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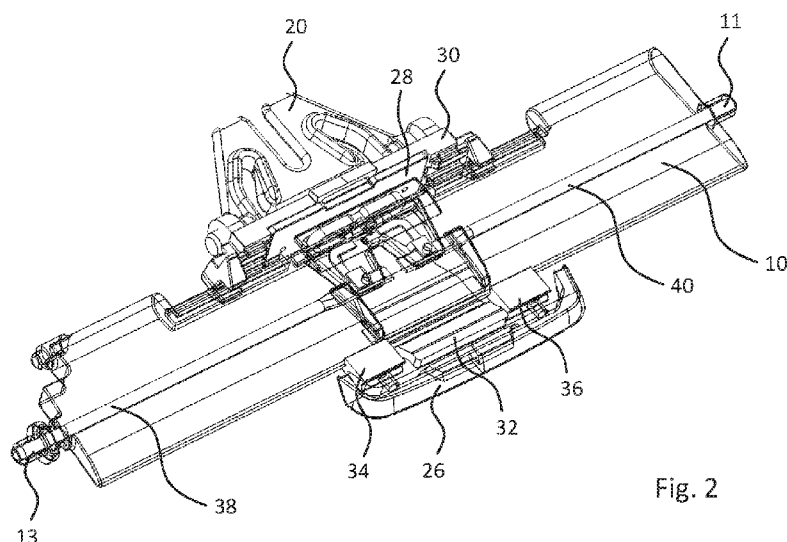


Fig. 2

(57) Abstract: An air guiding arrangement for an air outlet for a vehicle includes an air guiding element (10) and an operating element (12) which can be moved relative to the air guiding element (10) and has a manually actuable operating section (24) which is arranged on a front side of the air guiding element (10). A light source (29) is arranged on the operating element (12) on a rear side of the air guiding element (10), which rear side lies opposite the front side. A light guide (32) is provided, into which light which is emitted from the light source (29) is coupled and is guided to a light exit section of the operating section (24), the light guide (32) being guided around the air guiding element (10).

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AIR GUIDING ARRANGEMENT FOR AN AIR OUTLET

TECHNICAL FIELD

[0001] The invention relates to an air guiding arrangement for an air outlet for a vehicle, comprising an air guiding element and an operating element which can be moved relative to the air guiding element and has a manually actuatable operating section which is arranged on the front side of the air guiding element.

BACKGROUND

[0002] Air outlets of the above-mentioned type are used in vehicles and serve to ventilate the vehicle interior. To this end, the air outlets are connected to an air supply. The air outlets as a rule have a plurality of air guiding elements, for example air guiding slats, which guide the air flow in the desired direction into the vehicle interior. At least one air guiding element comprises an operating element, by way of which the air guiding element can be pivoted, for example, in order to change the direction of the air flow. The air guiding element which is coupled to the operating element can be coupled to further air guiding elements, with the result that the latter are pivoted synchronously. It is also possible to couple the air guiding element which is provided with the operating element to further air guiding elements which can then likewise be pivoted via the operating element, but, for example, about a pivot axis which is perpendicular with respect to the pivot axis of the air guiding element which is provided with the operating element.

[0003] There is a desire to eliminate the operating element, in particular for night illumination, search illumination or ambience illumination. If, for example, light emitting diodes are arranged in the region of an air outlet section of the operating element, this leads to undesirably non-uniform illumination (hotspots). It is proposed in DE 201 18 014 U1 to produce an air guiding element which is configured as a slat from a material which is flooded with light, and to load said air guiding element via at least one narrow side with light which is distributed in the slat body and exits from a defined section. As an alternative or in addition, it is proposed in said document to produce a setting or display element from plastic which can be flooded with light. For the electric supply, conductor rails or conducting plastic strips in the slat are proposed, on which conductor rails or conducting plastic strips sliding contacts slide in the case of a relative movement between the slat and

an actuating element. In order to homogenize the light emission, DE 20 2013 105 590 U1 proposes the inclusion of an elongate light guide in a slat as an air guiding element. The light guide extends over at least one length region of the slat and is intended to make a uniform illumination of a light exit face possible over its entire width and length.

[0004] The partial construction of the air guiding element from a light-permeable material or from a light guide leads, however, to it not being possible for incorrect use forces (misuse forces) to be absorbed at the level which is usually required by the vehicle manufacturer. This applies, in particular, to the deflection of air guiding slats. Moreover, there are doubts about the durability of systems of this type. Thus, for example, a light-permeable PMMA material is afflicted by safety concerns, since it usually breaks in a brittle manner and tends to shatter, which can lead to considerable injuries, for example, in the case of a head impact. Moreover, the electric contact via sliding contacts which is proposed in the prior art leads to an undesired influence on the movement forces of the operating element and to undesired noise development and wear.

SUMMARY

[0005] Proceeding from the described prior art, the invention is based on the object of providing an air guiding arrangement for an air outlet, which air guiding arrangement permits a uniform illumination of the operating element while satisfying the safety requirements at all times.

[0006] The invention achieves the object by way of the subject matter of claim 1. Advantageous refinements are found in the dependent claims, the description and the figures.

[0007] For an air guiding arrangement of the type mentioned at the outset, the invention achieves the object by virtue of the fact that a light source is arranged on the operating element on a rear side of the air guiding element, which rear side lies opposite the front side, and that a light guide is provided, into which light which is emitted from the light source is coupled and is guided to a light exit section of the operating section, the light guide being guided around the air guiding element.

[0008] The air guiding arrangement according to the invention is provided for an air outlet of a vehicle, such as a passenger car or truck. Air outlets of this type as a rule have a housing, for example made from a plastic material. One or more air guiding elements are mounted movably, for example mounted pivotably, on the housing. The air guiding elements can likewise consist of plastic. At least one of the air guiding elements is provided with an operating element, via which said air guiding element and possibly further air guiding elements which are coupled to said air guiding element can be adjusted manually in the way described at the outset, for example can be pivoted, in order to guide the air stream in the desired way into the vehicle interior. The operating element can likewise consist of a plastic. In addition to the air guiding element which is provided with the operating element, the air guiding arrangement according to the invention can have further air guiding elements which, in particular, can be coupled to the air guiding element which is provided with the operating element, and which do not have to have any operating elements.

[0009] A manually actuable operating section of the operating element is provided on a front side which faces the vehicle interior in the assembled state. A light source is arranged on the operating element on a rear side of the air guiding element, which rear side lies opposite the front side and faces away from the vehicle interior in the assembled state. The light source can comprise, for example, at least one light emitting diode (LED), in particular also a plurality of light emitting diodes. Light which is emitted by the light source is coupled into a light guide which guides the light to a light exit section of the operating section. The light guide is guided around the air guiding element. For example, the light guide can be guided along the underside or along the upper side of the air guiding element below the latter or above the latter. A split or single-piece (for example, horseshoe-shaped or semicircular) light guide is also conceivable which, for example, has a section which runs above the air guiding element and a section which runs below the air guiding element. Depending on the geometry of the air guiding element, the light guide can also be guided rotationally around the air guiding element, for example, in the case of a rotatable air guiding element. The air guiding element itself, for example an air guiding slat, can be impervious to light of the light source. Thus, according to the invention, no light-conducting section has to be provided within the air guiding element. The light which is emitted by the light source and is guided around the air guiding element by the light guide

exits uniformly from the light exit section and without the formation of hotspots. Weakening of the air guiding element can be avoided reliably by no light-conducting sections being required within the air guiding element. In particular, the requirements with regard to high incorrect use forces can also be satisfied reliably in this way. Moreover, a plastic material which does not break in a brittle manner in the case of a crash or tends to shatter can be selected for the air guiding element. Moreover, the arrangement of the light source on the rear side of the air guiding element permits optimum shielding, in order to completely avoid undesired light leakage. It is also possible in the case of the solution according to the invention to use suitable damping elements which result in pleasant haptics during the movement of the operating element.

[0010] In accordance with one refinement, at least one electric conductor can be arranged in the air guiding element, which electric conductor is connected firstly to the light source and can be connected secondly to an electric supply source. Two or more electric conductors can be provided, for example. The electric conductors can consist of a metal. Thus, for example, electric conductors can be formed by way of metal inserts which are inserted into the air guiding element. They do not have to lie parallel to one another. The metal inserts can be integrated into the air guiding element, for example, during a plastic injection molding process. Electrically conducting plastic is also fundamentally conceivable in this regard. Production using a two-component injection molding process would then be possible. The electric conductors can be connected firstly via the housing of the air outlet to an external electric voltage source in order to supply them. Secondly, the electric conductors can be connected to the light source in order to supply it electrically. A plug-in connection can be provided in a way which is simple to assemble, in particular, for the connection between the electric conductors and the light source.

[0011] It can be provided in accordance with a further refinement that at least one elastic electric connecting element is provided for electric connection between the light source and the at least one electric conductor, which electric connecting element is held on one side fixedly on the air guiding element and on the other side fixedly on the operating element, and which electric connecting element is deformed elastically in the case of a relative movement between air guiding element and operating element. The at least one electric transmission element can be at least one elastic conductor strip which is bent in a U-shaped manner, the first limb of which is held on a first holder which is connected to the electric

conductor, and the second limb of which is held on a second holder which is connected to the light source. The conductor strip is electrically conducting and can be, for example, a metal strip. The first and second holder are in each case electrically conducting. They can be, for example, metal holders. Here, for example, a clamping mounting of the conductor strip or strips in the holders is possible. In the case of, for example, two conductor strips for two electric conductors, two first holders and two second holders then exist accordingly. The holders can be part of an electric plug. In this way, the first and second holders can be connected electrically to one another. The first holder can be plugged, for example, onto the respective electric conductor. The second holder can be plugged, for example, onto a printed circuit board which supports the light source. The elastic electric connecting elements which are provided in the abovementioned refinements, in particular the elastic conductor strips, also provide a reliable electric connection between the parts which can be moved relative to one another at all times, even in the case of a relative movement between the operating element and the air guiding element, without the sliding contacts which are proposed in the prior art being necessary. As a result, undesired actions of force on the movement of the operating element can be ruled out. Moreover, undesired noise formation and/or wear can be avoided. The conductor strips roll with elastic deformation between running faces which face them during the movement between the operating element and the air guiding element, and in this way compensate for a movement, for example a displacement of the operating element with respect to the air guiding element. For example, the flexible conductor strips can be configured as spring steel strips, flexible printed circuit boards, copper strips or else electrically conducting plastic strips. Carbon fiber strips also come into consideration if they exhibit suitable conductivity. An assembly unit can preferably be formed from the elements of a plug which comprises the first and second holders, the elastic conductor strips and the light source or a printed circuit board which holds the light source, in each case with associated contact elements, which assembly unit can be preassembled in a simple way and can then be finally assembled as a whole. In this way, an electric connection is also possible in the case of a rotary knob as operating element, the elastic conductor strips then rolling on a circular track. A combination between a rotational movement and a sliding movement is also possible in conjunction with said electric connection. The abovementioned refinements can in principle be used in the case of every conceivable relative movement between the operating element and the air guiding element, for example even in the case of barrel-type air outlets or spherical air

outlets, in particular even in the combination of two linear units. Moreover, more than two electric conductors can be guided through the air guiding element, for example at least four electric conductors. In this way, the actuation of a colored RGB light emitting diode as light source would then be possible, which would make individually adjustable illuminating colors possible. It goes without saying that an embodiment with three electric conductors, for instance if control electronics for an RGB light emitting diode are seated on a printed circuit board, or five electric conductors, for example for the actuation of an RGBW light emitting diode, is also possible.

[0012] As an alternative to the abovementioned refinements, an electric connection can also take place via cables which exit, for example, on the rear side of the operating element and are guided from there through the housing of the air outlet to the outside. Electric conductors in the air guiding element can then be dispensed with. For example, the routing out of the housing can take place via a further air guiding element which is arranged behind the air guiding element which is provided with the operating element. In this case, as a result of a sufficient length, the cables undertake the compensation for the relative movement between the operating element and the air guiding element.

[0013] The air guiding element can be, in particular, an air guiding slat which is mounted pivotably in a housing of an air outlet. It can be capable of being pivoted, for example, about a pivot axis which is horizontal in the assembled state. For pivotable mounting, pivot pins can be configured in a manner known per se on lateral end faces of the air guiding slat, which pivot pins engage into corresponding pivot bearing sections of the housing of the air outlet. It is then possible, furthermore, that the at least one electric conductor is integrated into at least one pivot pin of the air guiding slat for pivotable mounting of the air guiding slat on the housing of the air outlet. For example, if two electric conductors are provided, in each case one electric conductor can be integrated into one of the pivot pins. The electric contact on the housing then takes place via the integration into the pivot pins. To this end, the pivot bearing sections which receive the pivot pins have corresponding electric contacts and are connected to the external electric supply.

[0014] In accordance with a further refinement, the light exit section of the operating section can be formed by way of an insert section of the operating element, which insert section is permeable for light from the light source and is inserted into the operating

section. The insert section forms the outer face of the operating section in sections. It can consist, for example, of plastic, in particular plastic with a diffuser effect for uniform illumination. Furthermore, the insert section can be provided partially with a coating, for example a paint or chrome coating, in order to achieve a sharp delineation of the illuminated region. It would also be conceivable to integrate a light-permeable section into the operating section of the operating element during a two-component injection molding process. In accordance with a further alternative refinement, it would also be possible to form the operating section or even the entire operating part from a material which is permeable for the light which is emitted by the light source. A coating, for example a paint or chrome coating, might then once again be provided, which coating exposes merely a desired light exit section.

[0015] In accordance with a further refinement, the operating element can have a housing, the housing being arranged on the air guiding element. For example, the housing can be pushed onto the air guiding element. In this way, the operating element is held on the air guiding element. The housing can have an open side, with the result that it can be pushed onto the air guiding element. In accordance with a further refinement in this regard, the operating element can comprise a closing part which is connected releasably to the housing and closes one side of the housing, for example a rear side of the housing, which rear side faces away from the vehicle interior in the assembled state. The closing part can be connected releasably to the housing, for example, by way of a latching connection or a press fit or the like. After the housing is pushed onto the air guiding element, the closing part can be connected to the housing, in order to close the open side of the housing, which open side is provided for assembly. The insert section can be arranged in the housing. The light guide can also be arranged in the housing. Furthermore, the light guide can be held on a printed circuit board of the operating element, which printed circuit board is arranged in the housing. The closing part can form a holding receptacle for the printed circuit board. A plug in accordance with the abovementioned refinements for establishing the electric connection between the light source and electric conductors which are provided in the air guiding element can also be arranged in the housing. As described above, an assembly unit can be formed from the elements of a plug which comprises the first and second holders, the elastic conductor strips and the light source or a printed circuit board which holds the light source, in each case with associated contact elements. In a particularly simple way,

the said assembly unit can then be inserted as a whole into the housing. An esthetically pleasing appearance results from the abovementioned components being arranged within the housing. For assembly purposes, said components can be inserted into the housing, for example from the rear side, with a closing element which has not yet been connected to the housing. The light guide can be pushed into the operating element, for example, from the rear side and can latch there or be held in a positively locking manner. The insert section can be pushed into the operating section, for example, from the front side and can latch there or be held in a positively locking manner, for example by way of suitable pins or the like. After the assembly of the components, the housing can be closed by way of the closing part.

[0016] It is also possible in accordance with one alternative refinement, however, that the operating element has a housing lower part and a housing upper part which is connected releasably to the housing lower part, the air guiding element being arranged between the housing lower part and the housing upper part. The releasable connection can once again take place, for example, by way of a latching connection or a press fit or the like. The insert section can then be held between the housing lower part and a housing upper part. The light guide can also be held between the housing lower part and a housing upper part. A printed circuit board of the operating element, which printed circuit board holds the light source, can likewise be held between the housing lower part and the housing upper part.

[0017] The operating element can be a sliding operating element or a rotary operating element. A combination is also possible.

[0018] In accordance with a further refinement, the light source can be surrounded in sections by a shielding element which permits an exit of light substantially only into the light guide. The shielding element can be seated in a positively locking manner on the light guide, for example, as a separate part.

[0019] The invention also relates to an air outlet for a vehicle, in particular a passenger car or a truck, comprising a housing and an air guiding arrangement according to the invention which is arranged in the housing, the air guiding element which is provided with the operating element being mounted pivotably in the housing. A plurality of air guiding elements which are mounted pivotably in the housing can also be provided, at least one air

guiding element then being provided in the manner according to the invention with an illuminated operating element. The air outlet is connected, in particular, to an air supply. The air then flows out on the front side, the air flow being controlled by way of the air guiding elements. As has already been described, a plurality of air guiding elements, for example a plurality of air guiding slats, can be provided, in particular, which are mounted on the housing of the air outlet such that they can be pivoted about parallel axes. Furthermore, a holder, for example a fork holder, can be provided on the operating element on the rear side of the air guiding element, on which holder one or more further air guiding elements which are arranged behind the front air guiding elements are arranged. Said air guiding elements which, for example, can likewise be air guiding slats can then be capable of being pivoted, for example, about a pivot axis which is perpendicular with respect to the pivot axis of the front air guiding elements. The pivoting can be brought about by way of a lateral displacement of the operating element. The front air guiding elements can be pivoted, for example, by way of upward and downward tilting of the air guiding element. All of this is known per se.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] Exemplary embodiments of the invention will be described in greater detail in the following text using figures, in which, diagrammatically:

[0021] Figure 1 shows an air guiding arrangement according to the invention in a perspective view from above,

[0022] Figure 2 shows the air guiding arrangement from Figure 1 in a partially transparent illustration and without the housing of the operating element,

[0023] Figure 3 shows a part of the air guiding arrangement which is shown in Figure 1 in a perspective view from above,

[0024] Figure 4 shows the part from Figure 3 in a perspective view from below,

[0025] Figure 5 shows a further view of a part of the air guiding arrangement from Figure 1 in a perspective, partially transparent rear side view, and

[0026] Figure 6 shows a perspective rear side view of an air guiding arrangement according to the invention in accordance with a further refinement.

[0027] Unless specified otherwise, identical designations denote identical objects in the figures.

DETAILED DESCRIPTION

[0028] The air guiding arrangement which is shown in Figure 1 comprises an air guiding element 10 (in the example which is shown, an air guiding slat 10) which is mounted in the housing of an air outlet for a vehicle, in particular a passenger car or a truck, such that it can be pivoted about a longitudinal axis via pivot pins 11, 13 which are configured on opposite end sides. In the example which is shown, an operating element 12 which can be moved relative to the air guiding slat 10 is configured as a manually actuatable sliding operating element 12. It comprises a housing 16 which is open on one side, in the present case the rear side which faces away from the vehicle interior in the assembled state, the housing being arranged on the air guiding slat 10. On the rear side which faces away from the vehicle interior in the assembled state, moreover, the operating element 12 has a fork holder 20, on which at least one further air guiding element (not shown in greater detail in Figure 1) can be held, for example likewise at least one air guiding element. As viewed in Figure 1, the operating element 12 can be displaced to the left and to the right relative to the air guiding slat 10, as a result of which a further air guiding element which is held in the receptacle 22 of the fork holder 20 is pivoted about an axis which is perpendicular with respect to the pivot axis of the air guiding element 10. Moreover, the operating element 12 can be tilted manually upward and downward, with the result that the air guiding slat 10 is pivoted about the pivot axis which is formed by way of the pivot pins 11, 13. In order to actuate the operating element 12, a manually actuatable operating section 24 is formed on the front side of the operating element 12, which front side faces the vehicle interior in the assembled state. Furthermore, an insert section 26 is inserted into the operating section 24, which insert section 26 forms a light exit section of the operating section 24. The insert section 26 is permeable for light which is emitted by a light source which is arranged on the rear side of the operating element 12, and said insert section 26 has a diffuser effect for a uniform light exit. In the present example, the light source is a light emitting diode which is shown at the designation 29 in Figure 4. The light source 29 is arranged on a printed

circuit board (PCB) which is shown at the designation 28, for example, in Figure 4, and said light source 29 is held by way of a closing part 30. In the case of components which are mounted in the housing 16, the closing part 30 serves to close the open rear side of the housing 16. The closing part 30 can be connected releasably to the housing 16, for example, by way of a latching connection or a press fit or the like. Light which is emitted by the light source 29 is coupled or directed into a light guide 32 and is thereby guided via the light guide 32, which light guide is guided around, or extends around, the air guiding slat 10 and is arranged in the housing 16, to the insert section 26 which is likewise arranged in the housing 16, and exits uniformly from the operating element 12 via said insert section 26. The light guide 32 can be seen, for example, in the illustration of Figure 2, where the housing 16 is not shown for illustrative reasons. The light guide 32 can also be seen clearly in Figures 3 and 4, in which the air guiding slat 10, the housing 16, the insert section 26, the fork holder 20 and the closing part 30 are not shown for illustrative reasons. In Figure 2, silicone dampers for damping the relative movement between the operating element 12 and the air guiding slat 10 can also be seen at the designation 34, 36. At its one end, the light guide 32 has a light coupling-in face 31 for coupling in the light which is emitted by the light source 29 and, at its opposite other end, has a light coupling-out face 33 for coupling out the light into the insert section 26.

[0029] Otherwise, it can be seen in the partially transparent illustration of Figure 2 that two electric conductors 38, 40 which are configured as insert parts extend along the pivot axis of the air guiding slat 10 and through the pivot pins 11, 13. In the assembled state, said electric conductors 38, 40 make contact via the pivot pins 11, 13 with corresponding electric supply contacts of the housing of the air outlet, which electric supply contacts are in turn connected to an electric supply.

[0030] The electric connection between the electric conductors 38, 40 and the printed circuit board 28 with the light source 29 is to be described in greater detail using Figures 3 to 5. The housing 16, the fork holder 20, the insert section 26, the closing part 30 and the printed circuit board 28 are not shown in Figure 5 for illustrative reasons. On its rear side, the air guiding slat 10 has a cavity 42, into which the electric conductors 38, 40 reach. The cavity 42 has a web 44 which supports the cavity and prevents it from collapsing under flexural loading. The plug 46 likewise comprises two electric conductors 48, 50 which in each case comprise a first holder 52, 54 as first contact elements. The first holders 52, 54

are plugged in the cavity 42 onto the electric conductors 38, 40 and thus establish electrically conducting contact, as can be seen in Figures 3 and 5, in particular. On the opposite sides, the electric conductors 48, 50 of the plug 46 in each case comprise a second holder 56, 58 as second contact elements, on which in each case one elastic conductor strip 60, 62 is held in a clamping manner. The conductor strips 60, 62 can be, for example, metal strips. The plug 46 comprising electric conductors 48, 50 and first and second holders 52, 54, 56, 58 can be configured in one piece and can likewise consist, for example, of metal. The conductor strips 60, 62 are in each case curved in a U-shaped manner, in each case a first limb being held on a second holder 56 and 58, respectively. A second limb of the metal strips 60, 62 which are curved in a U-shaped manner is held in a clamping manner in each case on a third holder 64, 66 which is fastened on the printed circuit board 28, as third contact elements. If the operating element 12 is displaced laterally on the air guiding element 10 in order to set the air flow direction, this results in a corresponding relative movement between the operating element 12 and the air guiding element 10. The conductor strips 60, 62 serve to bridge said relative movement electrically. To this end, during the relative movement, the conductor strips 60, 62 roll under elastic deformation between associated running faces. In the example which is shown, a shielding element 68 (can be seen in Figure 4) is provided on the printed circuit board 28 in order to shield the light which is emitted by the light source 29, which shielding element 68 at the same time forms a first running face for the conductor strips 60, 62. On the opposite side, the conductor strips 60, 62 roll on a corresponding running face, for example formed by way of a face of the plug 46 or by way of the air guiding slat 10 itself. The shielding element 68 shields leaked light from the light source 29 which is not coupled into the light guide 32, and forms a rolling face for the conductor strips 60, 62, as has been mentioned.

[0031] An assembly unit can preferably be formed from the elements of the plug 46 with its electric conductors 48, 50, the conductor strips 60, 62 and the printed circuit board 28, with the associated holders 52, 54, 56, 58, 64, 66.

[0032] In a further embodiment, the electric conductors 48, 50, the first holders 52, 54, the second holders 56, 58, the conductor strips 60, 62, the third holders 64, 66 and the conductor tracks of the printed circuit board and therefore also the contact of the light source 29 are connected, for example, to one another in one piece, with the result that a current feed is produced for each pole. To this end, the plate of the conductor strips is used

and corresponding geometries are added, which enable the contact of the electric conductors 48, 50 in the air guiding slot, the integral forming of the conductor strips 60, 62, and ultimately also the contact of the light source 29. To this end, for example, the said integral component is overmolded with the closing part 30 of the operating part 12 and, with the latter, forms a component which is simple to assemble.

[0033] Figure 6 shows a further exemplary embodiment of an air guiding arrangement according to the invention, which further exemplary embodiment corresponds largely to the air guiding arrangement which is shown in Figures 1 to 5. The exemplary embodiment of Figure 6 differs merely with regard to the electric supply of the light source 29 which is arranged on the printed circuit board 28. Thus, in the case of the exemplary embodiment of Figure 6, a cable supply via electric cables is provided instead of the electric conductors 38, 40 which are guided through the air guiding element 10, of which electric cables one can be seen at the designation 70 in Figure 6. The cable 70 is guided along a further air guiding element 10' which is held in the fork holder 20 and can be pivoted along a pivot axis which is defined by way of two pivot pins 11' and 13', perpendicularly with respect to the pivot axis of the air guiding element 10, by the operating element 12 being displaced laterally on the air guiding element 10. In the case of this exemplary embodiment, no electric conductors are provided in the air guiding element 10. Instead, the cable 70 are routed from the printed circuit board 28 through suitable bores in the closing part 30 to the outside and then from the closing part 30 on the fork holder 20 as far as the air guiding element 10' which is likewise configured as an air guiding slot, and from there out of the housing to an electric supply, as can be seen for the cable 70 in Figure 6. In this case, as a result of a sufficient length, the cables 70 undertake the compensation for the relative movement between the operating element 12 and the air guiding element 10.

List of Designations

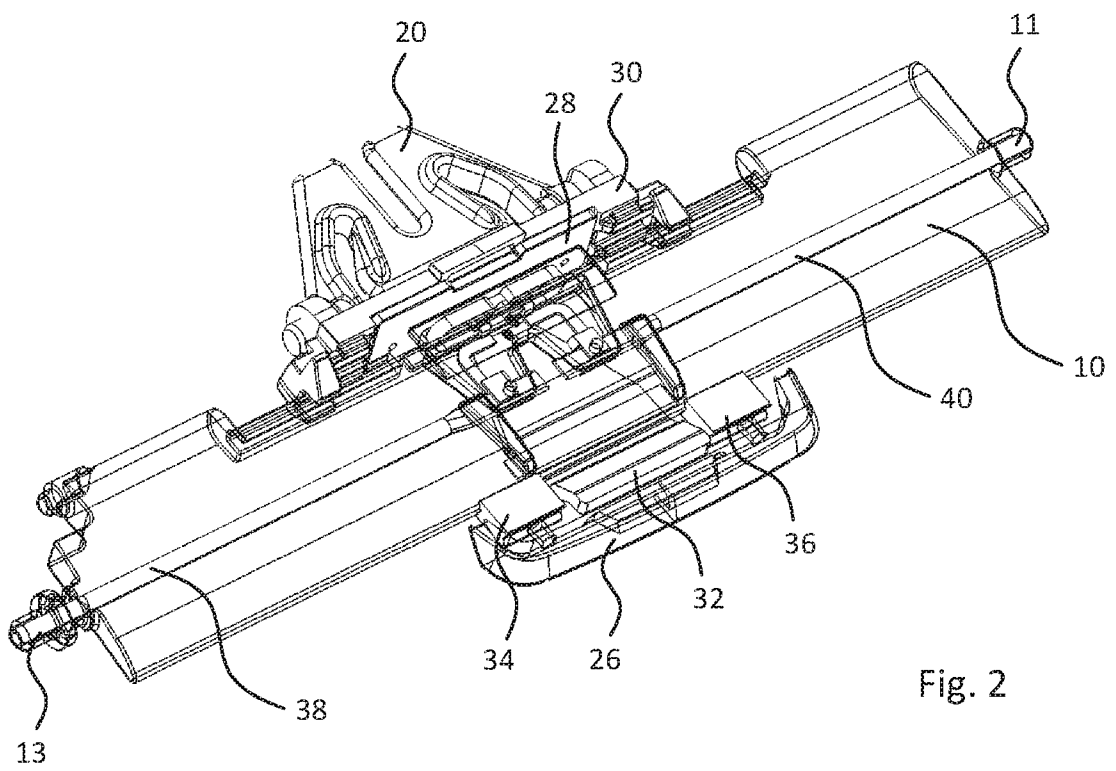
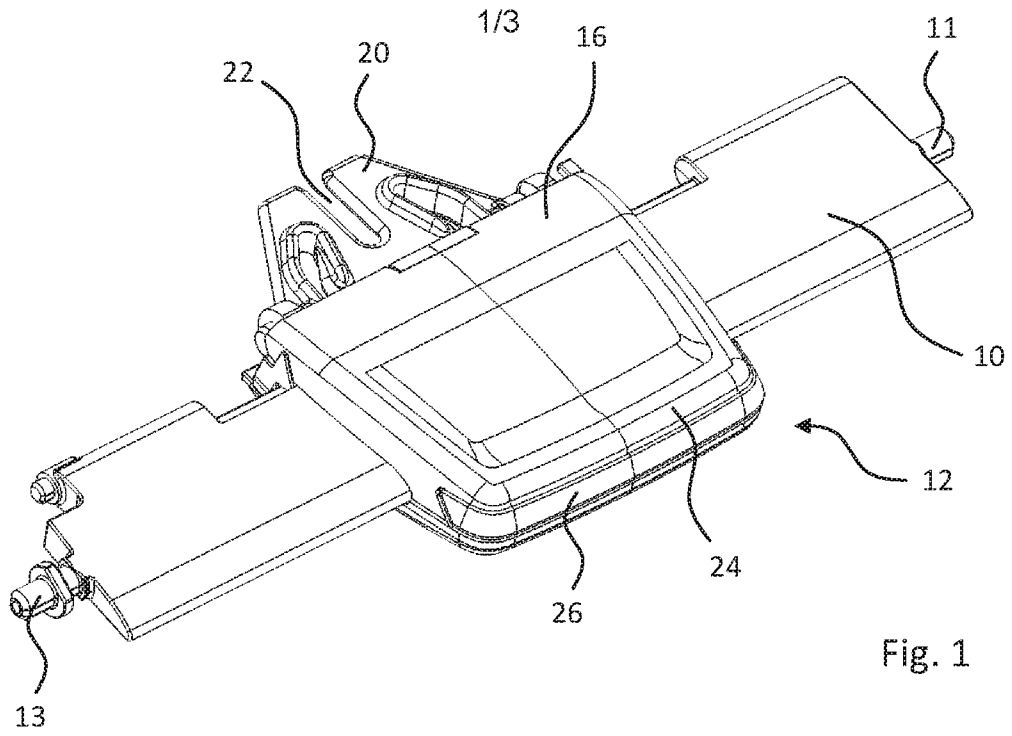
10, 10'	Air guiding element
11, 11', 13, 13'	Pivot pin
12	Operating element
16	Housing
20	Fork holder
22	Receptacle
24	Operating section
26	Insertion section
28	Printed circuit board
29	Light source
30	Closing part
31	Light coupling-in face
32	Light guide
33	Light coupling-out face
34, 36	Silicone damper
38, 40	Electric conductors
42	Cavity
44	Web
46	Plug
48, 50	Electric conductor
52, 54	First holders
56, 58	Second holders
60, 62	Conductor strips
64, 66	Third holders
68	Shielding element
70	Cable

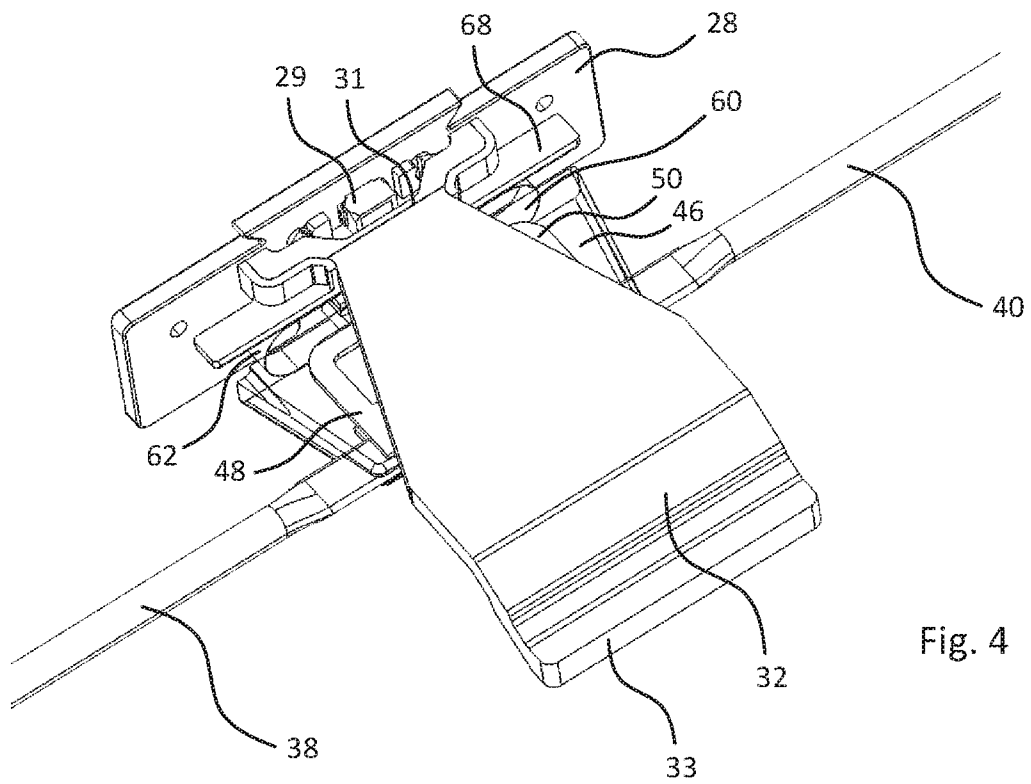
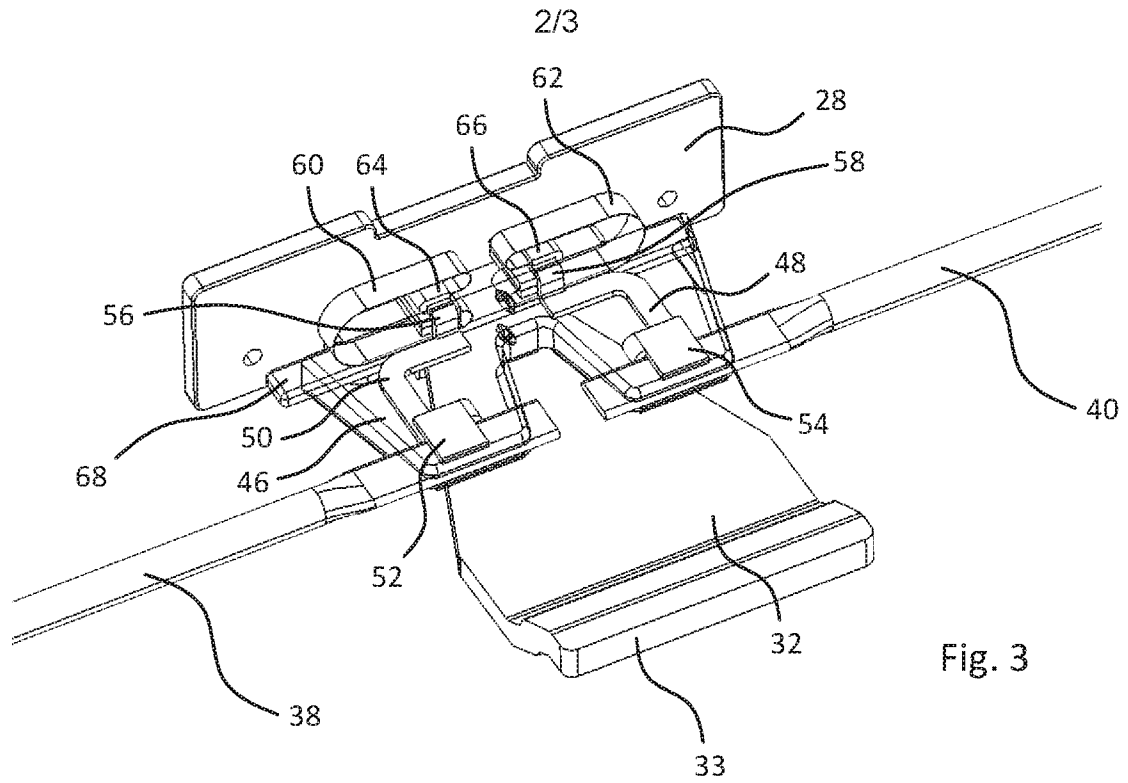
CLAIMS

1. An air guiding arrangement for an air outlet for a vehicle, comprising an air guiding element (10) and an operating element (12) which can be moved relative to the air guiding element (10) and has a manually actuable operating section (24) which is arranged on a front side of the air guiding element (10), characterized in that a light source (29) is arranged on the operating element (12) on a rear side of the air guiding element (10), which rear side lies opposite the front side, and in that a light guide (32) is provided, into which light which is emitted from the light source (29) is coupled and is guided to a light exit section of the operating section (24), the light guide (32) being guided around the air guiding element (10).
2. The air guiding arrangement as claimed in claim 1, characterized in that at least one electric conductor (38, 40) is arranged in the air guiding element (10), which electric conductor (38, 40) is connected firstly to the light source (29) and can be connected secondly to an electric supply source.
3. The air guiding arrangement as claimed in claim 2, characterized in that at least one elastic electric connecting element is provided for electric connection between the light source (29) and the at least one electric conductor (38, 40), which electric connecting element is held on one side fixedly on the air guiding element (10) and on the other side fixedly on the operating element (12), and which electric connecting element is deformed elastically in the case of a relative movement between air guiding element (10) and operating element (12).
4. The air guiding arrangement as claimed in claim 3, characterized in that the at least one electric connecting element is at least one elastic conductor track (60, 62) which is curved in a U-shaped manner, the first limb of which is held on a first holder (52, 54) which is connected to the electric conductor (38, 40), and the second limb of which is held on a second holder (56, 58) which is connected to the light source.
5. The air guiding arrangement as claimed in one of the preceding claims, characterized in that the air guiding element (10) is an air guiding slat (10) which is mounted pivotably in a housing of an air outlet.

6. The air guiding arrangement as claimed in claim 5 and one of claims 2 to 4, characterized in that the at least one electric conductor (38, 40) is integrated into at least one pivot pin (11, 13) of the air guiding slat (10) for pivotably mounting the air guiding slat (10) on the housing of the air outlet.
7. The air guiding arrangement as claimed in one of the preceding claims, characterized in that the light exit section of the operating section (24) is formed by way of an insert section (26) of the operating element (12), which insert section (26) is permeable for light from the light source and is inserted into the operating section (24).
8. The air guiding arrangement as claimed in one of the preceding claims, characterized in that the operating element (12) has a housing (16), the housing (16) being arranged on the air guiding element (10).
9. The air guiding arrangement as claimed in claim 8, characterized in that the operating element (12) comprises a closing part (30) which is connected releasably to the housing (16) and closes one side of the housing.
10. The air guiding arrangement as claimed in claim 7 and either of claims 8 and 9, characterized in that the insert section (26) is arranged in the housing (16).
11. The air guiding arrangement as claimed in one of claims 8 to 10, characterized in that the light guide (32) is arranged in the housing (16).
12. The air guiding arrangement as claimed in one of claims 8 to 11, characterized in that the light source (29) is held on a printed circuit board (28) which is arranged in the housing (16).
13. The air guiding arrangement as claimed in one of the preceding claims, characterized in that the operating element (12) is a sliding operating element (12) or a rotary operating element.
14. The air guiding arrangement as claimed in one of the preceding claims, characterized in that the light source (29) is surrounded in sections by a shielding element (68) which permits an exit of light substantially only into the light guide (32).

15. An air outlet for a vehicle, comprising a housing and an air guiding arrangement according to one of the preceding claims which is arranged in the housing.





3/3

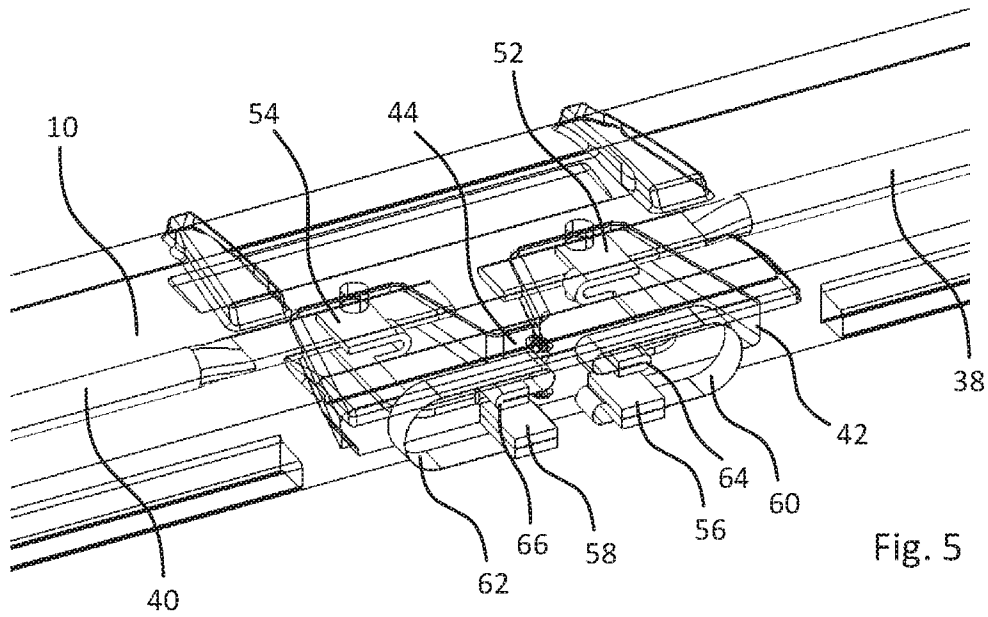


Fig. 5

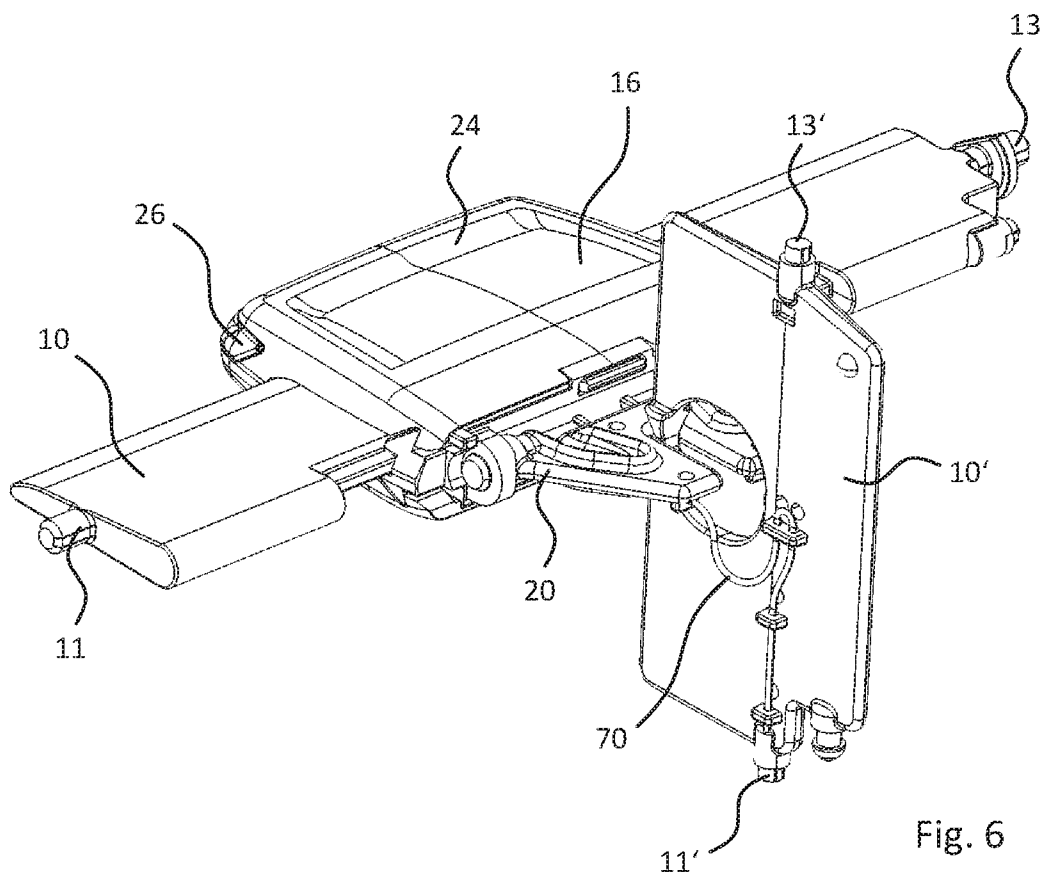


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2018/025030

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60H1/34
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60H F24F

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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 201 18 014 U1 (SCHNEIDER FRANZ KUNSTSTOFFWERK [DE]) 31 January 2002 (2002-01-31)	1,2,5-15
A	page 3 - page 6; claims 2-3,6,15; figure 1 -----	3,4
Y	DE 39 09 645 A1 (PREH ELEKTRO FEINMECHANIK [DE]) 4 October 1990 (1990-10-04) column 2 - column 3; claims 1-3; figures 2-4 -----	1,2,5-15
A	JP H06 58616 A (NIHON PLAST CO LTD) 4 March 1994 (1994-03-04) paragraphs [0024] - [0025], [0040] - [0042]; claim 1; figures 1,4, 5 -----	1-4
A	JP 2004 025960 A (TOYODA GOSEI KK) 29 January 2004 (2004-01-29) abstract; claims 1-5; figures 4-6 ----- -/-	1-4



Further documents are listed in the continuation of Box C.



See patent family annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

11 June 2018

Date of mailing of the international search report

21/06/2018

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Kristensen, Julien

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2018/025030

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002 036864 A (NIHON PLAST CO LTD) 6 February 2002 (2002-02-06) paragraphs [0026] - [0038]; figures 1-7 -----	1-4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2018/025030

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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JP 2004025960	A	29-01-2004	NONE	
JP 2002036864	A	06-02-2002	NONE	