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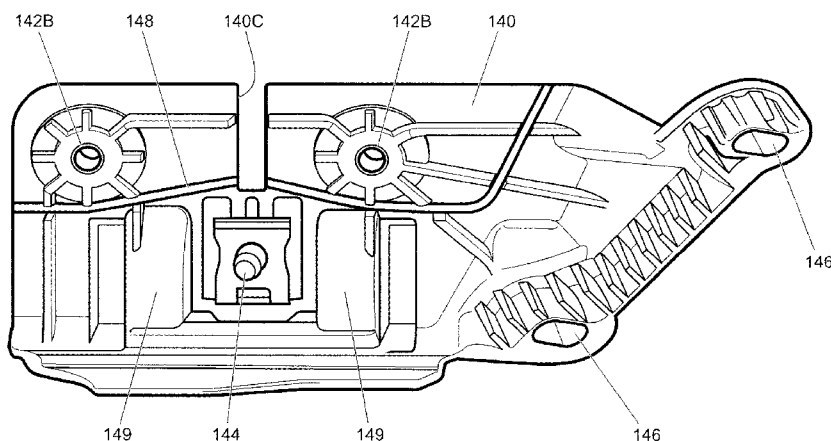


FIGURE 4

(57) Abstract: A motor vehicle headlamp support bracket (140) comprising: means (142) for coupling the bracket to a vehicle body structure; means (144) for coupling the bracket to a vehicle headlamp assembly; and means (146) for coupling the bracket to a vehicle front bumper, wherein the bracket is configured to support the headlamp and bumper in a substantially fixed position relative to the vehicle body structure. Embodiments of the present invention enable alignment of the headlamp assembly and bumper with respect to one another and the vehicle body structure to be accomplished in a convenient and relatively low cost manner.

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MOUNTING BRACKET AND METHOD OF SUPPORTING A STRUCTURE

TECHNICAL FIELD

The present invention relates to motor vehicle mounting brackets. In particular but not
5 exclusively the invention relates to a bracket for supporting a vehicle headlamp assembly.
Aspects of the invention relate to a bracket, to a method and to a vehicle. Aspects of the
invention relate to a sacrificial bracket.

BACKGROUND

10 It is known to provide a bracket for supporting a vehicle headlamp assembly. In one known
arrangement, a bracket is provided that couples the headlamp assembly to a front wing (or
'fender') of the vehicle. Coupling the headlamp assembly to the front wing allows the
relative positions of the headlamp assembly and wing to be fixed. This improves an
aesthetic appearance of the vehicle and reduces the likelihood that the headlamp assembly
15 and fender become misaligned in service. The front wing is in turn fixed to a body structure
of the vehicle. The wing may be fixed to the body structure by welding, threaded fasteners
or by other means.

In some other known arrangements, the headlamp assembly is coupled to a grille assembly
20 of the vehicle.

In some vehicle designs it may not be possible or desirable to attach the headlamp
assembly to a fender or to a hood. It is therefore desirable to provide an alternative
arrangement for supporting a headlamp assembly.

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SUMMARY OF THE INVENTION

Embodiments of the invention may be understood with reference to the appended claims.

Aspects of the present invention provide a support bracket, a vehicle and a method.

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In one aspect of the invention for which protection is sought there is provided a motor
vehicle headlamp support bracket comprising: means for coupling the bracket to a vehicle
body structure; means for coupling the bracket to a vehicle headlamp assembly; and
means for coupling the bracket to a vehicle front bumper, wherein the bracket is configured
35 to support the headlamp and bumper in a substantially fixed position relative to the vehicle
body structure.

Embodiments of the present invention have the advantage that a single bracket may support two components in substantially fixed positions relative to a body structure of a motor vehicle. This enables an aesthetic appearance of a vehicle to be enhanced. This enhancement is particularly effective because, by constraining movement of the headlamp assembly and bumper relative to one another and the vehicle body structure, a risk that the vehicle suffers misalignment of the headlamp assembly and/or bumper with respect to a hood and/or fender of the vehicle following initial assembly may be reduced. Furthermore, an ease with which the headlamp assembly and bumper may be aligned with respect to one another and with respect to a hood and/or fender may be reduced, both during initial assembly and any post-assembly servicing of the vehicle.

In some known arrangements in which the headlamp assembly is supported by a fender, which is in turn supported by the vehicle body structure, relative movement over time or due to a minor impact of the headlamp assembly with respect to the fender may result in misalignment of the headlamp assembly not only with the fender but also with a bumper and a hood. By fixing the relative positions of the headlamp assembly and bumper with respect to the body structure using a bracket according to an embodiment of the present invention, a risk that a vehicle suffers misalignment of one or more components is reduced.

Furthermore, it may be desirable in some vehicle designs to dispense with the provision of a discrete fender component and replace it with a portion of the bumper and/or hood. The provision of a bracket allowing coupling of the headlamp assembly and bumper to the vehicle body structure resolves the problems of supporting the headlamp assembly and of supporting the bumper in the absence of a fender, by the provision of a single component. Furthermore, embodiments of the invention enable the relative positions of the headlamp and bumper to be fixed, reducing a risk of excessive misalignment of the components.

Embodiments of the present invention may also mitigate against tolerance stack-up as the bracket may act to hold the headlamp assembly and bumper skin back to the body structure to which a fender may be mounted. In addition, it permits isolation of the headlamp assembly from low level forces applied to the bumper, for example in the event of a low speed parking collision. This may have the advantageous effect of reducing repair costs.

Advantageously the bracket may comprise a locally weakened portion arranged to yield upon impact of an object with the headlamp assembly thereby to reduce or prevent damage to the vehicle body structure. Additionally or alternatively, the bracket may comprise a frangible portion arranged to break upon impact of an object with the headlamp assembly thereby to reduce or prevent damage to the vehicle body structure.

The bracket may therefore be or comprise a sacrificial component, the breaking of which reduces a risk of damage to one or more other components of the vehicle that would be more costly to repair or replace.

If, in contrast, the bracket were not frangible, an impact applied to the headlamp assembly would be transmitted directly to the vehicle body structure by the bracket. This could result in damage to the vehicle body structure which may be difficult and/or expensive to repair.

Advantageously the frangible portion may be provided between the means for coupling the bracket to a vehicle headlamp assembly and the means for coupling the bracket to a vehicle body structure whereby the portions are separable when the frangible portion breaks.

Further advantageously the bracket may comprise deflection means, the bracket being configured wherein in the event of an impact in which the headlamp assembly is urged in a direction towards the means for coupling the bracket to the vehicle body structure such that the frangible portion breaks, a direction of continued movement of the means for coupling the bracket to the headlamp assembly is changed by the deflection means thereby to prevent impact of the headlamp assembly with the vehicle body structure.

This feature has the advantage that in the event a front impact is suffered by the vehicle and the headlamp assembly is displaced towards the vehicle body structure (for example in a rearward direction), a trajectory of the headlamp assembly may be managed by the bracket such that a risk of damage to the vehicle body structure is reduced.

It is to be understood that in the event of a low speed frontal impact in which movement of the headlamp assembly takes place towards a vehicle body structure, movement of the assembly may be managed such that damage to the vehicle body structure does not occur.

This is advantageous in reducing a cost of repair of the vehicle, and therefore a cost of ownership.

The deflection means may comprise a buffer member arranged to impact a portion of the vehicle body structure upon fracture of the frangible portion and to be deflected away from said portion of the vehicle body structure.

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Advantageously the means for coupling the bracket to a vehicle body structure and/or the means for coupling the bracket to a vehicle headlamp assembly and/or the means for coupling the bracket to a vehicle bumper may comprise at least one selected from amongst an opening through which a fixing means may be passed, a tapped bore and a portion of a latch arrangement for latching to a corresponding portion provided by the component the bracket is to be attached to.

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The fixing means may comprise a bolt, a screw or any other suitable fixing means.

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In a further aspect of the invention for which protection is sought there is provided a motor vehicle comprising a bracket as claimed in any preceding claim, the bracket being coupled to the vehicle headlamp assembly, front bumper and body structure thereby to support the headlamp assembly in a substantially fixed position with respect to the bumper and vehicle body structure.

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Optionally a hood of the vehicle has a clamshell portion defining a portion of a wheel arch of the vehicle, the front bumper extending rearwardly to meet the clamshell portion of the hood and defining the side of the vehicle forward of the clamshell portion.

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In other words, the bumper and clamshell portion of the hood define the fender from the clamshell portion of the hood forward. Thus in some embodiments any separate fender component is provided rearward of the clamshell portion of the hood defining the portion of the front wheel arch. In some embodiments no separate fender component is provided, whether forward or rearward of the clamshell portion of the hood, the clamshell portion of the hood and the front bumper defining the side of the vehicle that might otherwise be provided by a fender.

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In one aspect of the invention for which protection is sought there is provided a method of supporting a headlamp assembly of a motor vehicle comprising the step of coupling the headlamp assembly to a vehicle body structure and to a vehicle bumper by means of a bracket, whereby the headlamp assembly and bumper may be maintained in a substantially fixed position relative to the vehicle body structure.

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In a further aspect of the invention for which protection is sought there is provided a sacrificial corner node bracket for supporting a headlamp assembly in a substantially fixed position with respect to a vehicle body structure, the bracket comprising means for coupling the bracket to a vehicle body structure and means for coupling the bracket to a vehicle headlamp assembly, wherein the bracket is configured to support the headlamp and bumper in a substantially fixed position relative to the vehicle body structure, the bracket further comprising a frangible portion arranged to yield upon impact of an object with the headlamp assembly thereby to reduce or prevent damage to the vehicle body structure.

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In one aspect of the invention for which protection is sought there is provided a sacrificial motor vehicle support bracket for supporting a headlamp assembly in a substantially fixed position with respect to a vehicle body structure, the bracket comprising means for coupling the bracket to a vehicle body structure and means for coupling the bracket to a vehicle headlamp assembly, wherein the bracket is configured to support the headlamp and bumper in a substantially fixed position relative to the vehicle body structure, the bracket further comprising a frangible portion arranged to break upon impact of an object with the headlamp assembly thereby to reduce or prevent damage to the vehicle body structure.

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20 The bracket may further comprise means for coupling the bracket to a vehicle front bumper.

The bracket may therefore be or comprise a sacrificial component, the yielding of which reduces a risk of damage to one or more other components of the vehicle that would be more costly to repair or replace.

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It is to be understood that by the term yield is included responses by the bracket to impact forces such as brittle fracture, deformation for example by bending, and deformation followed by fracture of the bracket, optionally into separate, discrete portions.

30 If, in contrast, the bracket were not frangible, an impact applied to the headlamp assembly would be transmitted directly to the vehicle body structure by the bracket. This could result in damage to the vehicle body structure which may be difficult and/or expensive to repair.

In a further aspect of the invention for which protection is sought there is provided a motor vehicle comprising a bracket according to the preceding aspect, the bracket being coupled

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to the vehicle headlamp assembly and body structure thereby to support the headlamp assembly in a substantially fixed position with respect to the vehicle body structure.

Advantageously the bracket may be further coupled to the front bumper of the vehicle.

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The vehicle may comprise a hood having a clamshell portion defining at least a portion of a front wheel arch, the front bumper extending rearwardly to meet the clamshell portion of the bonnet and defining the side of the vehicle forward of the clamshell portion.

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In a further aspect of the invention for which protection is sought there is provided a method of supporting a headlamp assembly of a motor vehicle by means of a sacrificial bracket, comprising supporting the headlamp assembly in a substantially fixed position relative to a vehicle body structure by means of the bracket, in the event of a vehicle frontal impact the method comprising inducing yielding or breaking of a frangible portion of the bracket so as to reduce or prevent damage to the vehicle body structure.

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Advantageously, in the event of a vehicle front impact the method may comprise deflecting a trajectory of the headlamp assembly thereby to prevent impact of the headlamp assembly with the vehicle body structure.

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Within the scope of this application it is envisaged that the various aspects, embodiments, examples, features and alternatives set out in the preceding paragraphs, in the claims and/or in the following description and drawings may be taken independently or in any combination. Features described with reference to one embodiment are applicable to all embodiments, unless there is incompatibility of features.

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For the avoidance of doubt, it is to be understood that features described with respect to one aspect of the invention may be included within any other aspect of the invention, alone or in appropriate combination with one or more other features.

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BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will now be described with reference to the accompanying figures in which:

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FIGURE 1 is a perspective view of a vehicle according to an embodiment of the present invention incorporating a three-way corner node bracket;

FIGURE 2 is a view of a corner node bracket according to an embodiment of the invention from above;

FIGURE 3 is a perspective view of the corner node bracket of FIG. 2 as viewed in a rearward-looking direction with respect to an in-vehicle installed orientation;

FIGURE 4 shows an underside of the bracket of FIG. 2;

FIGURE 5 is a perspective view of the bracket of FIG. 2 coupled to a headlamp assembly;

FIGURE 6 is a close-up view of the bracket as shown in FIG. 2 showing the coupling to the headlamp assembly in more detail;

FIGURE 7 shows the bracket of FIG. 2 in an installed condition coupled to a shotgun structural member of a vehicle, a bumper and a headlamp assembly; and

FIGURE 8 shows the bracket of FIG. 2 in the installed condition of FIG.7 from below.

DETAILED DESCRIPTION

FIG. 1 shows a vehicle 100 according to an embodiment of the present invention. The vehicle has a front bumper 110, headlamp assemblies 120 at front left and right corners of the vehicle 100 and a hood 130. The hood 130 is of clamshell type having side portions 132 that wrap around longitudinal side edges of the vehicle 100 at a rearward portion thereof to form part of a fender or wing of the vehicle 100. The side portions 132 of the hood 130 also define a portion of a front wheel arch 102 of the vehicle 100.

The left and right headlamp assemblies 120, bumper 110 and hood 130 share a common boundary at nodes 100N at respective left and right front corners of the vehicle 100.

FIG. 2 shows a non-limiting example of a corner node bracket 140 according to an embodiment of the invention that is incorporated in the vehicle 100. The bracket is shown as viewed in a forward looking direction, i.e. from behind the bracket with respect to its orientation as installed in the vehicle 100. The bracket 140 is formed from a glass-filled polybutylene terephthalate (PBT) material although other materials are also useful.

The bracket 140 is configured for attachment to a vehicle structural member in the form of an upper front longitudinal side member 150 as shown in FIG. 7. Structural member 150 may also be referred to as a shotgun member in vehicles having upper and lower front side longitudinal members, as in the present embodiment. It is to be understood that
5 embodiments of the present invention are also useful in vehicles having only on front longitudinal side member or no front longitudinal side member provided a suitable structural member is available to which the bracket may be attached.

The bracket 140 has a generally rectangular basal portion 140B having vehicle structure
10 fixing portions 142 provided along one longitudinal edge thereof. The fixing portions 142 include a pair of metal insert elements 142 each having a tapped bore 142B provided therein to facilitate attachment of the bracket 140 to the shotgun member 150.

At a midpoint of an opposite longitudinal edge of the basal portion 140B a headlamp
15 assembly fixing portion 144 is provided. The fixing portion 144 comprises an aperture through which a bolt may be passed as shown in FIG. 2, enabling attachment of the bracket 140 to a tang 122 of the headlamp assembly 120 (FIG. 5). As shown in FIG. 5 the tang 122 extends rearwardly from an upper edge of the headlamp assembly 120. In the embodiment shown the tang 122 is formed from a polypropylene material although other
20 materials are also useful.

It is to be understood that other fixing elements are useful instead of or in addition to bolts.

The bracket 140 is provided with a pair of post elements 144P (FIG. 3) protruding upwardly
25 from the basal portion 140B either side of the fixing portion 144. The post elements 144P are arranged to protrude through corresponding apertures 122A in the tang 122 of the headlamp assembly 120 which surrounds the post elements 144P (FIG. 6). The post elements 144P are arranged to limit rotation of the tang 122 about the fixing portion 144, thereby constraining movement of the headlamp assembly 120 with respect to the bracket
30 140.

In the embodiment illustrated, an arm portion 140A extends from a lateral edge of the basal
portion 140B of the bracket 140. The arm portion 140A extends out of the plane of the basal portion 140B and supports a pair of bumper coupling elements 146 for coupling the
35 bracket 140 to the bumper 110. The coupling elements 146 define bores through each of

which a fixing element may be passed to enable attachment of the bracket 140 to the bumper 110.

FIG. 3 shows the bracket 140 as viewed in a rearward-looking direction.

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An underside of the bracket 140 is provided with an initiator feature 148 as shown in FIG. 4. The initiator feature 148 is arranged to provide a stress raiser and a known point of buckling or crack initiation if loading exceeds a predetermined limit. The initiator feature 148 is in the form of a groove 148 in the basal portion 140B. The initiator feature 148 is thus defined by a region of the basal portion 140B of reduced thickness. It is to be understood that in some arrangements the initiator feature 148 may buckle if the loading is between first and second limits, and fracture if the loading exceeds the second limit. Other arrangements are also useful.

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The groove 148 defines a boundary between the vehicle structure fixing portions 142 and both the headlamp assembly fixing portion 144 and bumper coupling elements 146. Thus, in the event of an impact, the initiator feature 148 enables separation of the vehicle structure fixing portions 142 from both the headlamp assembly fixing portion 144 and bumper coupling elements 146. It is to be understood that, as a consequence, once the bracket 140 yields along the initiator feature 148 the headlamp assembly 120 is no longer constrained in a substantially fixed orientation with respect to either the shotgun member 150 or the bumper 110. Thus, in the event of an impact in which sufficient force is applied in a rearward direction to the headlamp assembly 120 to fracture the bracket 140 along the initiator feature 148, the headlamp assembly 120 may move rearwardly freely and apply either a reduced amount or substantially no force to the shotgun member 150.

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In the embodiment shown, the groove 148 defines a boundary between the vehicle structure fixing portions 142 and the arm portion 140A. Other arrangements are also useful.

30

The basal portion 140B has an elongate, substantially rectangular cut-out portion 140C provided substantially perpendicular to the edge along which the vehicle structure fixing portions 142 are provided, the cut-out portion extending between the fixing portions 142. The cut-out portion 140C is arranged to reduce an amount of force required to fracture of the crack-initiator feature 148 in the event of a front impact.

35

The underside of the bracket 140 also has a pair of deflector ramps 149 integrally moulded therein. The deflector ramps protrude downwardly from the basal portion 140B with respect to the in-use orientation shown in FIG. 7. The ramps 149 incline upwardly in a rearward direction to meet the initiator feature 148 such that in the event the bracket fractures at the initiator feature 148 due to rearward pressure on the headlamp assembly 120 and the headlamp assembly 120 moves rearwardly, the portion of the bracket 140 that remains attached to the headlamp assembly 120 will ride upwardly and over the shotgun member 150.

FIG. 5 shows the bracket 140 attached to a headlamp assembly 120. FIG. 6 is a close-up view showing the bracket 140 and headlamp assembly 120 including tang 122 in more detail.

FIG. 8 shows an underside of the bracket 140 as installed in the vehicle 100, showing the shotgun member 150 and headlamp assembly 120 including a portion of tang 122. The relative positions of the deflector ramps 149 and shotgun member 150 may be clearly seen. As described above, in the event of a collision in which the headlamp assembly 120 is forced to move in a rearward direction towards the shotgun member 150, the basal portion 140B of the bracket 140 is arranged to yield at the initiator feature 148. This effectively creates a discontinuity in the load path between the headlamp assembly and the shotgun member 150. The relative position of the headlamp assembly fixing portion 144 with respect to the shotgun member 150, and the relative position of the bumper coupling elements 146 with respect to the shotgun member 150 are therefore no longer constrained by the bracket 140. The portion of the bracket 140 that is no longer coupled to the shotgun member 150 therefore continues to move rearwardly. As it does so, the deflector ramps 149 contact the shotgun member 150 (or the portion of the basal portion 140B still attached thereto) and ride upwardly, managing the force applied to the shotgun member 150.

It is to be understood that because the shotgun member 150 is a structural component of the vehicle, reducing or preventing damage thereto in the event of a low speed impact may reduce a cost of repair of the vehicle 100. The cost of replacement of the bracket 140 would typically be considerably less costly than repair of the shotgun member 150.

Embodiments of the invention have the advantage that the relative positions of a headlamp assembly, bumper and a portion of the body structure of a vehicle may be constrained by means of a single bracket. Alignment of the headlamp assembly and bumper with respect

to one another and with respect to the body structure of the vehicle may therefore be performed in relatively simple, quick and convenient manner. Furthermore, relative movement of the headlamp assembly and bumper with respect to each other and with respect to the body structure in service may be prevented, preventing deterioration of an aesthetic appearance of the vehicle due to misalignment of these components.

Some embodiments of the present invention provide a frangible bracket for connecting a headlamp assembly to a vehicle body structure. In the event of a low speed impact the bracket fractures, relieving pressure placed on the body structure by the headlamp assembly as it is displaced rearwardly. This reduces a risk of damage to the vehicle body structure in the event of a low speed impact. The bracket may be shaped so that it rides up and over the vehicle body structure, changing the trajectory of the headlamp assembly following the impact.

The bracket may also connect the bumper to the vehicle body structure enabling the headlamp assembly and bumper to be connected to the vehicle body structure by means of a single component.

In an embodiment, the bumper, or a decorative outer skin of the bumper, may be connected to the bracket in such a manner that if the bumper (or bumper skin) is displaced rearwardly with respect to the vehicle, the bumper 110 may become disconnected from the bracket 140. For example the bumper 110 may be arranged to slide rearwardly with respect to the bracket 140 and so become disconnected therefrom. This feature has the advantage that, in the event the bumper 110 suffers a low speed impact with an object such as a fixed post, an amount of force exerted on the vehicle body structure (such as shotgun member 150) by the bumper 110 may be reduced. That is, the bumper 110 does not remain connected to the bracket 140 and so force the headlamp assembly 120 also to move rearwardly in the event of a front impact.

In some alternative embodiments in which the bumper 110 is fixedly attached to the bracket 140, and not arranged to become detached, rearward movement of the bumper 110 may also cause buckling or fracture at the initiator feature 148, reducing an amount of force associated with a collision that is transmitted to the shotgun member 150.

Throughout the description and claims of this specification, the words "comprise" and "contain" and variations of the words, for example "comprising" and "comprises", means

“including but not limited to”, and is not intended to (and does not) exclude other moieties, additives, components, integers or steps.

5 Throughout the description and claims of this specification, the singular encompasses the plural unless the context otherwise requires. In particular, where the indefinite article is used, the specification is to be understood as contemplating plurality as well as singularity, unless the context requires otherwise.

10 Features, integers, characteristics, compounds, chemical moieties or groups described in conjunction with a particular aspect, embodiment or example of the invention are to be understood to be applicable to any other aspect, embodiment or example described herein unless incompatible therewith.

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CLAIMS:

1. A motor vehicle headlamp support bracket comprising:
 - means for coupling the bracket to a vehicle body structure;
 - 5 means for coupling the bracket to a vehicle headlamp assembly; and
 - means for coupling the bracket to a vehicle front bumper,
 - wherein the bracket is configured to support the headlamp and bumper in a substantially fixed position relative to the vehicle body structure.
- 10 2. A bracket as claimed in claim 1 comprising a frangible portion arranged to break upon impact of an object with the headlamp assembly thereby to reduce or prevent damage to the vehicle body structure.
- 15 3. A bracket as claimed in claim 2 wherein the frangible portion is provided between the means for coupling the bracket to a vehicle headlamp assembly and the means for coupling the bracket to a vehicle body structure whereby the portions are separable when the frangible portion breaks.
- 20 4. A bracket for supporting a headlamp assembly in a substantially fixed position with respect to a vehicle body structure, the bracket comprising means for coupling the bracket to the vehicle body structure and means for coupling the bracket to the headlamp assembly, wherein the bracket is configured to support the headlamp and a vehicle bumper in a substantially fixed position relative to the vehicle body structure, the bracket further comprising a frangible portion arranged to yield or break upon impact of an object with the
25 headlamp assembly thereby to reduce or prevent damage to the vehicle body structure.
- 30 5. A bracket as claimed in claim 4 wherein the frangible portion is provided between the means for coupling the bracket to a vehicle headlamp assembly and the means for coupling the bracket to a vehicle body structure whereby the portions are separable when the frangible portion breaks.
- 35 6. A bracket as claimed in any of claims 2 to 5 comprising deflection means, the bracket being configured wherein in the event of an impact in which the headlamp assembly is urged in a direction towards the means for coupling the bracket to the vehicle body structure such that the frangible portion breaks, a direction of continued movement of the means for coupling the bracket to the headlamp assembly is changed by the deflection

means thereby to prevent impact of the headlamp assembly with the vehicle body structure.

5 7. A bracket as claimed in claim 6 wherein the deflection means comprises a buffer member arranged to impact a portion of the vehicle body structure upon fracture of the frangible portion and to be deflected away from said portion of the vehicle body structure.

10 8. A bracket as claimed in claims 4 or 5, or claims 6 or 7 when dependent on claims 4 or 5 further comprising means for coupling the bracket to a vehicle front bumper.

15 9. A bracket as claimed in any preceding claim wherein the means for coupling the bracket to a vehicle body structure and/or the means for coupling the bracket to a vehicle headlamp assembly and, where the bracket further comprises means for coupling the bracket to a vehicle front bumper, and/or the means for coupling the bracket to a vehicle bumper comprises at least one selected from amongst:

an opening through which a fixing means may be passed;

a tapped bore; and

a portion of a latch arrangement for latching to a corresponding portion provided by the component the bracket is to be attached to.

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10. A motor vehicle comprising a bracket as claimed in any preceding claim, the bracket being coupled to the vehicle headlamp assembly, front bumper and body structure thereby to support the headlamp assembly in a substantially fixed position with respect to the bumper and vehicle body structure.

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11. A motor vehicle comprising a bracket as claimed in claim 4 or in any of claims 5 to 8 when dependent on claim 4, the bracket being coupled to the vehicle headlamp assembly and body structure thereby to support the headlamp assembly in a substantially fixed position with respect to the vehicle body structure.

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12. A vehicle as claimed in claim 11 when dependent on claim 8 wherein the bracket is further coupled to the front bumper of the vehicle.

35 13. A vehicle as claimed in any of claims 10, 11 or 12 comprising a hood having a clamshell portion defining at least a portion of a front wheel arch, the front bumper

extending rearwardly to meet the clamshell portion of the hood and defining the side of the vehicle forward of the clamshell portion.

14. A method of supporting a headlamp assembly of a motor vehicle comprising the
5 step of coupling the headlamp assembly to a vehicle body structure and to a vehicle bumper by means of a bracket, whereby the headlamp assembly and bumper may be maintained in a substantially fixed position relative to the vehicle body structure.
15. A method of supporting a headlamp assembly of a motor vehicle by means of a
10 sacrificial bracket, comprising supporting the headlamp assembly in a substantially fixed position relative to a vehicle body structure by means of the bracket, in the event of a vehicle front impact the method comprising inducing yielding or breaking of a frangible portion of the bracket so as to reduce or prevent damage to the vehicle body structure.
- 15 16. A method as claimed in claim 15, in the event of a vehicle front impact the method comprising the step of deflecting a trajectory of the headlamp assembly thereby to prevent impact of the headlamp assembly with the vehicle body structure.
- 20 17. A bracket, a vehicle or a method substantially as hereinbefore described with reference to the accompanying drawings.

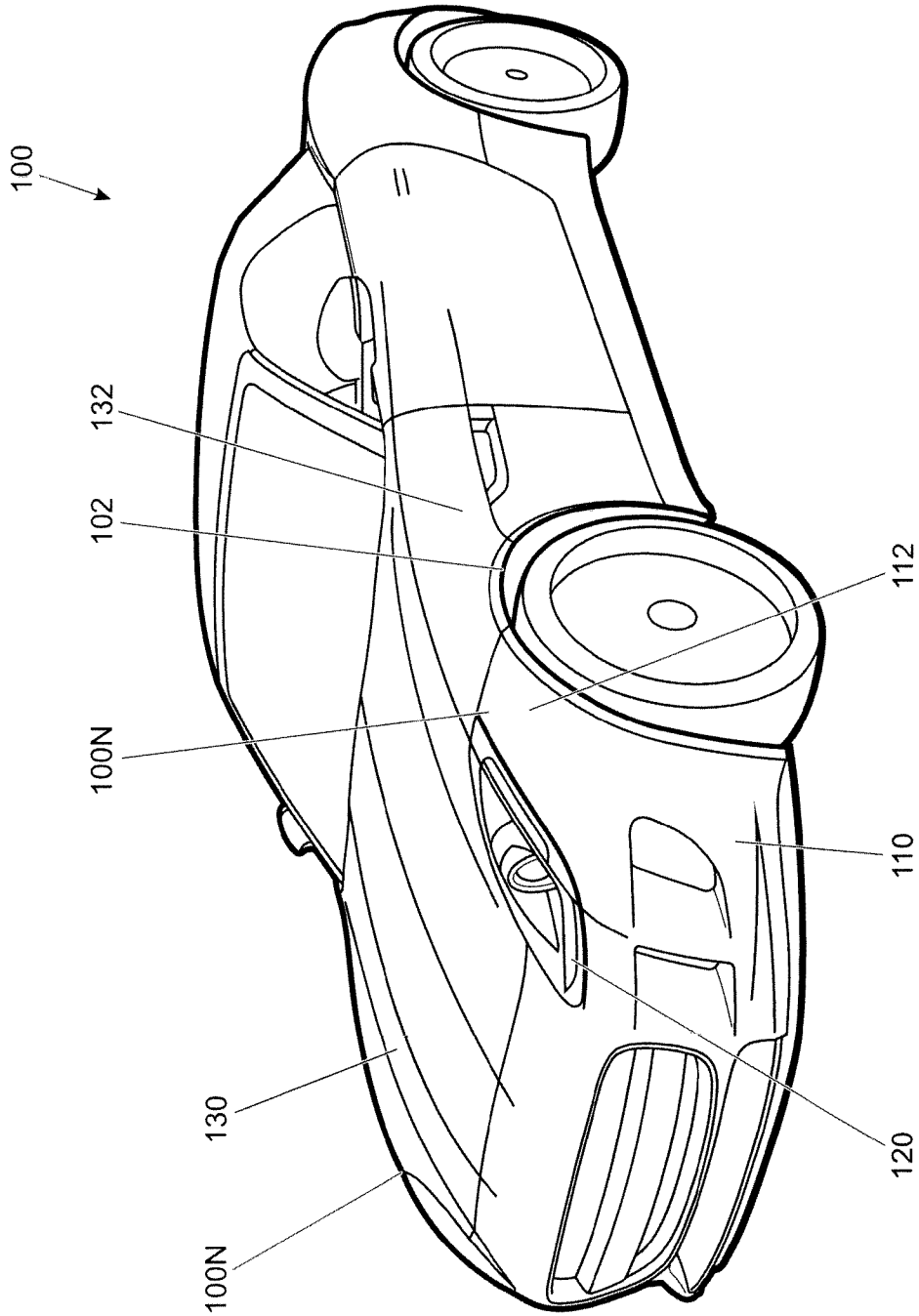


FIGURE 1

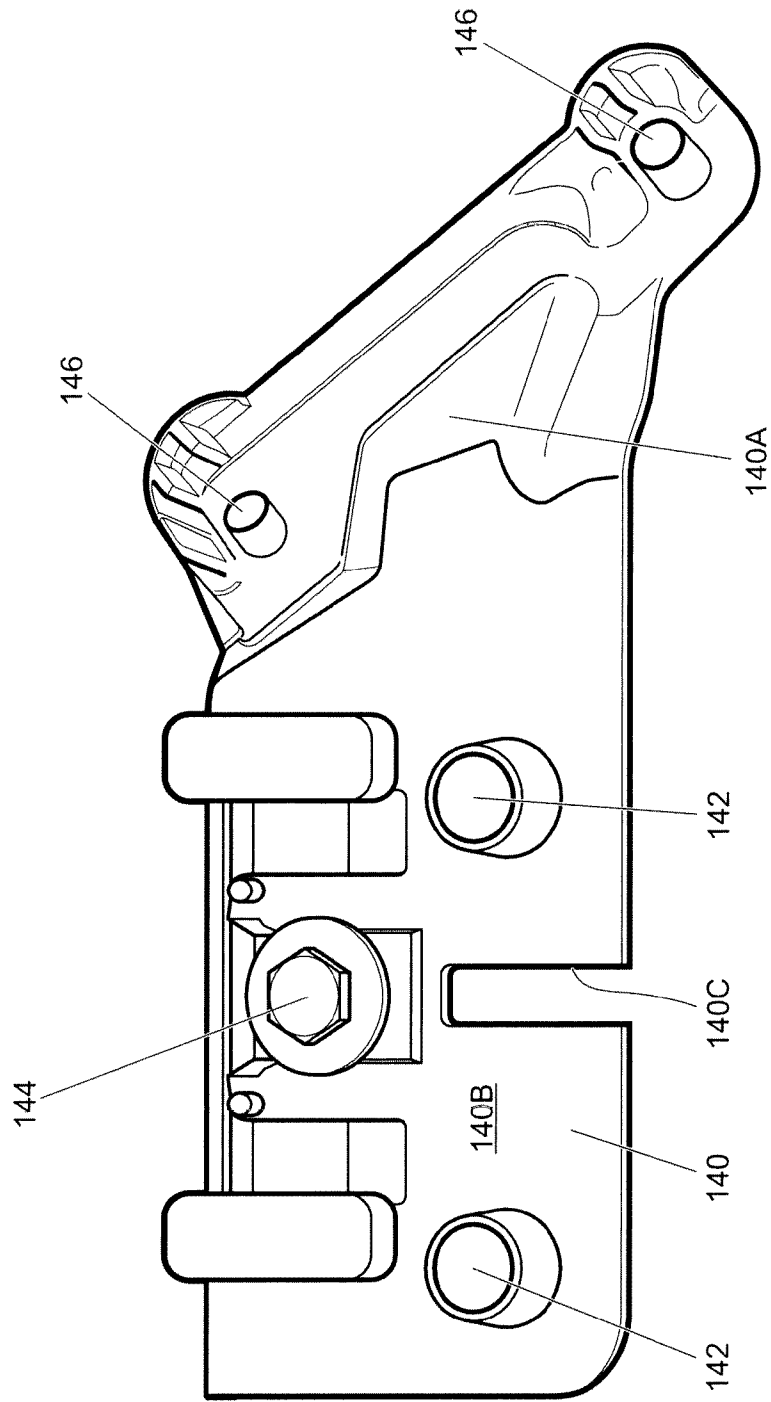


FIGURE 2

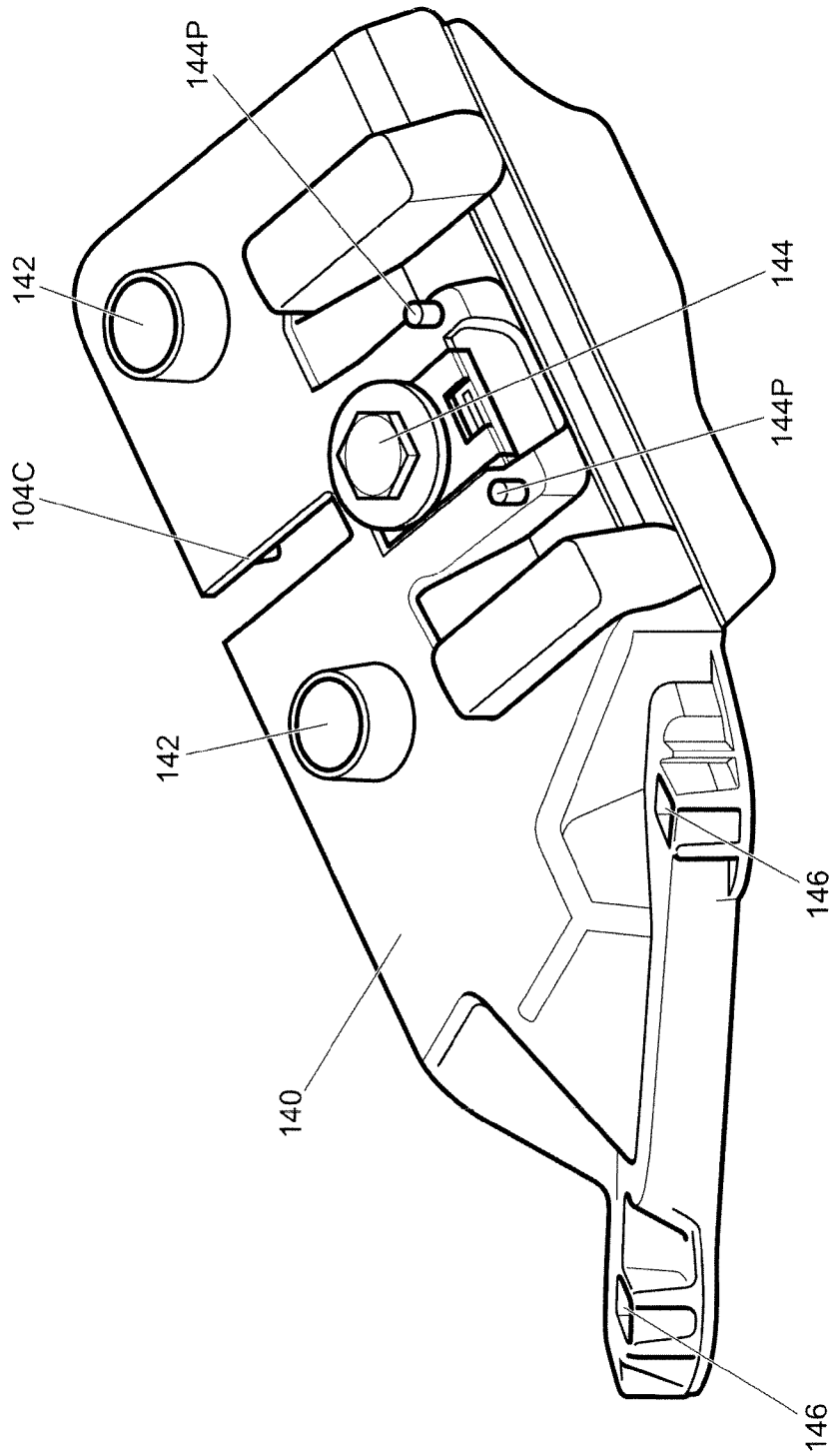


FIGURE 3

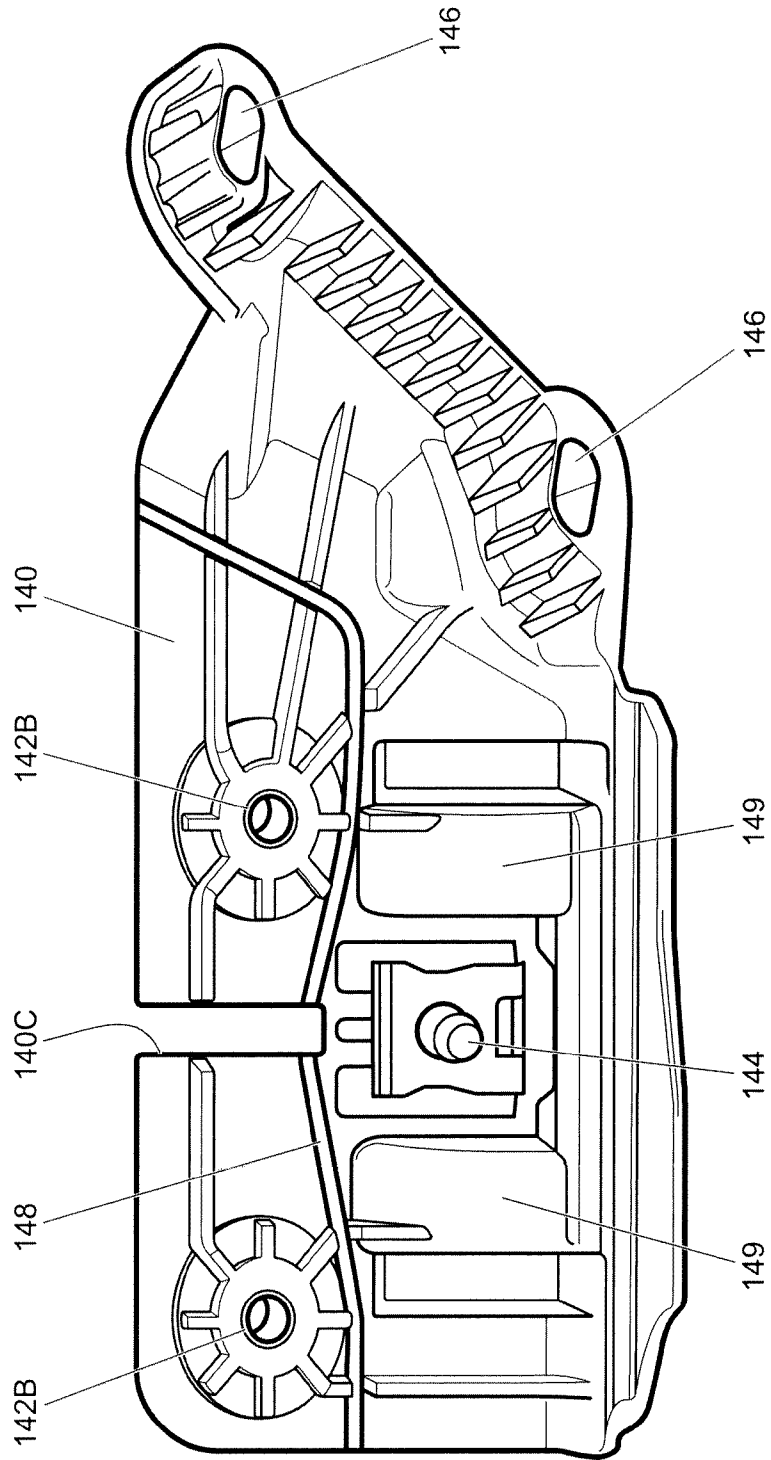


FIGURE 4

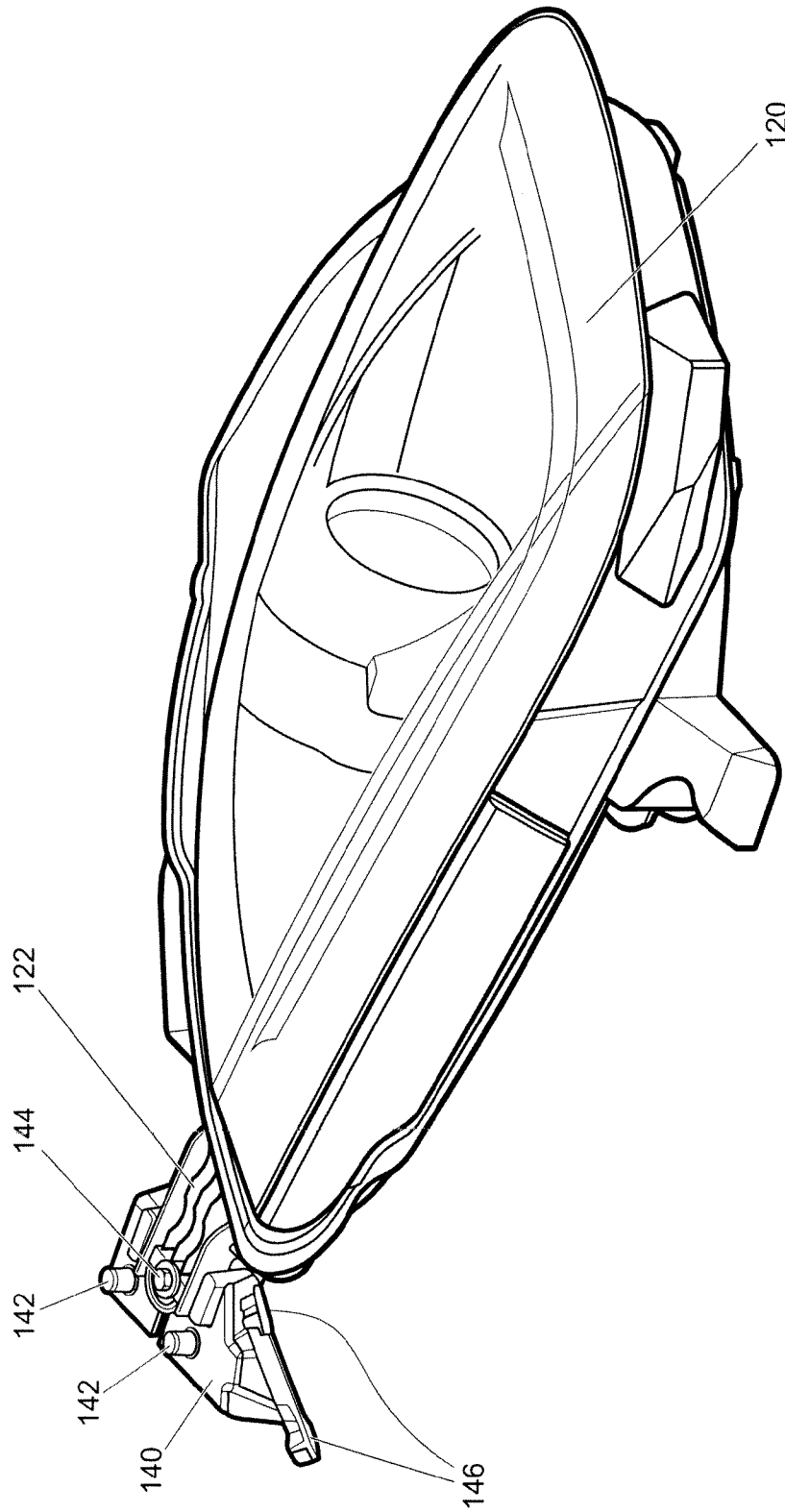


FIGURE 5

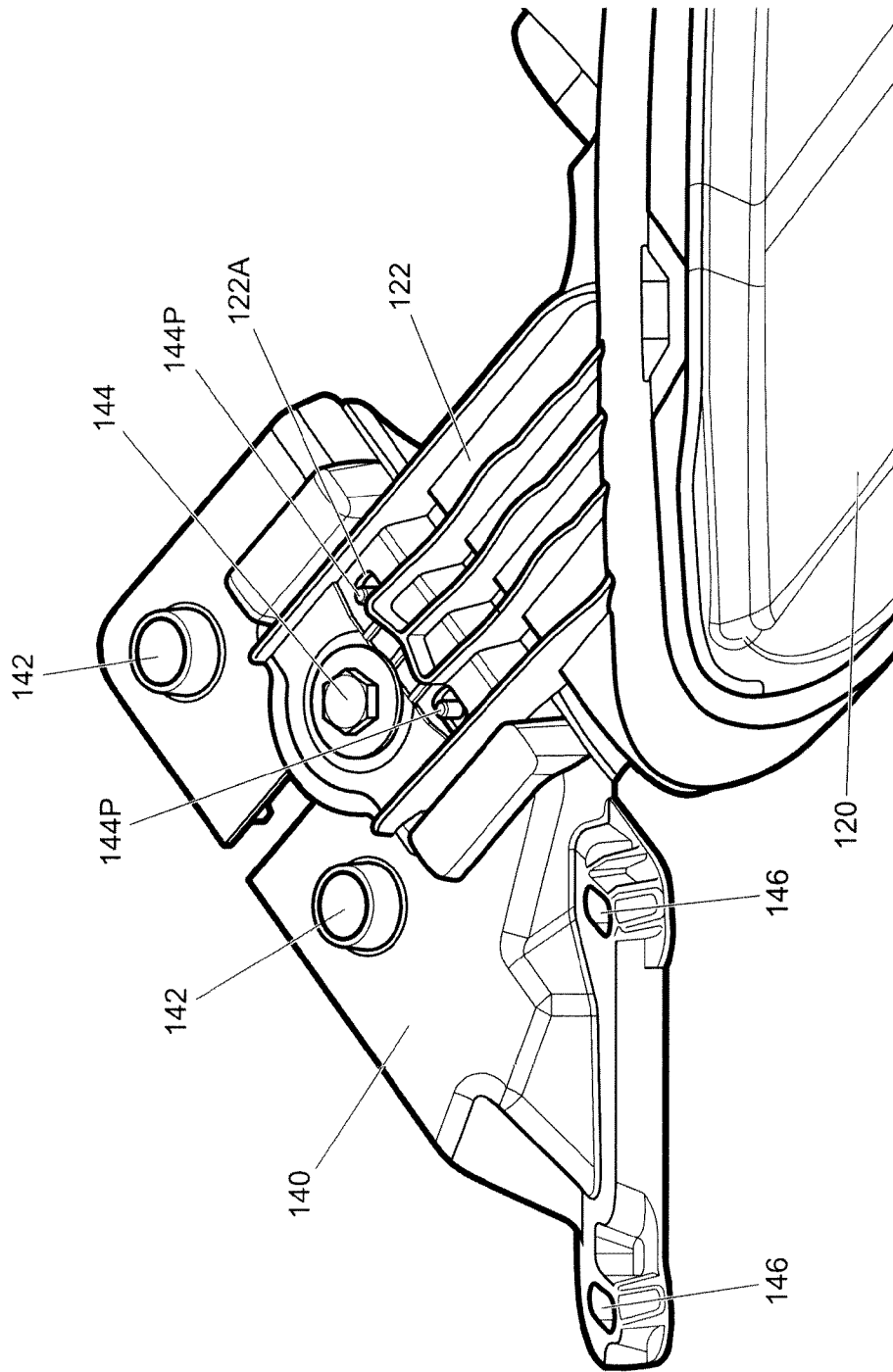


FIGURE 6

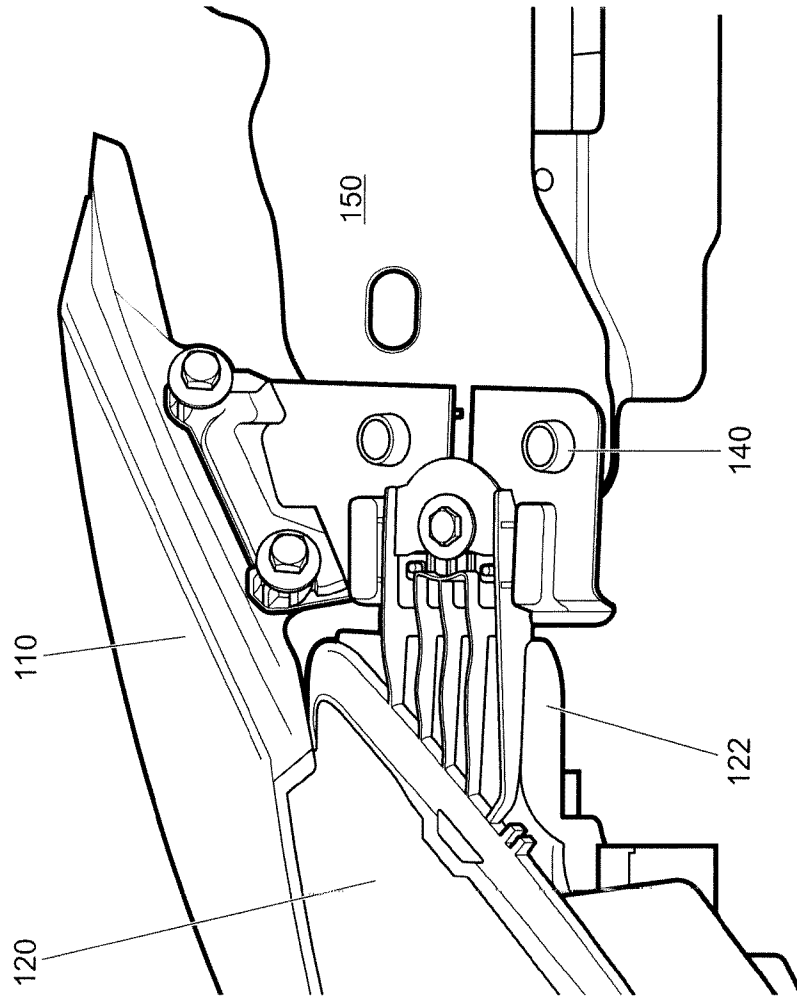


FIGURE 7

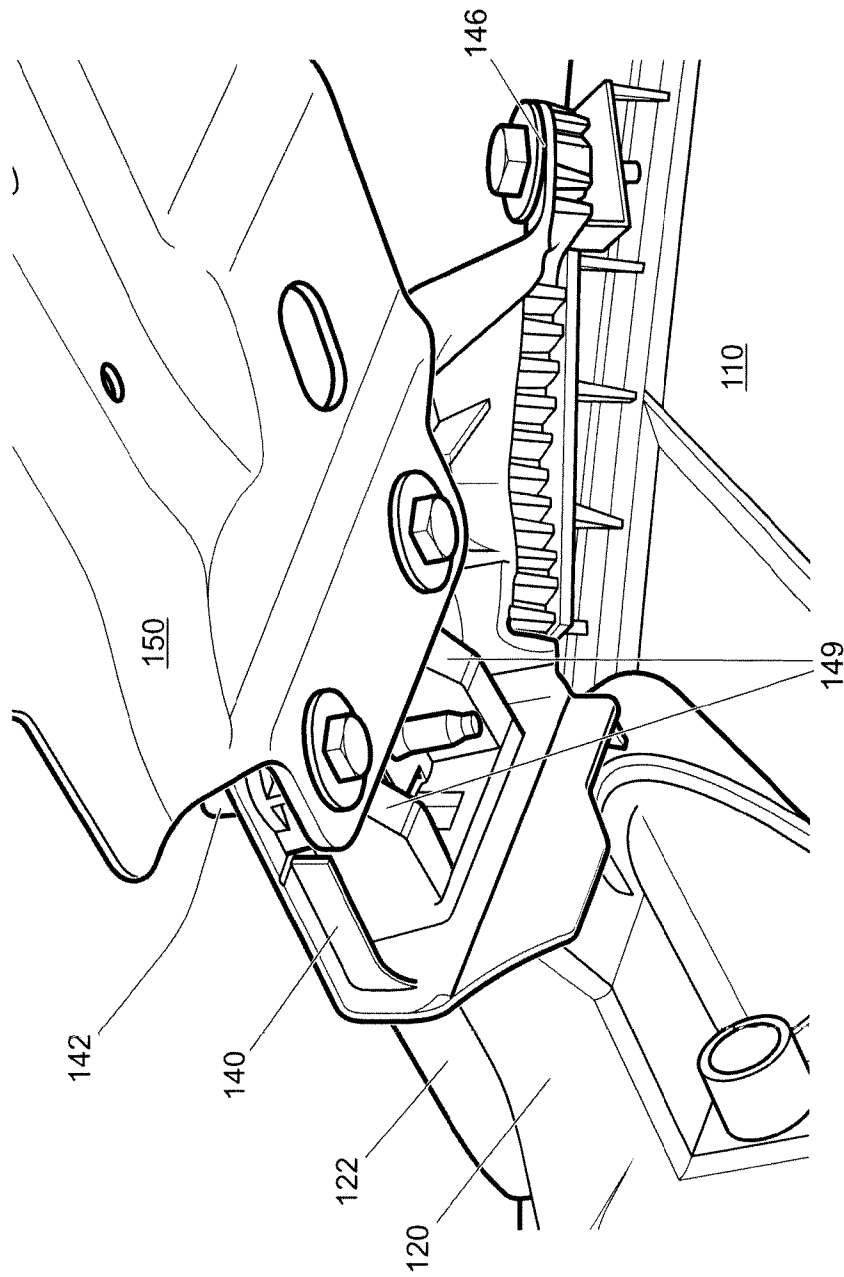


FIGURE 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/069942

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60Q1/04 B60R19/34
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)
B60Q B60R B62D

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

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X A	EP 1 932 749 A1 (VOLKSWAGEN AG [DE]) 18 June 2008 (2008-06-18) the whole document -----	1,10,14 2-5,13
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Further documents are listed in the continuation of Box C.

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Date of the actual completion of the international search 29 November 2013	Date of mailing of the international search report 09/12/2013
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 Aubard, Sandrine

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