Nov. 10, 1959 L. H. VERBEEK 2,912,610

ELECTRICAL INCANDESCENT LAMP MOUNTING STRUCTURE

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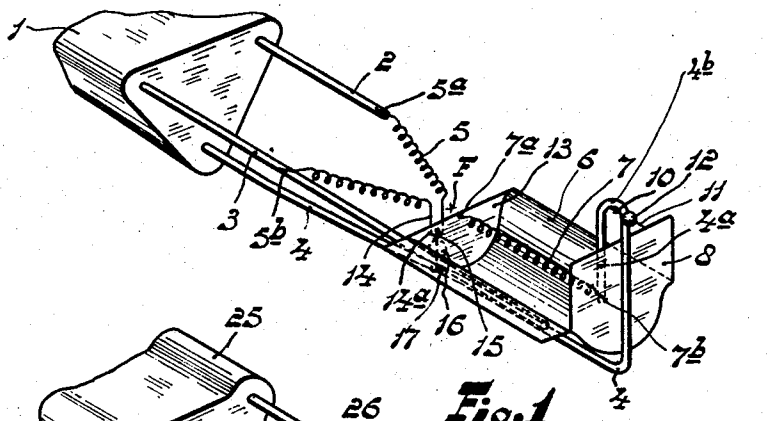

Fig. 1

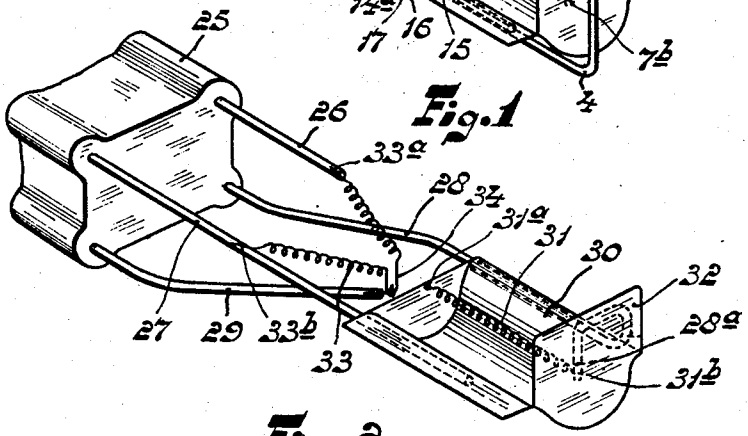

Fig. 2

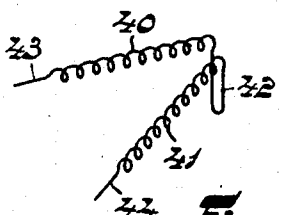

Fig. 3

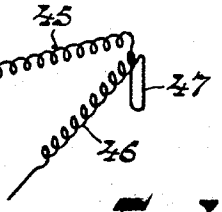

Fig. 4

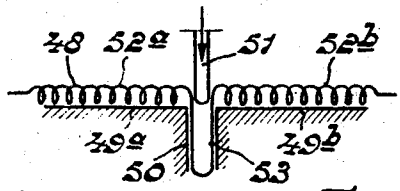

Fig. 5

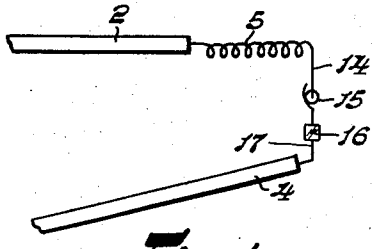

Fig. 1A

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ELECTRICAL INCANDESCENT LAMP MOUNTING STRUCTURE

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2 Claims. (Cl. 313—272)

This invention relates to incandescent lamps and more particularly to lamps for use in an automobile headlight.

An incandescent lamp for car lights is known, which comprises a helically wound main filament that is stretched to form an arc in a manner such that its closed part faces a screen provided in the lamp, which screen partly surrounds an auxiliary filament. These lamps are intended for use in conjunction with a reflector. These reflectors are usually separated from the lamp itself; however, constructions are known, in which the lamp bulb on the rear side has such a shape, usually corresponding to parabola, that this rear side itself subsequent to silver-plating, may serve as a reflector. In order to obtain an optimum light distribution attempts are made to arrange the top of the arc of the main filament and the rear side of the auxiliary filament cooperating with the screen as far as possible in the proximity of the focal spot of the reflector. Thus the top of the arc of the filament is positioned at a very short distance from the rear side of the said screen. In order to reinforce the internal construction of the lamp and, more particularly, to prevent the main filament from sagging, which might affect adversely the light distribution in the beam to be radiated it would be desirable to provide an additional support for the top of the main filament, the ends of which are secured to two pole wires. This is required particularly if such a filament has large dimensions and is, consequently, comparatively heavy. It is found, however, that, owing to the small space available in the proximity of the rear side of the screen, the support for the top of the main filament can be realized only with difficulty. But even if such a supporting structure would be used behind the rear side of the screen, this would have the disadvantage that the filament which is stretched would be capable of shifting in place transversely to the main axis of the lamp relatively to the supporting structure. Such a displacement affects quite adversely the light distribution of the luminous rays omitted by this main filament.

The present invention has for its object to mitigate this disadvantage. Thus, in accordance with the invention the lamp of the aforesaid kind has the feature that the part of the main filament near the screen is shaped in the form of a loop bent out of the plane of the main filament and preferably supported at its top. It is thus possible to provide an additional support for the main filament, the loop being so arranged that the supporting area of the main filament is such that it has sufficient space left for that part of the supporting member. This supporting member may be arranged in different ways in the lamp; it may, for example, be secured by way of a filament, for example, a glass bead to one of the other pole wires. In a preferred embodiment of the invention the top of the main filament is supported by a stay wire sealed in the pinching of the lamp.

Where reference is made herein to a main filament tended to form an arc, this is to be understood to mean that the term "arc" relates to all those embodiments in which the fastening points of the ends of this main filament are farther away from the screen than the top of this filament. The filament, for example, may be V-shaped or U-shaped.

In order to obtain a light distribution from this filament which corresponds to that of a main filament without a loop, in spite of the provision of the loop in the first body and in order to minimize the additional tensions in the material produced by the loop in the filament, it is advisable in accordance with a further embodiment of the invention to provide one helical turn of the loop less than for the adjacent parts of this filament. The main filament may, for example, have a straight wire section bent out to form a loop.

According to a further aspect of the invention, it is advisable, in order to improve the rigidity of the main filament, to provide opposite directions of winding for these parts of the main filament which are separated by the loop.

The present invention is particularly important for those cases in which the main filament for some reason or other has large dimensions, thus being comparatively heavy. This applies for example to the case in which the operational voltages for the filaments in the lamp is 12 v. or more.

The invention will be described more fully with reference to the drawing.

Figs. 1 and 2 show perspectively embodiments of a lamp mount for use in a car lamp, in which the main filament is additionally supported by means of a loop.

Figs. 1A is a partial side elevation view of Fig. 1 disclosing the pole wire, main filament and supporting structure.

Figs. 3 and 4 show on an enlarged scale in a perspective view two embodiments of main filaments of a lamp according to the invention.

Fig. 5 shows a front view of a possible embodiment in which a filament, wound without intermediate piece, is provided with a loop.

In the embodiment shown in Fig. 1, reference numeral **1** designates the pinching or base member of the lamp. Herein are sealed three pole wires **2**, **3** and **4** in a manner which is the usual practice for car lamps. Between the pole wires **2** and **3** the main filament **5** is stretched. It is evident from the figure that the pole wire **3** is longer than the pole wire **2**. The pole wire **3** supports the screen **6**, which partly surrounds the auxiliary filament **7**. The end 7^a of this auxiliary filament is secured to the screen **6**; and the other end 7^b of the filament **7** is secured to the part 4^a of the pole wire **4** curved over the head surface **8** of the screen **6**, so that this pole wire extends below the screen **6**. Between the bend 4^b of the pole wire **4** and the head surface **8** of the screen **6** provision is made of an insulating connection, comprising the metal wire pieces **10** and **11** and the glass bead **12**, operating as an insulator.

For a satisfactory operation of a car lamp comprising a main filament and an auxiliary filament it is desirable that both the part of the filament **5** nearest the screen **6** and the part of the auxiliary filament **7** nearest the rear side **13** of the screen are as close to one another as possible. Thus these parts may be arranged at the smallest possible distance from the focal spot F of the parabolic reflector (not shown), in which this lamp is housed.

If with a view to the operational voltage of the lamp the main filament **5** shows comparatively large dimensions, the main filament **5** is likely to sag after some time, if no special precautions are taken. This phenomenon is, of course, most conspicuous in the proximity of F, i.e. the area farthest away from the connecting areas 5^a and 5^b of the filament **5** to the pole wires **2** and **3**. The present invention overcomes this disadvantage by providing that part of the main filament **5**, which lies in the immediate proximity of the screen **6**, with a loop **14**, which is bent

out of the plane of the main filament 5. At the area of the top 14a of this loop this top is surrounded by an eyelet 15, which is supported by the pole wire 4 by way of the glass bead 16 and the wire piece 17. It is thus ensured that the filament maintains its original position and shape in a considerably more satisfactory manner than would be the case if this measure were not taken. The loop ensures particularly that the filament cannot shift in place transversely to the direction of length of the lamp.

In the embodiment shown in Fig. 2 the lamp pinching 25 comprises three pole wires 26, 27, and 28 and an additional wire 29. The latter wire is not connected to any of the external lamp contacts. The prolongation of the pole wire 27 supports the screen 30, which partly surrounds the auxiliary filament 31; the end 31a of this filament is connected electrically conductively to the screen 30. The end 31b of the filament is secured to the end 28a of the pole wire 28, which, as is evident from the figure, extends partly below the screen 30 and partly around the side of this screen and the end of which lies, in this embodiment, behind the head surface 32 of the screen 30. The main filament 33, the ends 33a and 33b of which are secured to the pole wires 26 and 27, comprises the loop 34, bent out of the plane of this body, this loop being secured to the stay wire 29. This support thus provides that, even in the operational conditions of the lamp, the filament maintains its prescribed position as far as possible.

Fig. 3 shows the main filament on an enlarged scale; from this figure it is evident that because of the helically wound parts 40 and 41 of this filament provision is made of a non-helically wound portion 42. If the parts 40 and 41 were each twice wound helically, it would suffice for the portion 42 to have a single helical turn or it would suffice to provide a part which is not wound helically at all, so that it is constituted by an initially straight wire piece. The filament shown in Fig. 3, of which the parts 40 and 41 exhibit the same direction of winding, may be manufactured by means of a coiling machine, the control-mechanism of which is adjusted in a manner such that alternately helically wound portions (40 and 41) and straight intermediate pieces are formed. These straight intermediate pieces may alternatively serve to form the loop 42 and to operate as the ends 43 and 44, which are to be secured to the pole wires.

In the embodiment shown in Fig. 4 the incandescent wire portions 45 and 46, which are separated by the loop 47, exhibit opposite directions of winding. This embodiment improves the rigidity of the filament to a high extent.

Fig. 5 shows, how an uninterruptedly single- or multiple-wound filament 48 may be provided with a loop in a simple manner. While the filament is supported from the table of which the portions 49a and 49b are separated by a slot 50 this filament may be subjected to the force exerted by a pressure member 51, which is located just over the slot 50 in the table. When this pressure member is lowered the turns over this slot will in accordance with the width of this slot, be urged down through this slot by the pressure member 51, the helical windings being thus caused to open themselves. Thus, a filament is obtained of which the helically wound portions 52a and 52b are separated by a loop 53.

What is claimed is:

1. An incandescent lamp mount and electrical arrangement for an automobile headlight comprising; a base member, a helically wound main filament having opposite ends thereof mounted on said member, a stretched intermediate portion of said main filament extending in the shape of a loop, said loop extending transversely relative to the remainder of said main filament, a supporting means for said loop, an auxiliary filament attached to said base member and disposed adjacent said intermediate portion of the main filament, a screen partially surrounding said auxiliary filament and mounted on said base member, the point of attachment of said supporting means to said loop being in a lower plane than the plane of said auxiliary filament whereby said main and auxiliary filaments are located as close to the focal point of said automobile headlight as possible while preventing shadows in the light pattern projected by said automobile headlight.

2. An incandescent lamp mount and electrical arrangement as claimed in claim 1 wherein said supporting means for said loop is a stay wire sealed to said base member, said loop constituting an interruption in the regular order of succession of the helical windings at the area of the loop, and said loop extending beyond the peripheries of said windings.

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