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(54) **Lighting apparatus with tabular housing body for the electrical components**

(57) The present invention refers to a lighting apparatus (10) comprising a housing body (11) for the electrical components that is substantially tubular and open at at least one end (12), and an abutment element (14) able to be coupled with the open end (12) of the housing

body (11) through releasable locking means (20), characterised in that the locking means (20) comprise a pair of elastic elements (21) fixedly connected to the housing body (11) suitable for cooperating with respective pins (22) fixedly connected to the abutment element (14).

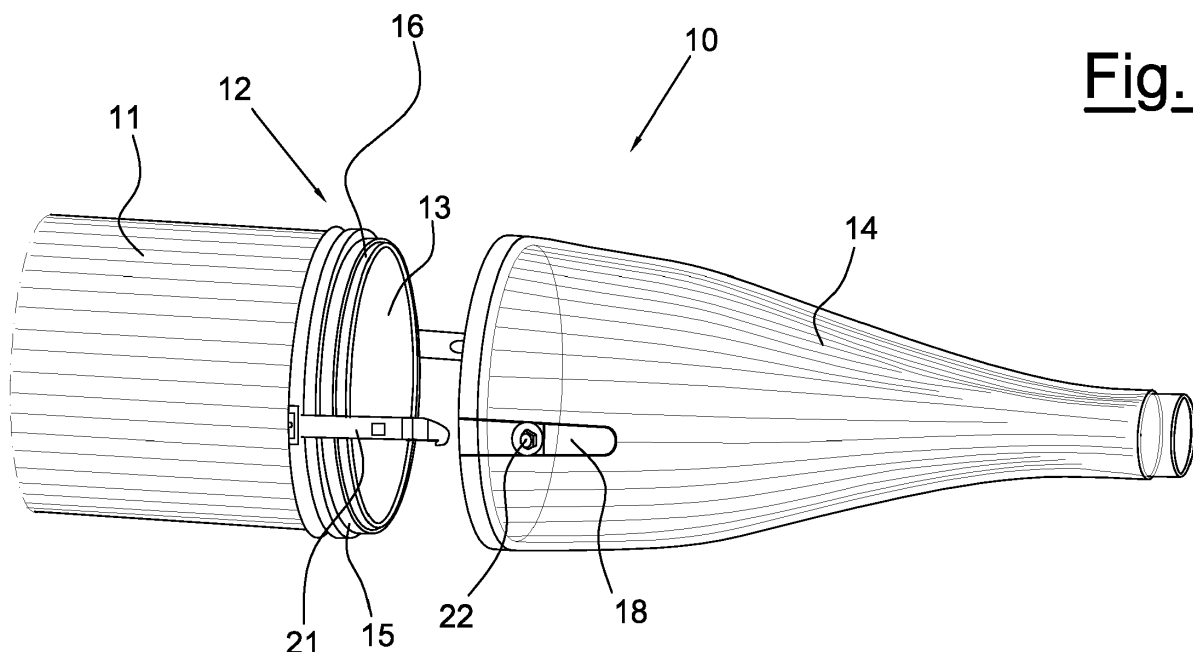


Fig. 1

Description

[0001] The present invention refers to a lighting apparatus with tubular body for housing the electrical components.

[0002] Amongst lighting apparatuses that use fluorescent bulbs there are already families the shape of which is substantially like a tube.

[0003] Such known lighting apparatuses generally comprise a tubular housing body made from material that is permeable to light and open at one end in order to allow the insertion and/or replacement of the electric part, or rather of the bulb and of the relative electrical group.

[0004] The housing body, at the open end, also has an associated abutment element suitable for closing the body and for this purpose joined to it through suitable locking means.

[0005] The problem of the seal of the apparatus, in particular in reference to the penetration of solid and liquid bodies, is therefore left to the seal of the end abutment that close the housing body.

[0006] Some of the possible known solutions that ensure a good seal foresee that the abutment element is provided with an O-ring gasket housed in one case in the cylindrical part of the abutment element itself or in the other case "under the head". Such abutment elements are locked through top screws to the housing body.

[0007] In other known types of lighting apparatuses with a tubular body, the abutment element is provided with a shaped gasket housed in its conical part. Such an abutment element is locked either through top screws or through a device that causes the compression of the gasket against the tubular wall of the housing body.

[0008] In a further known lighting apparatus, the abutment element is formed from two parts: a bushing and a conical part provided with an O-ring gasket. Screwing the bushing into the conical part causes the compression of the gasket against the inner wall of the tubular housing body.

[0009] In known solutions, the installation of the abutment element takes place through the use of special tools necessary for locking and removing the suitable means like for example the top screws. Moreover, known locking means are unable to offer mutual self-centring between the abutment element and the housing body. All of this leads to great difficulty of the assembly operation, which is therefore correlated to long operating times.

[0010] The replacement operations of the electric part are also in this way difficult and take a long time.

[0011] Last but not least, in known lighting apparatuses with tubular body for housing the electrical components there are no means for recovering the tolerances and thermal dilations.

[0012] The purpose of the present invention is to avoid the aforementioned drawbacks and in particular to make a lighting apparatus with tubular body for housing the electrical components that is able to be quickly and easily assembled and dismounted without the need for special

tools.

[0013] Another purpose of the present invention is to provide a lighting apparatus with tubular body for housing the electrical components that ensures a good seal against the penetration of solid or liquid bodies.

[0014] A further purpose of the present invention is to make a lighting apparatus with tubular body for housing the electrical components that ensures a recovery of the tolerances and thermal dilations.

[0015] These and other purposes according to the present invention are accomplished by making a lighting apparatus with tubular body for housing the electrical components as outlined in claim 1.

[0016] Further characteristics of the device are the object of the dependent claims.

[0017] The characteristics and advantages of a lighting apparatus with a tubular body for housing the electrical components according to the present invention shall become clearer from the following description, given as a non-limiting example, referring to the attached schematic drawings in which:

- figure 1 is an exploded perspective view of the housing body and of the abutment element of the lighting apparatus according to the present invention;
- figure 2 is a partial perspective view of the lighting apparatus according to the present invention in assembled configuration;
- figure 3 is a detail of a perspective view of the lighting apparatus according to the present invention in which the locking screws are depicted in a top side view;
- figure 4 is a partial section view of the lighting apparatus according to the present invention;
- figure 5 is an enlarged detail of figure 4.

[0018] With reference to the figures, a lighting apparatus is shown wholly indicated with 10 comprising a substantially tube-shaped body 11 that is open at least at one end 12 in order to allow the insertion and/or replacement of the electric part (not depicted), or else of the bulb and of the relative electric group.

[0019] Such a substantially tubular body 11 is preferably made from material that is permeable to light like for example polycarbonate.

[0020] At the open ending 12 of the housing body 11, a bearing ring 13 made for example from aluminium is fixedly connected to the body 11. According to a preferred embodiment, two sealing gaskets 15, 16 are housed in such a bearing ring 13.

[0021] Preferably, a first gasket 15 has a circular profile, like for example an O-ring, whereas a second gasket 16 has a profile such as to allow high compression.

[0022] The second gasket 16, or top gasket, ensures the recovery of tolerances and thermal dilations.

[0023] The housing body 11, at the open end 12, also has an associated abutment element 14 suitable for closing the body 11 and, for this purpose, joined to it through

suitable releasable locking means 20.

[0024] In order to ensure the seal of the abutment element 14, the locking means 20 comprise two elastic elements 21 fixedly connected to the housing body 11, which cooperate with respective pins 22 located in the abutment element 14.

[0025] In this way, the locking means 20 take the two gaskets 15,16 housed in the bearing ring 13 into compression.

[0026] The gasket with circular profile 15 ensures the centring of the abutment element 14 with respect to the bearing ring 13.

[0027] Advantageously, the abutment element 14 has a pair of guide grooves 18 that make it easier to assemble the housing body 11 with the abutment element 14 since they guide the elastic elements 21 towards their configuration fastened with the pins 22.

[0028] Such guide grooves 18 also make it easier to withdraw the abutment element 14 since, with the respective elastic element 21, they form a recess 17 to which it is easy to gain access to act against the force of the elastic means 21 disengaging them from the abutment element 14.

[0029] From the description that has been made the characteristics of the device object of the present invention are clear, just as the relative advantages are also clear.

[0030] The installation of the abutment element 14 can be carried out without special tools since the coupling between the housing body 11 and the abutment element 14 takes place by snapping into place by means of the cooperation between the elastic elements 21 and the pins 22.

[0031] There is also a substantial ease of insertion of the abutment element 14 thanks to the grooves 18 that guide the elastic elements 21 into their correct seat.

[0032] Last but not least, the withdrawal of the abutment element 14 is also made easier since special tools are not needed. Indeed, it is sufficient to insert a finger into the recess 17 formed between the abutment element 14 and the respective groove 18, simultaneously push the abutment element 14 in the direction of the bearing ring 13 and finally lift the elastic element 21.

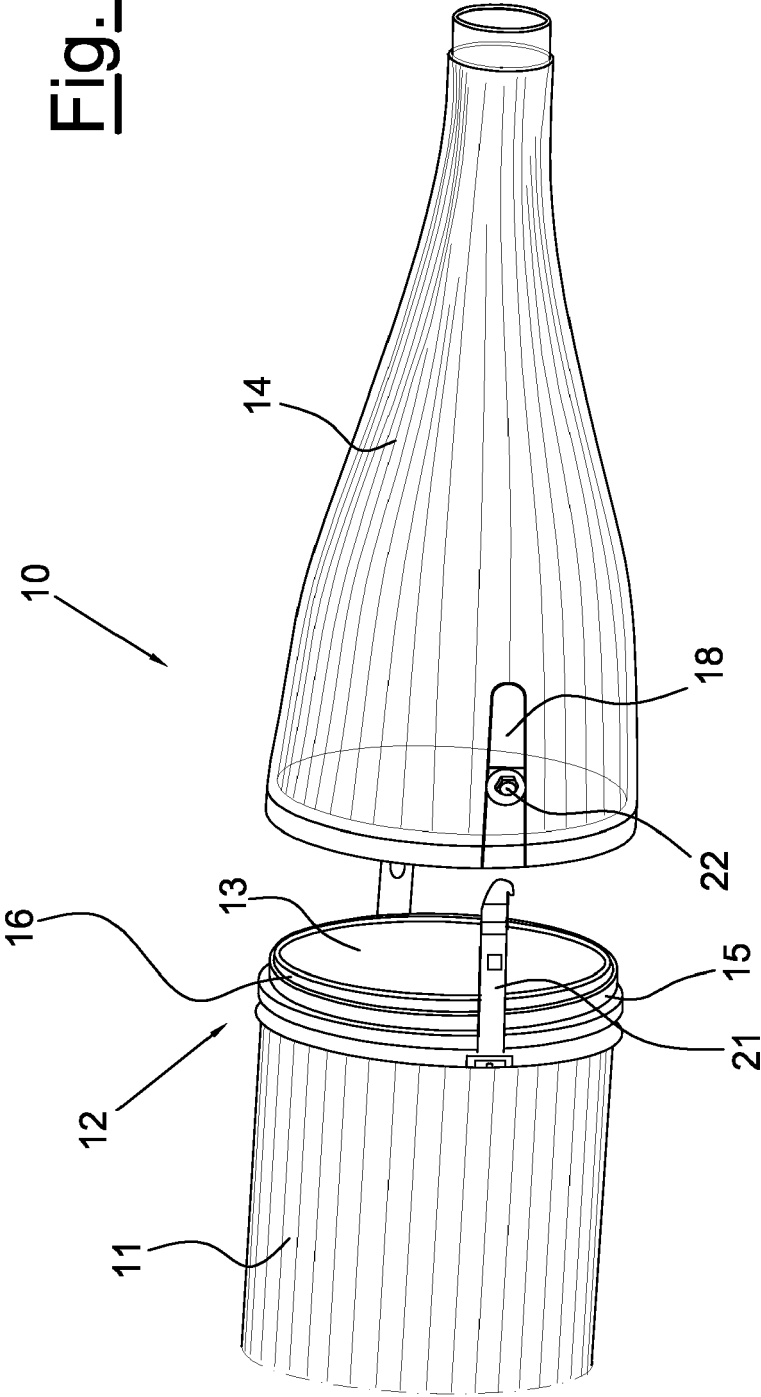
[0033] Moreover, the use of the special sealing gaskets 15,16 ensures the centring of the abutment element 14 with respect to the bearing ring 13, as well as the recovery of tolerances and thermal dilations.

[0034] Finally, it is clear that the device thus conceived can undergo numerous modifications and variants, all of which are covered by the invention; moreover, all of the details can be replaced by technically equivalent elements. In practice, the materials used, as well as the sizes, can be whatever according to the technical requirements.

Claims

1. Lighting apparatus (10) comprising a housing body (11) for the electrical components, which is substantially tubular and open at at least one end (12), and an abutment element (14) able to be coupled with said open end (12) of said housing body (11) through releasable locking means (20), **characterised in that** said locking means (20) comprise at least two elastic elements (21) fixedly connected to said housing body (11) suitable for cooperating with respective pins (22) fixedly connected to said abutment element (14).
2. Lighting apparatus (10) according to claim 1 **characterised in that** said abutment element comprises a plurality of grooves (18) suitable for guiding said elastic elements (21) towards their configuration cooperating with said pins (22).
3. Lighting apparatus (10) according to claim 1 or 2 **characterised in that** when said housing body (11) and said abutment element (14) are in a configuration fixedly connected to one another, each of said guide grooves (18) forms a recess (17) with the respective elastic element (21).
4. Lighting apparatus (10) according to one of claims 1 to 3 **characterised in that** a bearing ring (13) is fixedly connected to said housing body (11) at said open end (12).
5. Lighting apparatus (10) according to claim 4 **characterised in that** at least one sealing gasket (15,16) is housed in said bearing ring (13).
6. Lighting apparatus (10) according to claim 5 **characterised in that** said at least one sealing gasket (15) has a circular profile.
7. Lighting apparatus (10) according to claim 5 or 6 **characterised in that** said at least one gasket (16) has a profile suitable for allowing high compression.

Fig. 1



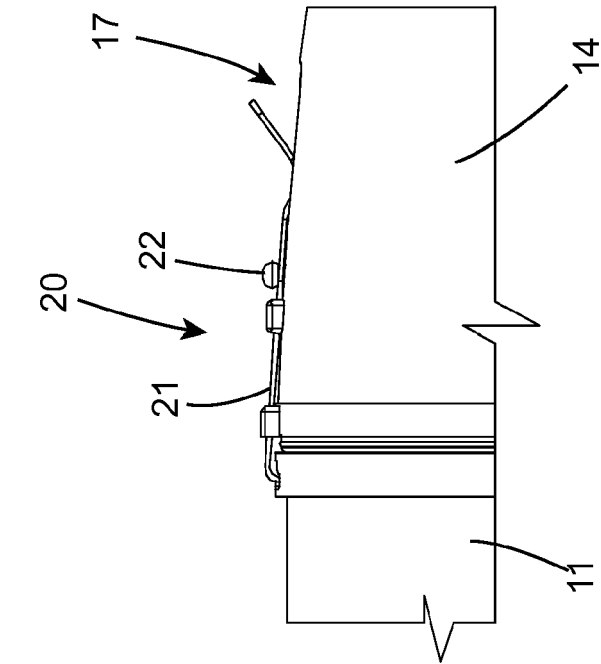


Fig. 3

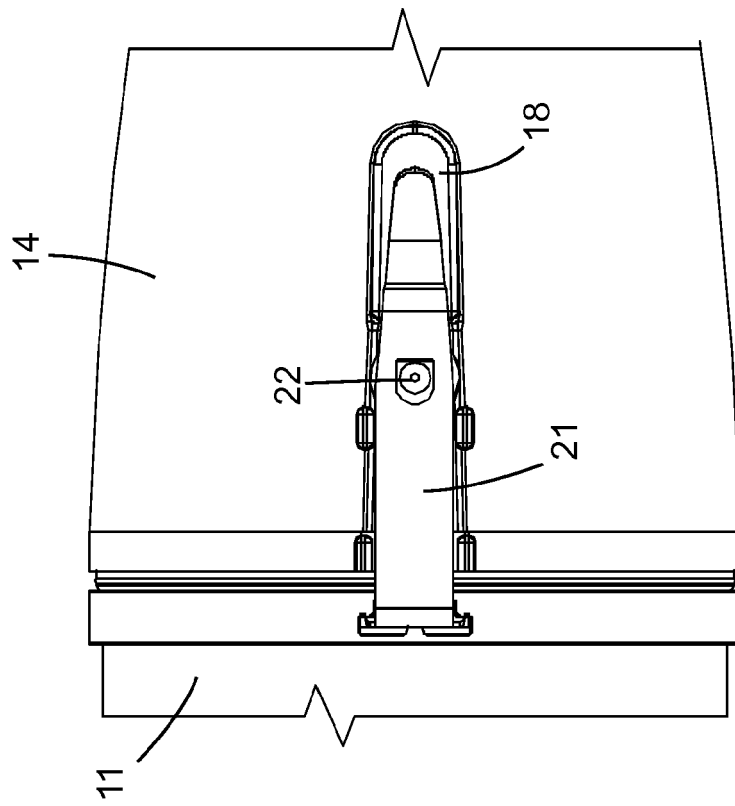


Fig. 2

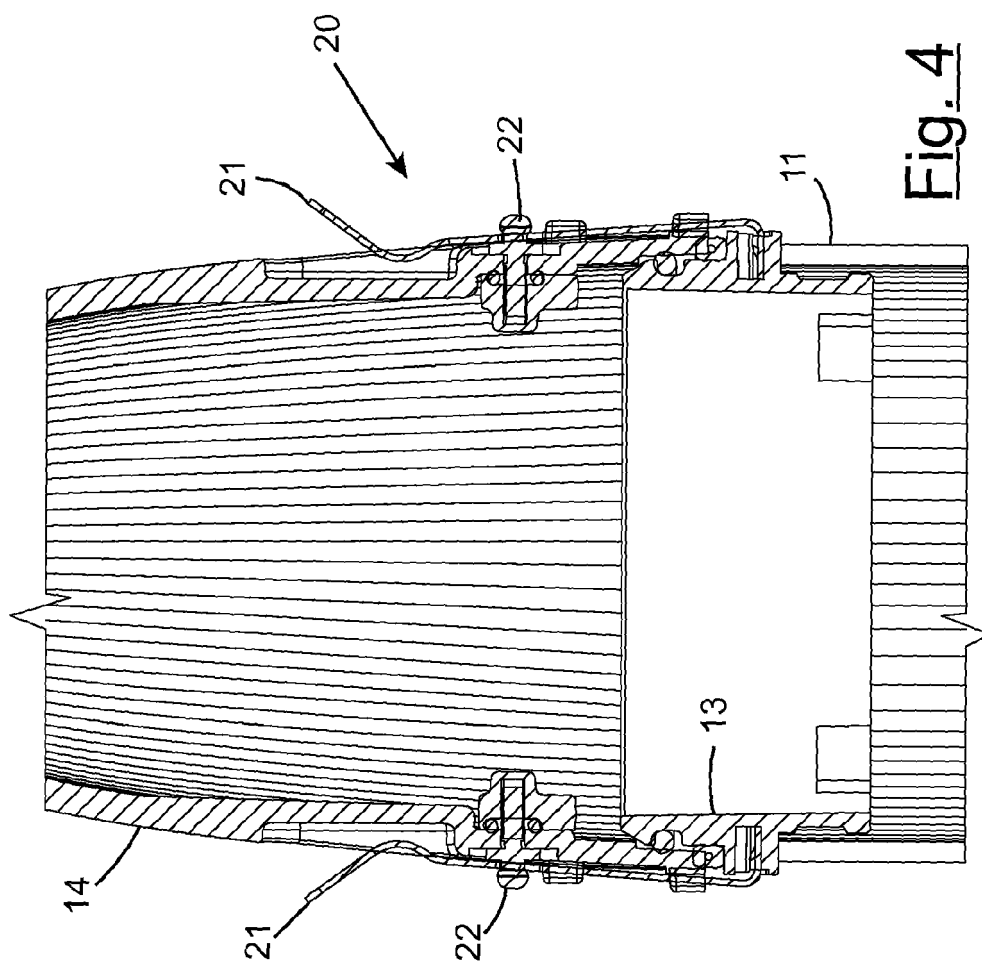


Fig. 4

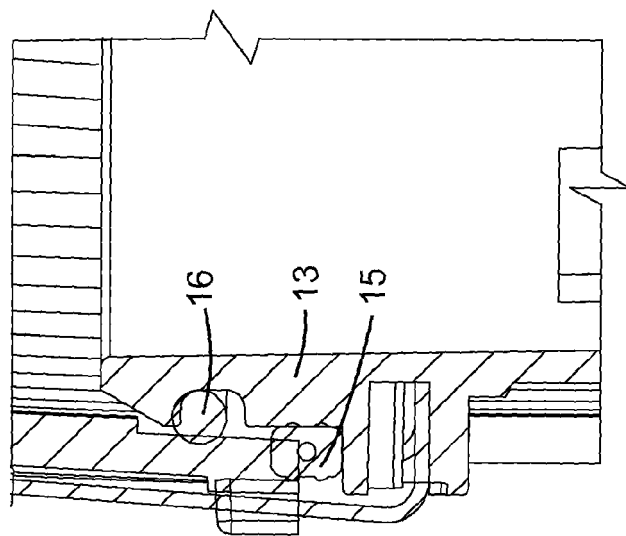


Fig. 5