The invention relates to a pocket torch for general use, consisting of a torch head in which there is arranged a reflector system and optionally a lens system and diaphragm system, and of a torch body which has at its front end facing the torch head in the axis of the torch a filament bulb with filament which projects beyond the torch body, and which furthermore has a compartment for holding batteries or storage batteries, the torch head being displaceable in the axial direction relative to the torch body and hence the reflector system attached to the torch head being displaceable relative to the bulb in the axial direction by means of a sliding connection.

Such a torch is known from US-A-2 647 254. The sliding connection between the torch head and the torch body is formed of a large number of segments which, when pushed one inside the other, take up a lot of space radially and require a conical structural form of the torch head. In the extended state, a conversely stepped, tapering cone is produced, from which all-around beaming of an distress signal light may be possible, but the bulb is not located within this cone. Due to this and to the segment steps, a large proportion of the light is wasted, which is a particular disadvantage in this particular operating state of the torch, in which a distress signal which is visible as widely as possible should be given.

GB-A-1 400 701 describes a pocket torch for directional illumination by means of a reflector and for all-around beaming, in which the torch head is conical. With this torch, however, the bulb must be displaced axially in the interior in order to be brought out of the reflector into the area of all-around beaming, and vice

versa. Such a mechanism is susceptible. In contrast, it is the object to design a torch having a fixed bright bulb in as smooth a housing as possible for keeping in a pocket, so that a searchlight-like light and an all-around light for signalling distress is provided simply by switching over with the entire luminous flux of the bulb each time without optical losses for the desired type of operation.

This object is obtained by the pocket torch according to Claim 1. The filament bulb is a halogen bulb. Halogen bulbs are already known for similar uses. However, the torches thus equipped should be made available especially for distress situations as signalling torches with the full luminous power of the halogen bulb.

According to the invention, the sliding connection consists of a hollow cylindrical tube which is rigidly connected to the hollow cylindrical torch head and the inner wall of the torch body which is designed as a hollow cylinder. The external diameter of the hollow cylindrical tube matches the internal diameter of the torch body, and the sliding connection is designed such that when the torch head is displaced the reflector system is pulled away from the halogen bulb. In so doing that part of the halogen bulb which surrounds the filament is located freely between the torch head and the torch body and is only surrounded by the hollow cylindrical tube, which is transparent at least in the section surrounding the halogen bulb, so that 360° all-around beaming of the torch perpendicular to the longitudinal axis of the torch occurs.

The torch head can advantageously be pulled so far away from the torch body that the entire bulb comes to lie behind the reflector system. To this end, the reflector is not connected to the bulb itself, and has at its apex an opening which permits the displacement of the bulb. When the bulb is switched on, then only the negligible proportion of light which passes into the reflector through the small opening in the reflector emerges forwards. Thus practically all the luminous flux generated by the halogen bulb is available for flashing operation. In order that this luminous flux is not absorbed by the back wall of the reflector or the holder and also the surroundings thereof, these parts are provided with a reflective layer or paint. When the torch head is pushed in, on the other hand, the halogen bulb is located completely within the reflector system, so that the entire luminous flux produced by the bulb is emitted forwards in the direction of the longitudinal axis of the torch for lighting purposes.

For reasons of space, the hollow cylindrical tube is rigidly connected to the torch head, since the torch body has more space for an optimum configuration of the sliding means.

The construction of the pocket torch is at its simplest when both the torch head and the torch body consist of hollow cylinders of the same inner diameters and the hollow cylindrical tube of the sliding connection has an external diameter which matches the internal diameter of the hollow cylinders of the torch head and torch body. Since the hollow cylindrical tube is connected rigidly to the torch head, the tube on the other side only needs to protrude a fairly long way into the torch body. The inner wall of the torch body housing then

forms the rail along which the extended end of the tube of the sliding means slides when the torch head is displaced. This yields a switch-over mechanism which is not susceptible to failure.

In addition, the hollow cylindrical tube has ribbing on the inner wall, in the section which surrounds the halogen bulb upon displacement of the torch head. This produces an intensified spread of the light in all directions perpendicular to the longitudinal axis of the torch. Furthermore, this section may be tinted in order to produce even brighter signals.

Upon displacement of the torch head, advantageously a switch which is connected to the circuitry of the halogen bulb is operated simultaneously and causes the bulb to flash.

The invention is illustrated in greater detail with reference to the following figures.

Figure 1 shows an embodiment in a partial section of the pocket torch according to the invention with non-displaced torch head.

Figure 2 shows the same embodiment in a partial section of the pocket torch according to the invention as in Figure 1, but with the torch head displaced.

The pocket torch 1 illustrated in Figures 1 and 2 has a cylindrical housing made of plastic with a height of approximately 180 mm and a diameter of approximately 40 mm. The housing is comprised of a torch body 2 and a torch head 3 which can both be rotated and displaced in

the axial direction with respect to the torch body 2. Both parts have the same external diameter and are separated optically on the outside by a metal ring 4 connected to the torch head 3. The torch head 3 has on its end close to the torch body 2 a reflector 5, consisting of an elliptical reflector section 6 and a reflector section 7 in the shape of a spherical zone. In front of the reflector 5, in the direction of emanation of light, there is arranged a diaphragm 8 with a changeable diaphragm opening 9 and an aspherical convergent lens 10. The torch body 2 has at its end close to the torch head 3 a lamp holder 11 which is connected to the housing by means of a holding device 12. Behind the lamp holder 11 there is a compartment 13 for holding batteries or storage batteries, which is accessible by means of a cap 14 at the rear end of the torch body 2. Furthermore a magnet 15 in the form of a ring is recessed in the cap 14, which magnet permits attachment of the pocket torch 1 to metal parts.

In order to produce a white, searchlight-like light, the torch head 3 in the pushed-in state lies closely on the torch body 2 with the metal ring 4. In this case, the halogen bulb 16 inserted into the lamp holder 11 is located with its bulb fully within the reflector 5. By rotating the torch head 3, the halogen bulb 16 is switched on by means of a switching mechanism (not shown) and light is emitted through the aspherical convergent lens 10 in the direction of the longitudinal axis of the torch. Furthermore, by rotating the torch head 3 the diaphragm opening 9 of the diaphragm 8 can be altered and thus cones of light of different sizes can be produced.

In order to produce a flashing light which beams perpendicular to the longitudinal axis of the torch, on the other hand, the torch head 3 is pushed forwards in the axial direction. With the aid of the hollow cylindrical tube 17, which is connected rigidly to the head 3, the torch head 3 slides forward on the inner wall of the torch body 2 until the halogen bulb 16 lies completely freely between the torch head 3 and the torch body 2. The halogen bulb 16 is then surrounded only by a section 18 of the hollow cylindrical tube 17 in the lateral direction of the beam. This section 18 is tinted yellow and has ribbing in order to render the flashing light more visible. In order to keep light losses due to absorption as low as possible, both the back of the elliptical reflector section 6 and the holder 11 and the holding device 12 are made reflective. The displacement of the torch head 3 also activates a switch (not shown here) which causes the halogen bulb 16 to flash.

Claims

1. Pocket torch (1) for general use, consisting of a torch head (3) in which there is arranged a reflector system (5) and optionally a lens system (10) and diaphragm system (8), and of a torch body (2) which has at its front end facing the torch head (3) in the axis of the torch (1) a filament bulb (16) with filament which projects beyond the torch body (2), and which furthermore has a compartment (13) for holding batteries or storage batteries, the torch head (3) being displaceable in the axial direction relative to the torch body (2) and hence the reflector system (5) attached to the torch head (3) being displaceable relative to the bulb (16) in the axial direction by means of a sliding connection,
characterised in that
the bulb (16) is a halogen bulb and the sliding connection consists of a hollow cylindrical tube (17) which is rigidly connected to the hollow cylindrical torch head (3) and the inner wall of the torch body (2) which is designed as a hollow cylinder, with the external diameter of the hollow cylindrical tube (17) matching the internal diameter of the torch body (2), and the sliding connection being designed such that when the torch head (3) is displaced the reflector system (5) is pulled away from the halogen bulb (16) and in so doing at least that part of the halogen bulb (16) which surrounds the filament is located freely between the torch head (3) and the torch body (2) and is only surrounded by the hollow cylindrical tube (17), which is transparent at least in the section (18) surrounding the halogen bulb (16), so that 360° all-around beaming of

the torch (16) perpendicular to the longitudinal axis of the torch occurs.

2. Pocket torch according to Claim 1, characterised in that both the torch head (3) and the torch body (2) consist of hollow cylinders with identical internal diameters, and the hollow cylindrical tube (17) of the sliding connection has an external diameter which matches the internal diameter of the hollow cylinder of the torch head (3) and torch body (2).

3. Pocket torch according to Claim 1 and/or 2, characterised in that the torch head (3) and the torch body (2) consist of hollow cylinders with the same external diameter.

4. Pocket torch according to Claim 1, characterised in that the hollow cylindrical tube (17) has ribbing on the inner wall, at least in the section (18) which surrounds the halogen bulb (16) upon displacement of the torch head (3).

5. Pocket torch according to Claim 1, characterised in that a switch is operated simultaneously with the displacement of the torch head (3) and causes the halogen bulb (16) to flash.