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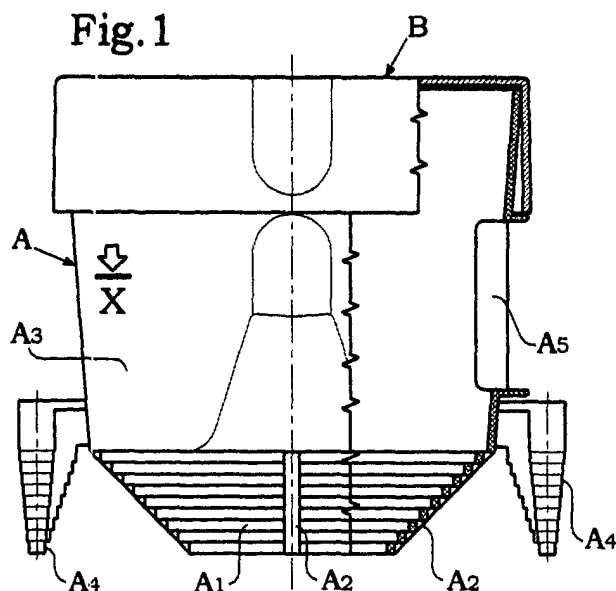
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(54) **Improvements to built-in spotlight boxes**

(57) The built-in support boxes for spotlights are characterised by adaptability of the main body (A) thereof to the diameter of the spotlights by making a horizontal cut which reduces the length of the lower part of the main body (A), which is formed by a succession of rings (A1) of decreasing diameter ring-by-ring in a downwards direction. A lateral opening (A5) is afforded in the box for engagement thereto of a secondary body (C) which

will house the electronic transformer. The main body (A) and the secondary body (C) of the box both exhibit two or more holed appendages (A4,D1), each exhibiting a vertical succession of cylindrical portions having portion-by-portion a decreasing diameter in a downwards direction, each portion thereof being identical in height to a ring of the succession of rings (A1) of the main body (A).



Description

[0001] The owner of the present application has already described and claimed a built-in a spotlight support box in a previous patent application, no. 99956329.9-2316-IT9900370; the present improvements relate principally to what is described and claimed in that invention.

[0002] The support box is to be made of an insulating and fire-retardant material, similar to the material used for electric plug sockets, and is mainly characterised in that it is easily adaptable to the diameter of the spotlights used. A horizontal cut is made which reduces the length of the truncoconical lower part of the box to a desired size; the truncoconical lower part is formed by a succession of rings, or circular steps, which are concentric and increase in diameter one-by-one in an upwards direction, in this way defining a number of cutting external planes. By choosing the most suitable of the external planes for an individual spotlight a decision upon where exactly to cut to size can be made. Internally, the presence of the circular rings and steps enables the sprung arms of the spotlight to grip directly thereon.

[0003] Both the box body and the cover thereof exhibit some predisposed fracture zones so that material can easily be removed when a passage for sleeves of electric wires is required, or for dispersion of heat.

[0004] The experience gained from the consolidated application of support boxes, together with further research aimed especially at improving the various aspects of the product as much as possible (safety, fire-proofing, duration of the lighting elements, ease of installation and maintenance), has led to various improvements which are described herein below with the use of three tables of drawings, here included by way of non-limiting illustration, in which:

- Figure 1 is a lateral view in section of the main body (A) complete with cover (B);
- Figure 2 is a lateral view of the secondary body (C) complete with support foot (D);
- Figures 3 - 4 - 5 and 6 show further views of the closure element (E) of the secondary body (C);
- Figures 7 - 8 and 9 show, in the same order as the figures of table 1, horizontal section XX relating to figures 1, 2 and 3;
- Figure 10 is a horizontal section (XX) of the elements (A - E - C) of table 2, in an assembled configuration;
- Figure 11 is a vertical section (YY) of the secondary body (C) complete with support foot (D);

[0005] With reference to the figures of the drawings, it can be observed that the main body (A), as in the above-identified patented support box, is practically truncoconical in the lower part thereof, which lower part is formed by a succession of concentric rings (A1) having a growing diameter in an upwards one-by-one direc-

tion. The concentric rings (A1) are joined together by radial strips (A2) made of the same material and therefore easily cuttable in cases where the suitable ring (A1) corresponding to the spotlight diameter has been identified and the smaller rings in excess are to be cut away.

[0006] Some improvements in the present invention related to the upper part (A3) of the main body (A), i.e. the part thereof which is located above the rings (A1) and which is destined to receive the cover (B). Externally of the lower zone of the upper part (A3) are located two or more holed appendages (A4) each exhibiting a vertical succession of practically cylindrical portions which are coaxial and exhibit a decreasing diameter one-by-one in a downwards direction, and are of a same height dimension as corresponding rings (A1) of the main body (A), so that easily alignment there-with can be achieved after suitable cutting for installation of each spotlight has been made. The holed appendages (A4) enable means for fastening to be inserted (nails, screws or other), chosen according to the installation surface involved: plasterboard, aluminium panels, wooden planks for cement castings and so on.

[0007] An opening (A5) is afforded in the upper part (A3) of the main body (A) for rapid attachment of the secondary body (C, figure 2), thanks to which the electronic transformer can be housed in a separate chamber to the chamber housing the spotlight, but which according to needs can be in communication there-with simply by removing a special snap-fastened closure element (E) achieving an effective thermal insulation between the two adjacent chambers, the chamber housing the heat source in the main body (A) and the chamber housing the transformer in the secondary body (C).

[0008] The secondary body (C) is formed by a frontal coupling of two shells (C' and C''), (figure 2 - 9 and 11) predisposed for this purpose, along the join edges, by male-female coupling. The coupling also enables, at an opposite end from an end which is to be inserted in the main body (A), a dove-tail coupling of a support foot (D) with which aligned fixture is achieved with the holed appendage (D1) which is identical to the holed appendages (A4) of the main body (A) and, like the holed appendages (A4), can be height-adapted by a simple cut in accordance with how the rings (A1) and the appendages on the main body (A) have been cut.

[0009] The secondary body (C), possibly longer than the transformer in order to enable the transformer to be distanced from the heat source by pushing it up against the end, is inserted into the main body (A) up to the position of the stops constituted by the relieves (C4), against the external frame of the opening (A5); the wedge-shaped ridges (C5) cross into the main body (A) and snap-fasten thereto (figure 10), preventing accidental separation of the two bodies (A and C).

[0010] Further ridges (C6) are predisposed internally of the main body (C) for snap-fastening to the closure element (E) and in particular the flat wall (E1) when the wall (E2), shaped to follow the curvature of the main

body (A), rests perfectly against the complementarily-shaped edge of the secondary body (C).

[0011] The two walls (E1 and E2), which enable separation of the spotlight chamber from the transformer chamber with a heat-insulating hollow space, are both predisposed along the perimeter edge with one or two recesses (E4) of a sufficient size to allow passage of connection cables from the spotlight to the transformer.

[0012] Since access to the built-in support box once installed is possible only through the fixture hole of the spotlight, in the wall (E2) thereof the closure element (E) exhibits a sort of small handle (E3) or the like, on which a screwdriver can be applied from the outside and through the above-mentioned hole, both for removing the element (E) and for repositioning it in order to obtain the snap-fastening using a finger.

[0013] Two or more truncoconical clutches (C7) are afforded externally of the secondary body (C), in the opposite vertical face thereof and located towards the end to be inserted in the main body (A). The truncoconical clutches (C7) have a larger radius thereof facing externalwards and offer a pressure-fit for passage sleeves of the electric cables at a predisposed fracture zone (C8). The ridges remaining after fracture prevent insertion of the tube internally of the secondary body (C) and the consequent risk of obstruction of passage of the transformer, both during the insertion stage and the extraction stage, when it is to be replaced.

[0014] Obviously, while the overall characteristics illustrated and described of both the main body (A) and the secondary body (C) remain the same, these elements and others may be susceptible to modifications and variations which might be revealed as suitable or necessary for reasons connected with press-forming or other details, but which nonetheless fall within the ambit of application of the patent.

Claims

1. Improvements to built-in support boxes, principally **characterised in that** in support boxes of this type, adaptable to diameters of spotlights by being cuttable horizontally in such a way as to reduce a length of a lower part thereof formed by a succession of concentric rings or steps, which concentric rings exhibit a diameter which decreases ring-by-ring in a downwards direction, a lateral opening is predisposed for insertion and engagement of a secondary body, which secondary body houses an electronic transformer in a chamber thereof which is different from a chamber in which the spotlight is housed; the chamber of the secondary body is constantly accessible from the chamber housing the spotlight, for purposes both of inserting the electronic transformer therein and for any necessary maintenance or replacement operations.
2. The improvements to built-in support boxes of the preceding claim, **characterised in that** the chamber of the main body, destined for insertion of the spotlight, and the chamber of the secondary body, destined to house the transformer, are separated from each other by a removable closure element which is snap-fittable to an entrance of the secondary body and which is predisposed with special clutches for passage of connection cables of the spotlight and the transformer; the removable closure element is provided with a small handle or a similar device which can be accessed by a screwdriver through the spotlight insertion hole, and can be both removed and repositioned so as to achieve a snap-fastening thereof by pressure of a finger.
3. The improvements to built-in support boxes of the preceding claims, **characterised in that** the removable element for separating the chamber of the secondary body from the chamber of the main body exhibits two walls which form a heat-insulating hollow space.
4. The improvements to built-in support boxes of claim 1), **characterised in that** two or more holed appendages (A4) are located externally of the main body (A); the two or more holed appendages (A4) each exhibit a vertical succession of practically cylindrical portions which are coaxial and which decrease in diameter portion-by-portion in a downwards direction, and are of a same height as the corresponding rings (A1) of the main body (A); after each spotlight has been installed in the support box, the two or more holed appendages (A4) can be aligned accordingly thereto; the two or more holed appendages (A4) being destined to receive means for fastening (nails, screws or the like) chosen according to a surface on which the support box is to be applied, including plasterboard, aluminium panels, wooden planks for cement castings and the like.
5. The improvements to built-in support boxes of claim 2), **characterised in that** the secondary body (C), which is destined to house the electronic transformer, is formed by a frontal coupling of two shells (C' and C'') predisposed for coupling, along join edges thereof, by male-female union; at an end of the secondary body (C) opposite to an end which is to be inserted into the main body (A), a dove-tail seating for attaching a support foot (D) is included.
6. The improvements to built-in support boxes of claim 5), **characterised in that** the support foot (D), which is predisposed for union in a dove-tail joint with the joined shells (C' and C'') is further predisposed for aligned fixture of the secondary body (C), a holed appendage (D1) being afforded therein which is identical to the holed appendages (A4) of

claim 4; the holed appendage (D1) of the support foot (D) being, like the holed appendages (A4) of claim 4, cuttable to be reduced to a height compatible with a height of the rings (A1) and the holed appendages (A4) of the main body (A).

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7. The improvements to built-in support boxes of claim 6), **characterised in that** the secondary body (C), preferably longer than the electronic transformer in order to enable the transformer to be distanced from a heat source constituted by the spotlight, by being pushed against a far end of the secondary body (C), is inserted at another end thereof on the main body (A) up until the ridges (C4) contact against an external frame of the opening (A5); wedge-shaped ridges (C5) of the secondary body (C) pass inside the main body (A) and engage thereto by means of a snap-fastening which prevents accidental separation of the main body (A) and the secondary body (C).
8. The improvements to built-in support boxes of any one or more of the preceding claims, **characterised in that** further ridges (C6) are predisposed internally of the body (C) for achieving a snap-fastening of the closure element (E) and in particular a flat wall (E1) thereof when the wall (E2), shaped in order to follow a curvature of the main body (A), rests perfectly against a similarly-shaped edge of the secondary body (C).
9. The improvements to built-in support boxes of claim 7), **characterised in that** two or more truncoconical clutches (C7) are afforded externally of the secondary body (C), in two opposite vertical faces thereof and located towards the end of the secondary body (C) which will be inserted in the main body (A); the two or more truncoconical clutches (C7) having larger diameters thereof facing externalwards for receiving press-insertion of passage sleeves of electric cables through a predisposed fractured zone (C8) in which remaining ridges after a fracturing has been made prevent insertion of a tube internally of the secondary body (C) and thus prevent a consequent risk of obstruction to passage of the electronic transformer during insertion thereof and extraction for replacement thereof.
10. The improvements to built-in support boxes of the preceding claims, as illustrated and described and for the set aims and independently of any modifications or variations which in practice may be applied without forsaking the claimed ambit of patent protection.

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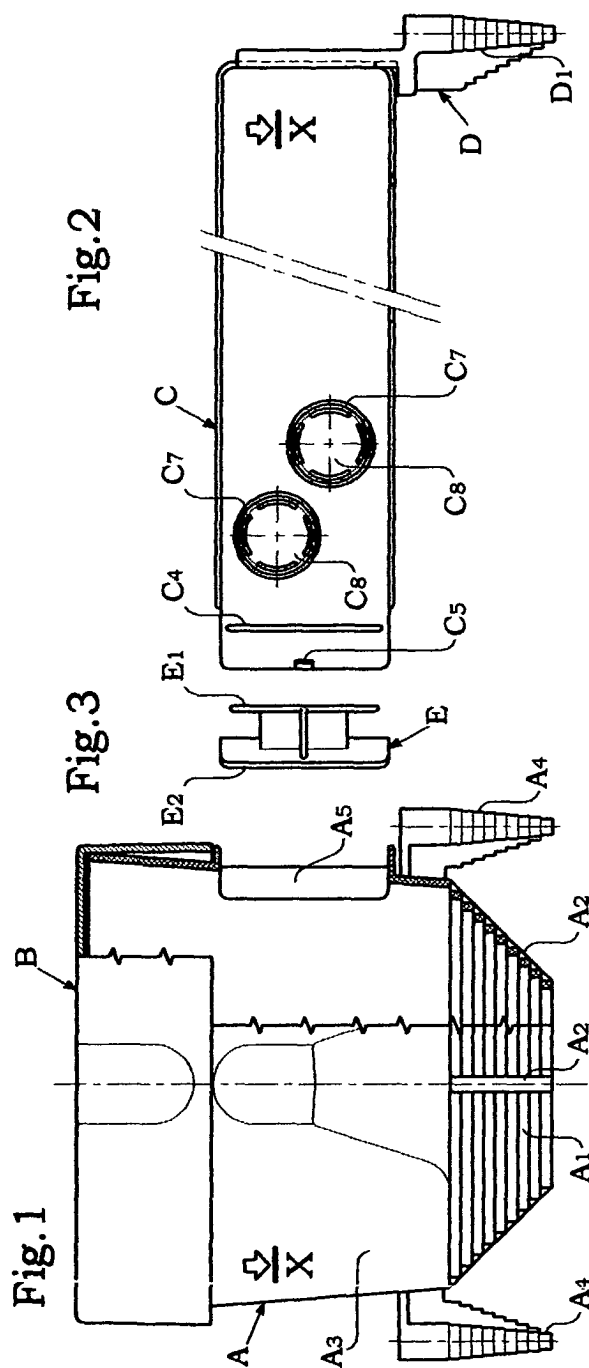


Fig. 2

Fig. 3

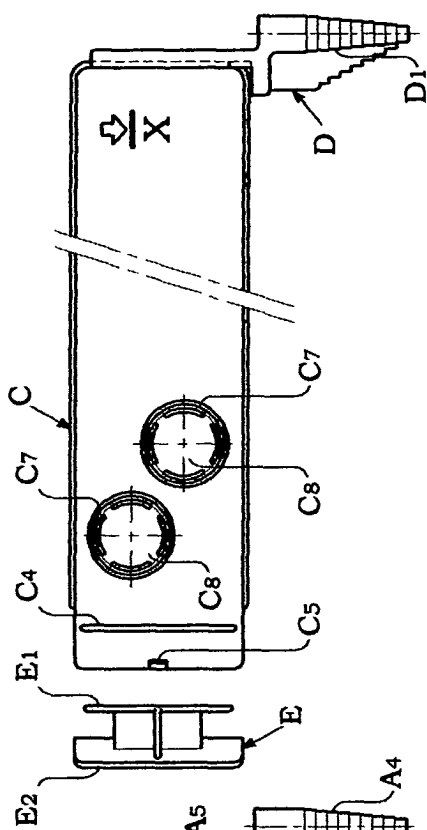
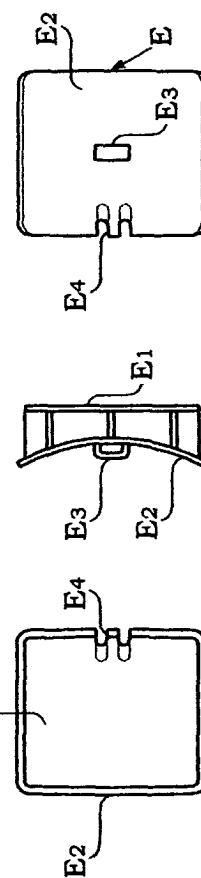
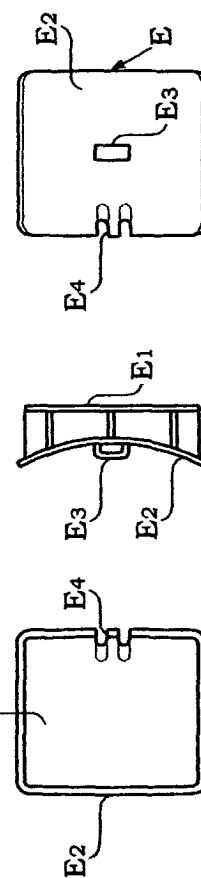
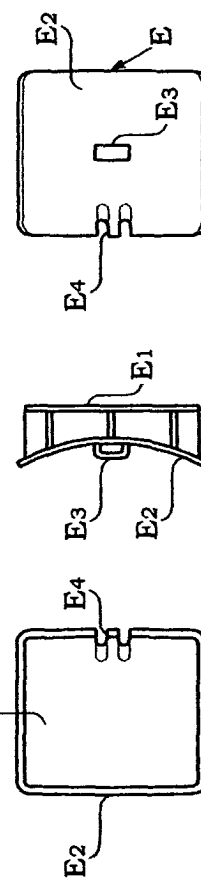


Fig. 4

Fig. 5

Fig. 6



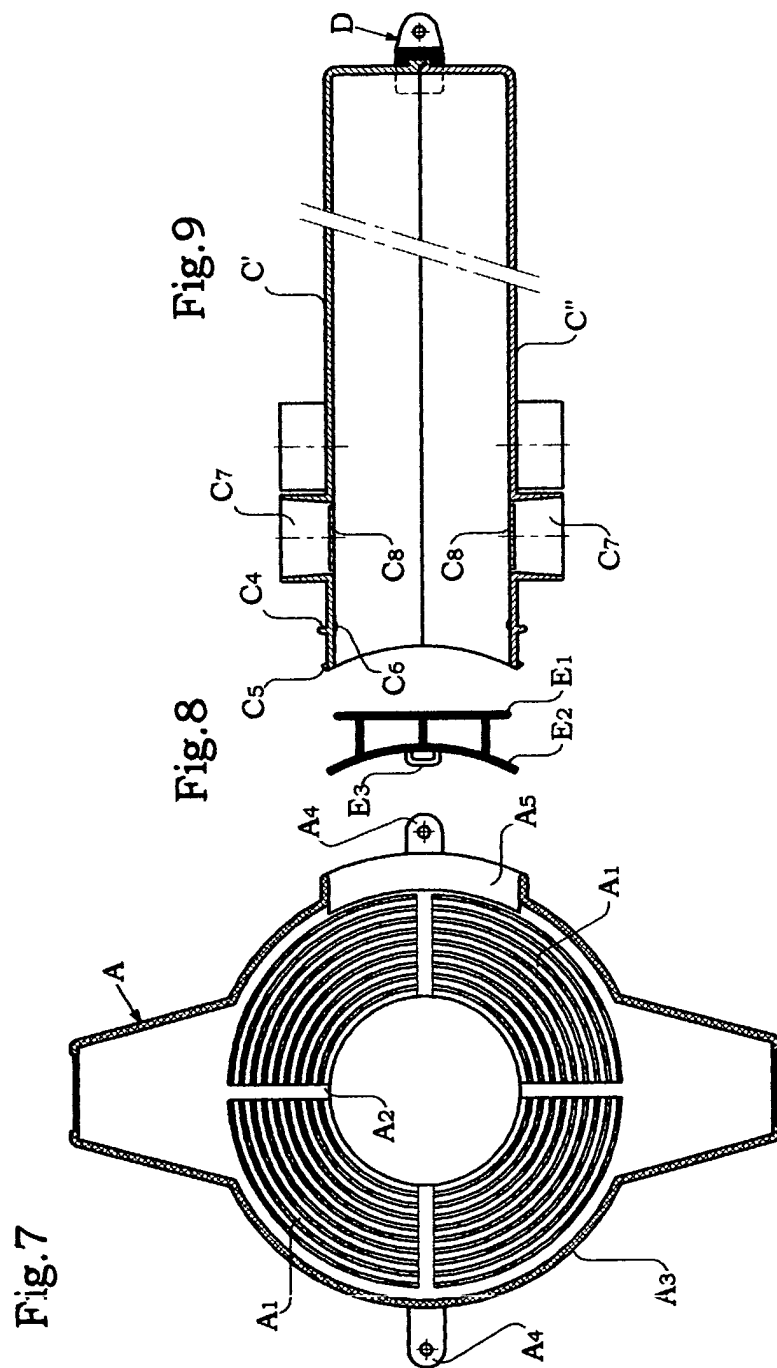


Fig.10

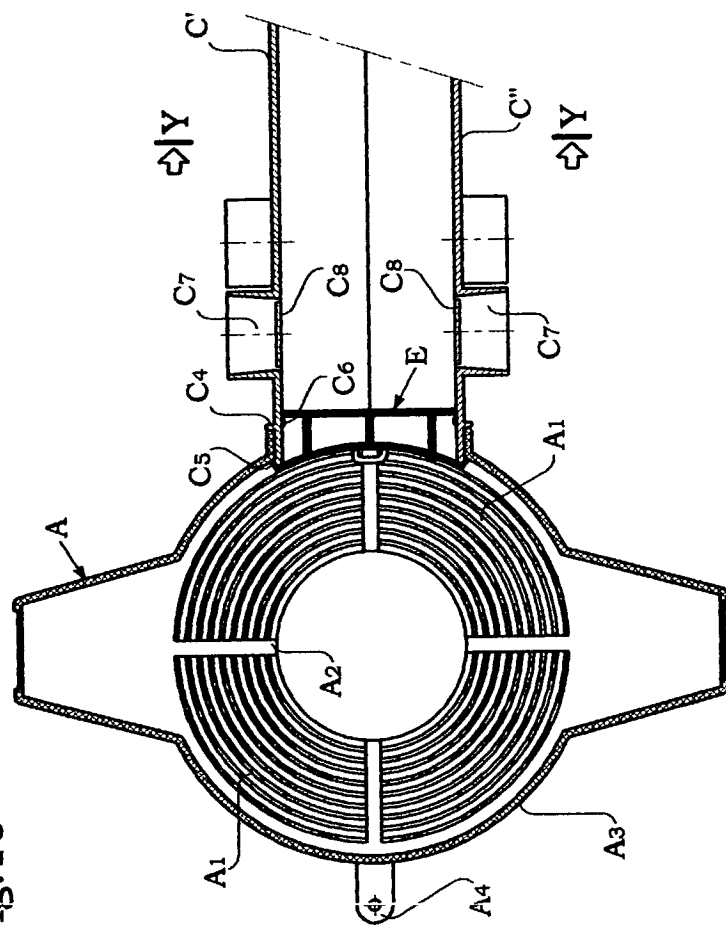


Fig.11

