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(54) INCANDESCENT LIGHT-BULB SOCKET AND AUTOMOTIVE LIGHT PROVIDED WITH SUCH A SOCKET

GLÜHLAMPENFASSUNG UND FAHRZEUGLICHT MIT EINER DERARTIGEN FASSUNG

DOUILLE DE LAMPE À INCANDESCENCE ET LUMIÈRE POUR AUTOMOBILE POURVUE D'UNE TELLE DOUILLE

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Description

TECHNICAL FIELD

[0001] The present invention relates to an incandescent light-bulb socket.

[0002] More in detail, the present invention relates to a long-life incandescent light-bulb socket of the type usually used in manufacturing of front or rear lights of motor vehicles, motorcycles and the like; use to which the following description will explicitly refer however without this implying any loss of generality.

[0003] The present invention further relates to an automotive light comprising such a light-bulb socket.

BACKGROUND ART

[0004] WO 2004/113790 A2 discloses a known incandescent light-bulb socket comprising a supporting platform, electric connection means and a light bulb retaining member.

[0005] As known, front and/or rear car lights are increasingly often recessed into the vehicle body, within seats that are difficult to reach/access from within the body for the usual ordinary maintenance operations, such as for example the light-bulb replacement.

[0006] In order to obviate this drawback, some car manufacturers have resolved to use automotive lights provided with special long-life incandescent light-bulbs (such as for example the incandescent light-bulbs has recently marketed by Philips with the name "HiPerVision") which, the light flow produced being equal, ensure a nominal life time that is almost ten times higher than that of the traditional filament light-bulbs with bayonet coupling. Such a device allows the light maintenance operations to be minimized.

[0007] These special light-bulbs comply with E.C.E. R37 standards, and are provided with a glass bulb having a substantially spherical-ampoule shape which houses the incandescent filament of the light-bulb; and with a plastic-material connection plug which is arranged to close the neck of the glass bulb and is structured so as to be forcedly inserted/fitted within a special coupling seat made in the socket.

[0008] More in detail, the plastic-material plug is provided with a headpiece which houses the terminals of the two rheophores which conduct the electric current up to the filament placed within the glass bulb, and is shaped so as to mesh/penetrate into the coupling seat for arranging the terminals of the two rheophores in direct contact with the electricity supply clamps at the bottom of the coupling seat; and with a peripheral stabilizing flange which overhangly protrudes from the plug body, between the glass bulb neck and the plug headpiece, and is dimensioned so as to close/plug the inlet of the coupling seat of the socket abutting against the body of the latter.

[0009] Incandescent light-bulbs made as described above obviously require special sockets suitably structured for accommodating and firmly retaining the light-bulb plug.

[0010] Long-life incandescent light-bulb sockets which are currently used in front and rear automotive lights consist of a supporting platform made of plastic material and provided with a coupling seat shaped so as to house the long-life incandescent light-bulb plug; two electricity supply clamps which are placed at the bottom of the coupling seat, and are structured so as to clamp the headpiece of the plug while touching the terminals of the two rheophores emerging from the same headpiece; and a series of locking tongues which overhangly extend from the supporting platform, close to the inlet of the coupling seat, and are shaped so as to snappingly close behind the peripheral flange of the plug, so as to indefinitely retain the light-bulb plug in place within the coupling seat.

[0011] Unfortunately, experimental tests have shown that the above-described sockets are not capable of effectively opposing the vibrations of the plug which are oriented parallel to the longitudinal axis of the light-bulb, with detrimental consequences on the light-bulb filament life when the sockets are used in lighting equipment continuously subject to mechanical vibrations.

[0012] In the current long-life incandescent light-bulb sockets, indeed, the locking tongues are integrally made in one piece with the supporting platform, obviously made of plastic material, and the distal ends of the locking tongues are provided with stop teeth which overhangly protrude into the periphery of the coupling seat mouth, while remaining at a slightly higher height from the seat mouth than the nominal thickness of the peripheral plug flange, so as to be capable of placing above the peripheral flange when the peripheral flange abuts against the coupling seat mouth. The stop teeth are furthermore shaped so that the lower lateral flank of the tooth (i.e. the lateral flank directly facing the coupling seat mouth) is locally parallel to and facing the upper/rear face of the peripheral flange which closes the coupling seat mouth, so as to indefinitely prevent the plug from being extracted from the coupling seat without the preliminary manual opening of the locking tongues.

[0013] Unfortunately, the actual thickness of the peripheral plug flange varies according to the light-bulb model, and may also vary among light-bulbs belonging to a same model, therefore it often occurs that, between the lower lateral flank of the stop tooth and the peripheral plug flange, mechanical clearances having a width even larger than one millimetre are formed, with all the drawbacks that this causes on the coupling stability between light-bulb and socket.

[0014] The automotive lights obviously are lighting equipments continuously subject to especially strong mechanical vibrations, thus in automotive lights the actual life of the long-life incandescent light-bulbs is usually shorter than the theoretical one, partially nullifying the advantages related to the use of this particular type of light-bulbs.

DISCLOSURE OF INVENTION

[0015] Aim of the present invention is to provide a long-life incandescent light-bulb socket which is capable of effectively opposing the light-bulb vibrations which cause the early breaking of the filament, while meeting all the restrictions provided by the international standards related to light sources for use in the automotive field.

[0016] In compliance with the above aims, according to present invention according there is provided a long-life incandescent light-bulb socket as specified in Claim 1 and preferably, though not necessarily, in any one of the dependent claims.

[0017] In compliance with the above aims, according to present invention there is furthermore provided an automotive light as specified in Claim 10.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] A non-limiting embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

- Figure 1 is a perspective view of a long-life incandescent light-bulb socket realized according to the teachings of the present invention;
- Figure 2 is a sectional view of the socket shown in Figure 1;
- Figure 3 is an exploded perspective view of the socket shown in Figure 1;
- Figure 4 is an exploded perspective view of an automotive light including a long-life incandescent light-bulb socket and realized according to the teachings of the present invention; whereas
- Figure 5 is an exploded perspective view of a constructional variation of the light-bulb socket shown in Figure 1.

BEST MODE FOR CARRYING OUT THE INVENTION

[0019] With reference to figures 1, 2 and 3, reference number 1 indicates as a whole a light-bulb socket specifically structured for housing/supporting a long-life incandescent light bulb 2, such as for example the incandescent light-bulbs recently marketed by Philips with the name "HiPerVision".

[0020] This special type of light-bulb complies with the E.C.E. R37 standard, and comprises a glass bulb 3 with a substantially spherical-ampoule shape that houses the incandescent filament of the light-bulb (not shown); and a plastic-material connection plug 4 which is arranged to close the neck of glass bulb 3 and is structured so as to be forcedly inserted/fitted within a special coupling seat provided in the light-bulb socket 1, with no rotation of the light bulb 2 about the longitudinal axis L the latter.

[0021] More in detail, plug 4 is provided with a headpiece 4a which houses the terminals of the two rheophores bringing the electric current up to the filament (not shown) placed within the glass bulb 3, and is shaped so as to mesh/penetrate into the coupling seat of light-bulb socket 1, so as to placed the terminals of the two rheophores close to the bottom of the same coupling seat; and with a peripheral stabilizing flange 4b which is approximately annular in shape and overhangly protrudes from the body of plug 4, between the neck of glass bulb 3 and the headpiece 4a, and is dimensioned so as to close/plug the mouth of the coupling seat of light-bulb socket 1 when abutting against the body of the latter.

[0022] With reference to figures 1, 2 and 3, light-bulb socket 1 comprises: a supporting platform 5 which is preferably, though not necessarily, made of plastic material, and is provided with a coupling seat 5a shaped so as to accommodate/house the portion of plug 4 beneath the peripheral flange 4b, i.e. the plug headpiece 4a, without allowing light-bulb 2 to rotate about the longitudinal axis L of the latter; and two electrical connection members 6 which are placed close to the bottom of the coupling seat 5a, and are structured so to be able, when plug 4 is fully inserted into the coupling seat 5a, to clamp and/or only touch the two portions of the plug headpiece 4a where the terminals of the two rheophores are placed, so as to allow the electric energy to pass to the rheophores.

[0023] More in detail, the coupling seat 5a is provided with a preferential plug insertion and extraction axis A, and is shaped so as to accommodate the light-bulb plug 4 only when the longitudinal axis L of the light bulb coincides with axis A and the plug 4 faces and is perfectly aligned with the coupling seat 5a. Obviously, the longitudinal axis L of light-bulb 2 substantially coincides with axis A, when plug 4 is fully inserted into the coupling seat 5a.

[0024] In the example shown, in particular, the supporting platform 5 is preferably, though not necessarily, provided with a preferably, though not necessarily, substantially parallelepiped-shaped, central projecting ledge which overhangly extends upwards, and the coupling seat 5a extends within the projecting ledge from the top of the latter. The mouth of the coupling seat 5a is thus placed on top of the central projecting ledge, substantially coaxial to the reference axis A of the coupling seat 5a.

[0025] The electrical connection members 6, instead, preferably, though not necessarily, consist of two preferably, though not necessarily, metal type, electrically-conductive material sheets 6 which are substantially U-folded so as to form corresponding clamps 6 dimensioned for enclosing the headpiece 4a of plug 4, and are attached to the bottom of the coupling seat 5a so that each of them can enclose and clamp a corresponding portion of headpiece 4a of plug 4, so as to touch the terminal of a corresponding rheophore of light-bulb 2.

[0026] The two clamps 6 are obviously connected to an electric power-supply circuit which is fixed to the supporting platform 5 in a known manner.

[0027] More in detail, with reference to Figure 3, in the example shown each clamp 6 is integrally obtained in one piece with the end of a corresponding electricity sup-

ply strip 7 which is substantially inverted-U folded, and is fixed astride the top edge of the central projecting ledge of the supporting platform 5, so as to have an starting segment adhered to the outer surface of the central ledge of platform 5, and a final segment which extends within the coupling seat 5a and forms the corresponding clamp 6. The starting segment of strip 7, instead, is connected to the electric power-supply circuit fixed in a known manner to the supporting platform 5.

[0028] With reference to Figures 1, 2 and 3, light-bulb socket 1 is further provided with a light-bulb retaining member 8 which is located on the supporting platform 5, substantially at the mouth of the coupling seat 5a, and is structured so as to hook, once plug 4 of light-bulb 2 has been fully inserted into the coupling seat 5a on the supporting platform 5, the peripheral flange 4b of plug 4 for indefinitely preventing the same plug 4 from being subsequently extracted from the coupling seat 5a, unless a direct manual action is exerted on the retaining member 8.

[0029] Unlike the current long-life incandescent light-bulb sockets, however, in light-bulb socket 1 the light-bulb retaining member 8 is also structured so as to continuously exert, on the peripheral flange 4b of plug 4 that engages the coupling seat 5a, an elastic traction force directed towards the bottom of the coupling seat 5a, so as to push/retain plug 4 within the coupling seat 5a.

[0030] In other words, the elastic traction force is adapted to push and then retain the peripheral flange 4b of plug 4 in abutment against the body of the supporting platform 5, at the mouth of the coupling seat 5a.

[0031] More in detail, the light-bulb retaining member 8 comprises a number of flexible locking tongues 9 which overhangly extend from the supporting platform 5, locally remaining substantially orthogonal to the lying plane of the mouth of coupling seat 5a, i.e. locally remaining substantially parallel to the reference axis A of the coupling seat 5a, and are suitably distributed about the mouth of the coupling seat 5a so as to form a sort of projecting crown 8 which surrounds and towers above the mouth of coupling seat 5a.

[0032] With reference to Figures 2 and 3, the distal ends 9a of the tongues 9 are further shaped so as to form, on top of the projecting crown 8, a converging and then diverging bottleneck 8a with a substantially double-frustoconical profile, and are capable of reciprocally moving away so as to allow the converging and then diverging bottleneck 8a to elastically dilate so to let the peripheral flange 4b of plug 4 pass, and then of closing back behind the peripheral flange 4b while leaving the lower portions of the distal ends 9a of the tongues, i.e. the portions of the distal ends 9a forming the diverging portion of the converging and then diverging bottleneck 8a, in abutment against the peripheral edge of the peripheral flange 4b of plug 4.

[0033] Furthermore, the distance/height of the diverging segment of the converging and then diverging bottleneck 8a from the mouth of the underlying coupling seat 5a is shorter than the minimum nominal thickness of the peripheral plug flange 4b, thus the peripheral plug flange 4b moves in abutment against the body of the supporting platform 5 before tongues 9 have returned to the position prior to the insertion of plug 4.

[0034] With reference to Figures 1 and 3, the distal end 9a of at least one of the flexible locking tongues 9 is further provided with at least one auxiliary stop anchor or tooth 10 which is shaped so as to overhangly protrude from the body of tongue 9 towards the interior of the converging and then diverging bottleneck 8a, roughly at the converging segment of the latter, and is shaped so as to dig onto the back/upper face of the peripheral flange 4b of plug 4 which engages the coupling seat 5a, so as to prevent the reciprocal moving away of the distal ends 9a of tongues 9 up to allow the extraction of the peripheral flange 4b from the projecting crown 8.

[0035] With reference to Figures 1, 2 and 3, in the example shown, in particular, the light-bulb retaining member 8 comprises two flexible locking tongues 9 which are arranged on opposite sides of the mouth of coupling seat 5a, parallel to and facing each other, so that the distal ends 9a of the two tongues 9 are arranged on opposite sides of the reference axis A of the coupling seat 5a.

[0036] Preferably, though not necessarily, the distal ends 9a of the two flexible locking tongues 9 are further both provided with two auxiliary stop anchors or teeth 10, which overhangly protrudes from the two lateral flanks of tongue 9 towards the centre of the converging and then diverging bottleneck 8a, thus forming a sort of fork which is located right above the diverging segment of the converging and then diverging bottleneck 8a.

[0037] More in detail, with reference to Figures 2 and 3, each flexible locking tongue 9 preferably, though not necessarily, consists of a metal sheet or strip 9 made of harmonic steel or other elastically deformable metal material, which has a lower segment rigidly trapped within the body of the supporting platform 5; an intermediate flexible segment which overhangly extends from the body of platform 5, beyond the mouth of the coupling seat 5a, thus remaining locally substantially parallel to the reference axis A of the coupling seat 5a; and finally an upper segment which is substantially obtuse-angle V-folded so as to approach and then move away from axis A.

[0038] The upper segments of the metal sheet or strips 9 forming tongues 9 are obviously facing each other so as to delimit the converging and then diverging bottleneck 8a having a substantially double-frustoconical profile and which is located on top of the projecting crown 8.

[0039] Two substantially L-shaped flat tabs are further obtained on top of the upper segment of each metal sheet or strip 9, which tabs overhangly extend from the two lateral flanks of sheet or strip 9 so as to form a sort of fork which extends towards axis A of the coupling seat 5a, thus remaining above the elbow of the substantially V-folded upper segment.

[0040] The substantially L-shaped flat tabs form the two auxiliary stop anchors or teeth 10 which are adapted

to dig onto the rear/upper face of the peripheral flange 4b of the plug 4 that engages the coupling seat 5a, so as to prevent plug 4 from being extracted from the coupling seat 5a.

[0041] With reference to Figure 4, light-bulb socket 1 is especially suitable for being used within a front or rear light 101 for motor vehicles and the like, in order to support a long-life incandescent light-bulb with the features of light-bulb 2.

[0042] More in detail, the automotive light 101 comprises:

- a rigid rear body 102 which is substantially basin-shaped and is structured so as to be recessed within a compartment specifically realized in the front or rear part of the vehicle body, or in any case fixed onto the front or rear part of the vehicle body;
- at least one light source 103 which is located close to the bottom of the rear body 102, and is structured so as to emit light when electricity powered; and finally
- at least one reflecting cup-like body (not shown) which is fitted onto the light source 103 with the concavity facing the mouth of the rear body 102, and has the inner surface structured so as to deviate/direct the light produced by the light source 103 towards the mouth of the rear body 102; and
- a front lenticular half-shell 104 which is at least partially made of a transparent or semi-transparent material, and is arranged to close the mouth of the rear body 102 so to be crossed by the light emitted by the light source 103, and so to emerge outside the vehicle body (not shown).

[0043] More in detail, in the example shown, automotive light 101 is provided with three independent light sources 103 which are fixed on a light-bulb bottom plate 105 which is structured so as to be fixed in a rigid and stable, though easily detachable, manner to the back of the rear body 102, so that the light sources 103 can protrude within the respective reflecting cup-like bodies, via a pass-through opening conveniently made on the bottom of the rear body 102.

[0044] Lenticular body 104 instead is made of a transparent or semi-transparent plastic material, optionally coloured, and is provided with three separate transparent or semi-transparent portions, each facing a respective light source 103.

[0045] With reference to Figure 4, at least one of the three light sources 103 (two in the example shown) consists of a known type a long-life incandescent light-bulb 2, and the light-bulb socket bottom 105 is provided with a corresponding long-life incandescent light-bulb socket 1 which is adapted to support and power the aforesaid long-life incandescent light-bulb 2.

[0046] General operation of the light-bulb socket 1 is easily inferable from the above description, and therefore does not require any further explanations.

[0047] As regards instead the light-bulb retaining member 8, the particular shape of the distal ends 9a of the two or more flexible locking tongues 9 forming the retaining member 8 allows the tongues 9 to exert, on the peripheral plug flange 4b, an axial elastic force that continuously tends to push the peripheral flange 4b towards the mouth of the coupling seat 5a, and the plug headpiece 4a in abutment against the bottom of the coupling seat 5a.

[0048] The lower portions of the distal ends 9a of the flexible locking tongues 9, in fact, are inclined relative to the lying plane of the peripheral plug flange 4b, thus the distal ends 9a of the tongues, when trying to return to the position occupied prior to the insertion of plug 4, tend to push the peripheral plug flange 4b downwards.

[0049] The distance separating the mouth of coupling seat 5a from the lower portions of the distal ends 9a of the flexible locking tongues 9, i.e. the portions of the distal ends 9a forming the diverging segment of the converging and then diverging bottleneck 8a, is however lower than the minimum nominal thickness of the peripheral plug flange 4b, thus the peripheral plug flange 4b moves in abutment against the body of the supporting platform 5 before tongues 9 can return the distal ends 9a to the original position.

[0050] The failed return of the flexible locking tongues 9 to the home position results in an elastic axial force which continuously tends to push the peripheral flange 4b of plug 4 in abutment against the body of the supporting platform 5, and firmly retain plug 4 within the coupling seat 5a, thus preventing it from vibrating within the seat.

[0051] The stop anchors or teeth 10 instead prevent any movement of the distal ends 9a of the tongues 9 relative to the peripheral plug flange 4b, thus preventing the tongues 9 from accidentally opening and the plug 4 from escaping. In fact, in order to open the light-bulb retaining member 8, manually acting on the distal ends 9a of tongues 9 is required in order to force the opening of tongues 9.

[0052] The advantages are related to the particular structure of the light-bulb retaining member 8 are large in number.

[0053] Firstly, the light-bulb socket 1 prevents plug 4 of light-bulb 2 from freely vibrating within the coupling seat 5a, to the advantage of the life of the incandescent filament of light-bulb 2.

[0054] Moreover, the particular shape of the distal ends 9a of the tongues 9 allows the flexible locking tongues 9 to be entirely made of metal material, for example by shearing and press-bending a metal sheet or strip, thus eliminating all the problems related to the high temperatures reached at the surroundings of the glass bulb 3 of light-bulb 2. In fact, metal is able to stand high temperatures much better than plastics.

[0055] Moreover, due to the particular structure of the light-bulb retaining member 8, light-bulb socket 1 is further capable of retaining light-bulb 2 in place also in presence of especially strong, impulsive mechanical strains, such as those generated when the hatch of a car is vig-

orously closed. Accordingly, light-bulb socket 1 is adapted to be used in automotive lights which are to be mounted to car hatches, or in the immediate vicinity thereof.

[0056] Furthermore, light-bulb socket 1 can now accommodate any model of long-life incandescent light-bulb without any drawbacks. In fact, it is sufficient for the thickness of the peripheral plug flange 4b of light-bulb 2 to be shorter than the distance separating the mouth of coupling seat 5a from the diverging section of the converging and then diverging bottleneck 8a to produce an elastic force sufficient for firmly retaining the peripheral plug flange 4b in abutment against the body of the supporting platform 5.

[0057] It is finally apparent that changes and variants can be made to the above-described light-bulb socket 1 without departing from the protective scope of the present invention.

[0058] For example, with reference to Figure 5, in a different embodiment, the flexible locking tongues 9 forming the light-bulb retaining member 8 may be integrally made in one piece with the electricity supply strips 7 which connect clamps 6 to the electric power-supply circuit placed on the supporting platform 5.

Claims

1. Incandescent light-bulb socket (1) of the type structured to support a light-bulb (2) provided with a glass bulb (3) housing the incandescent filament, and a connection plug (4) which is arranged to close the neck of the glass bulb (3), and is structured so as to be fitted in the light-bulb socket; said connection plug (4) being provided with an headpiece (4a) which houses the terminals of the rheophores that conduct the electric current to the filament, and with a peripheral flange (4b) that protrudes from the body of the plug (4), between the neck of the glass bulb (3) and the headpiece (4a) of the plug; the incandescent light-bulb socket (1) comprising:

   - a supporting platform (5) which is provided with a coupling seat (5a) shaped so as to house/ accommodate the portion of the plug (4) beneath the peripheral flange (4b);
   - electric connection means (6) located on the bottom of the coupling seat (5a), and structured so as to contact the plug headpiece (4a) at the terminals of the reophores, when the plug (4) is completely inserted in the coupling seat (5a); and
   - a light-bulb retaining member (8) which is located on the supporting platform (5), substantially at the mouth of the coupling seat (5a), and is structured so as to hook the plug peripheral flange (4b) to prevent the subsequent extraction of the plug (4) from the coupling seat (5a), and so as to continuously exert, on the peripheral flange (4b) of the plug (4) that engages the coupling seat (5a), an elastic traction force directed towards the bottom of the coupling seat (5a);

   the incandescent light-bulb socket (1) being **characterized in that** said light-bulb retaining member (8) comprises two or more flexible locking tongues (9) which are appropriately distributed about the mouth of the coupling seat (5a), and protrude from the supporting platform (5) so as to form a projecting crown (8) that towers above the mouth of the coupling seat (5a); the distal ends (9a) of said tongues (9) being profiled so as to form, on the top of the projecting crown (8), a converging and then diverging bottleneck (8a), and having the possibility of reciprocally moving away so as to allow the bottleneck (8a) to elastically dilate so as to let the plug peripheral flange (4b) pass, and then to close back behind said peripheral flange (4b) for leaving in abutment against the peripheral edge of the plug peripheral flange (4b) the distal ends (9a) lower parts forming the divergent segment of the bottleneck (8a) ; the distal end (9a) of at least one of the flexible locking tongues (9) also being provided with at least one projecting stop tailpiece (10) that protrudes from the tongue body (9) towards the inside of the blottleneck (8a), and is shaped so as to be fitted on the back/upper face of the peripheral flange (4b) of the plug (4) that occupies the coupling seat (5a), so as to prevent the reciprocal moving away of the distal ends (9a) of the tongues (9).

2. Incandescent light-bulb socket according to Claim 1, **characterised in that** the bottleneck (8a) has a substantially double-frustoconical profile.

3. Incandescent light-bulb socket according to Claim 1 or 2, **characterised in that** the distal end (9a) of at least one of the flexible locking tongues (9) is provided with two projecting stop tailpieces (10) which protrude from the two sides of the tongue (9) towards the centre of the throttling.

4. Incandescent light-bulb socket according to any one of the preceding claims, **characterised in that** at least one of the flexible locking tongues (9) is completely made of metal.

5. Incandescent light-bulb socket according to Claim 4, **characterised in that** at least one of the flexible locking tongues (9) is formed by a metal sheet or strip (9) of elastically deformable metal, which has a lower segment rigidly trapped in the body of the supporting platform (5); an intermediate flexible segment that protrudes from the body of the platform (5), beyond the mouth of the coupling seat (5a), remaining locally substantially parallel to the preferential insertion axis of the plug (A); and finally an upper

segment which is substantially obtuse-angle V-folded so as to approach and then move away from said plug preferential insertion axis (A).

6. Incandescent light-bulb socket according to any one of the preceding claims, **characterised in that** said electric connection means (6) comprise a pair of clamps (6) which are dimensioned so as to enclose the plug headpiece (4a), and are fixed on the bottom of the coupling seat (5a) so that each of them can enclose and clamp a corresponding portion of the headpiece (4a) of the plug (4), so as to touch the terminal of a corresponding reophore of the light-bulb (2).

7. Incandescent light-bulb socket according to any of the preceding claims, **characterised in that** the supporting platform (5) is provided with a central projecting ledge, and **in that** the coupling seat (5a) is positioned on the top of said central projecting ledge.

8. Incandescent light-bulb socket according to claims 6 and 7, **characterised in that** each clamp (6) is integral with the end of a corresponding electricity supply metal strip (7) which is substantially inverted-U folded, and is fixed astride the top edge of the central projecting ledge of said supporting platform (5), so as to have an initial segment adhered to the outer surface of the central ledge of the platform (5), and a final segment that extends within the coupling seat (5a) and forms said clamp (6); the initial segment of the electricity supply metal strip (7) being connected to an electric powering circuit attached on the supporting platform (5).

9. Incandescent light-bulb socket according to Claim 6 or 8, **characterised in that** at least one of the flexible locking tongues (9) is integral with a respective clamp (6).

10. Automotive light (101) comprising: a rigid rear body (102) which is substantially basin-shaped, and is structured so as to be fixed to the front or rear part of the vehicle body; at least one light source (103) which is located close to the bottom of said rear body (102), and is structured to emit light when electricity powered; and a front lenticular half-shell (104) which is at least partially made of a transparent or semi-transparent material, and is arranged to close the mouth of the rear body (102) so to be crossed by the light emitted by said at least one light source (103); the automotive light (101) being **characterised by** also comprising at least one incandescent light-bulb socket (1) made according to any one of Claims from 1 to 9.

Patentansprüche

1. Glühlampenfassung (1) der Bauart, die zum Halten einer Glühlampe (2) aufgebaut ist, welche mit einem Glaskolben (3), in welchem der Glühfaden untergebracht ist, und einem Stecksockel (4) versehen ist, der so angeordnet ist, dass er den Hals des Glaskolbens (3) verschließt, und so aufgebaut ist, dass er in die Glühlampenfassung eingesetzt werden kann; wobei der Stecksockel (4) mit einem Kopfstück (4a) versehen ist, in welchem die Anschlüsse der Rheophoren untergebracht sind, die den elektrischen Strom zu dem Faden leiten, sowie mit einem Umfangsflansch (4b), der von dem Körper des Stecksockels (4) zwischen dem Hals des Glaskolbens (3) und dem Kopfstück (4a) des Stecksockels vorspringt; wobei die Glühlampenfassung (1) umfasst:

- eine Stützplattform (5), die mit einem Anschlusssitz (5a) versehen ist, der so geformt ist, dass er den Teil des Stecksockel (4) unterhalb des Umfangsflansches (4b) unterbringen/aufnehmen kann;
- elektrische Anschlussmittel (6), die am Boden des Anschlusssitzes (5a) angeordnet sind und so aufgebaut sind, dass sie das Kopfstück (4a) des Stecksockels an den Anschlüssen der Rheophoren kontaktieren, wenn der Stecksockel (4) vollständig in den Anschlusssitz (5a) eingeführt ist; und
- ein Glühlampenhalteelement (8), welches auf der Stützplattform (5) im Wesentlichen an der Öffnung des Anschlusssitzes (5a) angeordnet ist und so aufgebaut ist, dass es an dem Umfangsflansch (4b) des Stecksockels einhakt, um das spätere Herausziehen des Stecksockels (4) aus dem Anschlusssitz (5a) zu verhindern, und so, dass es auf den Umfangsflansch (4b) des Stecksockels (4), der mit dem Anschlusssitz (5a) in Eingriff ist, eine elastische Zugkraft ausübt, die zum Boden des Anschlusssitzes (5a) gerichtet ist;

wobei die Glühlampenfassung (1) **dadurch gekennzeichnet ist, dass** das Glühlampenhalteelement (8) zwei oder mehr federnde Rastzungen (9) hat, die in geeigneter Weise um die Öffnung des Anschlusssitzes (5a) verteilt sind und von der Stützplattform (5) dergestalt vorspringen, dass sie eine vorspringende Krone (8) bilden, die über die Öffnung des Anschlusssitzes (5a) aufragt; wobei die distalen Enden (9a) der Zungen (9) so profiliert sind, dass sie an der Oberseite der vorspringenden Krone (8) eine konvergierende und anschließend divergierende Verengung (8a) bilden und die Möglichkeit haben, sich wechselweise wegzubewegen, um so die elastische Erweiterung der Verengung

(8a) zu erlauben, um so den Durchtritt des Umfangsflansches (4b) des Stecksockels zu erlauben, und sich anschließend nach dem Umfangsflansch (4b) wieder zu schließen, so dass die Unterteile der distalen Enden (9a), welche den divergierenden Abschnitt der Verengung (8a) bilden, am Umfangsrand des Umfangsflansches (4b) des Stecksockels anliegend verbleiben;
wobei das distale Ende (9a) mindestens einer der federnden Rastzungen (9) auch mit mindestens einem vorspringenden Anschlagendstück (10) versehen ist, welches von dem Zungenkörper (9) zur Innenseite der Verengung (8a) vorspringt und dergestalt geformt ist, dass es an der rückwärtigen/oberen Fläche des Umfangsflansches (4b) des Stecksockels (4), welcher den Anschlusssitz (5a) einnimmt, ansetzt, so dass das wechselseitige Wegbewegen der distalen Enden (9a) der Zungen (9) verhindert wird.

2. Glühlampenfassung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Verengung (8a) ein im Wesentlichen doppelkegelstumpfförmiges Profil hat.

3. Glühlampenfassung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das distale Ende (9a) mindestens einer der federnden Rastzungen (9) mit zwei vorspringenden Anschlagendstücken (10) versehen ist, die von den beiden Seiten der Zunge (9) zur Mitte der Verengung vorspringen.

4. Glühlampenfassung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens eine der federnden Rastzungen (9) vollständig aus Metall hergestellt ist.

5. Glühlampenfassung nach Anspruch 4, **dadurch gekennzeichnet, dass** mindestens eine der federnden Rastzungen (9) aus einer Metallplatte oder einem Metallstreifen (9) aus elastisch verformbaren Metall gebildet ist, der einen unteren Abschnitt, der starr im Körper der Stützplattform (5) eingeschlossen ist, einen mittleren federnden Abschnitt, der aus dem Körper der Plattform (5) über die Öffnung des Anschlusssitzes (5a) hinaus vorspringt und örtlich im Wesentlichen parallel zu der bevorzugten Einführachse des Stecksockels (A) bleibt, und schließlich einen oberen Abschnitt hat, der im Wesentlichen stumpfwinklig V-förmig gefaltet ist, so dass er sich an die bevorzugte Einführachse (A) annähert und anschließend von dieser entfernt.

6. Glühlampenfassung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die elektrischen Anschlussmittel (6) ein Paar Klemmen (6) umfassen, die so dimensioniert sind, dass sie das Kopfstück (4a) des Stecksockels umschließen und am Boden des Anschlusssitzes (5a) dergestalt angebracht sind, dass jede von ihnen einen entsprechenden Teil des Kopfstücks (4a) des Stecksockels (4) umschließen und festklemmen kann, so dass sie den Anschluss einer entsprechenden Rheophore der Glühlampe (2) berührt.

7. Glühlampenfassung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Stützplattform (5) mit einer zentralen vorspringenden Lage versehen ist, und dadurch, dass der Anschlusssitz (5a) auf der Oberseite der zentralen vorspringenden Lage angeordnet ist.

8. Glühlampenfassung nach den Ansprüchen 6 und 7, **dadurch gekennzeichnet, dass** jede Klemme (6) mit dem Ende eines entsprechenden elektrischen Metallanschlussstreifens (7) einstückig ist, der im Wesentlichen in Form eines umgekehrten U gefaltet ist und quer über den oberen Rand der zentralen vorspringenden Schicht der Stützplattform (5) befestigt ist, so dass er einen Anfangsabschnitt, der an der äußeren Oberfläche der zentralen Lage der Plattform (5) angebracht ist, und einen Endabschnitt, der innerhalb des Anschlusssitzes (5a) verläuft und die Klemme (6) bildet, hat; wobei der Anfangsabschnitt des elektrischen Metallanschlussstreifens (7) mit einer elektrischen Leistungsversorgungsschaltung verbunden ist, die an der Plattform (5) befestigt ist.

9. Glühlampenfassung nach Anspruch 6 oder 8, **dadurch gekennzeichnet, dass** mindestens eine der federnden Rastzungen (9) mit einer jeweiligen Klemme (6) einstückig ist.

10. Fahrzeuglicht (101), enthaltend: einen starren hinteren Körper (102), der im Wesentlichen schalenförmig ist und so aufgebaut ist, dass er an dem vorderen oder hinteren Teil der Fahrzeugkarosserie befestigt wird; mindestens eine Lichtquelle (103), die nahe dem Boden des hinteren Körpers (102) angeordnet ist und so aufgebaut ist, dass sie Licht abstrahlt, wenn sie mit Strom versorgt wird; und eine vordere linsenförmige Halbschale (104), die zumindest teilweise aus einem transparenten oder halb transparenten Material hergestellt ist und so ausgelegt ist, dass sie die Öffnung des hinteren Körpers (102) verschließt, so dass sie von dem von der mindestens einen Lichtquelle (103) abgestrahlten Licht durchquert wird; welches Fahrzeuglicht (101) **dadurch gekennzeichnet ist, dass** es ferner mindestens eine Glühlampenfassung (1) aufweist, die nach einem der Ansprüche von 1 bis 9 hergestellt ist.

Revendications

1. Douille d'ampoule lumineuse incandescente (1) du type structuré pour supporter une ampoule lumineuse (2) pourvue d'une ampoule en verre (3) logeant le filament incandescent, et un culot de connexion (4) qui est agencé pour fermer le col de l'ampoule en verre (3), et est structuré afin d'être ajusté dans la douille d'ampoule lumineuse ; ledit culot de connexion (4) étant pourvu d'une pièce de tête (4a) qui loge les bornes des rhéophores qui conduisent le courant électrique vers le filament, et d'une bride périphérique (4b) qui fait saillie à partir du corps du culot (4), entre le col de l'ampoule en verre (3) et la pièce de tête (4a) du culot ; la douille d'ampoule lumineuse incandescente (1) comprenant :

- une plateforme de support (5) qui est pourvue d'un siège d'accouplement (5a) formé afin de loger/contenir la partie du culot (4) en dessous de la bride périphérique (4b) ;
- des moyens de connexion électrique (6) situés sur le fond du siège d'accouplement (5a), et structurés afin d'entrer en contact avec la pièce de tête de culot (4a) aux bornes des rhéophores, lorsque le culot (4) est complètement inséré dans le siège d'accouplement (5a) ; et
- un élément de retenue d'ampoule lumineuse (8) qui est situé sur la plateforme de support (5), sensiblement à l'embouchure du siège d'accouplement (5a), et est structuré afin d'accrocher le culot bride périphérique (4b) pour empêcher l'extraction subséquente du culot (4) à partir du siège d'accouplement (5a), et afin d'exercer en continu, sur la bride périphérique (4b) du culot (4) qui entre en prise avec le siège d'accouplement (5a), une force de traction élastique dirigée vers le fond du siège d'accouplement (5a) ;

la douille d'ampoule lumineuse incandescente (1) étant **caractérisée en ce que** ledit élément de retenue d'ampoule lumineuse (8) comprend deux, ou plus, languettes de verrouillage flexibles (9) qui sont, de façon appropriée, distribuées autour de l'embouchure du siège d'accouplement (5a), et font saillie à partir de la plateforme de support (5) afin de former une couronne saillante (8) qui s'élève au-dessus de l'embouchure du siège d'accouplement (5a) ; les extrémités distales (9a) desdites languettes (9) étant profilées afin de former, sur la partie supérieure de la couronne saillante (8), un goulot d'étranglement convergeant et puis divergeant (8a), et présentant la possibilité de s'éloigner réciproquement afin que le goulot d'étranglement (8a) se dilate élastiquement afin de laisser la bride périphérique de culot (4b) passer, et puis de se refermer derrière ladite bride périphérique (4b) pour rester en butée contre le bord périphérique du culot bride périphérique (4b), les parties inférieures des extrémités distales (9a) formant le segment divergent du goulot d'étranglement (8a) ; l'extrémité distale (9a) d'au moins une des languettes de verrouillage flexibles (9) étant également pourvue d'au moins une pièce de queue d'arrêt saillante (10) qui fait saillie à partir du corps de languette (9) vers l'intérieur du goulot d'étranglement (8a), et est formée afin d'être ajustée sur la face arrière/supérieure de la bride périphérique (4b) du culot (4) qui occupe le siège d'accouplement (5a), afin d'empêcher l'éloignement réciproque des extrémités distales (9a) des languettes (9).

2. Douille d'ampoule lumineuse incandescente selon la revendication 1, **caractérisée en ce que** le goulot d'étranglement (8a) présente un profil tronconique sensiblement double.

3. Douille d'ampoule lumineuse incandescente selon la revendication 1 ou 2, **caractérisée en ce que** l'extrémité distale (9a) d'au moins une des languettes de verrouillage flexibles (9) est pourvue de deux pièces de queue d'arrêt saillantes (10) qui font saillie à partir des deux côtés de la languette (9) vers le centre de l'étranglement.

4. Douille d'ampoule lumineuse incandescente selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**au moins une des languettes de verrouillage flexibles (9) est complètement faite de métal.

5. Douille d'ampoule lumineuse incandescente selon la revendication 4, **caractérisée en ce qu'**au moins une des languettes de verrouillage flexibles (9) est formée par une feuille ou bande métallique (9) de métal élastiquement déformable, qui comporte un segment inférieur piégé de façon rigide dans le corps de la plateforme de support (5) ; un segment flexible intermédiaire qui fait saillie à partir du corps de la plateforme (5), au-delà de l'embouchure du siège d'accouplement (5a), restant localement sensiblement parallèle à l'axe d'insertion préférentiel de culot (A) ; et enfin un segment supérieur qui est sensiblement plié en V à angle obtus afin de s'approcher et puis de s'éloigner dudit axe d'insertion préférentiel de culot (A).

6. Douille d'ampoule lumineuse incandescente selon l'une quelconque des revendications précédentes, **caractérisée en ce que** lesdits moyens de connexion électrique (6) comprennent une paire de dispositifs de serrage (6) qui sont dimensionnés afin d'enfermer la pièce de tête de culot (4a), et sont fixés sur le fond du siège d'accouplement (5a) pour que chacun d'eux puisse enfermer et serrer une partie

correspondante de la pièce de tête (4a) du culot (4), afin de toucher la borne d'un rhéophore correspondant de l'ampoule lumineuse (2).

7. Douille d'ampoule lumineuse incandescente selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la plateforme de support (5) est pourvue d'un rebord saillant central, et **en ce que** le siège d'accouplement (5a) est positionné sur la partie supérieure dudit rebord saillant central.

8. Douille d'ampoule lumineuse incandescente selon les revendications 6 et 7, **caractérisée en ce que** chaque dispositif de serrage (6) est monobloc avec l'extrémité d'une bande métallique d'alimentation en électricité correspondante (7) qui est pliée en U sensiblement à l'envers, et est fixée à cheval sur le bord supérieur du rebord saillant central de ladite plateforme de support (5), afin de posséder un segment initial collé à la surface extérieure du rebord central de la plateforme (5), et un segment final qui s'étend à l'intérieur du siège d'accouplement (5a) et forme ledit dispositif de serrage (6) ; le segment initial de la bande métallique d'alimentation en électricité (7) étant connecté à un circuit d'alimentation électrique fixé sur la plateforme de support (5).

9. Douille d'ampoule lumineuse incandescente selon la revendication 6 ou 8, **caractérisée en ce qu'**au moins une des languettes de verrouillage flexibles (9) est monobloc avec un dispositif de serrage respectif (6).

10. Phare d'automobile (101), comprenant : un corps arrière rigide (102) qui présente sensiblement une forme de cuvette, et est structuré afin d'être fixé à la partie avant ou arrière de la carrosserie de véhicule ; au moins une source lumineuse (103) qui est située près du fond dudit corps arrière (102), et est structurée pour émettre de la lumière lorsqu'elle est alimentée en électricité ; et une demi-coque lenticulaire avant (104) qui est au moins partiellement faite d'un matériau transparent ou semi-transparent, et est agencée pour fermer l'embouchure du corps arrière (102) afin d'être traversée par la lumière émise par ladite au moins une source lumineuse (103) ; le phare d'automobile (101) étant **caractérisé en ce qu'**il comprend également au moins une douille d'ampoule lumineuse incandescente (1) faite selon l'une quelconque des revendications 1 à 9.

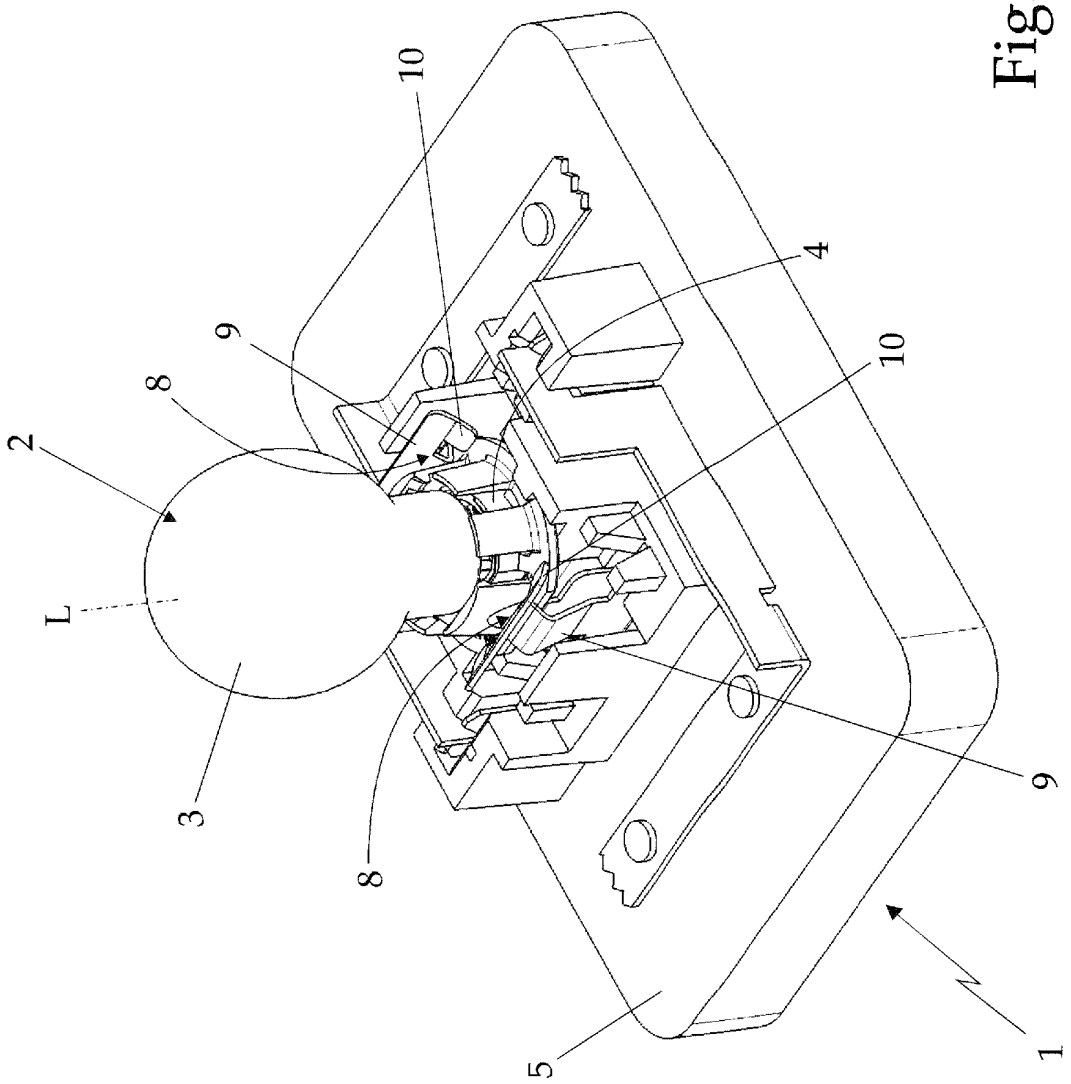

Fig. 1

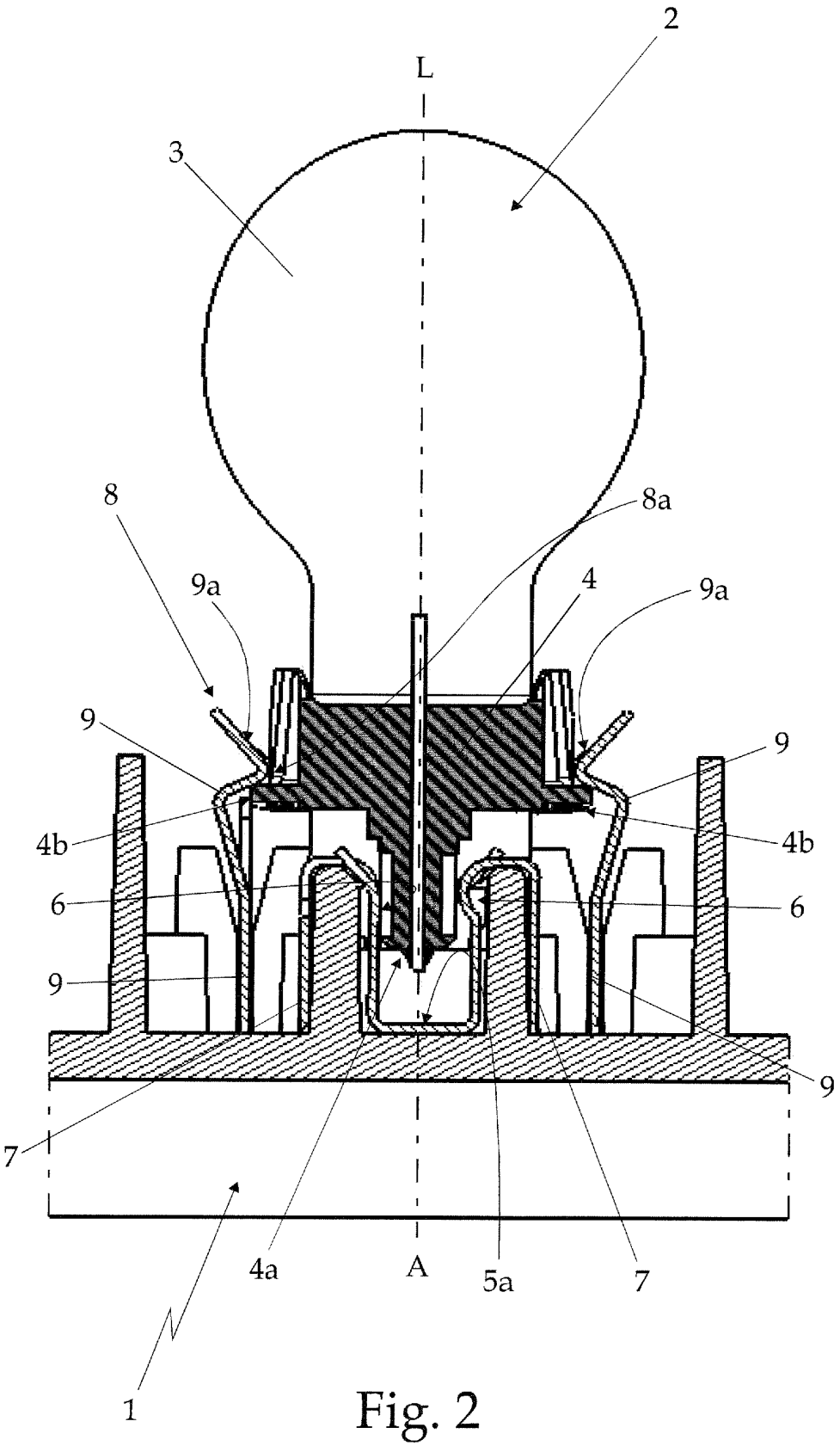

Fig. 2

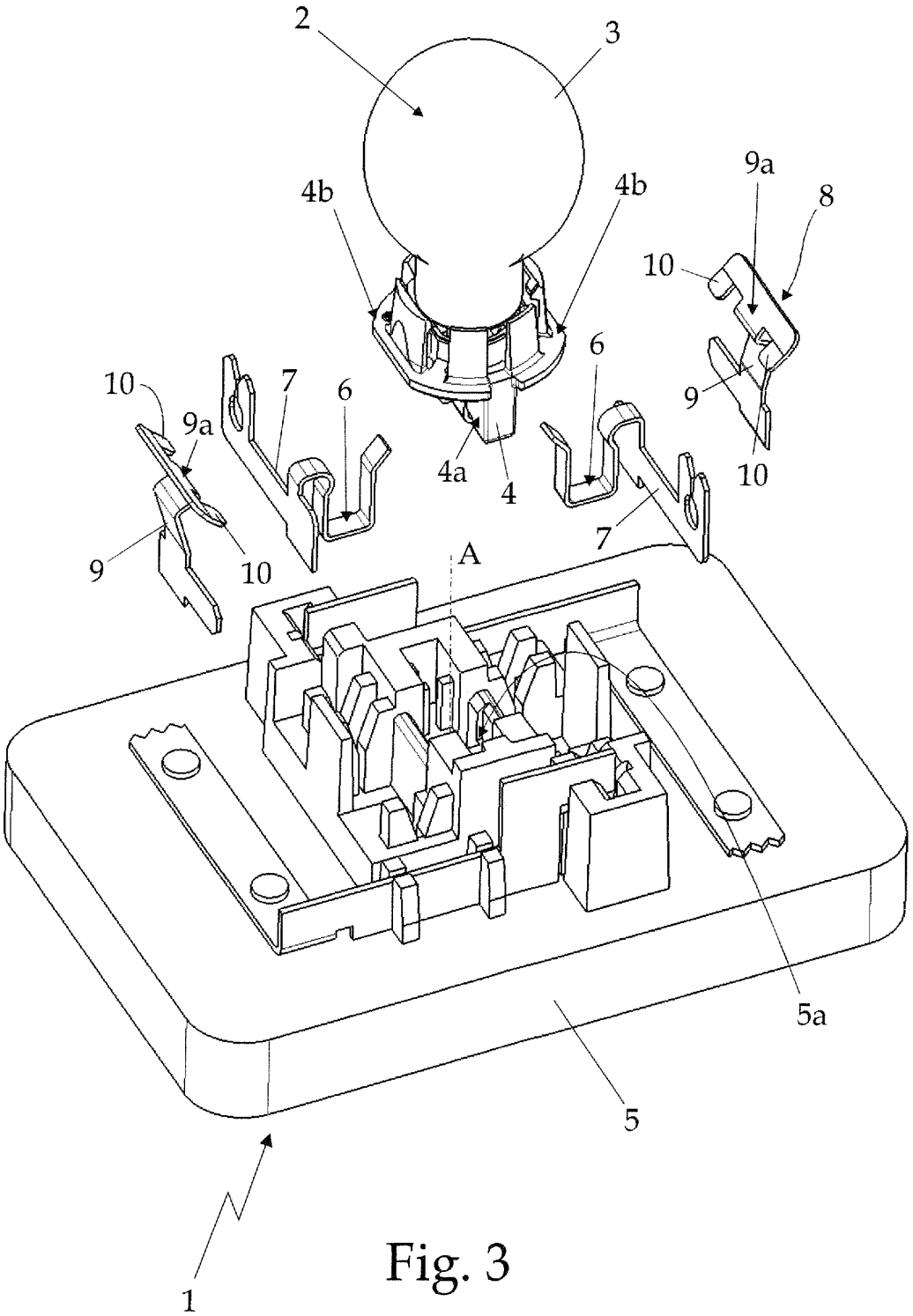

Fig. 3

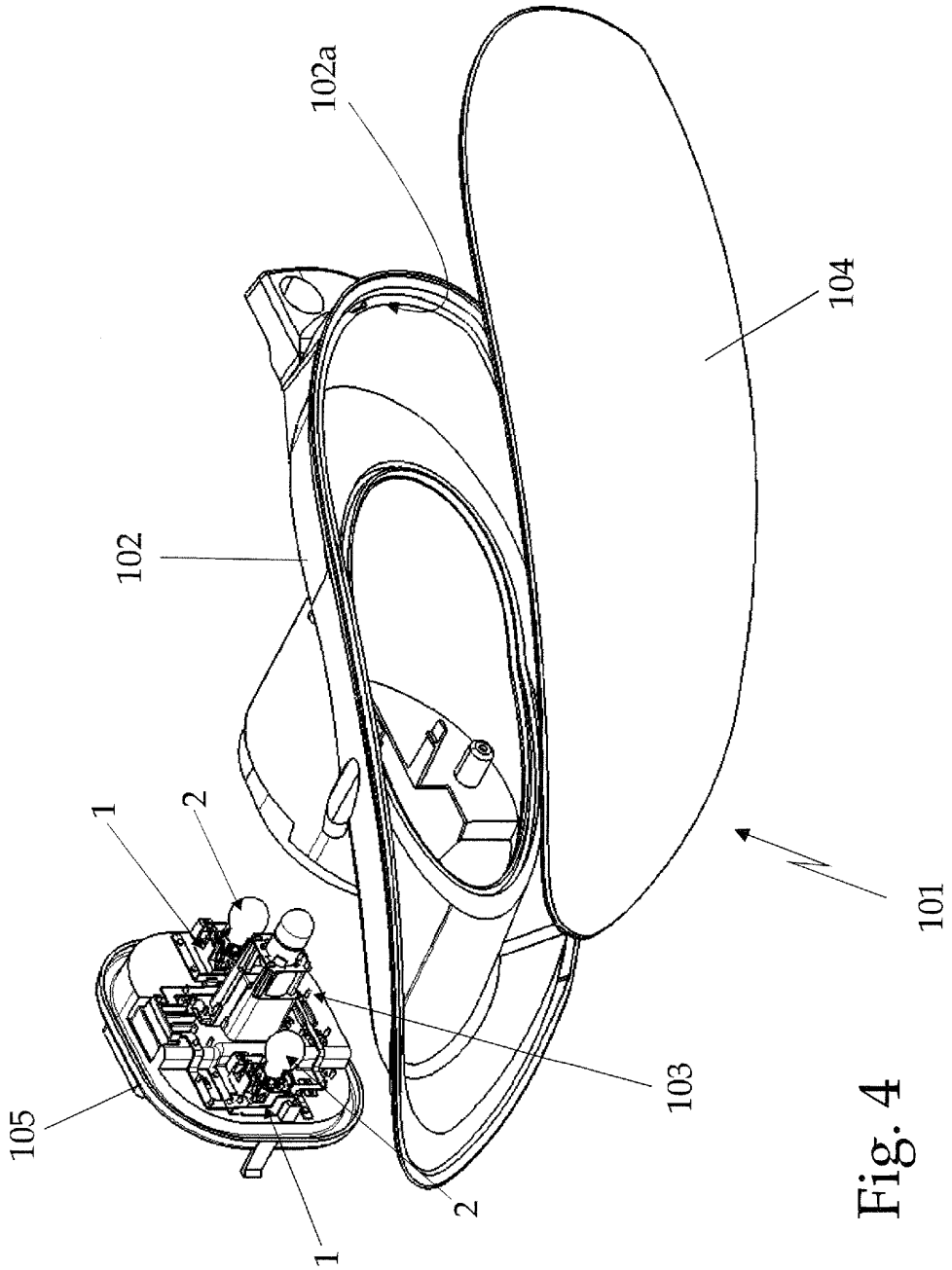

Fig. 4

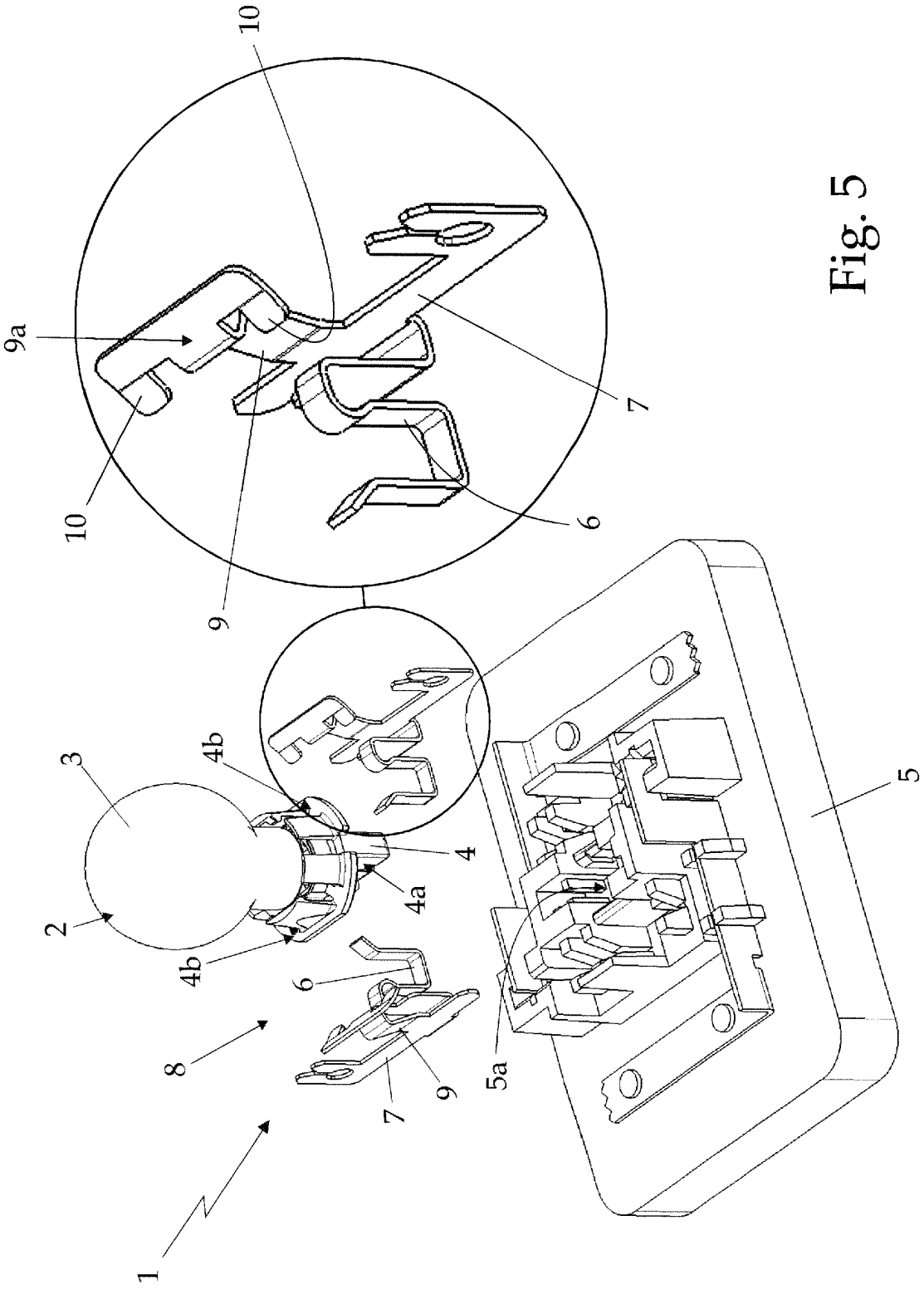

Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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