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Eriksson

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[54] **BATTERY-OPERATED HAND LAMP**

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[52] **U.S. Cl.** ..... **240/6.4 W;** 24/31 L; 24/68 AS; 24/115 H; 24/168; 240/10.63; 240/59; 128/23

[51] **Int. Cl.²** **F21V 33/00;** F21V 21/00; F16G 3/00; A61B 1/06

[58] **Field of Search** .... 24/115 H, 168, 68 AS, 68 E, 24/72, 31 L; 2/338; 240/6.4 W, 10.63, 59; 128/23

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[57] **ABSTRACT**

A battery-operated hand lamp which may be converted to a head lamp. It comprises a casing housing a glow-lamp holder, a switch, a reflector, and a number of batteries, and a lid housing a strap means by means of which the lamp may be attached to e.g. a user's head and serve as a head lamp (frontal lamp). During use of the hand lamp as a head lamp the strap is stored inside the lid but means are arranged to allow a portion of said belt to be quickly and easily extracted from the lid interior and whereby the length of said belt portion may be adjusted to the wearer's head in such a manner that said belt portion is retained in its adjusted position.

7 Claims, 9 Drawing Figures

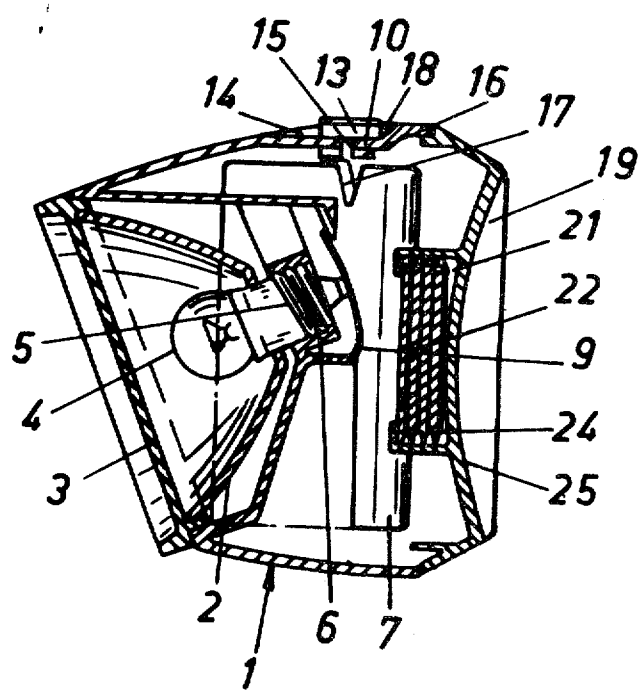


Fig.9

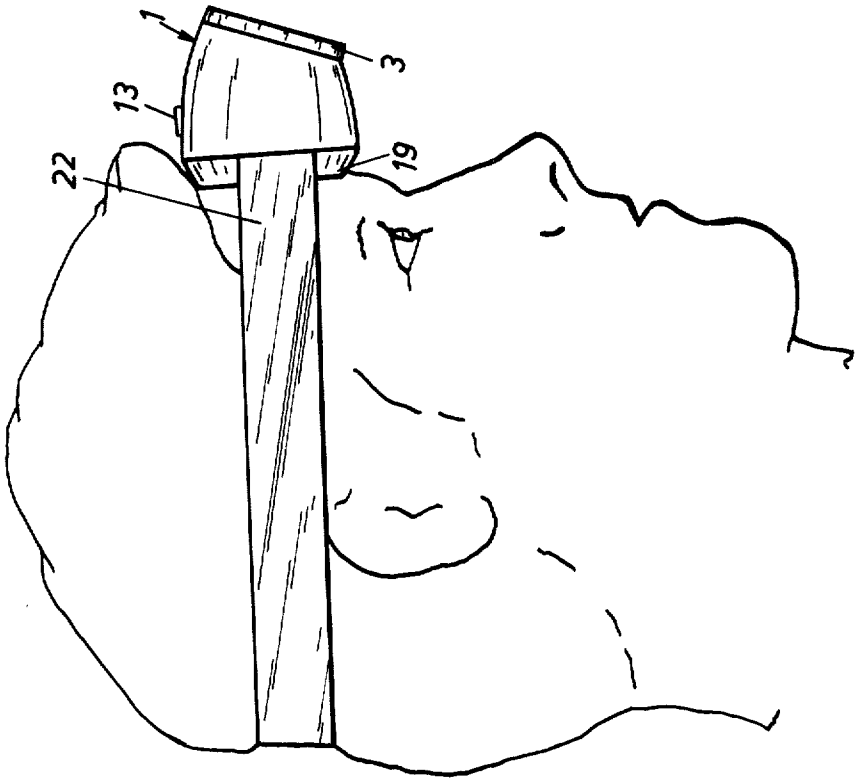


Fig.1

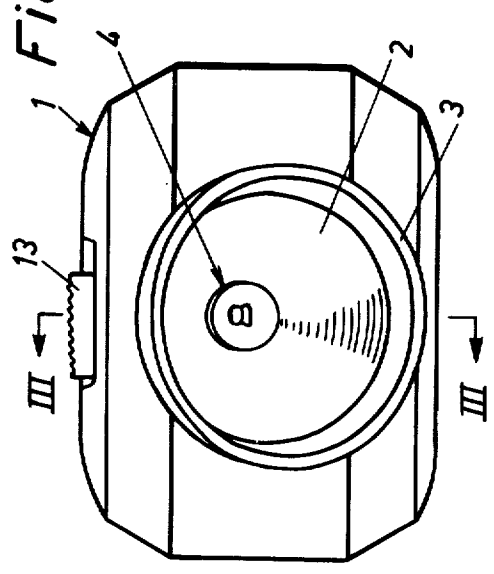
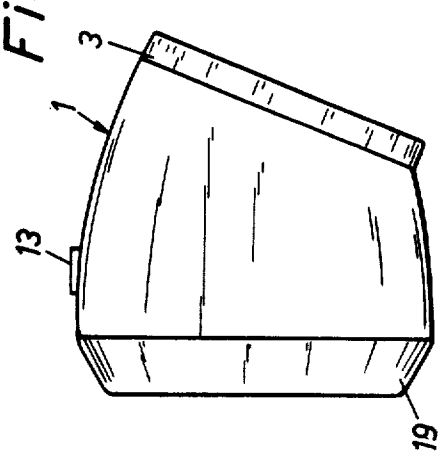


Fig.2



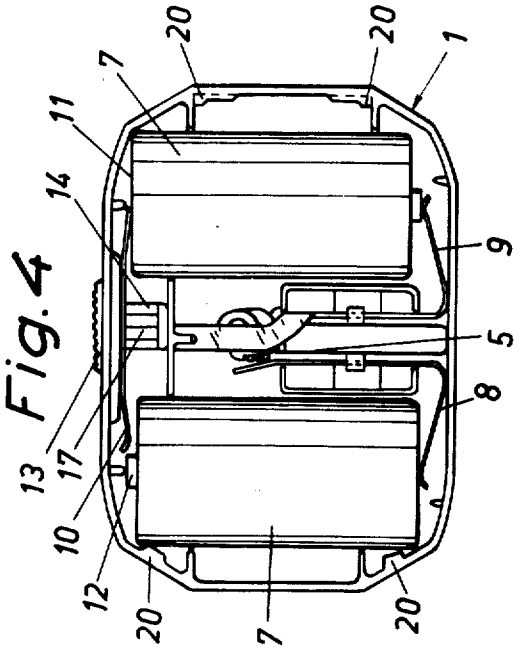


Fig.4

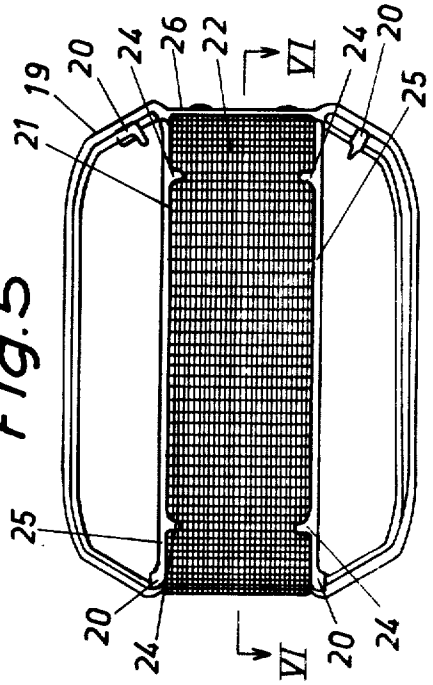


Fig.5

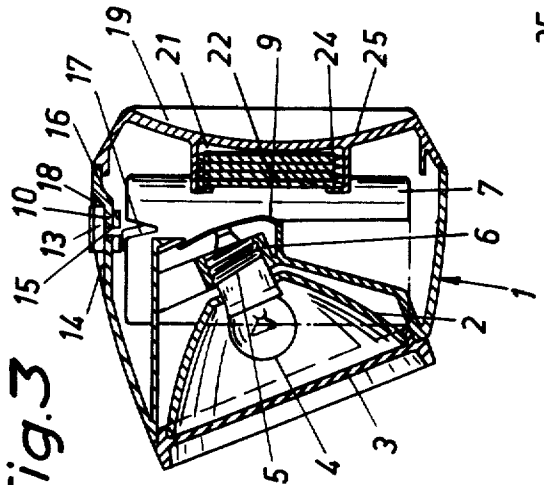


Fig.3

Fig.7

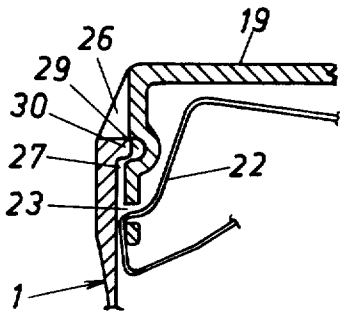


Fig.8

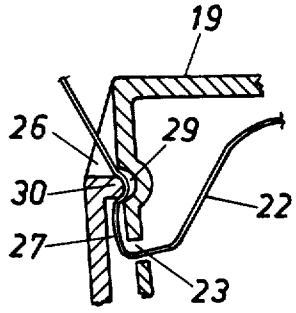
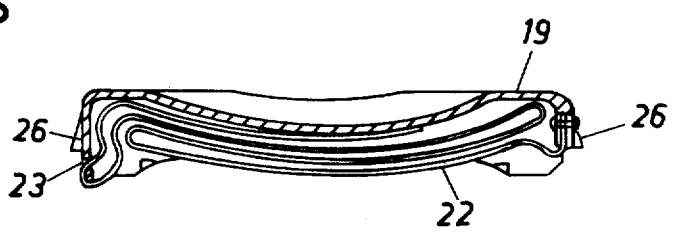


Fig.6



BATTERY-OPERATED HAND LAMP

BACKGROUND OF THE INVENTION

The present invention concerns a hand lamp of the kind which often constitutes the only source of light for working operations performed in dark premises. In such cases it often becomes necessary for the user to put the lamp down in order to free both his hands for the work or he might have to use one hand to steady himself and the other one to work with. It might then be very difficult to direct the lamp in a suitable manner and usually there is not suitable place available in which to put the lamp. Consequently, it might be necessary to position the lamp such that the light from the lamp falls on the working place from the wrong direction or even such that the worker stands in the way of the light. When the lamp has to be positioned far away from the working place the latter is not sufficiently lit and as a result the working operation becomes difficult.

Prior-art hand lamps comprising extractable attachment belts suffer from the disadvantage that complicated dismounting and mounting operations are necessary to make it possible to attach the lamp by means of the belt onto an object or on the head of the user. When such known hand lamps are dismounted, the lamp together with its support are separated from the battery unit which must be attached to some other place of the user's body.

SUMMARY OF THE INVENTION

Through the present invention these disadvantages have been completely eliminated. The invention concerns a battery-operated hand lamp comprising as a first unit a casing enclosing a glow-lamp holder, a switch, a reflector, and a number of batteries as a second unit, a lid and as a third unit a belt, band, or the like arranged, after its extraction, to serve as an attachment belt to secure the lamp to an object or to the body of the user, e.g. to his head. For this purpose the invention is characterised in that the lid is formed with an elongate space for receiving the belt therein, in that at two opposite points of the casing and the edge of the lid are provided openings for the belt, and in that upon use of the belt portion thereof extends out through these openings so as to form a loop, one end portion of the belt being securely attached to one end of the lid while the opposite end is secured to the lid in a manner permitting adjustment of the belt in the longitudinal direction thereof.

Owing to the arrangement of a hand lamp in accordance with the present invention only a few manipulations are required to transform it into an excellent head lamp which the user may direct towards the point desired through simply turning his head and which illuminates the working place at a close range.

It is also quite possible to attach the lamp by means of the belt to poles and other objects not suitable to serve as supports to ordinary hand lamps.

BRIEF DESCRIPTION OF THE DRAWINGS

One embodiment of the invention will be described more in detail in the following with reference to the accompanying drawings, wherein

FIG. 1 is a front view of the lamp in accordance with the invention,

FIG. 2 is a side view of the lamp,

FIG. 3 illustrates a section through the lamp along line III—III of FIG. 2,

FIG. 4 illustrates the lamp from behind, the lid having been removed,

FIG. 5 is a view of the lid interior,

FIG. 6 is a section through the lid along linje VI—VI of FIG. 5,

FIGS. 7 and 8 are a partly broken sectional view through the casing at one end of the lid, showing the extension of the belt when the latter is hidden and extracted, respectively, and

FIG. 9 illustrates the lamp while used as a head lamp.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

As appears from the embodiment illustrated, the lamp in accordance with the invention includes a casing 1 at one side of which, the front side, is arranged a round reflector 2 having a protective glass 3. At the centre of the reflector is arranged a glow-lamp 4 the mounting portion 5 of which is positioned in a glow-lamp holder 6 inside the casing 1. One battery 7 is located on either side of the glow-lamp holder and from the negative pole of one of the batteries and the positive pole of the other extend sheet-metal plates 8 and 9, respectively, up to the glow-lamp holder 6, where these plates abut against the connection portions of the glow-lamp 4 on the mounting portion 5.

The batteries 7, being two ordinary rod batteries, are positioned in parallel relationship and to break or close the current, respectively, a switch is used, this switch including an elongate sheet-metal plate 10 one end of which abuts against the large pole 11 (the negative pole) of one battery 7 and the other end of which is positioned adjacent the small pole 12 (the positive pole) of the other battery 7. The centre portion of the sheet-metal plate 10 abuts against the inner face of the casing. To permit displacement of the sheet-metal plate 10 into abutment against the pole 12 as well, an operating plate 13 is positioned on the outside of the casing 1 and a flat pin 14 extends from the operating plate 13 through an elongate slit 15 in the casing 1, said slit exceeding in dimensions the cross-sectional area of the pin 14, and also through a slit 16 in the sheet-metal plate 10, said slit having the same size as the cross-sectional area of the pin 14 whereby it becomes possible to move the operating plate 13 and thus the metal plate 10 towards the pole 12. From the apex portion of the pin 14 two tongues 17 project in a direction towards the operating plate 13 so as to engage the face of the operating plate 13 turned away from the casing 1 on either side of the slit 16 such that the operating plate 13 and the centre portion of the sheet-metal plate 10 will abut close to the inside and the outside, respectively, of the casing 1. The operating plate 13 is positioned in a shallow recess 18 in the casing 1 to provide a flat sliding surface.

The reverse side of the casing 1 consists of a removable lid 19. The lid 19 and the remainder of the casing 1 are provided with hook members 20 of a known kind to enable simple and reliable mounting and dismounting of the lid 19. The latter is formed with an elongate space arranged to receive therein an elastic band 22. The elastic band extending in loops or folds forwards and backwards in the space 21 is riveted at its one end to one end of the lid 19 whereas its opposite end is passed through a slot 23 at the opposite end of the

space **21** and lies freely at the bottom of the space **21.**

When the lamp is to be used as e.g. a head (frontal) lamp, the lid **19** is removed and the band **22** is thereafter formed into a loop laid "behind" the lid **19.** The belt **23** will then extend over the short sides of the lid **19** where the lid **19** is provided with recessed portions **26** forming openings **27** through which the band may pass when the lid **19** is replaced on the casing. At one end of the lid **19** where the slot **23** is positioned this opening **27** is, however, slightly narrow, whereby the band **22** will be clamped between a recess **29** formed in the lid **19** and a clamping edge **30** formed on the casing **1,** as appears from FIG. **8.** Before replacement of the lid a sufficient length of the band **22** must be pulled in or extracted through the gap **23** to achieve the desired tension of the band **22** when the lamp is positioned on the head. This method of tightening the band eliminates the need for complicated buckles and the like. To enable the lamp to adhere securely to the forehand during use, the lid has been given a slightly concave configuration. After use the band may again, with the aid of a few simple manipulations, be stowed into the lid interior so as to be kept out of the way when the lamp is used as a hand lamp.

In accordance with the embodiment described above one end of the band is riveted to the lid whereas the opposite one is adjustably squeezed between the lid and the casing. However, it is possible to modify the lamp lid by providing it with two openings **27,** one at each end of the lid so as to permit the band **22** to be adjustably squeezed between the lid and the casing at both ends. In FIG. **8** is illustrated the manner in which one of the band ends is clamped between the lid and casing. In accordance with this second embodiment wherein both band ends are adjustably arranged the opposite band end is clamped in exactly the same manner. The figure representing this end thus would be a mirror image of the one illustrated in FIG. **8.**

The end edges of the band in accordance with the second embodiment preferably are somewhat enlarged or thickened to prevent the band ends from sliding out through the openings in the lid upon loosening of the band. Such thickening of the band may quite simply be achieved by e.g. folding the band edge proper so as to form a transverse ridge, or by any other suitable means.

In the aforegoing the lid has been shown as removably secured to the casing. It is of course possible to hingedly attach the lid to the casing in which case the hinge preferably is positioned at the lid end where the band **22** is securely attached, i.e. at the right-hand end in accordance with FIG. **6.**

Also in accordance with the second embodiment according to which both band ends are adjustably secured, it is possible to attach the lid hingedly to the casing but the hinges must then be positioned at the centre of one of the longitudinal sides of the lid. Upon closure of the lid the required clamping effect is obtained in that the band will be squeezed between the lid and the casing.

The invention is not limited to the embodiment illustrated and described above but various modifications are possible within the scope of the appended claims. For instance, the lamp may contain any desired number of batteries and the casing and the reflector are by no means defined to a particular shape.

What I claim is:

1. An improved battery-operated lamp comprising
a casing enclosing a glow-lamp holder, a switch, a reflector, and a number of batteries,
means arranged at a back side of said casing for closing off said casing, said means including a lid,
strap means for serving as a means for attaching said lamp to the head of a user, said strap means comprising a belt, band, or the like, and
the improvement comprising means for defining an elongate space in said lid, said space for receiving said strap means therein,
means defining an opening for passage of said strap means therethrough said opening positioned between two opposite surfaces on said casing and on said lid respectively, whereby upon use of said strap means for attaching said lamp to the head of a user a portion thereof may extend out through said opening to form a loop, a first end portion of said strap means being securely fixed to one end of said lid and a second end portion of said strap means being attached to the lid in a manner permitting adjustment of the strap means in the longitudinal direction thereof, and
means for retaining said strap means in its adjusted position by squeezing said second end portion thereof between said lid and said casing.

2. An improved hand lamp as claimed in claim **1,** comprising hook members to removably secure said lid to said casing.

3. An improved battery-operated lamp comprising
a casing enclosing a glow-lamp holder, a swtich, a reflector, and a number of batteries,
means arranged at a back side of said casing for closing off said casing, said means including a lid,
strap means for serving as a means for attaching said lamp to the head of a user, said strap means comprising a belt, band, or the like, and
the improvement comprising means defining an elongate space in said lid for receiving said strap means therein,
means defining an opening at each end of said lid for passage of said strap means therethrough, each such opening positioned between two opposite surfaces on said casing and said lid respectively, whereby upon use of said strap means a portion thereof may extend out through said openings to form a loop of adjustable length, and
means for retaining said strap means in its adjusted position by squeezing the ends of said strap means between said lid and said casing.

4. An improved hand lamp as claimed in claimed **3** comprising hook members to removably secure said lid to said casing.

5. An improved hand lamp as claimed in claim **3,** comprising ridges on each belt end to prevent said belt ends from sliding out through said openings upon loosening of said belt.

6. An improved headlamp is recited in claim **1** further comprising hinges disposed at one end of said lid, said hinges adapted to swingably secure said lid to said casing.

7. An improved headlamp as recited in claim **3** further comprising hinges disposed at one end of said lid, said hinges adapted to swingably secure said lid to said casing.

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