

Dec. 18, 1962

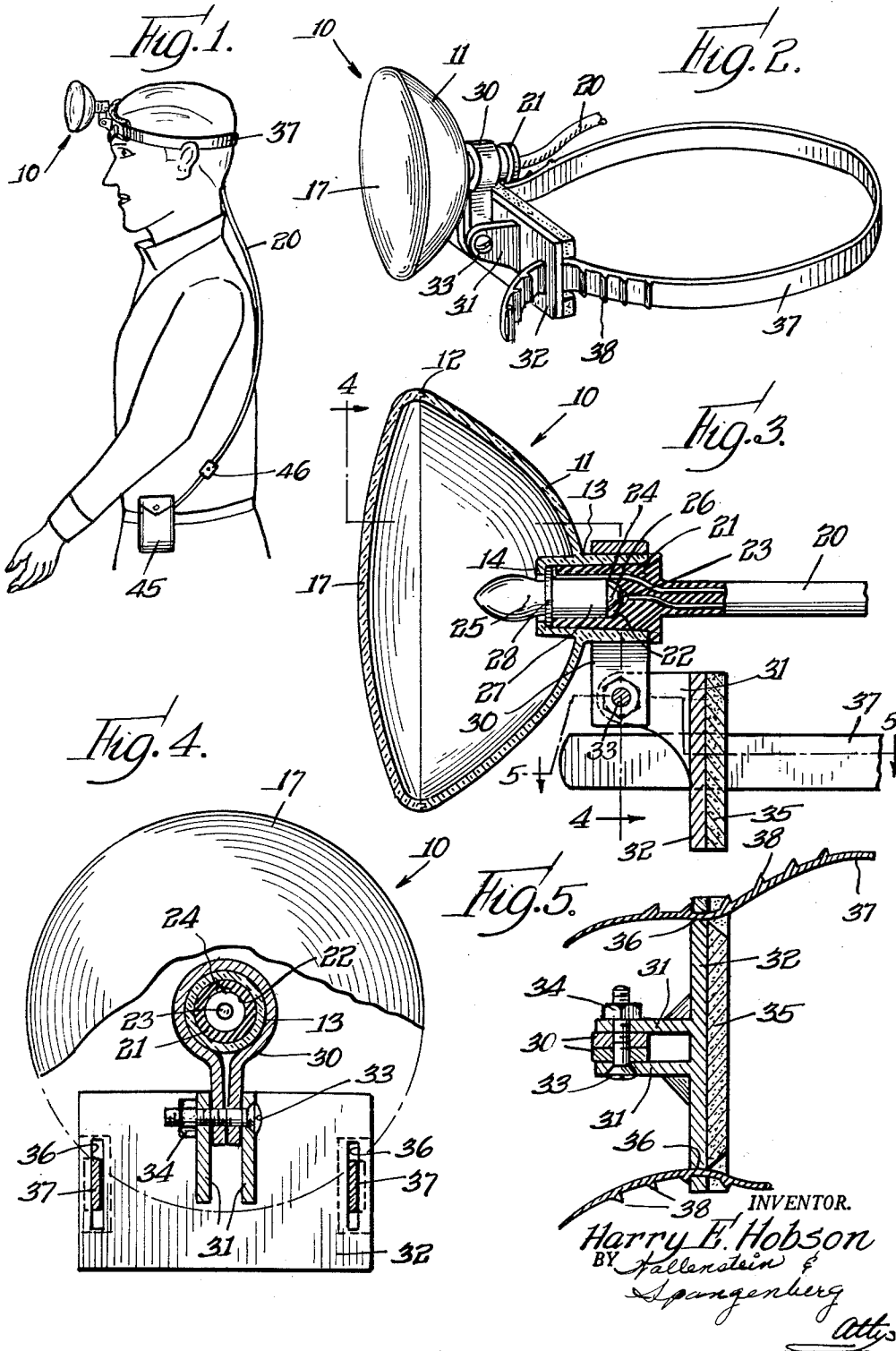
H. E. HOBSON

3,069,538

HEADLIGHT

Filed July 17, 1959

2 Sheets-Sheet 1



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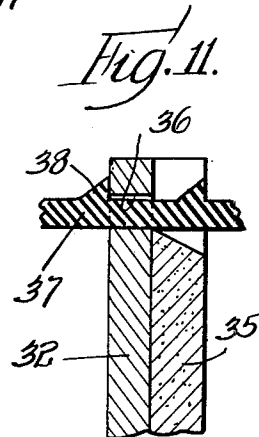
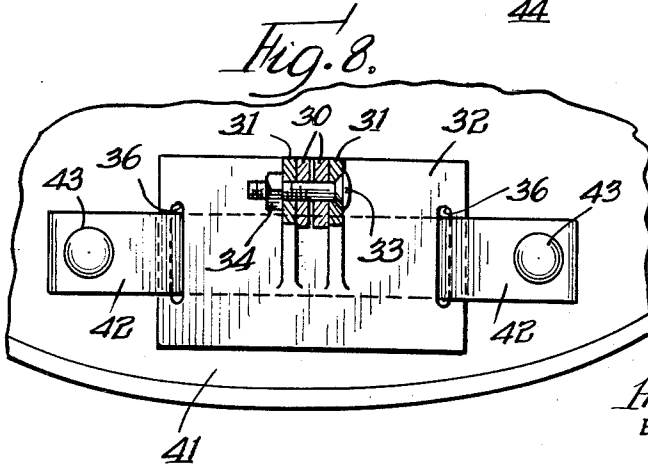
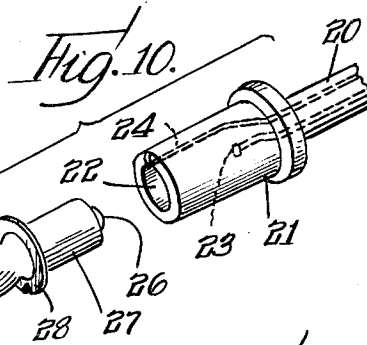
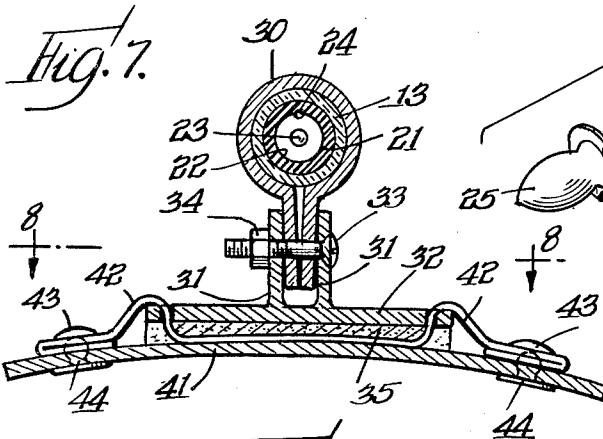
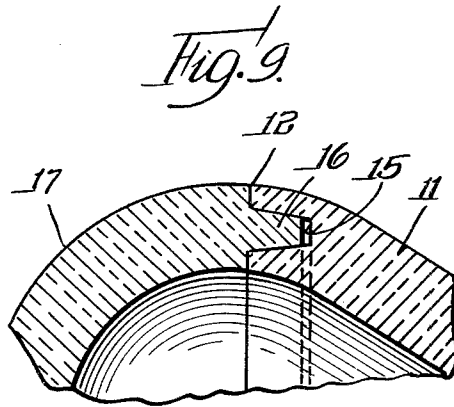
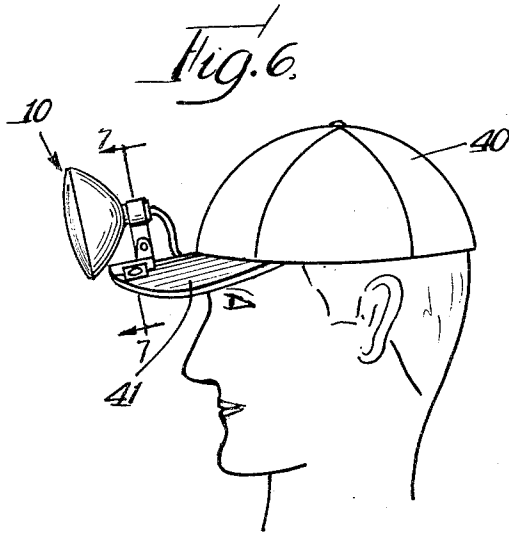
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2 Sheets-Sheet 2



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HEADLIGHT

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6 Claims. (Cl. 240—59)

Th principal object of this invention is to provide an improved headlight adapted to be worn on the head, which is particularly adapted for sporting and industrial uses, which is readily and conveniently applied to the head of the wearer, which is light in weight, which accurately provides a sharp spot but which may be adjusted to produce a flood, which is hermetically sealed to prevent interior deterioration but which allows ready replacement of the bulb, which is simple and rugged in construction and foolproof in operation, and which may be inexpensively manufactured.

Further objects of this invention reside in the details of construction of the headlight and in the cooperative relationships between the component parts thereof.

Other objects and advantages of this invention will become apparent to those skilled in the art upon reference to the accompanying specification, claims and drawings in which:

FIG. 1 is a perspective view of the headlight of this invention illustrated as being mounted on the head of the wearer by means of an adjustable headband.

FIG. 2 is an enlarged perspective view illustrating the headlight and headband shown in FIG. 1.

FIG. 3 is a vertical sectional view through the headlight of FIGS. 1 and 2.

FIG. 4 is a sectional view taken substantially along the line 4—4 of FIG. 3.

FIG. 5 is a sectional view taken substantially along the line 5—5 of FIG. 3.

FIG. 6 is a perspective view illustrating the headlight as applied to the visor of a cap so as to be worn on the head of the wearer.

FIG. 7 is a vertical sectional view taken substantially along the line 7—7 of FIG. 6.

FIG. 8 is a horizontal sectional view taken substantially along the line 8—8 of FIG. 7.

FIG. 9 is an enlarged vertical sectional view showing the manner of hermetically sealing the lens portion to the reflector portion of the reflector unit.

FIG. 10 is an exploded perspective view of the rubber-like plug and bulb utilized in the headlight.

FIG. 11 is an enlarged sectional view showing the manner of adjustably securing the strap or headband to the headlight.

Referring first to FIGS. 1 to 5, the headlight of this invention is generally designated at 10, which is here illustrated as being mounted on the head of the wearer by means of an adjustable headband or strap 37. The headlight 10 includes an integral hollow synthetic plastic reflector which has a substantially parabolic reflecting rear wall 11 terminating in a front edge 12, a sleeve portion 13 centrally arranged in the rear wall 11 and extending forwardly and rearwardly therefrom, and an internal shoulder 14 in the forward end of the sleeve portion 13. The reflector may be molded from any suitable synthetic plastic material such as the polystyrenes, acrylics and the like. The inside surface of the rear wall 11 of the reflector is preferably provided with a reflecting coating such as an aluminum or silver coating or the like which may be applied thereto in any suitable manner. The interior of the sleeve portion 13 of the reflector is tapered as indicated in FIG. 3 from its rear end to the shoulder 14 in its forward end.

As shown more clearly in FIG. 9, the front edge 12 of the reflector 11 is provided with an annular groove 15 which receives an annular tongue 16 of a lens 17.

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Also, the lens 17 is preferably formed from a synthetic plastic material such as the polystyrenes or acrylics and the lens 17 is secured and hermetically sealed to the reflector 11 by a suitable adhesive or cement or by heat sealing or the like.

A two wire cord 20 having rubber-like insulation terminates in a molded rubber-like plug 21, the rubber-like insulation and plug preferably being formed from rubber or neoprene or the like.

The rubber-like plug 21 which is resilient and compressible is provided with a central cavity 22. One of the wires of the cord forms a central contact 23 in the bottom of the cavity and the other of the wires form a side contact 24 extending along the side of the cavity and also preferably over the end of the plug. A prefocused bulb 25 having a base is removably received in the cavity 22 of the plug, the base of the bulb having a center contact 26 which engages the central contact 23 in the cavity and a sleeve contact 27 which engages the side contact 24 in the cavity. In this way, electrical connections from the wires of the cord 20 are readily and positively made with the bulb 25 for illuminating the same. The sleeve contact 27 is provided with a flange 28 which overlies the end of the plug 21, and which also engages the contact 24.

The bulb 25 and its base are first inserted in the cavity 22 of the rubber-like plug 21 to make the aforementioned electrical connections and then the rubber-like plug, which is also preferably externally tapered, is inserted in the tapered sleeve portion 13 of the reflector. When this is done, the rubber-like plug 21 is compressed and, as a result, good electrical contact between the contacts of the bulb and the plug is assured and hermetically sealing of the headlight is also assured. Preferably, the plug 21 is inserted all of the way into the sleeve portion 13 until the flange 28 of the bulb engages the internal shoulder 14 of the sleeve portion. By reason of this, positive maintenance of the lamp in electrical contact in the plug is brought about and the prefocused bulb 25 is accurately located with respect to the substantially parabolic reflecting rear wall 11 of the reflector. When the bulb is in this position, a sharp spot is accurately afforded. If it be desired to have a floodlighting effect as distinguished from a spotlighting effect, the plug 21 may be retracted somewhat to give the desired effect. There is, therefore, provided a headlight construction which is completely hermetically sealed so as to eliminate interior deterioration of the headlight by moisture, fumes or the like, and which prevents explosive atmospheres from coming into contact with the hot burning bulb. At the same time, it is also possible to remove and replace the bulb and to adjustably position the bulb for the desired lighting effect.

A clamping member 30 encompasses the rearwardly extending sleeve portion 13 of the headlight and the ends thereof are received between a pair of ears 31 formed on a supporting member 32, the clamping member and supporting member preferably being formed from a suitable synthetic plastic material such as Bakelite, linear polyethylene or the like. A screw 33 extends through holes in the clamping member 30 and the ears 31 and is drawn tight by a nut 34 so as to clamp the headlight in place and so as to adjustably position the headlight with respect to the supporting member 32. The rear face of the supporting member 32 is preferably provided with a pad 35 which may be made of sponge rubber, foamed plastic or the like suitably cemented thereto. The ends of the supporting member 32 are provided with a pair of slots 36 which are adapted to receive the ends of a strap or headband 37 as shown more clearly in FIGS. 2 to 5 and 11. The headband 37 is preferably formed from a rubber-like material such as rubber or neoprene or the like and it is provided adjacent its ends

with a plurality of projections 38. By stretching the headband 37, the projections 38 may be drawn through the slots 36 so as to adjust the effective length of the headband 37. After the headband has been so adjusted, it remains in proper adjustment by reason of the projections 38 engaging the supporting member 32 adjacent the slots 36. In this way, the headlight may be conveniently mounted on the head of the wearer.

FIGS. 6 to 8 illustrate another manner of mounting the headlight 10 on the head of the wearer. Here, there is provided a cap 40 having a visor 41. A short strap 42 is inserted through the slots 36 in the base member 32 and the ends of the strap are provided with the female parts 43 of snap fasteners which engage male parts 44 of the snap fasteners carried by the visor 41. Thus, in accordance with this arrangement, the headlight may be readily snapped on and off the visor of the cap worn by the wearer.

The two wire cord 20 may extend to batteries carried in a suitable case 45 which, for example, may be carried by the belt of the wearer. Also, the cord 20 may be provided with a suitable switch 46 for turning on and off the bulb in the headlight.

While for purposes of illustration, one basic form of the headlight of this invention has been disclosed, other forms thereof may become apparent to those skilled in the art upon reference to this disclosure and, therefore, this invention is to be limited only by the scope of the appended claims.

I claim as my invention:

1. A headlight adapted to be worn on the head comprising, an integral hollow synthetic plastic reflector having a substantially parabolic reflecting rear wall terminating in a front edge, a sleeve portion centrally arranged in the rear wall and extending forwardly and rearwardly therefrom and providing an opening therethrough, and an internal shoulder in the forward end of the sleeve portion, a synthetic plastic lens hermetically sealed to the front edge of the reflector, a two wire cord having rubber-like insulation terminating in a molded resilient rubber-like plug having a cavity therein, one of the wires of the cord forming a central contact in the bottom of the cavity of the plug and the other of the wires forming a side contact extending along the side of the cavity of the plug, and a bulb including a base removably carried within the cavity of the plug and having a center contact engaging the central contact in the cavity, a sleeve contact engaging the side contact in the cavity, and a flange extending from the sleeve contact and overlying the end of the plug, said resilient rubber-like plug being compressed and removably frictionally received, with the bulb in place therein, in the sleeve portion of the reflector for hermetically sealing the reflector and with the flange of the bulb engaging the internal shoulder for locating the bulb forwardly of the sleeve portion with respect to the substantially parabolic reflecting rear wall of the reflector.

2. A headlight adapted to be worn on the head comprising, a hollow synthetic plastic headlight unit including a synthetic plastic lens portion and a synthetic plastic reflector portion hermetically sealed together and the reflector portion being integrally provided with a synthetic plastic sleeve portion extending from within the unit to the rear thereof and providing an opening through the reflector portion into the unit, an electrical connector for the unit including a molded resilient rubber-like plug having a cavity therein provided with contacts, and a bulb of lesser diameter than the sleeve portion and including a base removably carried within the cavity of the plug and electrically connected to the contacts therein, said resilient rubber-like plug substantially filling the sleeve portion of the headlight unit and being compressed and removably received with the bulb in place therein, in the sleeve portion of the headlight unit from the rear thereof

for hermetically sealing the unit and for locating the bulb within the sealed unit.

3. A headlight adapted to be worn on the head comprising, a hollow sealed synthetic plastic headlight unit including a lens portion and a reflector portion provided with a sleeve portion extending from within the unit to the rear thereof and providing an opening through the reflector portion into the unit, said sleeve portion having an internal shoulder at the inner end thereof, an electrical connector for the unit including a molded resilient rubber-like plug having a cavity therein provided with a central contact and a side contact, and a bulb including a base removably carried within the cavity of the plug and having a center contact engaging the central contact in the cavity, a sleeve contact engaging the side contact in the cavity, and a flange extending from the sleeve contact and overlying the end of the plug, said resilient rubber-like plug being compressed and removably received with the bulb in place therein, in the sleeve portion of the reflector unit with the flange of the bulb engaging the internal shoulder of the sleeve portion for hermetically sealing the unit and for locating the bulb within the sealed unit.

4. A headlight adapted to be worn on the head comprising, an integral hollow synthetic plastic reflector having a substantially parabolic reflecting rear wall terminating in a front edge, and an integral synthetic plastic sleeve portion centrally arranged in the rear wall and extending forwardly and rearwardly therefrom and providing an opening therethrough, a synthetic plastic lens hermetically sealed to the front edge of the reflector, an electrical connector including a resilient rubber-like plug having a cavity therein provided with contacts, and a bulb of lesser diameter than the sleeve portion and including a base removably carried within the cavity of the plug and electrically connected to the contacts therein, said resilient rubber-like plug substantially filling the sleeve portion of the reflector and being compressed and removably received, with the bulb in place therein, in the sleeve portion of the reflector from the rear thereof for hermetically sealing the reflector and for locating the bulb forwardly of the sleeve portion with respect to the substantially parabolic reflecting rear wall of the reflector.

5. A headlight adapted to be worn on the head comprising, an integral hollow synthetic plastic reflector having a substantially parabolic reflecting rear wall terminating in a front edge, a sleeve portion centrally arranged on the rear wall and extending forwardly and rearwardly therefrom and providing an opening therethrough, and an internal shoulder in the forward end of the sleeve portion, a synthetic plastic lens hermetically sealed to the front edge of the reflector, an electrical connector including a molded resilient rubber-like plug having a cavity therein provided with a central contact and a side contact, and a bulb including a base removably carried within the cavity of the plug and having a center contact engaging the central contact in the cavity, a sleeve contact engaging the side contact in the cavity, and a flange extending from the sleeve contact and overlying the end of the plug, said resilient rubber-like plug being compressed and removably received, with the bulb in place therein, in the sleeve portion of the reflector with the flange of the bulb engaging the internal shoulder of the sleeve portion for hermetically sealing the reflector and for locating the bulb forwardly of the sleeve portion with respect to the substantially parabolic reflecting rear wall of the reflector.

6. A headlight adapted to be worn on the head comprising, a hollow synthetic plastic headlight unit including a synthetic plastic lens portion and a synthetic plastic reflector portion hermetically sealed together and the reflector portion being integrally provided with a synthetic plastic sleeve portion extending from the rear thereof, and providing an opening through the reflector portion

into the unit, a bulb of lesser diameter than the sleeve portion, an electrical connector including a molded resilient rubber-like plug removably carrying the bulb and making electrical contact therewith and being compressed and removably received, with the bulb in place therein, within the sleeve portion of the headlight unit from the rear thereof for hermetically sealing the unit and for locating the bulb within the sealed unit, the resilient rubber-like plug substantially completely filling the sleeve portion, a clamping member encompassing the sleeve portion of the headlight unit, a supporting member, means for tightening the clamping member about the rearwardly extending sleeve portion and adjustably pivotally mounting the clamping member on the supporting member, and means for mounting the supporting member on the head of the wearer.

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