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(54) Multi-arm luminaire assembly.

(57) The invention relates to a multi-arm luminaire, i.e. of the kind having a number of arms (11) emanating from a central support body (4), each having a lampholder (14) at its outer end.

To enable the luminaire to be readily assembled from flat packs, and to give a choice to the user to select a preferred arm/support body combination, the invention is characterised in that the central support body is in two parts comprising a casing (4a) with an opening therein and a cover (9) for fixing over said opening, and a separate set of detachable arms. Mounting means preferably in the form of open apertures (12) are spaced around the wall of the casing at positions from which said arms are to emanate, each adapted to co-operate with locating means such as jointing plates (10) on each arm. Thus, a sliding joint is effectively provided by which each arm can be located in its correct attitude on said casing. Each arm (11) is pre-wired and the arms are electrically connected together and to a mains lead (16) via a connector (14) which fits into the casing opening. During assembly, when the connector is located within said casing opening, it will be appreciated that the wires of said pre-wired arms pass into said opening via respective open apertures (12), the casing opening then being closed by the cover (9).

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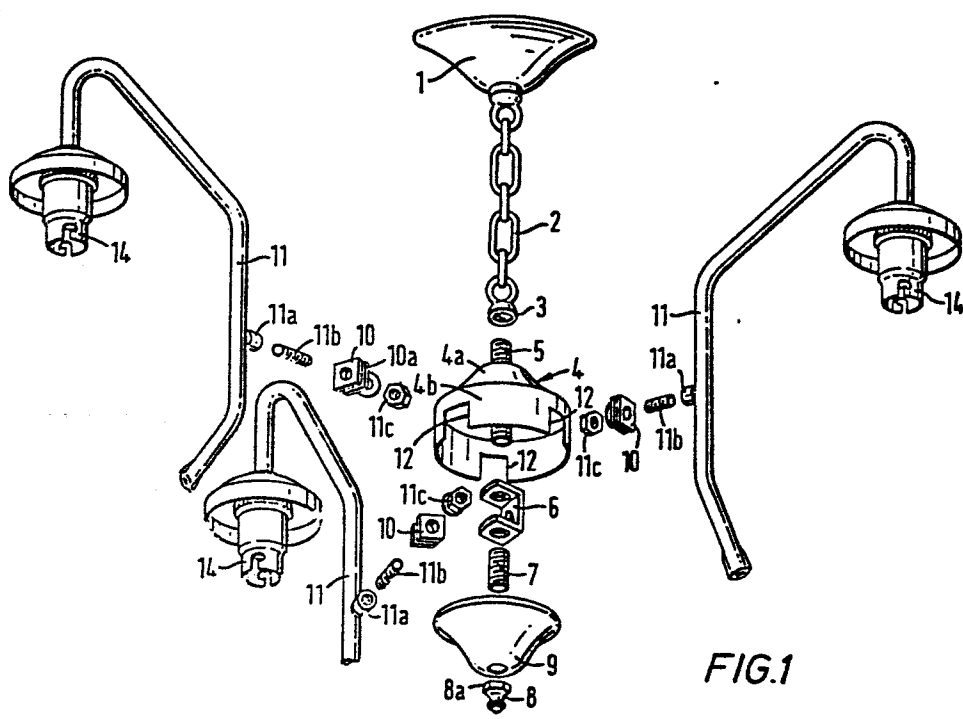


FIG.1

Multi-Arm Light Fittings or Luminaires

This invention relates to multi-arm luminaires, i.e. a light fitting with a number of arms, the arms emanating from a central support body and each having a lampholder towards its outer end. Such luminaires are at present supplied in an assembled and wired state. Because the arms generally radiate outwardly from the central support body, a degree of fragility is introduced into the article; also, it is cumbersome, and storage and packing are made difficult and expensive.

A further disadvantage of such a luminaire is that, in order to give the buying public a good selection, a relatively large range of alternative models must be held in stock, with consequent storage problems.

The object of the invention is to provide an arrangement for such a luminaire, by which packing and storage can be effected more efficiently.

According to the invention, there is provided a multi-arm luminaire, characterised in that it comprises, as an assembly, a central support body which is in at least two parts including a casing with an opening therein, and a cover for fixing over said opening, in that a series of mounting means are spaced around the wall of the casing at positions from which said arms are to emanate, each adapted to co-operate with locating means provided at an appropriate position on a respective arm, said mounting and locating means providing a sliding joint, by which each arm can be

located in its correct attitude on said casing, in that each mounting means has an associated slot extending from an edge of the casing wall defining said opening, and in that each arm is pre-wired, the wires extending from the lampholder
5 along said arm and projecting from the said arm adjacent its locating means, the arrangement being such that, for assembly, the wires of the pre-wired arms can be connected together and to a mains lead via a suitable connector and said connector can be readily located within said casing, the
10 wires of said pre-wired arms passing into the casing via the respective associated slots, the cover then being fixed over the casing opening to close the casing.

Preferably, the cover when fixed is adapted to bear against said sliding joints so as to rigidly fix and maintain
15 the arms in their correct attitude emanating from the central body of the assembled luminaire.

Conveniently, each said mounting means and associated slot may be formed as a single, open aperture in the casing wall extending from the said edge, and the locating means of
20 each arm may comprise a jointing plate with a perimetric groove which is a sliding fit onto the edges of a respective said open aperture.

Each jointing plate may be of circular or other overall shape, but the perimetric groove and its respective open
25 aperture are, preferably, of such a shape (e.g. rectilinear) that the respective arm is positively and rigidly maintained in its correct attitude and orientation.

Each said arm may be tubular and its wires may extend through said arm and out through an aperture formed in its jointing plate, the arrangement being such that, when assembling the jointing plates into respective open apertures, the respective wires of the arms are, as a consequence, concentrated within the casing housing.

Preferably, the wires of said pre-wired arms are electrically connected together and to the mains lead via said connector during manufacture so that no wiring connections need to be made during assembly of the luminaire.

It will be appreciated from the foregoing that the invention provides a multi-arm luminaire which overcomes, or at least substantially reduces, the above discussed disadvantages, and provides the further commercially attractive advantage that a customer can select his own preferred combination of suspension complete with its central support body, and the set of arms (preferably already electrically connected together and with the mains lead) to be used therewith. For this, both components may be readily displayed in individual, relatively flat-packs.

In order that the invention may be readily understood, one embodiment, and modifications thereof, will now be described, with reference to the accompanying sketches, in which:

Figure 1 is an exploded perspective view of the light fitting.

Figure 2 is a fragmentary part-sectioned, side view of

the assembly within the central support body

Figure 3 is an enlarged view of the connector with the wiring connected, and

5 Figures 4 (a) to (c) are fragmentary exploded views showing alternative locating arrangements for the lamp arms.

Referring to Figure 1, the multi-arm luminaire comprises essentially a central suspension, and a set of arms (in this embodiment three) emanating therefrom (in this embodiment radially).

10 The suspension is of a standard type and can be supplied substantially completely assembled in its own display pack. The suspension comprises a ceiling rose 1 to which is attached one end of a chain 2, the other end of which is attached to an upper end cap 3 on the centre support
15 body 4. The cap 3 is screwed onto a threaded tubular connector 5 which extends through an upper end wall of the body 4 and is screwed to one upper limb of a U-shaped bridge 6 within the body, the opposed limb being screwed to another threaded tubular connector 7, which projects through the
20 bottom of the body 4 to receive a screwed lower end cap or ferrule 8. The body 4 is in two parts comprising a casing 4a and a dished cover 9, said casing having a cylindrical wall 4b with an open lower edge 4c which defines an opening adapted to be closed by the cover 9, the cover being located
25 onto the edge 4c via the connector 7 and the casing and cover being fixed together by screwing home the ferrule 8, which may be formed with means, e.g. a hexagon 8a, whereby the

parts can be tightened together by a tool. In accordance with the invention, mounting means and an associated slot are provided on the body 4 for each arm. In this embodiment they are in the form of rectilinear open apertures 12 spaced around the cylindrical wall 4b of the casing 4a, at positions corresponding to the positions from which the lamp support arms 11 are to radiate, each slot extending upwardly from the edge 4c of said wall. Each slot 12 is shaped and dimensioned to slidably receive locating means provided on a respective arm 11; in this embodiment the locating means are in the form of a jointing plate 10 having a perimetric groove 10a extending around the edge of the plate, the groove locating onto respective edges of the slot. Each jointing plate, which may be of metal or plastics, is fixed to the radially inner part of its lamp support arm 11 via a threaded boss 11a fixed to the arm and a threaded tubular connector 11b and nut 11c. Alternatively, the plate can be directly fixed to the arm, e.g. by welding. It will be appreciated that each arm 11 can be removably located in its correct attitude and orientation, in an open aperture 12 of cylindrical wall 4b by sliding movement, after which all the arms 11 can be prevented from further sliding movements, and thus be rigidly fixed and maintained in position, simply by securing the dished cover 9 onto the edge 4c of the wall 4b so that it bears against the located jointing plates 10. The arms 11 are therefore unable to twist out of position as can commonly happen in multi-arm luminaires presently available. It will

also be appreciated that, since each jointing plate 10 and co-operating open aperture 12 are rectilinear, the arms 11 can be fixed either with their lampholders pointing upwardly
5 "up-light", or downwardly "down-light", at the choice of the assembler. It will also be appreciated that no special tools need to be used in the assembly.

Also, in accordance with the invention, the individual arms 11 complete with their jointing plates 10 are pre-wired
10 with earth, neutral and live wires, the wire leads 13 for each arm running from the lampholder 14 and through the arm to project through an aperture 10b in the jointing plate. Thus, when assembling the arms via their respective jointing plates 10, the leads of each arm 11 naturally extend to
15 within the casing 4a of the body 4, where they are located and connected together and to the mains lead 16 via a suitable connector 14. In this embodiment, the leads 13 are preferably connected together and to the mains lead via the connector 14 in the factory during manufacture(i.e. harnessed
20 together) so that, during assembly, no wiring connections are required. Thus, the assembler simply locates all the leads and the connector 14 within the casing 4a.

Referring now to Figure 2 and 3, the connector 14 is in the form of a semi-circular box (see Figure 2) dimensioned to
25 fit snugly within the casing 4a around the bridge 6. The box has a snap-on lid 14a and the arm leads 13 and mains lead 16 extend into the box via apertures 14b in its wall 14c, the wires passing to appropriate live, neutral and earth crimp or

other suitable connectors 18 within the box via a wire grip 17, which is in the form of a semi-circular plate (see Figure 2) with apertures coinciding with the apertures 14b and defined by upstanding resilient tongues 17a. During location of the connector box 14 within the casing 4a, the mains lead 16 is passed through the tubular connector 5 and out through the aperture in the end cap 3 (see Figure 2) and is threaded through the chain 2 up to the ceiling rose 1.

As discussed above, the electrical wiring is carried out during manufacture. Hence, the quality of the electrical connections can be assured and tested according to electrical safety regulations. The luminaire assembly can be designed either as a Class 1 fitting (earthed) in which case each arm 11 is pre-wired with leads 13 having live, neutral and earth wires and the wire connections made as described above, or a Class 2 fitting (double-insulated) in which case the wiring connections would be as for Class 1, the lampholders 14 would be of plastics, and the arms 11 would be prewired with double-insulated flexible leads 13.

It will be appreciated that, apart from the modifications already discussed above, further modifications could be made without departing from the scope of the invention. For example, instead of a particular mounting and locating sliding joint arrangement for the arms 11 described above (i.e. slot 12 and jointing plate 10 with perimetric groove 10a), the sliding joint arrangement could be as shown in any of Figures 4a to 4c. In Figure 4a each jointing plate 10 has

a pair of headed locating projections 19 which slidably locate into a pair of shaped slots 20 and a separate, associated open slot 21 is provided for the arm lead 13. In
5 Figure 4b the jointing plate 10 is shaped to slide onto a mounting plate 22 fixed to the casing wall 4b, a separate slot 21 being provided in said wall for the lead 13 and a stop projection 23 being provided to facilitate location. In
10 Figure 4c a relatively narrow rectilinear slot 12 is provided and opposed cut-outs 24 are provided on the arm 11 which slidably engage on the slot; thereby, a jointing plate is not required.

It will be readily appreciated from the foregoing that a multi-arm luminaire in accordance with the invention,
15 manufactured for D-I-Y assembly, in accordance with the invention has a number of advantages over prior art arrangements as follows:-

1. No special tools are required for assembly, and assembly is very easy and quick and readily comprehensible to
20 the assembler.
2. The arms inter-connected by the electrical harness can be blister or shrink packed, and a selection of different designs offered to the public.
3. The suspension complete with central body can be
25 blister or shrink packed, and a variety of different designs offered to the public.
4. If the vendor offers a selection of glass or material shades, a very large number of design permutations can be

obtained from the variables 2 and 3 above. This results in a very wide selection for the public with minimum stocks.

5 5. Because the components can be readily blister packed, shrink wrapped, or shrink packed, this results in (a) less damage, (b) less breakage, (c) less space; thus less stock wastage and greater economy for the vendor.

6. The manufacturer saves on labour costs by not having to assemble.

10 7. As the size of packing is reduced, there is a large saving in transport costs to the vendor and delivery costs incurred by the vendor.

8. The nature of the presentation means that many supermarkets, hypermarkets, D-I-Y shops, that otherwise would
15 not sell multi-arm luminaires, could now do so.

9. The multi-arm luminaire can be assembled either as an "up light", or "down light", at the customer's choice, thus extending further the choice of the customer from a minimum stock held by the retailer.

20 10. The customer can change from "up-light" to "down-light", or, vice versa, at any time.

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CLAIMS

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1. A luminaire of the kind having a number of arms emanating from a central support body, each having a lampholder towards its outer end, characterised in that said luminaire is assembled from separate components comprising said central support body, which is in at least two parts including a casing with an opening therein and a cover for fixing over said opening, and a set of detachable arms, in that a series of mounting means are spaced around the wall of the casing at positions from which said arms are to emanate, each adapted to co-operate with locating means provided at an appropriate position on a respective arm, said mounting and locating means providing a sliding joint by which each arm can be located in its correct attitude on said casing, in that each mounting means has an associated slot extending from an edge of the casing wall defining said opening, in that each arm is pre-wired, the wires extending from the lampholder along said arm and projecting therefrom adjacent its locating means, and in that a connector is provided shaped to fit into said casing for connecting the wires of the pre-wired arms together and to a mains lead, the arrangement being such that, for assembly, said connector is located within said casing opening with the wires of said pre-wired arms passing into said opening via respective associated slots, the opening then being closed by the cover.

2. A multi-arm luminaire according to Claim 1, further characterised in that the cover when fixed is adapted to bear against said sliding joints so as to fix and maintain the

arms rigidly in their correct attitude emanating from the central body of the assembly.

3. A multi-arm luminaire according to Claim 1 or 2, further characterised in that each said mounting means and associated slot is formed as a single, open aperture in the casing wall extending from the said edge, and the locating means of each arm comprises a jointing plate with a perimetric groove which is a sliding fit onto the edges of a respective said open aperture.

4. A multi-arm luminaire according to Claim 3, further characterised in that the perimetric groove of each joint plate and its respective open aperture are of such a shape that the respective arm is positively and rigidly maintained in its correct attitude and orientation.

5. A multi-arm luminaire according to Claim 4, further characterised in that said perimetric groove is of rectilinear shape.

6. A multi-arm luminaire according to any one of Claims 3 to 5, further characterised in that each said arm is tubular and its wires extend through said arm and out through said arm and out through an aperture formed in its jointing plate, the arrangement being such that, when assembling the jointing plates into respective open apertures, the respective wires of the arms are, as a consequence, concentrated within the casing housing.

7. A multi-arm luminaire according to any one of the preceding Claims, further characterised in that the wires of set of pre-wired arms are electrically connected together and

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to the mains lead via said connector during manufacture so that no wiring connections need to be made during assembly of the luminaire.

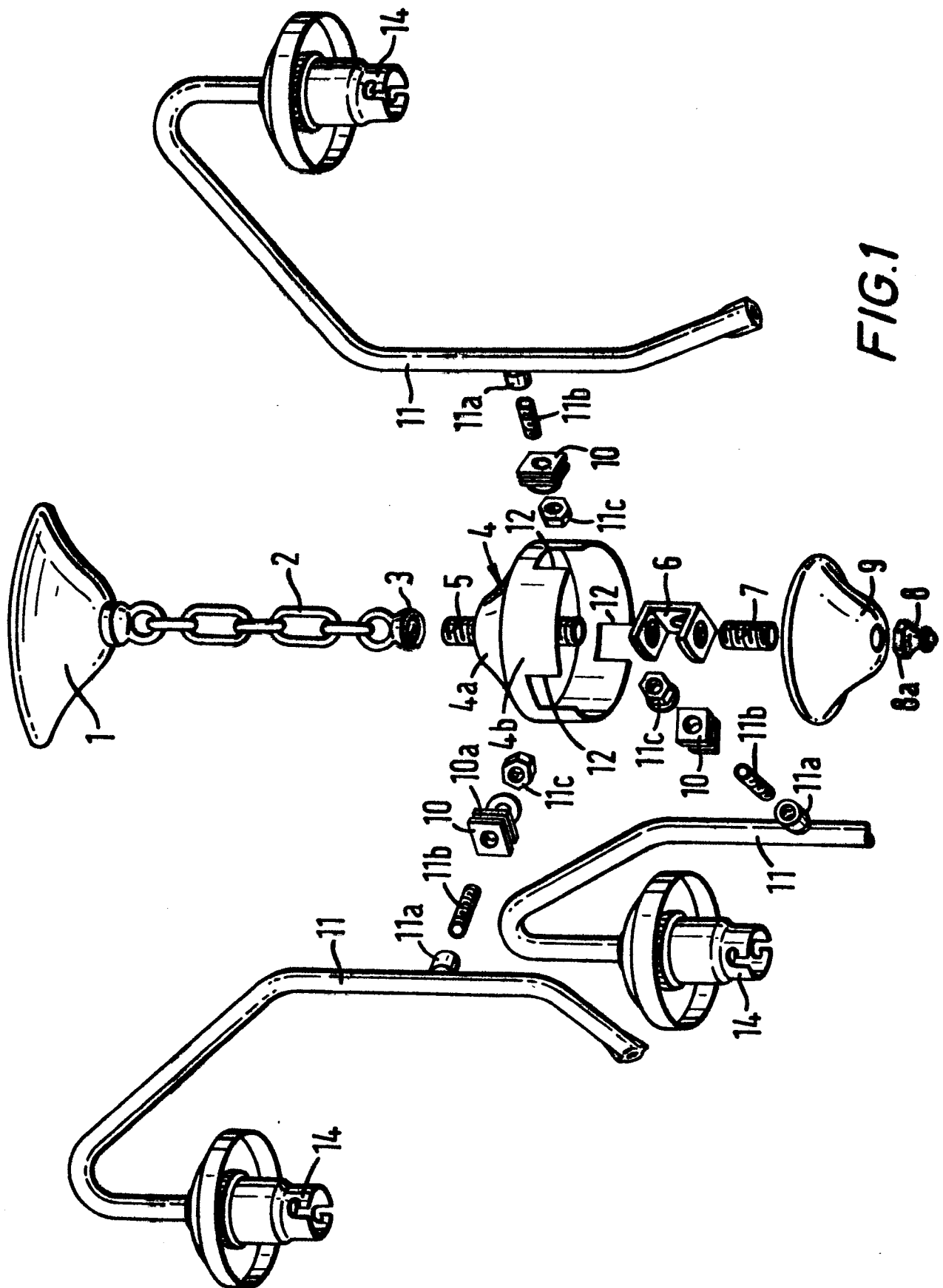


FIG. 1

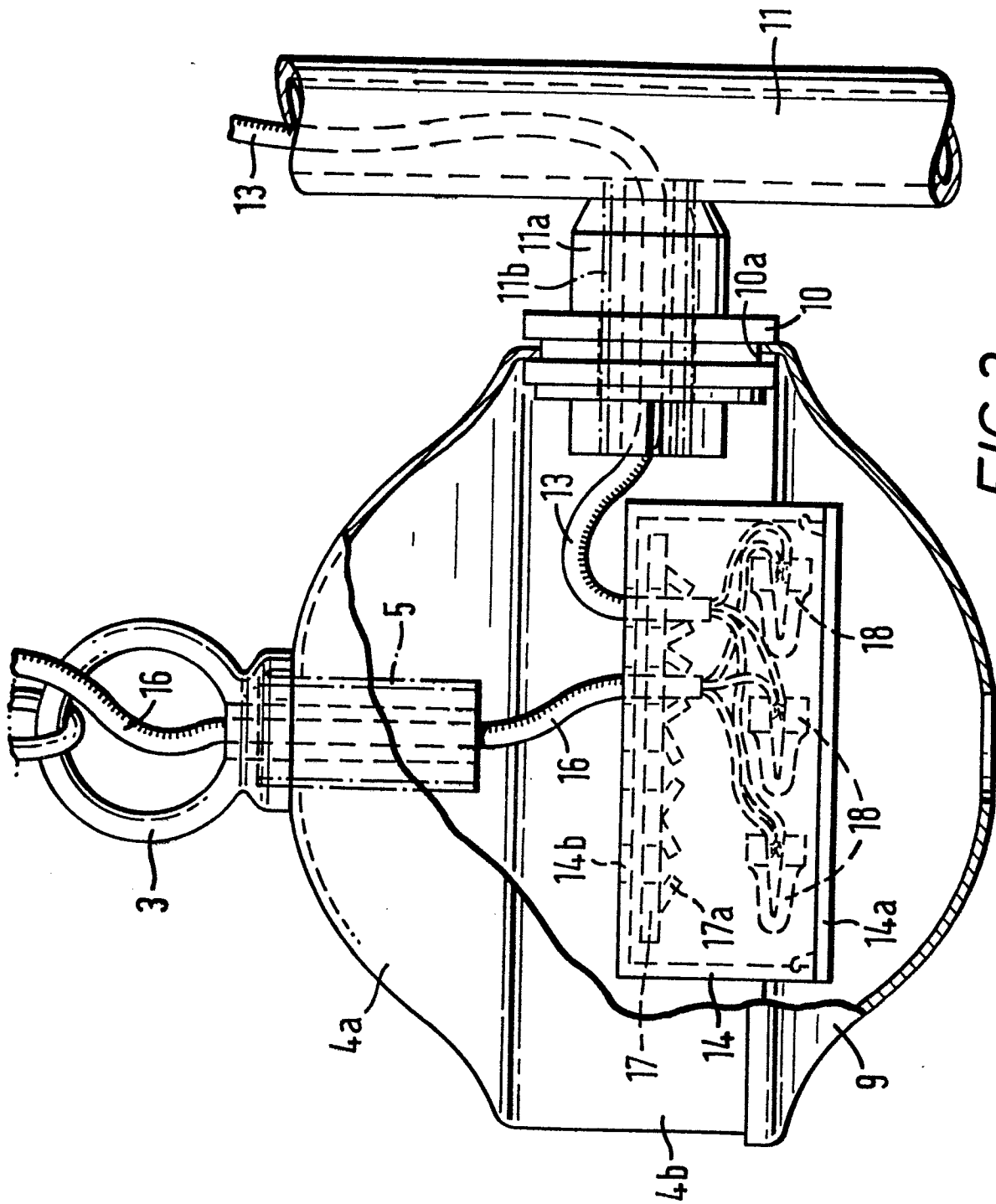
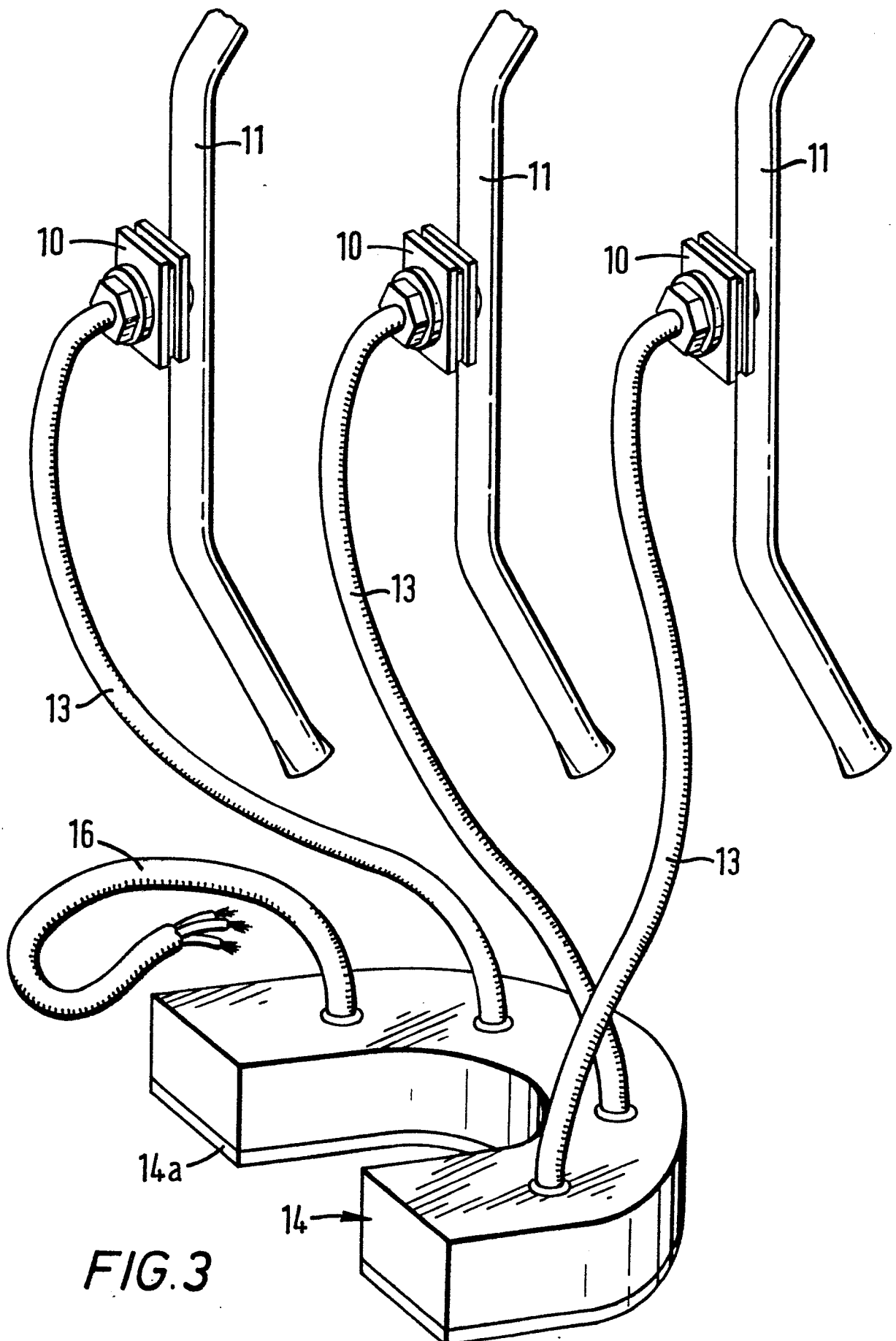


FIG. 2



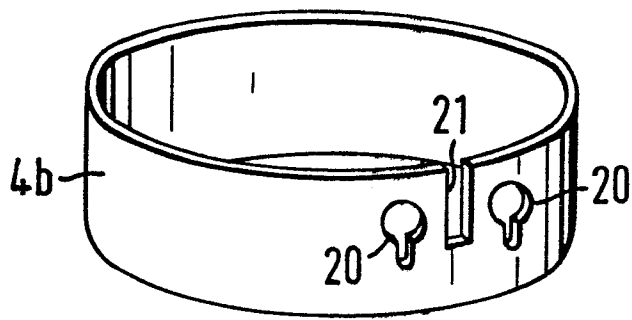


FIG. 4a

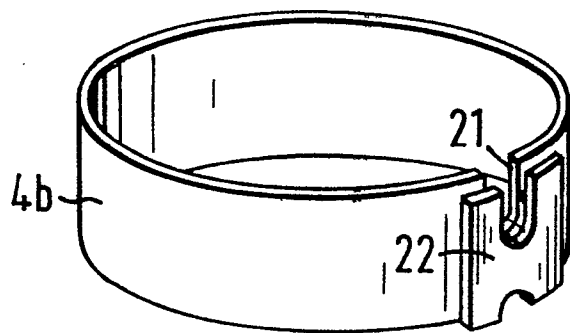
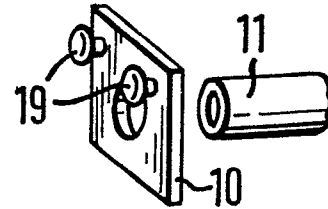


FIG. 4b

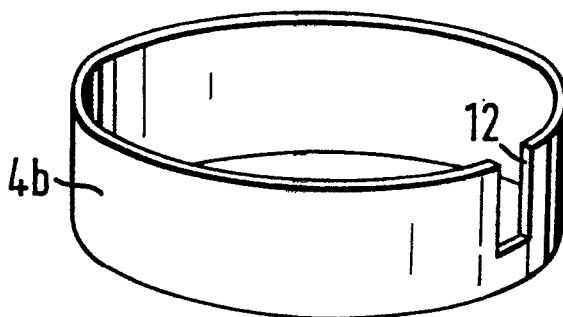
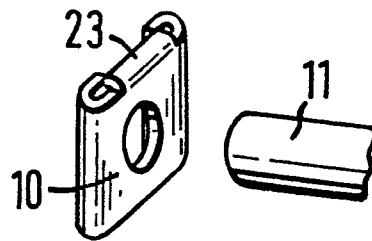
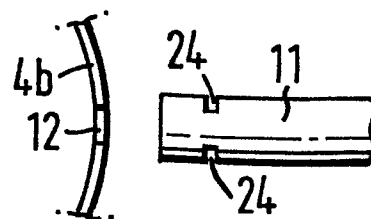
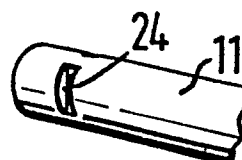


FIG. 4c





European Patent
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EUROPEAN SEARCH REPORT

0179638
Application number

EP 85 30 7576

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-4 107 770 (WEBER) * Figures 12-15 *	1-6	F 21 S 1/06
A	GB-A- 894 373 (COMRAS) * Page 4, lines 102-123 *	1-6	
A	FR-A-1 212 045 (MALAISE) * Figures 8-11 *	1-6	
A	FR-A-1 487 840 (MEROPIALI) * Figures 1-5 *	1-6	
A	US-A-3 622 779 (LAGIN) * Column 2, lines 62-68 *	1,7	
A	GB-A- 11 026 (LUMLEY)(1913) * Figure 1 *	1,7	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			F 21 S
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13-12-1985	Examiner FOUCRAY R.B.F.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			