A shield is foreseen in a light consisting of a casing with a transparent front wall as well as of a reflector (5), which is adapted to said casing and preferably consists of a thermoplastic material on the basis of polymers and is furnished with a throat (4), which is provided with circumferentially extending ornamental ribs (6) on its inner surface (40) and adapted to receive a standardized halide bulb, e.g. H8 or H11, wherein said shield is quickly and simply insertable within said reflector (5) without any need on providing specially adapted location for attachment such shield. To this aim, said shield in addition to a light impermeable screen (3, 3') and appropriately rigid cantilever (2, 2') comprises an attaching ring (1), which is firmly interconnected with each rigid cantilever (2, 2') and adapted for inserting into the interior of the throat (4) of the reflector (5) and upon said inserting also for establishing a positive interconnection with the reflector (5), in particular with said ribs (6, 6) on the inner surface (40) of the throat (4) of the reflector (5).

Published: with international search report (Art. 21(3))
Motor vehicle light shield

The invention refers to a motor vehicle light shield, which is intended for shielding in each desired area the light generated by a light source. In this, said light may either be a headlight, a fog light and/or a cornering light which is activated by turning in certain circumstances. In accordance with the International Patent Classification, such invention in the field of transporting belongs to vehicles, namely to lighting equipment for vehicles, and in particular to headlights, fog lights and other external lights which are intended to illuminate the area in front of the vehicle.

Starting from a light, which comprises at least a casing with a transparent front wall as well as a reflector, which is adapted to said casing and preferably consists of a thermoplastic material on the basis of polymers and is moreover furnished with a throat adapted to receive a standardized H8 or H11 halide bulb and circumferentially extending ornamental ribs, the purpose of the present invention is to create such shield preferably consisting of a metallic material, which could be adapted to each optical conditions and could moreover be easily, simply and reliably mounted directly into a reflector of a light, without any need on arranging a specially designed location on the surface of said reflector for the purposes of mounting such shield.
As known, each light source in a motor vehicle light is able to generate light rays, which are merely uniformly distributed in all directions. However, by using such light in traffic, quite rigorous rules must be taken into consideration about that, how much light is required or allowed to be transferred to certain areas in the adjacency of the vehicle, by which on the one hand a sufficient illumination of vehicle is achieved and on the other hand all other traffic participants are prevented from glaring.

According to EP 1 798 466 A1 (VALEO VISION), a vehicle light is furnished with a shield, which is in view of a driving direction located in front of a centrally arranged light source, by which the light rays generated by the said source are reflected in the opposite direction rearwards to reflecting surfaces of a reflector, by which said rays are then in a controlled manner re-directed towards a pre-determined area in front of the vehicle. Such shield is mounted in appropriate location, which is specially for this particular purpose designed on the reflector, by which then either each disposable reflecting surfaces are essentially reduced, or optical properties of said reflecting surfaces are hindered.

Alternatively, there is also a group of position-adjustable shields, one of them is described in EP 1 764 550 A1 (VALEO VISION) and is intended for mounting between the light casing and a reflector in order to be adjusted after that by means of a very special and quite complicated driving unit, while the other one according to EP 1 621 810 B1 (VALEO VISION) is mounted onto the light casing and supported by screws, by means of which then the shield may also be displaced. By taking into account vibrations generated during the use of the vehicle, or deformations resulting from temperature differences, accuracy of positioning a shield in such light is quite problematic, which however directly results in optical properties of such light.

The present invention refers to a motor vehicle light shield, wherein such shield comprises at least one light impermeable screen, which is in view of its shape and dimensions adapted to and to each optical requirements of each particular light and is
located at certain distance apart from the circumference of each available light source
and is firmly interconnected with appropriately rigid cantilever, by means of which
said screen is connectable with the light reflector. Each screen together with each
belonging cantilever preferably consists of a metallic material, while the reflector
consists of a thermoplastic material on the basis of polymers and is furnished with a
throat, which is adapted to receive a light source, preferably a standardized halide bulb
H8 or H11. Such shield is insertable into a reflector of a motor vehicle light, in which
at least two circumferentially extending, apart from each other located and radially
inwards protruding ribs are available on the inner wall of said throat of the reflector.

According to the invention, such shield in addition to at least screen and each
belonging cantilever also comprises an attaching ring, which is firmly interconnected
with each cantilever of each corresponding screen and is adapted for inserting into the
interior of the throat of the reflector for the purposes of establishing a positive
interconnection between said ring and the reflector in the area of said throat, namely in
the area of at least two apart from each other located, in the circumferential direction
of the inner surface of the throat extending and radially inwards protruding ribs.

In this, each screen ring is either detachably or in an undetachable manner
interconnected with each belonging cantilever. Moreover, the ring is either detachably
or in an undetachable manner interconnected with each belonging cantilever.

In one of possible embodiments of the invention, the ring comprises two opposite end
portions, wherein on the first end portion is directed outwardly from the reflector and
is furnished with holding members, which are adapted for transferring torque onto said
ring, while the opposite end portion is furnished with sequences of arresting teeth,
which are located apart from each other in the area of said ribs and shaped in the sense
of enabling movements in one direction and preventing movement in the opposite
direction, and in the adjacency i.e. at certain distance apart from said teeth a resting
protrusion is foreseen, providing that said distance is correspondingly smaller than the
thickness of said ribs. In this, said holding members are preferably available in the form of recesses, and each of them is ended by a rest extending at least approximately in the axial direction with regard to the ring.

In a further embodiment, the ring comprises at least two preferably toothed gripping means arranged on its second end portion, which is in the axial direction of the ring located oppositely from outwardly directed end portion on which the ring is firmly interconnected with each disposable cantilever of each corresponding screen, said gripping means being in the circumferential direction of the ring arranged at certain distance apart from each other and are each per se insertable through corresponding openings in the ribs on the inner surface of the throat of the reflector,

and moreover also two in the circumferential direction of said ring apart from each other located and at certain distance apart from previously mentioned gripping means arranged arresting means, which are adapted to cooperate with each disposable light source, preferably the H8 or H11 bulb, and each of them similarly like previously mentioned ripping means extends in the axial direction of the ring and is at its free end portion ended with a radially inwards directed arresting tooth.

The invention will be described in more detail on the basis of an embodiment, which is shown in the accompanied drawings, where

Fig. 1 is a schematic perspective view of a motor vehicle lights shield; and

Fig. 2 is also a perspective view of a further embodiment of the motor vehicle light shield, partially in cross-section.

A shield according to the invention comprises an attaching ring 1, by which at least one cantilever 2, 2' is firmly interconnected, which is on the other hand firmly interconnected with at least light impermeable shield 3, 3'.
In both shown embodiments according to Fig. 1 and 2, each cantilever 2, 2' is interconnected with each ring 1 and/or each corresponding shield 3 in an undetachable manner, although generally at least of these interconnection may optionally also be a detachable one.

In accordance with the invention it is also preferred that each available shield 3, 3' is located adjacent to a not-shown light source, by which said ring 1, each cantilever 2, 2' and each shield 3, 3' consist of a high-temperature resistant metallic material. However, as is will be subsequently described, due to relatively small contact surfaces the heat transfer between said shield and said light source is not very intensive and is not problematic.

The shape and the surface extent of each particular shield 3', 3' are determined in accordance with requirements in each particular light, while the shape and dimensions of the ring 1 are adapted to the shape of the throat 4 of each reflector 5, which is adjusted for inserting each desired halide bulb, e.g. H8 or HI1, which is known per se and is therefore not separately shown in the drawing. In such reflectors 5, circumferentially extending ornamental ribs 6 are foreseen on the inner surface 40 of the throat 4 of said reflector 5.

By taking into consideration the above described features of a described bulb and correspondingly adapted throat 4 of the reflector 5, the invention provides that the ring 1 is adapted for establishing a positive interconnection with said ribs 6, which are located in the area of the reflector 5.

In the first embodiment of the shield according to Fig. 1, said ring 1 comprises two end portions 11, 12, wherein in the first end portion 11, where a cantilever 2 of a screen 3 is attached to said ring 1, holding members 111, 111', 111" are foreseen, which are adapted to cooperate with each disposable means for mounting the shield into the throat 4 of the reflector 5 and which are in this particular embodiment available in the
form of recesses, which are each per se ended with an at least approximately in the axial direction of the ring 1 extending rest 112, 112’, 112”, so that the torque can be transferred from said means for mounting to said ring 1. On the other end portion 12 of the ring 1 there are sequences of arresting teeth 121, 121’, 121”, which protrude outwardly apart from the ring 1 and are appropriately sharp in order to enable sliding in one direction and to disable sliding in the opposite direction, adjacent to which at appropriate axial distance \( t_p \) which is slightly smaller than the thickness \( t_2 \) of said ornamental ribs 6, appropriate resting protrusion 122, 122’, 122” is arranged.

Mounting of such shield into the reflector 5 is performed quickly, simply and extremely reliable. As soon as the shield is ready for mounting into each prepared reflector 5 having a throat 4 and circumferential ribs 6 in the area of said throat 4, said ring 1 is inserted into said throat 4 in the axial direction of the throat 4 of the reflector 5, so that the second end portion 12 of the ring 1 in the area of arresting teeth 121, 121’, 121” is rest on the surface of said ribs 6 and protrusions 122, 122’, 122” are located adjacent to said ribs 6. Upon that said ring 1 is turned, by which on the one hand said protrusions 122, 122’, 122” slide along each belonging surface of each corresponding rib 6, by which the arresting teeth 121, 121’, 121” are embossed and remain anchored in the material of the rib 6. Consequently, each further rotation of the ring 1 is prevented by means of teeth 121, 121’, 121”, and each further movement of the ring 1 within the throat 4 is prevented by means of protrusions 122, 122’, 122”, so that the shield is firmly anchored within the throat 4 of the reflector 5. As mentioned, the contact surfaces between the metallic shield and the thermoplastic reflector 5 are relatively small, so that the thermal flux between the shield and the reflector is relatively small and the thermal balance of the reflector 5 is not changed essentially.

A further embodiment according to Fig. 2 also refers to a motor vehicle light shield, which comprises at least one light impermeable screen 3, 3’, which is regarding the shape and dimensions accommodated to each disposable optical requirements in each light, wherein in this particular case two screens 3, 3’ are foreseen, which are located
within the light adjacent to the circumference of the bulb, which is also in this case a classic H8 or H11 bulb, which is not shown in the drawing. Each of said screens 3, 3' is firmly interconnected with each corresponding relatively rigid cantilever 2, 2', by means of which the screen 3, 3' is connectable to the light reflector 5. Each screen 3, 3' together with each corresponding cantilever 2, 2' preferably consists of metal, while the reflector 5 preferably consists of a thermoplastic material on the basis of polymers and comprises a throat 4, which is adapted to receive a light source, namely a standardized halide bulb, which is optionally a H8 or H11 bulb, wherein on the inner surface 40 of the throat 4 of the reflector 5 again appropriate circumferential ribs 6 are foreseen.

In accordance with the present invention, also in this case in addition to the said at least one shield 3, 3' with corresponding cantilever 2, 2', the shield comprises an attaching ring 1, which is firmly interconnected with each cantilever 2, 2' of each available screen 3, 3' and is moreover adapted for inserting into the throat 4 of the reflector 5 and after that also for establishing a positive interconnection with the reflector 5 in the area of its throat 4 and in particular with said ribs 6, 6' on the inner surface 40 of the throat 4 of the reflector 5.

Also in such case, when observed in the axial direction of said ring 1 and reflector 5 and the bulb and correspondingly also of the shield, the ring comprises an outwardly from the light directed end portion 11, in the area of which the ring 1 is interconnected with each cantilever 2, 2', and also an oppositely directed second end portion 12.

By taking into consideration the previously defined orientation, the ring 1 is on the lastly mentioned end portion 12 furnished with at least two preferably toothed gripping means 123, 124, which extend axially and are in the circumferential direction located apart from each other and are moreover insertable through appropriate openings 61, 62 in said circumferential ribs 6, 6' on the inner surface 40 of the throat 4 of the reflector 5.
In addition to said gripping means 123, 124, at least two axially extending arresting means 125, 126 are foreseen on said end portion 12 of the ring 1, which are located in the circumferential direction apart from each other and apart from previously mentioned gripping means 123, 124 and are adapted to cooperate with each corresponding bulb H8 and/or H11, wherein each arresting means 125, 126 is ended on its free end with a radially inwards protruding arresting teeth 125', 126'.

In this case, during inserting the ring 1 of the shield into the throat 4 of the reflector 5 each disposable gripping means 123, 124 enters into each corresponding opening 60, 60' of each corresponding circumferential rib 6, 6', by which thanks to the shape thereof, namely to teeth, it is embossed into said opening 60, 60'. By this the ring 1 of the shield is positively interconnected with the reflector 5. Upon inserting the bulb into the throat 4 of the reflector 5 and simultaneously within said ring 1, the shield is still additionally secured in such position, since the engagement is established between the bulb and the arresting teeth 125', 126' of the arresting means 125, 126 on the ring 1. When the bulb is removed, e.g. due to replacement thereof, the ring 1 is by means of its gripping means 123, 124 still efficiently maintained in its position and cannot be removed from the throat 4 of the reflector.
PATENT CLAIMS

1. Motor vehicle light shield, comprising at least one light impermeable screen (3, 3'), which is in view of its shape and dimensions adapted to and to each optical requirements of each particular light and is located at certain distance apart from the circumference of each available light source and is firmly interconnected with appropriately rigid cantilever (2, 2'), by means of which said screen (3, 3') is connectable with the light reflector (5), wherein each screen (3, 3') together with each belonging cantilever (2, 2') preferably consists of a metallic material, while the reflector (5) consists of a thermoplastic material on the basis of polymers and is furnished with a throat (4), which is adapted to receive a light source, preferably a standardized halide bulb H8 or H11, and wherein at least two circumferentially extending, apart from each other located and radially inwards protruding ribs (6) are available on the inner wall (40) of said throat (4) of the reflector (5), characterized in that such shield in addition to at least screen (3, 3') and each belonging cantilever (2, 2') also comprises an attaching ring (1), which is firmly interconnected with each cantilever (2, 2') of each corresponding screen (3, 3') and is adapted for inserting into the interior of the throat (4) of the reflector (5) for the purposes of establishing a positive interconnection between said ring (1) and the reflector (5) in the area of said throat (4), namely in the area of at least two apart from each other located, in the circumferential direction of the inner surface (40) of the throat (4) extending and radially inwards protruding ribs (6, 6').

2. Shield according to Claim 1, characterized in that each screen (3, 3') is in an undetachable manner interconnected with each belonging cantilever (2, 2').

3. Shield according to Claim 1, characterized in that each screen (3, 3') is detachably interconnected with each belonging cantilever (2, 2').
4. Shield according to Claim 2 or 3, characterized in that the ring (1) is in an undetachable manner interconnected with each belonging cantilever (2, 2’).

5. Shield according to Claim 2 or 3, characterized in that the ring (1) is detachably interconnected with each belonging cantilever (2, 2’).

6. Shield according to anyone of Claims 1 - 5, characterized in that the ring (1) comprises two opposite end portions (11, 12), wherein on the first end portion (11) is directed outwardly from the reflector (5) and is furnished with holding members (111, 111’, 111”), which are adapted for transferring torque onto said ring (1), while the opposite end portion (12) is furnished with sequences of arresting teeth (121, 121’, 121”), which are located apart from each other in the area of said ribs (6) and shaped in the sense of enabling movements in one direction and preventing movement in the opposite direction, and in the adjacency i.e. at certain distance (t₁) apart from said teeth a resting protrusion (122, 122’, 122”) is foreseen, providing that said distance (t₁) is correspondingly smaller than the thickness (t₂) of said ribs (6, 6’).

7. Shield according to Claim 6, characterized in that the holding members (111, 111’, 111”) are available in the form of recesses, and each of them is ended by a rest (112, 112’, 112”) extending at least approximately in the axial direction with regard to the ring (1).

8. Shield according to anyone of Claims 1 - 5, characterized in that the ring (1) comprises

at least two preferably toothed gripping means (123, 124) arranged on its second end portion (12), which is in the axial direction of the ring (1) located oppositely from outwardly directed end portion (11) on which the ring (1) is firmly interconnected with each disposable cantilever (2, 2’) of each corresponding screen (3, 3’), said gripping means being in the circumferential direction of the ring (1) arranged at certain distance apart from each other and are each per se insertable through
corresponding openings \((61, 62)\) in the ribs \((6, 6')\) on the inner surface \((40)\) of the throat \((4)\) of the reflector \((5)\),

and moreover also two in the circumferential direction of said ring \((1)\) apart from each other located and at certain distance apart from previously mentioned gripping means \((123, 124)\) arranged arresting means \((125, 126)\), which are adapted to cooperate with each disposable light source, preferably the H8 or H11 bulb, and each of them similarly like previously mentioned ripping means \((123, 124)\) extends in the axial direction of the ring \((1)\) and is at its free end portion ended with a radially inwards directed arresting tooth \((125', 126')\).
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. F21V11/16
ADD.

According to International Patent Classification (IPC) into both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F21V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:
  * A' document defining the general state of the art which is not considered to be of particular relevance
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A' document member of the same patent family

Date of the actual completion of the international search

31 March 2011

Date of mailing of the international search report

06/04/2011

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer
Goltes, Matjaz

Form PCT/ISA/210 (second sheet) (April 2005)
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