# United States Patent [19]

**Dola**

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[54] **COVER PLATE FOR ELECTRICAL OUTLET**


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[73] Assignee: **AMP Inc.,** Harrisburg, Pa.



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[52] **U.S. Cl.** ..... **339/40,** 174/67

[51] **Int. Cl.** ..... **H01r 13/54**

[58] **Field of Search** ..... 339/36, 40, 123; 174/66, 174/67



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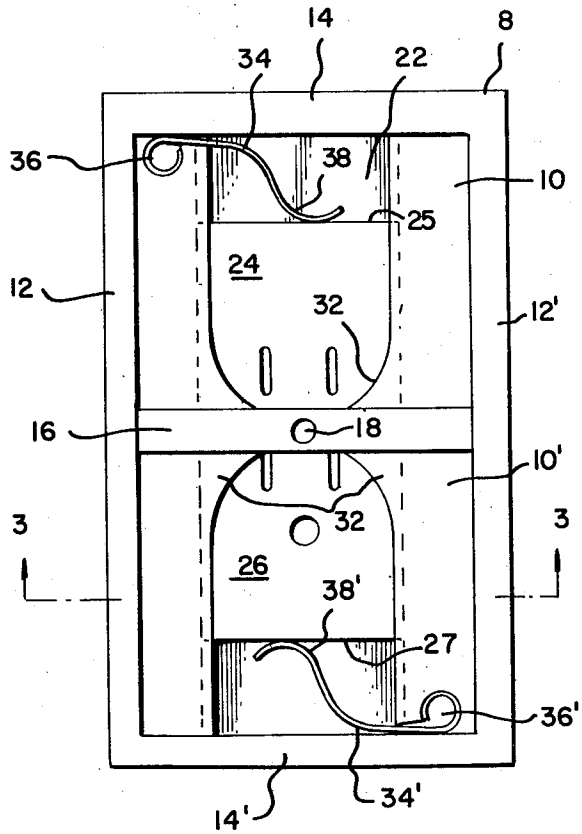
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*Attorney, Agent, or Firm*—F. W. Raring; Jay L. Seitchik; William J. Keating



[57] **ABSTRACT**

Cover plate for dual electrical receptacle unit has slidable shutters therein which normally cover the openings in the receptacle which receive the blade contacts and the grounding pin of an electrical plug. The shutters can be slid in their own planes in the cover to positions which permit insertion of the blades and grounding pin of the plug. When the plug is withdrawn from the receptacle, the shutters return to their normal positions and cover the blade and grounding pin openings.


**3 Claims, 7 Drawing Figures**



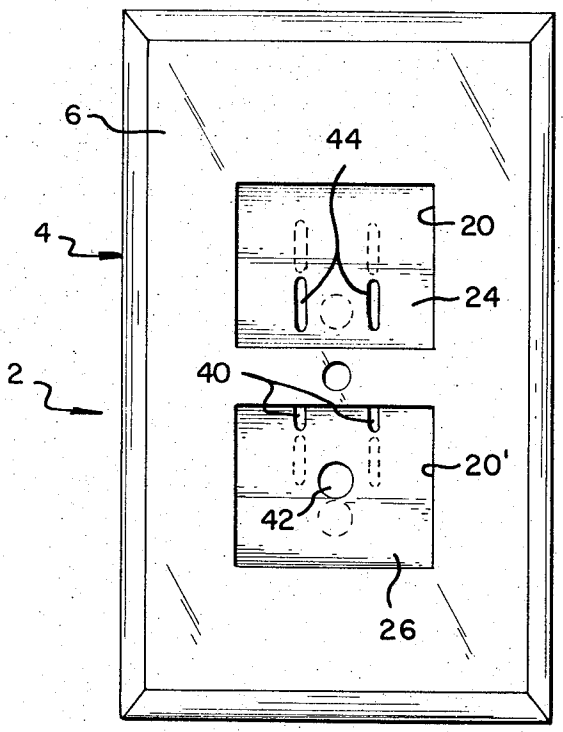



Fig. 1

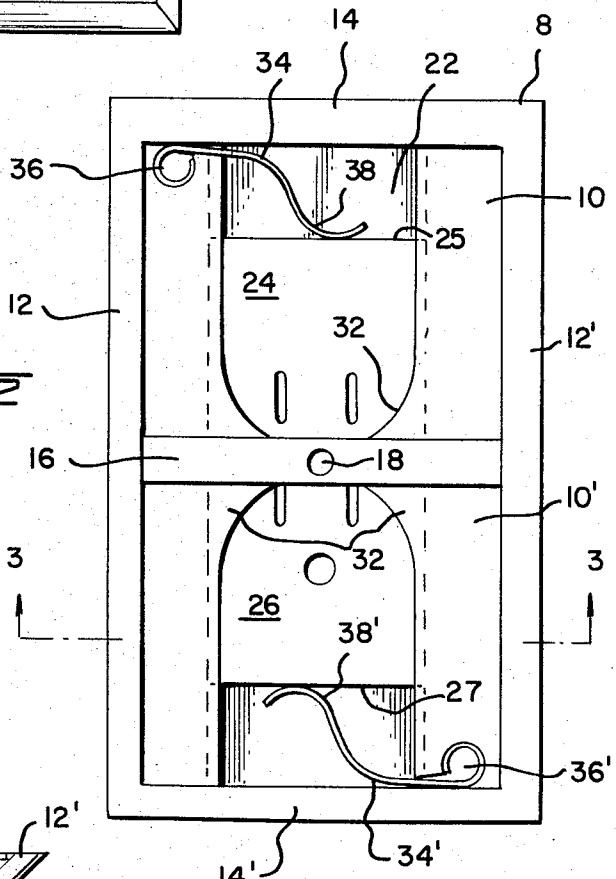



Fig. 2

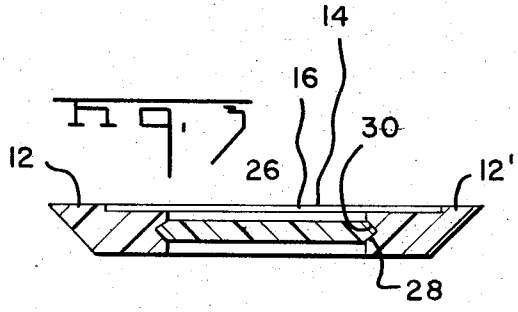



Fig. 3

Fig. 4

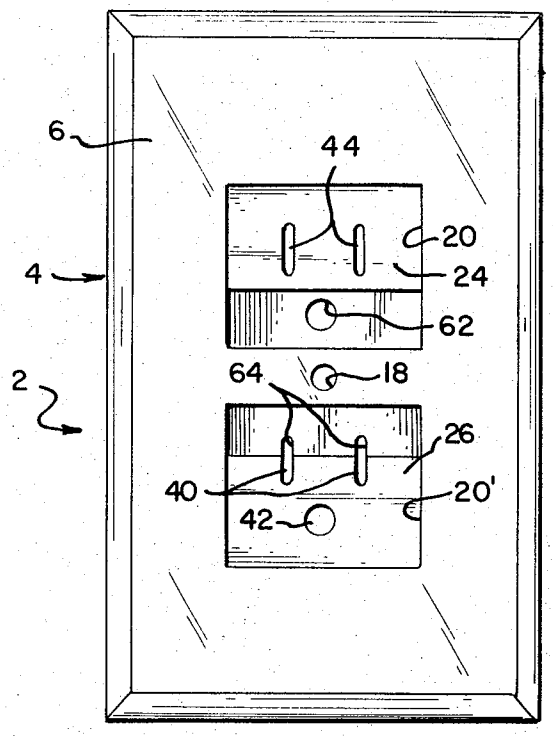
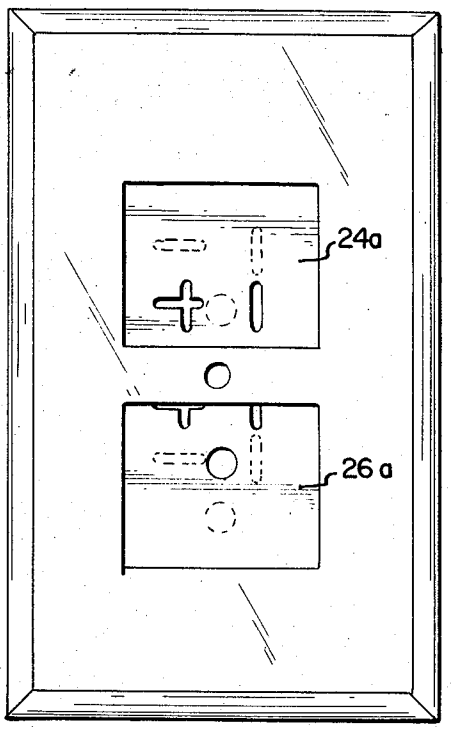
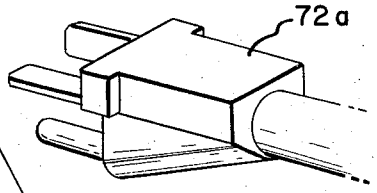



Fig. 5



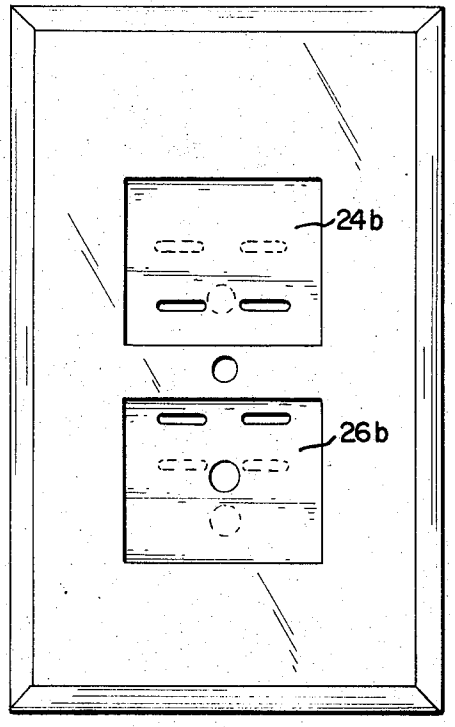
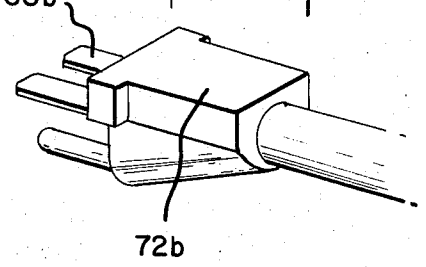




Fig. 6



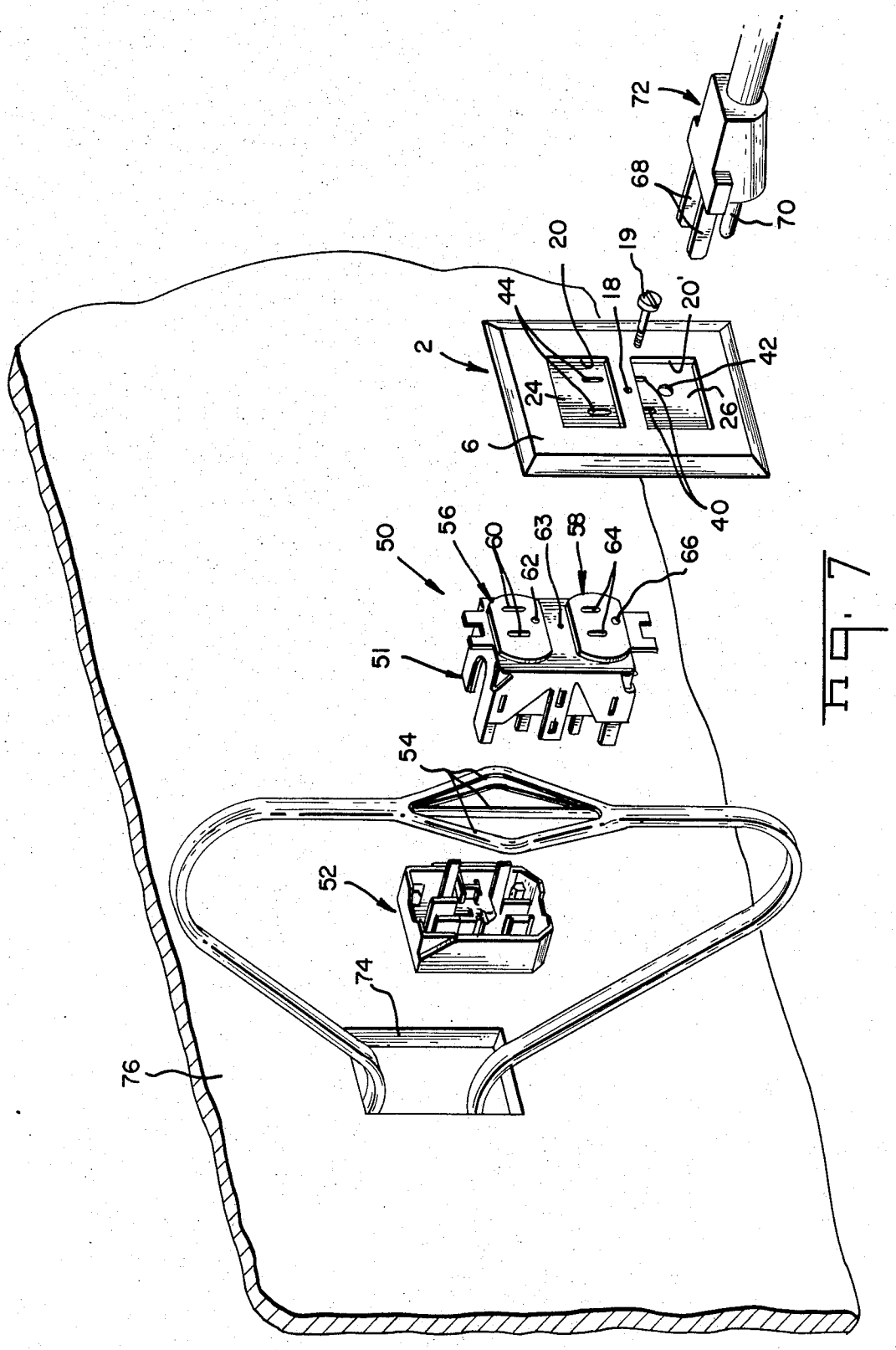

72
68
70
20
19
18
20'
44
2
42
24
26
6
40
50
56
60
62
63
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64
66
51
54
52
74
76

Fig. 7

# COVER PLATE FOR ELECTRICAL OUTLET

## BACKGROUND OF THE INVENTION

This invention relates to cover plates for dual electrical receptacle units of the type commonly used for building wiring. The invention is specifically directed to the achievement of an improved cover plate having safety shutters which normally cover the openings in the receptacle which receive blades and the grounding pin of an electrical plug so that the danger of electrical shock following insertion of a foreign object into the openings is avoided. The shutters can be readily moved in the cover plate to positions such that the plug blades and the grounding pin of the plug can be inserted into the receptacle. Cover plates of the general type under consideration are shown, for example, in U.S. Pat. Nos. 2,820,842 and 2,710,382 and 2,641,627.

It is an object of the invention to provide an improved safety cover plate for an electrical receptacle unit which can be manufactured at an extremely low cost. A further object is to provide a safety cover plate which can be readily retro-fitted to an electrical receptacle by a person having virtually no mechanical skills. A further object is to provide a safety cover plate having dimensions which are substantially the same as those of many commonly used standard cover plates. A further object is to provide a safety cover plate for an electrical receptacle which will effectively cover the openings in the receptacle which are adapted to receive the blades and the grounding pin of an electrical plug but which will not interfere with insertion of the plug into the receptacle.

These and other objects of the invention are achieved in preferred embodiments thereof which are briefly described in the foregoing abstract, which are described in detail below, and which are shown in the accompanying drawing in which:

FIG. 1 is a front view of a cover plate in accordance with the invention.

FIG. 2 is a view of the reverse side of the cover plate of FIG. 1.

FIG. 3 is a view taken along the lines 3—3 of FIG. 2.

FIG. 4 is a view similar to FIG. 1 but showing the shutters in their displaced positions to permit insertion of electrical plugs into the receptacles of the receptacle unit.

FIGS. 5 and 6 are fragmentary views of alternative embodiments of the invention.

FIG. 7 is a fragmentary exploded view of an electrical receptacle unit exploded from a panel member.

Referring first to FIG. 7, cover plate member 2 in accordance with the invention is mounted on the face of a receptacle unit 50 which comprises a receptacle housing 51 and a back cover 52. The receptacle unit 50 shown in the drawing is of the general type disclosed in application Ser. No. 300,931 and need not be described in detail here. This receptacle unit, in common with all other types of receptacle units, has first and second receptacles 56, 58 on its face which are adapted to receive electrical plugs of the type shown at 72. The first or upper receptacle unit 56 has a pair of spaced apart parallel blade openings 60 which are in parallel side-by-side planes and a circular pin opening 62 which is between, and below, the blade openings 60. The pin opening 62 is adjacent to a centrally located screw hole 63 which is adapted to receive a screw 19 which secures the cover plate to the receptacle unit. The lower



receptacle 58 has parallel side-by-side blade openings 64 which are adjacent to the screw hole 63 and a circular opening 66 for the grounding pin of the plug which is remote from the screw hole 63. The blade openings and the grounding pin opening of each receptacle from the apices of an isosceles triangle. The two individual receptacles 56, 58 are similarly oriented one above the other but are not symmetrical with respect to the central screw hole 63.

The receptacle unit 50 is installed on a cable by separating the three conductors 54 of the cable and engaging the conductors with contact terminals in the housing 51. The back cover 52 is then assembled to the housing and the housing is inserted into a rectangular opening 74 in panel 76 as described in the aboveidentified application Ser. No. 300,931.

Referring now to FIGS. 1 and 2, a preferred form of cover plate assembly 2 in accordance with the invention comprises a rectangular plate member 4 having a front surface 6 and a rear surface 8. Two rectangular recesses 10, 10' are provided on the rearward side and are separated by a transversely extending rib 16 which extends between the sides 12, 12'. The upper and lower ends of the plate are defined by the horizontally extending end sections 14, 14'.

Two rectangular windows 20, 20' are provided in the plate on each side of the transverse rib 16 and are located such that when the plate is secured to the housing by a screw 19, the upper and lower receptacles will be exposed through these windows. Shutters 24, 26 are slidably mounted in the windows 20, 20' and have beveled side edges 28 which are received in V-shaped grooves 30 in the opposed edges of the windows. It will be noted from FIG. 2 that the portions 22, 22' of the plate between the remote edges 25, 27 of the shutters and the ends 14, 14' are also recessed with respect to the recess 10, 10' and the V-shaped grooves extend through these portions 22, 22' so that the shutters can be slid upwardly and downwardly as shown in FIG. 4. It will also be noted from FIG. 2 that thin webs 32 extend from the floors of the recesses 10, 10' towards the center of the transverse rib 16 in order to aid in retaining the shutters in the guideways 30.

The shutters are normally biased to the position in FIG. 2 that is, with their edges against the transverse rib 16, by wire springs 34, 34'. These springs have circular ends disposed in circular recesses 36, 36' and have resilient arms 38, 38' which bear against the outwardly facing edges 25, 27 of the shutters. When either shutter is moved towards the associated end 14, 14' of the cover part, these spring arms 38 are flexed so that they tend to return the shutter to its normal position.

The shutter 24 which is contained in the upper portion of the plate has two parallel spaced apart openings 44 which are adapted to receive the blades 68 of an electrical plug 72. When the shutter is closed as shown in FIG. 1, the openings 44 in the shutter are not in alignment with the openings 60 in the upper receptacle 56 and the ground pin hole 62 in the upper receptacle is also covered by the shutter. When a plug 72 is to be inserted into upper receptacle 56, the ends of the blades 68 are inserted into the holes 44 and the shutter is pushed upwardly by maniuplating the plug until the holes 44 are in alignment with the blade receiving openings 66 of the receptacle and the grounding pin hole 62 is exposed. The plug can then be fully inserted so that the blades and the grounding pin engage the ap-

propriate electrical contacts in the housing. When the plug is withdrawn, the shutter returns to its normal position as shown in FIG. **1.**

The lower shutter **26** has parallel spaced apart slots **40** which extend downwardly from its edge which is against the transverse rib **16** and has a centrally located circular hole **42.** The shutter normally covers the blade receiving openings **64** and the grounding pin hole **66** of the lower receptacle **58** and when a plug **72** is to be inserted into this lower receptacle, the blades and the ground pin can be inserted into the slots **40** and hole **42** and the shutter slid downwardly by moving the plug **72** downwardly a short distance. When the hole **42** is in alignment with the opening **66** and the blades **68** and slots **40** are in alignment with the blade openings **64** of the lower receptacle **58,** the plug can be inserted into the lower receptacle. Again, the shutter will return to its normal position under the influence of spring **34'** when the plug is withdrawn from the lower receptacle.

Any suitable insulating material can be used for cover plates in accordance with the invention. For example, good results can be obtained by molding both the plate **4** and the shutters from a relatively firm polyvinyl chloride material. The shutters can be assembled to the plate by merely flexing them so that they can be fitted into the guide ways **30** in the edges of the windows. The shutters will withstand such flexure even if they are of a relatively firm material because of the fact that they are relatively thin and wide. Thermoplastic materials can also be used if desired.

The embodiment of the invention shown in FIGS. **1–4** is intended for use for the receptacle which is adapted to supply 115 volt, 15 amp service. Receptacles having service of this rating have parallel blade openings in spaced apart planes as indicated by the plug **72** in FIG. **7.**

It is common practice to key a receptacle to a particular type of plug for different ratings of electrical service, for example, 115 v or 230 v, and 15 amps or 20 amps for each voltage rating. These keying arrangements are achieved by providing blade receptacles and blades in orientations other than the parallel side-by-side orientation of the plug **72.** The principles of the instant invention can be adapted to the manufacture of cover plates for receptacles which are keyed to receive only a particular type of plug. FIG. **5** shows a cover plate which has a shutter **24***a* in which one T-shaped opening is provided and one vertical blade opening is provided. The shutter **26***a* of the cover plate of FIG. **5** has an L-shaped opening adjacent to its upper edge and a slot as shown. This cover plate is adapted to receive plugs as shown at **72***a* having one blade disposed in a horizontal plane and one blade in a vertical plane or it can receive plugs of the type shown at **72** having the blades **68** in vertical planes. FIG. **6** shows a cover plate in which the shutter **24***b* has a blade openings which are adapted to receive only a plug of the type shown at **72***b* in which the blades **68***b* are coplanar. The shutter **26***b* of this embodiment has two notches at its upper edge to receive the blades as previously described.

A cover plate in accordance with the invention can readily be provided with any of the types of blade openings shown in FIGS. **5** and **6** or variations thereof by virtue of the fact that substantial shutter movement is permitted between the open and closed positions. In all cases, the blade openings and the pin openings will be covered when the shutters are closed so that foreign objects cannot be inserted into the receptacles.

Cover plates in accordance with the invention can be designed such that their overall dimensions will be substantially equal to or only very slightly greater than the dimensions of a standard cover plate which does not have safety shutters. This advantage is achieved as a result of a fact that the shutters move in opposite directions away from the center rib section **16** to expose the receptacles. As is apparent from FIG. **2,** the shutters can move for a substantial distance towards the ends **14, 14'** and the springs **34, 34'** have relatively long arms. The springs are thus not highly stressed and will be effective to return the shutters to their normal positions when the plugs are withdrawn. It should also be noted that only three plastic parts are required, the shutters and the plate **4** and these can be molded of the same material as noted above.

Changes in construction will occur to those skilled in the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the foregoing description and accompanying drawings is offered by way of illustration only.

What is claimed is:

**1.** Cover plate means for a dual electrical receptacle unit, said unit having first and second electrical receptacles, each of said receptacles having two plug blade openings and having a grounding pin opening, said plug blade openings and grouonding pin opening being adapted to receive the blades and the grounding pin respectively of an electrical plug, said blade openings and pin opening of each of said receptacles forming an isosoles triangle, and the two receptacles of the unit being located with the pin opening of the first receptacle adjacent to the blade openings of the other receptacle, said cover plate means comprising:

a flat plate member having first and second windows therein and having an integral bar extending between said windows,

first and second shutters in said plate member, said shutters being slidable towards and away from said bar, spring means biasing said shutters towards and against said bar,

said plate member consisting of a onepiece molding having guideways extending along opposite sides of said windows, said shutters being slidably mounted in said guideways,

said first shutter having two shutter blade openings therein which are spaced from said bar whereby,

upon moving said first shutter away from said bar, said shutter blade openings of said first shutter are brought into alignment with said blade openings of said first receptacle and said first shutter moves beyond said pin opening of said first receptacle thereby to permit insertion of a plug into said first receptacle,

said second shutter having a pair of blade openings therein which are immediately adjacent to said bar and having a pin opening therein which is relatively remote from said bar whereby, upon moving said second shutter away from said bar, said blade openings of said second shutter are brought into alignment with said blade opening of said second receptacle and said pin opening is brought into alignment with said pin opening of said second re-

ceptacle thereby to permit insertion of a plug into said second receptacles.

**2.** Cover plate means as set forth in claim **1,** said blade openings in said shutters comprising slots extending transversely of the direction of sliding movement of said shutters, said cover plate means being adapted for use on a receptacle unit having receptacles which are adapted to receive a plug having co-planar parallel blades.

**3.** Cover plate means for a dual electrical receptacle unit, said unit having first and second electrical receptacles, each of said receptacles having two plug blade openings and having a grounding pin opening, said plug blade openings and grounding pin opening being adapted to receive the blades and the grounding pin respectively of an electrical plug, said blade openings and pin opening of each of said receptacles forming an isosoles triangle, and the two receptacles of the unit being located with the pin opening of the first receptacle adjacent to the blade openings of the other receptacle, said cover plate means comprising:

a flat plate member having first and second windows therein and having an integral bar extending between said windows,

first and second shutters in said plate member, said shutters being slidable towards and away from each other, spring means biasing said shutters towards and against said bar,

said first shutter having two shutter blade openings therein which are spaced from said bar, said shutter blade openings in said first shutter comprising a pair of parallel slots which extend

parallel to the direction of sliding movement of said first shutter whereby,

upon moving said first shutter away from said bar, said shutter blade openings of said first shutter are brought into alignment with said blade openings of said first receptacle and said first shutter moves beyond said pin opening of said first receptacle thereby to permit insertion of a plug into said first receptacle,

said second shutter having a pair of blade openings therein which are immediately adjacent to said bar and having a pin opening therein which is relatively remote from said bar, said blade openings in said second shutter comprising a pair of parallel slots which extend parallel to the direction of sliding movement of said shutter and which extend to the edge of said shutter which is against said integral bar whereby,

upon moving said second shutter away from said bar, said blade openings of said second shutter are brought into alignment with said blade opening of said second receptacle and said pin opening is brought into alignment with said pin opening of said second receptacle thereby to permit insertion of a plug into said second receptacles.

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