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EP 0 749 142 A2

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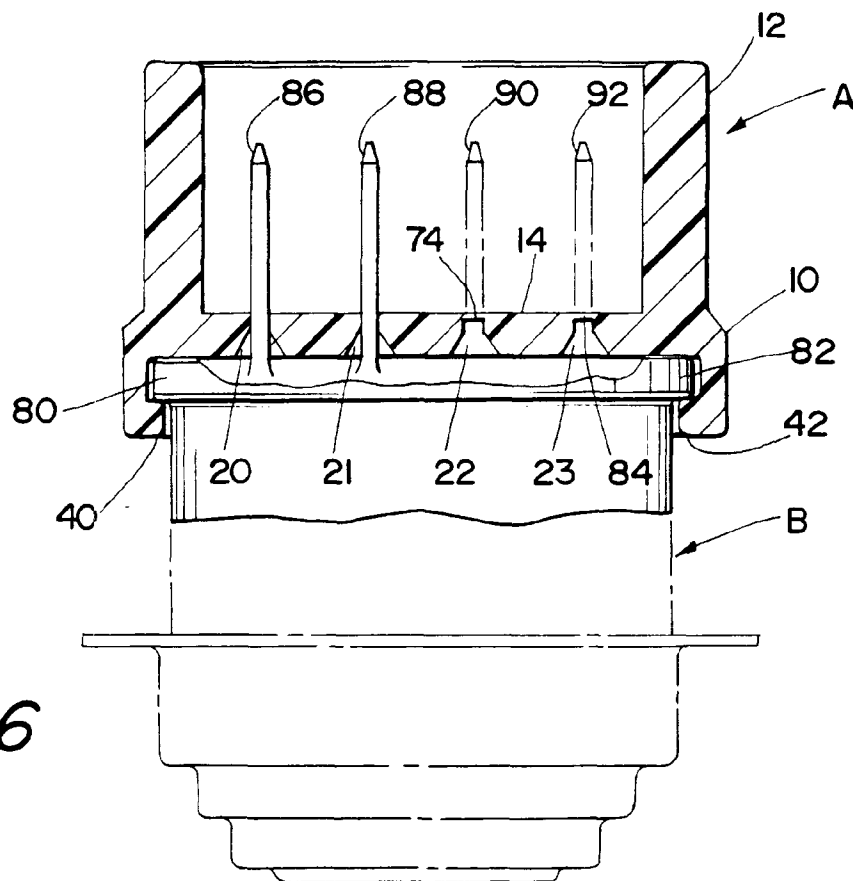
EUROPEAN PATENT APPLICATION

(43) Date of publication:

18.12.1996 Bulletin 1996/51(51) Int Cl.⁶: **H01H 37/04, H01R 13/52**(21) Application number: **96630009.7**(22) Date of filing: **15.02.1996**(84) Designated Contracting States:
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1015 Luxembourg (LU)(71) Applicant: **EMERSON ELECTRIC CO.**
St. Louis Missouri 63136 (US)(54) **Cover for electrical devices**

(57) A cover for electrical devices that may have two, three or four elongated electrical terminals. The cover has four terminal receiving openings, two of which are normally closed by a thin frangible crust of plastic flash. When the cover is used on a device that has only

two terminals that extend through the unflashed openings, the flash that closes the other two openings prevents entry of foreign material into the electrical device. When the cover is used on devices that have three or four terminals, the additional terminals are forced through the plastic flash by fracturing same.

*Fig. 6*

Description

BACKGROUND OF THE INVENTION

This application relates to the art of covers for electrical devices and, more particularly, to such covers that have openings for receiving elongated terminals on electrical devices. The cover of the present application is particularly applicable for use on thermostats and will be described with specific reference thereto. However, it will be appreciated that the invention has broader aspects and can be used on other electrical devices.

Thermostats have different internal switch arrangements that require different numbers of external terminals. By way of example, a thermostat that has a pair of completely independent internal switches will have four external terminals.

A thermostat having a pair of internal switches that employ one common contact will have three external terminals. A thermostat having one internal switch will have two external terminals. It is common to package these different switch and terminal arrangements in a standard housing and a different cover having the proper number of terminal receiving openings is required for each different terminal arrangement. It is undesirable to use a cover with four terminal receiving openings on a thermostat that has only two or three terminals because the extra openings provide passages for undesirable entry of foreign material to the interior of the housing. It would be desirable to provide one cover that could be used with all of the different terminal arrangements without having unused openings through which foreign material can enter the thermostat housing.

SUMMARY OF THE INVENTION

A cover for a thermostat of the type described has four terminal receiving openings, two of which are normally closed by a thin and frangible crust of plastic flash. The unblocked openings receive the terminals on a thermostat having two terminals. When the cover is used on a thermostat that has three or four terminals, one or both of the blocked openings are unblocked by breaking the crust of plastic flash.

In a preferred arrangement, the crust of plastic flash is adjacent the exit ends of the terminal receiving openings.

The terminal receiving openings are of the type having a uniform rectangular size and shape over a first portion of their length adjacent their exit ends. The remaining length of the openings have a tapered or funnel-like shape for guiding terminals toward the rectangular-shaped portion. The frangible crust of plastic flash is in the rectangular portion of the opening and has a thickness that is less than one-half of the length of the rectangular portion.

It is a principal object of the present invention to provide an improved cover that can be used with electrical

devices having different numbers of external terminals.

It is also an object of the invention to provide such a cover having a plurality of auxiliary terminal receiving openings that are normally blocked by a thin and frangible crust of plastic flash.

BRIEF DESCRIPTION OF THE DRAWING

Figure 1 is a top plan view of a cover having the improvements of the present application incorporated therein;

Figure 2 is a bottom view thereof;

Figure 3 is a cross-sectional elevational view taken generally on line 3-3 of Figure 1;

Figure 4 is an enlarged partial cross-sectional elevational view showing an opening through the cover of Figures 1-3;

Figure 5 is a view similar to Figure 4 and showing one of the terminal receiving openings blocked by a thin and frangible crust of plastic flash; and

Figure 6 is a partial cross-sectional elevational view showing the cover positioned on a thermostat.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawing, wherein the showings are for purposes of illustrating a preferred embodiment of the invention only and not for purposes of limiting same, Figures 1-3 show a cover A that is molded of synthetic plastic material such as a polyamide. Cover A has a circular base portion 10 and a generally rectangular upper portion 12. A wall 14 at the bottom of generally rectangular top portion 12 has four equidistantly spaced openings 20-23 therethrough and aligned along a common longitudinal axis 24.

Base portion 10 has a plurality of inwardly extending longitudinal ribs 30-33 receivable in suitable longitudinal grooves in the upper exterior surface of a thermostat housing for aligning cover A on the housing and preventing relative rotation therebetween. A pair of opposite inwardly extending lugs 40-42 on base portion 10 of cover A are receivable over outwardly extending projections on a thermostat housing for securing cover A to the housing.

Figure 4 shows opening 20 as having a first or slot portion 50 that is of uniform rectangular cross-sectional size and shape along its entire length. Rectangular first or slot portion 50 has a length that is less than one-half of the entire length of opening 20, with the total length of the opening being the same as the thickness of wall 14. Dimensional examples will be given simply by way of illustration and not by way of limitation. When wall 14 has a thickness of about 0.080 inches, first rectangular opening portion 50 has a length of about 0.020 inches. Second portion 52 of opening 20 occupies the remaining length of the opening and has converging sidewalls that intersect rectangular portion 50 at intersections 54, 55. Opening second portion 52 is generally funnel-like and

gradually diminishes in size from entrance side 60 of wall 14 toward exit side 62 thereof. This facilitates positioning of electrical terminals in the openings and guides them through rectangular portions 50 with a relatively close fit. All of openings 20-23 have substantially the same size and shape.

Figure 5 shows opening 22 having a rectangular portion 70 corresponding to rectangular portion 50 and a tapered portion 72 that corresponds to portion 52 of opening 20. Rectangular opening portion 70 is closed by a thin and frangible crust 74 of plastic flash that is integral with wall 14. Crust 74 has a thickness between about 5-11 thousandths of an inch. In one arrangement, the thickness of crust 74 is approximately 8 thousandths of an inch when the length of rectangular portion 70 is about 0.020 inches. Approximately 9-20 pounds of force is required to break crust 74 for allowing reception of an electrical terminal through opening 22. Opening 23 has a crust that is the same as crust 74 on opening 22.

Figure 6 shows cover A positioned on a thermostat housing B with lugs 40, 42 received over opposite projections 80, 82 on the housing. A pair of flat blade-type of elongated electrical terminals 86, 88 extend through adjacent openings 20, 21. Openings 22, 23 remain closed by crusts 74, 84 to prevent entrance of foreign material to the interior of thermostat B. When cover A is used with a thermostat having a third terminal 90, the cover is positioned with third terminal 90 extending into opening 22 against crust 74. Force applied to cover A then causes breakage of crust 74 to allow terminal 90 to move completely through opening 22. The fourth opening 23 will remain closed by crust 84 of plastic flash to prevent entrance of foreign material to the interior of thermostat B. When the cover is used with a thermostat having both a third terminal 90 and fourth terminal 92, the cover is positioned with terminals 90, 92 extending into openings 22, 23 against crusts 74, 84. Force applied to cover A then causes breakage of crusts 74, 84 to allow movement of terminals 90, 92 completely through the openings 22, 23.

The arrangement shown and described provides a cover with a plurality of spaced-apart openings 20-23 in excess of two for receiving elongated electrical terminals therethrough. All but two adjacent ones 20, 21 of the openings 20-23 are normally closed by a thin and frangible crust 74, 84 of plastic flash that is integral with and of the same material as cover A. Crust 74, 84 of plastic flash is also flush with exit side 62 of wall 14. The openings have entrance ends at the entrance surface 60 of wall 14 that are substantially larger than the exit ends thereof located at exit surface 62 of wall 14. Wall 14 through which the terminal receiving openings extend is preferably substantially flat. Location of the frangible crust adjacent the ends of the openings prevents the broken plastic material from entering the interior of the thermostat because the rectangular opening portions are just slightly larger than the rectangular electrical terminals.

Although the invention has been shown and described with respect to a preferred embodiment, it is obvious that equivalent alterations and modifications will occur to others skilled in the art upon the reading and understanding of this specification. The present invention includes all such equivalent alterations and modifications, and is limited only by the scope of the claims.

10 Claims

1. A cover for an electrical device having a plurality of spaced-apart terminals, said cover having a plurality of spaced-apart openings in excess of two for receiving said terminals therethrough, and all but two adjacent ones of said openings being closed by a thin frangible crust of plastic flash that is integral with and of the same material as said cover.
2. The cover of claim 1 wherein said crust has a thickness between about 5-11 thousandths of an inch.
3. The cover of claim 1 wherein said openings have entrance ends and exit ends, and said openings being substantially larger at said entrance ends than at said exit ends.
4. The cover of claim 3 wherein said crust is at said exit ends of said openings.
5. The cover of claim 3 wherein said cover has a flat portion through which said openings extend, said flat portion having a predetermined thickness, said openings being of uniform cross-sectional size and shape through part of said predetermined thickness and being of varying cross-sectional size through the remainder of said predetermined thickness.
6. The cover of claim 1 wherein said crust is broken when a force between about 9-20 pounds is applied thereto.
7. A cover having a plurality of openings therethrough for receiving electrical terminals, and at least certain of said openings being closed by a thin frangible crust of plastic flash.
8. The cover of claim 7 wherein there are four said openings equidistantly-spaced from one another along a common axis and only two adjacent ones of said openings are closed by said crust.
9. The cover of claim 7 wherein said openings have entrance and exit ends and a predetermined length, said openings having first portions with a uniform rectangular cross-sectional size and shape extending over less than one-half of said length adjacent said exit ends and having second portions with a

funnel-like shape extending over the remainder of said length, said crust being at said exit ends and having a thickness that is less than one-half the length of said first portions of said openings.

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10. An electrical device cover having four openings for receiving electrical terminals, and two adjacent ones of said openings being closed by a thin frangible crust of plastic flash.

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11. The cover of claim 10 wherein said openings have entrance and exit ends and said entrance ends are substantially larger than said exit ends, and said crust is adjacent said exit ends.

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12. The cover of claim 11 wherein said openings have slot portions with a uniform rectangular cross-sectional size and shape over a portion of the length thereof adjacent said exit ends and said crust has a thickness that is less than one-half the length of said slot portions.

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13. The cover of claim 10 wherein said crust has a thickness that is less than about 15% of the total length of said openings.

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14. The cover of claim 10 wherein said crust has a thickness between about 5-11 thousandths of an inch.

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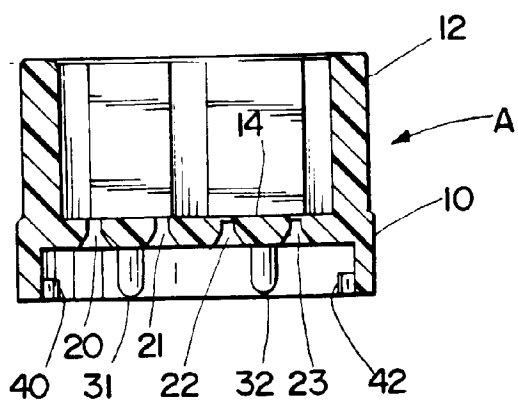
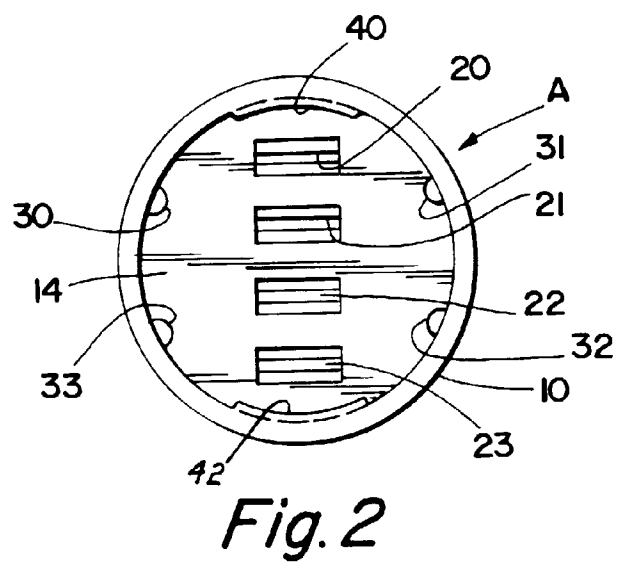
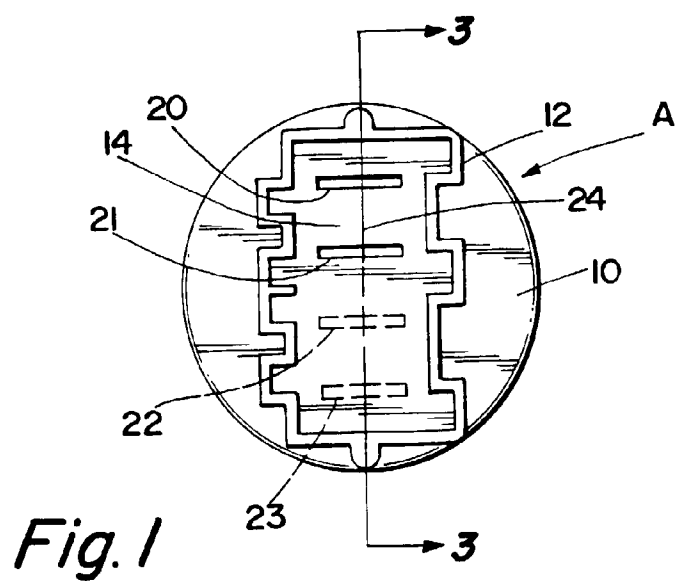


Fig. 4

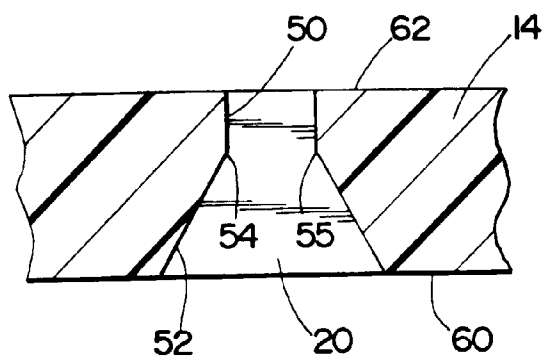


Fig. 5

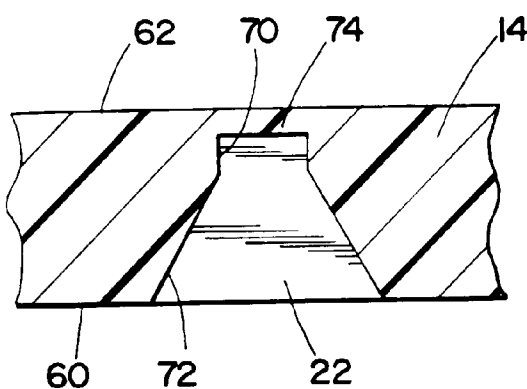


Fig. 6

