May 8, 1951 R. POPP 2,552,061

SAFETY ELECTRICAL OUTLET

Filed Dec. 17, 1947 2 Sheets-Sheet 1

FIG. 1

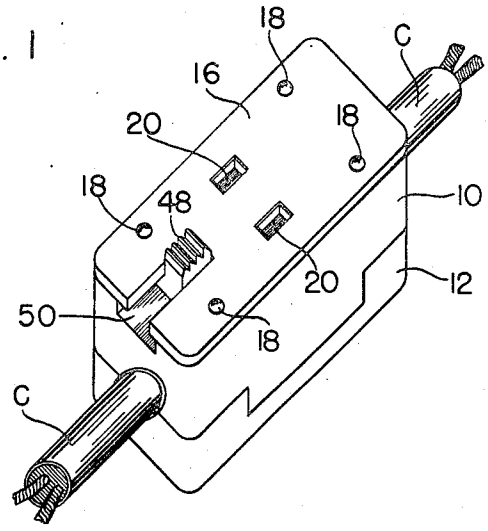


FIG. 2

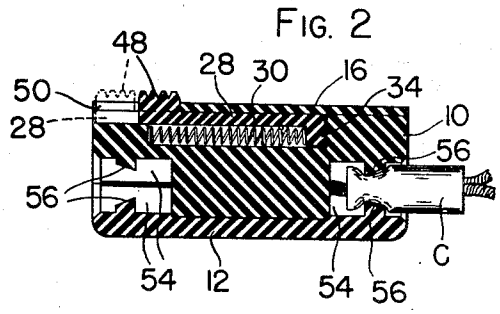


FIG. 3

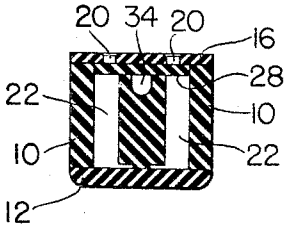


FIG. 5

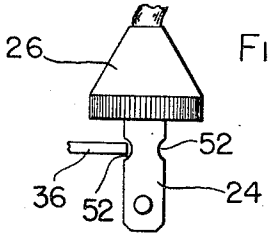
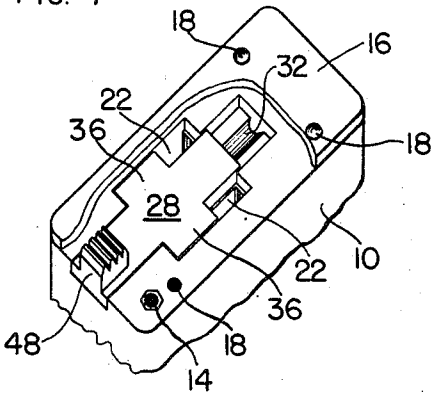


FIG. 4



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May 8, 1951 R. POPP 2,552,061

SAFETY ELECTRICAL OUTLET

Filed Dec. 17, 1947 2 Sheets-Sheet 2

FIG. 6

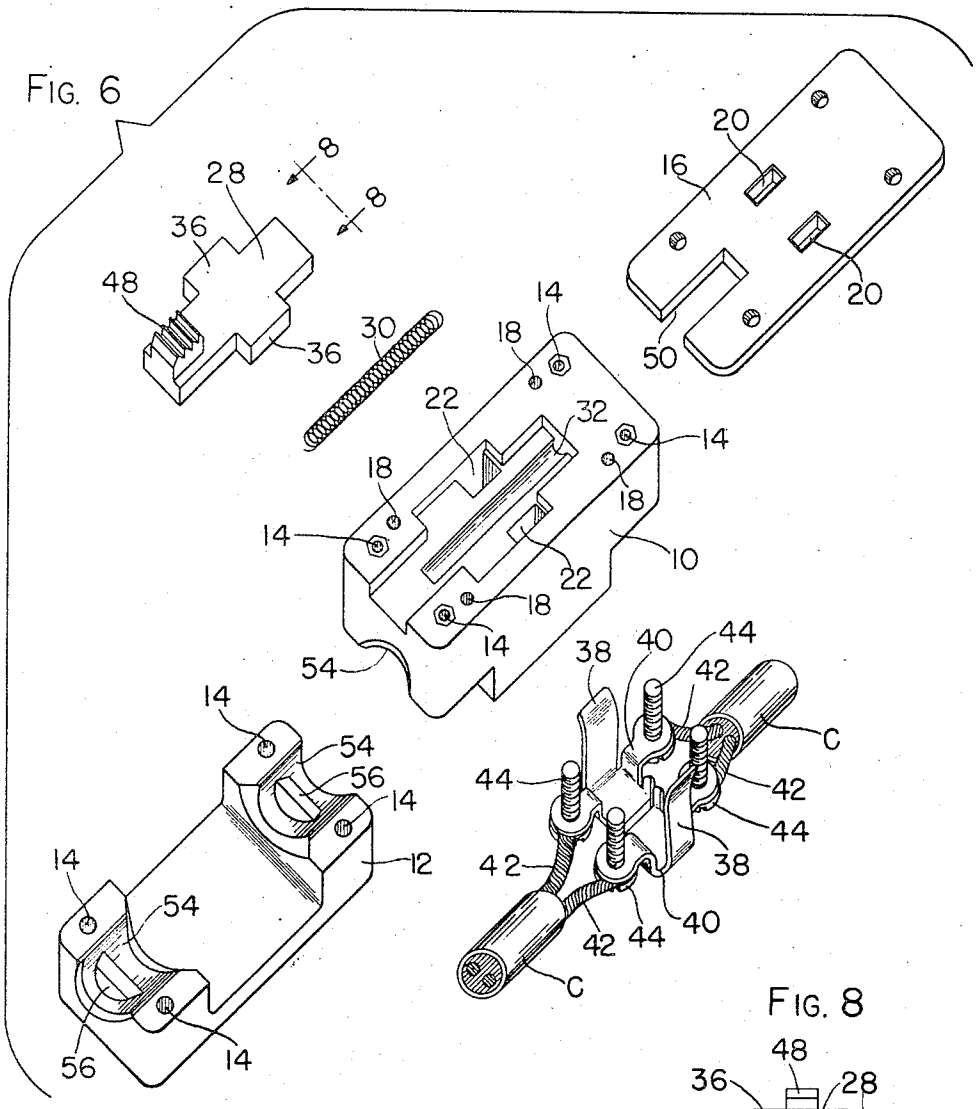


FIG. 8

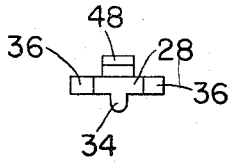
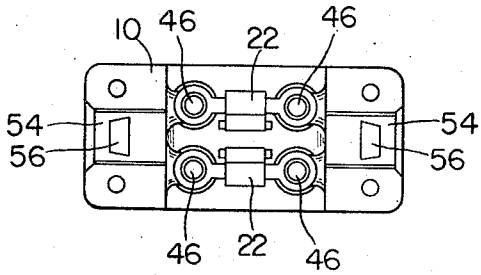


FIG. 7



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Patented May 8, 1951

2,552,061

UNITED STATES PATENT OFFICE

2,552,061

SAFETY ELECTRICAL OUTLET

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Application December 17, 1947, Serial No. 792,241

2 Claims. (Cl. 173—330)

1

This invention relates to electric outlets and particularly to portable convenience outlets.

It has been proposed heretofore to equip a portable electric appliance such as an extension lamp with a convenience outlet which is mounted directly on the appliance or on an electric cord leading to the appliance. One objection to such an arrangement is that the outlet is apt to be used in situations where it is exposed to dirt, oil, moisture or other foreign matter which is likely to enter the holes in the outlet when no plug is present therein. This interferes with the proper use of the outlet and in some instances gives rise to a short-circuit hazard. Moreover, the outlet is prone to become accidentally separated from the plug or plugs which it receives. Still another disadvantage is that the electric cord usually is weakened by the presence of the outlet therein.

An object of the present invention is to provide a portable convenience outlet of novel construction which is free of the aforesaid difficulties.

While the invention has special utility in the case of portable convenience outlets, certain features thereof are applicable to other types of electric outlets as well. Accordingly, a further object is to improve the design of electric outlets generally.

One of the features of the invention consists in arranging a spring-urged slide on a convenience outlet in such fashion that normally it covers the holes in the outlet which are adapted to receive the prongs of a male plug. Before a plug can be inserted, the slide must be grasped and moved into a position where it does not cover the holes in the body of the outlet.

Another feature is that the slide serves to lock the plug to the outlet, preventing the plug from being pulled out accidentally. To remove the plug, the slide must be grasped and retracted to disengage it from the prongs of the plug.

Still another feature is that the body of the outlet is provided with strain-relieving teeth molded integrally therewith for gripping or clamping the outer cover of the electric cord. Thus, any strain on the cord is borne by the covering thereof rather than by the individual conductors in the cord.

The foregoing and other objects, features and advantages of this invention will be appreciated from a study of the following description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view of a convenience outlet constructed in accordance with and embodying the principles of the invention;

2

Fig. 2 is a longitudinal section through the middle of the outlet;

Fig. 3 is a cross-sectional view at the center of the outlet;

Fig. 4 is a partial perspective view of the outlet with a portion of the cover plate broken away to show some of the internal parts more clearly;

Fig. 5 is an elevational view of a male plug adapted to coact with the slide on the outlet, as indicated;

Fig. 6 is an exploded perspective view of the outlet and portions of the electric cord connected thereto;

Fig. 7 is a bottom view of one of the parts illustrated in Fig. 6; and

Fig. 8 is an end view of the slide, looking in the direction of the arrows 8 in Fig. 6.

In the embodiment of the invention herein disclosed the outlet has a two-part body, a cover plate and a slide interposed between the cover plate and the body. The slide has a projecting knob or finger piece to facilitate grasping thereof and is capable of limited rectilinear movement relative to the outlet. The cover plate and body of the outlet are provided with aligned holes which afford passageways for receiving the prongs of a male plug. When no plug is received in the outlet, the slide is urged by a spring toward a position in which it covers the holes in the body of the outlet. Hence, the contacts of the outlet are sealed against foreign matter which otherwise might tend to enter the body through the prong-receiving apertures thereof in the absence of a plug. When a plug is to be inserted in the outlet, the knob is grasped and pulled to retract the slide, permitting the prongs of the plug to be inserted in the aforesaid holes. The slide then is released to the action of its spring, which causes certain edge portions of the slide to bear against the edges of the prongs. Preferably the prongs are notched slightly to receive the edges of the slide so that the plug is locked to the outlet. Thereafter the plug can be removed from the outlet only when the slide is manually retracted.

Referring now to the drawings, the body of the outlet has two mating parts 10 and 12 formed of insulating material which are secured together by screws 14, Fig. 6. An insulating cover plate 16 is mounted on the part 10 and is secured thereto by screws 18. The cover plate 16 and the body part 10 are provided with aligned holes 20 and 22, respectively, for receiving the prongs 24, Fig. 5, of a plug 26.

Interposed between the cover plate 16 and the

body part 10 is a slide 28, formed of insulating material, which is disposed in a suitable recess in the body member 10. The slide 28 is capable of longitudinal movement within this recess between the limiting positions thereof respectively illustrated in solid and broken lines, Fig. 2. A spring 30 disposed in a channel 32 formed in the body member 10 acts against a lug 34, Figs. 3 and 8, on one end of the slide 28 to urge the slide toward its full-line position shown in Fig. 2. The slide 28 has laterally extending portions 36 which are disposed so as to block the passageways defined by the holes 20 and 22 when the slide 28 is in its extreme right-hand position as viewed in the drawings, which position it normally occupies when no plug is received by the outlet.

Disposed in the holes 22 in the member 10 are contact pieces 38, Fig. 6, of terminals 40, which are held between the mating parts 10 and 12. The conductors 42 of the associated electric cord C are attached by screws 44 to the terminals 40, and the member 10 is formed with recesses 46, Fig. 7, therein to receive the shanks of these screws 44. When the slide 28 is in its closed position as just described, it blocks the entrances of the holes 22 in which the contacts 38 are disposed. Hence, no dirt or other foreign matter can enter the holes 22 when there is no plug in the outlet. Likewise, objects cannot be inserted in the holes by irresponsible persons such as small children while the slide is closed.

When it is desired to insert a plug in the outlet, the slide 28 is grasped by means of an integral knob or finger piece 48 which projects through a slot 50 in the cover plate 16, and the slide 28 is moved into its open position (illustrated in Fig. 4) against the action of the spring 30. The plug 26, Fig. 5, then can be inserted in the outlet with its prongs 24 seating in the holes 22. The knob 48 then is released, and the spring 30 moves the slide 28 until the edges of the portions 36 thereon bear against the prongs 24. In order that the plug 26 will be positively retained against accidental or unauthorized displacement, I prefer to employ a plug having notches 52, Fig. 5, in the prongs 24, these notches being adapted to receive the edges of the portions 36 of the slide 28 as indicated in the last-mentioned view. Under these circumstances the plug 26 cannot inadvertently be pulled loose from the outlet. If desired, the knob 48 and the cover plate 16 may be so formed that the knob 48 does not protrude from the surface of the plate 16. This would eliminate any likelihood that the slide 28 will be operated due to the knob 48 being caught by an obstruction as the outlet is moved with the cord.

The body parts 10 and 12 of the outlet have complementary channels 54 of semicircular cross-section to receive the adjacent ends of the electric cord C. Teeth 56 molded integrally with these body parts are disposed in the channels 54 to grip the outer covering of the cord C, as indicated in Fig. 2. Preferably the teeth are bevelled so that the high points thereof are disposed away from the entrances to the channels 54. If the cord itself is not sufficiently thick to be clamped by the teeth 56, the thickness thereof may be built up by tape or other means so that the teeth 56 may firmly grip the cord. In this way, the two portions of the cord are prevented from separating by being pulled loose from the outlet, and it is not necessary to employ inter-

connecting straps or other cumbersome contrivances.

It will be apparent from the foregoing description that I have provided a novel convenience outlet which fulfills the above-stated objects of the invention. I am aware that there has been proposed a convenience outlet in which a disc-like member of approximately the same diameter as the plug is rotatably mounted on the surface of the outlet and is biased toward a position to close the apertures in which the prongs of a male plug customarily are received. Such outlets cannot conveniently be manipulated without actually inserting the prongs of the plug into holes in the disc and twisting the plug to bring these holes into registry with the holes in the body of the outlet that are designed to receive the prongs. This arrangement does not lend itself to the feature of locking the plug in place, because of the great difficulty which would be encountered in attempting to remove the plug from the outlet. In my outlet, on the other hand, the slide is easily grasped and moved. Furthermore, it has been observed in the case of the prior device just mentioned that the practice of using a plug as an implement to twist the rotary cover disc, and withdrawing the plug against the spring tension acting on the disc, tends to place an undue strain on the plug and to produce considerable wearing of the outlet, all of which is avoided in my structure. Still other advantages of my invention over prior arrangements will be apparent to those who are skilled in the art.

While a preferred embodiment has been disclosed, this obviously is capable of modification without departing from the spirit of the invention. For example, the outlet can be constructed to accommodate two or more plugs instead of a single plug as shown, and other changes can be made likewise to adapt the outlet for particular purposes. It is intended, therefore, to include all such modifications within the scope of the appended claims.

I claim:

1. An electric convenience outlet adapted to be mounted directly on an electric cord and comprising two mating parts of insulating material, means securing said parts together to form a body having recesses therein to receive the prongs of an electric plug, a plurality of interconnected lead-in and lead-out terminals in said body adapted to be connected respectively to the conductors of the electric cord and coacting with said prong receiving recesses to provide a current outlet tap, said insulating parts having complementary channels to receive the ends of said cord and means provided with integral teeth respectively disposed in said channels to grip the outer covering of the cord, a slide mounted on said body for movement between opened and closed positions, said slide having portions which are effective when said slide is in its closed position to cover all of the prong receiving recesses in said body and also having a finger piece adapted to be grasped for withdrawing said slide to its open position, and a spring arranged to bias said slide toward its closed position, said slide being capable of movement relative to the prongs of the plug when the plug is seated on the outlet, and said finger piece being accessible whether or not the plug is seated on the outlet.

2. An electric convenience outlet adapted to be mounted directly on an electric cord, includ-

ing in combination a pair of mating parts of insulating material, with one of said parts having a recess therein and the other of said parts having a projecting portion fitting into said recess, one of said parts having contact prong receiving cavities therein, a plurality of interconnected lead-in and lead-out terminals and separated metal prongs connected respectively thereto and adapted to be correspondingly electrically connected to the conductors of an electric cord, said insulating parts having complementary channels on the inside of each and opening at two opposite ends in the convenience outlet to receive the electric cord therein from said terminals and extending outwardly in opposite directions from the outlet, said mating parts and said recesses and said cavities receiving and supporting therein said terminals and said prongs entirely on the inside of said convenience outlet and insulatingly protected by said mating parts, said one of said parts which has prong-receiving cavities therein also having a shallow cavity therein adjacent said cavities, a slidable cover in said shallow cavity adapted to be selectively moved to cover or expose said prongs in said prong receiving cavities, and means connected with said slide to permit movement thereof whether a plug is or is not seated in said outlet in physical and electrical connection with said prongs.

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