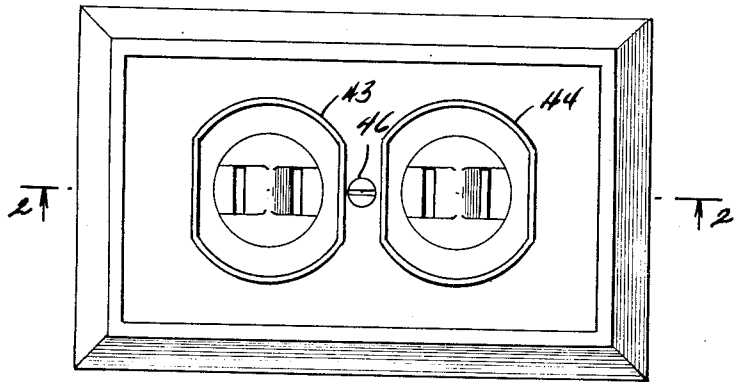
July 11, 1950 P. E. HAMILTON 2,515,003

ELECTRICAL OUTLET WITH MOVABLE CLOSURE

Filed Sept. 14, 1948

FIG. 1.



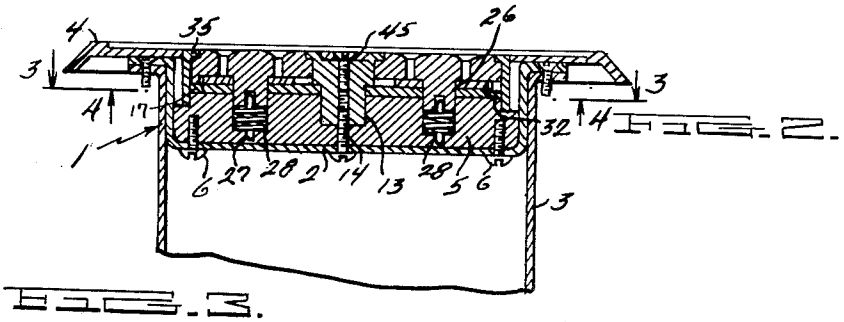


FIG. 2.

FIG. 3.

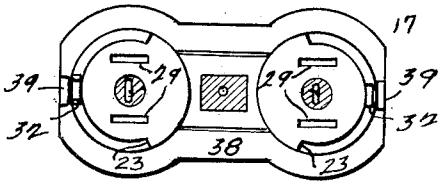
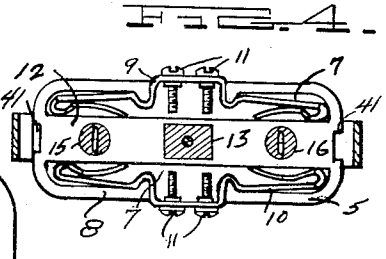


FIG. 4.



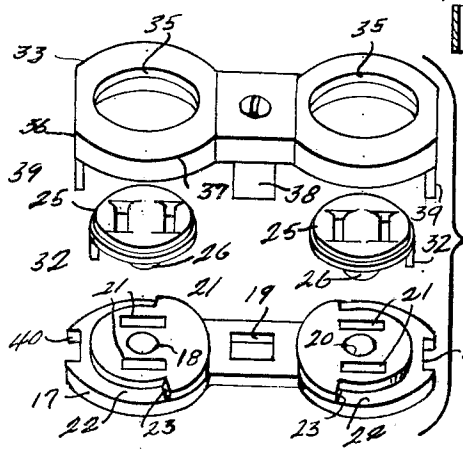


FIG. 5.

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ELECTRICAL OUTLET WITH MOVABLE CLOSURE

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2 Claims. (Cl. 173—330)

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This invention relates to an electrical outlet and more particularly to a safety outlet for the reception of plugs on extension cords.

In the usual electrical outlet, electrical conductors connected with the source of electricity are situated at the base of recesses which are continually open when the outlet is not in use. The recesses are spaced for the reception of the plugs which make contact with the electrical conductors at the base of the recesses. In these conventional fittings, which most often are located slightly above floor level, dirt is free to pass into the recesses. Moreover, it is possible that hairpins and other metallic objects may be inserted in the recesses, for example by young children, and shock the child or cause a short circuit.

In order to overcome the objections to the ordinary outlets, outlets have been designed with a rotating shutter which is normally in a position to close the recesses and prevent the entrance of foreign materials. The safety outlets of this type have heretofore been rather difficult to assemble which adds greatly to their cost of manufacture. Ordinarily the outlets are made of relatively low cost materials and sold at a low price. Clearly a complicated structure which is difficult to assemble cannot be commercially successful.

It is, of course, necessary to construct most parts of the outlet of non-conducting materials. The materials usually employed are various plastic compositions which in most cases have low strength, as compared with metals. It is, therefore, desirable to provide a safety outlet in which the parts thereof are subjected to minimum strains.

It is an object of this invention to provide a safety electrical outlet which closes the recesses in the female electrical connection when the outlet is not in use.

Another object of this invention is to provide an electrical outlet of the safety type which may be easily manufactured and sold at a low price.

It is also an object of this invention to provide a safety electrical receptacle in which the parts are thoroughly insulated and protected to eliminate any possibility of one using the receptacle receiving a shock.

Still another object of this invention is to provide a safety outlet having a shutter normally closing the recesses of the outlet adapted to move in either direction to a position in register with the electrical conductor in the outlet.

With these and other objects in view which will become apparent in the detailed description following, this invention resides in an electrical

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receptacle having electrical conductors in a base member. A shield lies over the conductors having openings in alignment with the conductors and rotatably supporting a shutter having openings normally out of register with the openings in the shield. The shutter may be rotated in either direction to a position in which the openings therein are in register with the openings in the shield.

In the drawings:

Figure 1 is a top plan view of the completely assembled electrical outlet comprising this invention;

Figure 2 is a vertical sectional view along section line 2—2 in Figure 1 illustrating the assembled outlet;

Figure 3 is a horizontal sectional view along the section line 3—3 in Figure 2 showing the shield on which the shutter turns;

Figure 4 is also a horizontal sectional view taken along the section line 4—4 in Figure 1 illustrating the position of the conductors in the outlet base of the outlet; and

Figure 5 is an exploded perspective view of the retainer shutter and shield of the outlet described herein.

For purposes of illustration, this invention is described with reference to a conventional household outlet having two receptacles for plugs from extension cords. Referring to Figure 2, the electrical outlet, indicated generally by 1, is attached to a bracket 2 for securing in place in any suitable container 3 in a wall or floor of a building. The container 3 and outlet are covered by a cover plate 4 of the conventional type.

The electrical outlet 1 has a base member 5, illustrated in section in Figure 2 and in plan in Figure 4, to which the bracket 2 is secured by screws 6. The base 5 has grooves 7 extending longitudinally thereof and opening through the side walls 8 of the base for the reception of conductors 9 and 10. The conductors 9 and 10 may be provided with screws 11 or other suitable means for connection with the wires from the source of electricity. Grooves 7 are separated by a ridge 12 extending centrally through the length of the base in which there is a central cavity 13 communicating with the outer surface of the base 5 by means of a hole 14. On each side of the cavity 13 are round recesses 15 and 16, having grooves in their lower ends, serving as journals in which the shutter of the outlet turns in the manner hereinafter described.

Resting on the upper surface of the base 5 is a shield 17 which is essentially a flat strip of

insulating material having openings 18, 19, and 20 positioned in alignment with recess 15, cavity 13, and recess 16, respectively. The shield 17 has slots 21 positioned directly over the conductors 9 and 10 to allow contact of the prongs of a plug with the conductors. The ends of shield 17 are depressed to form channels 22. These channels are terminated by shoulders 23 on the shield which limit the rotation of the shutter.

A pair of disc-like shutters 25 having hubs 26 are supported on the upper surface of the shield with the hubs extending through the openings 18 and 20. The lower end of the hub is grooved at 27, as illustrated in Figure 2, for engagement with a torsion spring 28. The torsion spring 28 rests on the recesses 15 and 16 and engages the grooves in the bottom of those recesses. A pair of slots 29 are positioned in the shutter for alignment with the slots 21 in the shield 17 and consequently with the electrical conductors 9 and 10 in the base of the outlet. In their normal position, illustrated in the drawings, however, the slots 29 are angularly disposed 90° from the position of the slots 21 and effectively close the openings of the outlet.

Each of the shutters 25 has an annular shoulder 30 extending around its periphery from which a lug 32 extends downwardly. When the shutter 25 is resting on the upper surface of the shield 17, the lugs 32 travel in the channels 22. Rotation of the shutters 25 is limited by engagement of the lug 32 with one of the shoulders 23 at the end of the channels 22. When the shutter is in its normal position, the lug lies midway between the shutters.

A retainer 33 having openings 34 in raised collars 35 is adapted to fit over the shutters 25 and hold them securely, but rotatably, in place on the shield 17. The annular shoulders 30 of the shutters 25 are of larger diameter than the openings 34 and engage the lower surface of the retainer 33, as is best illustrated in Figure 2, to prevent movement of the shutters 25 from the shield 17. The retainer 33 has side walls 36 depending from its upper surface to the upper edge of the side walls 8 of the base 5 to enclose the shutters 25 and the shield 17.

Extending downwardly from a depressed neck 37 between the collars 35 is a post 38 positioned to enter the cavity 13 of the base 5 of the outlet. The post 38 is drilled and tapped throughout its length for the reception of a screw 42 which holds the retainer 33 firmly against the base 5 to give a rugged, unitary structure. In order to further increase the rigidity of the structure, the retainer may be equipped with arms 39 at its ends which engage grooves 40 in the shield 17 and 41 in the base 5.

The assembly of the outlet is completed after the base, shield, shutters and retainer have been assembled and secured in position by means of the bracket 2 by placing a conventional cover plate 4 over the retainer. The cover plate is provided with openings 43 and 44 positioned to receive the collars 35 of the retainer 33. The cover plate 4 is also drilled at 45 for the reception of a screw 46 which enters the post 38 to hold the cover plate firmly in position.

The electrical outlet described herein may be quickly assembled by unskilled workers. After the bracket 2 has been attached to the base 5 by means of screws 6, the torsion springs 28 are dropped into recesses 15 and 16. The shield 17 is placed in position with the openings 18 and 20 in register with the recesses 15 and 16, and the shutters 25 are then placed on the shield with the hubs 26 entering the openings 18 and 20 and engaging the torsion springs 28. The retainer is dropped into position and the screw 42 is tightened to hold the retainer, and consequently the shutters 25 and shield 17, firmly against the base 5. The outlet is then fixed in position by means of screws 47 which engage the bracket 2 and the cover plate is then tightened in place by means of screw 46. The complete assembly of the outlet takes but a few seconds and contributes greatly to the low cost of production of the outlet.

The operation of the outlet is believed to be clear from the description of its structure. The prongs of a plug are placed in the slots 29 of the shutters 25 and the shutter is turned in either direction until the slots 29 are in alignment with the slots 21 of the shield at which point the prongs of the plug are free to slide into contact with the electrical conductors 9 and 10. The proper alignment of the shutter 25 and the shield 17 is aided by the provision of the walls 23 which limit the rotation of the shutter to the proper position for alignment of the slots. It will be noted that the shutter 25 is free to turn in either direction for the alignment of the slots therein with the slots in the shield. It is consequently impossible for one to break the relatively weak lug on the shutter by turning it in the wrong direction.

When the plug is removed from the outlet, the spring 28 urges the shutter 25 to its normal position. At this position the slots in the shutter are out of alignment with the slots in the shield, and the conductors 9 and 10 are covered.

While this invention has been described in detail with reference to specific examples, it is to be understood that the invention is not limited to those details but falls within the scope of the appended claims.

I claim:

1. An electrical receptacle comprising an insulating base having electrical conductors therein, a cavity in the center of the base, a grooved recess in the base, a shield on the base having holes therein overlying the cavity and recess, slots in the shield in alignment with the electrical conductors, a shutter rotatable on the shield, slots in the shutter spaced for alignment with the electrical conductors, a hub on the shutter adapted to extend into the recess in the base and about which the shutter rotates, a torsion spring in the recess engaging the shutter and the base urging the shutter to a normal position with its slots out of register with the shield, a retainer overlying the shutter having a post drilled and tapped throughout its length extending therefrom into the cavity in the base, said retainer engaging the shutter to hold it against the shield, a cover plate over the retainer, screws securing the cover plate and base to the post, and arms on ends of the retainer engaging grooves in the shield and base.

2. An electrical receptacle comprising an insulating base having electrical conductors therein, a cavity in the center of the base, a grooved recess in the base, a shield on the base having holes therein overlying the cavity and recess, slots in the shield in alignment with the electrical conductors, a shutter rotatable on the shield, slots in the shutter spaced for alignment with the electrical conductors, a hub on the shutter adapted to extend into the recess in the base and about which the shutter rotates, a lug on

the shutter and shoulders on the shield limiting rotation of the shutter, a torsion spring in the recess engaging the shutter and the base urging the shutter to a normal position with its slots out of register with the shield, a retainer overlying the shutter having a drilled and tapped post throughout its length extending therefrom into the cavity in the base, said retainer engaging the shutter to hold it against the shield, a cover plate over the retainer, screws securing the cover plate and base to the post, and arms on ends of the retainer engaging grooves in the shield and base.

PHILIP E. HAMILTON.

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