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Description

[0001] The present invention relates to an automotive light.

[0002] More specifically, the present invention relates to a rear light for cars, use to which the following description refers purely by way of example without implying any loss of generality.

[0003] As is known, the car rear lights are usually made up of a substantially basin-shaped, rigid rear casing which is structured so as to be permanently recessed into a compartment specifically made in the rear portion of the vehicle body; of at least one cup-shaped body of substantially parabolic profile, which is located inside the rear casing with the concave side facing the mouth of the rear casing, and has a mirror-finished inner surface so as to reflect the incident light towards the mouth; of a light source which is placed close to the bottom of the cup-shaped body, and is structured so as to emit light when electricity powered; and of a front lenticular half-shell which is at least partially made of a transparent or semi-transparent, also possibly colored, plastic material and is arranged to close the mouth of the casing so as to emerge to the outside of the vehicle body and be crossed by the light emitted from the light source underneath.

[0004] More specifically, the front lenticular half-shell is provided with at least one transparent or semi-transparent, usually colored, portion, and is positioned immediately over the body of the reflecting cup and, according to the features of the light beam that the light must emit, may be shaped so as to have clear surfaces which do not significantly modify the propagation of light and/or optical surfaces having the function of either scattering or concentrating the light produced by the light source underneath.

[0005] Over the past years, after having integrated the rear light in the outer profile of the vehicle body, some car manufacturers have decided to fit, on some new car models, rear lights which have, either on the inner face of the lenticular half-shell or on the inner surface of the reflecting cup-shaped body, relief decorative patterns which are shaped so as to produce, when the light is turned on, certain special light effects having the function of creating a unique and immediately recognizable light beam emitted by the light. In this way, the model of car that adopts this particular type of light can be easily recognized/ identified among all vehicles in circulation.

[0006] In other words, the light effects produced by the rear light are used to give greater visibility and distinctive capacity to the car having said light installed.

[0007] US5258895 discloses an automotive light implementing an interferometric effect with Moiré deterioration which generates a virtual decorative optical pattern.

[0008] Aim of the present invention is to make a rear light for cars, motor vehicles and the like, which is capable of producing, via an interferometric effect with Moiré deterioration, new aesthetically engaging and innovative light effects greater than those currently known.

[0009] In compliance with the above aims, according to the present invention there is provided an automotive light as specified in Claim 1 and preferably, though not necessarily, in any one of the dependant claims.

[0010] A non-limiting embodiment of the present invention will now be described with reference to the accompanying drawings, in which:

- Figure 1 shows in a partially exploded isometric view, and with parts removed for clarity, a car rear light realized in accordance with the teachings of the present invention;
- Figure 2 is a sectional view of the rear light shown in Figure 1; whereas
- Figures 3 to 8 schematically show corresponding variants of the Figure 1 rear light.

[0011] With reference to Figures 1 and 2, referral numeral 1 indicates as a whole an automotive light specially structured to be fixed on the front or rear part of the vehicle body of a car or other vehicle.

[0012] More specifically, in the example shown the automotive light 1 is preferably, though not necessarily, structured to be fixed on the rear part of the car body, and comprises:

- a substantially basin-shaped, rigid rear casing 2 which is structured so as to be recessed into a compartment specifically made in the vehicle body (not shown);
- at least one main cup-shaped body 3 preferably, though not necessarily, having a parabolic profile and which is located in the rear casing 2 with the concave side facing the mouth 2a of the rear casing 2, and has the inner surface 3i structured so to direct the incident light towards the mouth 3i of the cup-shaped body 3 and, therefore, towards the mouth 2a of the rear casing 2; and
- at least one light source 4 which is arranged close to the bottom of the cup-shaped body 3, roughly in the center thereof, and is structured so as to emit light when electricity powered.

[0013] In the example shown, in particular, the inner surface 3i of cup-shaped body 3 is preferably, though not necessarily, metalized or otherwise mirror-finished, so as to reflect the incident light towards the mouth 3a of cup-shaped body 3 and, therefore, towards the mouth 2a of rear casing 2.

[0014] Automatic light 1 is further provided with a front lenticular half-shell 5 at least partially made of a transparent or semi-transparent material, and which is arranged to close the mouth 2a of the rear casing 2 so as to surface from the outside of the vehicle body (not shown) and be crossed by the light emitted by the light source 4. The cup-shaped body 3 is thus positioned in

the rear casing 2 with the mouth 3a facing the lenticular half-shell 5.

[0015] More specifically, the lenticular half-shell 5 is provided with at least one transparent or semi-transparent, and optionally also colored, portion, and is arranged to close the mouth 2a of rear casing 2, so that its transparent or semi-transparent portion is crossed by at least part of the light that is emitted by the light source 4 and is reflected towards the mouth 2a of the casing 2a of the cup-shaped body 3.

[0016] In the example shown, in particular, automotive light 1 is preferably, though not necessarily, provided with only one cup-shaped body 3 completely recessed inside the rear casing 2; while the lenticular half-shell 5 is preferably, though not necessarily, made entirely of a transparent or semi-transparent plastic material, optionally also colored, such as polycarbonate or polymethyl methacrylate.

[0017] More specifically, in the example shown the cup-shaped body 3 is preferably, though not necessarily, made of an opaque plastic material via an injection molding process, and has the inner surface 3i mirror-metalized so as to reflect the incident light. The bottom of cup-shaped body 3 is furthermore rigidly anchored to the bottom of rear casing 2 by means of pass-through screws that pass in sequence both elements.

[0018] Similarly, the rear casing 2 is preferably, though not necessarily, made of an opaque plastic material via an injection molding process, and is provided with a number of protruding fixing appendixes in plastic and/or metal material.

[0019] Obviously, in a different embodiment the cup-shaped body 3 can be made in one piece with the rear casing 2 preferably, though not necessarily, via an injection molding process.

[0020] With reference to Figure 2, light source 4 instead preferably, though not necessarily, consists in a incandescent light bulb 4 or similar which is fitted in removable manner into a light socket 6 which, in turn, is structured so as to be inserted and then locked in a rigid and stable, though easily releasable, manner within a pass-through hole 6a specifically realized on the bottom of cup-shaped body 3, so as to allow the light bulb 4 to protrude into the cup-shaped body 3 while keeping said bulb substantially coaxial to the longitudinal axis A of the cup-shaped body 3.

[0021] With reference to Figures 1 and 2, unlike the currently known automotive lights, the automotive light 1 is also provided with two substantially lenticular-shaped, neutral optical filters 7 and 8 which are made of transparent or semi-transparent material and are arranged one on top of the other, immediately underneath the lenticular half-shell 5, so as to be parallel and faced one other and to either partially or completely cover the mouth 3a of the cup-shaped body 3 for being crossed by the light coming out from the latter.

[0022] In the example shown, in particular, the optical filters 7 and 8 are made of transparent or semi-transparent, optionally also colored, plastic material; lay on reference planes locally and substantially perpendicular to the longitudinal axis A of cup-shaped body 3; and are dimensioned so as to completely cover the mouth 3a of the cup-shaped body 3, so as to be crossed by the whole of the light which is produced by the light bulb 4 and comes out from cup-shaped body 3.

[0023] Each optical filter 7, 8 is furthermore structured so as to have, on one of the two faces, a decorative preferably, though not necessarily, bas-relief optical pattern which is cyclically repeated on surface of the optical filter 7 or 8 with a predetermined spatial periodicity. The decorative optical pattern on the optical filter 7 has, in all cases, a shape/design and/or spatial periodicity which is slightly different from that of the decorated optical pattern present on optical filter 8, so as to cause, in the light coming out from of the main cup-shaped body 3, an inferometric effect with Moire deterioration that generates a virtual decorative optical pattern different from the decorative optical patterns on the two additional optical filters 7 and 8.

[0024] The automotive light 1 is furthermore provided with an electrically-actuated moving device 9 which is structured so as to be able to move, on command, the two optical filters 7 and 8 one with respect to the other so as to be able to control the arising of the interferometric effect with Moiré deterioration, and/or adjust/vary on command the intensity of the interferometric effect with Moire deterioration.

[0025] By movement of the two optical filters 7 and 8 to one another, it is also intended even a temporary elastic deformation of one of the two optical filters 7, 8, while the other filter remains preferably, though not necessarily, always of the same shape.

[0026] With reference to Figure 2, in the example shown, in particular, the optical filter 7 consists of a disc-shaped body made of a transparent or semi-transparent plastic material, optionally also colored, which has a shape complementary to that of the mouth 3a of cup-shaped body 3, and is rigidly fixed to the cup-shaped body 3, so as to lie on a reference plane locally perpendicular to the axis A of the cup-shaped body 3 and be crossed by the whole light coming out of cup-shaped body 3; whereas the optical filter 8 consists of a disc-shaped body made of a transparent or semi-transparent plastic material, optionally also colored, which is fixed in axially rotational manner on an annular fifth wheel 10 which, in turn, is rigidly fixed to the mouth 3a of the cup-shaped body 3, so as to lay on a reference plane locally orthogonal to the axis A of the cup-shaped body 3, and so as to be coaxial to axis A of the cup-shaped body 3.

[0027] Alternatively, the annular fifth wheel 10 may also be fixed directly onto the rear casing 2 or to the front half-shell 5, obviously always over the mouth 3a of the cup-shaped body 3.

[0028] Thus the optical filter 8 can freely rotate around the axis A of cup-shaped body 3, immediately over the optical filter 7, and the optical-filter moving device 9 con-

sists of a small, permanent-magnets electric motor 9 or similar which is preferably, though not necessarily, located in the gap formed by the cup-shaped body 3 within the rear casing 2, so that its motor shaft overhangingly protrudes beyond the mouth 3a of the cup-shaped body 3, and may mesh on a toothed annular crown 9a specifically realized on the periphery of the optical filter 8, so as to be able to rotate the optical filter 8 about axis A within the fifth wheel 10, and consequently vary, on command, the angular position of the optical filter 8 with respect to the optical filter 7.

[0029] Obviously, the rotation axis of optical filter 8 may also be parallel and distanced from axis A of cup-shaped body 3. Similarly, the electric motor 9 may be replaced by another type of electro-mechanical or piezoelectric actuator capable of varying, on command, the angular position of the optical filter 8 with respect to the optical filter 7.

[0030] As regards instead the decorative optical pattern present on the optical filters 7 and 8, the outer face of optical filter 7 is preferably, though not necessarily, provided with a number of radially-oriented longitudinal recesses, which are angularly equally spaced about the axis of the optical filter, i.e. about the axis A of cup-shaped body 3, and which extend along the periphery of the optical filter 7 so as to form a regular undulated profile with radial development.

[0031] The outer face of the optical filter 8, i.e. the face facing the front half-shell 5, is instead provided with a second series of transversal recesses which are locally inclined and staggered with respect to the transversal recesses of the optical filter 7 underneath, and are angularly spaced about the reference axis of the optical filters, i.e. about the axis A of cup-shaped body 3, so as to form, along the periphery of the optical filter 8, a second regular undulated annular profile, the shape of which slightly differs from that of the annular crown on the optical filter 7.

[0032] The functioning of rear light 1 is easily inferable from that description above and needs no further explanations. Except to point out that the interferometric effect with Moiré deterioration occurs when the decorative optical patterns present, respectively, on the surfaces of the two optical filters 7 and 8 have a well-defined spatial distribution with respect to each other, and that the interferometric effect with Moiré deterioration allows the external observer to visualize a virtual decorative pattern having a shape and a spatial periodicity completely different from that of the two decorative optical patterns present on the optical filters 7 and 8.

[0033] In this particular context, the moving device 9 has the function of arranging, on command, the optical filters 7 and 8 in the spatial configuration which causes the manifesting of the inferometric effect with Moire deterioration.

[0034] The mathematical treatise of the conditions leading to the onset of the interferometric effect with Moiré deterioration has already been exposed in detail in numerous scientific publications, such as the treatise entitled "Analysis of the Superposition of Periodic Layers and Their Moire Effects through the Algebraic Structure of Their Fourier Spectrum" which was published in 8th Volume of the Journal of Mathematical Imaging and Vision 1998, whose content is incorporated in the present patent application for the sake of completeness.

[0035] In addition to the above, experimental tests have shown that the interferometric effect with Moire deterioration may occur even when the two decorative patterns or optical designs that are superimposed, are of identical shape but are slightly offset and/or rotated one relative to the other so as to slightly change the spatial periodicity thereof.

[0036] The advantages deriving from the particular structure of the automotive light 1 are numerous. First, the use of the interferometric effect with Moire deterioration allows the automotive light 1 to produce virtual three-dimensional developed light effects, i.e. virtually provided with depth, which are radically different, and much more visually engaging, than those offered by the currently-installed rear lights on cars.

[0037] There are many advantages deriving from the particular structure of the automotive light 1. Firstly, the use of the inferometric effect with Moire deterioration allows the automotive light 1 to produce light effects with virtual three-dimensional development, i.e. virtually provided with depth, which are radically different, and aesthetically much more pleasing, than those offered by the rear lights currently fitted on cars.

[0038] Furthermore, the considerable distance between the two optical filters 7 and 8 allows to exploit the parallax effects to make more realistic the "depth" and three-dimensionality of the light effects produced by the light.

[0039] And moreover, this particular structure allows the automotive light 1 to change appearance when the light source 4 is turned on. If lighted from the outside, in fact, the automotive light 1 shows to the viewer only the optical filter 8, with its relative ornamental pattern.

[0040] Finally, the automotive light 1 has production costs that are only slightly higher than those of a traditional automobile light, with all the commercial advantages that this implies.

[0041] Clearly, changes may be made to the car automotive light 1 as described and illustrated above without, however, departing from the scope of the present invention.

[0042] For example, in a non-shown, more sophisticated embodiment of the automotive light, the automotive light 1 may be provided with a third optical filter arranged so as to be crossed by the light produced by the light source 4, either upstream or downstream of the optical filters 7 and 8. This third optical filter will be provided with an optical surface structured so as to display a third decorated optical pattern which is cyclically repeated with a predetermined special periodicity; the shape and/or spatial periodicity will be different from the shape and/or the

spatial periodicity of the decorative optical patterns present on the optical filters 7 and 8, so that the light coming out from the cup-shaped body 3 produces, again for inferometric effect with Moiré deterioration, a virtual decorative optical pattern different from the decorative optical patterns present on the three optical filters mentioned above.

[0043] The mathematical treatise of the conditions leading to the onset of the interferometric effect with Moire deterioration in the presence of three or more decorative optical patterns is described in detail in the volume "Periodic Layers" of the treatise entitled "The Theory of the Moire Phenomenon" written by Isaac AMIDROR and published by SPRINGER publishing house in 2009, whose content is incorporated in this patent application.

[0044] Furthermore, in a second, non-shown and more sophisticated embodiment of the automotive light, the light source 4 may be replaced by a series of light-emitting diodes which are distributed on a supporting and power-supplying board which, in turn, is arranged in the cup-shaped body 3 with the diodes facing the mouth 3a of the cup-shaped body 3. In this case, the inner surface 3i of the cup-shaped body 3 may also not be mirror-finished.

[0045] Furthermore, the optical-filters moving device 9 may also be structured so as to be able to rotate, on command and in continuous manner, any one of the two optical filters 7, 8 about the axis A of cup-shaped body 3, so as to seamlessly move in space and/or to modify the virtual decorative optical pattern generated by inferometric effect with Moire deterioration over time.

[0046] With reference to figure 3, in a first alternative embodiment, the optical filter 7 consists of a lenticular body 7 made of transparent or semi-transparent, optionally also colored, material which is directly fixed on the lenticular half-shell 5, over the mouth 3a of the cup-shaped body 3; the optical filter 8 instead remains fixed in axially rotating manner on the annular fifth wheel 10, so as to be rotated about axis A of cup-shaped body 3 by the moving device 9.

[0047] With reference to Figure 4, in a second alternative embodiment, the optical filter 7 consists of a cup-shaped body 7 made of transparent or semi-transparent, possibly also colored, material, which is arranged directly on the bottom of the cup-shaped body 3, so as to be crossed by the light emitted by the light bulb 4 and reflected towards the mouth 3a of the cup-shaped body 3; the optical filter 8 instead remains fixed in axially rotational manner on the annular fifth wheel 10, so as to be rotated, on command, about the axis A of the cup-shaped body by the moving device 9. The cup-shaped body 7 may possibly be made also in one piece with the cup-shaped body 3.

[0048] With reference to Figure 5, in a third alternative embodiment, the optical filter 7 instead consists of a cap 7 of transparent or semi-transparent, possibly also colored, material, which has the shape of a substantially cylindrical bell, extends coaxially to the axis A of cup-shaped body 3 within said cup-shaped body 3, and is fitted directly on the light bulb 4 so as to be first crossed by the light emitted by the light bulb 4. The cap 7 in transparent or semi-transparent material is furthermore rigidly fixed on the light socket 6, and has, on its inner or outer cylindrical lateral surface, a preferably, though not necessarily made, bas-relief, decorative optical pattern having a predetermined spatial periodicity.

[0049] In the example shown, in particular, the outer cylindrical lateral surface of cap 7 has a regular undulated profile, wherein the crests of the waves are parallel to each other and slightly inclined with respect to the longitudinal axis of the cap 7, i.e. slightly inclined with respect to the axis A of the cup-shaped body 3.

[0050] The light that crosses the cap 7 is reflected by the inner surface 3i of the cup-shape body 3 and comes out of the mouth 3a of cup-shaped body 3 generating, due to the interferometric effect with Moire deterioration, a virtual decorative optical pattern which has a shape/design and a spatial periodicity completely different from those of the two decorative optical patterns present on the optical filters 7 and 8.

[0051] In this third alternative embodiment, the optical filter 8 remains preferably, though not necessarily, fixed in axially rotational manner on the annular fifth wheel 10 so as to be able to rotate about the axis A of cup-shaped body 3 under the bias of the moving device 9.

[0052] With reference to figure 6, in a fourth alternative embodiment the lenticular-shaped optical filter 7 is fixed to the mouth 3a of the cup-shaped body 3, closing the latter; the optical filter 8 instead consists of a cap 8 in transparent or semi-transparent, possibly also colored, material, which has the shape of a substantially cylindrical bell, extends coaxially to the axis A of cup-shaped body 3 within said cup-shaped body 3, and is fitted directly on the light bulb 4 so as to be first crossed by the light emitted by the light bulb 4. The cap 8 in transparent or semi-transparent material has, on its inner or outer cylindrical lateral surface, a preferably, though not necessarily, bas-relief, decorative optical pattern having a predetermined spatial periodicity; and is fixed in axially rotational manner on an annular fifth wheel 11 which in turn is rigidly fixed on the light socket 6, coaxial to the axis A of cup-shaped body 3.

[0053] Thus the cap 8 is therefore crossed by the light emitted from the light bulb 4 and can rotate around the axis A of cup-shaped body 3.

[0054] In this fourth variant embodiment, the optical-filters moving device 9 consists of a small permanent-magnets electric motor 9 or similar, which is fixed to the light socket 6 next to the light bulb 4, so that its drive shaft protrudes inside the cup-shaped body 3, and can mesh on a toothed annular crown specifically realized on the periphery of cap 8, so as to be able to rotate cap 8 within the fifth wheel 11 about axis A, and consequently vary, on command, the angular position of cap 8 with respect to the optical filter 7.

[0055] Also in this case, the cylindrical outer or inner surface of cap 8 in transparent or semi-transparent ma-

terial is provided with a decorative optical pattern preferably, though not necessarily, in bas-relief which is provided with a predetermined spatial periodicity. More specifically, in the example shown the outer cylindrical surface of the cap 8 has a regular undulated profile, in which the crests of the waves are parallel to one another and slightly inclined with respect to the longitudinal axis of the cap 8, i.e. slightly inclined with respect to the axis A of cup-shaped body 3.

[0056] The light which crosses the cap 8 is reflected by the inner surface 3i of the cup-shape body 3 and comes out of the mouth 3a of cup-shaped body 3 generating, due to the interferometric effect with Moire deterioration, a virtual decorative optical pattern which has a shape/ design and a spatial periodicity completely different from those of the two decorative optical patterns present on the optical filters 7 and 8.

[0057] With reference to figure 7, in a first simplified embodiment, the optical filter 8 consists of a cup-shaped body 8 made of transparent or semi-transparent, possibly colored, material, which is arranged directly on the bottom of the cup-shaped body 3, so as to be crossed by the light emitted by the light bulb 4 and reflected towards the mouth 3a of the cup-shaped body 3; the optical filter 7 instead remains to close the mouth 3a of the cup-shaped body 3.

[0058] In this simplified embodiment, obviously, the automotive light 1 lacks the moving device 9.

[0059] With reference to Figure 8, in a second simplified embodiment, the optical filter 7 consists of a cup-shaped body 7 made of transparent or semi-transparent, possibly also colored, material, which is arranged directly on the bottom of the cup-shaped body 3, so as to be crossed by the light emitted by the light bulb 4 and reflected towards the mouth 3a of the cup-shaped body 3; the optical filter 8 instead consists of a lenticular body 8 made of transparent or semi-transparent, possibly also colored, plastic material, which is fixed directly onto the lenticular half-shell 5, over the mouth 3a of the cup-shaped body 3.

[0060] Once again, in this simplified embodiment, obviously, the automotive light 1 lacks the moving device 9.

Claims

1. Automotive light (1) comprising at least one main cup-shaped body (3) having the inner surface (3i) structured so to direct the incident light towards the mouth (3a) of the same main cup-shaped body (3), and at least one light source (4) which is located within the main cup-shaped body (3), and is structured so as to emit light when electricity powered;
the automotive light (1) moreover comprising at least two additional optical filters (7, 8) that are made of a transparent or semi-transparent material, and are arranged so to be crossed in sequence by the light produced by the light source (4); the two additional optical filters (7, 8) being both provided with a respective optical surface structured so to have a decorative optical pattern which is cyclically repeated with a predetermined spatial periodicity; the shape and/or spatial periodicity of the decorative optical pattern on the first optical filter (7) being different from the shape and/or spatial periodicity of the decorative optical pattern on the second optical filter (8), and such to cause, in the light coming out from the main cup-shaped body (3), an interferometric effect with Moire deterioration which generates a virtual decorative optical pattern different from the decorative optical patterns on the two additional optical filters (7, 8);
the automotive light (1) being **characterized in that** one of said optical filters (7, 8) consists of a cup-shaped body (7, 8) which is made of a transparent or semi-transparent material and is placed at the bottom of the main cup-shaped body (3) so as to be crossed by the light emitted by the light source (4) and reflected towards the mouth (3a) of said main cup-shaped body (3), or of a substantially bell-shaped cap (7, 8) which is made of a transparent or semi-transparent material (7, 8) and is fitted onto the light source (4) so as to be crossed by the light emitted by the latter.

2. Automotive light according to Claim 1, **characterized in that** the other of said additional optical filters (7, 8) is substantially lenticular in shape, and is located substantially at the mouth (3a) of the main cup-shaped body (3), so to be crossed by the light which exits therefrom.

3. Automotive light according to Claim 1 or 2, **characterized by** further comprising electrically actuated moving means (9) which are structured for moving, on command, said at least two optical filters (7, 8) one with respect to the other.

4. Automotive light according to Claim 3, **characterized in that** one of said optical filters (7, 8) is able to rotate about a predetermined reference axis (A), and **in that** the moving means (9) are structured for rotating this optical filter (7, 8) about said reference axis (A).

5. Automotive light according to Claim 4, **characterized in that** said reference axis (A) is locally substantially coincident with the longitudinal axis (A) of the main cup-shaped body (3).

6. Automotive light according to any one of the preceding claims, **characterized in that** said substantially bell-shaped cap (7, 8) is in the shape of a substantially cylindrical bell, and is arranged substantially coaxial to the longitudinal axis (A) of the main cup-shaped body (3).

7. Automotive light according to any one of the foregoing Claims, **characterized by** further comprising:

   - a substantially basin-shaped, rigid rear casing (2) which is structured so as to be recessed into a compartment specifically made in the vehicle body; and
   - a front lenticular half-shell (5) at least partially made of a transparent or semi-transparent material, and which is placed to close the mouth (2a) of the rigid rear casing (2);

   said at least one main cup-shaped body (3) being located inside the rigid rear casing (2), with the mouth (3a) of the main cup-shaped body (3) facing the front lenticular half-shell (5).

8. Automotive light according to Claims 2 and 7, **characterized in that** said substantially lenticular-shaped additional optical filter (7, 8) is fixed to the front lenticular half-shell (5) immediately over the mouth (3a) of the main cup-shaped body (3).

9. Automotive light according to any one of the foregoing Claims, **characterized in that** the inner surface (3i) of the main cup-shaped body (3) is mirror-finished so as to reflect the incident light towards the mouth (3a) of the same main cup-shaped body (3).

Patentansprüche

1. Kraftfahrzeuglicht (1), mindestens einen napfförmigen Hauptkörper (3), dessen innere Oberfläche (3i) so strukturiert ist, dass sie das auftreffende Licht in Richtung der Mündung (3a) desselben napfförmigen Hauptkörpers (3) lenkt, und mindestens eine Lichtquelle (4) aufweisend, die sich innerhalb des napfförmigen Hauptkörpers (3) befindet und so strukturiert ist, dass sie Licht aussendet, wenn Strom eingeschaltet wird;
   wobei das Kraftfahrzeuglicht (1) des Weiteren mindestens zwei zusätzliche optische Filter (7, 8) aufweist, die aus einem transparenten oder halbtransparenten Material hergestellt und so angeordnet sind, dass sie nacheinander von dem von der Lichtquelle (4) erzeugten Licht durchquert werden; wobei die zwei zusätzlichen optischen Filter (7, 8) beide mit einer jeweiligen optischen Oberfläche versehen sind, die so strukturiert ist, dass sie ein optisches Ziermuster, das mit einer vorbestimmten räumlichen Periodizität zyklisch wiederholt wird, besitzt; wobei die Form und/oder räumliche Periodizität des optischen Ziermusters auf dem ersten optischen Filter (7) von der Form und/oder räumlichen Periodizität des optischen Ziermusters auf dem zweiten optischen Filter (8) verschieden ist/sind und von solcher Art ist/sind, dass in dem aus dem napfförmigen Hauptkörper (3) kommenden Licht ein Interferenzeffekt mit Moiré-Störung verursacht wird, der ein virtuelles, optisches Ziermuster, das von den optischen Ziermustern auf den zwei zusätzlichen optischen Filtern (7, 8) verschieden ist, erzeugt;
   wobei das Kraftfahrzeuglicht (1) **dadurch gekennzeichnet ist, dass** eines der optischen Filter (7, 8) aus einem napfförmigen Körper (7, 8), der aus einem transparenten oder halbtransparenten Material hergestellt und an der Unterseite des napfförmigen Hauptkörpers (3) so angeordnet ist, dass er von dem von der Lichtquelle (4) ausgesendeten und in Richtung der Mündung (3a) des napfförmigen Hauptkörpers (3) reflektierten Licht durchquert wird, oder aus einer im Wesentlichen glockenförmigen Kappe (7, 8), die aus einem transparenten oder halbtransparenten Material (7, 8) hergestellt und an der Lichtquelle (4) so angebracht ist, dass sie von dem von Letzterer ausgesendeten Licht durchquert wird, besteht.

2. Kraftfahrzeuglicht nach Anspruch 1, **dadurch gekennzeichnet, dass** das andere der zusätzlichen optischen Filter (7, 8) im Wesentlichen die Form einer Linse hat und sich im Wesentlichen an der Mündung (3a) des napfförmigen Hauptkörpers (3) befindet, sodass es von dem Licht, das von dort austritt, durchquert wird.

3. Kraftfahrzeuglicht nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** es ferner elektrisch betätigte, bewegende Mittel (9) aufweist, die für das Bewegen, auf Befehl, der mindestens zwei zusätzlichen optischen Filter (7, 8) in Bezug aufeinander strukturiert sind.

4. Kraftfahrzeuglicht nach Anspruch 3, **dadurch gekennzeichnet, dass** eines der optischen Filter (7, 8) fähig ist, um eine vorbestimmte Bezugsachse (A) zu drehen, und dadurch, dass die bewegenden Mittel (9) für das Drehen dieses optischen Filters (7, 8) um die Bezugsachse (A) strukturiert sind.

5. Kraftfahrzeuglicht nach Anspruch 4, **dadurch gekennzeichnet, dass** die Bezugsachse (A) lokal im Wesentlichen mit der Längsachse (A) des napfförmigen Hauptkörpers (3) zusammenfällt.

6. Kraftfahrzeuglicht nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die im Wesentlichen glockenförmige Kappe (7, 8) die Form einer im Wesentlichen zylindrischen Glocke hat und mit der Längsachse (A) des napfförmigen Hauptkörpers (3) im Wesentlichen achsgleich angeordnet ist.

7. Kraftfahrzeuglicht nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** es

ferner aufweist:

- ein im Wesentlichen beckenförmiges, starres, hinteres Gehäuse (2), das so strukturiert ist, dass es in einen eigens in der Fahrzeugkarosserie hergestellten Ausschnitt versenkt ist; und
- eine vordere Linsenscheiben-Halbschale (5), die mindestens teilweise aus einem transparenten oder halbtransparenten Material hergestellt ist und die angeordnet wird, um die Mündung (2a) des starren, hinteren Gehäuses (2) zu schließen;

wobei der mindestens eine napfförmige Hauptkörper (3) sich im Inneren des starren, hinteren Gehäuses (2) befindet, während die Mündung (3a) des napfförmigen Hauptkörpers (3) der vorderen Linsenscheiben-Halbschale (5) zugewandt ist.

8. Kraftfahrzeuglicht nach den Ansprüchen 2 und 7, **dadurch gekennzeichnet, dass** das im Wesentlichen linsenförmige, zusätzliche optische Filter (7, 8) an der vorderen Linsenscheiben-Halbschale (5) unmittelbar über der Mündung (3a) des napfförmigen Hauptkörpers (3) befestigt ist.

9. Kraftfahrzeuglicht nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die innere Oberfläche (3i) des napfförmigen Hauptkörpers (3) hochglänzend ist, um das auftreffende Licht in Richtung der Mündung (3a) desselben napfförmigen Hauptkörpers (3) zu reflektieren.

Revendications

1. Feu automobile (1) comprenant au moins un corps principal en forme de coupelle (3) ayant la surface interne (3i) structurée de façon à diriger la lumière incidente vers l'orifice (3a) du même corps principal en forme de coupelle (3), et au moins une source de lumière (4) qui est située dans le corps principal en forme de coupelle (3), et est structurée de façon à émettre de la lumière lorsqu'elle est alimentée en électricité ;
le feu automobile (1) comprenant en outre au moins deux filtres optiques supplémentaires (7, 8) qui sont réalisés en un matériau transparent ou semi-transparent, et sont agencés de façon à être traversés dans l'ordre par la lumière produite par la source de lumière (4) ; les deux filtres optiques supplémentaires (7, 8) étant tous deux pourvus d'une surface optique respective structurée de façon à avoir un motif optique décoratif qui est répété cycliquement avec une périodicité spatiale prédéterminée ; la forme et/ou la périodicité spatiale du motif optique décoratif sur le premier filtre optique (7) étant différentes de la forme et/ou de la périodicité spatiale du motif optique décoratif sur le second filtre optique (8), et de façon à provoquer, dans la lumière provenant du corps principal en forme de coupelle (3), un effet interférométrique avec détérioration de Moiré qui génère un motif optique décoratif virtuel différent des motifs optiques décoratifs sur les deux filtres optiques supplémentaires (7, 8) ;
le feu automobile (1) étant **caractérisé en ce que** l'un desdits filtres optiques (7, 8) consiste en un corps en forme de coupelle (7, 8) qui est réalisé en un matériau transparent ou semi-transparent et est placé au fond du corps principal en forme de coupelle (3) de façon à être traversé par la lumière émise par la source de lumière (4) et réfléchie vers l'orifice (3a) dudit corps principal en forme de coupelle (3), ou d'un capuchon sensiblement en forme de cloche (7, 8) qui est réalisé en un matériau transparent ou semi-transparent (7, 8) et est installé sur la source de lumière (4) de façon à être traversé par la lumière émise par cette dernière.

2. Feu automobile selon la revendication 1, **caractérisé en ce que** l'autre desdits filtres optiques supplémentaires (7, 8) est de forme sensiblement lenticulaire et est situé sensiblement au niveau de l'orifice (3a) du corps principal en forme de coupelle (3), de façon à être traversé par la lumière qui en sort.

3. Feu automobile selon la revendication 1 ou 2, **caractérisé en ce qu'**il comprend en outre des moyens de déplacement à actionnement électrique (9) qui sont structurés pour déplacer, sur ordre, lesdits au moins deux filtres optiques (7, 8) l'un par rapport à l'autre.

4. Feu automobile selon la revendication 3, **caractérisé en ce que** l'un desdits filtres optiques (7, 8) est apte à tourner autour d'un axe de référence prédéterminé (A), et **en ce que** les moyens de déplacement (9) sont structurés pour faire tourner ce filtre optique (7, 8) autour dudit axe de référence (A).

5. Feu automobile selon la revendication 4, **caractérisé en ce que** ledit axe de référence (A) est situé sensiblement coïncident à l'axe longitudinal (A) du corps principal en forme de coupelle (3).

6. Feu automobile selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit capuchon sensiblement en forme de cloche (7, 8) a la forme d'une cloche sensiblement cylindrique, et est agencé sensiblement coaxial à l'axe longitudinal (A) du corps principal en forme de coupelle (3).

7. Feu automobile selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend en outre :

- un boîtier arrière rigide sensiblement en forme de cuvette (2) qui est structuré de façon à être en retrait dans un compartiment réalisé spécifiquement dans la carrosserie de véhicule ; et
- une demi-coque lenticulaire avant (5) au moins partiellement réalisée en un matériau transparent ou semi-transparent, et qui est placée pour fermer l'orifice (2a) du boîtier arrière rigide (2) ;

ledit au moins un corps principal en forme de coupelle (3) étant situé à l'intérieur du boîtier arrière rigide (2), avec l'orifice (3a) du corps principal en forme de coupelle (3) en regard de la demi-coque lenticulaire avant (5).

8. Feu automobile selon les revendications 2 et 7, **caractérisé en ce que** ledit filtre optique supplémentaire sensiblement de forme lenticulaire (7, 8) est fixé à la demi-coque lenticulaire avant (5) juste au-dessus de l'orifice (3a) du corps principal en forme de coupelle (3).

9. Feu automobile selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la surface intérieure (3i) du corps principal en forme de coupelle (3) a un fini miroir de façon à réfléchir la lumière incidente vers l'orifice (3a) du même corps principal en forme de coupelle (3).

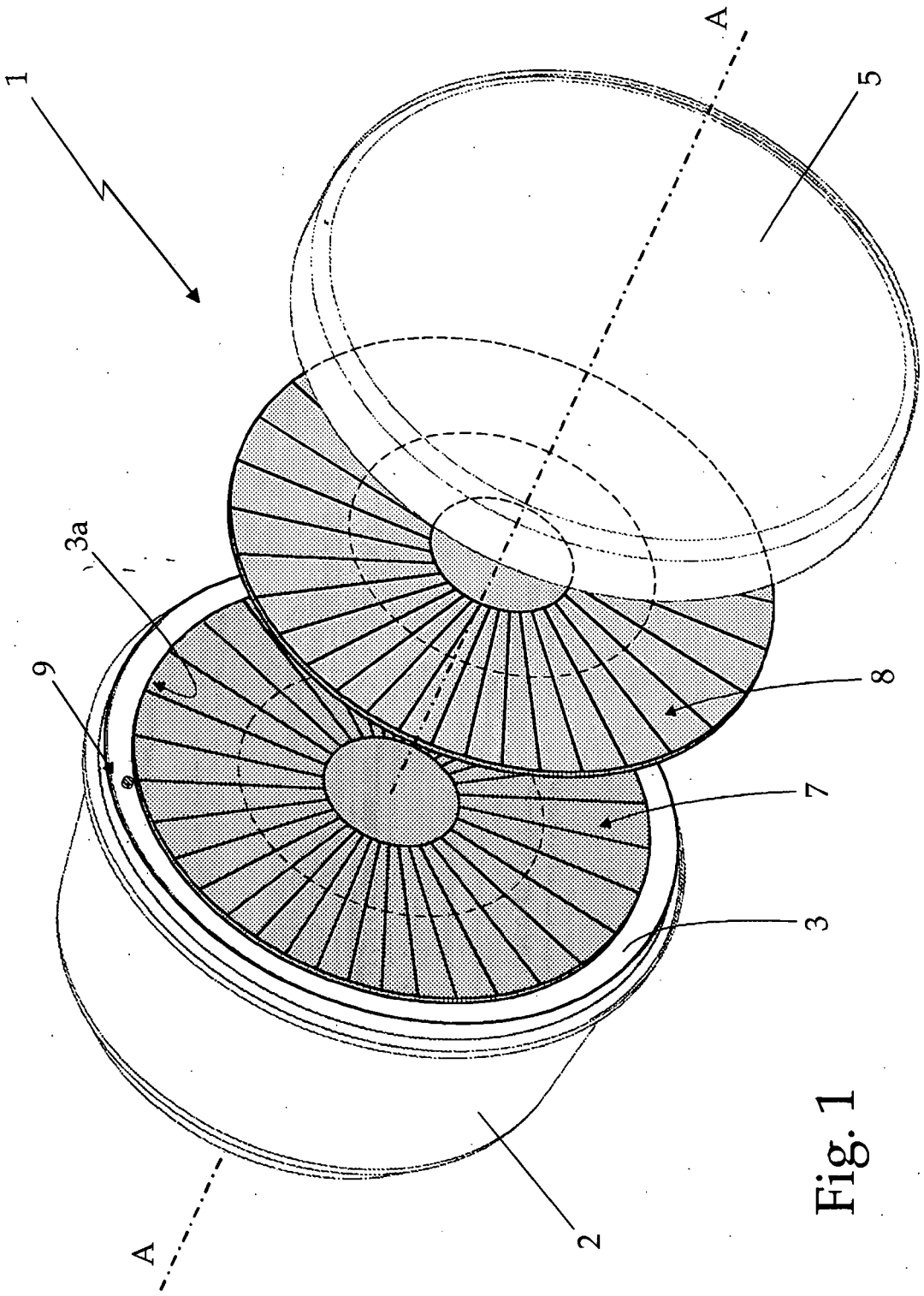

Fig. 1

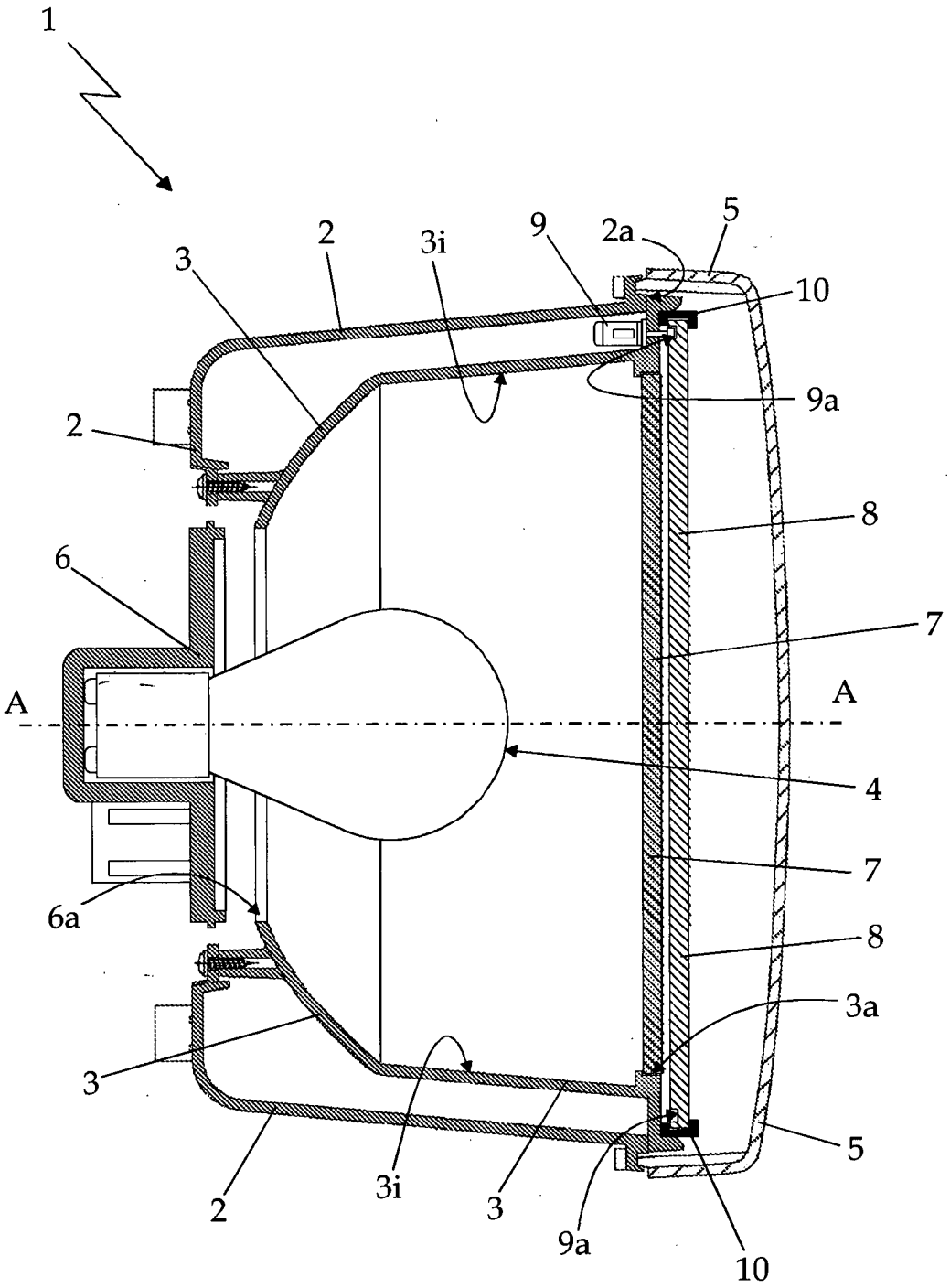

Fig. 2

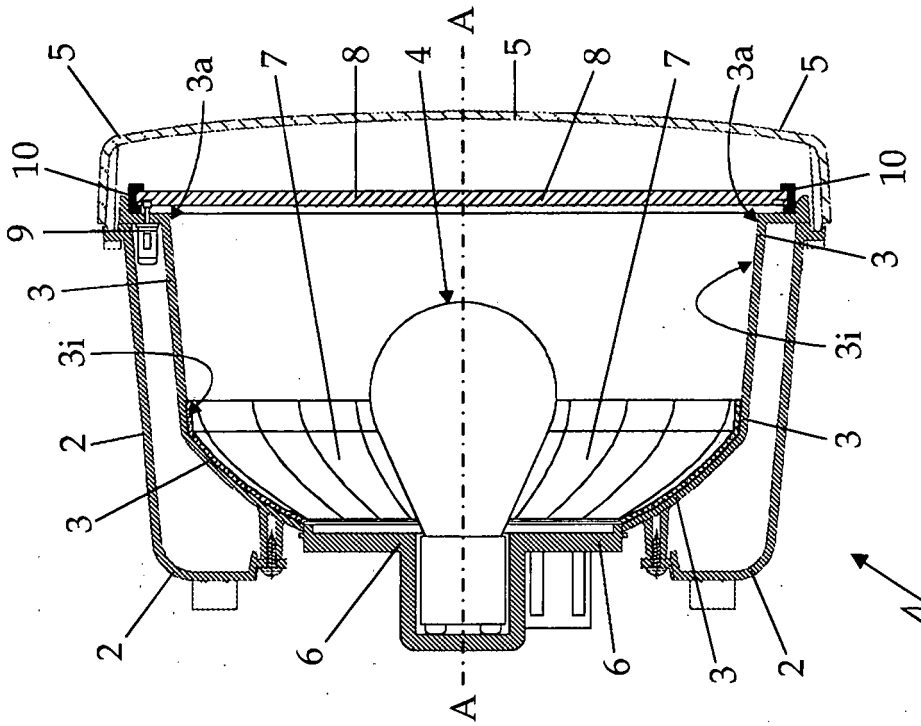
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Fig. 4

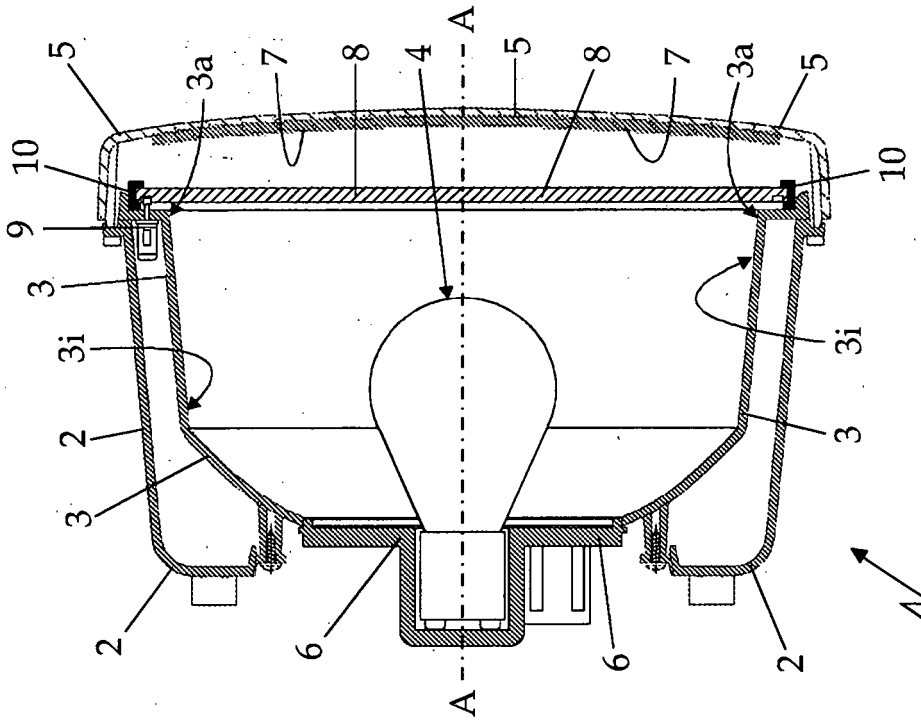
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Fig. 3

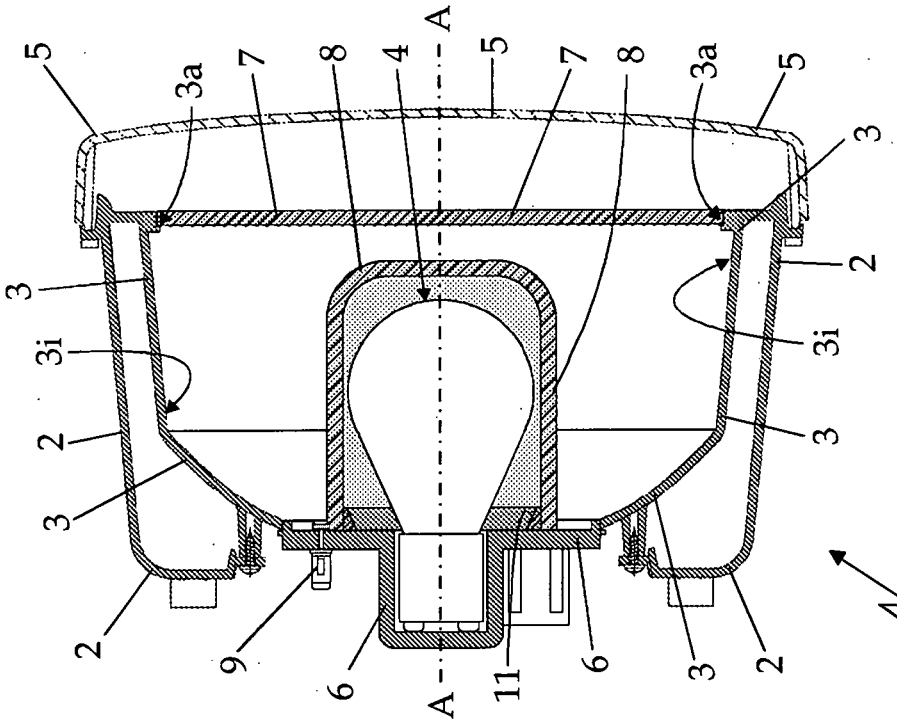
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Fig. 6

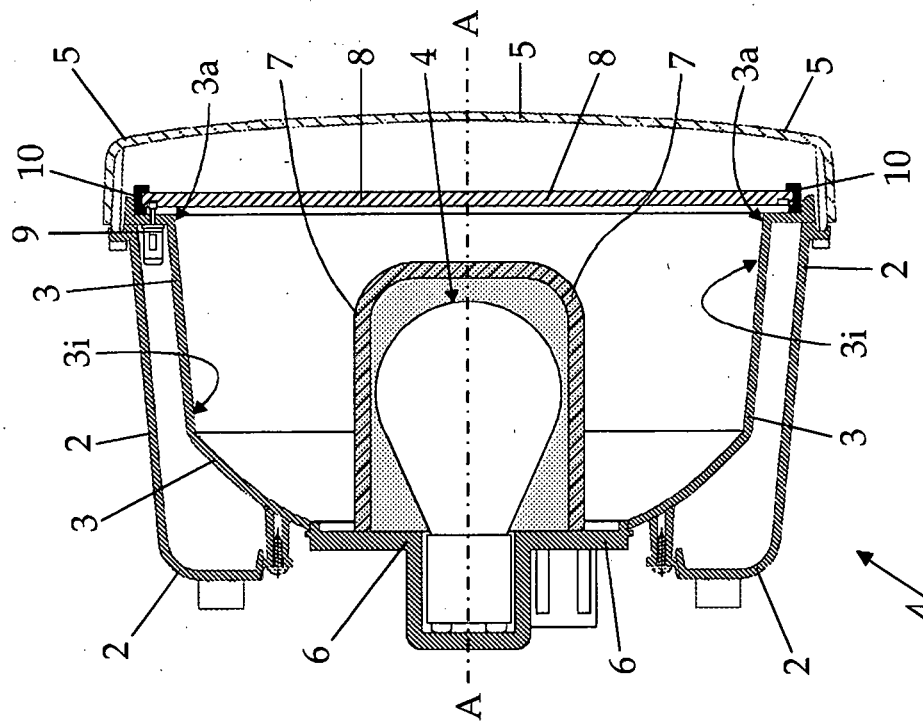
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Fig. 5

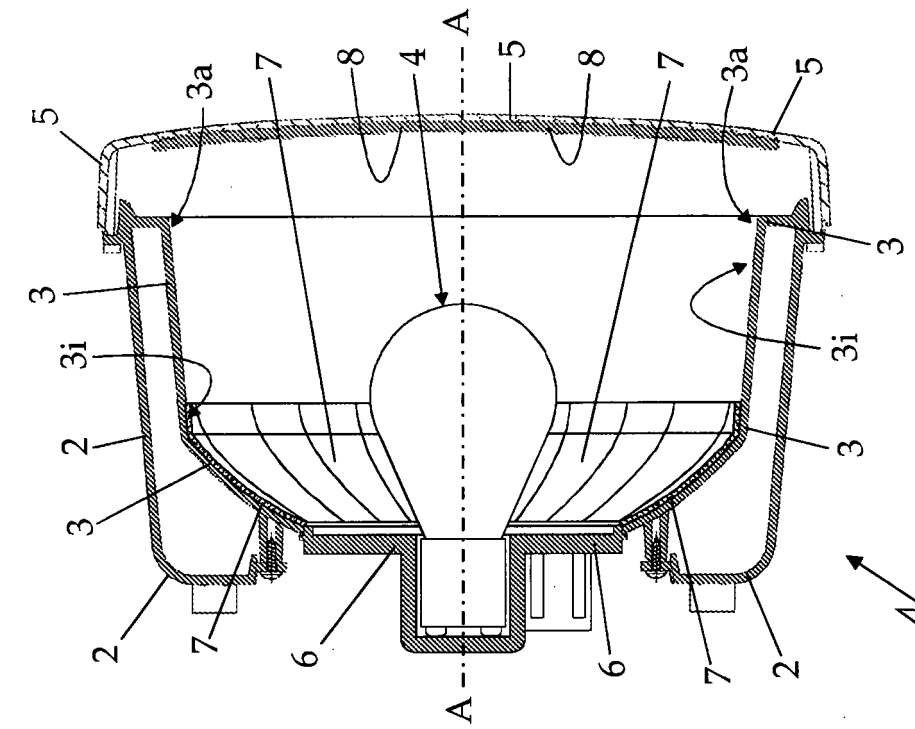
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Fig. 8

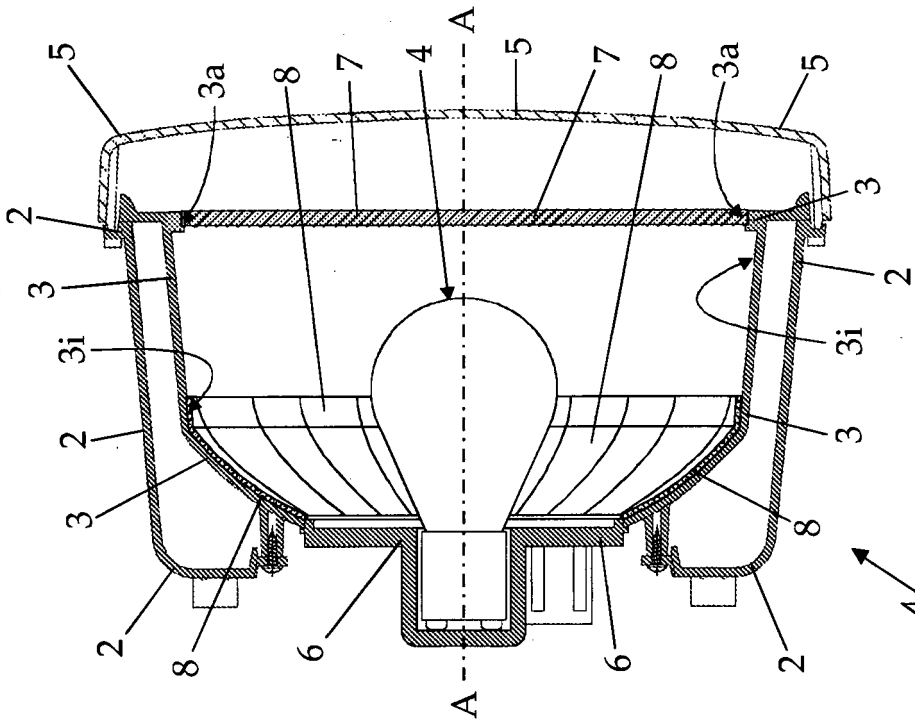
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Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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