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[54] A FLASHLIGHT 手電筒

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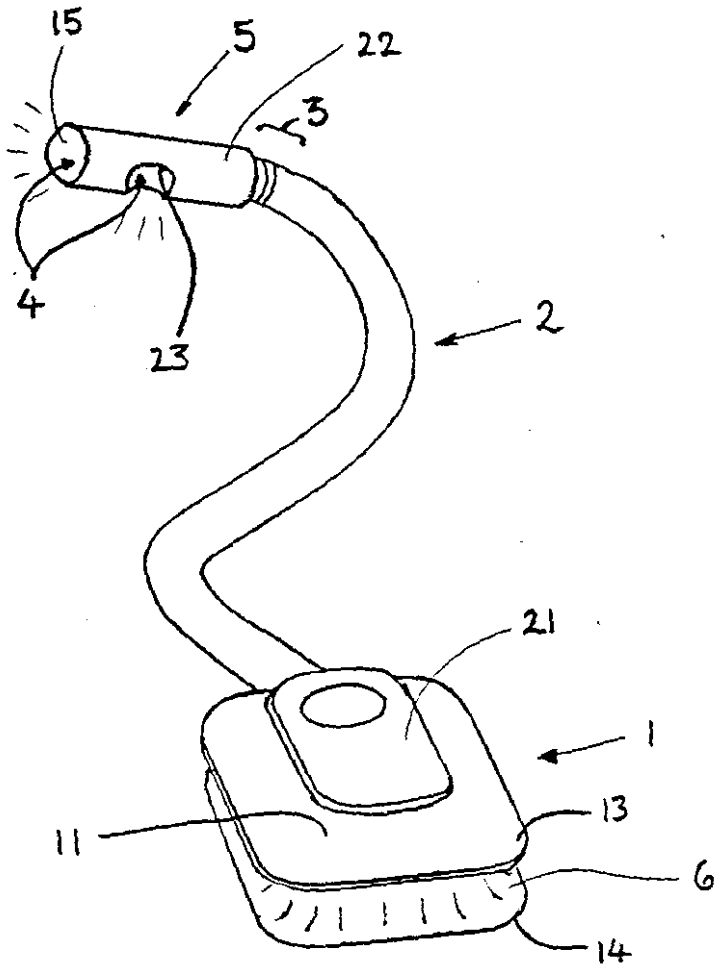


Figure 1

HK 1000672 A

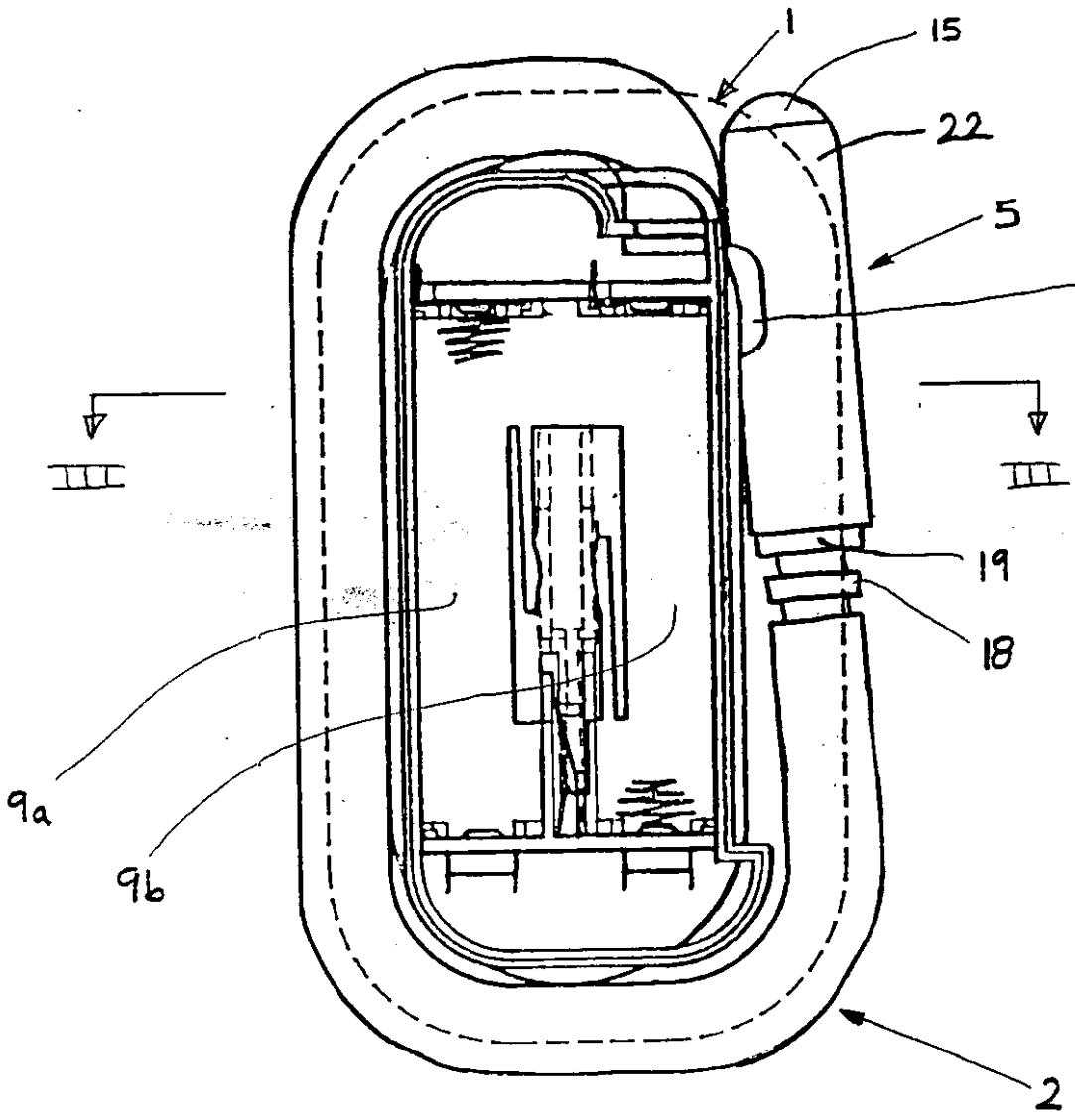


Figure 2

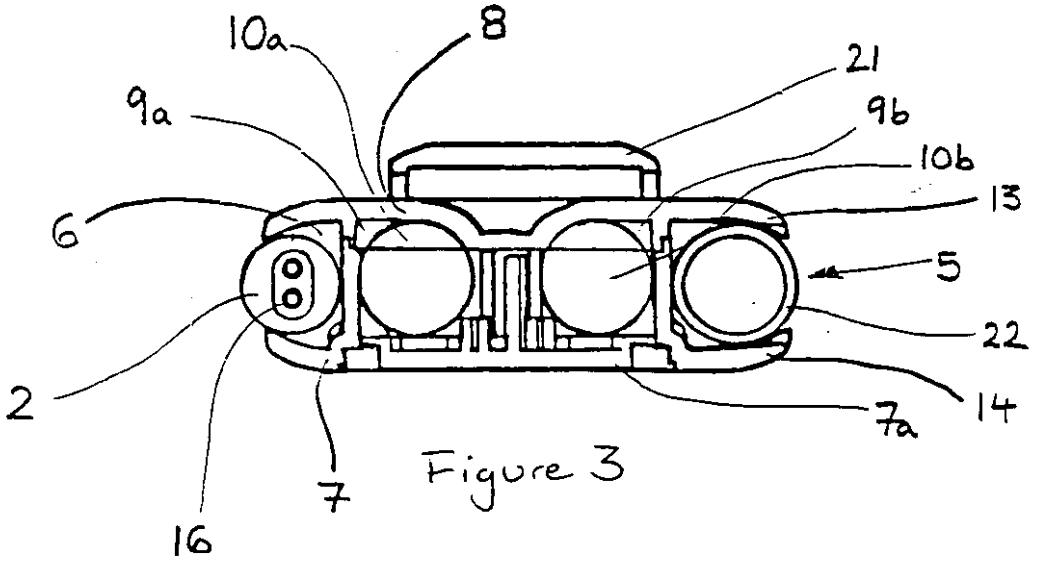
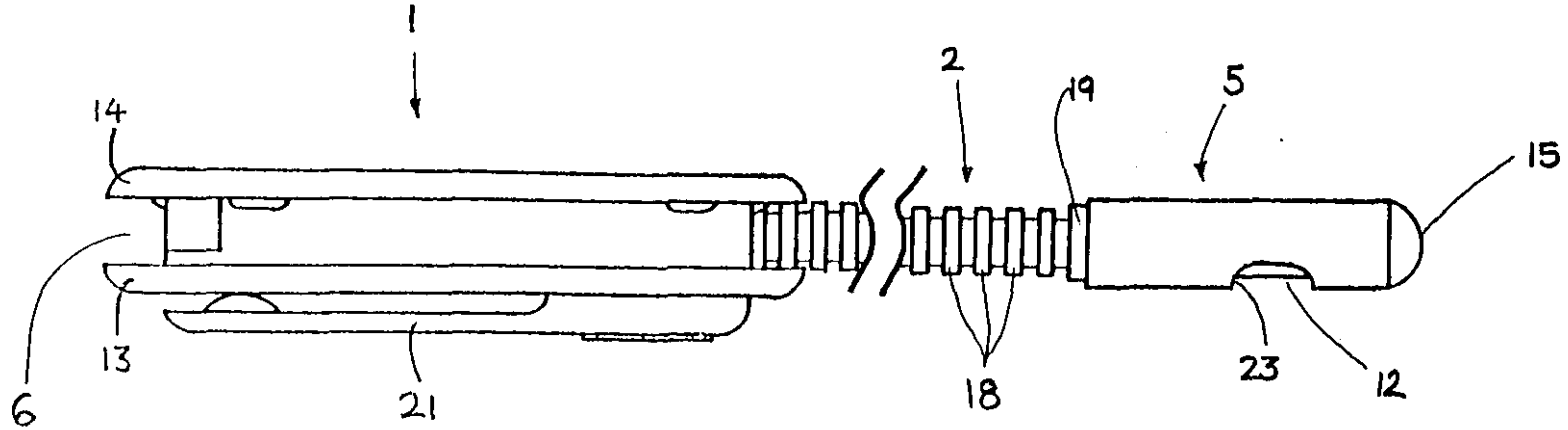


Figure 3

HK 1000672 A

Figure 4A



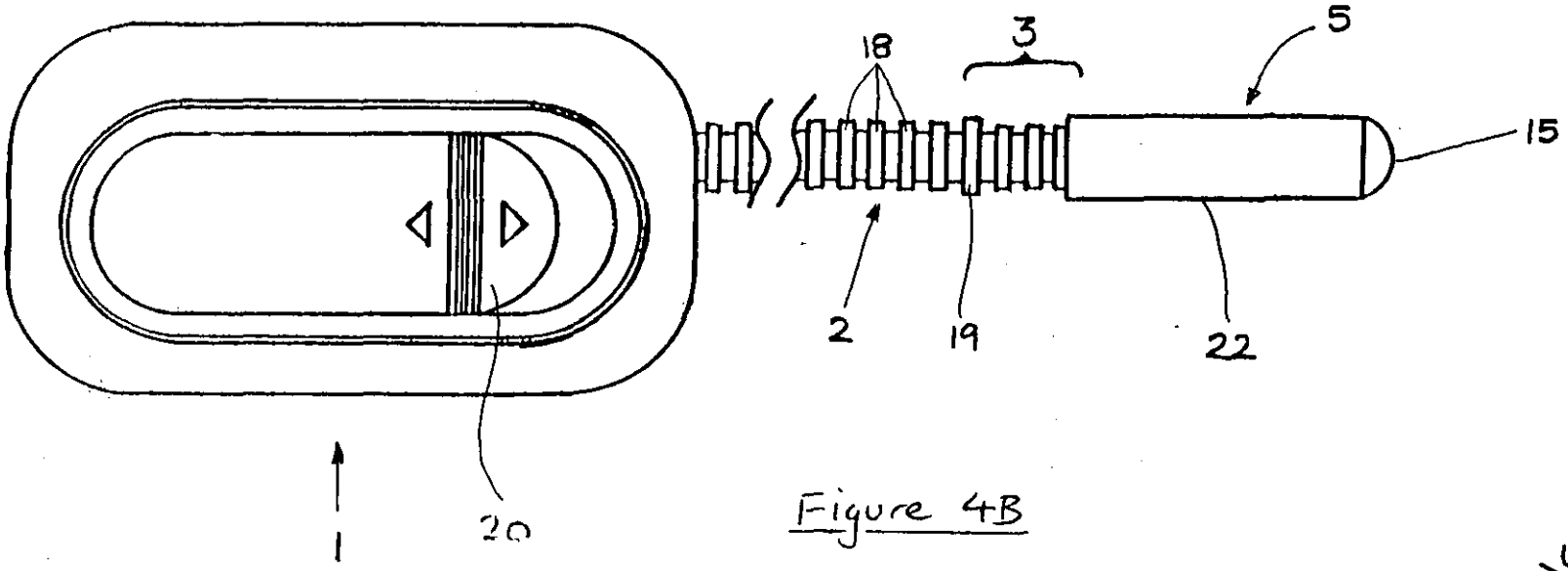


Figure 4B

HK 1000672 A

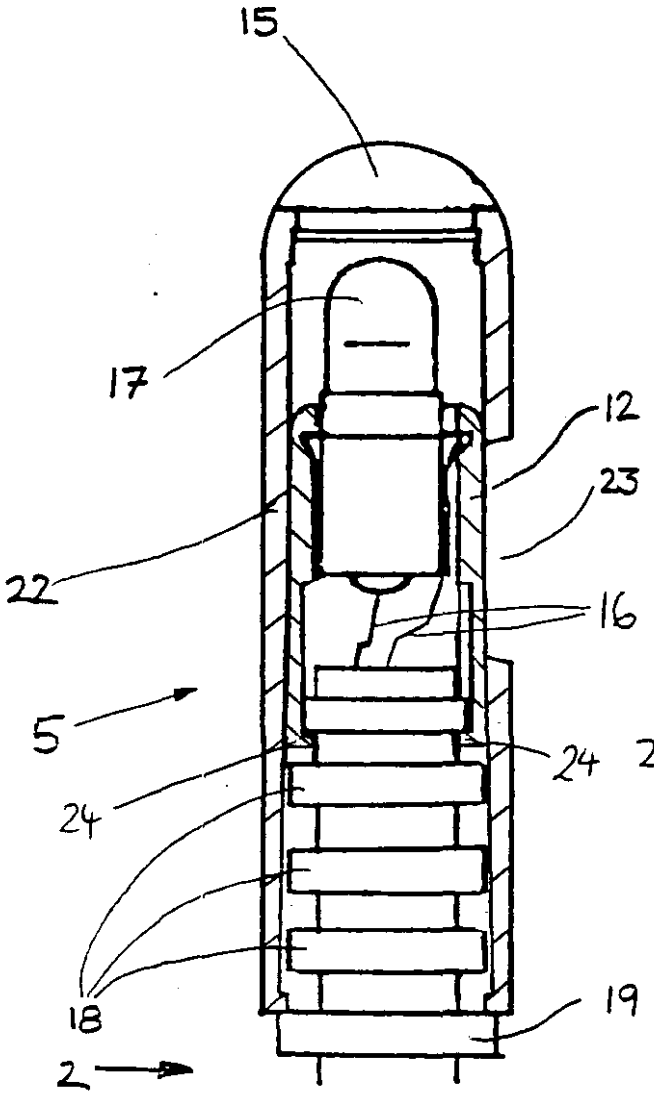


Figure 5

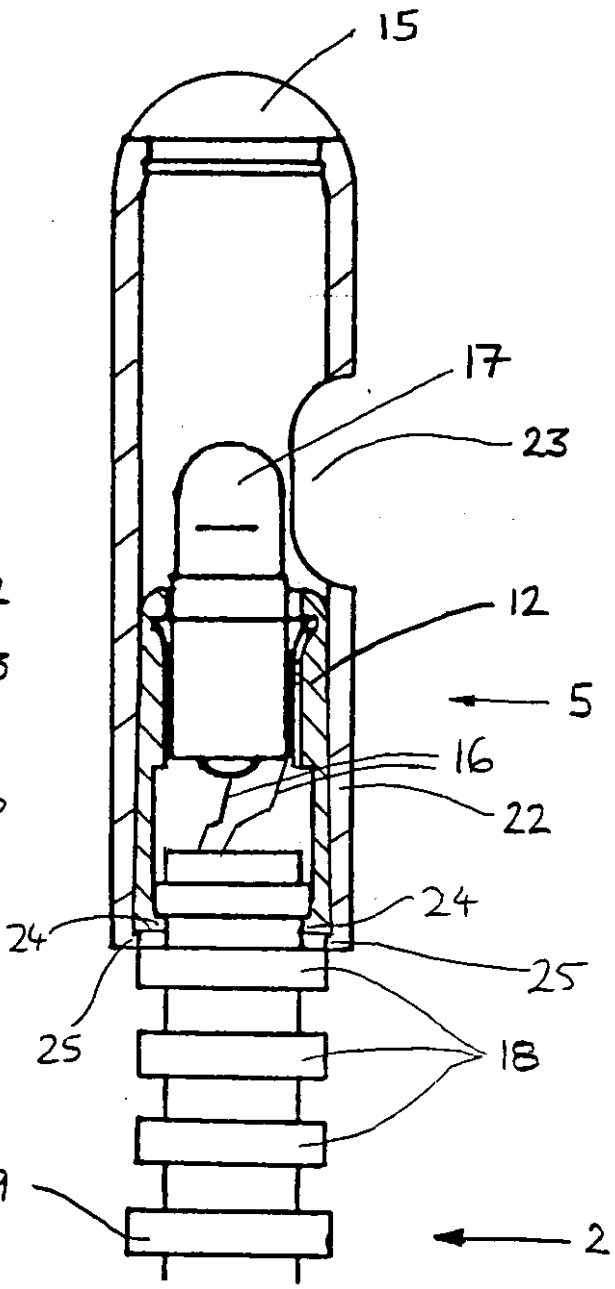


Figure 6

HK 1000672 A

"A Flashlight"

The present invention relates to a flashlight and more particularly to a flashlight which can operate both as a pocket flashlight and as a reading light.

One aspect of the present invention provides a flashlight comprising a flashlight comprising a main body and a flexible arm attached to the main body, the arm carrying a light source and being movable between a first position in which the arm is received by the main body in a stowed position so that the flashlight operates as a conventional flashlight; and a second position in which the arm is removed from the stowed position so that the flashlight operates as a reading light.

In order that the present invention may be more readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a flashlight embodying the present invention in a reading light configuration;

Figure 2 is a plan view of the flashlight of Figure 1 in a flashlight configuration with the periphery of the top surface shown in phantom;

Figure 3 is a cross section on the line III-III of Figure 2 showing a channel formed around a main body of the flashlight for receiving a reading light arm of the flashlight;

HK 1000672 A

Figure 4A is a side view of the flashlight of Figure 1 showing the reading light of the flashlight arm in a fully extended position;

Figure 4B is a plan view of the flashlight of Figure 1 showing the reading light arm of the flashlight in a fully extended position;

Figure 5 is an enlarged view of a portion of the reading light arm carrying the lamp cover, showing the lamp cover in a flashlight position; and

Figure 6 is an enlarged view corresponding to Figure 5 but with the flashlight lamp cover in a reading light position.

Referring to Figure 1 of the drawings, the illustrated flashlight embodying the present invention comprises a main body 1 and a flexible arm 2 attached at a root end thereof to the main body 1. The other end or tip 3 of the arm 2 remote from the main body 1 is provided with a light source 4 which is housed in a substantially cylindrical lamp cover 5 mounted on the arm 2. The arm 2 is flexible and movable into the extended position shown in Figure 1 from a stowed position in which it is received in a channel 6 formed around the periphery of the main body 1.

When the arm 2 is wrapped around the main body 1 as shown in Figure 2, the flashlight is in the so called flashlight configuration. When unwrapped, the flexible arm 2 is in the so called reading light configuration as shown in Figure 1.

HK 1000672 A

The main body 1 is of a two-part construction, comprising a first shell 7 and a second shell 8, and is substantially rectangular in plan view as seen in Figure 2. The first shell 7 is formed with two recesses 9a an 9b for receiving two batteries 10a and 10b. The first and second shells 7 and 8 snap fit together securely to locate the batteries 10a and 10b within the main body 1. A releasable battery cover 7a is provided on the first shell part 7 to allow access to the batteries 10a and 10b when they are in need of replacement.

When the two shells 7 and 8 are fitted together in snap-fit engagement, the main body 1 comprises a central portion 11 about which extends the peripheral channel 6 which is formed by two overhanging lips 13,14 each located on a respective major surface of the main body 1.

The root end of the arm 2 is attached to the central portion 11 of the main body 1 within the channel 6. In the flashlight configuration the arm 2 is wrapped around the main body 1 within the channel 6 as shown in Figure 2, so that the arm 2 is securely received within the channel 6. The length of the arm 2 is substantially equal to the length of the periphery of the channel 6 surrounding the main body 1. Thus, when the arm 2 is wrapped around the main body 1, the entire length of the arm 2 is located in the channel 6 and the lamp cover 5 provided on the arm 2 at the tip 3 of the arm 2 is located parallel to the longitudinal axis of the main body 1, so that the optical axis of a lens 15 provided at a leading end of the lamp cover 5 lies substantially parallel to the longitudinal axis of the main body 1.

HK 1000672 A

The arm 2 is formed as an elongate tube of PVC extrusion with a circular cross section. A pair electrical copper wires 16 are threaded through the arm 2 and electrically connect a cylindrical lampholder 12 fitted with a light bulb 17 which constitutes the light source 4 in the lamp cover 5 at the tip of the arm 2 with the batteries 10a and 10b located in the main body 1 of the flashlight. An annular rim 24 of the lampholder 12 is provided with inwardly facing lugs 24 for engaging the last rib 18 formed at the tip 3 of the arm 2 to prevent the lampholder 12 from disengaging from the arm 2. The outer surface of the arm 2 is formed with a series of equispaced annular ribs 18 and, towards the tip 3 end of the arm 2 carrying the lamp cover 5, a single annular rib 19 which is of slightly larger diameter than the ribs 18. A trailing end of the lamp cover 5 abuts the single rib 19 when the lamp cover 5 is in the flashlight position. The trailing end of the lamp cover 5 tapers and is provided with an inwardly facing annular lip 25 so that the lip 25 abuts the lugs 24 of the lampholder 12 when the lamp cover 5 is moved into the reading light position.

The ribs 18 and the material from which the arm 2 is made provide a good frictional surface to prevent the flashlight slipping out of a hand when the arm 2 is in the flashlight configuration.

The main body 1 incorporates an electrical switch 20 which is slidable between an OFF position and an ON position. The switch 20 is located on one major surface of the flashlight body and occupies a substantial part of the one major surface to enable the switch 20 to be easily operable in the dark. The other major surface of the main body 1 carries a belt clip 21 which allows the main body 1 to be fixed onto a belt for easy carrying.

HK 1000672 A

The lamp cover 5 mounted on the tip 3 of the arm 2 comprises a tubular member in the form of a hollow cylinder 22 which is closed at its leading end by the transparent optical lens 15 and which is formed with an aperture 23 between its ends. When in the flashlight position, the lamp cover 5 abuts the single rib 19 and surrounds the tip 3 of the arm 2. The light bulb 17 is then located between the aperture 23 and the lens 15 such that, when lit, substantially all of the light from the light bulb 17 passes along the longitudinal axis of the lamp cover 5 and through the lens 15. The distance from the lens 15 to the light bulb 17 is adjustable to provide the light beam with an adjustable focus.

The lamp cover 5 can be moved from the flashlight position to the reading light position by sliding the lamp cover 5 away from the rib 19 along the arm 2, so that the light bulb 17 is located opposite the aperture 23. When the lamp cover is in this position, most of the light radiating from the light bulb 17 passes through the aperture 23 and only a small amount of light passes through the lens 15 of the lamp cover 5. The arm 2 is unwrapped from the main body 1 and the main body 1 rested on a supporting surface, such as a desk. The flexible arm 2 can then be oriented into a desired position so that light emanating from the aperture 23 can be used to read directions, a map or the like.

To convert the flashlight from the reading light configuration back to the flashlight configuration, the lamp cover 5 is simply slid back along the arm 2 into abutment with the rib 19 and the arm is wrapped around the main body 1 so that substantially all the light from the light bulb 17 passes through the lens 15 of the lamp cover 5 to provide a beam of light directed substantially parallel to the longitudinal axis of the body 1.

HK 1000672 A

Accordingly, the flashlight can be easily converted from a hand-held flashlight to a portable reading light which can be placed on a surface in a hands free condition to facilitate reading or the like.

HK 1000672 A

CLAIMS:

1. A flashlight comprising a main body and a flexible arm attached to the main body, the arm carrying a light source and being movable between a first position in which the arm is received by the main body in a stowed position so that the flashlight operates as a conventional flashlight; and a second position in which the arm is removed from the stowed position so that the flashlight operates as a reading light.

2. A flashlight according to Claim 1, wherein the main body portion is formed with a peripheral channel for receiving the flexible arm in the stowed position of the arm.

3. A flashlight according to Claim 1 or 2, wherein the light source is provided with a lamp cover which is adjustable to alter the direction from which light radiates from the light source.

4. A flashlight according to Claim 3, wherein the lamp cover comprises a tubular member formed with an optical lens at one end and provided with an aperture between its ends.

5. A flashlight according to Claim 4, wherein the lamp cover is movable between a first position in which the lens is located adjacent the light source such that a substantial proportion of the light radiates from the lamp cover in a direction parallel with the longitudinal axis of the lamp cover and a second position in which the aperture is located adjacent the light source such that a substantial proportion of light radiates from the aperture

HK 1000672 A

in a direction substantially perpendicular to the longitudinal axis of the lamp cover.

6. A flashlight according to Claim 4 or 5, wherein the distance from the lens to the light source is adjustable to provide the light beam with an adjustable focus.

7. A flashlight according to any preceding claim, wherein the flashlight is provided with an on/off switch which occupies a substantial portion of a major surface of the flashlight main body.

8. A flashlight according to any preceding claim, wherein the arm is formed from a flexible plastics material which has good frictional characteristics to enable the flashlight to be held in the hand when the arm is in the stowed position to prevent the flashlight from slipping out of a hand.

9. A flashlight according to any preceding claim, wherein the main body portion is provided with a belt clip for attaching the flashlight to a belt.

10. A flashlight substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

HK 1000672 A

RENEWAL DETAILS

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Title A FLASHLIGHT

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