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MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
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(54) Title: BRACKET ELEMENT ATTACHING WHEEL HOUSING TO THE REAR PARCEL SHELF

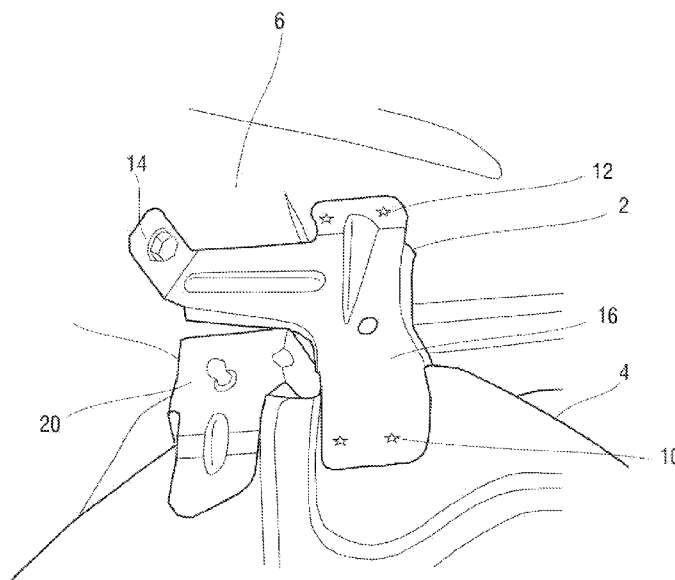


FIG. 1

(57) Abstract: A vehicle comprises: two opposed rear wheel housings (4,104); a rear parcel shelf (6) extending above and between the two rear wheel housings (4,104); wherein the vehicle comprises at least one bracket element (2,102) extending between one of the rear wheel housing (4,104) and the rear parcel shelf (6) and being attached to said housing (4,104) and shelf (6). The solution is particularly effective in damping noise at low-end audible frequencies.



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BRACKET ELEMENT ATTACHING WHEEL HOUSING TO THE REAR PARCEL SHELF

FIELD OF TECHNOLOGY

The invention is directed to the field of vehicle acoustics, more particularly to a vehicle comprising at least one bracket element attaching, one of two opposed wheel housings to a rear parcel shelf.

BACKGROUND

Generally, the vehicle body generates noise due to vibrations caused by the roughness of the road. To overcome this prejudice, the car manufacturers tend to increase the stiffness of the vehicle body. However, an improved rigidity of the vehicle body often results in a mass increase.

SUMMARY

The invention has for technical problem to provide a solution to at least one shortcoming of the prior art. More specifically, the invention has for technical problem to damp the noise in a cost effective way.

For this purpose, the invention is directed to a vehicle comprising: two opposed rear wheel housings; a rear parcel shelf extending above and between the two rear wheel housings; wherein the vehicle comprises at least one bracket element extending between one of the rear wheel housings and the rear parcel shelf and being attached to said housing and shelf.

According to a preferred embodiment, the at least one bracket element extends between the wheel housing and the rear parcel shelf vertically or inclined with an angle of less than 30° relative to a vertical direction.

According to a preferred embodiment, the at least one bracket element extends in a main vertical and longitudinal plane.

According to a preferred embodiment, the attachment of the at least one bracket element to the wheel housing is by welding against a side generally vertical wall of said wheel housing.

According to a preferred embodiment, the attachment of the at least one bracket

element to the wheel housing comprises at least spot-welding points distant from each other longitudinally.

According to a preferred embodiment, each of the at least one bracket element is a stamped metal sheet comprising ribs formed thereon.

According to a preferred embodiment, each of the at least one bracket element comprises at least one tab attached against a lower face of the rear parcel shelf.

According to a preferred embodiment, each of the at least one bracket element comprises at least two tabs attached against a lower face of the rear parcel shelf, one of said tabs being attached by welding and the other one being attached by a fastener.

According to a preferred embodiment, the at least one bracket element comprises a left bracket element attached to a corresponding left rear wheel housing of the two rear wheel housings, and a right bracket element attached to a corresponding right rear wheel housing of said two rear wheel housings.

According to a preferred embodiment, the left and right bracket elements have different shapes.

The invention is interesting in that it provides a solution that simplifies the car manufacturing process, since no major structural design change is necessary. The bracket elements can be made out of scraped stamped sheets. There is also no significant increase in the overall weight of the vehicle. The solution is particularly effective in damping noise at low-end audible frequencies.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will be readily understood from the following detailed description and drawings among them:

Figure 1 is a view of a first rear bracket element positioned on the right side of the vehicle;

Figure 2 is a view of a second bracket element positioned on the left side of the vehicle.

DETAILED DESCRIPTION

Figure 1 depicts a first bracket element 2 extending between a first rear wheel housing 4 and the rear parcel shelf 6. The first bracket element 2 is positioned on a right side of

a vehicle. The first bracket element 2 allows attaching the first rear wheel housing 4 to the rear parcel shelf 6.

The first bracket element 2 is a stamped metal sheet comprising ribs formed thereon and extends between the first rear wheel housing 4 and the rear parcel shelf 6 vertically. The first bracket element 2 extends in a main vertical and longitudinal plane in figure 1. In an alternative not shown, the first bracket element 2 can extend between the first rear wheel housing 4 and the rear parcel shelf 6, inclined with an angle of less than 30° relative to a vertical direction.

The attachment 10 of the first bracket element 2 to the wheel housing 4 is by welding against a side generally vertical wall of the first rear wheel housing 4. The attachment 10 of the first bracket element 2 to the first rear wheel housing 4 comprises at least spot-welding points, for instance two distant from each other longitudinally. The first bracket element 2 comprises two tabs 12, 14 attached against a lower face of the rear parcel shelf 6, wherein the first of both tabs 12 is attached by welding with two weld-spots for instance and the second one 14 is attached by a fastener. The first bracket element 2 presents an L shape to accommodate a spring bracket 20 of an interface for a rear trunk lid mechanism.

The first bracket element 2 comprises a principal portion 16 having a generally rectangular shape with a height H1 and a width W1, wherein the ratio between the H1 and W1 is preferably between 1.5 to 3.0. The first bracket element 2 also comprises the first tab 12 extending from an upper edge thereof. The first tab 12 of the first bracket element 2 is connected to a portion of the lower face of the rear parcel shelf 6 through at least one welding spot, the portion being preferably horizontal. The first bracket element 2 further includes a projection extending in a longitudinal rear to front direction from an upper portion of the principal portion 16 of the first bracket element 2. An end portion of the projection is angled with regard to a main portion of the projection, the end portion forming the second tab 14 of the first bracket element 2. The second tab 14 of the first bracket element 2 comprises a hole for a fastener such as a bolt. In figure 1, the second tab 14 of the first bracket element 2 rests on another portion of the lower face of the parcel shelf 6, wherein the other portion of the lower face of the rear parcel shelf 6 is inclined.

Figure 2 depicts a second bracket element 102 extending between a second rear wheel housing 104 and the rear parcel shelf 6. The second bracket element 102 is positioned

on a left side of the vehicle. The second bracket element 102 allows attaching the second rear wheel housing 104 to the rear parcel shelf 6.

The second bracket element 102 is a stamped metal sheet comprising ribs formed thereon and extends between the second rear wheel housing 104 and the rear parcel shelf 6 vertically. The second bracket element 102 extends in a main vertical and longitudinal plane in figure 2. In an alternative not shown, the second bracket element 102 can extend between the second rear wheel housing 104 and the rear parcel shelf 6, inclined with an angle of less than 30° relative to a vertical direction.

The attachment 110 of the second bracket element 102 to the second rear wheel housing 104 is by welding against a side generally vertical wall of the second rear wheel housing 104. The attachment 110 of the at least one bracket element to the wheel housing comprises at least spot-welding points, for instance four distant from each other longitudinally. The second bracket element 102 comprises two tabs 112, 114 attached against a lower face of the rear parcel shelf 6, wherein the first tab 112 is attached by welding with two weld-spots for instance and the second tab 114 is attached by a fastener.

The second bracket element 102 presents a generally rectangular shape, comprising a principal portion 116 with a height $H2$ and a width $W2$, wherein the ratio between the $H2$ and $W2$ is preferably between 0.5 to 2.0. The first tab 112 of the second bracket element 102 is connected to a further portion of the lower face of the rear parcel shelf 6 through at least one welding spot, the further portion being preferably horizontal. The second bracket element 102 further includes a second tab 114 extending from an upper front corner of the principal portion 116 of the second bracket element 102. The second tab 114 of the second bracket element 102 has a hole for a bolt and rests on another further portion of the lower face of the parcel shelf 6. In figure 2, the second tab 114 of the second bracket element 102 is angled with regard to the principal portion 116 of the second bracket element 102, wherein the other further portion of the lower face of the rear parcel shelf 6 is inclined.

The vehicle can comprise the first bracket element 2 attached to the first rear wheel housing 4 on the right side of the vehicle and the second bracket element 102 attached to the second rear wheel housing 104 on the left side of the vehicle. The first bracket element 2 and the second bracket element 102 can have different shapes.

WHAT IS CLAIMED IS:

1. A vehicle comprising:

two opposed rear wheel housings (4, 104);

a rear parcel shelf (6) extending above and between the two rear wheel housings (4, 104);

wherein

the vehicle comprises at least one bracket element (2, 102) extending between one of the rear wheel housings (4, 104) and the rear parcel shelf (6) and being attached to said housing (4, 104) and shelf (6).

2. The vehicle according to claim 1, wherein the at least one bracket element (2, 102) extends between the wheel housing (4, 104) and the rear parcel shelf (6) vertically or inclined with an angle of less than 30° relative to a vertical direction.

3. The vehicle according to claim 1, wherein the at least one bracket element (2, 102) extends in a main vertical and longitudinal plane.

4. The vehicle according to claim 1, wherein the attachment (10, 110) of the at least one bracket element (2, 102) to the wheel housing (4, 104) is by welding against a side generally vertical wall of said wheel housing (4, 104).

5. The vehicle according to claim 4, wherein the attachment (10, 110) of the at least one bracket element (2, 102) to the wheel housing (4, 104) comprises at least spot-welding points distant from each other longitudinally.

6. The vehicle according to claim 1, wherein each of the at least one bracket element (2, 102) is a stamped metal sheet comprising ribs formed thereon.

7. The vehicle according to claim 1, wherein each of the at least one bracket element (2, 102) comprises at least one tab (12, 112, 14, 114) attached against a lower face of the rear parcel shelf (6).

8. The vehicle according to claim 1, wherein each of the at least one bracket element (2, 102) comprises at least two tabs (12, 112, 14, 114) attached against a lower face of the rear parcel shelf (6), one of said tabs (12, 112) being attached by welding and the other (14, 114) one being attached by a fastener.

9. The vehicle according to claim 1, wherein the at least one bracket element (2, 102) comprises a left bracket element (102) attached to a corresponding left rear wheel housing (104) of the two rear wheel housings (4, 104), and a right bracket element (2) attached to a corresponding right rear wheel housing (4) of said two rear wheel housings (4, 104).

10. The vehicle according to claim 9, wherein the left and right bracket elements (2, 102) have different shapes.

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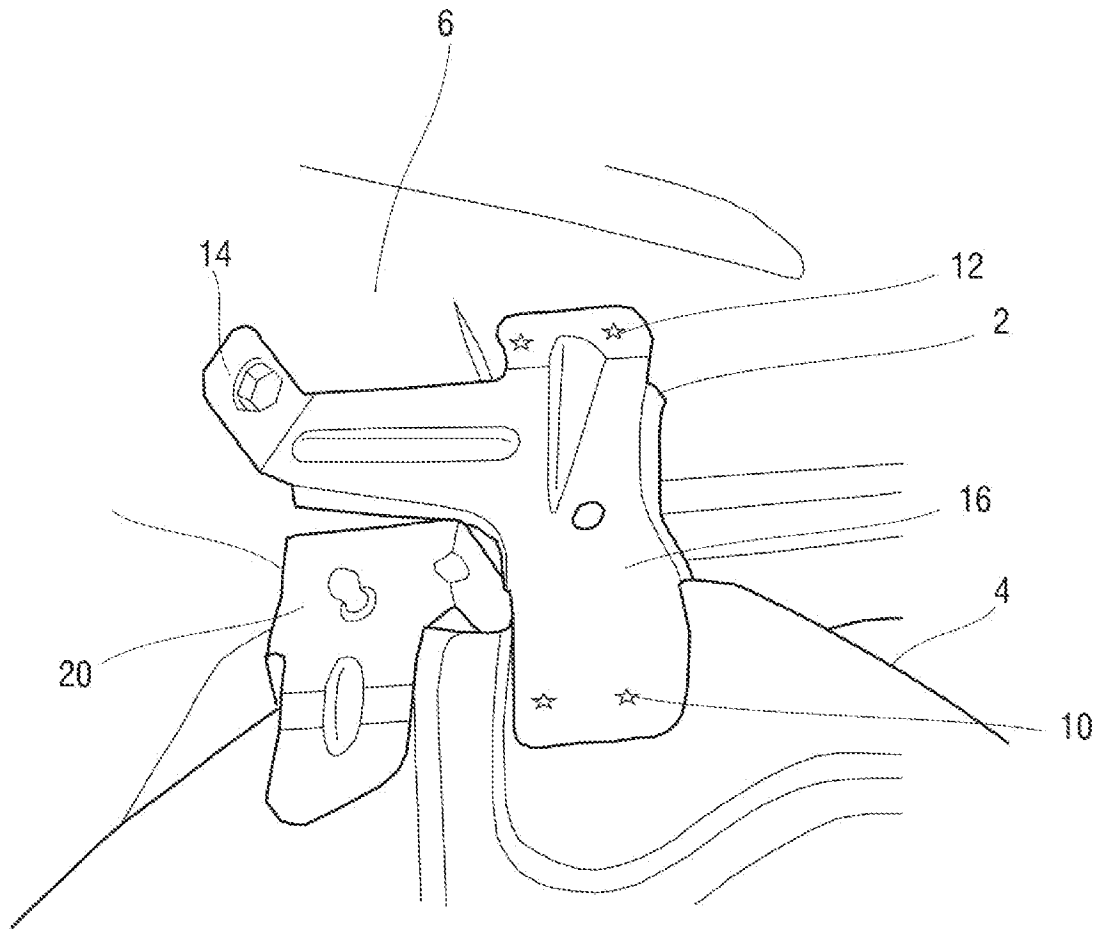


FIG. 1

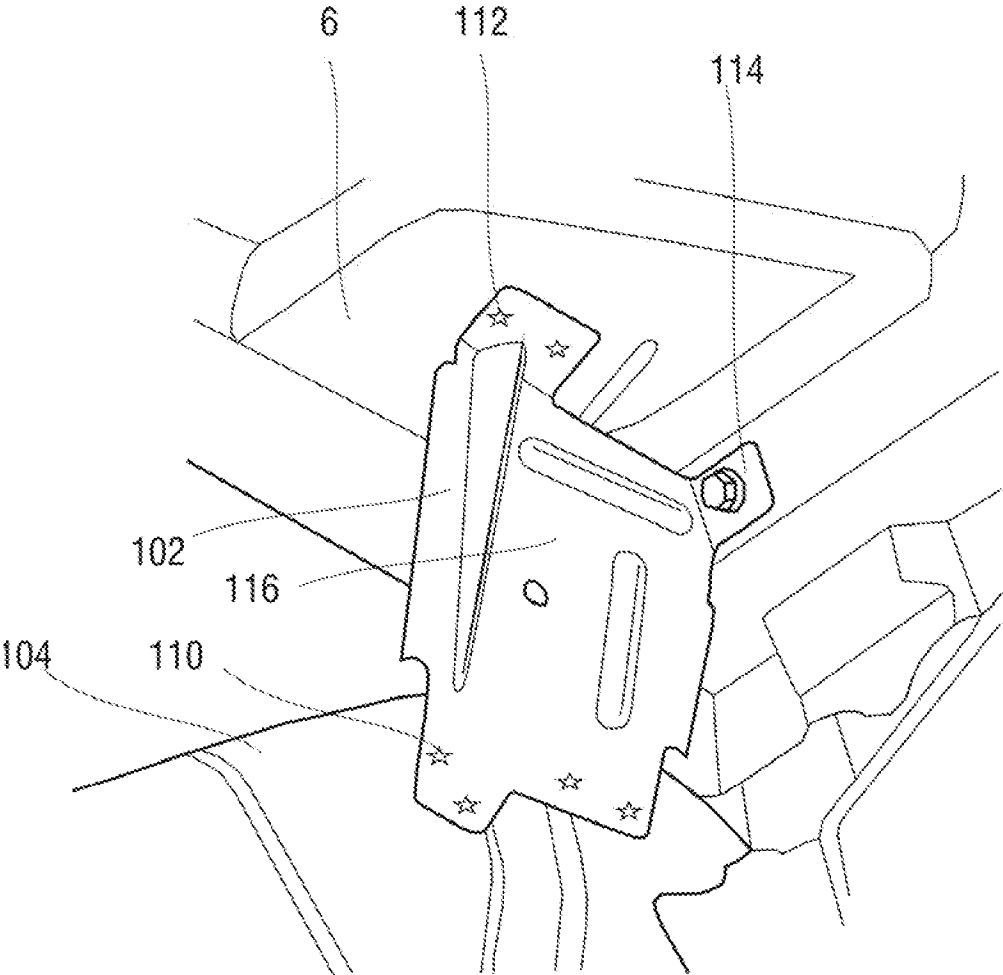


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/075009

A. CLASSIFICATION OF SUBJECT MATTER

B62D 25/08(2006.01)i

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)

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)

WPI, EPODOC, CNPAT, CNKI; rear,back,package,trunk,parcel,boot,house,case,wheel,connect,reinforce+,noise

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 202783429 U (ZHEJIANG GEELY AUTOMOBILE RES. INST. CO. ET AL.) 13 March 2013 (2013-03-13) description para.[0015] and fig.1	1-3, 6, 8
Y	CN 202783429 U (ZHEJIANG GEELY AUTOMOBILE RES. INST. CO. ET AL.) 13 March 2013 (2013-03-13) description para.[0015] and fig.1	4, 5, 7, 9, 10
Y	CN 204110177 U (DONGFENG PEUGEOT CITROEN AUTOMOBILE CO.) 21 January 2015 (2015-01-21) description paragraphs [0012]-[0016] and figures 1-4	4, 5, 7, 9, 10
A	JP 2006256351 A (TOYOTA JIDOSHA K.K.) 28 September 2006 (2006-09-28) the whole document	1-10
A	JP 2014162315 A (MITSUBISHI JIDOSHA ENG. K.K. ET AL.) 08 September 2014 (2014-09-08) the whole document	1-10
A	CN 1640746 A (MAZDA MOTOR CORP.) 20 July 2005 (2005-07-20) the whole document	1-10

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

* Special categories of cited documents:

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“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

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“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

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Name and mailing address of the ISA/CN

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
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