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(72) Inventor: **Bellini, Claudio**
20143 Milano (IT)

(74) Representative: **Cerbaro, Elena, Dr. et al**
STUDIO TORTA S.r.l.,
Via Viotti, 9
10121 Torino (IT)

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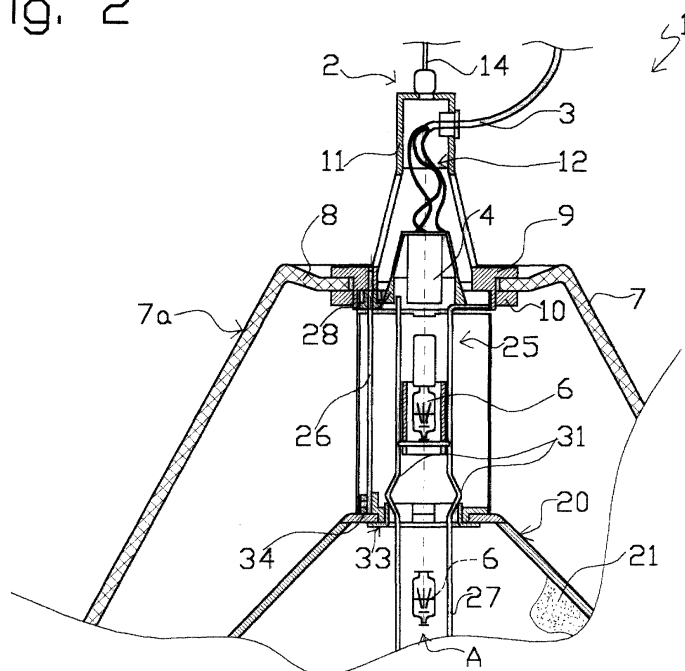
(71) Applicant: **ARTEMIDE S.p.A.**
I-20122 Milano (IT)

(54) **Variable-diffusion lighting device**

(57) A lighting device (1), in particular a suspended lamp, having a lamp-holder device (4) for receiving a light source (6); a first diffusing screen (7); a support (2) having an electric power lead (3) and integrally supporting the first diffusing screen (7) and the lamp-holder device (4); a second diffusing screen (20) housed between the lamp-holder device (4) and the first diffusing screen (7), and which is smaller than the first diffusing screen

(7) and displaced with respect to the first diffusing screen (7) in a predetermined direction; and a carriage (25) integrally supporting said lamp-holder device (4) and movable, in said predetermined direction and along guide means (26) carried integrally by the support (2), between at least two predetermined operating positions, in at least one of which the second diffusing screen (20) does not intercept the light emitted by the light source (6).

Fig. 2



EP 1 134 483 A2

Description

[0001] The present invention relates to a lighting device, wherein diffusion of the light emitted can be adjusted easily and effectively by the user. Though reference is made in the following description to suspended lighting devices fixed to a ceiling and normally suspended by one or more supporting cables, the invention is in no way to be inferred as being limited to this particular application.

[0002] Suspended lighting devices are normally used to illuminate specific areas of a room, e.g. the dining area, studio area, etc., from above. Which applications frequently call for lighting the area with diffused light or stronger, localized light, depending on the circumstances involved.

[0003] In the past, this requirement has always been met using lamps with up-down control systems, whereby the entire lighting device is raised or lowered with respect to the ceiling (e.g. by means of systems acting on the suspension cable/s). Known devices of this sort, however, are unsightly and unsatisfactory both mechanically and in terms of lighting efficiency. What is more, modern interior design often also calls for diffused light of different colours, which cannot be provided by known devices of the type described.

[0004] It is an object of the present invention to provide a lighting device, particularly though not exclusively of the suspended type, which provides for controlling diffused light intensity and/or colour, and which at the same time is cheap and easy to produce and eliminates the aforementioned drawbacks typically associated with known devices.

[0005] According to the present invention, there is provided a lighting device, in particular a suspended lamp, comprising a lamp-holder device for a light source; a first diffusing screen; and a support having an electric power lead and integrally supporting the first diffusing screen and the lamp-holder device; characterized by also comprising, in combination, a second diffusing screen housed between the lamp-holder device and the first diffusing screen; and a carriage integrally supporting said lamp-holder device and fitted movably to guide means carried integrally by the support; said second diffusing screen being smaller than the first diffusing screen, and being displaced with respect to the first diffusing screen in a predetermined direction; said carriage being movable selectively, along said guide means and in said predetermined direction, between at least two operating positions, in at least one of which, substantially all the light emitted by said light source only passes through said first diffusing screen.

[0006] Preferably, said first and said second diffusing screen are defined by respective cup-shaped bodies defined by respective surfaces pervious to light, and having a common axis of symmetry defining said predetermined direction; the second diffusing screen being housed inside the first so as to only occupy part of the

volume of the first diffusing screen in said predetermined direction, and having a coloured filter formed integrally with or carried by the second diffusing screen.

[0007] A non-limiting embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a cross section of a lighting device in accordance with the present invention;

Figure 2 shows a larger-scale detail of the Figure 1 section;

Figure 3 shows part of a component of the Figure 1 and 2 lighting device.

[0008] Number 1 in Figures 1 and 2 indicates as a whole a lighting device defined, for example, by a suspended lamp of conventional design and overall configuration, and comprising a support 2 with an electric power cable 3; a conventional lamp-holder device 4 for a light source defined, for example, by a bulb 6; and a diffusing screen defined by a conventional shade 7 in turn defined by a lateral surface 7a pervious to light but preferably not transparent.

[0009] In the non-limiting example shown, shade 7 is defined by a truncated-cone-cup-shaped body made of glass - e.g. frosted, opal, or with diffraction means - and fitted to and projecting from the bottom of support 2. More specifically, the minor base 8 of shade 7 has a hole and is gripped between two flanged members 9, 10 of support 2. Support 2 also comprises a hollow body 11 housing a portion 12 - unsheathed in the example shown - of lead 3; a known ceiling attachment 13; and a cable 14 by which body 11 is suspended from attachment 13.

[0010] According to the invention, device 1 also comprises a second diffusing screen 20 housed between lamp-holder device 4 and diffusing screen or shade 7. Diffusing screen 20 is also defined by a truncated-cone-cup-shaped body smaller than shade 7 and having a lateral surface pervious to light, and is displaced with respect to shade 7 in a predetermined direction - in the example shown, coincident with a common axis of symmetry A of shade 7 and screen 20, which are mounted coaxially, with screen 20 inside shade 7.

[0011] Preferably, diffusing screen 20 is also made of glass, is fitted inside shade 7 so as to be displaced axially downwards with respect to base 8 and so occupy only the bottom part of the volume of shade 7, and comprises a coloured filter 21 formed integrally with (or carried by) diffusing screen 20, and defined, for example, by appropriate colouring of the glass of which screen 20 is made, or by a film applied to the lateral surface of screen 20.

[0012] According to the invention, device 1 also comprises a carriage 25 integrally supporting lamp-holder device 4 and mounted to run along guide means 26, which are fitted integrally to support 2 and are defined, in the example shown, by three rods 26 (only one shown

in Figures 1 and 2) fitted to and projecting downwards from flanged member 9 of support 2, and arranged in a ring so as to extend, inside shade 7, parallel to axis of symmetry A.

[0013] As shown in the Figure 3 detail, carriage 25 comprises a dead-end sleeve 28 engaging rods 26 in sliding manner; and an elastically deformable member 27 defined by a steel rod bent into a U, and fitted to and projecting from a flanged end 29 of dead-end sleeve 28, with the concavity facing the concavity of dead-end sleeve 28. More specifically, in use, dead-end sleeve 28 receives part of lamp-holder device 4, the rest of which, together with bulb 6, being housed inside the bend defined by the concavity of U-shaped rod 27, which is fitted coaxially to dead-end sleeve 28 by means of flexible L-shaped ends 30 of the rod engaging respective through lateral holes in sleeve 28. Rod 27 extends further along axis A than shade 7, so that, in use, a curved end 27a of U-shaped rod 27 projects from shade 7 to define user gripping and control means, as described later on.

[0014] Axially downstream from bulb 6 in the direction of end 27a, U-shaped rod 27 is provided externally with two V-shaped bends 31, which, in use, define stop means cooperating with a stop ring 33 fitted integrally to respective bottom ends 34 of rods 26 opposite body 11.

[0015] More specifically, ring 33 comprises two connectable elements by which the ring engages the top minor base of truncated-cone-shaped screen 20, which is thus gripped between stop ring 33 and the lateral wall of shade 7, with a bottom peripheral edge of screen 20 resting on the lateral wall of the shade.

[0016] The flanged end 29 of sleeve 28 is fitted externally with respective plugs 38 made of low-friction material, retained by ring nuts 39, and by which sleeve 28 engages rods 26 in sliding manner. In actual use, once fitted in sliding manner to rods 26, carriage 25 is therefore movable selectively, along axis A, between a first limit position wherein lamp-holder device 4 is housed partly inside diffusing screen 20, the flanged end 29 of dead-end sleeve 28 rests by force of gravity on stop ring 33, and bulb 6 is located along axis A in the position shown by the dash line in Figures 1 and 2 and housed entirely inside screen 20, which intercepts the light emitted by the bulb; and a second limit position (shown by the continuous line in Figures 1 and 2) wherein lamp-holder device 4 is housed inside body 11, bulb 6 is located, along axis A, inside shade 7 and axially outside diffusing screen 20, which therefore does not intercept (i.e. does not let through) the light emitted by bulb 6, and V-shaped bends 31 rest by force of gravity on stop ring 33 to lock carriage 25 in position.

[0017] According to the invention, lead portion 12 is housed loosely inside the cavity of body 11, and is longer than the travel of carriage 25 between the first and second limit position.

[0018] Device 1 operates as follows. When carriage 25 is set to the second limit position shown in Figures 1

and 2, the light emitted by bulb 6 is almost entirely intercepted by shade 7; the downward-directed light portion is mostly reflected by screen 20; device 1, when bulb 6 is turned on, generates a diffused light, which is emitted through shade 7; and screen 20 inside shade 7 is invisible through shade 7, whether bulb 6 is on or off.

[0019] From the above position, the user may switch to the first limit position by simply gripping and pulling down on end 27a, which increases the pressure of bends 31 on ring 33 (formerly limited to the weight of carriage 25 and lamp-holder device 4) to flex rod 27 inwards; bends 31 thus slip through the inside of ring 33; and carriage 25 drops down by force of gravity into the first limit position with sleeve 28 resting on ring 33. In this position, bulb 6 is housed entirely inside screen 20, which therefore intercepts practically all the light emitted by the bulb; part of the light is reflected downwards, and part travels through screen 20 to acquire the colour of filter 21 and illuminate shade 7, so that device 1 generates, simultaneously, a strong localized light directly beneath shade 7, and a diffused coloured light through shade 7, thus resulting in a pleasant and surprising aesthetic effect. Carriage 25 is restored to the second position by simply gripping and pushing end 27a upwards to flex rod 27 and slip bends 31 back up through ring 33.

[0020] Obviously, by forming a number of bends 31 in different axial positions, carriage 25 may be set selectively to a number of intermediate positions between the two limit positions described, thus providing for various intermediate light settings of device 1.

Claims

1. A lighting device, in particular a suspended lamp, comprising a lamp-holder device for a light source; a first diffusing screen; and a support having an electric power lead and integrally supporting the first diffusing screen and the lamp-holder device; **characterized by** also comprising, in combination, a second diffusing screen housed between the lamp-holder device and the first diffusing screen; and a carriage integrally supporting said lamp-holder device and fitted movably to guide means carried integrally by the support; said second diffusing screen being smaller than the first diffusing screen, and being displaced with respect to the first diffusing screen in a predetermined direction; said carriage being movable selectively, along said guide means and in said predetermined direction, between at least two operating positions, in at least one of which, substantially all the light emitted by said light source only passes through said first diffusing screen.
2. A device as claimed in Claim 1, **characterized in that** said first and said second diffusing screen are defined by respective cup-shaped bodies defined

by respective curved annular surfaces pervious to light, and having a common axis of symmetry defining said predetermined direction; said second diffusing screen being housed inside the first so as to only occupy part of the volume of the first diffusing screen in said predetermined direction. 5

3. A device as claimed in Claim 2, **characterized in that** said second diffusing screen has a coloured filter formed integrally with or carried by the second diffusing screen. 10

4. A device as claimed in Claim 2 or 3, **characterized in that** said first diffusing screen is defined by a shade fitted to and projecting from the support; said guide means comprising straight rods projecting inside said shade from the support and parallel to said axis of symmetry; and said second diffusing screen being gripped between a lateral wall of the shade, on which lateral wall a first peripheral edge of the second diffusing screen rests, and a stop ring carried by respective ends of said rods opposite said support. 15
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5. A device as claimed in Claim 4, **characterized in that** said carriage is defined by a dead-end sleeve engaging in sliding manner said rods, and by an elastically deformable, U-shaped member fitted to and projecting, parallel to said guides, from a flanged end of the dead-end sleeve, with the concavity facing the concavity of the dead-end sleeve; said elastically deformable member having stop means cooperating selectively with said stop ring; and said carriage being movable between a first limit position wherein said lamp-holder device is housed inside said second diffusing screen and said flanged end of the dead-end sleeve cooperates with said stop ring, and a second limit position wherein the lamp-holder device is housed inside the shade and axially outside the second diffusing screen, with said stop means resting by force of gravity on said stop ring. 25
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6. A device as claimed in Claim 5, **characterized in that** said support has an inner cavity in which is housed loosely a portion of said electric power lead longer than the travel of said carriage between said first and said second limit position. 45

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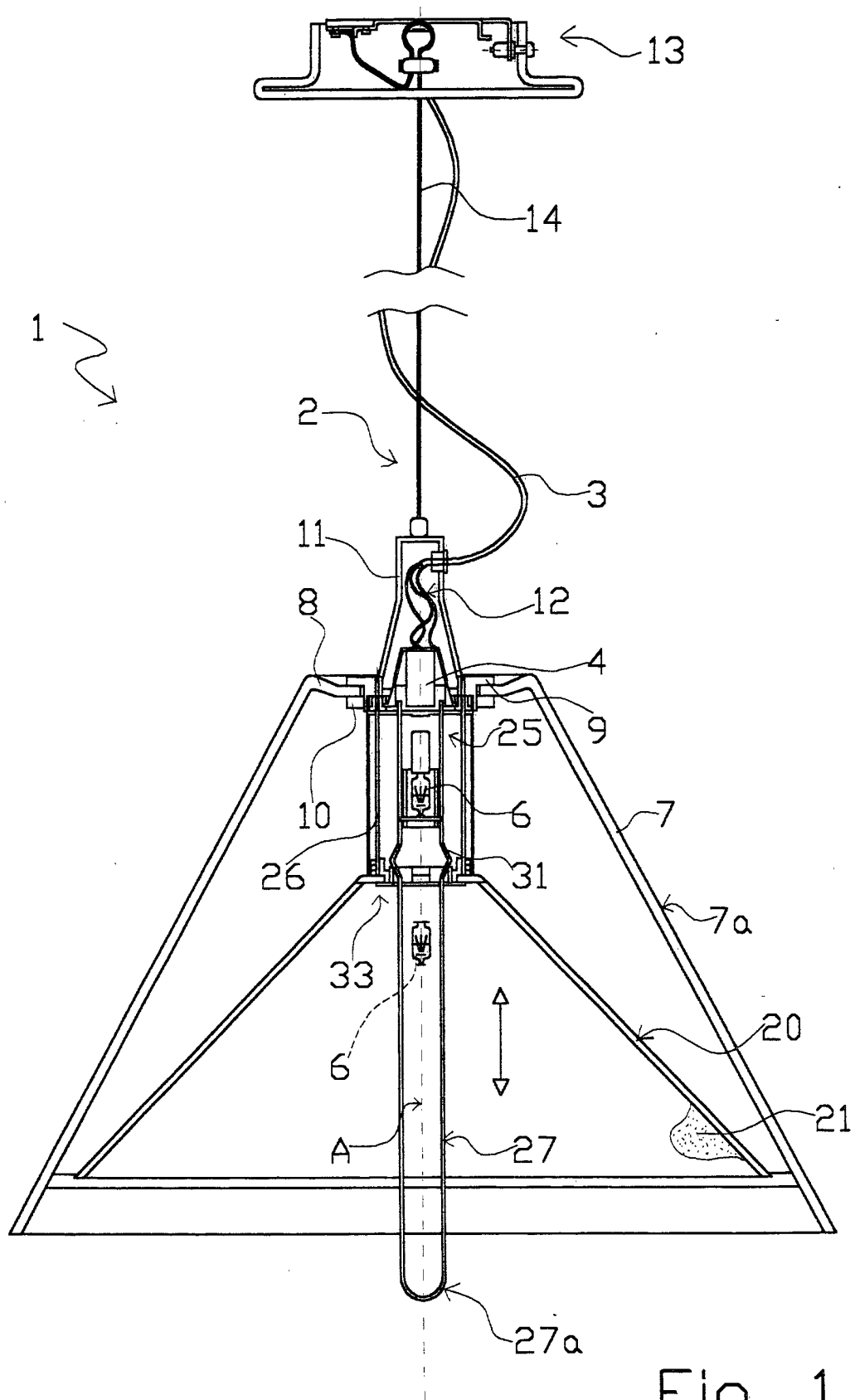


Fig. 1

Fig. 2

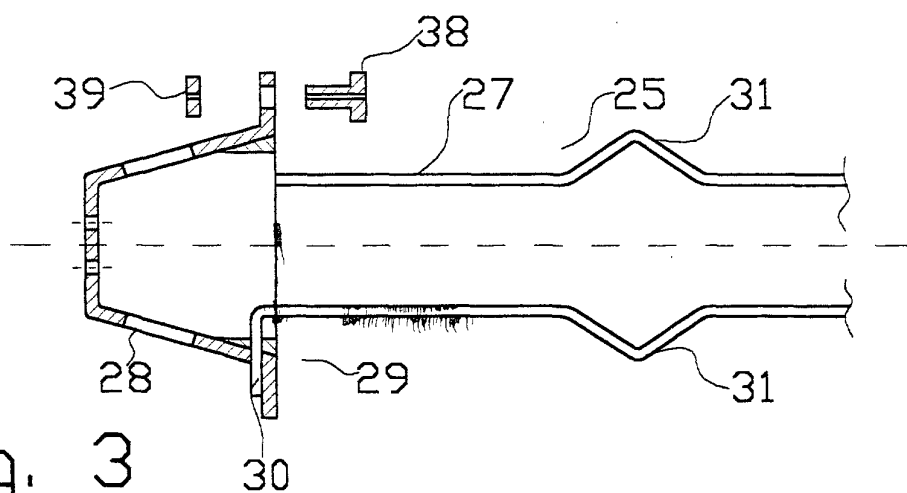
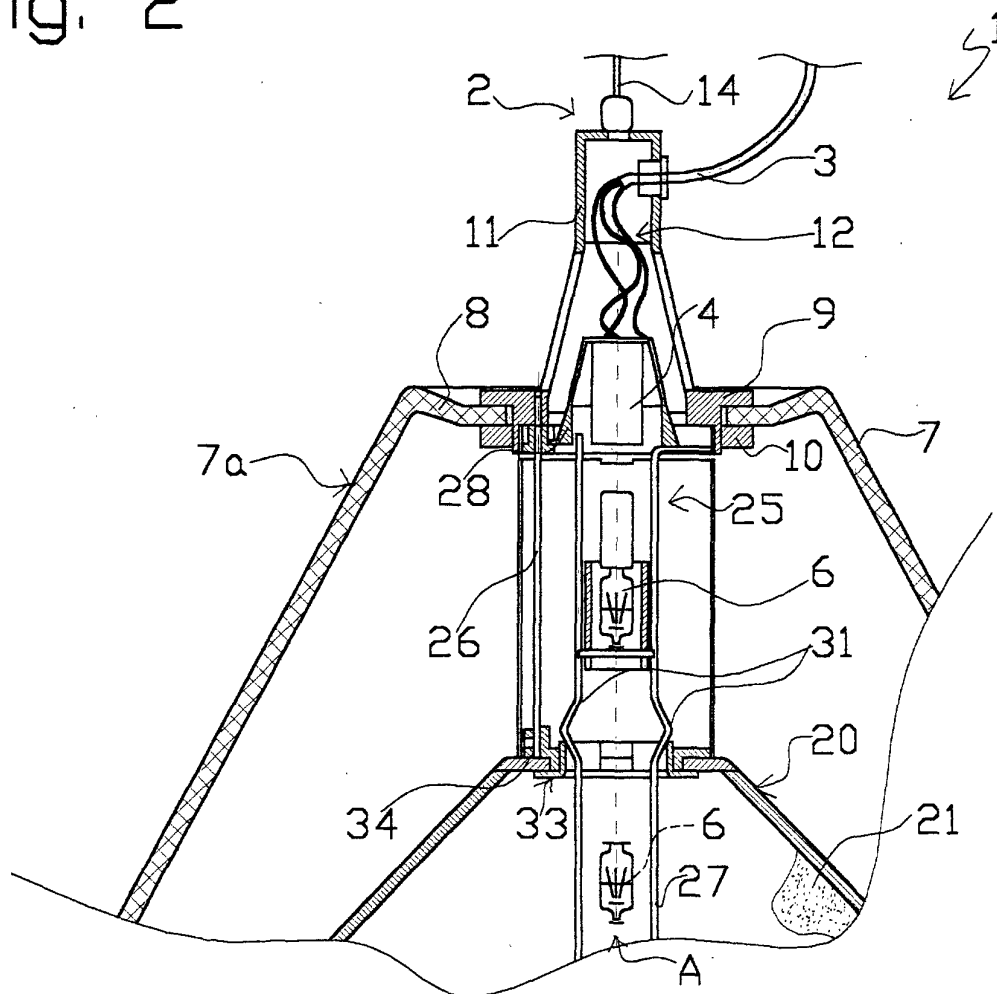


Fig. 3