle and without requiring installation of a special type receptacle.

A further object is to provide an electric safety plug which will prevent an infant from removing the same from the receptacle and thereby gaining access to the interior of the latter with consequent danger.

These and other objects and advantages of our invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to similar parts throughout the several views, and in which:

Fig. 1 is a front elevational view of one embodiment of our invention inserted in a double receptacle of the standard type and locked thereto;

Fig. 2 is an exploded side elevational view of an embodiment of our invention;

Fig. 3 is a front end elevational view with the parts shown in Fig. 2 assembled;

Fig. 4 is a vertical sectional view of the device shown in locked position;

Fig. 5 is a side elevational view of one type of locking element which may be utilized in conjunction to our invention.

One embodiment of our invention as shown in Figs. 1–5 includes a main body **6** of insulating material having a relatively flat forward face surface **7** and a restricted rear end portion **8**. Formed on the rear end of the rear end portion **8** is an outwardly extending ridge **9**. Mounted within the main body **6** of insulating material and extending outwardly therefrom through its forward face **7** is a pair of electrical conductor prongs **10**. These prongs **10** are adapted in the conventional manner to be secured to the respective wires **11** of an electrical cord **12**. As shown, the main body **6** of insulating material is adapted to receive, from the rear in its central portion, this electrical cord **12** and to permit the connection of the wires **11** to the respective prongs **10**.

A shell member indicated generally as **13** is mounted in encircling relationship on the main insulating body **6** for free rotation thereon. This shell **13** has an open face **14** and an inwardly extending flange **15** adjacent its rear end. The size of the flange **15** is such as to leave an aperture **16** in the rear end of the shell **13**, the diameter of this aperture **16** being slightly smaller than the diameter of the ridge **9** on the main body **6** of insulating material.

Formed in the forward end portion of the shell **13** is a longitudinally extending slot **17** which communicates with the face **14** and extends rearwardly a slight distance. A circumferentially arranged slot **18** is also formed in the forward end portion of the shell **13** and is arranged at right angles to the direction of extension of the slot **17** and communicates with the innermost portion thereof.

To assemble the main body **6** and the shell **13**, the shell **13** is heated slightly and the resulting expansion of the same is sufficient to permit the ridge **9** to pass through the aperture **16** defined by the inwardly extending flange **15**. The subsequent cooling of the shell **13** will cause the diameter of the aperture **16** to again be restricted to a point where the main body **6** will thereafter be secured to the shell **13** to prevent appreciable relative longitudinal movement therebetween. The flange **15** will thereafter ride on the reduced portion **8** of the main body **6** and the shell **13** will be free to rotate with respect to the main body.

To adapt any standard receptacle for use of our invention it is only necessary to replace the conventional screw, which holds the wall plate **19** to the wall, with a double headed screw indicated as **20**. This double headed screw **20** is screwed inwardly until the inner head **21** rests against the plate to retain the plate **19** in its original and proper position. The outer head **22** serves as a locking element extending outwardly from the receptacle.

In operation, the prongs **10** may be inserted within the receptacle **23** in the usual standard manner. The shell **13** is rotated to a position so that the portion of the head **22** of the double head screw **20** will move inwardly through the slots **17** and align itself with the slot **18**. By giving a simple twist to the shell **13** thereafter that portion of the double head screw **22** will move into the slot **18** as shown in Fig. 4 and thereafter rigidly secure the plug from being accidentally partially and unintentionally withdrawn from the receptacle. When it is desired to remove the plug the operation is reversed.

Thus it can be seen that we have provided an electric safety plug which can be readily used in conjunction with

a standard receptacle and without requiring installation of an additional and special type receptacle. Within the United States all receptacles manufactured have been standardized in size and all have a screw for maintaining the wall plate **19** which may be replaced by the double head screw **20** to be in proper position for the locking action described above.

When one of our safety plugs has been locked in proper position as described above there is no danger of the same being partially withdrawn with consequently large fluctuations in the current passing to the electrical device with which it is connected. This eliminates any danger of the device being burned out as a result of such fluctuations.

It should be noted that our device effectively prevents infants and small children from removing the male plug and thereby gaining access to the interior of the receptacle with consequent extreme danger. It should also be noted that the locking elements (**17** and **18**) of the plug is inherent within the plug itself.

The biggest advantage of our invention, of course, lies in the fact that the safety plug may be used with the standard receptacle currently sold within the United States. The sole alteration required is the inconsequential removal of a single screw and the substitution therefor of the double headed screw **20**. Even with a double receptacle installation, such as is shown in Fig. 1 only a single double headed screw need be substituted. In such an arrangement the same double headed screw **20** will cooperate with two separate shells **13** simultaneously to lock each of the shells securely in proper position.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of our invention.

What we claim is:

In an electric safety plug assembly for use in conjunction with a receptacle, the combination of a double headed screw having an inner head and an outer head spaced outwardly therefrom, said heads being greater in diameter than the rest of the screw, said screw replacing the screw used ordinarily to secure the receptacle to the wall and performing its function of retaining the receptacle in place, the inner head of said screw abutting against the receptacle and the outer head being disposed outwardly therefrom; and a safety plug engaged by said screw and secured to the receptacle thereby and comprising a main body of insulating material having a face adapted to register with the face of the receptacle, a pair of spaced electrical conductor prongs extending outwardly from said face of said body and adapted for ready insertion into said receptacle, said body being adapted to permit the electrical connection of said prongs with the wires of an electric cord, and a shell encircling said body and being unlimitedly rotatable in either direction about said body and having a peripheral edge portion disposed adjacent to but inwardly of said face of said body, said shell being connected to said body to prevent appreciable longitudinal movement with respect to said body, the peripheral edge portion of said shell having a longitudinally extending slot extending inwardly from the outer edge thereof and having a circumferentially arranged slot communicating with said longitudinally arranged slot and disposed inwardly from the outer edge of said peripheral portion, said longitudinal slot receiving said outer head of said screw therein when said prongs are inserted into the receptacle and said circumferentially arranged slot receiving said outer head of said screw therein and positively and cooperatively locking said shell directly to said screw and the receptacle when said shell is rotated about its longitudinal axis after said prongs have been inserted into the receptacle and said outer head has been received within said longitudinally extending slot whereby accidental disconnection of said safety plug will be prevented.

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