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EUROPEAN PATENT APPLICATION

21 Application number: 89300607.2

51 Int. Cl.4: **F21L 15/02 , F21V 11/12**

22 Date of filing: 23.01.89

30 Priority: 09.02.88 GB 8802851

43 Date of publication of application:
16.08.89 Bulletin 89/33

84 Designated Contracting States:
CH DE ES FR GB IT LI SE

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54 Illuminating devices.

57 With reference to Figures 1 and 3, an illuminating device comprises a tubular outer sleeve 12 provided with an elongated transparent window 13, with an inner sleeve 22 formed with an aperture 27. The inner sleeve 22 houses a pair of self-luminous light sources 30.

Relative rotation between the inner and outer sleeves 22, 12 determines the shape illuminated by the sources 30 and visible through the window 13.

The inner sleeve 22 thus serves as a shutter in controlling light emission.

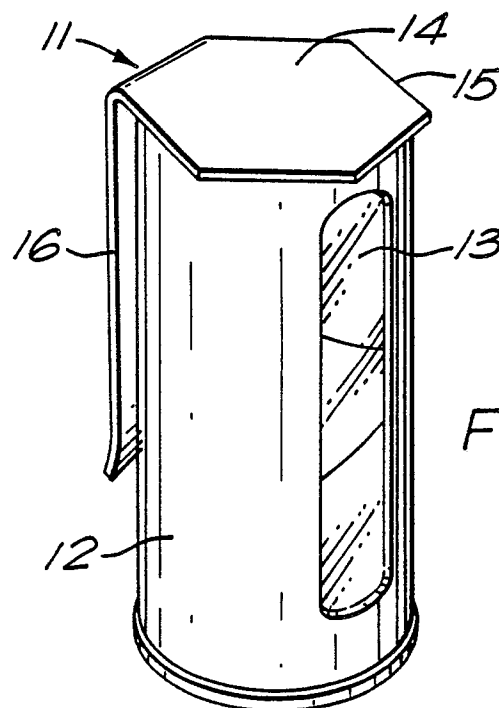


FIG.1.

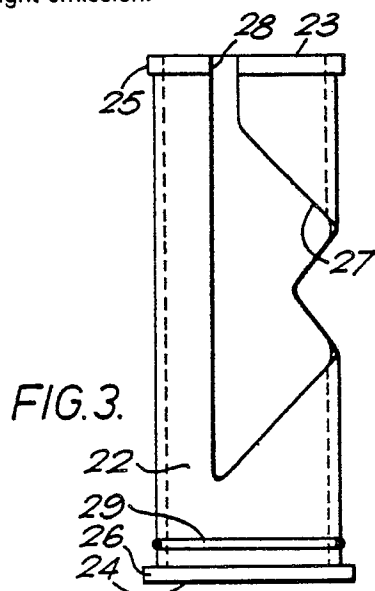


FIG.3.

EP 0 328 265 A2

Illuminating Devices

BACKGROUND OF THE INVENTION

This invention relates to illuminating devices and is particularly concerned with portable illuminating devices for providing either selected illuminated shapes or a source of light.

SUMMARY OF THE INVENTION

According to the invention, an illuminating device comprises a tubular sleeve provided with a window, a shutter member rotatable within the sleeve, at least one aperture formed in the shutter member and at least one light source disposed internally of the shutter member, whereby relative rotation of the shutter member and the sleeve changes the shape that is illuminated through the window.

Preferably, the shutter member comprises an inner sleeve. The first-mentioned sleeve then becomes an outer sleeve.

The light source preferably comprises one or more self luminous light sources and the light sources may be attached to a pillar extended internally of the inner sleeve and formed integral with a cover closing an upper end of the device.

Preferably, the cover is provided with a clip member to facilitate attachment of the device and may have a peripheral shape comprising a number of flat portions to prevent rolling of the device when it is placed on a surface.

An upper end surface of the outer sleeve may be attached to an internal surface of the cover portion, and may be formed with an internal groove for engagement by a flange portion at an upper end of the inner sleeve.

A lower end of the inner sleeve may be used to close the other end of the device and may include a radially extending flange portion by which relative rotation of the inner and outer sleeve is achieved.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

The invention will now be described by way of example only, with reference to the accompanying drawings, wherein :-

Figure 1 is a perspective view of an illuminating device constructed according to the invention,

Figure 2 is a side view of a tubular outer sleeve part of the device of Figure 1,

Figure 3 is a side view of a tubular inner sleeve part of the device of Figure 1,

Figure 4 is a side view of a light source holder and cover portion of the device of Figure 1,

Figure 5 is a sectional view taken on lines A-A of Figure 4,

Figure 6 is a sectional view, similar to the arrangement of Figure 5, which view illustrates one modification, and

Figure 7 is a view which illustrates another modification.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures, the illuminating device 11 illustrated thereby comprises a tubular outer sleeve 12 provided with a longitudinally extending transparent elongated window portion 13. A shutter member comprising a tubular inner sleeve 22 is disposed coaxially within the outer sleeve and is rotatable relative thereto. A cover portion 14 having a hexagonal peripheral shape 15 closes one end of the outer sleeve 12 and is provided with a clip member 16 to facilitate attachment of the device 11 to a person.

The illuminating device 11 is constructed of resilient plastics material.

As shown in more detail in Figure 2, the outer sleeve 12 which incorporates the window 13, is open at both ends. A first internal groove 17 is formed on the inner (wall) surface 18 of the sleeve 12 at an upper end 19 thereof. A second internal groove 20 is formed on the inner (wall) surface 18, spaced inwardly from a lower end 21 of the sleeve.

The tubular inner sleeve 22 (Figure 3) has an upper end 23 and a closed lower end 24. Radially extending flanges 25 and 26 respectively are located at the upper and lower ends 23, 24 of the inner sleeve 22.

An aperture 27 having a predetermined shape and for a purpose hereinafter described, is formed in the wall of the inner sleeve 22, and is extended by a slot 28 through its upper end 23. An O-ring 29 is located in a peripheral groove adjacent the lower end of the inner sleeve 22.

Two longitudinally extending self luminous visible light sources 30 of elongate form, such as are manufactured by Saunders-Roe Developments Limited under the Trade Mark "BETALIGHT", are adhered or otherwise secured to the surface of a

pillar 31 which is formed integral with the top cover 14, and extending generally perpendicularly downwardly therefrom. Two concentric integral flanges 32 and 33 are formed on a lower surface of the cover 14.

In assembly of the illuminating device 11, the slot 28 enables the upper end 25 of the resilient inner sleeve 22 to be squeezed to permit its location through the lower end 21 of the outer sleeve 12. When the sleeve 22 is fully inserted, the flange 25 of the sleeve snaps outwardly into engagement with the groove 17 at the upper end 19 of the outer sleeve 12. The sleeves 12 and 22 are then retained in coaxial relationship with each other.

The pillar 31 is located internally of inner sleeve 22 and the assembled upper ends 19 and 23 are located between the flanges 32 and 33. The outer sleeve 12 is ultrasonically welded to the cover 14 so as to seal the upper end of the device 11.

The O-ring 29 locates in the groove 20 so as to seal the lower end of the device 11 and prevent the ingress of dirt or moisture.

Relative rotation of the inner and outer sleeves 12 and 22 is effected by rotating the bottom flange 26. It will be apparent that the inner sleeve 22 serves as a shutter during such rotation so as to determine the shape that is illuminated by the light sources 30 and visible through the window 13.

The shape of the aperture 27 in the illustrated embodiment provides four operating positions of the device 11. From a position in which no light is visible through window 13, rotation of the inner sleeve 22 serves firstly to display a narrow vertical band of light and further rotation serves to allow light to be emitted from the entire window area so as to enable the device 11 to serve as a torch.

Further rotation serves to illuminate a pointed shape usable as a direction indicator and yet further rotation returns the device to the effective OFF position in which no light is visible.

As an alternative, or as an addition to the visible light source(s) 30, one or more light sources may be used which emit non-visible light. That is to say, light which is not visible to the naked eye.

Figure 6 illustrates such a modification wherein visible light sources 30 (of Figures 4 and 5) have been replaced by a pair of light sources 40 which emit light on an infra-red wavelength. The light sources 40 become visible when viewed with special equipment such as night vision goggles.

In a non-illustrated modification, one of the visible light sources 30 shown in Figure 5 is replaced by a non-visible light source 40, so that the device 11 is then provided with both visible and non-visible light sources, disposed side by side.

In the modification illustrated by Figure 7, the device 11 has light sources 45, (visible or non-

visible to the naked eye), which remain passive, that is, non light emitting until triggered to an active mode by receipt of an interrogatory signal. Such a signal may take the form of a (visible or non-visible) light or radio beam signal 46 emitted by a controllable source 47.

When this modification is in use, the shutter member/sleeve 22 is left open to admit access of the beam signal 46.

Whilst one embodiment and modification have been described and illustrated, it will be apparent that many further modifications may be made without departing from the scope of the invention. For example, the shape of aperture 27 can be selected to provide other desired indicated shapes as the inner sleeve is rotated, and may comprise a series of round or other shape apertures to provide a desired display sequence as relative rotation occurs. Any suitable alternative light source may be incorporated such as one or more light emitting diode (LED) sources which may be powered from a miniature battery located within the device. In such an arrangement switch means may be incorporated and may be arranged to be automatically operated during the relative rotation of the inner and outer sleeves so as to switch off the power to the light source when the device is in the OFF position, thereby conserving battery power.

The flat portions of the hexagonal shape 15 prevent rolling of the device 11 when it is placed on a substantially horizontal or slightly sloping surface.

The light sources 40 and 45, like sources 30, are of elongate form.

Claims

1. An illuminating device, characterised in that it comprises a tubular sleeve (12) provided with a window (13), a shutter member (22) rotatable within the sleeve (12), at least one aperture (27) formed in the shutter member (22) and at least one light source (30) disposed internally of the shutter member (22), whereby relative rotation of the shutter member (22) and the sleeve (12) changes the shape that is illuminated through the window (13).

2. A device as claimed in Claim 1, characterised in that the shutter member comprises an inner sleeve (22) disposed within the said (outer) sleeve (12).

3. A device as claimed in Claim 1 or 2, characterised in that the light source comprises one or more self luminous light sources (30).

4. A device as claimed in Claim 3, characterised in that the light source (30) is attached to a pillar (31) extended internally of the inner sleeve (22) and formed integral with a cover (14) closing an upper end of the device (11).

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5. A device as claimed in Claim 4, characterised in that the cover (14) carries a clip member (16) to facilitate attachment of the device.

6. A device as claimed in any one of Claims 1 to 5, characterised in that it has a peripheral shape comprising a number of flat portions to prevent rolling of the device when it is placed on a surface.

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7. A device as claimed in any one of Claims 2 to 6, characterised in that an upper end of the outer sleeve (12) is attached to an internal surface of the cover portion (14).

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8. A device as claimed in any one of Claims 2 to 7, characterised in that an upper end of the outer sleeve (12) is formed with an internal groove (17) for engagement by a flange portion (33) at an upper end of the inner sleeve (12).

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9. A device as claimed in any one of Claims 2 to 8, characterised in that the lower end of the inner sleeve (12) closes the lower end (24) of the device (11) and includes a radially extending flange portion (26) by which relative rotation of the inner (22) and outer (12) sleeves is achieved.

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10. A device as claimed in any one of Claims 1 to 9, characterised in that it is provided with at least one light source (40) which emits non-visible light.

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