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Backlit light assembly for a road vehicle and related road vehicle having a partially transparent substrate

Abstract

Light assembly comprising: a support structure; an illuminating source unit, mounted on board the support structure; an at least partially transparent polymeric substrate extending between a proximal end, mounted at the support structure and the illuminating source unit, and a distal end, opposite the proximal end and projecting from the support structure; wherein the polymeric substrate comprises a thickness lower than the other dimensions and is configured to be traversed, along its thickness, by a light beam emitted from the illuminating source unit at the proximal end, which exits at least from an outlet profile arranged at the distal end.

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Background/Summary

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

(1) This patent application claims priority from Italian patent application no. 102023000014139 filed on Jul. 6, 2023, the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

(2) The present invention relates to a light assembly for a road vehicle and to a related road vehicle provided with said assembly.

(3) In particular, the present invention has an advantageous, but not exclusive, application in a rear light assembly for a high-performance automobile, to which the description that follows will refer explicitly, but without thus losing its general nature.

PRIOR ART

(4) As known, an automobile has a complex lighting system usually comprising a plurality of lights.

(5) In particular, the lights are devices adapted to generate a light beam to signal its presence on the road (normally arranged at both the front and the rear, as in the case of position lights and daytime running lights) or to make the road surface visible to the driver (such as the headlights arranged at the front of the vehicle, for example).

(6) Generally, the lights are also called headlights, projectors or optical units.

(7) In the last decade, LED technology has been widely used in the car industry, and in particular in the lights. Increasingly smaller and sophisticated diodes allow certain design constraints to be eliminated, allowing increasingly original light forms to be created. These include the so-called “coast-to-coast” lights, usually installed horizontally in the rear zone as daytime running lights or position lights (or as brake lights, increasing their intensity). These lights are thus named because they cross from side to side, horizontally, a large part of the rear of the road vehicle.

(8) In these cases, a LED strip is usually arranged so as to direct the light beam backwards, in order to be directly visible, unless a transparent or opaque protection is present, to the vehicles following behind. In other words, the LED strip is usually so to as to direct the light beam along a parallel direction to a longitudinal axis of the vehicle, with the direction diverging from the centre of the road vehicle towards the rear.

(9) In particular, these technologies currently provide for the installation of a single LED strip at the rear end of the light, so that the light visible from the rear of the road vehicle is directly the one of the LEDs composing the strip.

(10) However, these technologies cause certain disadvantages in mounting and possibly in replacement of the light in the case of damage.

(11) In fact, the mounting of the LED strip in a manner that it is directly visible from the outside requires a high level of accuracy, since any defect in the positioning causes an aesthetic visual defect of the road vehicle.

(12) Furthermore, since the diodes are particularly exposed, they could break in the case of impact with obstacles and thus need to be replaced together with the polymeric part which usually protects them.

(13) In addition, according to the solutions of the prior art, a single LED strip is present, which defines a light emission that is particularly thin and not always appreciable at long distances. In order to improve the visibility of this emission, by increasing its thickness, it would therefore be necessary to install further parallel LED strips (or matrix LED groups).

(14) Lastly, the need to position the diodes so that they are directly visible imposes design constraints from a stylistic viewpoint, since the position of the diodes and the power supply lines of said diodes must always be considered.

DESCRIPTION OF THE INVENTION

(15) The object of the present invention is to provide a light assembly for a road vehicle and a relative road vehicle provided with said assembly that are at least partially free from the problems described here above and, at the same time, are simple and efficient to manufacture.

(16) According to the present invention, a backlit light assembly for a road vehicle and a relative road vehicle are provided according to what is claimed in the independent claims that follow and, preferably, in any one of the claims that are directly or indirectly dependent upon the independent claims.

(17) The claims describe preferred embodiments of the present invention and form an integral part of this description.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) The present invention will now be described with reference to the appended drawings, which illustrate a non-limiting example embodiment thereof, wherein:

(2) FIG. **1** is a front and schematic perspective view, with parts removed for clarity, of a road vehicle realised according to the dictates of the present invention;

(3) FIG. **2** is a rear and schematic perspective view, with parts removed for clarity, of the road vehicle of FIG. **1**;

(4) FIG. **3** is a side and schematic view, with parts removed for clarity, of a rear side portion of the vehicle of FIGS. **1** and **2**, in which a light assembly in accordance with the present invention is visible;

(5) FIG. **4** is a plan view of the light assembly isolated from the vehicle of FIG. **3**;

(6) FIG. **5** is a side view of the light assembly of FIG. **4**;

(7) FIG. **6** is a perspective and sectional view of the light assembly of FIGS. **4** and **5**; and

(8) FIG. **7** shows a detail of FIG. **6**.

PREFERRED EMBODIMENTS OF THE INVENTION

(9) In FIGS. **1** and **2**, the number **1** denotes, in its entirety, a road vehicle comprising two front wheels **2** and two rear wheels **3** and comprising an outer body **4** and a passenger compartment **5**, obtained inside the outer body **4** between the front and rear wheels **2**, **3** themselves.

(10) The same reference numbers and reference letters in the figures identify the same elements or components with the same function.

(11) In this description, the term “second” component does not imply the presence of a “first” component. Such terms are, in fact, adopted as labels to improve clarity and should not be intended as limiting.

(12) The elements and features illustrated in the different preferred embodiments, including the drawings, may be combined with each other without deviating from the scope of protection of this application as described below.

(13) It is specified that, in the description that follows, expressions such as “above”, “below”, “front”, “rear” and similar are used with reference to conditions of normal travel of the road vehicle **1** along the normal travel direction D.

(14) As shown in the non-limiting embodiment of FIG. **1**, it is also possible to define: a longitudinal axis X, pertaining to the automobile **1** and arranged, in use, horizontal and parallel to a normal travel direction D of the vehicle **1**; a transverse axis Y, pertaining to the automobile **1** and arranged, in use, horizontal and orthogonal to the axis X; and a vertical axis Y, pertaining to the automobile **1** and arranged, in use, vertical and orthogonal to the axes X, Y.

(15) The outer body **4** comprises, among other things, an undercarriage **6**, a bonnet **7**, a roof **8** and a windscreen **9** extending between the bonnet **7** and the roof **8**.

(16) In particular, the undercarriage **6** extends between the front wheels **2** and the rear wheels **3**.
(17) The outer body **4** also comprises two front sidewalls **10**, extending on opposite sides of the bonnet **7**, and two opposite rear sidewalls **11**, aligned with, and distanced from, the respective front sidewalls **10**.
(18) The outer body **4** also comprises a rear window **12** and a boot **13**.
(19) The windscreen **9** is coupled below with the bonnet **7** and above with the roof **8** and extends between the front sidewalls **10**.
(20) The rear window **12** is coupled below with the boot **13** and above with the roof **8**. The rear window **12** also extends between the rear sidewalls **11**.
(21) In particular, the outer body **4** comprises a front portion **14** and a rear portion **15** with respect to a travel direction D of the road vehicle **1**.
(22) The road vehicle **1** advantageously comprises a (backlit) light assembly **16** mounted on the front portion **14** and/or on the back portion **15**, as shown in the non-limiting embodiments of the appended figures. In particular, the light assembly **16** is configured to be visible (only) from the outside of the road vehicle **1**, for example from a position behind the road vehicle **1** in the case of the embodiments of the appended figures.
(23) Advantageously, the light assembly **16** comprises a support structure **17** configured to be mounted (therefore coupled, for example by means of fastening members of a known type) on the outer body **4** of the road vehicle **1**, in particular at the front portion **14** and/or the rear portion **15**, as shown in the appended figures.
(24) The support structure **17** extends primarily along a first direction A, which corresponds primarily (coincides) substantially with the transverse axis Y of the road vehicle **1**. The term "correspond primarily" in relation to an axis and to a direction means that there is an angle lower than 45°, in particular lower than 20°, between the two of them.
(25) In addition, the light assembly **16** comprises an illuminating source unit **18**, which is mounted on board the support structure **17** and comprises a plurality of luminous devices **19** arranged mainly along the first direction A (i.e. along the transverse axis Y).
(26) Advantageously but not necessarily, the luminous devices **19** are a strip **20** of light-emitting diodes **21** (LED). In this manner, it is easily possible to adjust the intensity, the colour and possibly also the frequency of the light radiation emitted by the unit **18**.
(27) Advantageously, the light assembly **16** also comprises an at least partially, in particular totally, transparent polymeric substrate **22**.
(28) Preferably but not in a limiting manner, the polymeric substrate **22** has a flat shape, i.e. extending primarily in two directions and having a limited thickness W.
(29) In particular, but not in a limiting manner, the thickness W of the polymeric substrate (**22**) is substantially constant. In other words, the thickness W does not vary, or varies in a negligible manner (for example, of the order of one millimetre), along both or only one of the two extension directions.
(30) In detail, the polymeric substrate **22** extends along a second direction B perpendicular to the first direction A and corresponding primarily (coinciding substantially) with the longitudinal axis X of the road vehicle **1**, between a proximal end **23**, mounted at the support structure **17** and the illuminating source unit **18**, and a distal end **24**, opposite the proximal end **23** and projecting from the support structure **17**.
(31) Advantageously, but not in a limiting manner, the thickness W of the polymeric substrate **22** is constant along the direction B, between the proximal end **23** and the distal end **24**. According to several variants, the thickness W varies, in particular increases, from the proximal end **23** to the distal end **24**.
(32) In particular, but not in a limiting manner, the distal end **24** exits in a cantilevered manner (preferably behind, as shown in FIG. **3**) from the outer body **4** of the road vehicle **1**. In other words, the distal end **24** projects from the inside to the outside of the vehicle **1**. More in particular, the

distal end **24** is exposed outside of the vehicle **1**, i.e. directly visible from the outside, without protection means and/or covering members, such as glass, lenses or further polymeric substrates.
(33) As previously mentioned, therefore, the polymeric substrate **22** comprises a thickness W lower than the other dimensions (along directions A and B) and is configured to be traversed, along its thickness W, by a light beam L emitted by the luminous devices **19** at the proximal end **23**, which exits at least from an outlet profile **25** arranged at the distal end **24**.
(34) In other words, the light beam L emitted by the diodes **21** traverses the polymeric substrate **22** primarily (substantially) along the longitudinal axis X of the road vehicle **1** (i.e. along the first direction A).
(35) Preferably, but not in a limiting manner, the substrate **22** determines a rear spoiler of the road vehicle **1** (i.e. having aerodynamic and/or aesthetic functions).
(36) In the non-limiting embodiment of the appended figures, the main outlet profile **25** is substantially the end profile of the polymeric substrate **22**. In particular, the outlet profile **25** is substantially parallel to the vertical axis Z. In this manner, the visibility of the beam L exiting from it is maximised, since the profile **25** causes a clean interruption of the substrate **22**.
(37) Advantageously, but not in a limiting manner, the polymeric substrate **22** is made (at least in part, in particular entirely) of methacrylate (PMMA). In detail, said material may be very transparent (even more than glass) and possesses characteristics of behaviour similar to optical fibre in quality of transparency. In this manner, the light beam L emitted by the diodes **21** may traverse almost completely, and in any case efficiently, the substrate **22** until it exits from the profile **25**.
(38) In addition, methacrylate also possesses important mechanical characteristics that make it difficult to break, increasing the safety in the case of impacts (no shards would fly) and simplifying its replacement in safety.
(39) As shown in the non-limiting embodiment of FIG. **3**, the light assembly **16** is mounted on the rear portion **15**, so as to be slightly inclined with respect to the longitudinal axis X of the road vehicle **1**.
(40) Preferably but not in a limiting manner, and as shown clearly in FIGS. **5** and **6**, the polymeric substrate **22** comprises, along the second direction B (i.e. along the axis X), starting from the proximal end **23** toward the distal end **24**, a first portion **26** and a second portion **27**, wherein the second portion **27** is inclined, in particular upwardly, with respect to the first portion **26**. In this manner, the surface of substrate **22** visible for a vehicle following the road vehicle **1** is increased.
(41) Advantageously, in accordance with what is described above, the polymeric substrate **22** comprises two main outer surfaces **28** facing each other and a minor lateral surface **29** connecting the two main outer surfaces **28**. The outlet profile **25** is at least part of the minor lateral surface **29**.
(42) Preferably but not in a limiting manner, the two main surfaces **28** are striped surfaces, in particular, extendible.
(43) Advantageously, furthermore, according to what is shown by FIGS. **4** and **6**, the polymeric substrate **22** comprises, between the proximal end **23** and the distal end **24**, further outlet profiles **30** obtained on at least one of the main outer surfaces **28**.
(44) In particular, in the non-limiting embodiment shown, the further outlet profiles **30** are obtained on the main lower surface **28**, so as to be better visible from the rear of the road vehicle **1**. The combination of the main outlet profile **25** with the further outlet profiles **30** allows the light emission exiting from the substrate **22** to be thickened, making the vehicle more visible and recognisable, even at long distances.
(45) The further outlet profiles **30** represent interruptions in the continuity of thickness W of the polymeric substrate **22** and cause the exit of part of the light beam L precisely at these discontinuities, according to known principles of light refraction in a transparent body.
(46) Advantageously, the further outlet profiles **30** are grooves **31**, in particular millings that partially interrupt the passage of the light beam L towards the outlet profile **25**, determining an

intermediate partial exit thereof.
(47) Advantageously, but not in a limiting manner, the grooves **31** determine the interruption of one profile of the at least one main outer surfaces **28** that otherwise would be continuous, i.e. that excepted where the grooves are is continuous. According to the non-limiting embodiment shown, the grooves **31** are obtained on the main lower surface **28** and interrupt its profile.
(48) As shown in the non-limiting embodiments of FIGS. **4** and **6**, the further outlet profiles **30** are concentric to each other, namely have the same shape, but different dimensions, as the outlet profile **25**, thus of at least part of the lateral surface **29**. In particular, the profiles **30** are symmetric figures with respect to the same centre of symmetry. More in particular, as shown in FIG. **4**, the profiles **30** are substantially projections of the profile **25** on the plane AB, scaled dimensionally and homogeneously on both axes A and B with respect to the same point of reference. In this manner, the view at a distance of the road vehicle **1** has a homogeneous form (and achieves the effect of thickening the light emission of only the outlet profile **25**).
(49) Preferably but not in a limiting manner, the outlet profile **25** comprises at least two rectilinear portions parallel to a direction of travel of the road vehicle **1** and at least one curved portion, wherein the at least one curved portion unites the rectilinear portions. In other words, the rectilinear portions extend mainly along the direction of travel.
(50) In particular, in the non-limiting embodiment of FIG. **4**, the profile **25** comprises two rectilinear portions substantially parallel to the direction B. More in particular, the rectilinear portions have a component along the axis B and a component along the axis A, and the component along axis B is, preferably, considerably (more than double), larger than the component along axis A.
(51) Advantageously, but not in a limiting manner, the illuminating source unit is integrated into the support structure **17**. Therefore, the luminous devices **19** are not directly visible from the outside of the road vehicle **1**. In this manner, according to what is described here, it is possible to obtain different luminous effects by exploiting the refraction internal to the polymeric substrate **22**, which have no design constraints in relation to the direct view of the diodes **21**, which are also more protected.
(52) According to several non-limiting embodiments, such as the one shown in FIGS. **6** and **7**, at the proximal end **23**, the luminous devices **19** emit the light beam L into the polymeric substrate **22** through an input surface **32** facing and parallel to the luminous devices **19**. More in particular, its input surface **32** is substantially planar and parallel to the first direction A and to the second direction B. In other words, the input surface **32** is primarily horizontal.
(53) Advantageously, but not in a limiting manner, therefore, the luminous devices **19** are arranged so as to emit the light beam L transversely, in particular perpendicularly, to the input surface **32** and therefore to the first direction A and to the second direction B.
(54) Preferably, but not in a limiting manner, the polymeric substrate **22** comprises a sloped reflective surface **33**, which is arranged close to the illuminating source unit **18**, downstream of the input surface **32**, following the path of the light beam L.
(55) The sloped reflective surface **33** is arranged to deflect the light beam L substantially parallel to the second direction B and therefore, in use, mainly along the longitudinal axis X of the road vehicle **1** (behind, according to the example shown).
(56) Advantageously, but not in a limiting manner, with the exception of the output profiles **25** and **30**, the thickness W of the polymeric substrate **22** after the sloped reflective surface **33** is substantially constant. In this manner, its propagation is optimised.
(57) In the non-limiting embodiment visible in the appended figures, in particular in FIGS. **6** and **7**, the support structure **19** comprises a cavity **34** (elongated) in which both the illuminating source unit **18** and the proximal end **23** of the polymeric substrate **22** are housed. In particular, the cavity **34** extends primarily along the first direction A, i.e. along the transverse axis Y of the road vehicle **1**.

(58) Preferably but not in a limiting manner, and as shown in the embodiments of FIGS. **6** and **7**, the cavity **34** is bounded, along the second direction B, by a first containment member **35**, in particular a first ribbing **36**, and a second containment member **37**, in particular a second ribbing **38**, which are preferably made of a piece with the polymeric substrate **22** and are mounted, by shape coupling, so as to bind the polymeric substrate **22** to the support structure **17**. In other words, the ribbings **36** and **37** are radial protrusions (along the vertical axis Z, for example) obtained on the polymeric substrate **22** so as to bind it to the support structure **17**, avoiding a relative movement thereof along the second direction B.
(59) According to several preferred embodiments, therefore, the light assembly **16** is mounted on the outer body **4** so that the polymeric substrate **22** vents upwardly.
(60) Preferably but not in a limiting manner, the polymeric substrate **22** extends transversely from at least a right sidewall **10**, **11** (front or rear, as shown) to a left sidewall **10**, **11** (front or rear, as shown) of the road vehicle **1**.
(61) In particular, as shown in FIGS. **1** to **3**, the substrate **22** comprises an inner portion **39** inside the outer body **4** of the road vehicle **1**, in particular inside the support structure **17**, and a projecting portion **40**, i.e. that part which protrudes from the outer body **4**, meaning the vehicle shell, and is visible from the outside of the vehicle, also from above (as shown in FIG. **4**).
(62) In particular, the projecting portion **40** comprises in turn a rear part **41**, which extends substantially along the first direction A and is arranged behind the vehicle, in detail below the rear window **12** or the windscreen **9**.
(63) Furthermore, preferably but not in a limiting manner, the projecting portion **40** comprises a pair of side parts **42**, opposite each other and arranged at the sidewalls **10**, **11**. In particular, the side parts **42** project from the sidewalls **10**, **11**. In this manner, the visibility of the polymeric substrate **22** is also improved for vehicles that are located laterally with respect to the road vehicle **1**.
(64) Preferably but not in a limiting manner, the outlet profile **25** and/or the further outlet profiles **30** comprise a surface finish, for example translucent.
(65) In use, the light beam L is emitted by the diodes **21** downwards, hits and is refracted by the sloped surface **33** and is propagated as far as the outlet profile **25**, which is illuminated by the interruption of the propagation, as known, in refraction phenomena. A part of the light beam L is, on the other hand, dispersed into the further outlet profiles **30**, which in turn will be illuminated by the portion of the light beam L that exits from the polymeric substrate **22**.
(66) Although the invention described here above makes particular reference to a precise example of embodiment, it is not to be considered as limited to said example of embodiment, its scope including all those variants, changes or simplifications covered by the appended claims, such as, for example, a different conformation of the polymeric substrate, a use of the light assembly as headlights, a different type of vehicle.
(67) From an examination of the features of the road vehicle **1** and the light assembly **16** realised according to the present invention, the advantages they allow to achieve are evident.
(68) In particular, in the solution presented here, mounting of the light assembly is simplified and its resistance is improved by protecting the LED strip and exposing exclusively the polymeric substrate to impacts.
(69) Furthermore, the plurality of outlet profiles determines a thickening of the luminous strip visible from outside the road vehicle.
(70) In addition, it appears evident that the use of a single strip of diodes to generate a plurality of luminous lines allows the overall weight of the road vehicle to be reduced, with respect to a solution with more strips of diodes, the relative power supplies and the relative cabling.
(71) Lastly, the freedom of design is improved, as there is no longer a need to position the strip of diodes so that it is directly visible from the outside the vehicle. In this manner, it is possible to produce even complex luminous profiles, which can improve the visibility and recognisability of the road vehicle (including laterally).

LIST OF REFERENCE NUMBERS OF THE FIGS

(72) **1** road vehicle **2** front wheels **3** rear wheels **4** outer body **5** passenger compartment **6** undercarriage **7** bonnet **8** roof **9** windscreen **10** front sidewalls **11** rear sidewalls **12** rear window **13** boot **14** front portion **15** rear portion **16** light assembly **17** support structure **18** illuminating source unit **19** luminous devices **20** strip **21** diodes **22** polymeric substrate **23** proximal end **24** distal end **25** outlet profile **26** first portion **27** second portion **28** main surfaces **29** lateral surface **30** further outlet profiles **31** grooves **32** input surface **33** sloped reflective surface **34** cavity **35** first containment member **36** first ribbing **37** second containment member **38** second ribbing **39** inner portion **40** projecting portion **41** rear part **42** lateral parts A first direction B second direction C third direction D travel direction L light beam W thickness X longitudinal axis Y transverse axis Z vertical axis

Claims

1. A light assembly (**16**) for a road vehicle (**1**); the light assembly (**16**) comprising: a support structure (**17**) configured to be mounted on an outer body (**4**) of the road vehicle (**1**) and extending primarily along a first direction (A); an illuminating source unit (**18**), mounted on board the support structure (**17**) and comprising a plurality of luminous devices (**19**) arranged mainly along the first direction (A); and an at least partially transparent polymeric substrate (**22**) extending, along a second direction (B) perpendicular to the first direction (A), between a proximal end (**23**), mounted at the support structure (**17**) and the illuminating source unit (**18**), and a distal end (**24**), opposite the proximal end (**23**) and projecting from the support structure (**17**); wherein the polymeric substrate (**22**) comprises a thickness (W) lower than other dimensions of the polymeric substrate and is configured to be traversed, along its thickness (W), by a light beam (L) emitted from the luminous devices (**19**) at the proximal end (**23**), which exits at least from an outlet profile (**25**) arranged at the distal end (**24**); wherein the polymeric substrate (**22**) comprises: two main outer surfaces (**28**) facing each other and a minor lateral surface (**29**) connecting the two main outer surfaces (**28**); wherein the outlet profile (**25**) is at least part of the minor lateral surface (**29**); and further outlet profiles (**30**) are made on at least one of the main outer surfaces (**28**), between the proximal end (**23**) and the distal end (**24**); wherein the further outlet profiles (**30**) are grooves (**31**) that partially interrupt the passage of the light beam (L) towards the outlet profile (**25**) determining an intermediate partial exit thereof, wherein the further outlet profiles (**30**) are concentric to each other having same shapes with different dimensions as the outlet profile (**25**) of at least part of the lateral surface (**29**).

2. The light assembly (**16**) according to claim 1, wherein the polymeric substrate (**22**) is made of methacrylate.

3. The light assembly (**16**) according to claim 1, wherein the polymeric substrate (**22**) comprises, along the second direction (B), starting from the proximal end (**23**) toward the distal end (**24**), a first portion (**26**) and a second portion (**27**), wherein the second portion (**27**) is inclined upwardly, with respect to the first portion (**26**).

4. The light assembly (**16**) according to claim 1, wherein the grooves (**31**) cause interruption of a profile of the at least one of the main outer surfaces (**28**) that would otherwise be continuous.

5. The light assembly (**16**) according to claim 1, wherein the thickness (W) of the polymeric substrate (**22**) is substantially constant.

6. The light assembly (**16**) according to claim 1, wherein the outlet profile (**25**) comprises at least two rectilinear portions substantially parallel to a direction of travel of the road vehicle (**1**) and at least one curved portion, wherein the at least one curved portion unites the rectilinear portions.

7. The light assembly (**16**) according to claim 1, wherein, at the proximal end (**23**), the luminous devices (**19**) emit the light beam (L) into the polymeric substrate (**22**) through an input surface (**32**) facing and parallel to the luminous devices (**19**); wherein the input surface (**32**) is substantially

parallel to the first (A) and to the second direction (B).
8. The light assembly (**16**) according to claim 7, wherein the luminous devices (**19**) are arranged to emit the luminous beam (L) perpendicularly, to the input surface (**32**).
9. The light assembly (**16**) according to claim 1, wherein the polymeric substrate (**22**) comprises a sloped reflective surface (**33**) arranged to deflect the light beam (L) parallel to the second direction (B) and, in use, mainly along a longitudinal axis (X) of the road vehicle (**1**).
10. The light assembly (**16**) according to claim 1, wherein the luminous devices (**19**) are a strip (**20**) of light-emitting diodes (**21**).
11. The light assembly (**16**) according to claim 1, wherein the support structure (**17**) comprises a cavity (**34**) in which both the illuminating source unit (**18**) and the proximal end (**23**) of the polymeric substrate (**22**) are housed, the cavity (**34**) extending primarily The light assembly the first direction (A).
12. The light assembly (**16**) according to claim 11, wherein the cavity (**34**) is bounded, along the second direction (B), by a first containment member (**35**) and a second containment member (**37**), which are made of a piece with the polymeric substrate (**22**) and are mounted, by shape coupling, so as to bind the polymeric substrate (**22**) to the support structure (**17**).
13. A road vehicle (**1**) comprising: a pair of front wheels (**2**) and a pair of rear wheels (**3**); an outer body (**4**) comprising a front portion (**14**) and a rear portion (**15**) with respect to a normal travel direction (D) of the road vehicle (**1**); and a light assembly (**16**) according to claim 1, wherein the light assembly (**16**) is mounted to the front portion (**14**) and/or the rear portion (**15**) and is configured to be visible from the outside of the road vehicle (**1**); wherein a longitudinal axis (X) of the road vehicle (**1**) corresponds primarily with the second direction (B) and a transverse axis (Y) of the road vehicle (**1**) corresponds primarily with the first direction (A).
14. The road vehicle (**1**) according to claim 13, wherein the light assembly (**16**) is mounted to the outer body (**4**) so that the polymeric substrate (**22**) vents upwardly.
15. The road vehicle (**1**) according to claim 13, wherein the polymeric substrate (**22**) extends transversely from at least a right sidewall to a left sidewall of the road vehicle (**1**).