



(51) International Patent Classification:
B62J 7/00 (2006.01) *B62J 9/00* (2006.01)

(21) International Application Number:
PCT/IB2017/056392

(22) International Filing Date:
16 October 2017 (16.10.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
201641035163 14 October 2016 (14.10.2016) IN

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(54) Title: A STORAGE SHELL FOR A TWO WHEELED VEHICLE

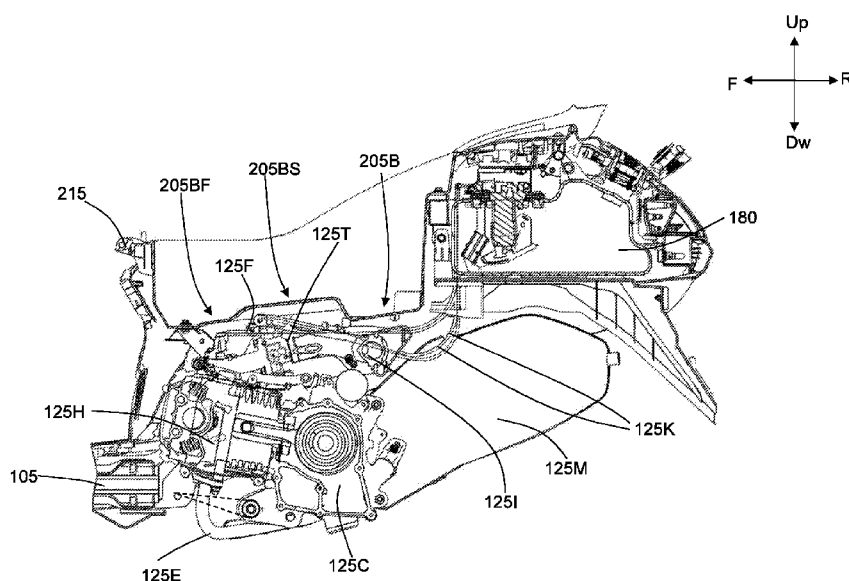


Fig. 1 (d)

(57) Abstract: The present subject matter provides a two-wheeled vehicle (100) with a power unit (125) swingably mounted to a structural member (105). A storage shell (200) is disposed upwardly of the power unit (125). The storage shell (200) includes a base portion (205B) forming a lower side thereof. The base portion (205B) includes a first hump (205BF) and a second hump (205BS). The first hump (205BF) extends from a front portion of the storage shell (200) towards at least a mid-portion of the storage shell (200) in a direction along the longitudinal axis (F-R). The second hump (205BS) is provided on the first hump (205BF) and extends from a rear portion of the first hump (205BF) towards at least a mid-portion of the first hump (205BF) in a direction along the longitudinal axis (F-R). The first hump (205BF) and the second (205BS) selectively provide required clearance and storage volume.

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(81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

- *with international search report (Art. 21(3))*

A STORAGE SHELL FOR A TWO WHEELED VEHICLE

TECHNICAL FIELD

[0001] The present subject matter relates generally to two-wheeled motor vehicle and more particularly to a storage shell for the two-wheeled motor vehicles.

BACKGROUND

5 [0002] Generally, in a two-wheeled vehicle with a step-through type frame assembly, a floorboard is provided. A user rests his feet on the floorboard, which enables rider to have a seating posture, while driving. The frame assembly acts as structural member and skeleton of the vehicle. A seat assembly is disposed in a posterior portion of the step-through space. The seat assembly is capable of
10 accommodating a rider and a passenger. Generally, the step-through space is used for carrying loads or articles. Further, such vehicles are provided with a utility box disposed below the seat assembly. The utility box is mounted to the frame assembly. The seat assembly, in an open condition, provides access to the utility box. Further, the vehicle includes a power unit that is mounted to the frame
15 assembly and is disposed below the utility box.

BRIEF DESCRIPTION OF DRAWINGS

[0003] The detailed description of the present subject matter is described with reference to the accompanying figures. Same numbers are used throughout the drawings to reference like features and components.

20 [0004] Fig. 1 (a) illustrates a left side view of a two-wheeled vehicle, in accordance with an embodiment of present subject matter.

[0005] Fig. 1 (b) illustrates a rear perspective view of the vehicle, in accordance with the embodiment of Fig. 1 (b).

[0006] Fig. 1 (c) depicts a top perspective view of the storage shell, in
25 accordance with the embodiment of Fig. 1 (b).

[0007] Fig. 1 (d) depicts a cross-sectional view of the storage shell taken along axis X-X' and employed on a vehicle, in accordance with the embodiment of Fig. 1 (c).

5 [0008] Fig. 1 (e) depicts a cross-sectional view of the storage shell employing a head protection device, in accordance with the embodiment of Fig. 1 (a).

[0009] Fig. 2 (a) depicts a top perspective view of a storage shell, in accordance with another embodiment of the present subject matter.

[00010] Fig. 2 (b) depicts a cross-sectional view of the storage shell taken along Y-Y' and employed on a vehicle, in accordance with Fig. 2 (a).

10 **DETAILED DESCRIPTION**

[00011] Generally, in a vehicle with a step-through type frame assembly or a step-through type layout, the power unit is swingably connected to the frame assembly of the vehicle. The power unit is disposed below the seat assembly and rearward of the step-through portion. Generally, the power unit includes an
15 internal combustion (IC) engine or a traction motor or both. The IC engine is provided with various vehicle components that work in conjunction with the IC engine that are supported by the IC engine. Hereinafter, the terms IC engine and power unit are interchangeably used.

[00012] The vehicle components that work in conjunction with the IC engine
20 include a fuel injector, hoses, a throttle body, a resonator, an air filter, etc. These vehicle components swing along with the power unit. Therefore, in vehicles with utility box disposed above the power unit there is a possibility of vehicle components fouling with the utility box due to the swinging of the power unit. Especially, vehicles components like the fuel injection system or carburetor are
25 mounted on an upper side of the power unit and such vehicle components foul with the utility box during a full bump condition, which is the height to which the aforementioned vehicle components can move to, when encountered with a

pothole or undulation. Generally, presence of speed-breakers and varying road conditions there is major possibility that the full bump condition is frequently encountered. Also, when the vehicle is in "on-stand" condition, i.e., when on main stand, the vehicle components that are disposed in an upper portion of the engine
5 are at the maximum height (or the clearance between the utility box and the vehicle components disposed at the upper portion is reduced) thereby resulting in fouling of the vehicle components with utility box. This could damage the vehicle components thereby affecting the functional performance of the vehicle components. This further affects the vehicle performance as the complements like
10 fuel injection are essential functional components. Moreover, there are limitations with respect to the position and height of the seat that is disposed above the utility box. Therefore, the utility box cannot be disposed at a higher position to provide clearance.

[00013] Moreover, the power unit includes IC engine that is subject to heating
15 due to combustion of air fuel mixture. Generally, in vehicles with the power unit disposed at a rear position of the utility, the impact of the heat on the utility box is less. However, in vehicles with the power unit disposed below the utility box, the utility box is affected due to the heat from the power unit. Especially, the heat dissipation is more on the side where the exhaust is extending. This heats up the
20 utility box. Moreover, users store personal belongings or articles in the utility box, which are affected due to the heat. Moreover, vehicles provided with mobile charger in the utility box forces users to store mobile in the utility box during running of the IC engine. This affects the electrical components such as mobile phones placed in the utility box.

25 [00014] Moreover, the utility box is an essential storage space for the vehicle. The utility box is used for storing a helmet or other articles. Therefore, the

essential functional aspects of the utility box that include storage of a helmet and storage space with sufficient volume are also to be retained.

[00015] Therefore, there is a need for providing a utility box that does not interfere with the vehicle components including fuel injection mounted on the IC engine and provides storage space that could reduce the effect of heat from the power unit thereof.

[00016] Thus, there is a need for addressing the aforementioned and other problems in the prior art.

[00017] Hence, it is an object of the present subject matter to provide a storage shell for a two-wheeled vehicle. The storage shell is provided with a first hump on a base portion of the storage shell. The first hump of the storage shell includes a second hump provided thereon.

[00018] It is a feature that the first hump and the second hump are curved inward. It is an aspect of the present subject matter that the first hump extends from a front portion towards at least a mid-portion of the storage shell. Further, the first hump eliminates fouling of vehicle components mounted on the engine, especially an air-fuel supply system, during full bump condition.

[00019] It is another aspect that the second hump provided on the first hump extends from a rear portion of the first hump towards at least a mid-portion of the first hump. The second portion eliminates fouling of the air-fuel supply system with the storage shell even in an on-stand condition. It is an advantage that the second hump is having smaller area compared to the first hump whereby the storage volume of the storage shell is retained.

[00020] It is an advantage that the first portion improves clearance between the power unit and storage shell. This is preferred in a forwardly inclined engine disposed below the storage shell. In one embodiment, a long axis of the first hump taken at lateral center thereof is at a lateral offset from a longitudinal axis of the

vehicle, wherein longitudinal axis of the vehicle being taken at lateral center of the vehicle. It is an advantage that the first hump is disposed towards one lateral side of the vehicle, where the exhaust system extends, and thereby providing clearance between the storage shell and the power unit for improved heat dissipation.

5 [00021] It is an additional aspect, the provision of the first hump and second hump provides a smooth transition from the base portion to the second hump through the first hump. It is an advantage that aesthetic appeal is enhanced as the storage shell is provided with smooth humps without any drastic change of profile.

[00022] It is an additional aspect that the, first hump is capable providing
10 clearance irrespective of tolerances of the vehicle parts including engine mounting or frame mounting. This improves the ease of assembly as the tolerance variations are accommodated by the first hump of the storage shell. Therefore, the first hump and the second hump are adapted to selectively accommodate the upward motion of the swinging type power unit thereby selectively accommodating the components
15 like air-fuel supply system.

[00023] It is an additional feature that a head protection device is accommodated in the storage shell with ease. A front portion or a chin of the head protection device sits on the first hump and a rear portion of the head protection device sits on the base portion. It is also an advantage of the above position of the
20 head protection device restricts forward-rearward motion of the head protection device as the rear end portion of the first hump restricts motion of the head protection device.

[00024] It is an aspect of the present subject matter that the storage shell is provided with stepped humps thereby improving storing of articles. For example,
25 a mobile device can be placed at the base and laterally adjacent to the first hump thereby restricting movement of the mobile device during operation of the vehicle.

[00025] It is yet an additional aspect that the first hump and the second hump support routing of cables or hoses with improved clearance from heat dissipating parts of the vehicle. It is an advantage that the life and function of cables or hoses is improved as cables and hoses are accommodated at the dents formed by the humps.

[00026] It is another additional feature that the storage shell provides sufficient clearance with the power unit and at the same time enables retaining the height of the seat by eliminating moving of the utility box upwards.

[00027] It is yet an additional aspect that the storage shell is provided with one or more ribs that improve structural rigidity, wherein the one or more ribs are integrally formed. Further, the form strength of the storage shell is improved.

[00028] It is an additional aspect that the ribs provided in the storage shell includes compartments for reducing displacement of articles stored in the storage shell whereby various articles can categorically be stored thereat.

[00029] In one embodiment, the storage shell is provided with charging port that enables charging of the electronic devices like mobile phones. Is it an advantage that the mobile device or the like can be seated at the base portion of the storage shell. Further, the first hump reduces displacement of the mobile device that could be either laterally adjacent to or longitudinally adjacent to the first hump at the base.

[00030] The aforesaid and other advantages of the present subject matter would be described in greater detail in conjunction with the figures in the following description.

[00031] Fig. 1 illustrates a left side view of a two-wheeled vehicle, in accordance with an embodiment of the present subject matter. Arrows provided in the top right corner of each figure depicts direction with respect to the vehicle 100, wherein the arrow F denotes front direction, an arrow R indicated rear direction, an arrow Up denotes upward direction, an arrow Dw, an arrow with LH denotes a

left side, and an arrow with RH denotes a right side. The vehicle 100 has a frame assembly 105 that includes a head tube 105A, a main tube 105B extending rearwardly downward from the head tube 105A, and a pair of railing 105C extending inclinedly rearward from a rear portion of the main tube 105B. The
5 frame assembly 105 acts as structural member. Therefore, the terms frame assembly and structural member are interchangeably used. In another embodiment, the structural member can be a monocoque structure. A handlebar assembly 110 is connected to a front wheel 115 through one or more front suspension(s) 120. A steering shaft (not shown) connects the handlebar assembly 110 to the front
10 suspension(s) 120. The steering shaft is rotatably journaled about the head tube 105A. Further, the frame assembly 105 of the vehicle 100 defines a step-through space ST. A power unit 125 including at least one of an internal combustion engine and/or a traction motor disposed in a posterior portion of the step-through portion ST. In a preferred embodiment, the IC engine is forwardly inclined i.e. a
15 piston axis of the vehicle is forwardly inclined. The power unit 125 is functionally connected to a rear wheel 130 through a transmission system (not shown). The transmission system includes a continuously variable transmission or a fixed gear ratio transmission or automatic-manual transmission.

[00032] Further, the rear wheel 130 is connected to the frame assembly 105
20 through one or more rear suspension(s) 135. The power unit 125 is swingably mounted to the frame assembly 105 through a toggle link or the like. A seat assembly 140 is disposed above a storage shell 200 (shown in Fig. 1 (b)) and is supported by the pair of railing(s) 105C. A passenger grip 145 is provided posterior to the seat assembly 140 for pillion/passenger support.

25 **[00033]** Further, the vehicle 100 includes a front fender 150 covering at least a portion of the front wheel 115. A floorboard 145 is disposed at the step-through space ST and is supported by the main tube 105B. The user can operate the

vehicle 100 by resting feet on the floorboard 145, in a sitting position. In an embodiment, a fuel tank (not shown) is disposed below the seat assembly 140. A rear fender 155 is covering the at least a portion of the rear wheel 130. The vehicle 100 comprises of plurality of electrical/electronic components including a
5 headlight 160A, a tail light 160B, a battery (not shown), a transistor controlled ignition (TCI) unit (not shown), an alternator (not shown), a starter motor (not shown). Further, the vehicle 100 includes a synchronous braking system or an anti-lock braking system.

[00034] Fig. 1 (b) depicts a rear perspective view of the vehicle 100, in
10 accordance with the embodiment depicted in Fig. 1 (a). The vehicle 100 includes plurality of panels 170A, 170B 170C that include a front panel 170A disposed in an anterior portion of the head tube 105A, a leg shield 170B is disposed in a posterior portion of the head tube 105A. The leg shield 170B supports an auxiliary storage enclosure 175. Conventionally, the auxiliary storage enclosure 175 is
15 called a glove box. A rear panel assembly 170C extending downwardly of the seat assembly 140 and extends rearward from a rear portion of the floorboard 145 towards a rear portion of the vehicle 100. The rear panel assembly 170C encloses the storage shell 200. Also, the rear panel assembly 170C partially encloses the power unit 125. The storage shell 200 extends at least from a front portion
20 towards a rear portion of the power unit 125 substantially along a longitudinal axis F-R of the vehicle 100. The IC engine 125 of the power unit 125 includes an air intake system (not shown), an air fuel supply system 125F, 125T (shown in Fig. 1 (d)) that are coupled to an intake side of the IC engine 125 and are disposed on the IC engine 125. Also, an exhaust system 125E (shown in Fig. 1 (d)) is coupled
25 to exhaust side of the IC engine 125 and the exhaust system 125E extends towards one lateral side of the vehicle 100.

[00035] The seat assembly 140 comprises a top portion provided with a cushion material to provide comfortable ride to the users. A seat base 140B acts a skeleton or structural member of the seat assembly 140. The seat base 140 has a hollow lower surface to accommodate a head protection device (not shown). Also, the seat assembly 140 in an open condition (as shown in Fig. 1 (b)) provides access to the storage shell 200 provided with an opening in a top portion. The seat assembly 140 includes an engaging portion 140E for locking the seat assembly 140 to the frame assembly 105. Therefore, the seat assembly 140 in the open condition provides access to the storage shell 200. Therefore, the storage shell 200 is accessible by authorized user only. In a preferred embodiment, the storage shell 200 is made of rigid material including any known polymer or fiber.

[00036] Fig. 1 (c) depicts a top perspective view of a storage shell, in accordance with the embodiment depicted in Fig. 1 (b). The storage shell 200 includes a base portion 205B. The base portion 205B is lower most portion of the storage shell 200 or the base portion 205 is lower side of the storage shell 200. Further, a peripheral wall 210 is disposed substantially orthogonally to the base portion 205B. The base portion 205B and the peripheral wall 210 are integrally formed. Further, a first hump 205BF is provided on the base portion 205B, wherein the first hump 205BF is at an elevation from the base portion 205B. In the present embodiment, the first hump 205BF extends from a front portion of the storage shell 200 towards at least a mid-portion of the storage shell 200. In a preferred embodiment, the first hump 205BF extends from a front portion of the storage shell 200 and above a fuel injector system 125F and the throttle body 125T (shown in Fig. 1 (d)). Further, the storage shell 200 includes a second hump 205BS provided on the first hump 205BF, wherein the second hump 205BS is at an elevation from the first hump 205BF. The second hump 205BS extends from a rear portion of the first hump 205BF towards at least a mid-portion of the first

hump 205BF. In other words, the second hump 205BS is at a vertical offset from the first hump 205BF and the first hump 205BF is at a vertical off set from the base portion 205B. Preferably, the first hump 205BF and the second hump 205BS are curved inwards when viewed from vehicle top (as shown in Fig. 1 (d)) or from
5 top of the storage shell 200. In other words, the first hump 205BF and the second hump 205BS are curved outwards when viewed bottom of the storage shell 200.

[00037] In the present embodiment, the storage shell 200 is provided with a hinge portion 215 provided at a front-top portion of the periphery wall 210. The seat assembly 140 is hinged to the hinge portion 215. In one embodiment, the seat
10 assembly 140 is hinged to a cross-member (not shown) of the frame assembly 105. In addition, the storage shell 200 includes plurality of mounting portions 220R, 220L, 225L, 225R that are provided distributively on the base portion 205B. The mounting portions 220R, 220L, 225R, 225L abut against one or more cross members (not shown), which extend in the lateral direction of the vehicle 100, and
15 enable securing the storage shell 200 to the frame assembly 105 through fasteners.

[00038] Further, in one embodiment, the first hump 205BF and said second hump 205BS are selectively detachable from said storage shell 200. The first hump 205BF or the second hump 205BS in a detached condition provides access to apertures on the base portion 205B whereby one or more vehicle components
20 like the air-fuel supply system 125F, 125T disposed below the storage shell 200 are accessible therethrough. Therefore, it is an advantage that the ease of servicing is improved as the first hump 205BF or the second hump 205BS can be removed depending on the location or size of the component.

[00039] Fig. 1 (d) depicts a cross-sectional view taken along axis X-X' of the
25 storage shell 200 being employed on the vehicle 100, in accordance with the embodiment as depicted in Fig. 1 (c). The storage shell 200 is mounted to the frame assembly 105 (not shown) of the vehicle 100. The power unit 125 is

swingably coupled to the frame assembly 105. The power unit 125, which is the IC engine 125, is forwardly inclined. Further, the storage shell 200 is disposed above the power unit 125. A cylinder head 115H of the IC engine is at a front portion below the storage shell 200. A fuel injector system 125F is disposed on the

5 IC engine 125 is functionally connected to the intake port (not shown) of the engine 125. Further, a throttle body 125T is disposed on the IC engine 125 and adjacent to the fuel injector system 125F. The throttle body 125T connects the air intake system 125I to the intake port. The intake port is at a top portion of the cylinder head 125H. Hereinafter, the fuel injector system 125F and the throttle

10 body 125T are collectively referred to as air-fuel supply system 125F, 125T. Similarly, an exhaust port is provided on a bottom portion of the cylinder head 125H and exhaust pipe 125E connects the exhaust port to the muffler 125M. The muffler 125M is disposed on one lateral side of the vehicle 100 and the exhaust pipe extends from the exhaust port towards the muffler 125M.

15 **[00040]** In a side view, as shown in Fig. 1 (d), the IC engine 125 during vehicle 100 operation is swingable without fouling with the storage shell 200. As, the first hump 205BF provides clearance between the storage shell 200 and the air-fuel supply system 125F, 125T thereby providing sufficient clearance to eliminate fouling even in a full bump condition. Furthermore, the second hump

20 205BS is provided on the first hump 205BF thereby providing additional clearance to eliminate interference between the storage shell 200 and the IC engine 125 therebetween, especially in on-stand condition. The second hump 205BS provides maximum clearance between the storage shell 200 and the air-fuel supply system 125F, 125T. Also, the provision of first hump 205BF from a

25 front portion towards at least the mid portion of the storage shell 200 enables accommodation of any manufacturing or assembly tolerances. The provision of first hump 205BF in the front portion of the storage shell 200 improves clearance

between the cylinder head 125H and the exhaust system 125E thereby reducing the effect of heat on the storage shell 200 and on the articles stored therein. This also improves heat dissipation.

[00041] In an embodiment, the outward surface of the first hump 205BF and the second hump 205BS supports electrical cables or hoses that are extending from a posterior portion of the storage shell 200 towards anterior portion, or vice-versa, whereby the clearance between the cables or hoses and the heat emitting parts of the vehicle including cylinder head 125H is improved. This improves the life and function of the cables or hoses. Also, the length of the cables or hoses can be reduced as the humps 205BF or 205BS provides shorter routing path.

[00042] Moreover, provision of the second hump 205BS on the first hump 205BF provides aesthetic appeal due to the stepped transition from the base portion 205B to the second hump 205BS. Also, the storage shell 200 enables better storing of articles in storage shell 200 as the elevation of flat articles is minimal due to the stepped humps. For example, a book placed in the storage shell 200 rests on the first hump 205BF and the second hump 205BS has a lower elevation due to the less height difference between the first hump 205BF and the second hump 205BS when compared to the base portion 205B and the second hump 205BS. This enables storages of additional articles above such flat articles. Moreover, storage shell 200 is capable of accommodating a full-face head protection device.

[00043] Fig. 1 (e) depicts a cross-sectional view of a storage shell in accordance with the embodiment of depicted in Fig. 1 (a). Fig. 1 (d) depicts the cross-sectional view taken along longitudinal axis F-R of the vehicle 100. In an embodiment, a full-face head protection device 300, herein after referred to as head protection device 300, is disposed below the seat assembly 140, and

accommodated by the storage shell 200. Therefore, a half-face head protection device is accommodated with ease. Further, the peripheral wall 210 of the storage shell 200 is integrated with the base portion 205B. A front portion or a chin of the head protection device 300 sits on the first hump 205BF and the rear portion of the head protection device 300 rest on the base portion 205B that is at the rear portion of the storage shell 200. In one embodiment, in closed condition of the seat assembly 140, at least a portion of the seat base 140B (shown in Fig. 1 (b)) abuts against the head protection device 300 thereby restricting forward-rearward motion of the head protection device 300. Further, the head protection device 300 is placed with ease in the storage shell 200 with an opening face OF of the head protection device 300 facing downwards as the second hump 205BS is accommodated by the opening face OF of the head protection device 300.

[00044] Further, Fig. 1 (d) depicts change in orientation of the fuel hose 125K with the change in position of the air-fuel-supply system 125F, 125T. The fuel hose 125K connect a fuel tank 180 and the fuel injector system 125F. The fuel-supply system 125F, 125T position changes with the full bump or on-stand condition of the vehicle 100, and the first hump 205BF and the second hump 205BS of the storage shell 200 accommodate variation of the position of the fuel-supply system 125F, 125T.

[00045] Fig. 2 (a) depicts a top perspective view of a storage shell 201, in accordance with another embodiment of the present subject matter. Fig. 2 (b) depicts a cross-sectional view of the storage shell 201 taken along axis Y-Y' and the storage shell 201 being employed on the vehicle, in accordance with the embodiment of Fig. 2 (a). A base portion 205B of the storage shell 201 supports a peripheral wall 210 that extends substantially orthogonally to the base portion 205B. The base portion 205B is provided with a first hump 205BFO that extends from a front portion towards at least a mid-portion of the storage shell 201. In the

present embodiment, the first hump 205BFO is disposed at an offset from a lateral center of the vehicle. In other words, the first hump 205BFO is disposed towards one lateral side RH-LH of the storage shell 201. In a preferred embodiment, the first hump 205BFO is disposed towards the lateral side, where the exhaust system 125E is extending. Thus, the first hump 205BFO provides clearance between the cylinder head 125H (shown in Fig. 2 (b)) and a region where the exhaust system 125E extends. A second hump 205BS is provided on the first hump 205BFO and the second hump 205BS extends from a rear portion of the first hump 205BFO towards at least a mid-portion of the first hump 205BFO.

10 [00046] Furthermore, the storage shell 201 is provided with one or more rib(s) 230W, 230L. In the present embodiment, a first rib 230RL extends substantially in a longitudinal direction F-R. In other words, the first rib 230L extends along a long axis F-R of the storage shell 201. Similarly, a second rib 230W extends orthogonal to the long axis F-R of the storage shell 201. The first rib 230L and the second rib 230W are integrated with the storage shell 201 and provide structural rigidity. In the present embodiment, the base portion 205B of the storage shell 201 is L-shaped portion LP that is at a lower elevation compared to the first hump 205BFO. The first hump 205BFO and the second hump 205BS eliminate fouling of the fuel-supply system 125F, 125T with the storage shell 201 either in full
15 bump condition or in on-stand of the vehicle 100.

[00047] In one embodiment, the storage shell 201 is provided with a universal serial bus (USB) casing 400 disposed on an inward surface of the peripheral wall 210. The USB casing 400 is provided with an automatically retractable flap that provides access to the USB port. The automatic retraction of the flap is achieved
20 by a pre-compressed spring provided on the flap. In one embodiment, a lamp is integrated with the USB casing 400 to improve visibility. The USB port is electrically coupled to at least one power source of the vehicle 100. The USB port

enables charging of electronic portable devices like a mobile by placing in the storage shell 201. Further, the portable device placed at the base portion 205B reduces the movement of the device, when the vehicle 100 is in operation, as the first hump 205BFO acts as a boundary restricting movement thereof. Further, in 5 the present embodiment, the first rib 230L and the second rib 230W divide the storage shell 201 in four compartments. This enables storing of articles or electronic devices like mobile with minimum displacement in said compartments. Thus, the compartments restrict movement of the articles on devices. Further, a head protection device (not shown) is seated on the base portion 205B and the 10 first hump 205BFO. In yet another embodiment, recess is provided on the rib(s) 230L, 230W to accommodate the head protection device. Thus, the storage shell 200 improves structural rigidity in addition to elimination of fouling of engine components.

[00048] It is to be understood that the aspects of the embodiments are not 15 necessarily limited to the features described herein. Many modifications and variations of the present subject matter are possible in the light of above disclosure. Therefore, within the scope of claims of the present subject matter, the present disclosure may be practiced other than as specifically described.

We claim:

1. A two-wheeled vehicle (100) with a power unit (125) swingably mounted to a structural member (105) of said two-wheeled vehicle (100), said two-wheeled vehicle (100) comprising:
 - 5 a storage shell (200, 201) disposed upwardly of said power unit (125), said storage shell (200, 201) extends at least from a front portion towards a rear portion of the power unit (125) substantially along a longitudinal axis (F-R) of said vehicle (100),
wherein
 - 10 said storage shell (200, 201) includes a base portion (205B) forming a lower side thereof, said base portion (205B) includes a first hump (205BF, 205BFO) disposed at an elevation from said base portion (205B), said first hump (205BF, 205BFO) extends from a front portion of the storage shell (200, 201) towards at least a mid-portion of the storage shell (200, 201) in a direction along said
 - 15 longitudinal axis (F-R), and said first hump (205BF, 205BFO) includes a second hump (205BS) disposed at an elevation from said first hump (205BF, 205BFO), said second hump (205BS) extends from a rear portion of the first hump (205BF, 205BFO) towards at least a mid-portion of the first hump (205BF, 205BFO) in a direction along said longitudinal axis (F-R).
- 20 2. The two-wheeled vehicle (100) of claim 1, wherein said first hump (205BF, 205BFO) disposed at an elevation from said base portion (205B) and said first hump (205BF, 205BFO) is inwardly curved when viewed from top of said storage shell (200).
3. The two-wheeled vehicle (100) of claim 1, wherein said second hump (205BS)
- 25 disposed at an elevation from said first hump (205BF, 205BFO) and said second hump (205BS) is inwardly curved when viewed from top of said storage shell (200).

4. The two-wheeled vehicle (100) of claim 1, wherein said first hump (205BFO) and said second hump (205BS) are disposed at an offset with respect to a longitudinal (F-R) center of said storage shell (201).
5. The two-wheeled vehicle (100) of claim 1, wherein said power unit (125) includes a forwardly inclined internal combustion (IC) engine (125) having an exhaust system (125E) extending towards one lateral side (RH or LH) of the IC engine (125) and at least a portion of said exhaust system (125E) is disposed below said storage shell (200, 201).
6. The two-wheeled vehicle (100) of claim 1 or 5, wherein said first hump (205BFO) is disposed at an offset towards a first lateral side (RH or LH) towards which the exhaust system (125E) is extending and said first hump (205BFO) provides higher clearance between said IC engine (125) thereof compared to clearance between said base portion (205B) and said exhaust system (125E).
7. The two-wheeled vehicle (100) of claim 1 or 5, wherein said IC engine (125) includes an air-fuel supply system (125F, 125T) disposed on an upper facing side of said IC engine (125), said first hump (205BF, 205BFO) and said second hump (205BS) are capable of selectively accommodating said air-fuel supply system (125F, 125T) in either full-bump or on-stand condition of the two-wheeled vehicle (100) thereby eliminating fouling of said air-fuel supply system (125F, 125T) with said storage shell (200, 201).
8. The two-wheeled vehicle (100) of claim 1, wherein said first hump (205BF) supports a chin portion of a head protection device (300) disposed in said storage shell (200), an opening face (OF) of said head protection device (300) sits over at least a portion of said second hump (205BS), and a rear portion of the head protection device (300) is supported by said base portion (205B).
9. The two-wheeled vehicle (100) of claim 1, wherein said storage shell (201) includes one or more rib(s) (230L, 230W) extending along said base portion

(205B), said first hump (205BFO), and said second hump (205BS) substantially in one or more directions (F-R, RH-LH).

10. The two-wheeled vehicle (100) of claim 9, wherein said storage shell (201) provided with said rib(s) (230L, 230W) includes a recess to accommodate the head
5 protection device.

11. The two-wheeled vehicle (100) of claim 1, wherein said first hump (205BF) and said second hump (205BS) are selectively detachable from said storage shell (200) and said first hump (205BF) or said second hump (205BS) in a detached condition forms apertures on said base portion (205B) whereby one or more vehicle
10 components (125F, 125T) disposed below said storage shell (200) are accessible therethrough.

12. The two-wheeled vehicle (100) of claim 1 or 2, wherein said base portion (205B) of the storage shell (200) includes an L-shaped portion (LP) and said L-shaped portion (LP) is disposed rearward and towards one lateral side of said first
15 hump (205BF).

13. The two-wheeled vehicle (100) of claim 1, wherein said storage shell (201) includes a universal serial bus (USB) casing (400) disposed on an inward surface of the peripheral wall (210), said USB casing (400) accommodates an USB port for supplying power to portable device(s), said USB casing (400) includes a flap for
20 providing access to said USB port in a detached condition, and said USB casing is capable of accommodating a light source for providing visibility.

14. A storage shell (200) for a two-wheeled vehicle (100), said storage shell (200) capable of being disposed upwardly of a power unit (125) swingably connected thereof, said storage shell (200) comprising:

25 a base portion (205B) forming a lower side thereof; and
a peripheral wall (210) disposed substantially at an angle to said base portion (205B),

wherein

said base portion (205B) includes a first hump (205BF, 205BFO) disposed at an elevation from said base portion (205B), said first hump (205BF, 205BFO) extends from a front portion of the storage shell (200, 201) towards at least a
5 mid-portion of the storage shell (200, 201) in a direction along a longitudinal axis (F-R), and said first hump (205BF, 205BFO) includes a second hump (205BS) disposed at an elevation from said first hump (205BF, 205BFO), said second hump (205BS) extends from a rear portion of the first hump (205BF, 205BFO) towards at least a mid-portion of the first hump (205BF, 205BFO) in a direction along said
10 longitudinal axis (F-R).

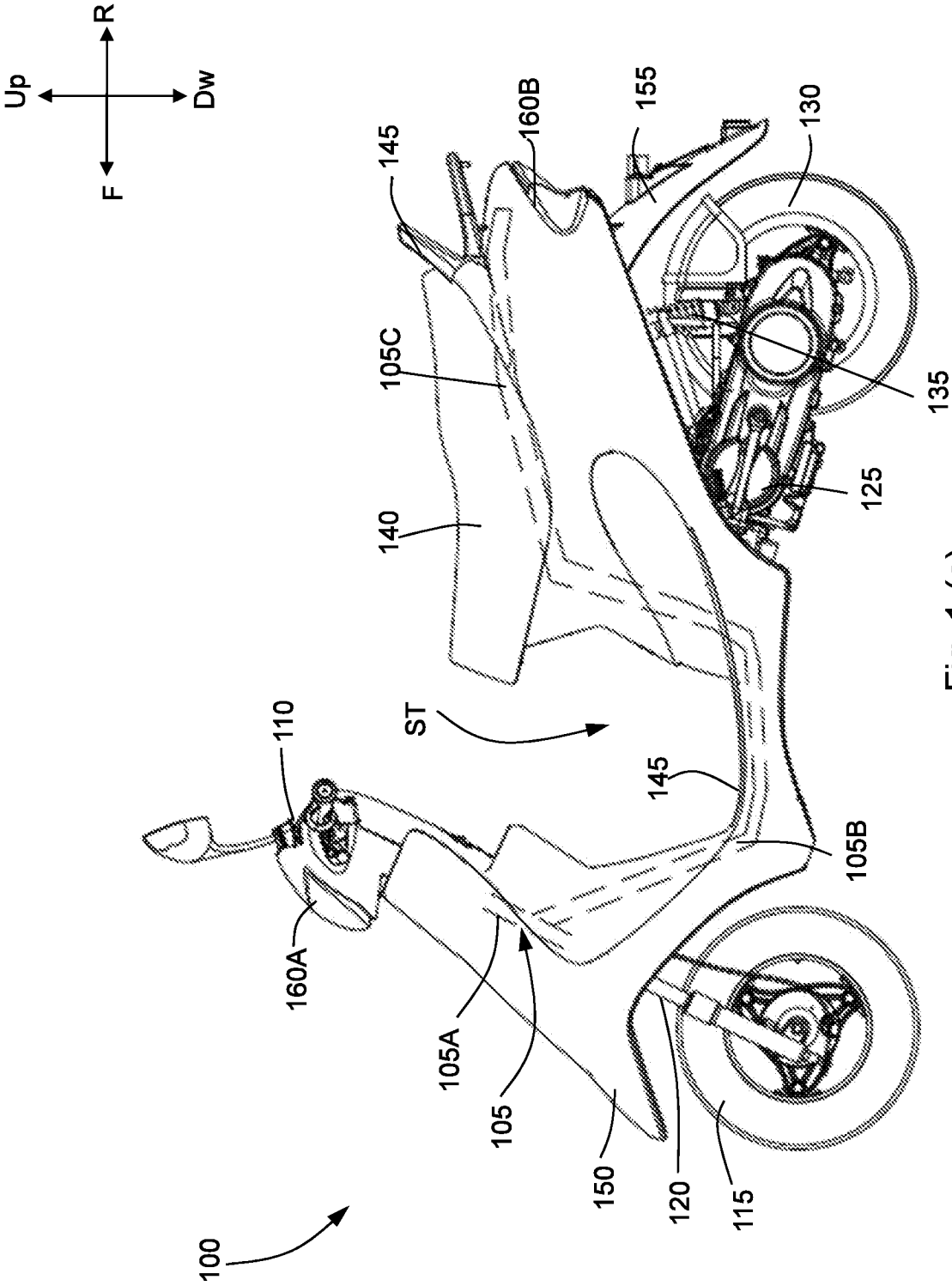


Fig. 1 (a)

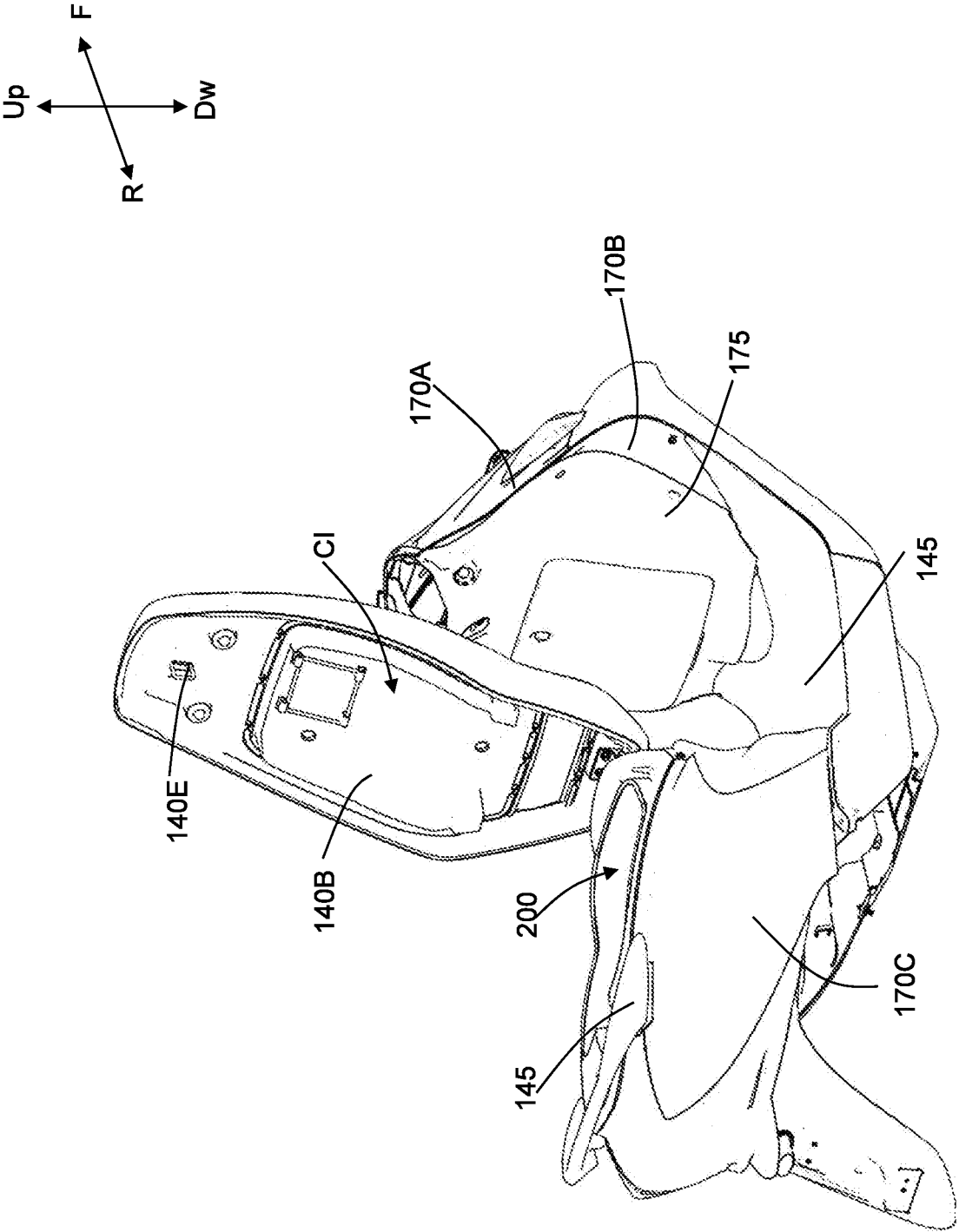


Fig. 1 (b)

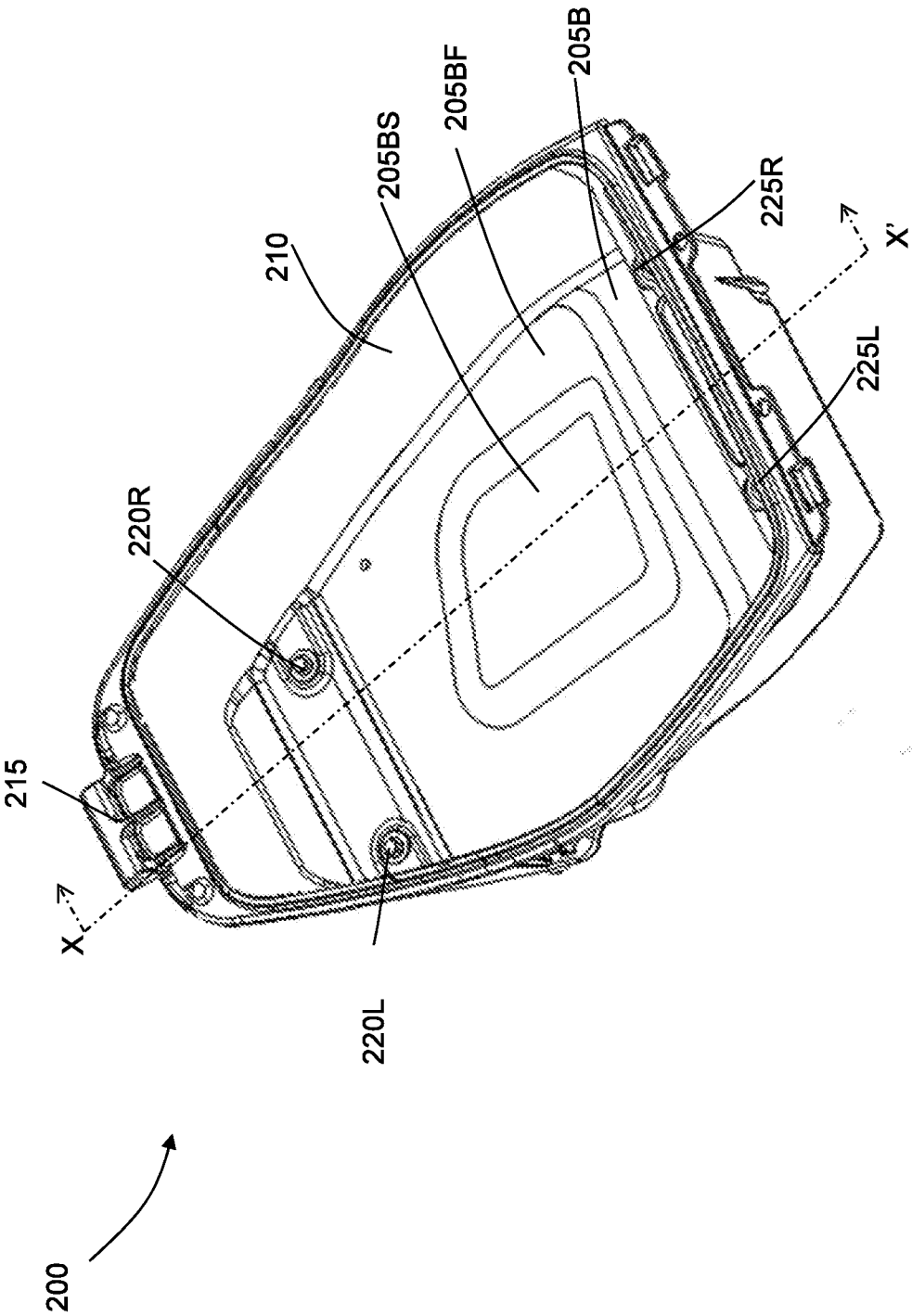
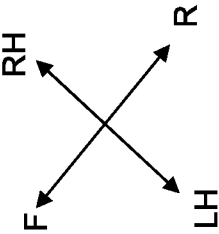


Fig. 1 (c)

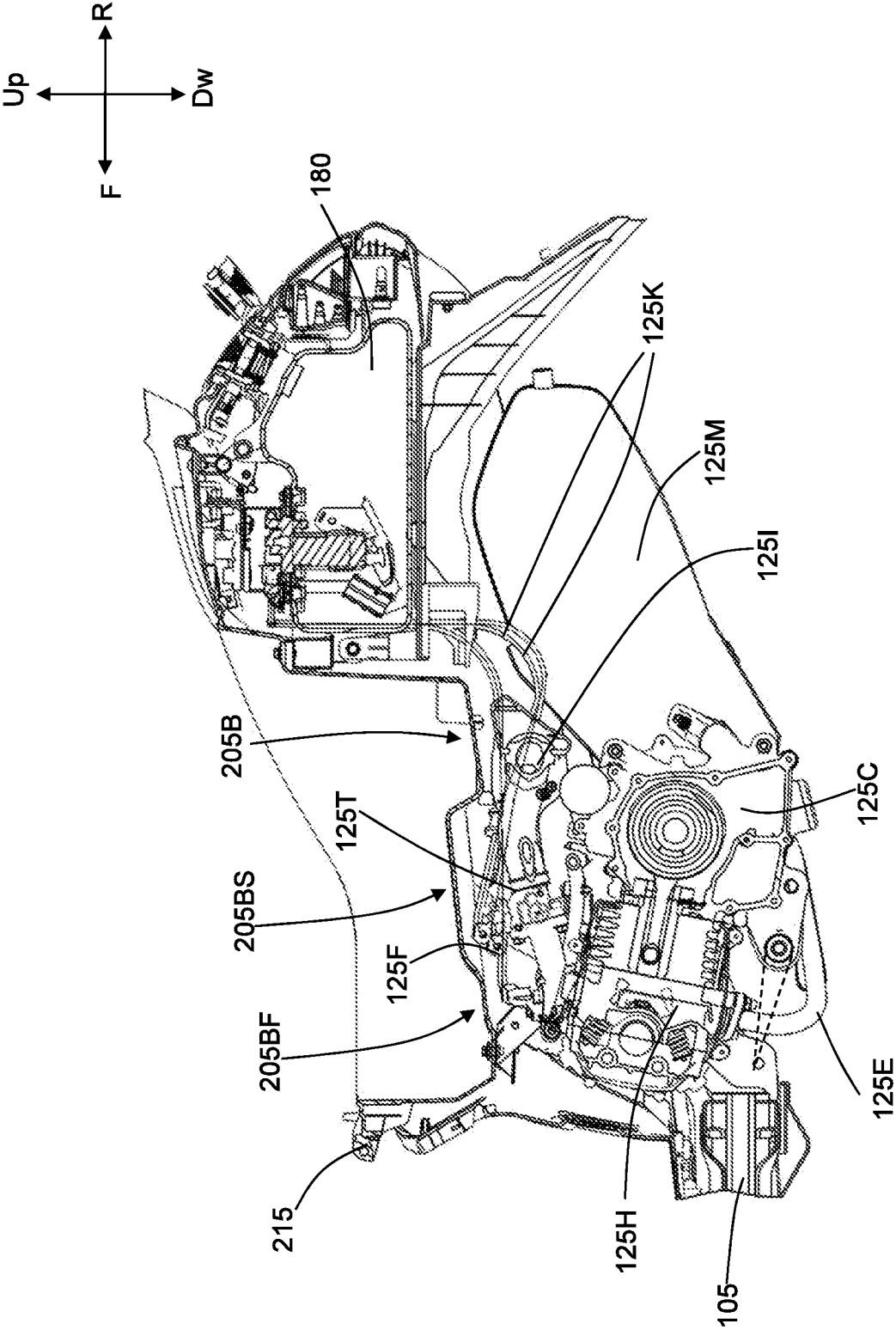


Fig. 1 (d)

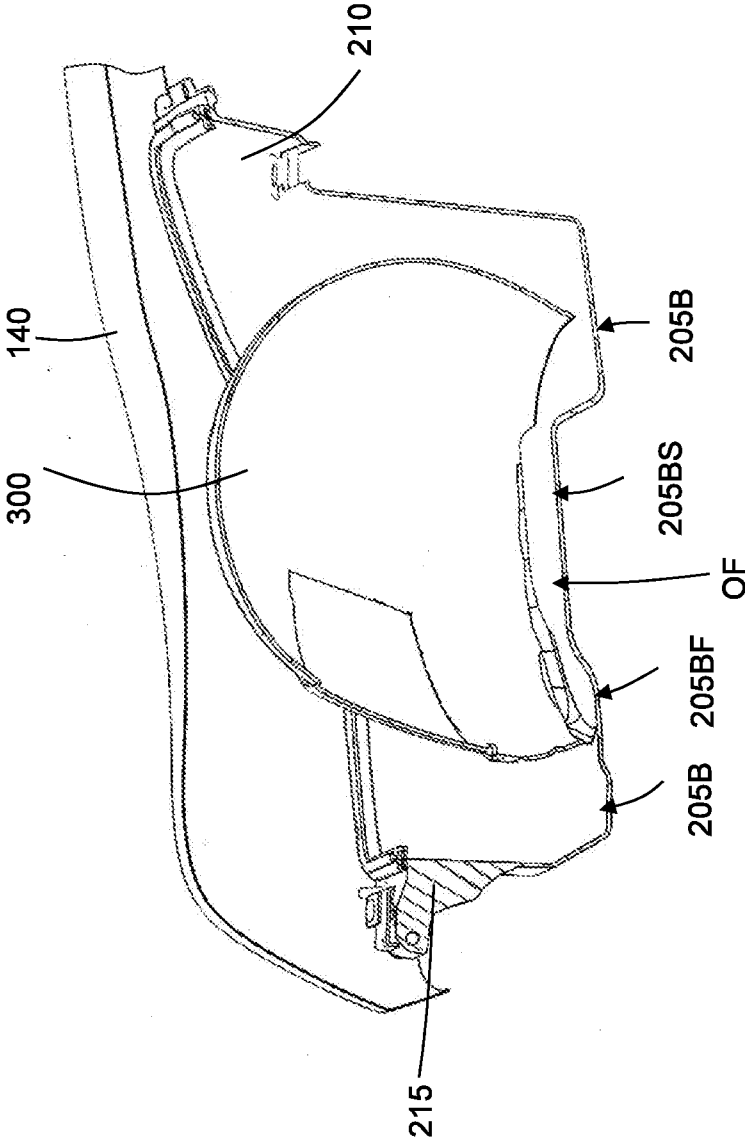
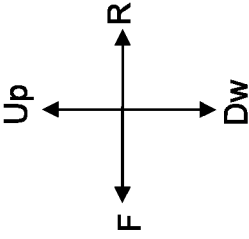


Fig. 1 (e)

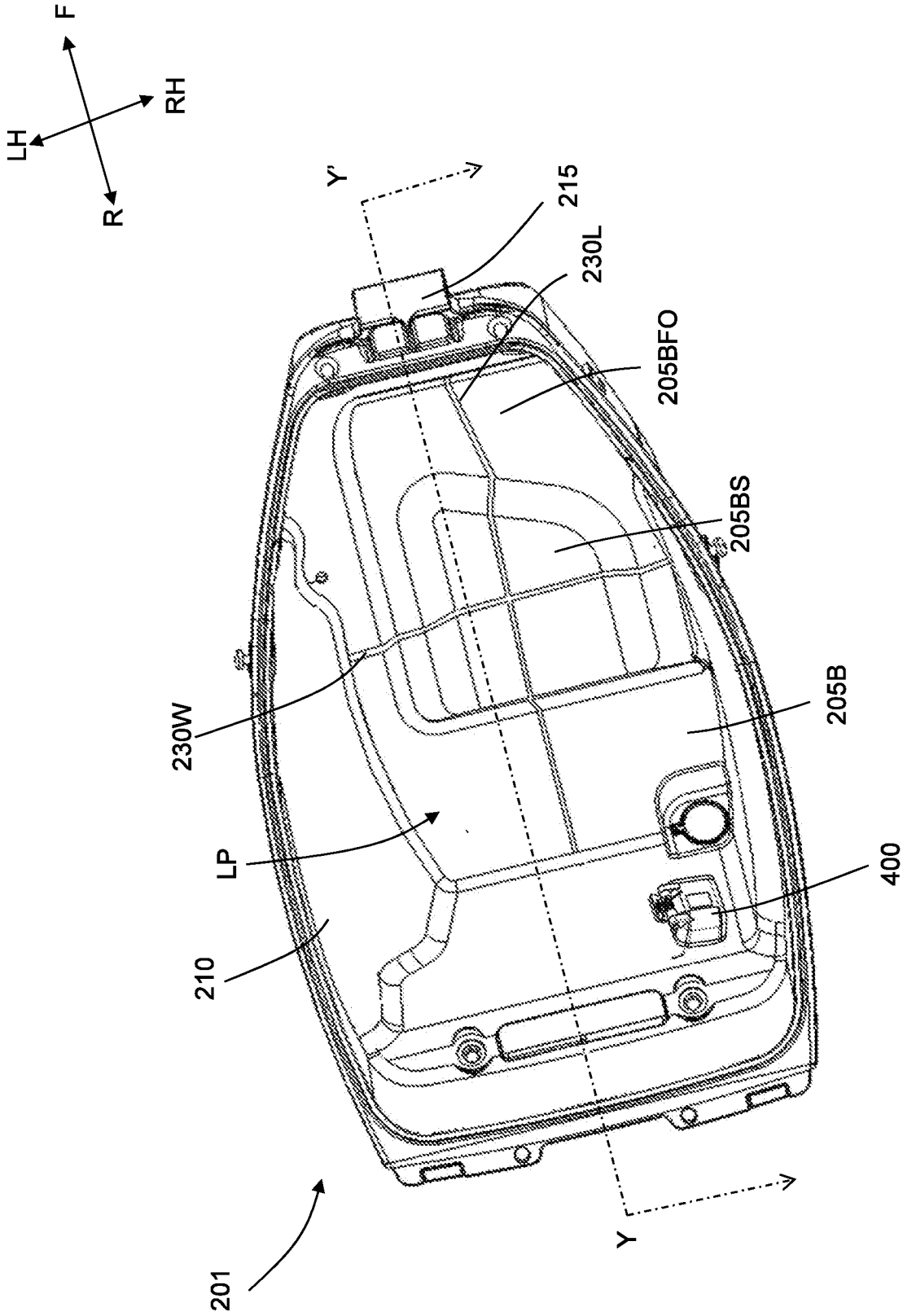


Fig. 2 (a)

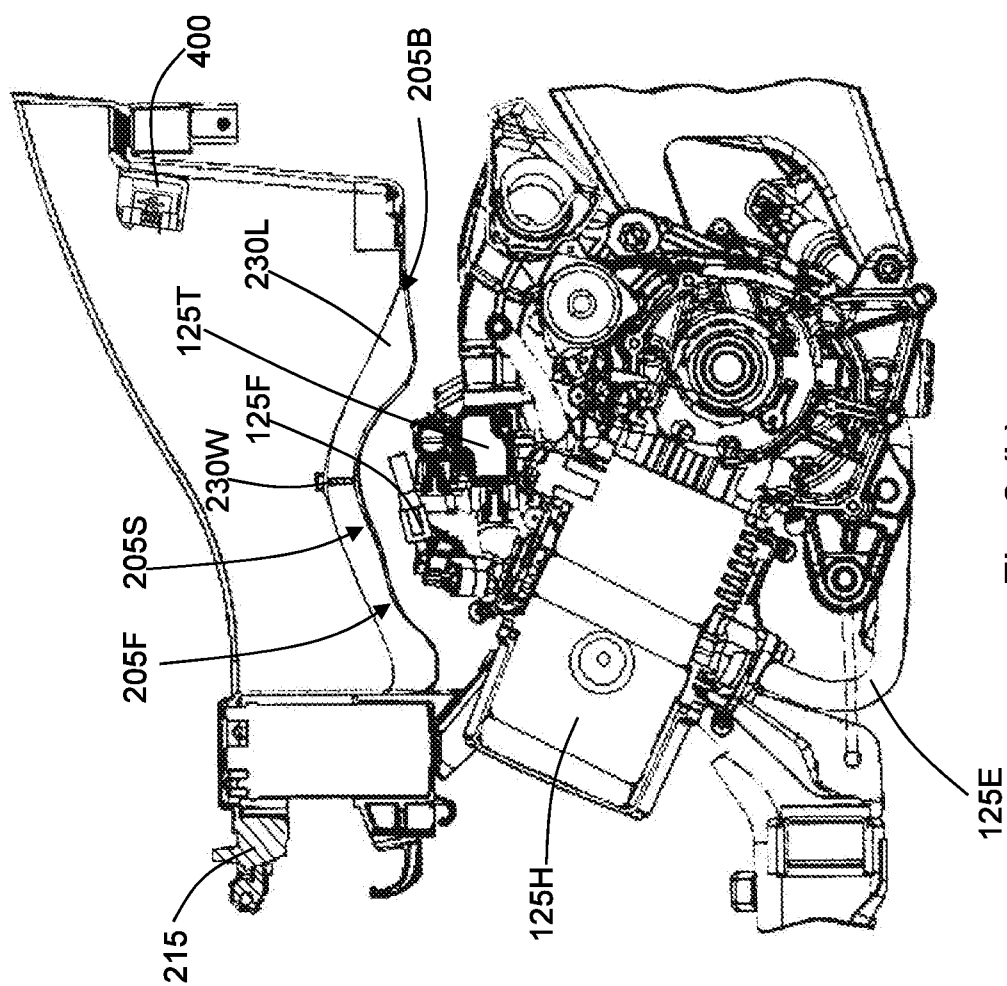
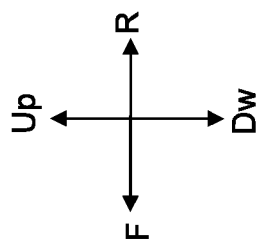


Fig. 2 (b)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2017/056392

A. CLASSIFICATION OF SUBJECT MATTER
B62J7/00, B62J9/00 Version=2018.01

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)

B62J

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)

Patseer, IPO Internal Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP1304283 A1 (YAMAHA MOTOR CO LTD) 23 April 2003 (23-04-2003) Abstract; Paragraphs [0003], [0006], [0017], [0018]; Figures 1-3	1-14
Y	EP2157010 A2 (YAMAHA MOTOR CO LTD) 24 Feb 2010 (24-02-2010) Abstract; Paragraphs [0007], [0011], [0037], [0051], [0080], [0083]; Figures 8-10, 14, 15	1-14
Y	CN105774976 A (KWANG YANG MOTOR CO LTD) 20 July 2016 (20-07-2016) Paragraph [0021]; Figures 3, 4, 9	13-14
Y	US2014060945 A1 (HONDA MOTOR CO LTD) 06 March 2014 (06-03-2014) Abstract; Paragraphs [0006], [0009]	11



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

29-01-2018

Date of mailing of the international search report

29-01-2018

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IB2017/056392

Citation	Pub.Date	Family	Pub.Date
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