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(54) Lighting means

(57) The invention to which the application relates is a lighting means which is provided in a form to allow at least two lighting functions to be created. A first lighting function is in the form of a torch and the second function is as a nightlight with a glow lighting effect. In one arrangement the lighting means include a housing which can be gripped to allow the housing to be held as a torch and in the second function the illumination of a light source causes a glow effect through the wall of the housing to create a nightlight effect.

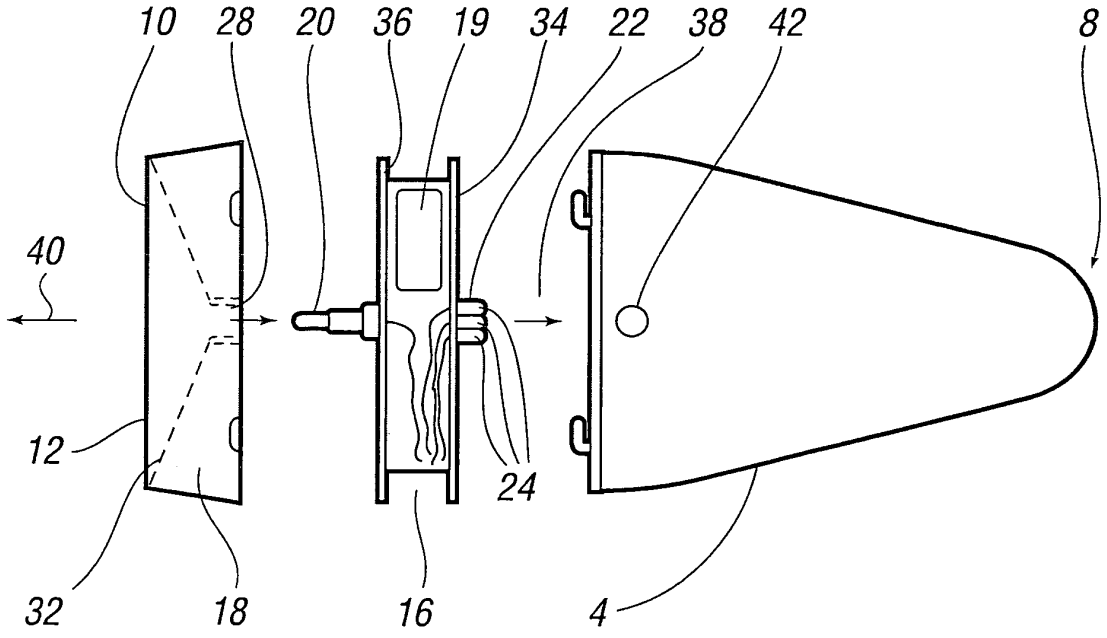

FIG. 4

EP 2 063 169 A2

Description

[0001] The invention to which this application relates is a lighting means of a type which can be used for two lighting functions, in particular, but not necessarily exclusively, a first lighting function as a torch and a second lighting function is a glowing light source or night light.

[0002] The uses of torches is well known in which a body or housing is held by a user in the hand and, from a transparent face of the housing there is provided a light which is emitted from a light source within the housing. The housing can then be moved by the hand to direct the light to a particular item or article which is to be illuminated in darkness. The torch can be used outside or inside of a building and can have a strength of light depending on the power which is provided and/or the type of light source which is used.

[0003] The use of night lights is also known. A night light typically comprises a body or housing which has a light source mounted therein, with the light source positioned internally of the housing to allow light emitted therefrom to be of a relatively low level and/or pass through at least one part of the housing wall so as to provide a glow effect. The purpose of the nightlight is not to act as a means for illuminating any particular article clearly but rather to emit a low intensity light glow which prevents, for example, a room in which a child is sleeping, from being in total darkness but equally, does not light the room up sufficiently so as to potentially cause the child to be woken up. Typically the light source used and/or the level of the material opaqueness of the housing wall can be selected so as to achieve the required glow effect.

[0004] A problem with the known devices is that typically, they are provided as two separate items which means that a device is either a torch or a night light. Thus if the two lighting functions are required in the same area than conventionally two devices are provided, which then clutters up space in, for example, a bedroom, where the amount of available space may already be at a premium.

[0005] It is known from patent US6280051 to provide a combination of light effects and in this patent, the combination is achieved by providing a single light source which, in one configuration of the apparatus, can be used to direct light in a first direction, and in a second configuration of the apparatus can be used to direct light in a second direction. In the second direction, the light source illuminates some decorative material, such as for example a liquid which is held within the device. However, the use of a single light source requires a relatively large number of components to be provided within the device and also the light source is required to be masked depending on the particular configuration and hence direction in which the light is to be emitted at that time. If the masking is not sufficient then leakage of the light can occur which can cause a reduced light intensity in the required direction of illumination and/or causes the device not to function properly. It has therefore been found that the device disclosed in this patent is impractical in use.

[0006] The aim of the present invention is to provide a combined torch and night light device which overcomes the problems of the prior art and to provide the same in a manner which is relatively easy to use and which operates to an improved efficiency level in comparison to known devices.

[0007] In a first aspect of the invention, there is provided a lighting means, said lighting means including a housing, said housing having a plurality of light sources located therein, and a power source, at least a first one of said light sources mounted so as to emit light, when illuminated, in a direction substantially towards a first end of the housing, said first end including a transparent window through which light can pass from the illuminated first light source and at least a further light source mounted such that when illuminated, light is emitted in a direction away from the first end towards the wall and end of the housing, characterised in that said lighting means can be selectively used as a torch when the said first light source is illuminated with the housing gripped by the user and, as a nightlight by illumination of the at least one further light source to create a glow lighting effect through the wall of the said housing.

[0008] Typically, said first and second light sources are respectively mounted on opposing faces of a lighting assembly so as to direct light, when illuminated, in opposing directions.

[0009] In one embodiment, the assembly has a first light source which when illuminated, allows the housing to be used as a torch with the light emitted through a transparent end face of the housing and a second light source including a plurality of light elements which, when illuminated, illuminate at least part of the interior of the housing and said housing is provided with at least a portion of the walls of the same formed of a material which allows the light to pass through the same from the interior of the housing and cause the same to glow, thereby allowing the lighting means to act as a night light in this configuration.

[0010] In one embodiment, the further light source is mounted adjacent a reflecting material so as to ensure that the emitted light is reflected into the interior of the housing.

[0011] In one embodiment, the light sources are mounted on an assembly located within the housing and said assembly can be engaged with and/or located adjacent to an end cap of the housing of the lighting means. The said end cap forms part of the housing and has an aperture in which the first light source is positioned, said aperture positioned adjacent reflective material so as to direct the emitted light through a transparent face of the end cap.

[0012] In one embodiment, the end cap forms one end of the housing and is the end from which the light is emitted when the housing is acting as a torch.

[0013] In one embodiment, a power source is provided

and in one embodiment the housing incorporates the power source mounted therein, said power source preferably providing power for the lighting means when acting as a torch or a night light. The power source can be a mains power connection to the lighting means and/or one or more batteries located within the lighting means.

[0014] In one embodiment, the housing incorporates a user actuable switch, said switch operable to move the lighting means between off and on conditions at least with respect to the illumination of the first light source and allow control of the lighting means when acting as a torch.

[0015] In one embodiment, the lighting means includes a further part, which can, in one embodiment, be a base or a holder, and with which further part the housing can be selectively located and connected.

[0016] In a preferred embodiment, the lighting means is only operable with the further light source illuminated as a nightlight when the housing is located with and connected electrically with said further part.

[0017] In one embodiment, when said housing is not located with said further part, the lighting means can only be used as a torch, typically by actuating a switch to cause the selective illumination of the first light source.

[0018] In a further aspect of the invention, there is provided a lighting means, said lighting means including a housing, said housing includes a first light source which can be illuminated when the housing is not placed on another article and a further light source which can be illuminated when the housing is placed on another article.

[0019] Typically, when the first light source can be illuminated, the second light source cannot be illuminated and vice versa.

[0020] Typically, the said further part includes electrical contact means and electrical contact means are provided on the housing, and when the same are brought into connection by locating the housing on the further part an electrical circuit is completed which enables the further light source to be illuminated. When there is no electrical contact between said further part and the housing, the further light source cannot be illuminated and then a switch can be operated on the housing to allow the first light source to be selectively illuminated and allow the housing to be gripped and used as a torch independently of the further part.

[0021] In a further feature of the invention the lighting means includes an image projecting device. Typically the device can be selectively positioned on the housing and/or adjusted such as to allow images to be projected from the lighting means onto another surface or as a light beam. The device is typically used when the lighting means is in use as a torch with the first light source illuminated, and the image projecting device is mounted on the housing so as to lie in the path of the light from the first light sources when illuminated.

[0022] In one embodiment the image projecting device includes one or more slides on which an image to be projected is formed and said slides can be selectively positioned in the image projecting device to allow a selected image to be generated.

[0023] In one embodiment characters or other artwork which are depicted on the external surface of the housing of the lighting means are linked to the images which can be generated using the image projecting device in conjunction with the lighting means.

[0024] Specific embodiments of the invention are now described with reference to the accompanying drawings wherein;

Figure 1 illustrates the components of the invention in accordance with one embodiment;

Figure 2 illustrates the apparatus of figure 1 in a first form of use;

Figure 3 illustrates the apparatus in figure 1 in a second form of use;

Figure 4 illustrates the components of the housing of the apparatus of the embodiments of figures 1-3;

Figures 5a to d illustrate a further embodiment of the invention which can be used to project images; and

Figure 6 illustrates a further embodiment of the apparatus of Figures 5a-d.

[0025] Referring firstly to figures 1 and 2, there is illustrated apparatus in accordance with one embodiment of the invention. The lighting means 2 comprises a housing 4, which in this case is of a substantially conical shape. The housing has a first end 8 and an opposing end 10, with the end 10 being an end cap having a transparent face 12 through which light can pass. A further part 14 is also provided, in this case in the form of a base or holder with a central recess 16 into which the end 10 of the housing can be placed selectively.

[0026] Turning now to figure 4, there is illustrated the main component parts located within the housing 4 of figure 1. The components located in the housing 4 include towards the end 10 a light source assembly 16 and an end cap 18. The assembly includes a power source 19 such as a battery mounted thereon and associated circuitry to allow the selective supply of power to a first light source 20 and a further light source 22 which, in this case, is formed by a cluster of LED's 24.

[0027] The light sources 20, 22 are fitted on opposing faces of the assembly as shown and separated by a plate. The assembly is fitted in the housing in an orientation such that the first light source 20 at face 36 of the plate passes through an aperture 28 in the end cap 18 and is located with a reflector 32 such that when the light source is illuminated, light is directed towards and passes through the transparent window 12 of the end 10 of the housing in direction 40. This means that the housing can be gripped by a hand and when the light source 20 is illuminated the lighting means used as a torch.

[0028] The further light source 22 is positioned on the opposing face 34 of the plate of the assembly 16 from the face 36, as shown in Figure 4, and therefore light which is emitted, when the LED's of the light source 22 is illuminated, is emitted in direction 38 to the interior of the housing 4 and light subsequently passes through the wall of the housing to emit a glow externally of the same. Although, in this case, the light will pass through practically all of the substantially translucent wall of the housing to create a glow effect, it should be appreciated that perhaps only part of the wall will be formed of material which will allow light to pass there through.

[0029] The assembly is typically secured within the housing interior and the end cap 18 is located onto the open end of the housing 4.

[0030] Turning again to figure 2, there is illustrated the apparatus of figures 1 and 4, in a first embodiment of use as a torch. In this case, the first light source 20 is illuminated and the housing 4 is separate from the further part base. Thus, the housing can be carried in the hand as a torch and the light is emitted from the same in a direction controlled by movement of the users hand. Once the housing is removed from the base, then in one embodiment only the first light source 20 can be illuminated. This is achieved by the operation of a switch 42 provided on the external surface of the housing 4 and which allows the selective connection of power from the power source to the first light source 20 to illuminate the same. It should be appreciated that in this arrangement, the second light source 22 cannot be illuminated as the housing is not connected to the base.

[0031] To achieve illumination 48 of the further light source 22 and hence creation of the night light glow effect in the housing 4 as shown in figure 3, electrical connection is required to be made between metallic studs 44 provided on the end cap or housing and one or more metallic bands 46 on the base 14, as shown in figure 2.

[0032] Figure 3 illustrates the use of the apparatus as a nightlight and, in this case, the housing 4 is located in the base 14 cavity 16 with the end cap 18 positioned therein and as a result, electrical contact is made between the studs 44 and the bands 46 on the housing and base respectively. With this contact having being achieved, then connection is made with the power supply as the contact made completes the electrical circuit (not shown) connecting the light source 22 and power supply. Either the further light source can be illuminated automatically upon contact or can be illuminated once the switch 42 is moved to the correct position. In any case, it should be appreciated that in this configuration, the first light source does not illuminate and therefore it is only the second light source 22 which illuminates to allow the emission of the glow nightlight effect through the housing 4

[0033] Referring now to Figures 5a-d there is illustrated a further embodiment of the invention in which an image projecting device is provided. This device includes a slot 50 in the end 10 or an additional cap 51 fitted to the end for the selective placement of any of a range of slides 52 which can be inserted or removed as indicated by arrow 54. Figures 5a-c illustrate the stages of movement of the slide 52 into position in the slot 50 such that in Figure 5c the slide lies entirely over the transparent face 12 of the end 10.

[0034] The slide has an image 56 thereon surrounded by apertures or a transparent material 58. When the lighting means is operated as a torch with the first light source illuminated the light is emitted through the end face 12 and through the transparent part 58 of the slide 52. The external light beam 60 which is created allows the image 56 to be magnified and projected onto a surface 62 as shown in Figure 5d to create the image 56' therein.

[0035] Figure 6 illustrates a further embodiment of the invention in which the housing 4 is shown in a first position in the base or holder 14 for use as a nightlight with the further light source illuminated, and also in a second position separated from the base or holder 14 for use as a torch and also with the ability to have a series of slides 52 selectively positioned therein to allow an image 56' to be projected therefrom. It will be appreciated that the lighting means which includes the image projecting device has three possible uses, thereby increasing the attractiveness of the lighting means of the invention to a child.

[0036] Thus there is provided in accordance with the invention, a combined torch and night light lighting means which allows efficient operation in both modes of operation. No complex masking arrangements or risk of light leakage is encountered as the light sources are positioned to emit light in particular directions only and, as the light sources can only be illuminated when the apparatus is in a particular configuration, so it can be ensured that light is only emitted from the respective light sources when the apparatus is in the correct configuration for use of that light source.

Claims

1. A lighting means (2), said lighting means including a housing (4), said housing having a plurality of light sources (20;22,24) located therein, and a power source (19), at least a first one of said light sources (20) mounted so as to emit light, when illuminated, in a direction substantially towards a first end (10) of the housing, said first end including a transparent window (12) through which light can pass from the illuminated first light source and at least a further light source (22,24) mounted such that when illuminated, light is emitted in a direction away from the first end towards the wall and end (8) of the housing, **characterised in that** said lighting means can be selectively used as a torch when the said first light source (20) is illuminated with the housing gripped by the user and, as a nightlight by illumination of the at least one further light source (22,24) to create a

glow lighting effect through the wall of the said housing.

2. A lighting means according to claim 1 wherein said first and second light sources are respectively mounted on opposing faces of a light source assembly in the housing so as to direct light, when the same are illuminated, in opposing directions.

3. A lighting means according to claim 1 wherein said housing is provided with at least a portion of the walls of the same formed of a material which allows the light from the further light source to pass through the same from the interior of the housing and cause the same to glow, thereby acting as a night light.

4. A lighting means according to claim 1 wherein the further light source is mounted adjacent a reflecting material so as to cause the emitted light to be reflected into the interior of the housing.

5. A lighting means according to claim 1 wherein the further light source is formed by a cluster of light sources.

6. A lighting means according to claim 1 wherein the light sources are mounted on a light source assembly which is located within the housing and is engaged with and/or located adjacent to an end cap which forms part of the housing.

7. A lighting means according to claim 9 wherein the said end cap has an aperture in which the first light source is positioned.

8. A lighting means according to claim 10 wherein said aperture is positioned adjacent reflective material.

9. A lighting means according to claim 6 wherein the end cap forms one end of the housing and is the face towards which the light is directed from the first light source.

10. A lighting means according to claim 1 wherein the housing incorporates a user actuable switch, said switch operable to move the lighting means between off and on conditions at least when acting as a torch.

11. A lighting means according to claim 10 wherein the switch allows the selection of mode of operation of the lighting means illumination.

12. A lighting means according to claim 1 wherein the lighting means can be selectively positioned on another article to cause the illumination of said further light source to create the nightlight effect.

13. A lighting means according to claim 12 wherein the selective positioning of the lighting means completes an electrical circuit to allow connection to the power source and illumination of the said further light source.

14. A lighting means according to claim 1 wherein when the said first light source can be illuminated the said further light source cannot be illuminated.

15. A lighting means according to any of the preceding claims wherein when the said further light source can be illuminated the said first light source cannot be illuminated.

16. A lighting means according to claim 1 wherein said lighting means including a housing, said housing includes a first light source which can be selectively illuminated when the housing is not placed on another article and a further light source which can be illuminated when the housing is placed on another article.

17. A lighting means according to claim 1 wherein the light emitted from the housing when the first light source is illuminated is brighter than that emitted when the said further light source is illuminated.

18. A lighting means, said lighting means including a housing (4) said housing includes a first light source (20) which can be illuminated when the housing is not placed on another article and a further light source (22,24) which can be illuminated when the housing is placed on another article.

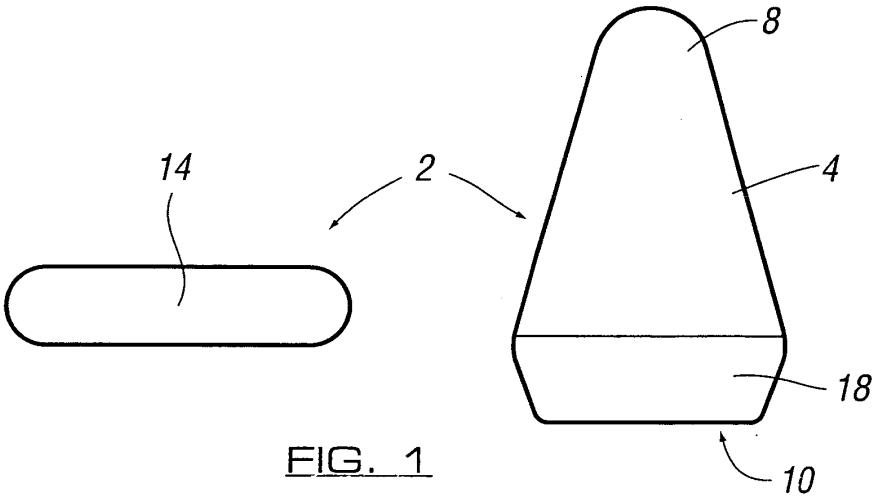

FIG. 1

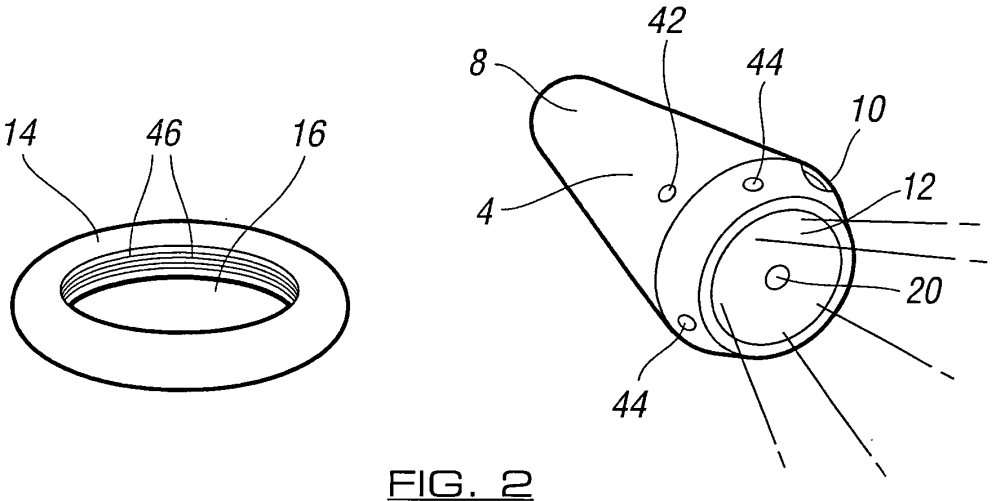

FIG. 2

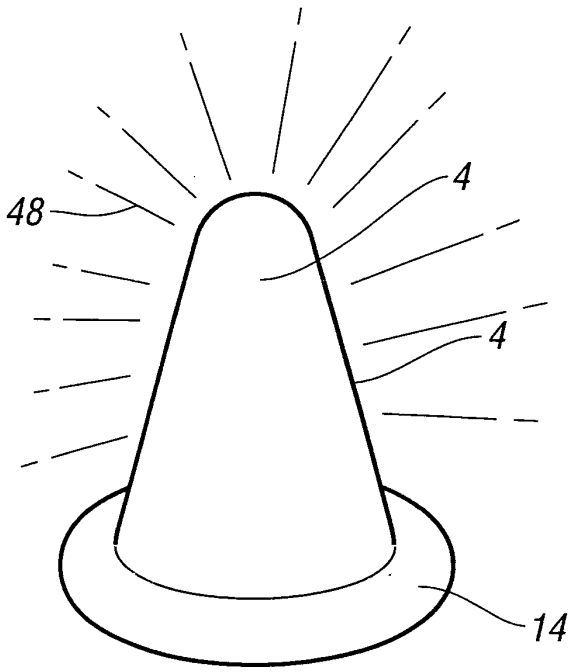

FIG. 3

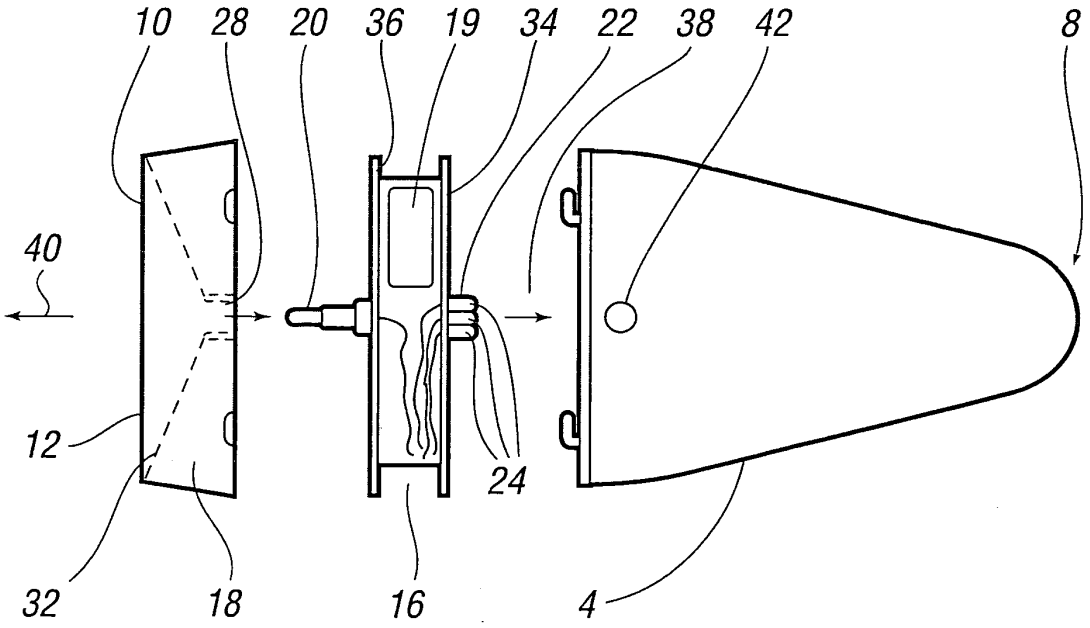

FIG. 4

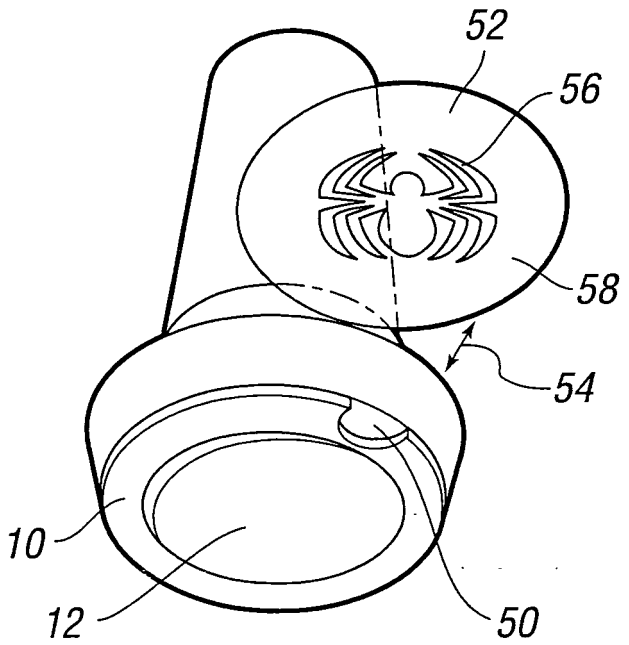

FIG. 5a

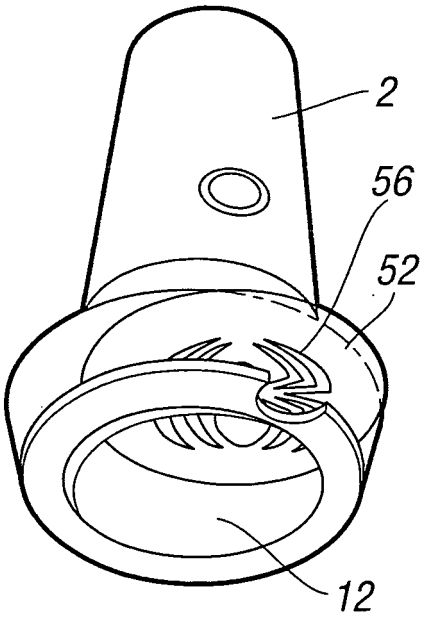

FIG. 5b

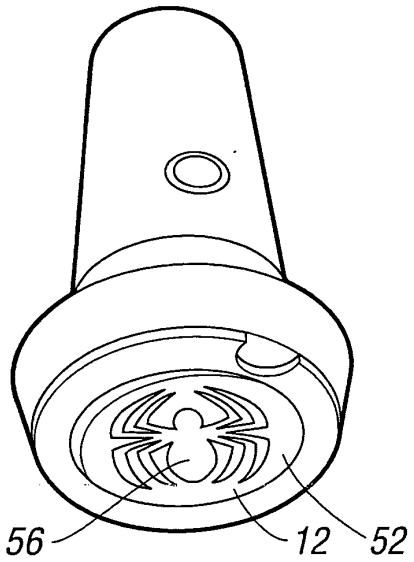

FIG. 5c

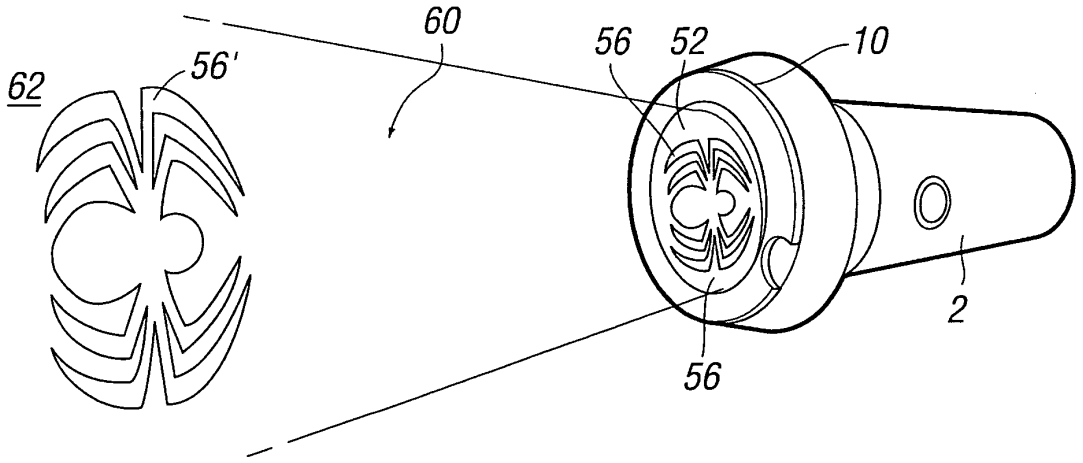

FIG. 5d

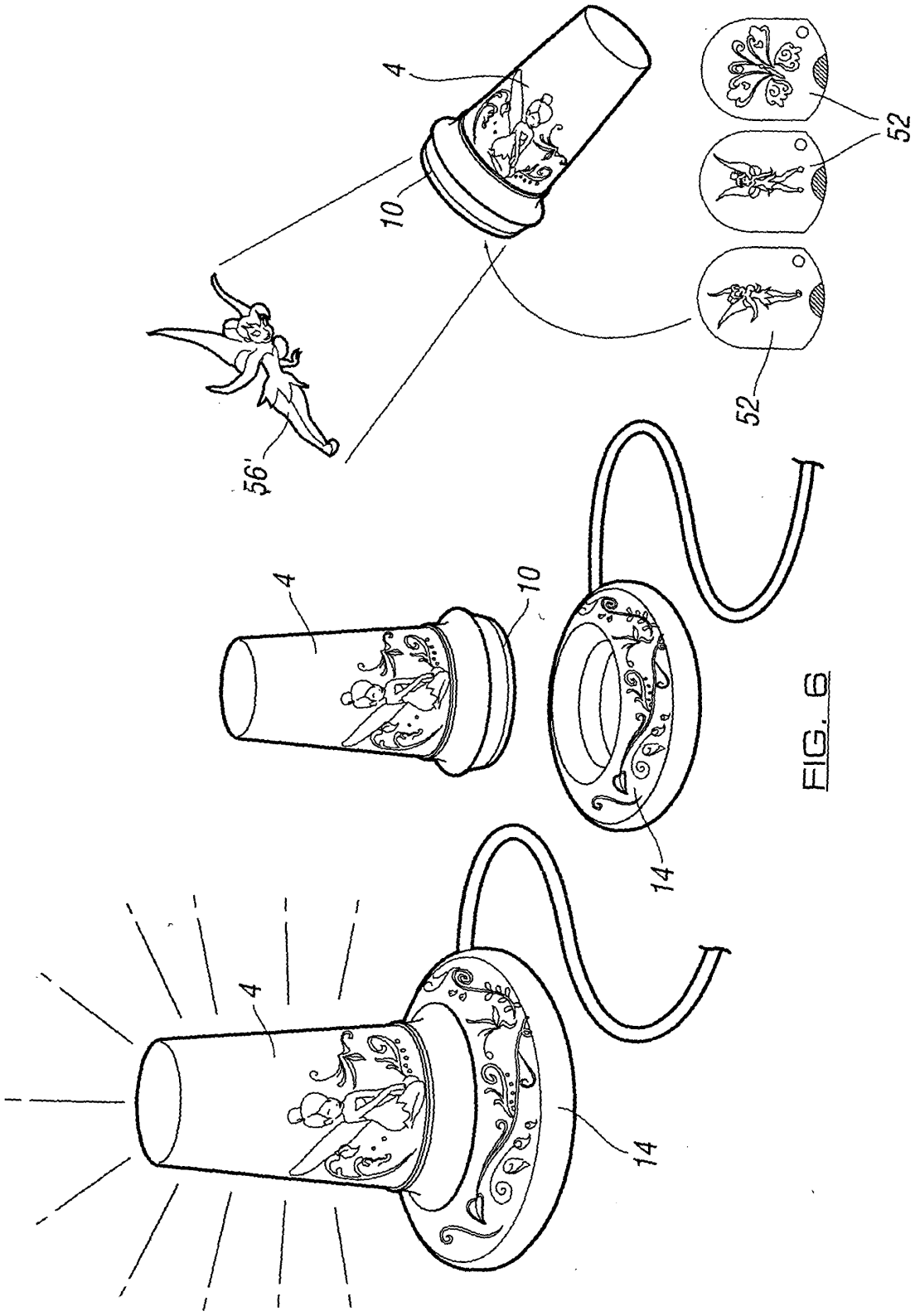

FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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