

FASCICULE DE BREVET D'INVENTION

21 Numéro de dépôt : 1202400365
PCT/IN2023/050070

22 Date de dépôt : 22/01/2023

30 Priorité(s) :
IN n° 202241019637 du 31/03/2022

24 Délivré le : 21/02/2025

45 Publié le : 04.04.2025

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54 Titre : Fender assembly for a vehicle.

57 Abrégé :

Present invention provides a fender assembly (100) for a vehicle (200). The fender assembly (100) comprises a fender member (102) mounted on a frame member (202) and being adapted to cover a top portion (204a) and side portion (204b) of a wheel assembly (204) of the vehicle (200). One or more guard members (104) are mounted to an inner side (102a) of the fender member (102), wherein the one or more guard members (104) are adapted to protect an engine compartment (230) of the vehicle (200) from mud and water ingress during operation of the vehicle (200).

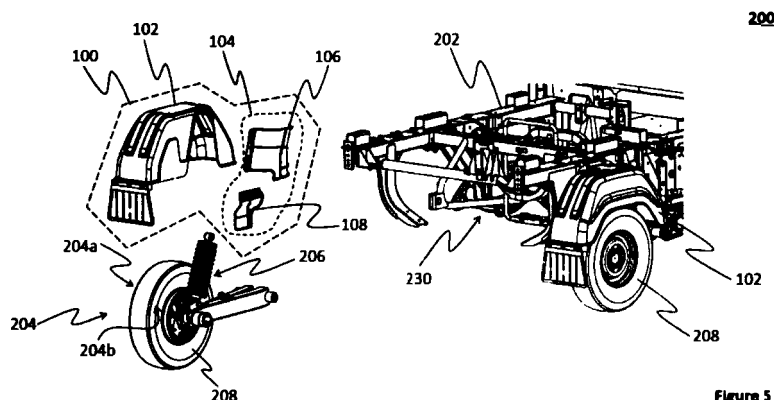


Figure 5

Figure 5

Fender Assembly for a Vehicle

FIELD OF THE INVENTION

[001] Present invention relates to a fender assembly for a vehicle. More particularly, relates to the fender assembly for protecting an engine compartment from mud and water ingression during operation of the vehicle.

5 BACKGROUND OF THE INVENTION

[002] Typically, vehicles such as three-wheeled cargo vehicles, are required to operate in uneven or muddy terrain. During such an operation, due to lack of splash guard particularly in rear wheel area of the vehicle, mud gets splashed on both sides of the rear wheels. Due to splashing, mud gets accumulated in
10 an engine compartment and on a bottom area of a loading deck. Such a situation requires frequent cleaning of the vehicle, especially in the engine compartment, which is laborious.

[003] In order to overcome the aforesaid limitations, a cover member is provided in the engine compartment area for avoiding accumulation of mud.
15 However, installation of the cover member results in a greater material requirement in the vehicle, making the vehicle expensive and heavy. Also, the cover member is required to be thermal resistant for withstanding the heat generated from an engine in the engine compartment area, which further adds onto the cost of the vehicle. Further, vehicle operators require installation of
20 cover member mostly in rainy conditions. Thus, vehicle operators prefer



accessory components rather than the conventional cover member. However, the cover member as an accessory component requires special tools, generally available at a dealer end, for installation. Such a requirement makes installation of the cover member a hassle or tedious, which is undesirable.

- 5 [004] In view of the above, there is a need for a fender assembly for a vehicle, which addresses one or more limitations stated above.

SUMMARY OF THE INVENTION

- [005] In one aspect, a fender assembly for a vehicle is disclosed. The fender
10 assembly comprises a fender member mounted on a frame member and being adapted to cover a top portion and side portion of a wheel assembly of the vehicle. One or more guard members are mounted to an inner side of the fender member, wherein the one or more guard members are adapted to protect an engine compartment of the vehicle from mud and water ingress
15 during operation of the vehicle.

[006] In an embodiment, the one or more guard members comprises a first guard member adapted to be mounted at a front portion of the inner side of the fender member and a second guard member adapted to be mounted at a rear portion of the inner side of the fender member.

- 20 [007] In an embodiment, the first guard member comprises a body portion having a top portion, a bottom portion and side portions. The body portion extending axially at an angle from the top portion to the bottom portion. A cutout

is defined at the top portion of the body portion. The cutout adapted to avoid interference with a suspension system upon mounting on the fender member. One or more side receptacles are defined on side portions of the body member and is adapted to engage with the fender member.

- 5 [008] In an embodiment, each of the one or more side receptacles are rectangular in shape.

[009] In an embodiment, a plurality of rib members are provided on the body portion of the first guard member. The plurality of rib members are defined around the one or more side receptacles for enhancing structural rigidity of the
10 body member.

[010] In an embodiment, the body portion extending from the side portions is defined with a C-shaped profile. The C-shaped profile is adapted to surround a suspension system attached to the wheel assembly upon mounting to the fender member.

- 15 [011] In an embodiment, the second guard member comprises a body member having a top surface portion, a bottom surface portion and side surface portions. The one or more top receptacles are provided on the top surface portion of the body member and are adapted to engage with the fender member. A plurality of ribs are provided on the body member and surround the
20 one or more top receptacles for enhancing structural rigidity of the body member.

[012] In an embodiment, the body member extends from the top surface portion to the bottom surface portion and from the side surface portions is defined with a stepped profile.

[013] In an embodiment, the one or more guard members are mounted to the
5 inner side of the fender member via a clip nut.

[014] In an embodiment, the vehicle is a three-wheeled vehicle.

BRIEF DESCRIPTION OF THE DRAWINGS

[015] Reference will be made to embodiments of the invention, examples of
10 which may be illustrated in accompanying figures. These figures are intended to be illustrative, not limiting. Although the invention is generally described in context of these embodiments, it should be understood that it is not intended to limit the scope of the invention to these particular embodiments.

Figure 1 is a schematic view of a vehicle, in accordance with an
15 embodiment of the present invention.

Figure 2 is a top view of the vehicle, in accordance with an embodiment of the present invention.

Figure 3 is a schematic view of a rear wheel of the vehicle, in accordance with an embodiment of the present invention.

20 Figure 4 is a right side view of the vehicle, in accordance with an embodiment of the present invention.

Figure 5 is an exploded view of the vehicle, in accordance with an embodiment of the present invention.

Figure 6 is a perspective view of a first guard member, in accordance with an embodiment of the present invention.

5 Figure 7 is a perspective view of the first guard member, in accordance with an embodiment of the present invention.

Figure 8 is a rear view of the first guard member, in accordance with an embodiment of the present invention.

10 Figure 9 is a top view of the first guard member, in accordance with an embodiment of the present invention.

Figure 10 is a schematic view of a second guard member, in accordance with an embodiment of the present invention.

Figure 11 is a side view of the second guard member, in accordance with an embodiment of the present invention.

15 Figure 12 is a schematic view of the second guard member, in accordance with an embodiment of the present invention.

Figure 13 is a schematic view of a rear portion of the vehicle, in accordance with an embodiment of the present invention.

20 Figure 14 is a perspective view of the fender assembly mounted on the rear wheel, in accordance with an embodiment of the present invention.

Figure 15 is a perspective view of the fender assembly mounted on the rear wheel, in accordance with an embodiment of the present invention.

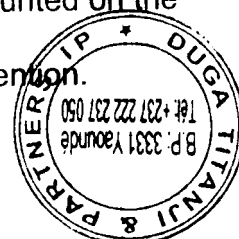


Figure 16 is a top view of the fender assembly mounted on the rear wheel, in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

5 [016] Various features and embodiments of the present invention here will be discernible from the following further description thereof, set out hereunder.

[017] Figure 1 illustrates a schematic view of a vehicle 200, in accordance with an embodiment of the invention. As an example, the vehicle 200 is a three-wheeled cargo vehicle. The vehicle 200 has an Internal combustion (IC) engine
10 (not shown) or an electric powertrain (not shown) for generating the motive force required for driving the vehicle 200. The vehicle 200 has a wheel assembly 204 (as shown in Figure 5) a frame member 202, a seat assembly 212 and a fuel tank (not shown). In the present embodiment, the wheel assembly 204 is a rear wheel assembly mounted on a right-rear and a left-rear
15 sides of the vehicle 200. Accordingly, the wheel assembly 204 includes a rear wheel 208 supported by a suspension assembly 206 (shown in Figure 5) of the vehicle 200. In another embodiment, the wheel assembly 204 can be a front wheel assembly as well, as per feasibility and requirement.

[018] The IC engine may be on the frame member 202. The frame member
20 202 includes a pair of long members 214a, 214b (as shown in Figure 2) that extend in a vehicle front-rear direction of the vehicle 200. The pair of long members 214a, 214b extend in the vehicle front-rear direction substantially

parallelly to each other. In an embodiment, the IC engine is mounted between the pair of long members 214a, 214b. The frame member 202 further has one or more cross members (not shown) that extend transversely between the pair of long members 214a, 214b. A head pipe (not shown) supports a steering shaft (not shown) and at least one front suspension (not shown) attached to the steering shaft. The front suspension support the front wheel 210. The upper portion of the front wheel 210 is covered by a front fender 216 mounted to the lower portion of the front suspension at the end of the steering shaft. A handlebar (not shown) is operatively connected to steering shaft, and can rotate about the steering shaft on both sides for maneuvering the vehicle 200.

[019] A front portion of the frame member 202 supports a plurality of body panels to form a cabin 218, wherein the seat assembly 212 and the handlebar are disposed inside the cabin 218. A headlight 220 is provided on a front face of the cabin 218. A pair of swing arms 222 (only one swing arm depicted in Figure 1) are configured to extend rearwardly from the frame member 202 and support the rear wheels 208. Further, each of the rear wheels 208 are covered by a fender assembly 100 (as shown in Figure 5) that is disposed above each of the rear wheel 208. In an embodiment, the rear wheels 208 rotate by the driving force of the IC engine transmitted from a differential unit of the IC engine through propeller shafts (not shown).

[020] In an embodiment, the vehicle 200 further has a loading deck 224 that is mounted on the frame member 202 via mounting brackets (not shown in

Figures). In an embodiment, the loading deck 224 is mounted on the pair of longitudinal members 214a, 214b via the mounting brackets. The loading deck 224 includes a floor base panel 226 configured to receive cargo to be transported. The floor base panel 226 includes a service door 228 operable
5 between a closed position (not shown in Figures) and an open position (not shown in Figures). In an embodiment, the IC engine is mounted between the pair of longitudinal members 214a, 214b below the loading deck 224.

[021] Referring to Figures 4 and 5 in conjunction with Figure 1, each of the rear wheels 208 of the vehicle 200 is provided with a fender assembly 100. The
10 fender assembly 100 is adapted to prevent mud and water ingress into an engine compartment 230 of the vehicle 200. The engine compartment 230 may be a portion of the vehicle 200 including powertrain components such as the IC engine, a radiator or a cooling system (not shown) for the IC engine, a transmission assembly (not shown) and the like. The fender assembly 100
15 includes a fender member 102 adapted to cover a top portion 204 and a side portion 204b (as shown in Figure 3) of the wheel assembly 204. In the present embodiment, the fender assembly 100 is provided to the rear wheels 208, in order to protect the engine compartment 230 provided at a rear portion of the vehicle 200. As such, the fender assembly 100 may be incorporated suitably
20 for the front wheel 210 as well, when the engine compartment 230 is provided at a front portion of the vehicle 200.

[022] In the present embodiment, the term "top portion 204a" of the wheel assembly 204 refers to the top portion of the rear wheel 208. Also, the term "side portion 204b" of the wheel assembly 204 refers to the side portion of the rear wheel 208.

5 [023] As depicted in Figure 5, the fender assembly 100 includes one or more guard members 104 mounted to an inner side 102a (as shown in Figure 13) of the fender member 102. The one or more guard members 104 are adapted to splashing of mud and water onto the engine compartment 230 during operation of the vehicle 200, thus protect the engine compartment 230 from mud and
10 water ingress. In the present embodiment, the inner side 102a pertains to the side facing the engine compartment 230 of the vehicle 200. The guard members 104 comprise a first guard member 106 mounted at a front portion of the inner side 102a of the fender member 102 and a second guard member 108 mounted at a rear portion of the inner side 102a of the fender member 102
15 (for e.g. as shown in Figures 14, 15 and 16). In an embodiment, the guard members 104 is a split-type guard member, having the first guard member 106 and the second guard member 108, for ease of assembly and disassembly.

[024] Referring to Figures 6-9 in conjunction with Figure 5, the first guard member 106 is depicted. The first guard member 106 is mounted onto the front
20 portion of the inner side 102a of the fender member 102. In the present embodiment, the term "front portion" refers to the portion facing towards the front of the vehicle 200. The first guard member 106 is mounted on the front

portion of the inner side 102a via a clip nut (not shown). The clip nut facilitates assembly and disassembly of the first guard member 106 from the fender member 102. In an embodiment, the first guard member 106 may be mounted by conventionally mounting techniques such as fastening, snap-fit and the like,
5 as per design feasibility and requirement.

[025] The first guard member 106 comprises a body portion 110 having a top portion 112, a bottom portion 114 and side portions 116, 118. The body portion 110 also extends axially at an angle from the top portion 112 to the bottom portion 114 to form a bulge-like structure (for e.g. as shown in Figure 5). The
10 angular axial extension is provided in order to accommodate other vehicular components that may be in the vicinity of the rear wheel, such as the suspension assembly 206. In addition to the axial extension, a cutout 138 is also provided at the top portion 112 of the body portion 110. The cutout 138 is also provided to avoid interference with the suspension system 206 upon
15 mounting on the fender member 102. As such, the dimensions of the cutout 138 as well as the angular axial extension is selected as per design feasibility and requirement. In an embodiment, the cutout 138 is a U-shaped cutout (as shown in Figure 7) provided on the top portion 112 of the body member 110.

[026] The body portion 110 also includes one or more side receptacles 120
20 defined on side portions 116, 118 of the body member 110. The side receptacles 120 engage with the fender member 102 for mounting the first guard member 106 with the fender member 102. The side receptacles 120 are

defined on peripheral surfaces of the side portions 116, 118. Further, the body portion 110 extends between the side portions 116, 118 is defined with a C-shaped profile (as shown in Figure 9). The C-shaped profile surrounds the suspension system 206 (as shown in Figure 16) upon mounting to the fender member 102. As such, the construction of the body portion 110 is to avoid interference with the suspension assembly 206, while being connected to the fender member 102 via the side receptacles 120. In an embodiment, the dimensions and configuration of the C-shaped profile is selected based on mounting of the suspension assembly 206 in the vehicle 200. In an embodiment, the top portion 112, the bottom portion 114 and the side portions 116, 118 form a trapezoidal shaped body portion 110 (as shown in Figure 8).

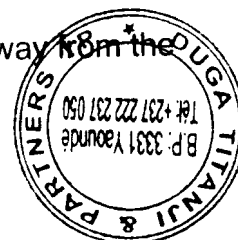
[027] In an embodiment, the side receptacle 120 is defined with an opening 120a for receiving the clip nut, during engagement with the fender member 102.

In the present embodiment, side receptacles 120 are provided, as the top portion 112 and the bottom portion 114 are required to avoid interference with the suspension system 206. As such, the side receptacles 120 may be provided at any location on the first guard member 106 as per design feasibility and requirement. In the present embodiment, the side receptacles 120 are rectangular in shape for ensuring stability during engagement with the clip nut.

However, the shape and dimensions of the side receptacles 120 can be considered as per design feasibility and requirement.

[028] The first guard member 106 also comprises a plurality of rib members 122 provided on the body portion 110, particularly on the outer surface of the body portion 110. The rib members 122 enhance structural rigidity of the first guard member 106 to withstand impact of mud or water particles during movement of the vehicle 200. In an embodiment, the rib members 122 are defined around the one or more side receptacles 120 for enhancing structural rigidity of the body member 110 in the area of the side receptacles 120. In the present embodiment, the rib members 122 extend horizontally and vertically on the body portion 110. In another embodiment, the rib members 122 extend along peripheral surface of the top portion 112, the bottom portion 114 and the side portions 116, 118.

[029] Referring to Figures 10-12 in conjunction with Figure 5, the second guard member 108 is depicted. The second guard member 108 comprises a body member 124. The body member 124 has a top surface portion 126, a bottom surface portion 128 and side surface portions 130, 132. The body member 124 extends from the top surface portion 126 to the bottom surface portion 128 and from the side surface portions 130, 132 to form a stepped profile (for e.g. as shown in Figures 10 and 11). In an embodiment, the stepped profile forms a bump portion 140a towards the side portion 132 and a recessed portion 140b towards the side portion 130. The bump portion 140a and the recessed portion 140b are strategically provided on the body member 124 so that maximum amount of mud and water particles are deflected away from the



engine compartment 230 during operation of the vehicle 200. As such, the bump portion 140a and the recessed portion 140b are provided to ensure optimum mud and ingress protection from the rear portion of the fender member 102. Also, the recessed portion 140b ensures that the body member 124 extends towards the rear portion of the fender member 102 or the vehicle 200 (as shown in Figures 13, 14, 15 and 16).

[030] The second guard member 108 also comprises one or more top receptacles 134 provided on the top surface portion 126 of the body member 124. The top receptacles 134 engage with the fender member 102 for mounting the second guard member 108 onto the fender member 102. In the present embodiment, the top receptacles 134 are defined with an opening 134a for engaging with a clip nut, thereby mounting the top receptacle 134 onto the rear portion of the fender member 102. In another embodiment, the top receptacle 134 can engage with the clip nut by conventional mounting means known in the art such as fastening, snap-fitting and the like. In an embodiment, the second guard member 108 is oriented such that the bump portion 140a is faced towards the front of the vehicle 200 (as shown in Figure 14).

[031] Further, the second guard member 108 comprises a plurality of ribs 136 provided on the body member 124, particularly on the outer surface of the body member 124. The ribs 136 surround the top receptacles 134 for enhancing structural rigidity of the body member 124. In an embodiment, the ribs 136 extend horizontally or vertically on the body member 124. The ribs 136 may

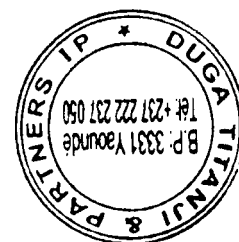
also extend along peripheral surface of the top surface portion 126, the bottom surface portion 128 and the side surface portions 130, 132.

[032] The claimed invention as discussed above is not routine, conventional, or well understood in the art, as the claimed aspects enable the following solutions to the existing problems in conventional technologies. Specifically, the claimed aspect of the one or more guard members 104 adapted to avoid mud and water ingress into the engine compartment 230. Also due to the split-type guard members 104, that is the first guard member 106 and the second guard member 108 facilitates assembly and disassembly. Due to ease of assembly and disassembly, the first guard member 106 and the second guard member 108 are easily replaceable in the event of a damage. Also, due to construction of the guard member 104 packaging cost is reduced.

[033] While the present invention has been described with respect to certain embodiments, it will be apparent to those skilled in the art that various changes and modification may be made without departing from the scope of the invention as defined in the following claims.

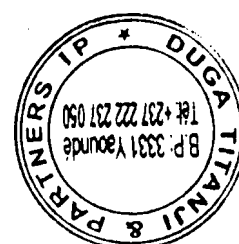
Reference numerals

100 -	Fender assembly
102 -	Fender member
102a -	Inner side of the fender member
104 -	One or more guard members



106 -	First guard member
108 -	Second guard member
110 -	Body portion of first guard member
112 -	Top portion of first guard member
114 -	Bottom portion of first guard member
116, 118 -	Side portions of first guard member
120 -	Side receptacles on the first guard member
122 -	Rib members on the first guard member
124 -	Body member of the second guard member
126 -	Top surface portion
128 -	Bottom surface portion
130, 132 -	Side surface portions
134 -	Top receptacles of second guard member
136 -	Ribs on second guard member
138 -	Cutout on first guard member
200 -	Vehicle
202 -	Frame member
204 -	Wheel assembly
204a -	Top portion of wheel assembly
204b -	Side portion of wheel assembly
206 -	Suspension system
208 -	Rear wheel
210 -	Front wheel
212 -	Seat assembly
214a, 214b -	Pair of long members
216 -	Front fender
218 -	Cabin
220 -	Headlight
222 -	Swing arm

- 224 - Loading deck
- 226 - Floor base panel
- 228 - Service door
- 230 - Engine compartment



WE CLAIM:

1. A fender assembly (100) for a vehicle (200), the fender assembly (100) comprising:

5 a fender member (102), the fender member (102) being mounted on a frame member (202) and being adapted to cover a top portion (204a) and a side portion (204b) of a wheel assembly (204) of the vehicle (200); and

one or more guard members (104), the one or more guard members (104) being mounted to an inner side (102a) of the fender member (102),

10 wherein the one or more guard members (104) being adapted to protect an engine compartment (230) of the vehicle (200) from mud and water ingress during operation of the vehicle (200).

15 2. The fender assembly (100) as claimed in claim 1, wherein the one or more guard members (104) comprise:

a first guard member (106) being adapted to be mounted at a front portion of the inner side (102a); and

20 a second guard member (108) being adapted to be mounted at a rear portion of the inner side (102a).

3. The fender assembly (100) as claimed in claim 2, wherein the first guard member (106) comprises:

5 a body portion (110) having a top portion (112), a bottom portion (114) and one or more side portions (116, 118), the body portion (110) extending axially at an angle from the top portion (112) to the bottom portion (114);

a cutout (138) being defined at the top portion (112) of the body portion (110), the cutout (138) being adapted to avoid interference with a suspension system (206) upon mounting on the fender member (102); and

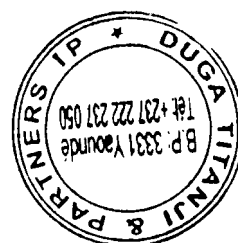
10 one or more side receptacles (120) being defined on the one or more side portions (116, 118) of the body member (110), the one or more side receptacles (120) being adapted to engage with the fender member (102).

4. The fender assembly (100) as claimed in claim 3, wherein each of the one or more side receptacles (120) being rectangular in shape.

15

5. The fender assembly (100) as claimed in claim 3, wherein the first guard member (108) comprises a plurality of rib members (122), the plurality of rib members (122) being provided on the body portion (110) of the first guard member (106), the plurality of rib members (112) being defined around the
20 one or more side receptacles (120) for enhancing structural rigidity of the body member (110).

6. The fender assembly (100) as claimed in claim 3, wherein the body portion (110) extending from the one or more side portions (116, 118) being defined with a C-shaped profile, the C-shaped profile being adapted to surround the suspension system (206) attached to the wheel assembly (204) upon being
5 mounted to the fender member (102).
7. The fender assembly (100) as claimed in claim 2, wherein the second guard member (108) comprises:
- a body member (124) having a top surface portion (126), a bottom
10 surface portion (128) and one or more side surface portions (130, 132);
- one or more top receptacles (134) provided on the top surface portion (126) of the body member (124), the one or more top receptacles (134) being adapted to engage with the fender member (102); and
- a plurality of ribs (136) being provided on the body member (124), the
15 plurality of ribs (136) surrounding the one or more top receptacles (134) for enhancing structural rigidity of the body member (124).
8. The fender assembly (100) as claimed in claim 7, wherein the body member (124) extending from the top surface portion (126) to the bottom surface
20 portion (128) and from the one or more side surface portions (130, 132) being defined with a stepped profile.



9. The fender assembly (100) as claimed in claim 1, wherein the one or more guard members (104) being mounted to the inner side (102a) of the fender member (104) via a clip nut.
- 5 10. The fender assembly (100) as claimed in claim 1, wherein the vehicle (200) being a three-wheeled vehicle.

ABSTRACT

Present invention provides a fender assembly (100) for a vehicle (200). The fender assembly (100) comprises a fender member (102) mounted on a frame member (202) and being adapted to cover a top portion (204a) and side portion (204b) of a wheel assembly (204) of the vehicle (200). One or more guard members (104) are mounted to an inner side (102a) of the fender member (102), wherein the one or more guard members (104) are adapted to protect an engine compartment (230) of the vehicle (200) from mud and water ingress during operation of the vehicle (200).

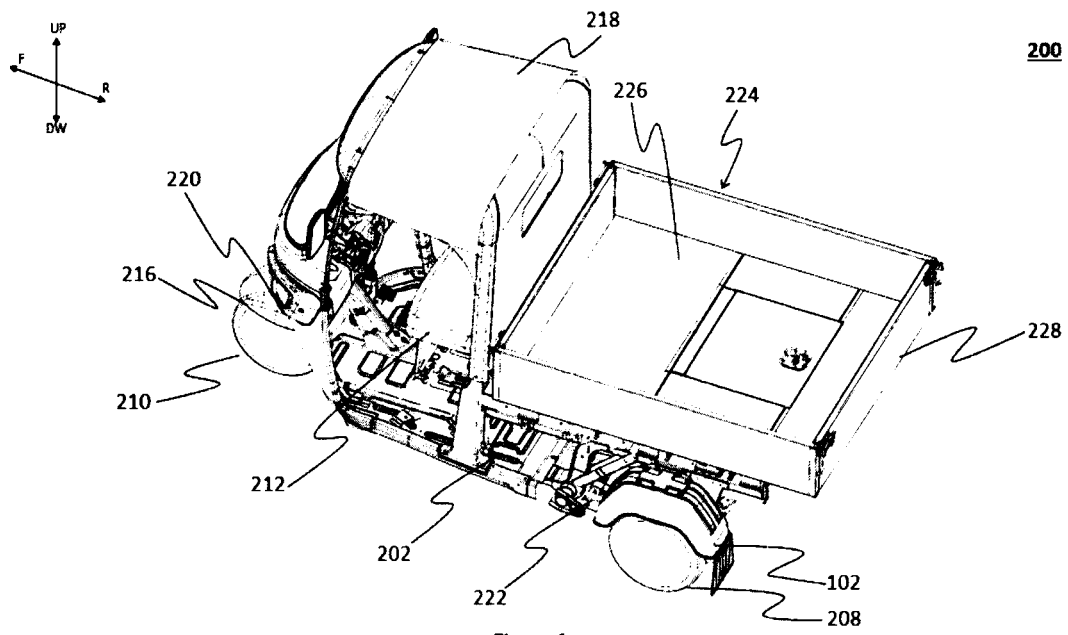
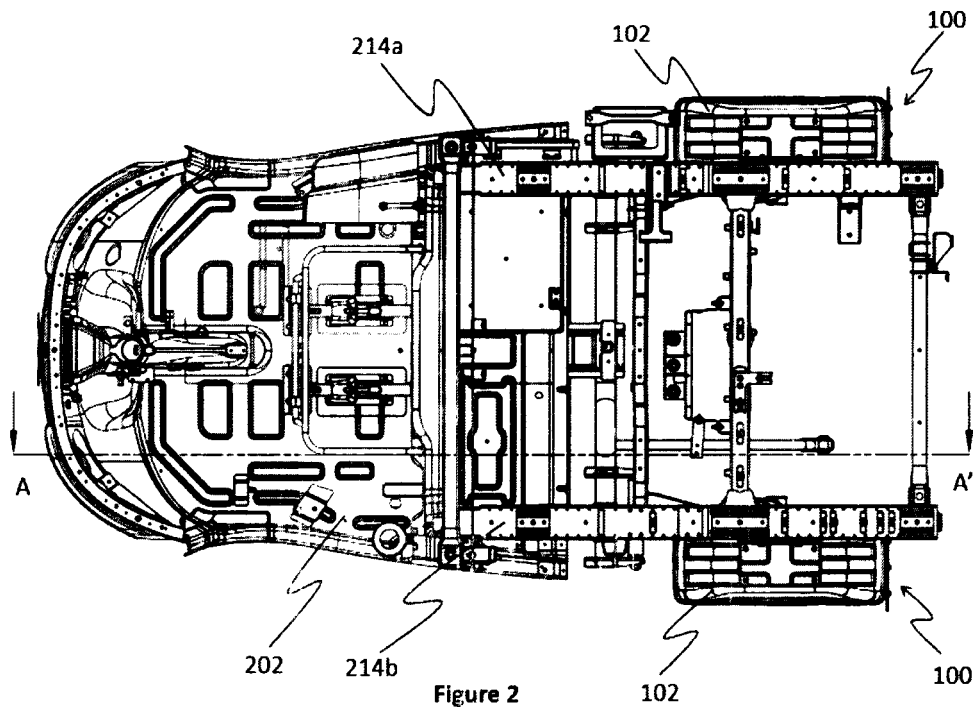
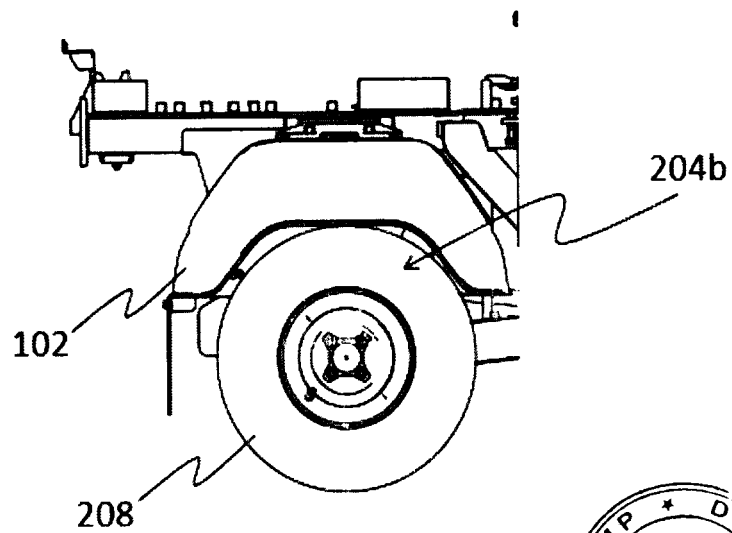
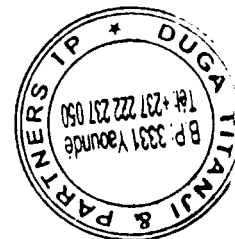


Figure 1

200

200**Figure 3**

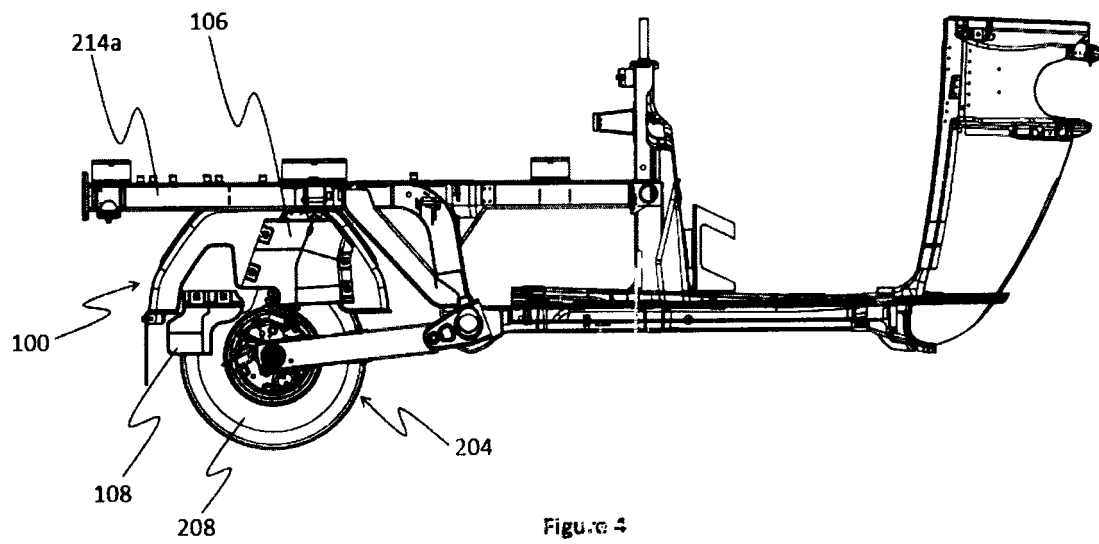


Figure 4

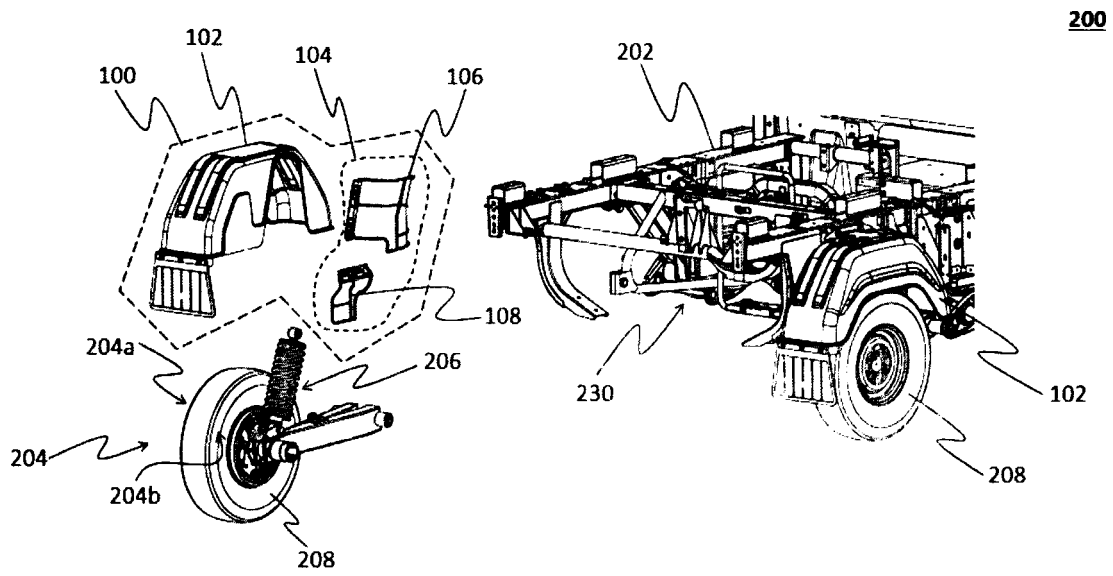
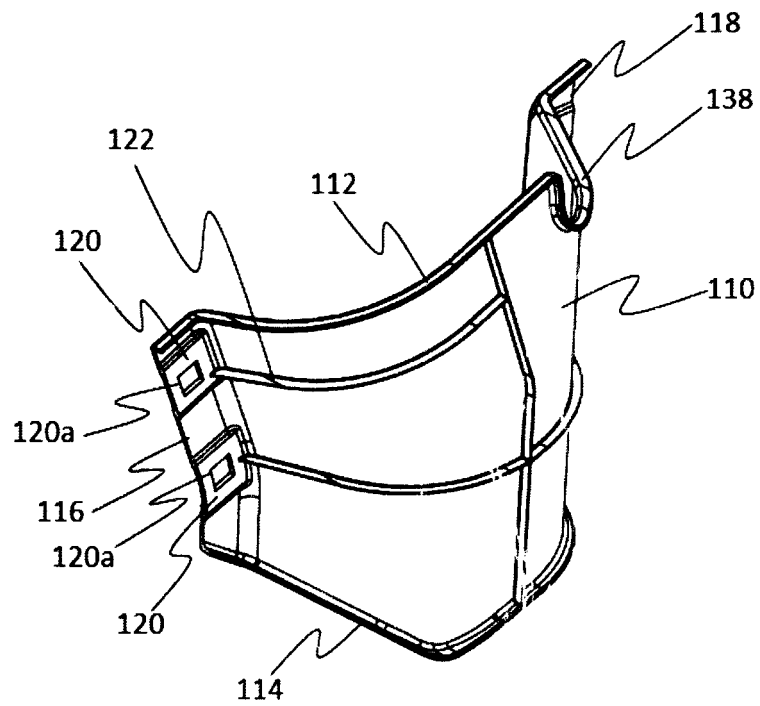


Figure 5



106

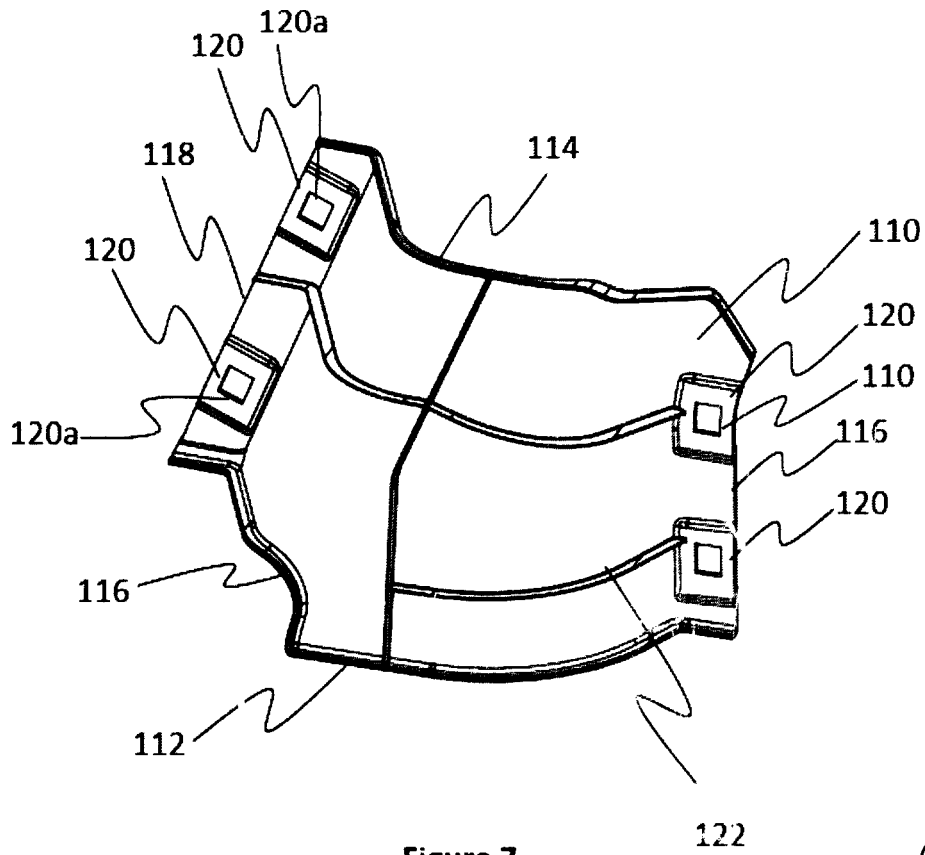
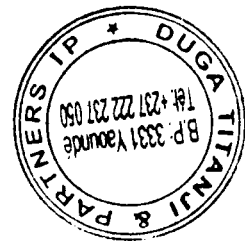


Figure 7

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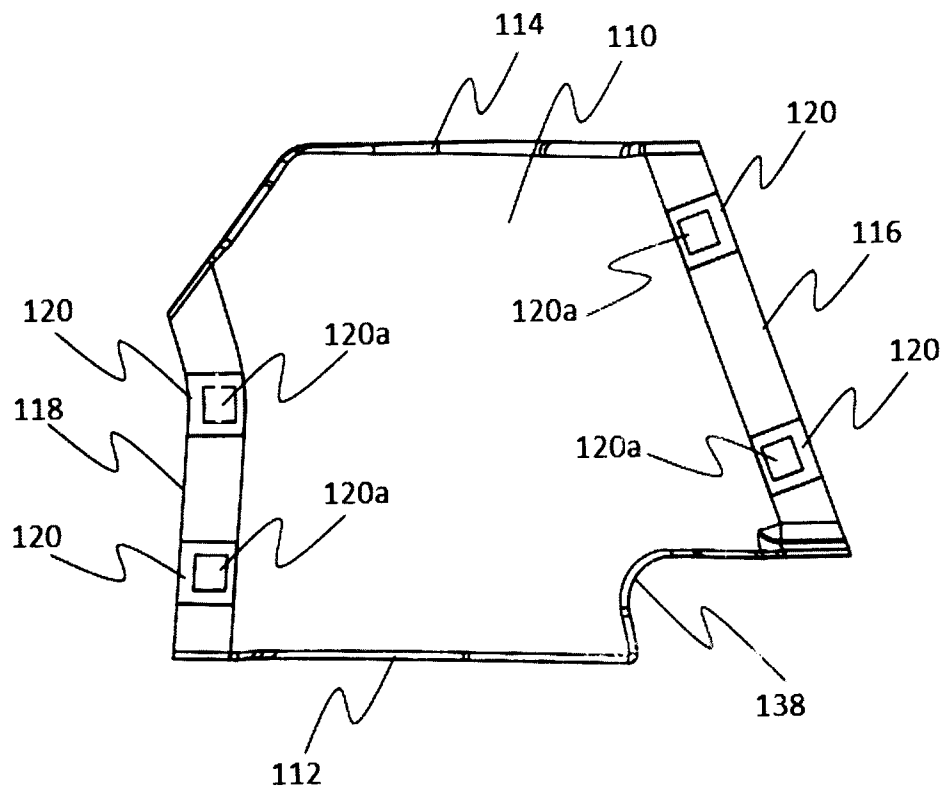
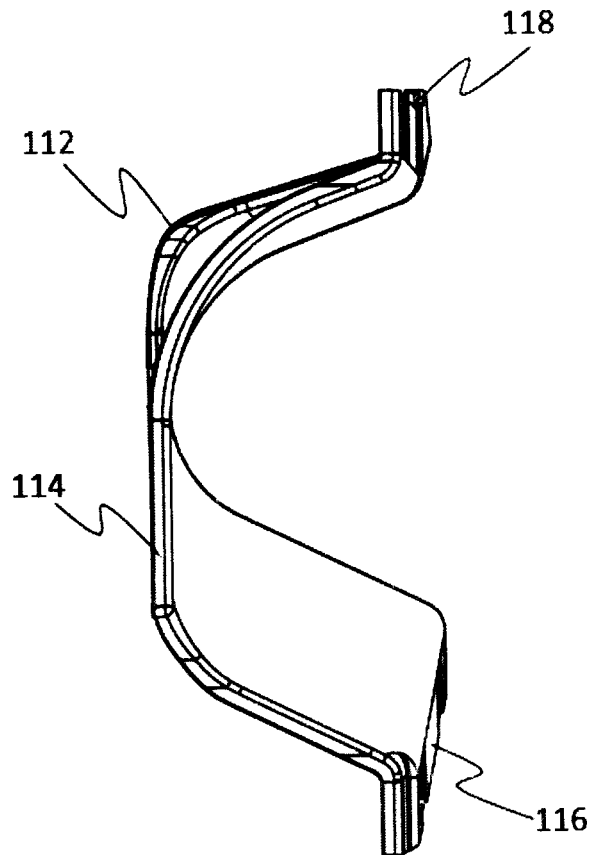
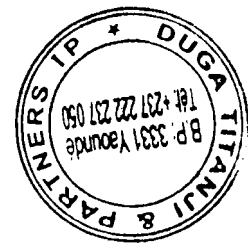


Figure 8

106

106**Figure 9**

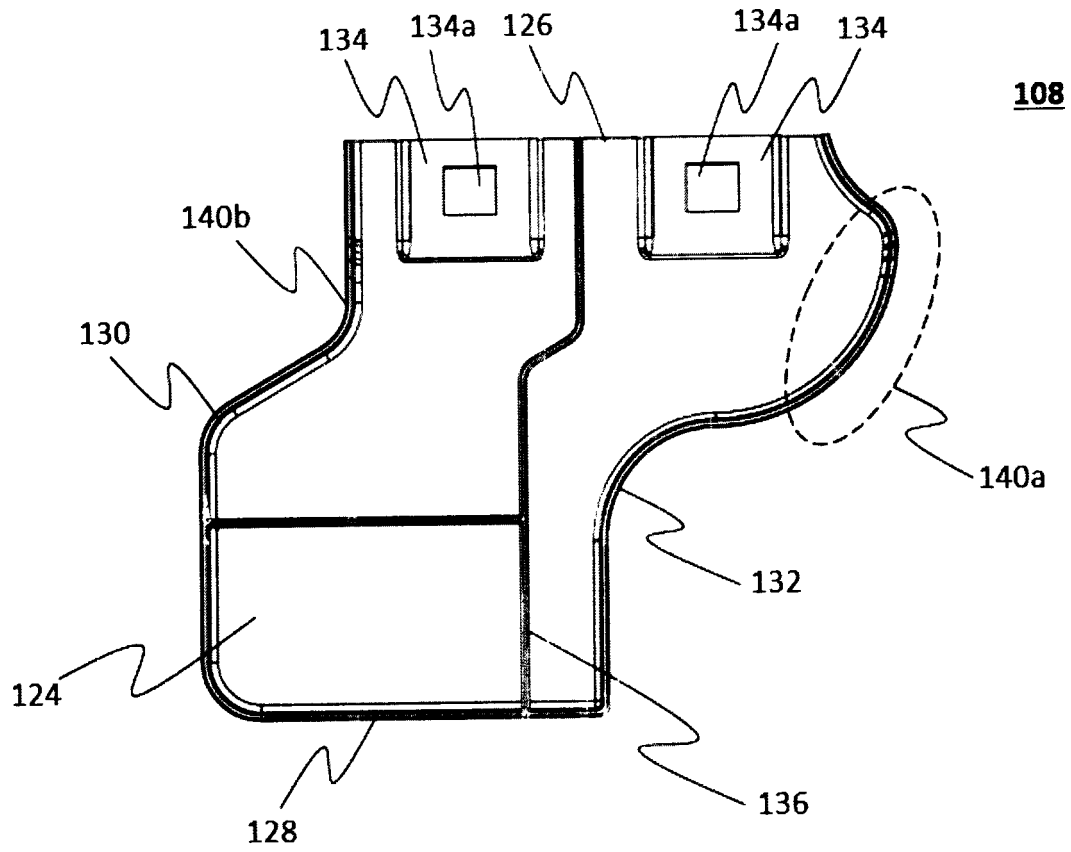
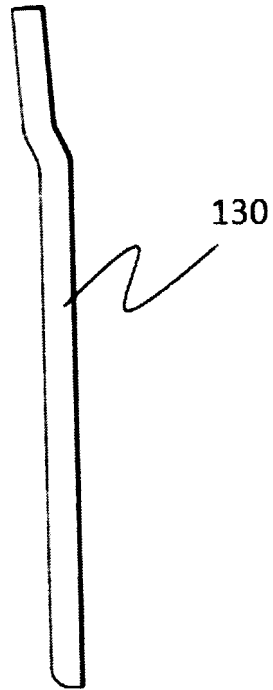


Figure 10

108**Figure 11**

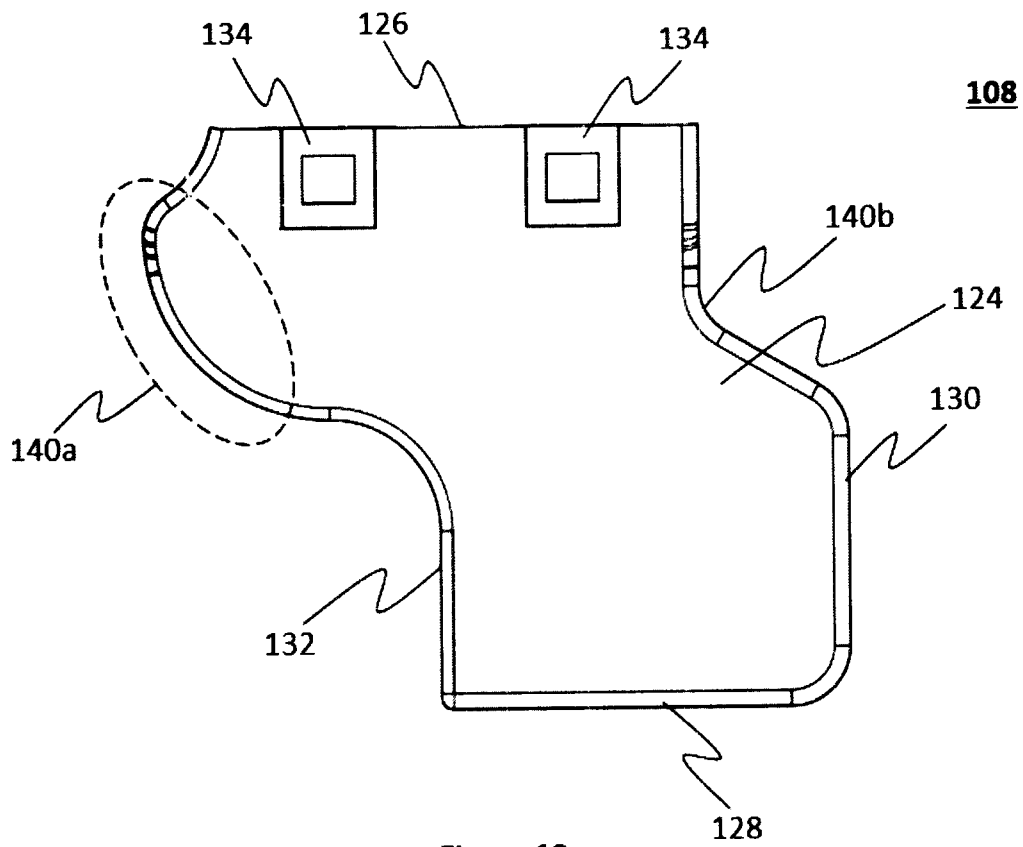
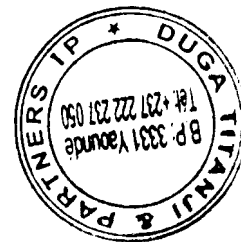


Figure 12



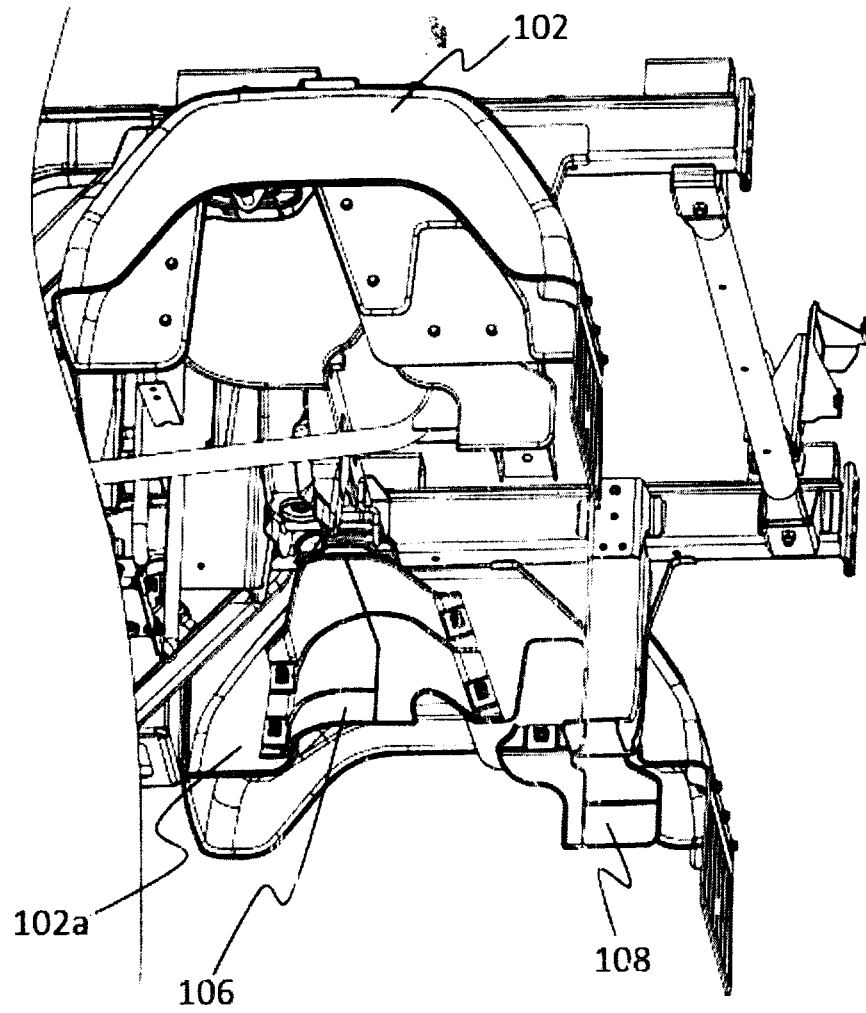


Figure 13

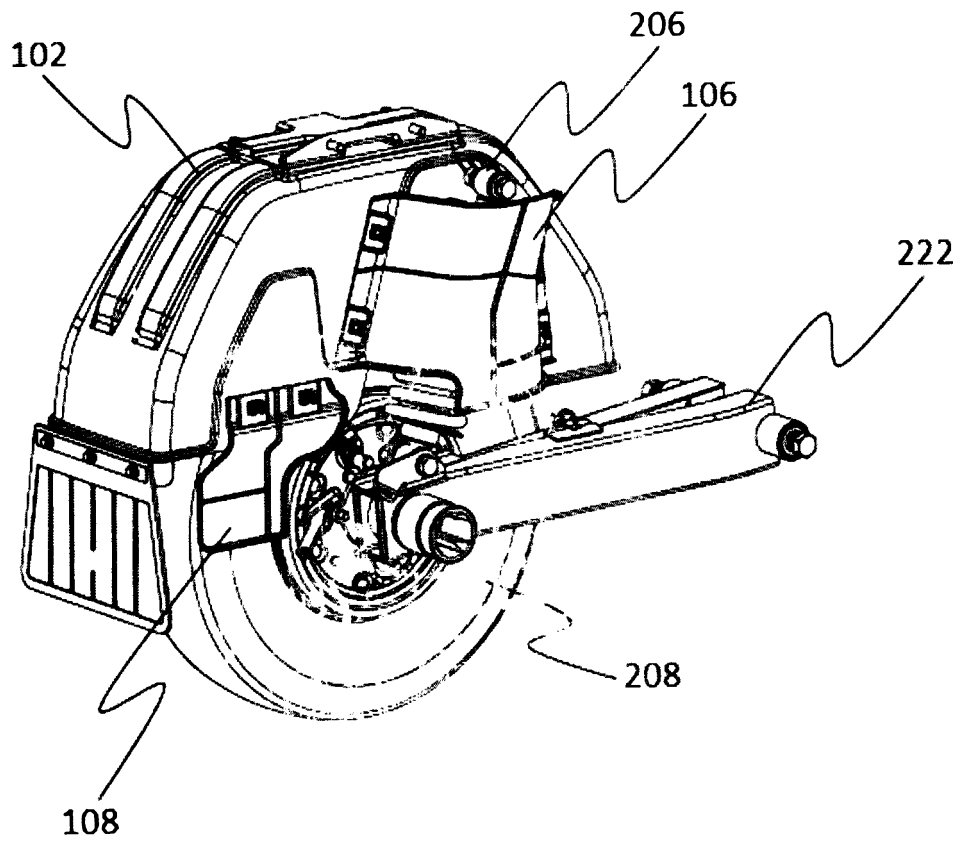
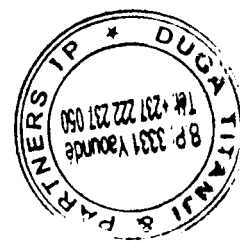


Figure 14



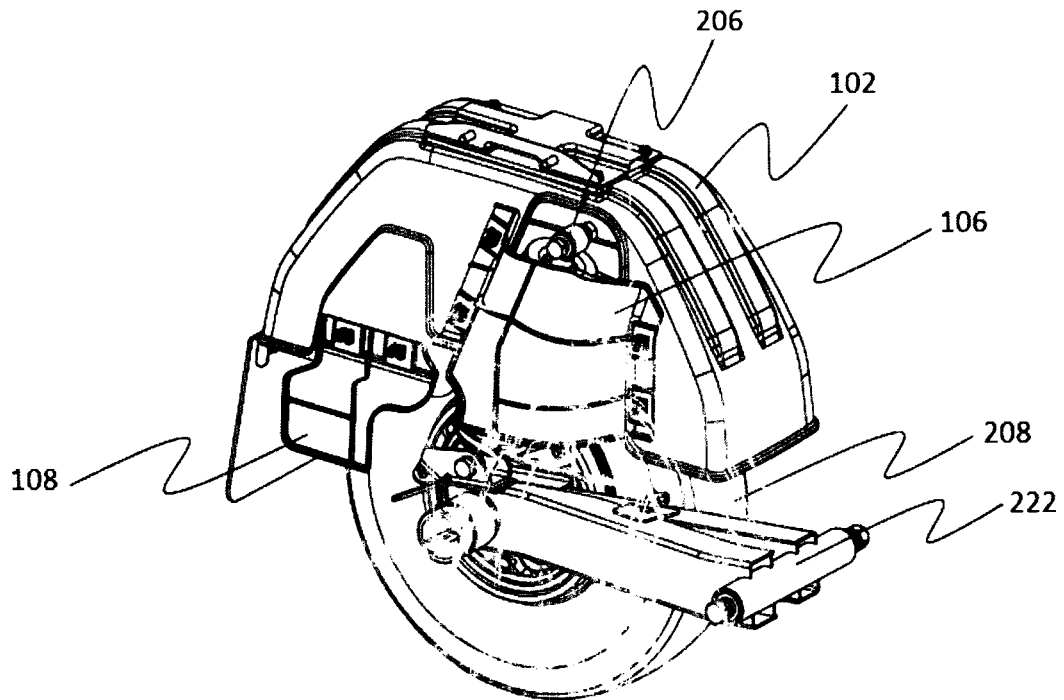


Figure 15

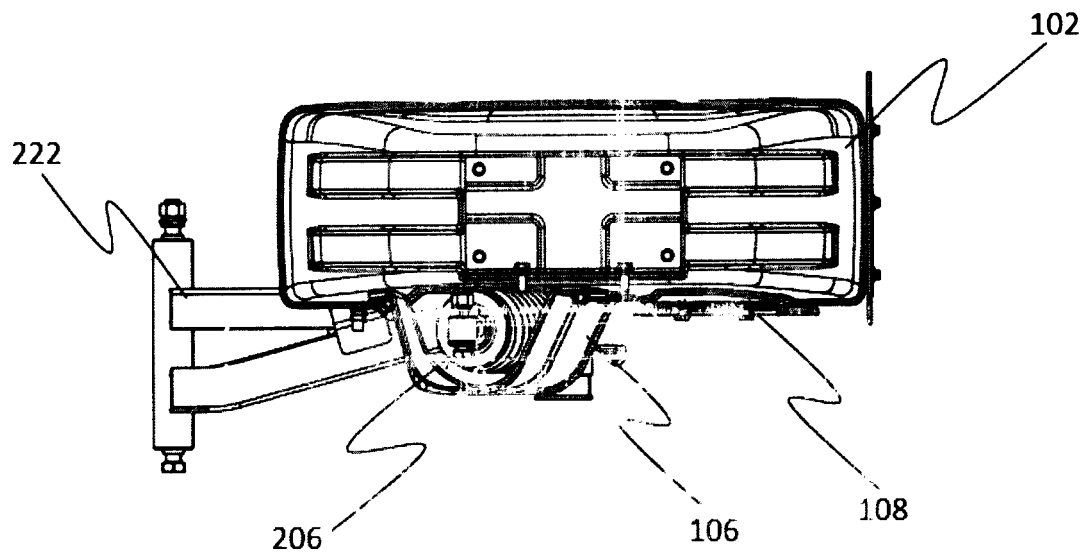


Figure 16

