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- (21) Application No. 18771/78 (22) Filed 10 May 1978  
 (44) Complete Specification Published 21 Oct. 1981  
 (51) INT. CL.<sup>3</sup> H02G 3/08  
 H01R 13/625 //  
 F21V 21/02  
 (52) Index at Acceptance  
 H2E 119 CCD  
 F4R MR  
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(19)



## (54) ELECTRICAL FITTINGS

- (71) We, ROTAFLEX (GREAT BRITAIN) LIMITED, a British Company, of Rotaflex House, 241 City Road, London, EC1P 1ET, England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following state-  
 avoided by using electrical wallplate fittings according to the invention. The fitting can safely be left unused until an appliance is to be powered from it when all that is required is to remove the cover, wire the appliance to the cover contacts and replace the cover on the base part of the fitting. The appliance may be conveniently supported by the cover

## PATENTS ACT 1949

## SPECIFICATION NO. 1600964

following amendments were allowed under Section 29 on 6 March 1985

- e 1 line 38 delete full stop insert, the locking means comprising a projection egral with one of the base part and cover and a recess in the other of the base t and cover for receiving the projection, and the cover being arranged to flex iliently as it is rotated onto the base part for urging the projection and ess into cooperation with a snap-action.  
 e 1 line 66 delete The cover  
 e 1 delete lines 67 and 68  
 e 3 line 49 delete full stop insert ,  
 e 3 delete lines 50-52 insert the locking means comprising a projection integral h one of the base  
 e 3 line 55 delete full stop insert , and  
 e 3 delete lines 56 and 57 insert the cover being arranged to  
 e 3 line 58 after base insert part  
 e 3 line 61 after to delete any  
 e 3 delete line 62 insert claim 1, wherein the securing  
 e 3 delete line 70 insert claim 2, wherein  
 e 3 line 74 delete 4 or 5 insert 2 or 3  
 e 3 line 79 delete 6 insert 4  
 e 3 line 83 delete 7 insert 5  
 e 3 line 87 delete 8 insert 6  
 e 3 line 91 delete 9 insert 7  
 e 3 line 95 delete 10 insert 8  
 e 3 For claims 4 to 13 read 2 to 11

THE PATENT OFFICE  
 April 1985

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## (54) ELECTRICAL FITTINGS

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This invention is concerned with electrical fittings and in particular to connection boxes of the kind used on walls and ceilings (hereinafter referred to for convenience as "wallplates") for connecting a wall or ceiling mounted appliance to a mains electricity supply circuit.

According to the invention there is provided an electrical wallplate fitting comprising a base part, a cover, a securing means on the base part and cover, the cover being rotatable through a predetermined angle between initial and final positions relative to the base part to engage and disengage the securing means to secure the cover mechanically to the base part and release the cover from the base part, respectively, a plurality of first electrical contacts mounted on the base part and spaced from the axis of rotation of the cover, a corresponding number of second contacts so positioned on the cover that when the cover is rotated from the initial to the final positions the second contacts move along arcuate paths into contact with respective first contacts, and releasable locking means for locking the cover in said final position on the base part and arranged to engage automatically when the cover is rotated into said final position.

When electrical wiring is being installed in a building it is common practice to leave cables protruding from walls where it is anticipated that wall mounted appliances, such as light fittings, might be required. Exposed protruding cables are both unsightly and potentially dangerous and can be

avoided by using electrical wallplate fittings according to the invention. The fitting can safely be left unused until an appliance is to be powered from it when all that is required is to remove the cover, wire the appliance to the cover contacts and replace the cover on the base part of the fitting. The appliance may be conveniently supported by the cover itself.

In a preferred embodiment of the invention the base part and cover are provided with cam means which cooperate as the cover is turned towards the final position to bring the cover into close, secure contact with the base part. The cam means consists of several pairs of complementary cams uniformly spaced apart around the periphery of the base part and cover. The releasable locking means takes the form of a latch projection on the cover which snaps into a recess in the base part. The cover itself flexing resiliently to provide the necessary spring action for the latch projection.

Preferably either the first or the second contacts comprises spring wiper blades so that a wiping action is obtained between the contacts as the cover is rotated to ensure good electrical connection. The angular displacement of the cover between the initial and final positions need be only small and in the preferred embodiment is of the order of 10°.

The presently preferred embodiment of the invention will now be described in detail by way of example with reference to the accompanying drawings in which:-

*Figure 1* is a plan view showing the base and cover of the wallplate;

*Figure 2* is a scrap section showing portions of the base and cover positioned ready to be brought together;

*Figure 3* is a similar view to *Figure 2*, but showing the cover fitted to the base;

*Figure 4* is a cut-away perspective view illustrating cooperating cams on the cover

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and base;

Figure 5 is a side view of the wall plate shown mounted on a wall and carrying a lamp; and

5 Figure 6 is a similar view to Figure 5 and showing the cover in a position just before full engagement with the base.

The wallplate illustrated in the drawings includes two separable moulded plastics parts, namely a circular base 1 adapted to be 10 firmly secured to a ceiling or wall by screws 2 which pass through slots 3 provided for that purpose in the bottom wall 4 of the base, and a cover plate 5. A bracket 6 15 carrying a spot light 7 is firmly secured on a central, hollow spigot 8 integral with the cover 5 by a clamping ring 9. An electric cable 10 extending from the spot light 7 20 passes through the spigot 8 to the inside surface of the cover where it is firmly gripped by a cable clamp 11 which is tightened by a screw 12. Spade connectors 13 are fitted to the ends of the conductors of the conventional live L, neutral N and earth 25 E leads of the cable 10 and the connectors 13 are pushed on to respective lugs 14 formed of insulating plastics material integrally with the cover. The lugs 14 extend parallel to the plane of the cover and are spaced apart in a line substantially radial to 30 the cover

The bottom wall 4 of the base 1 has a cable entry hole 15 through which a supply cable 16 passes. To prevent the cable sheath 35 chaffing against the head of the fixing screw 2 a plate 17 is positioned between them. The plate 17 can be pivoted away from the illustrated position to expose the screw for fixing purposes. The conductors of the live L, neutral N and earth E leads of the cable 40 are stripped of insulation at their ends and are connected by screws 20 to terminal portions 19 of respective wiper blades 21. The screws 20 are in threaded engagement with cooperating nuts (not shown) embedded in thick portions 22 of the bottom wall 4. The wiper blades are fixed to the base by 45 pins 23 and have end portions which are turned back upon themselves to form spring wiper contacts 24. As may be seen from Figure 1, the wiper contacts are aligned radially of the base and are positioned for cooperation with the contacts formed by the spade connectors 13 on the cover. The base 50 bottom wall 4 also includes upstanding partition walls 25 and an alternative cable entry hole 26 and cable clamp 27.

Integral with the bottom wall 4 of the base 1 is a cylindrical side wall 28 on the inside of 60 which three cover securing formations 29 are provided at 120° to each other. Each formation 29, seen most clearly in Figures 2 and 4, includes an upright rail 30, a circumferentially extending cam strip having a 65 slightly curved inner surface which is closer

to the bottom wall at the rear end of the strip than it is at the front end which faces the rail 30, and a stop wall 32 at the rear end of the cam strip. The cover 5 is provided 70 with three integral projections 33 spaced apart around the cover at 120° to each other for cooperation with the formations 29. The outer part of each projection 33 is shaped to define a curved camming shoulder 34 which 75 faces the cover plate and curves away from it in the direction from a forward edge of the projection to a rear edge thereof.

At its periphery the cover is additionally formed with an upstanding, rectangular tooth 35 arranged for engagement in a 80 complementary rectangular notch 36 provided in the side wall 28 of the base.

In use of the wall plate, the base 1 is secured to a wall by screws 2 and the mains supply cable is wired to the terminals 19 of 85 the wiper blades 21. The spotlight 7 is attached to the cover 5 and wired thereto with the connectors 13 pushed on to lugs 14, as described above. The cover 5 is placed axially together with the base 1 so that the projection 33 which is generally aligned with the line of connectors 13 enters the opening 90 defined between the rail 30 and the forward edge of the cam strip 31 of the securing formation 29 generally aligned radially with the wiper blades 21 (see Figure 2). In other 95 words, as seen in Figure 1, the cover 5 is turned over on top of the base 1. The uniform spacing between the formations 29 and projections 33 ensures that the other two projections 33 will enter the corresponding openings defined by the other 100 formations 29. The cable clamp 11 cooperates with the partition walls 25 in the base to prevent the cover and base being brought together in any other than the rotational 105 alignment described.

The cover 5 is then rotated with respect to the base 1 to bring the cam surface 34 on the projections 33 into engagement with those 110 of the corresponding cam strips 31, the camming surfaces cooperating to pull the cover 5 towards the base as the rotation is continued until the leading edges of the projections 33 abut the stops 32, as shown in 115 Figure 3. If the cover is imagined placed on top of the base in Figure 1, the direction of rotation of the cover is clockwise. The angle of rotation between the initial and final positions, as determined by the rails 30 and stops 32, is about 12°. During the relative 120 rotation between the cover 5 and base 1 the wiper contacts 24 come into contact with and wipe over the connectors 13 and in this way a good electrical connection is obtained 125 between the sets of contacts. It will be appreciated that as cover 5 is rotated the connectors 13 associated with the leads L, N, S of cable 10 will move along respective arcuate paths, each of which includes the 130

corresponding wiper contact 24 associated with the lead L, N or E of the cable 16.

During the initial rotation of the cover the tooth 35 slides along the rim of the base sidewall 28 and the inherent resilience of the cover 5 allows it to flex away from the base, as shown in Figure 4. As the projections 33 come into abutment with the stops 32 the tooth 35 registers with and snaps into the recess 36 in the side wall 28 (Figure 6) to lock the cover 5 against reverse rotation and hence disengagement from the base 1. To remove the cover 5 from the base 1 a screwdriver tip or other suitable tool must be inserted between the tooth 35 and bottom of recess 36 to force the tooth out of the recess and the cover then turned to release it from the base.

While a wallplate having three pair of contacts has been described it will be appreciated that more or less pairs of contacts may be provided as required. For example, in certain types of electrical installations earth connections are unnecessary, so that the earth contacts can be omitted from the wallplate.

#### WHAT WE CLAIM IS:-

1. An electrical wallplate fitting comprising a base part, a cover, a securing means on the base part and cover, the cover being rotatable through a predetermined angle between initial and final positions relative to the base part to engage and disengage the securing means to secure the cover mechanically to the base part and release the cover from the base part, respectively, a plurality of first electrical contacts mounted on the base part and spaced from the axis of rotation of the cover, a corresponding number of second contacts so positioned on the cover that when the cover is rotated from the initial to the final positions the second contacts move along arcuate paths into contact with respective first contacts, and releasable locking means for locking the cover in said final position on the base part and arranged to engage automatically when the cover is rotated into said final position.

2. An electrical fitting according to claim 1, wherein the locking means comprises a projection integral with one of the base part and cover and a recess in the other of the base part and cover for receiving the projection.

3. An electrical fitting according to claim 2, wherein the cover is arranged to flex resiliently as it is rotated onto the base for urging the projection and recess into cooperation with a snap-action.

4. An electrical fitting according to any one of claims 1 to 3, wherein the securing means comprise complementary cam means provided on the base part and cover, which cam means cooperate to draw the cover

towards and into close contact with the base part as the cover is rotated into said final position on the base.

5. An electrical fitting according to claim 4, when appended to claim 3, wherein the action of the cam means causes said flexing of the cover.

6. An electrical fitting according to claim 4 or 5, wherein said cam means comprises a plurality of pairs of complementary cam spaced apart around the periphery of the base part and cover.

7. An electrical fitting according to any one of claims 1 to 6, wherein the first contacts are spaced apart in a line extending radially of the base part.

8. An electrical fitting according to any one of claims 1 to 7, wherein either the first or second contacts comprise spring wiper blades.

9. An electrical fitting according to any one of claims 1 to 8, wherein the second contacts are detachably mounted on the cover.

10. An electrical fitting according to claim 9, wherein the second contacts comprise connector tags pushed onto lugs integral with the cover.

11. An electrical fitting according to any one of claims 1 to 10, wherein the predetermined angle of cover rotation is in the order of  $10^\circ$ .

12. An electrical fitting according to any one of the preceding claims wherein the cover is provided with support means for supporting an electrical appliance to be supplied with electric power through the fitting.

13. An electrical wallplate fitting substantially as herein described with reference to the accompanying drawings.

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Printed for Her Majesty's Stationery Office,  
by Croydon Printing Company Limited, Croydon, Surrey, 1981.  
Published by The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.

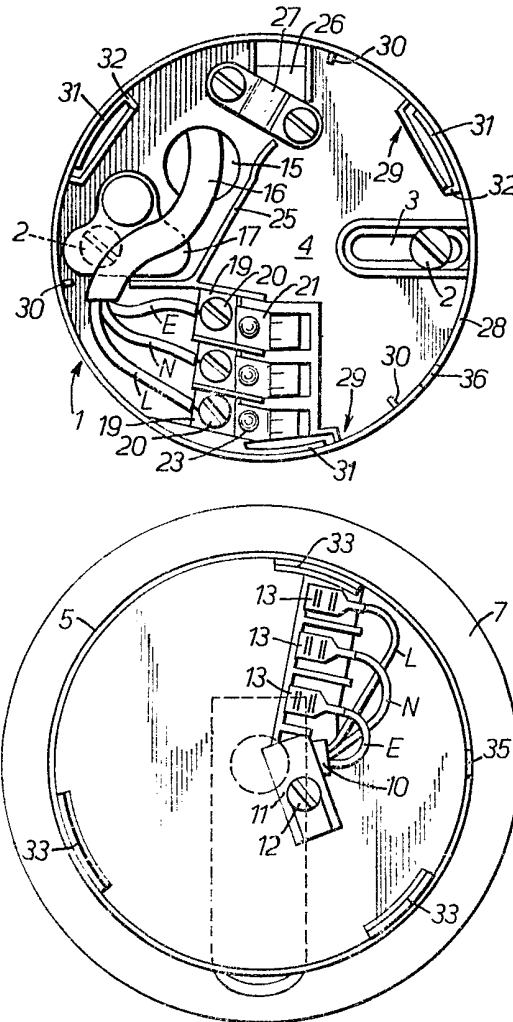
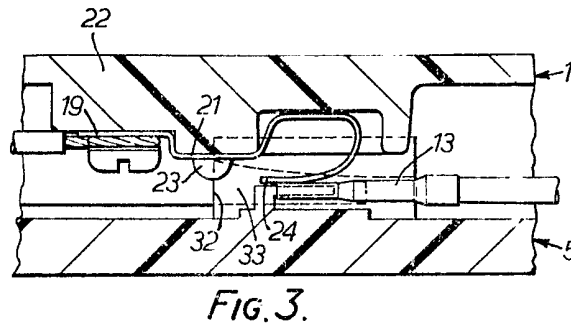
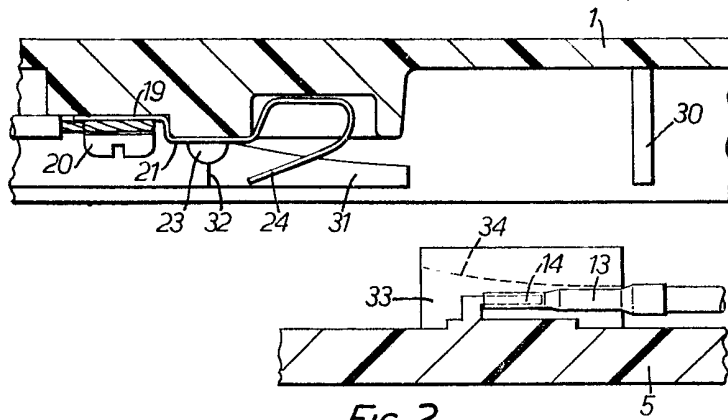


FIG. 1.



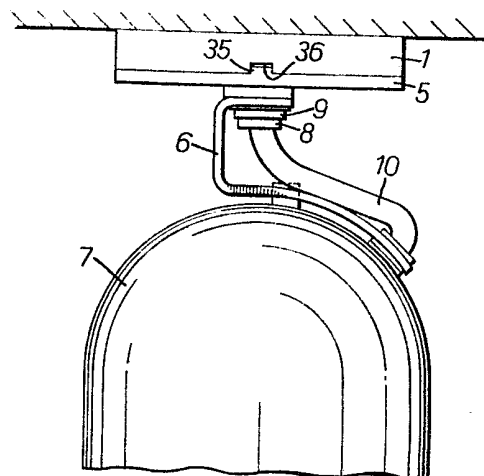


FIG. 5.

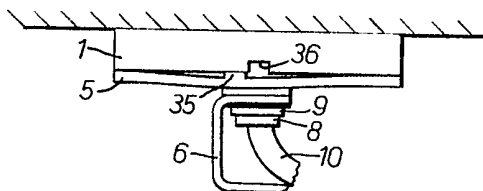


FIG. 6.

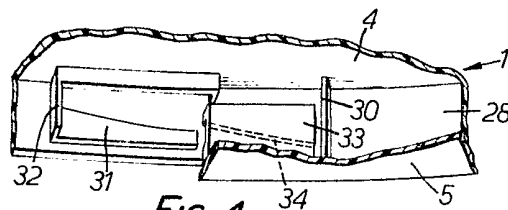


FIG. 4.