

Feb. 16, 1960

K. W. BEACH
VEHICLE LAMP

2,925,487

Filed April 4, 1955

2 Sheets-Sheet 1

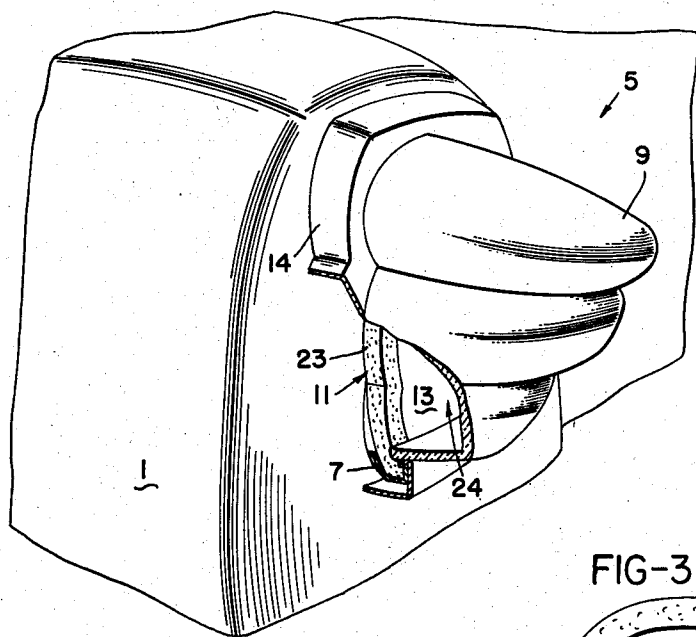


FIG-1

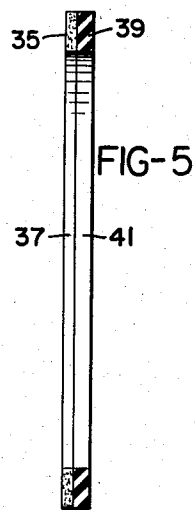


FIG-5

FIG-3

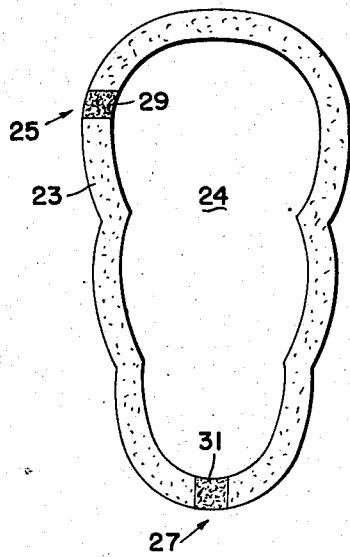


FIG-7

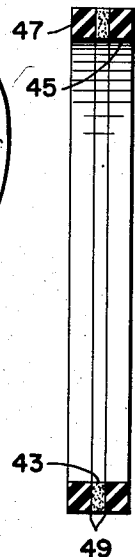
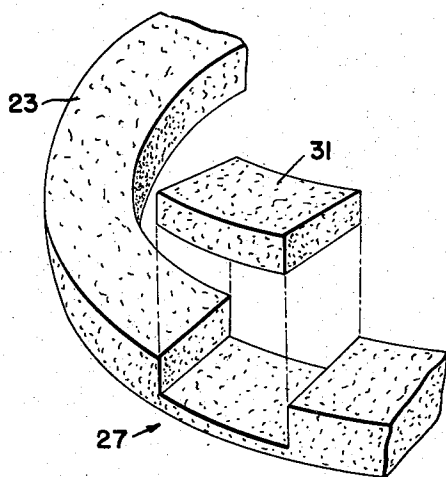


FIG-4



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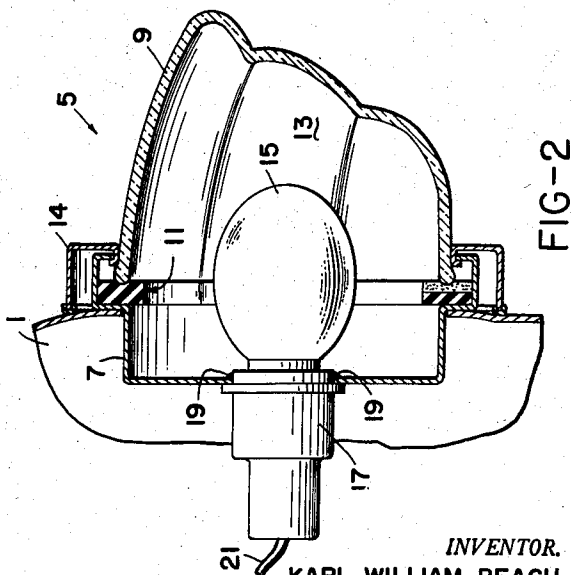
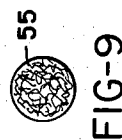
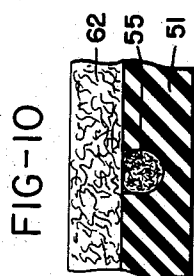
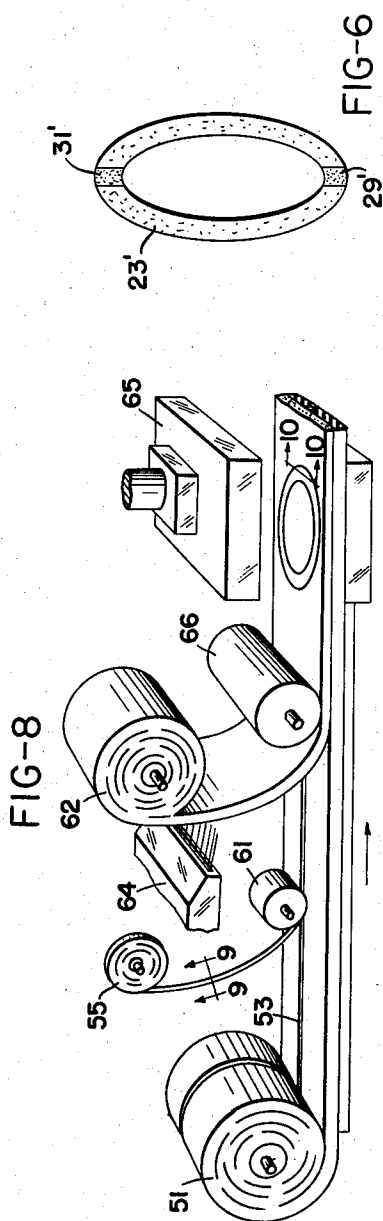
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2 Sheets-Sheet 2



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VEHICLE LAMP

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5 Claims. (Cl. 240—8.3)

My present invention relates to lamps having a closed spacing and is particularly directed to breathing closure means for sump lamps.

The invention is particularly concerned with gasket-sealed lamps and lighting equipment for automobiles. Modern automotive design has resulted in the evolution of many complicated and varying shapes for tail lights, parking lights and fog lights, for example. The complexity of the lens shapes, the fact that the structures are changed almost annually and the great size of many of the lenses has prohibited the production of such lamps in a fully sealed manner such as is customarily employed with head lights of a vehicle.

Accordingly gasket sealing means are generally employed in connection with auxiliary lighting equipment and for tail, parking and fog lights. With gasket sealing the seal while good is not completely airtight and moisture tends to enter the spacing surrounding the bulb of the lamp structure; further with such lamps air, dust and moisture tend to be included in the lamp structure when it is assembled.

The presence of dust and moisture in the lamp structure spacing is particularly deleterious with present high-speed automobiles because the presence of such in the atmosphere of the spacing tends to diminish the light emitted by the lamp; not only does condensation take place in the presence of the dust to form fog within the spacing but moisture condenses on the lens and other inner surfaces of the enclosure; this leads to dispersion of the projected beam and impairment and corrosion of the reflector and other lamp components. The result frequently is that the emitted light transmitted to an operator of a following vehicle, for example, is low in intensity and inadequate.

The difficulties, mechanical and economical, attendant upon the production and use of such lamps are overcome in the practice of my invention by the provision of a novel breathing closure structure which incorporates, in combination, resilient, impervious, substantially non-absorbent gasket means and a moisture-absorbent body.

The moisture-absorbent material is in contact with the gasket means and borders to at least some extent the spacing of the lamp. Most suitably the absorbent material is itself somewhat resilient and accordingly it is pressured with the resilient gasket means and the combination tends to breathe. However the arrangement is such that moisture vapor in the spacing contacts the absorbent material and is wicked out of the lamp structure. This action is facilitated by the fact that the interior of the lamp is normally at a higher temperature than the exterior.

The invention therefore contemplates the provision of a novel breathing closure means for lamp structures.

The invention particularly contemplates the provision of economical lamp structures for automobiles which lamp structures are economical to produce and relatively simple to assemble.

These and other allied objectives of the invention will

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be more fully understood by reference to the following detailed description and accompanying drawings wherein:

Figure 1 is a perspective view of a tail light incorporating the features of this invention;

5 Figure 2 is a sectional view through the tail light of Figure 1;

Figure 3 is an elevational view of the breathing closure of Figures 1 and 2;

10 Figure 4 is an enlarged and exploded perspective view of a portion of the structure of Figure 3;

Figure 5 is a view of a further embodiment of the invention;

Figure 6 is an elevational view of yet another modification of the invention;

15 Figure 7 illustrates a further modification of the invention;

Figure 8 is a perspective view schematically illustrating apparatus useful in the production of the closure of the invention;

20 Figure 9 is a view taken on line 9—9 of Figure 8 and illustrates one form of the absorbent material; and

Figure 10 is a sectional view of the breathing closure taken on line 10—10 of Figure 8.

Referring to the drawings the numeral 1 in Figure 1 indicates the rear fender of an automobile and supported thereon is a tail light or lamp structure 5.

The lamp structure comprises (Figure 2) a body support and reflector 7; a lens 9 which is most suitably of a plastic material although it may be of glass; and a breathing closure assembly 11. The support 7, lens 9, and assembly 11 together form an enclosure and define a spacing 13; clamping ring 14 retains the support, lens and assembly 11 together and is itself secured to the rear fender.

25 Extending from the rear of the lamp structure into the spacing 13 is an electric bulb 15; bulb 15 is supported in a metal base 17 which extends through an opening in the rear of the reflector-support 7. Most suitably base 17 is soldered to reflector-support 7 at 19 in air-tight relation, but such is not necessary in the practice of this invention and the base may be removably mounted with respect to the support if desired by incorporating the breathing means of this invention between the outer side of support 7 and the base 17.

30 Current lead-ins 21 pass into the base 17 in the usual manner and connect with filaments (not shown) in the bulb.

The breathing closure means 11 is shown more clearly in Figure 3; this closure assembly includes a resilient, impervious endless gasket 23 which is preferably of a sponge rubber provided with a central opening 24. The gasket 23 is in this instance slotted through the width and partially through the thickness at several points indicated by the numerals 25 and 27. Inserted into the slots thus formed are sections 29, 31, respectively, of a moisture-absorbent, somewhat resilient material such as felt.

35 The moisture-absorbent sections border the opening 24 seat in the slots, extend to the surface of the gasket, join the peripherally extending portions of the gasket on each side of the slots and are adapted to contact moisture vapor existing in the atmosphere of the lamp. Preferably also at least one section of the moisture absorbent material is positioned at the lower end of the closure 11 to permit absorption of any condensed moisture existing in the base of the lamp structure. The gasket 23 (Figure 6) has the sections 29, 31 so arranged that either may be positioned at the lower end of the closure.

40 The moisture-absorbent material may be in block form as illustrated at 31 in Figure 4; or the material may be in roll form as described hereafter in connection with Figures 8 and 9. In either event the moisture is picked

up and withdrawn from the interior spacing 13 by the absorbent material in the slots of the gasket. Since the temperature normally existing within the lamp is higher than the outside surroundings, and particularly so when the bulb 15 is illuminated, the moisture will be caused to travel through the width of the absorbent body and to be evaporated therefrom through the juncture of the ring 14 and the body support 7 in the case of the structure of Figure 2.

As shown in Figure 5 the moisture-absorbent body may be co-extensive with and superposed on the gasket; thus the body of absorbent material 35 having the opening 37 corresponds in configuration to the gasket 39 having the opening 41.

The moisture-absorbent body may also be compressed between two resilient gaskets as shown in Figure 7 wherein the absorbent body 43 is shown sandwiched between gaskets 45 and 47.

As shown most clearly in Figure 2 the breathing closure is normally compressed between a support body and a lens of glass or plastic. The resilient nature of the gasket insures that the closure will remain close fitting with changes in conditions, as temperature. The tendency of the absorbent body to pick up moisture and to permit passage of air therethrough also tends to increase the pressure acting between the components and to inhibit dust passage to the interior of the spacing 13. Further absorbent bodies such as felt are themselves compressible and resilient to a degree and tend to maintain the tight fitting relation.

In general capillaceous bodies, that is bodies of high capillary potential, are preferred as the absorbent bodies. Such include wool felt, paper felt, mats of fine fibers including cotton and staple glass fibers; further bonding agents which are non-film forming such as colloidal sodium silicate and aluminum silicate as indicated at 49 in Figures 5 and 7 are most useful although other bonding agents may be utilized. However for many applications no bonding agent is required as impervious gaskets such as soft-rubber, or compositions of soft rubber and cork, adhere well to the absorbent materials.

The production of the closure means is economically attained in the manner illustrated in Figure 8. A roll of soft sponge rubber 51 grooved longitudinally at 53 is drawn rightwardly beneath a coil 55 of absorbent material in the cylindrical form indicated in cross-section in Figure 9. A roller 61 pressures the absorbent material into groove 53; if desired a second roll of gasket material 62 may be positioned to provide an upper ply and cement or adhesive may be sprayed from head 64 as the upper ply passes to roller 66. Then the composite passes to the die 65 where the closure means, such as that shown at 23' in Figure 6, is stamped out. It will be appreciated that by selection of width of the sponge, the number and size of the grooves and the cross-section size of the coiled material 55 a wide variety of the closure means may be attained on a continuous basis.

As shown in Figure 10 the absorbent material 55 conforms closely to the gasket means in contour.

With the lamp structure described the breathing closure serves to filter out dust particles while permitting the passage of moisture laden air and while wicking moisture from the enclosure. Under operating conditions of the lamp substantially no moisture will be retained in the spacing 13 and thus the presence of fog in the enclosure and the presence of condensation is inhibited.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and accordingly it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. A lamp unit comprising an enclosure defining a spacing and including a lamp body support, a translucent cover, and breathing sealing means compressed between

the support and cover in contact therewith closing the spacing, said means comprising a resilient non-absorbent gasket having a cut-out portion and an insert in the form of a body section of absorbent material seated in the cut-out portion and conforming in size and shape to the cut-out portion, said absorbent material bordering the spacing and communicating the spacing with the exterior of the enclosure, the insert resting on the gasket and joining contiguous surface portions of the gasket.

2. A lamp unit comprising an enclosure defining a spacing and including a lamp body support, a translucent cover, and breathing sealing means compressed between the support and cover in contact therewith closing the spacing, said means comprising resilient substantially moisture impervious gasket means and a body section of absorbent material, the body section of absorbent material having contact with the atmosphere of the spacing and extending on and across the width of the gasket means flush with the gasket means to the outer side of the enclosure.

3. A lamp structure for vehicles comprising an enclosure defining an interior spacing and including a lamp support, a translucent cover and breathing sealing means compressed between the support and cover in contact therewith, closing the spacing and extending outwardly of the enclosure, said breathing sealing means comprising a resilient endless gasket of substantially non-absorbent, moisture-impervious material provided with a central opening and engaged in sealing relation between said support and cover, said gasket having a cut-out portion extending completely through a peripheral portion of the width thereof and only partially through the thickness thereof, and an insert in said cut-out portion of said gasket in the form of a body section of a moisture-absorbent and pervious material, said insert joining contiguous peripherally extending surface portions of the gasket and extending on the gasket from the opening of the gasket and the spacing of the enclosure to the outer side of the said gasket and said enclosure.

4. A lamp structure for vehicles comprising an enclosure defining an interior spacing and including a lamp support, a translucent cover and breathing sealing means compressed between the support and cover in contact therewith, closing the spacing and extending outwardly of the enclosure, said breathing sealing means comprising a resilient endless planar gasket of substantially moisture-impervious material provided with a central opening and engaged in sealing relation between said support and cover and extending in a substantially vertical plane, said gasket having a cut-out portion extending through a peripheral portion of the width thereof and only partially through the thickness thereof at the lower-most portion of the gasket, and an insert in said cut-out portion of said gasket in the form of a body section of a moisture-absorbent and pervious material, said insert being flush with and joining contiguous peripherally extending surface portions of the gasket and extending on the gasket from the opening of the gasket and the spacing of the enclosure to the outer side of the said gasket and said enclosure.

5. A lamp structure for vehicles comprising an enclosure defining an interior spacing and including a lamp support, a translucent cover and breathing sealing means compressed between the support and cover in contact therewith, closing the spacing and extending outwardly of the enclosure, said breathing sealing means comprising a resilient endless gasket of substantially non-absorbent moisture-impervious material provided with a central opening and engaged in sealing relation between said support and cover, said gasket having a cut-out portion extending completely through a peripheral portion of the width thereof and only partially through the thickness thereof, and an insert in said cut-out portion of said gasket in the form of a body section of rolled shape and of a moisture absorbent and pervious material, said in-

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sert joining contiguous peripherally extending surface portions of the gasket and extending on the gasket from the opening of the gasket and the spacing of the enclosure to the outer side of the said gasket and said enclosure.

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