United States Patent [19]

Eriksson

[11] **3,912,919**

[45] **Oct. 14, 1975**

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

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[22] Filed: **May 21, 1974**

[21] Appl. No.: **472,062**

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

[51] **Int. Cl.**²..... **F21V 33/00;** S16G 11/00

[58] **Field of Search**.... 24/115 H, 168, 68 AS, 68 E, 24/72, 31 L; 2/338; 240/6.4 W, 10.63, 11.3, 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, 10 Drawing Figures

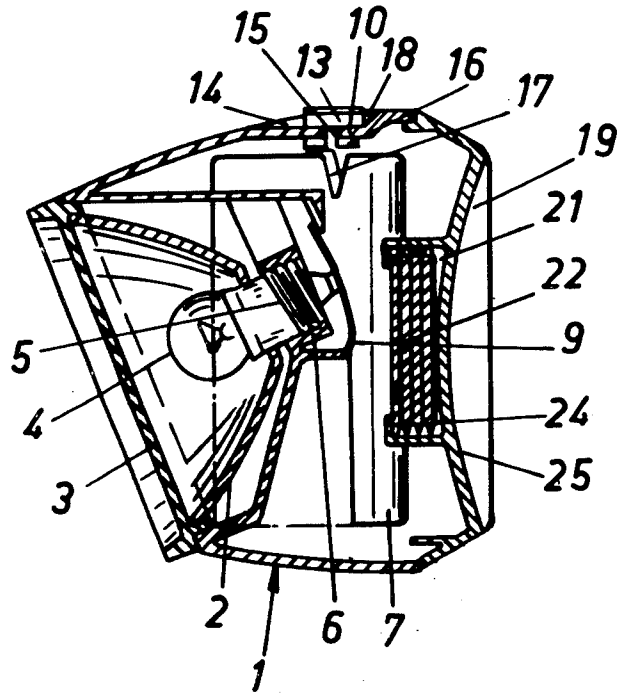


Fig.9

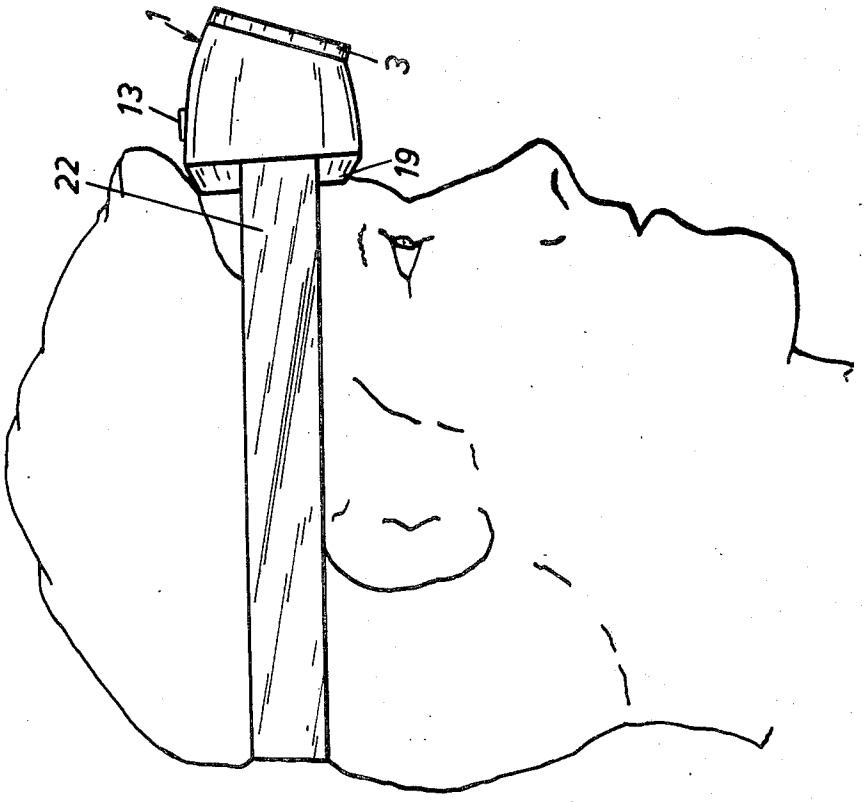


Fig.1

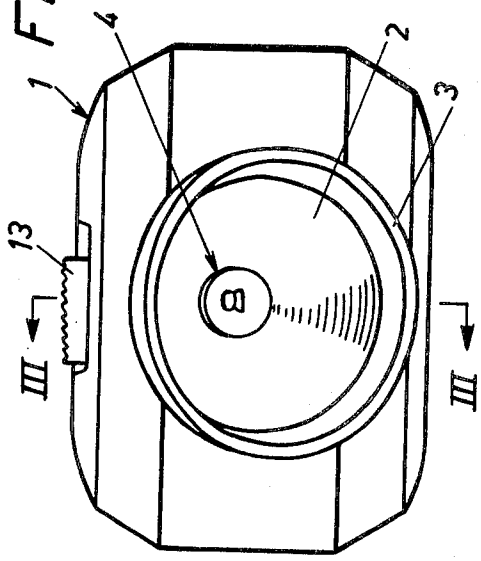
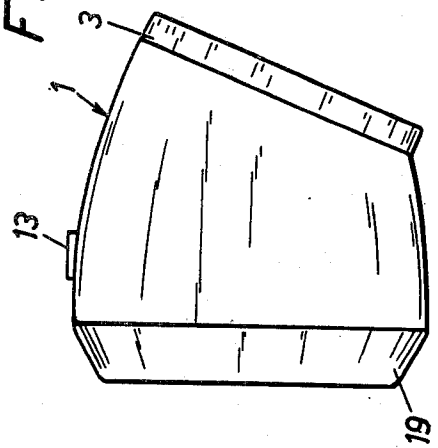


Fig.2



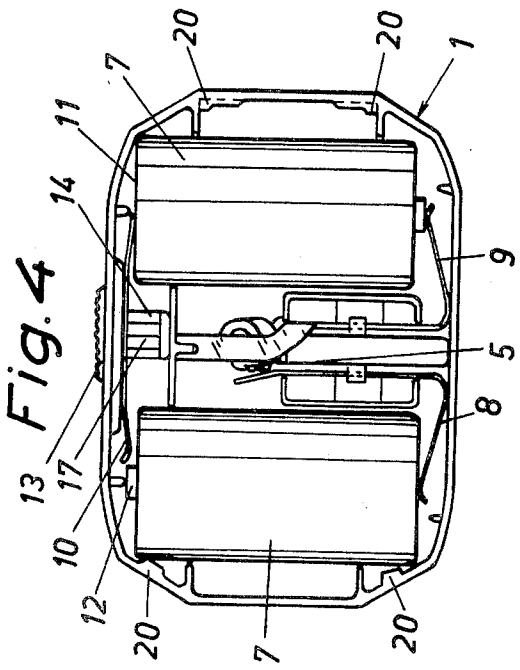


Fig. 4

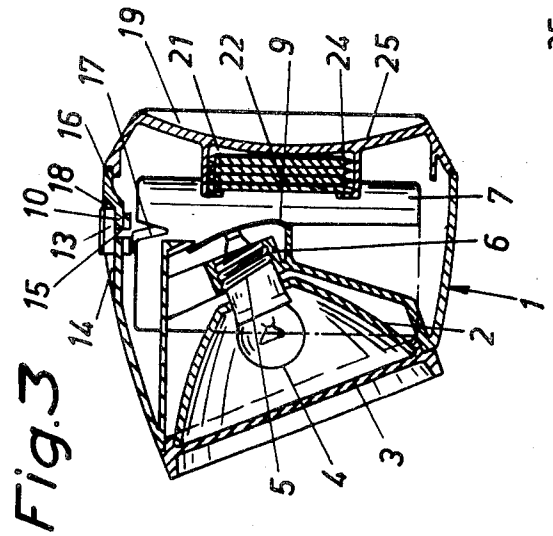


Fig. 3

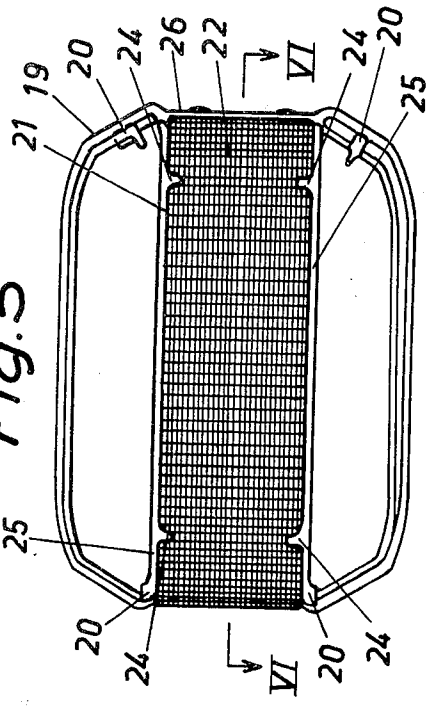


Fig. 5

Fig. 7

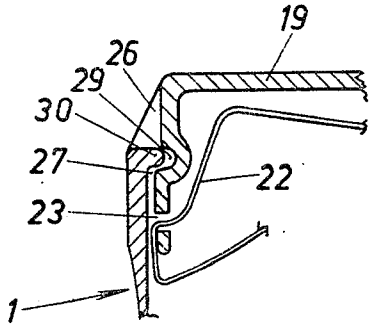


Fig.10

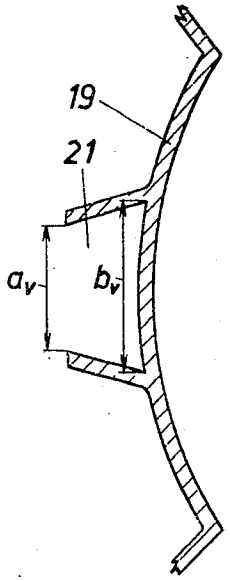


Fig. 8

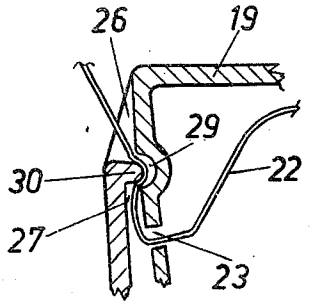
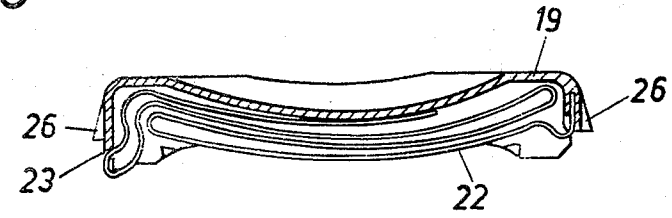


Fig.6



BATTERY-OPERATED HAND LAMP

BACKGROUND OF THE INVENTION

Prior-art hand lamps of the kind which are provided with a space housing a band laid e.g. round the head of the user, are difficult to handle. In known lamps the space intended to house the band is positioned in areas in the lamp that are accessible only with great difficulty and as a result complicated dismounting is necessary to extract the band. In addition, the band is not securely arranged in the space but might fall out of the space alloted to it and become entagled during dismounting. In addition, after use of the prior-art hand lamps of this kind as head lamps, positioned on the forehead of the wearer, extensive work demanding a great deal of patience is required in order to put the band back into the space.

SUMMARY OF THE INVENTION

The present invention provides a lamp which eliminates these drawbacks entirely. More precisely the invention relates to battery-operated hand lamps of the kind comprising as a first unit a casing enclosing a glow-lamp holder, a switch, a reflector, and a number of batteries, and as a second unit a removable lid the interior of which is formed with a space to receive therein a belt, band or the like which is attached to the lid and arranged, after its extraction, to serve as an attachment band to secure the lamp to an object or to the body of the user, e.g. the head. For this purpose the lid of the lamp in accordance with the invention comprises at least two retaining means positioned opposite one another, the facing lateral surfaces of said retaining means diverging towards the bottom of said lid, the shortest distance between two opposite retaining means being less than the width of said strap means such that the latter, when not in use and laid in folds or loops backwards and forwards between said retaining means is maintained in position by said means.

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

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 thereof,

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

FIG. 4 is a rear view of the lamp, the lid having been removed,

FIG. 5 shows the inside of the lid and its groove in accordance with a first embodiment,

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

FIGS. 7 and 8 are partly broken sectional views through the casing at one end of the lid, the view showing the band in its tucked-away and extracted positions, respectively,

FIG. 9 shows the lamp while being used as a head lamp, and

FIG. 10 shows a section through the lid and its groove in accordance with a preferred embodiment.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

As illustrated in the drawings, the lamp in accordance with the invention includes a casing **1** at one side of which, the front side, is arranged a circular reflector **2** having a protective glass **3.** At the centre of the reflector is arranged a glow-lamp the mounting portion **5** 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 as well as from the positive pole of the other one sheet-metal plates **8** and **9,** extend respectively, 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, 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 opposite 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 pointed portion of the pin **14** two tongues **17** project in a direction towards the operating plate **13** to engage the face of the operating plate **13** turned away from the casing 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 construction to ensure simple and reliable attachment and dismounting of the lid **19.** At the centre of the lid as seen in the longitudinal direction thereof, extends a groove **21** formed by walls **25** between the edges of the lid **19,** said groove housing an elastic band **22.** The band **22** which extends in loops forwards and backwards inside the groove **21,** is riveted at its one end to one end of the groove **21** whereas its opposite end is threaded through a slot **23** at the opposite end of the groove **21** so as to lie freely at the bottom of the grooves **21.** Hooks **24** departing from and extending in over the groove **21** maintain the band **22** in position in said groove **21.**

In accordance with a preferred embodiment illustrated in FIG. **10** the band is retained in position by side walls **25** or side wall portions delimiting the groove. These walls or wall portions incline in relation to one

another such that the distance separating the walls increase in the direction towards the interior of the lid, i.e. they diverge towards the lid bottom such that the distance *a* (FIG. **10**) is less than the distance *b* which by a slight amount is less than the width of the band.

When the lamp is to be used e.g. as a head lamp, positioned at the forehead of the wearer, the lid **19** is removed whereupon the band **22** is formed into a loop and laid "behind" the lid **19.** The band **22** will now extend over the short sides of the lid **19** at which sides the lid is provided with recessed portions **26** forming openings **27** and **28** through which the band passes when the lid is replaced on the casing. At one end of the lid **19** where the gap or slot **23** is positioned, this opening **27** is however, somewhat too narrow, whereby the band **22** will be securely clamped between a recess **29** formed in the lid **19** and a clamping edge **30** provided in the casing **1,** as appears from FIG. **8.** Before replacing the lid a sufficient length of the band **22** must be pulled in or extracted through the slot **23** to achieve the desired tension of the band **22** upon securing of the lamp to the head. This method of tightening the band eliminates the need for complicated buckles and similar arrangements. To ensure that the lamp, when used as a head lamp, adheres securely to the forehead of the wearer, the lid has been given a somewhat concave configuration.

After use, the band may again be tucked into the groove of the lid where it is maintained in position by means of the hook members **24** (FIG. **5**) or by the walls of the groove (FIG. **10**) to avoid that the band is in the way when the lid is replaced on the casing.

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.**

What I claim is:

1. A portable self-contained electric lamp capable of being mounted around a person's head or other objects, comprising:

a casing,

a source of electric energy within said casing,

a light emitting assembly including a bulb, a bulb holder and reflector means,

switch means for connecting said bulb with said source of electric energy,

a lid for closing said casing,

a strap having one end thereof fixed to said lid,

wherein said lid further comprises:

retaining means for retaining a strap in a folded condition when not in use and means for adjustably holding said strap when said strap is used to mount said lamp to an object.

2. A lamp as claimed in claim **1** wherein said source of electric energy comprises batteries.

3. A lamp as claimed in claim **1,** wherein said lid has an inner face and an outer face, said retaining means comprises at least two walls attached to said inner face and extending interiorly thereof.

4. A lamp as claimed in claim **3** wherein said walls define an open channel extending along said inner surface, said channel being of a width equal to said strap and said walls being provided with a plurality of hook members projecting towards one another from the outer edge of said walls so as to hold said strap in a folded condition within said channel.

5. A lamp as claimed in claim **3** wherein said at least two walls diverge away from each other toward said inner face thereby defining an open ended channel extending along said inner face wherein the width of the open end of said channel is narrower than the width of said channel adjacent said inner surface, the width of said open end being less than the width of said strap so as to hold said strap in a folded condition within said channel.

6. A lamp as claimed in claim **1** wherein said adjustably holding means further comprises a side wall attached to said lid, recess means in said side wall for mating with said casing and defining openings through which said strap can pass so that when said strap is stored within said retaining means, said recess means mates with said casing, securing said lid thereto and when said strap is in use, said strap passes through said openings and is adjustably held between said casing and said lid.

7. An improved battery-operated light suitable for being fastened around objects comprising:

1. a first unit comprising a casing having a lamp holder containing a bulb, a reflector, batteries mounted within said casing, and a switch for connecting and disconnecting said batteries and said bulb,
2. a second unit comprising a lid adapted to fit onto the casing, said lid having an inner face and an outer face, said inner face having wall means extending away therefrom defining an open channel extending along said inner face,
3. a strap, having two ends, one of the ends being fixed to said lid, the other end being unsecured so as to permit adjustment of said strap,
4. wherein said wall means defining said channel diverge towards the inner face so that the width of the channel along its open end is less than the width where said wall means meet the inner face and the width of said channel along the open end is less than the width of said strap so as to allow said strap to be retained in said channel when not in use,
5. and wherein said lid further comprises means for adjustably holding said strap between said first unit and said second unit when in use around the object to which the light is secured.

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