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3,518,478

ELECTRIC INCANDESCENT LAMP HAVING AN EXTERNAL SCREEN AND
OPERABLE WITH A REFLECTOR

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2 Sheets-Sheet 1

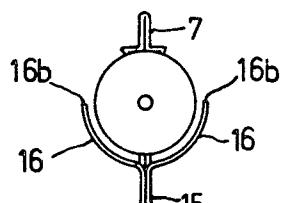


FIG. 2

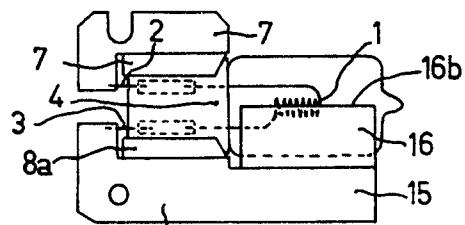


FIG. 1

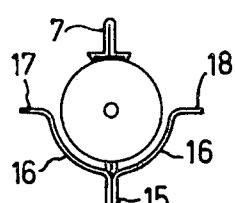


FIG. 4

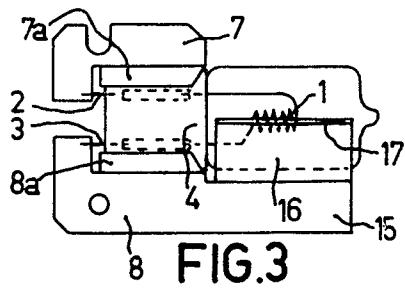


FIG. 3

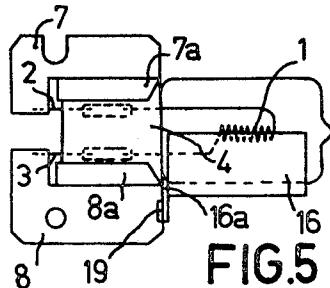


FIG. 5

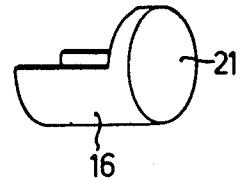


FIG. 6

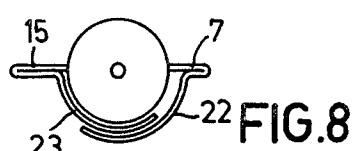


FIG. 8

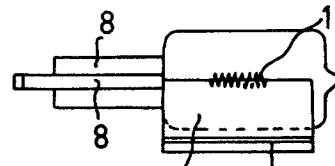


FIG. 9

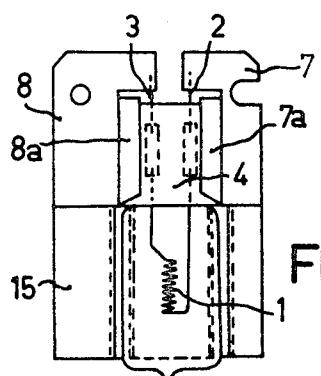


FIG. 7

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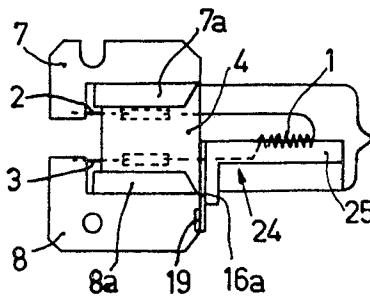


FIG.10

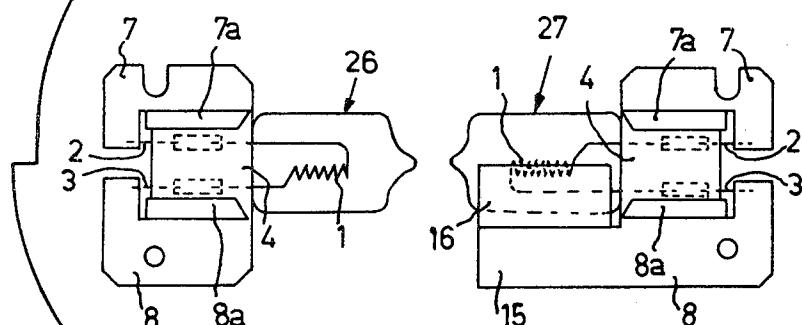


FIG.11

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ELECTRIC INCANDESCENT LAMP HAVING AN EXTERNAL SCREEN AND OPERABLE WITH A REFLECTOR

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U.S. Cl. 313—117

6 Claims

ABSTRACT OF THE DISCLOSURE

An electric incandescent lamp having current-supply members secured to the sealed portion of the bulb with an external screen extending from at least one of the current-supply members, the screen cooperating with the filament in the bulb and the reflector of the lamp for providing a directed beam.

There is known an electric incandescent lamp having a regenerative cycle for use in car headlights, said lamp having not only a bulb but also one or more external current supply members, formed from thin metal sheet and clamped to the lamp seals.

Incandescent lamps having a regenerative cycle, such as the so-called halogen incandescent lamps, have the advantage for car lights that owing to the regenerative cycle in operation the filament may be electrically loaded to a greater extent for the same lifetime than the conventional gas-filled electric incandescent lamps for car lights. This involves that the light output per unit of supplied power with the lamps having a regenerative cycle is higher. Such lamps are therefore extremely suitable for use in the head lights of a car for producing the main or dipped beam. This kind of lamp comprises, in general, a bulb of extremely small dimensions. For this reason and also because of the very high operational temperature of this kind of lamp it is often inconvenient to arrange the screen providing the prescribed light-dark boundary of the dipped beam inside the bulb. A further reason for not arranging such a screen inside the bulb of such a lamp resides in that the regenerative cycle limits the choice of the material for such a screen.

The present invention mitigates these disadvantages with a lamp which is characterized in that one at least of the external current supply members, clamped to the lamp seals, supports a screen which surrounds the lamp bulb over part of its circumference.

This provides the advantage that only at the area of fixation of the external current supply members to the lamp seals, a connection is established between the bulb and the metal parts forming the current supply members and the screen. The current supply members and the screen may, if desired, be made by a simple cutting, folding and bending operation from a single piece of metal strip.

In an advantageous embodiment of the lamp according to the invention having a substantially cylindrical bulb the current supply members are formed by a partly folded, thin metal sheet having, apart from the peripheral parts clamped to the lamp seals, one or more strip-shaped portions curved like part of a cylinder and positioned in the vicinity of the lamp bulb.

In a further embodiment of the invention, in which two external current supply wires are clamped to one and the same lamp seal, each of these members has a strip-shaped part curved like part of a cylinder in the

2

vicinity of the lamp bulb, where these parts overlap each other.

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

FIGS. 1 and 2 are a side elevation and a front view of a first embodiment of the lamp according to the invention.

FIGS. 3 and 4 are a side elevation and a front view of a variant of the lamp according to the invention.

FIG. 5 is a side elevation of a further embodiment of the lamp according to the invention.

FIG. 6 shows perspective the screen which may be employed in the lamp shown in FIG. 5.

FIGS. 7 and 9 are side elevations in two orthogonal planes of a further variant of the lamp according to the invention.

FIG. 8 is a front view of said lamp.

FIG. 10 shows a further embodiment of the lamp according to the invention.

Finally FIG. 11 shows diagrammatically a headlight comprising two lamps, of which the right-hand one has a few features of the present invention.

The embodiment of the lamp according to the invention shown in FIGS. 1 and 2, like in the further embodiments described in this application, is a lamp of the regenerative type. In the axial direction a helical filament 1 is arranged in the bulb of said lamp. The ends of said filament are connected through the foils inside the flat seal 4 to the two external current supply wires 2 and 3. Each of these current supply wires is electrically connected to one of the wing-shaped, external current supply members 7 and 8. These current supply members are folded, thin metal sheets which are secured by means of peripheral parts 7a and 8a respectively to the edge and ridge of the flat seal 4.

In this embodiment the current supply member 3 has an extension 15, which extends along the lamp bulb. Strip-shaped peripheral parts 16 thereof are curved like part of a cylinder and located in the close proximity of the cylindrical periphery of the lamp bulb. The boundaries 16b of the strip-shaped parts 16 determine the light-dark boundary of the light beam produced by the lamp, it being assumed that this lamp is arranged in a conventional manner inside a parabolic headlight.

The embodiment of the lamp according to the invention shown in FIGS. 3 and 4 differs from the embodiment shown in FIGS. 1 and 2 only in that the strip-shaped parts 16, which together surround part of the cylindrical bulb, terminate at the ends in outwardly projecting peripheral parts 17 and 18, which produces a still sharper boundary of the light beam of the filament.

In the embodiment of the lamp according to the invention shown in FIGS. 5 and 6 the external current supply member 7 is identical to the external current supply member 7 of the lamp shown in FIGS. 1 and 2, and in FIGS. 3 and 4 respectively. The screen 16, however, has a slightly different structure. In the latter embodiment the external current supply member 8 and the screen 16 are initially separate structural parts. This provides the advantage that in the manufacture of the lamp, initially only the current supply members 7 and 8 need be fastened to the peripheral parts of the seal 4. Then the lamp is arranged in an aligning apparatus, where the screen 16 is aligned with respect to the filament 1 and hence also to the current supply member 8. After this alignment the screen 16 is secured to the external current supply member 8 by means of the peripheral part 16a with the aid of a quantity of solder 19. This has the advantage that, when the screen 16 is arranged in place, any inaccuracies caused by sealing the filament 1 in the bulb may be compensated for.

As is shown in FIG. 6 is a perspective view the screen

16 may be provided with a further screen part 21 on the side of the lamp remote from the current supply members, which part can retain for the major part the light directly emanating from the filament, when the lamp is employed in a reflector.

In the embodiment of the invention shown in FIGS. 7, 8 and 9 the screen, partly surrounding the cylindrical bulb, also comprises two portions, i.e. 22 and 23. However, in contrast to the embodiments shown in FIGS. 1 and 2 or 3 and 4 respectively said parts are each integral with one of the external current supply members 7 or 8 respectively. From FIG. 8 it will be seen that the screen portions 22 and 23 overlap each other partly.

FIG. 10 shows a screen structure similar to that of FIG. 4; one of the screen portions may be partly out on the upper side, so that the screen portion 24 of FIG. 10 has an edge which is located on a lower level in the normal operational position of the lamp than the upper edge of the screen portion 25. In this manner a so-called asymmetrical beam can be obtained, if the lamp is arranged in the conventional manner in a parabolic reflector.

The lamp according to the invention permits of constructing a headlight comprising furthermore a second lamp. This search light can produce a main beam and a dipped beam. This is illustrated in FIG. 11.

The search light shown in FIG. 11 comprises two lamps 26 and 27, which are arranged in line with each other so that their external current supply members are remote from each other. The reflector of the search light comprises two half-paraboloids of revolution 28 and 29, which are off-set relatively to each other as shown. The dipped beam is obtained by the co-operation of the lamp 27 with the upper half-paraboloid reflector portion 28. The main beam is produced by the co-operation of the lamp 26 with the two half-paraboloid reflector portions 28 and 29. In the latter case the lamp 27 may also be switched on.

The construction shown is particularly interesting because the lamps themselves are of small dimensions and, moreover, the structurally simple, rugged, external current supply members permit the use of simple lamp holders occupying little space.

If desired, the current supply members 8 of the lamps 26 and 27 may be integral with each other or they may be interconnected more or less permanently by means of a metal connecting piece.

What is claimed is:

1. In an electric incandescent lamp having a regenerative cycle and having at least one seal portion of the bulb through which current-supply wires extend from their connection to the filament, the improvement in combination therewith comprising, (a) at least one current-supply member (i) formed as a thin outwardly extending metal sheet, (ii) secured to the seal part, and (iii) connected to a current-supply wire, and (b) an external screen which is secured to said current-supply member and defines a cylindrical sleeve extending along the length of the bulb and approximately half-way around its circumference.

2. A lamp as defined in claim 1 wherein the screen and the current-supply member are integral parts of a single piece of thin sheet metal.

3. A lamp as defined in claim 1 wherein said bulb is cylindrically shaped, and the screen defines a partial cylinder.

4. A lamp as defined in claim 3 comprising two current-supply members secured to opposite sides of the seal with screens secured to the current-supply members and extending in mutually overlapping relationship.

5. A lamp as defined in claim 3 wherein said screen adjacent the bulb extends axially from said current-supply member adjacent the seal thereof.

6. A lamp as defined in claim 3, further comprising a plate part closing one end of the cylindrical screen.

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U.S. Cl. X.R.

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