# VEHICLE BODY ASSEMBLY OF VEHICLE AND VEHICLE

## CROSS-REFERENCE TO RELATED APPLICATION

**[0001]** This application is based on and claims priority to Chinese Patent Applications No. 202410378346.9, filed on March 29, 2024, the entire contents of which are incorporated herein by reference.

## FIELD

**[0002]** The present disclosure relates to, but is not limited to, the field of vehicles, and in particular, to a vehicle body assembly of a vehicle and a vehicle.

## BACKGROUND

**[0003]** A rear longitudinal beam of a vehicle generally acts as a mounting site of a rear suspension trailing arm of the vehicle. However, a structural design of the rear longitudinal beam in an existing vehicle is unreasonable, making mounting of the rear suspension trailing arm of the vehicle inconvenient. Moreover, the mounting site of the vehicle's rear suspension trailing arm with such poor dynamic stiffness results in poor NVH (Noise, Vibration, Harshness) performance of the vehicle, which seriously affects driving experience and riding experience of the vehicle.

## SUMMARY

**[0004]** The following description is a summary of the subject matter described in detail herein. This summary is not intended to limit the scope of the claims.

**[0005]** An objective of the present disclosure is to provide a vehicle body assembly of a vehicle. The vehicle body assembly can reduce mounting difficulty of a rear suspension

trailing arm of the vehicle, improve NVH performance of the vehicle, and enhance driving experience and riding experience of the vehicle.

**[0006]** The present disclosure further provides a vehicle.

**[0007]** The vehicle body assembly of the vehicle according to the present disclosure includes: a longitudinal beam body; a sill beam connected to the longitudinal beam body and defining a first receiving cavity; a first mounting member, in which the longitudinal beam body has a first avoidance hole, the first mounting member being disposed on the longitudinal beam body and corresponding to the first avoidance hole, and the first mounting member being adapted to be cooperatively assembled with a suspension trailing arm of the vehicle; a sealing member, in which the longitudinal beam body has a second avoidance hole formed at an end of the longitudinal beam body close to the sill beam, the sealing member being disposed on the longitudinal beam body and corresponding to the second avoidance hole to shield the second avoidance hole, where in a height direction of vehicle body assembly, the sealing member being recessed in a direction away from the second avoidance hole; and a reinforcement beam disposed in the first receiving cavity.

**[0008]** For the vehicle body assembly of the vehicle according to the present disclosure, by forming the second avoidance hole, the rear suspension trailing arm of the vehicle can be avoided, which can reduce the mounting difficulty of the vehicle’s rear suspension trailing arm. By providing the sealing member for shielding the second avoidance hole, dynamic stiffness of a mounting site of the vehicle’s rear suspension trailing arm can be improved, which can enhance the NVH performance of the vehicle as well as the driving experience and riding experience of the vehicle.

**[0009]** In some examples of the present disclosure, the sealing member has a sealing flange connected to the longitudinal beam body, where the sealing flange has a third avoidance hole, the first mounting member passing through the third avoidance hole and being connected to the sealing member.

**[0010]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a first reinforcement member disposed on the longitudinal beam body and arranged around the sealing member. The first reinforcement member is connected to the sealing member.

**[0011]** In some examples of the present disclosure, the first reinforcement member includes a first reinforcement body and a first connection flange connected to the first reinforcement body. The first connection flange extends in the height direction and is connected to the sealing member.

**[0012]** In some examples of the present disclosure, the first reinforcement member is disposed at the end of the longitudinal beam body close to the sill beam in a first direction of vehicle body assembly; and the first reinforcement member includes a first reinforcement body and a first flange connected to the first reinforcement body. The first flange is sandwiched between the longitudinal beam body and the sill beam in a second direction of vehicle body assembly, and the second direction, the first direction, and the height direction are perpendicular to one another.

**[0013]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a second reinforcement member partially located above the first reinforcement member in the height direction. The second reinforcement member is connected to the first reinforcement member and the longitudinal beam body.

**[0014]** In some examples of the present disclosure, the second reinforcement member is connected to the first mounting member.

**[0015]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a third reinforcement member. The longitudinal beam body defines a second receiving cavity; the third reinforcement member is disposed in the second receiving cavity and is spaced apart from the first reinforcement member in a first direction of vehicle body assembly; the second reinforcement member is connected to the third reinforcement member; and the first direction is perpendicular to the height direction.

**[0016]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a fourth reinforcement member disposed in the second receiving cavity, in which the fourth reinforcement member is disposed at a side of the third reinforcement member away from the first reinforcement member and connected to the third reinforcement member in the first direction; and a second mounting member. The first mounting member is disposed in the second receiving cavity and extends through the fourth reinforcement member, and the second mounting member is adapted to be cooperatively

assembled with a rear suspension of the vehicle.

**[0017]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a fifth reinforcement member disposed in the second receiving cavity, in which the fifth reinforcement member is disposed at a side of the fourth reinforcement member away from the first reinforcement member in the first direction; and a third mounting member disposed in the second receiving cavity and extending through the fifth reinforcement member. The second mounting member is adapted to be cooperatively assembled with the rear suspension of the vehicle.

**[0018]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a first extension beam corresponding to the first reinforcement member in a second direction of vehicle body assembly; a second extension beam corresponding to the fourth reinforcement member in the second direction of vehicle body assembly; and a third extension beam corresponding to the fifth reinforcement member in the second direction of vehicle body assembly. The first extension beam, the second extension beam, and the third extension beam are each connected to the longitudinal beam body, and the second direction is perpendicular to the first direction.

**[0019]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a first connection member connected between the sill beam and the reinforcement beam. The first connection member is disposed at each of two ends of the reinforcement beam in a first direction of vehicle body assembly.

**[0020]** In some examples of the present disclosure, the first connection member includes a first connection plate and a second connection plate connected to the first connection plate. An angle is formed between the first connection plate and the second connection plate; the first connection plate is connected to the reinforcement beam; the second connection plate is connected to the sill beam; and the second connection plate has a notch extending through the second connection plate in a thickness direction of the second connection plate.

**[0021]** In some examples of the present disclosure, the vehicle body assembly of the vehicle further includes: a second connection member located in the first receiving cavity and connected between the sill beam and the reinforcement beam. The second connection member is disposed at each of the two ends of the reinforcement beam in the first direction, and an

overlapping region exists between an orthographic projection of the first connection member and an orthographic projection of the second connection member.

**[0022]** The vehicle according to the present disclosure includes the vehicle body assembly as described above.

**[0023]** Additional aspects and advantages of the present disclosure will be provided in part in the following description, or will become apparent in part from the following description, or can be learned from practicing of the present disclosure.

**[0024]** Other aspects may be apparent upon reading and understanding the drawings and detailed descriptions.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0025]** FIG. 1 is a schematic view of a vehicle body assembly according to an embodiment of the present disclosure.

**[0026]** FIG. 2 is a schematic enlarged view of part D in FIG. 1.

**[0027]** FIG. 3 is a bottom view of a vehicle body assembly according to an embodiment of the present disclosure.

**[0028]** FIG. 4 is a schematic enlarged view of part E in FIG. 3.

**[0029]** FIG. 5 is a schematic view of a vehicle body assembly (with a first reinforcement member and a second reinforcement member omitted) according to an embodiment of the present disclosure.

**[0030]** FIG. 6 is a schematic enlarged view of part F in FIG. 5.

**[0031]** FIG. 7 is a top view of a vehicle body assembly according to an embodiment of the present disclosure.

**[0032]** FIG. 8 is a top view of a vehicle body assembly (with a second reinforcement member omitted) according to an embodiment of the present disclosure.

**[0033]** FIG. 9 is a schematic enlarged view of part G in FIG. 8.

**[0034]** FIG. 10 is a schematic view of a vehicle body assembly according to an embodiment of the present disclosure.

**[0035]** FIG. 11 is an enlarged view of part A in FIG. 10.

**[0036]** FIG. 12 is an enlarged view of part B in FIG. 10.

**[0037]** FIG. 13 is a schematic view of a vehicle body assembly according to an embodiment of the present disclosure from another angle.

**[0038]** FIG. 14 is an enlarged view of part C in FIG. 13.

**[0039]** FIG. 15 is a top view of a vehicle body assembly (without omitting a second reinforcement member) according to an embodiment of the present disclosure.

**[0040]** FIG. 16 is a top view of a vehicle body assembly (with a second reinforcement member omitted) according to an embodiment of the present disclosure.

**[0041]** FIG. 17 is a schematic assembly view of a sill beam and a seat mounting cross beam according to an embodiment of the present disclosure.

**[0042]** FIG. 18 is an enlarged view of part H in FIG. 17.

**[0043]** FIG. 19 is a schematic view of a sill beam according to an embodiment of the present disclosure.

**[0044]** FIG. 20 is a schematic view of a sill beam according to an embodiment of the present disclosure.

**[0045]** FIG. 21 is a schematic cross-sectional view of a partial structure of a sill beam and a seat mounting cross beam according to an embodiment of the present disclosure.

**[0046]** FIG. 22 is a schematic cross-sectional view of a sill beam according to an embodiment of the present disclosure.

**[0047]** Reference numerals:

**[0048]** vehicle body assembly 100;

**[0049]** seat mounting cross beam 199; front-seat front mounting cross beam 1; front-seat rear mounting cross beam 2;

**[0050]** longitudinal beam body 10; second receiving cavity 11; first avoidance hole 12; first mounting member 13; second avoidance hole 14; longitudinal beam flange 15; longitudinal beam bottom plate 16;

**[0051]** first reinforcement member 20; first reinforcement body 21; first flange 22; first connection flange 23;

**[0052]** first extension beam 30; second extension beam 31; third extension beam 32;

**[0053]** sill beam 40; first receiving cavity 41; inner side wall 411; reinforcement beam 42;

inner sill panel 43; inner panel body 431; inner panel connection plate 432;

**[0054]** outer sill panel 44; outer panel body 441; outer panel connection plate 442;

**[0055]** first connection member 45; first connection plate 451; second connection plate 452; notch 4521; reinforcement rib 4522; lightening hole 4523;

**[0056]** second connection member 46; connection member body 461; first plate body 4611; second plate body 4612; third plate body 4613; first connection flange 462; second connection flange 463; rear sill segment 480; second reinforcement member 50; second connection flange 51; third connection flange 52; recessed portion 53;

**[0057]** third reinforcement member 60; fourth reinforcement member 70; second mounting member 701; fifth reinforcement member 71; third mounting member 711; sixth reinforcement member 72;

**[0058]** sealing member 80; sealing flange 81; third avoidance hole 82.

## DETAILED DESCRIPTION OF THE EMBODIMENTS

**[0059]** Embodiments of the present disclosure will be described in detail below with reference to examples thereof as illustrated in the accompanying drawings, throughout which same or similar elements, or elements having same or similar functions, are denoted by same or similar reference numerals. The embodiments described below with reference to the drawings are illustrative only, and are intended to explain, rather than limiting, the present disclosure.

**[0060]** A vehicle body assembly 100 according to the embodiments of the present disclosure is described below with reference to FIG. 1 to FIG. 22.

**[0061]** As shown in FIG. 1 to FIG. 9, the vehicle body assembly 100 according to the embodiments of the present disclosure includes: a longitudinal beam body 10, a first mounting member 13, a sealing member 80, a sill beam 40, and a reinforcement beam 42.

**[0062]** The longitudinal beam body 10 is connected to the sill beam 40 of the vehicle. The longitudinal beam body 10 has a first avoidance hole 12. The first mounting member 13 is disposed on the longitudinal beam body 10 and corresponds to the first avoidance hole 12. The first mounting member 13 is adapted to be cooperatively assembled with a suspension

trailing arm of the vehicle. A second avoidance hole 14 is formed at an end of the longitudinal beam body 10 close to the sill beam 40. The sealing member 80 is disposed on the longitudinal beam body 10 and corresponds to the second avoidance hole 14 to shield the second avoidance hole 14. In a height direction of the vehicle body assembly 100 (i.e., a Z direction shown in FIG. 1), the sealing member 80 is recessed in a direction away from the second avoidance hole 14.

**[0063]** As shown in FIG. 1 and FIG. 3, the sill beam 40 includes a sill beam body and a rear sill segment 480. In a first direction of the vehicle body assembly 100 (i.e., an X direction shown in FIG. 1, i.e., a length direction of the vehicle body assembly 100), the sill beam body and the rear sill segment 480 are connected, and the rear sill segment 480 is located at a rear end of the sill beam body.

**[0064]** The longitudinal beam body 10 extends in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 1), and has two opposite ends. An end of the longitudinal beam body 10 close to the rear sill segment 480 is connected to the rear sill segment 480.

**[0065]** The longitudinal beam body 10 has the first avoidance hole 12. In some embodiments of the present disclosure, the first avoidance hole 12 is formed at the end of the longitudinal beam body 10 close to the rear sill segment 480. A plurality of first avoidance holes 12 may be provided. For example, the number of first avoidance holes 12 may be two. In some embodiments of the present disclosure, the plurality of first avoidance holes 12 may be arranged at intervals in a second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1, i.e., a width direction of the vehicle body assembly 100).

**[0066]** The first mounting member 13 is disposed on the longitudinal beam body 10 and disposed corresponding to the first avoidance hole 12. In some embodiments of the present disclosure, the plurality of mounting members 13 may be provided, and the number of first mounting members 13 is the same as the number of first avoidance holes 12. The plurality of first mounting members 13 are arranged in one-to-one correspondence with the plurality of first avoidance holes 12. The first mounting member 13 may be cooperatively assembled with a rear suspension trailing arm of the vehicle. In some embodiments of the present disclosure, the first mounting member 13 may be constructed as a threaded pipe, and a mounting frame

of the rear suspension trailing arm of the vehicle may be cooperatively assembled with the first mounting member 13 in a threaded connection manner.

**[0067]** The second avoidance hole 14 is formed at the end of the longitudinal beam body 10 close to the rear sill segment 480, and may be used to avoid the rear suspension trailing arm of the vehicle. In some embodiments of the present disclosure, the second avoidance hole 14 may be formed between the two first avoidance holes 12 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1).

**[0068]** The sealing member 80 is disposed on the longitudinal beam body 10. In some embodiments of the present disclosure, the sealing member 80 and the longitudinal beam body 10 may be connected by means including, but not limited to, welding and screwing. The sealing member 80 is arranged corresponding to the second avoidance hole 14. In an exemplary embodiment of the present disclosure, the sealing member 80 is connected to the longitudinal beam body 10 and is capable of shielding the second avoidance hole 14. With such an arrangement, external impurities such as dust and particles can be prevented from entering an interior of the vehicle through the second avoidance hole 14.

**[0069]** In the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the sealing member 80 is recessed in the direction away from the second avoidance hole 14, i.e., the sealing member 80 is recessed upward. In some embodiments of the present disclosure, the sealing member 80 may be constructed as an arc-shaped structure, and the upward recess of the sealing member 80 can avoid the rear suspension trailing arm, which is beneficial to a reduction in mounting difficulty of the rear suspension trailing arm of the vehicle. It should be noted that the sealing member 80 can not only avoid the rear suspension trailing arm, but can also improve dynamic stiffness of a mounting site of the rear suspension trailing arm.

**[0070]** It can be understood that by forming the second avoidance hole 14, the rear suspension trailing arm of the vehicle can be avoided. By providing the sealing member 80 to shield the second avoidance hole 14 and making the sealing member 80 recessed in the direction away from the second avoidance hole 14, the sealing member 80 may also avoid the rear suspension trailing arm of the vehicle, which can reduce the mounting difficulty of the rear suspension trailing arm of the vehicle. Moreover, by providing the sealing member 80

shielding the second avoidance hole 14, the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle can be improved. In addition, by allowing the sealing member 80 to shield the second avoidance hole 14, the external impurities such as dust and particles can be prevented from entering the interior of the vehicle through the second avoidance hole 14, and sealing performance of the vehicle can be improved.

**[0071]** The sill beam 40 defines a first receiving cavity 41. In an exemplary embodiment of the present disclosure, the sill beam 40 includes a sill beam body and a rear sill segment 480, and the sill beam body defines the first receiving cavity 41. The sill beam 40 may be disposed at each of two sides of the vehicle in the width direction of the vehicle (i.e., the Y direction shown in FIG. 1). In some embodiments of the present disclosure, the sill beam 40 may include an inner sill panel 43 and an outer sill panel 44. The inner sill panel 43 and the outer sill panel 44 may be arranged in the width direction of the vehicle (i.e., a Y direction shown in FIG. 6) and connected to each other. The outer sill panel 44 may be disposed at a side of the corresponding inner sill panel 43 away from the vehicle. The inner sill panel 43 and the outer sill panel 44 may together define the first receiving cavity 41.

**[0072]** In some embodiments of the present disclosure, as shown in FIG. 21, the inner sill panel 43 may have an inner panel body 431, and an inner panel connection plate 432 may be provided at an end of the inner panel body 431. As shown in FIG. 22, the outer sill panel 44 may have an outer panel body 441, and an outer panel connection plate 442 may be provided at an end of the outer panel body 441. The inner panel connection plate 432 may be connected to the outer panel connection plate 442 to connect the inner sill panel 43 and the outer sill panel 44. The inner panel body 431 and the outer panel body 441 may together surround the first receiving cavity 41.

**[0073]** In some embodiments of the present disclosure, the reinforcement beam 42 and the sill beam 40 may extend in a length direction of the vehicle (i.e., the X direction shown in FIG. 1). The reinforcement beam 42 is disposed in the first receiving cavity 41. With such an arrangement, a structural strength of the sill beam 40 can be enhanced, which can enhance a structural strength of the longitudinal beam body 10 connected to the sill beam 40, and is beneficial to an improvement in NVH performance of the vehicle.

**[0074]** Therefore, by forming the second avoidance hole 14, the rear suspension trailing

arm of the vehicle can be avoided, and the mounting difficulty of the rear suspension trailing arm of the vehicle can be reduced. By providing the sealing member 80 shielding the second avoidance hole 14, the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle can be improved, which can improve the NVH performance of the vehicle and enhance driving experience and riding experience of the vehicle.

**[0075]** In addition, it should be noted that with the vehicle body assembly 100 of the present disclosure, since the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle is improved, the number of mounting frames of the rear suspension trailing arm of the vehicle can be reduced. For example, one mounting frame of the rear suspension trailing arm of the vehicle can be omitted, which can reduce a weight of the whole vehicle, and is beneficial to a lightweight design of the vehicle.

**[0076]** In some embodiments of the present disclosure, as shown in FIG. 5 and FIG. 6, the sealing member 80 has a sealing flange 81 connected to the longitudinal beam body 10, the sealing flange 81 has a third avoidance hole 82, and the first mounting member 13 passes through the third avoidance hole 82 and is connected to the sealing member 80.

**[0077]** The sealing member 80 has the sealing flange 81 that is connected to the longitudinal beam body 10. In some embodiments of the present disclosure, the sealing member 80 and the sealing flange 81 may be integrally formed, i.e., the sealing member 80 and the sealing flange 81 are an integrally molded structure. The sealing flange 81 has the third avoidance hole 82, and the first mounting member 13 passes through the third avoidance hole 82 and is connected to the sealing member 80.

**[0078]** In some embodiments of the present disclosure, a plurality of third avoidance holes 82 may be provided. For example, the number of third avoidance holes 82 may be two. The plurality of third avoidance holes 82 may be arranged in one-to-one correspondence with the plurality of first mounting members 13.

**[0079]** In some embodiments of the present disclosure, the number of third avoidance holes 82 is two, the number of first mounting members 13 is two, and the two first mounting members 13 may pass through the two third avoidance holes 82 and be connected to the sealing flange 81, respectively. In some embodiments of the present disclosure, the first mounting member 13 is capable of being connected to the sealing member 80 by welding.

**[0080]** It can be understood that during traveling of the vehicle, vibration of the rear suspension trailing arm of the vehicle is transmitted to the first mounting member 13. By forming the third avoidance hole 82 at the sealing member 80 and allowing the first mounting member 13 to pass through the third avoidance hole 82 and be connected to the sealing member 80, the first mounting member 13 can be avoided. Moreover, the first mounting member 13 can be connected to the sealing member 80. In this way, stress on the first mounting member 13 can be shared by the sealing member 80, thereby improving the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle.

**[0081]** In some embodiments of the present disclosure, as shown in FIG. 1, FIG. 2, and FIG. 7 to FIG. 9, the vehicle body assembly 100 further includes: a first reinforcement member 20 disposed on the longitudinal beam body 10 and arranged around the sealing member 80. The first reinforcement member 20 is connected to the sealing member 80.

**[0082]** In some embodiments of the present disclosure, in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 1), the first reinforcement member 20 may be disposed at the end of the longitudinal beam body 10 close to the sill beam 40, i.e., the first reinforcement member 20 is disposed at a front end of the longitudinal beam body 10. The first reinforcement member 20 is connected to the sealing member 80. In an exemplary embodiment of the present disclosure, the first reinforcement member 20 may be arranged around the sealing member 80 and connected to the sealing member 80. In some embodiments of the present disclosure, the first reinforcement member 20 may have a hole avoiding the sealing member 80, enabling the first reinforcement member 20 to be arranged around the sealing member 80. The first reinforcement member 20 and the sealing member 80 may be connected by means including, but not limited to, welding and bolting.

**[0083]** By providing the first reinforcement member 20, stress on the longitudinal beam body 10 and the sealing member 80 can be shared by the first reinforcement member 20. In this way, the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle can be improved, which is beneficial to the improvement in the NVH performance of the vehicle and an enhancement in the driving experience and the riding experience of the vehicle.

**[0084]** In some embodiments of the present disclosure, as shown in FIG. 8 and FIG. 9, the

first reinforcement member 20 includes: a first reinforcement body 21 and a first connection flange 23 connected to the first reinforcement body 21. The first connection flange 23 extends in the height direction of the vehicle body assembly 100 (i.e., a Z direction shown in FIG. 5) and is connected to the sealing member 80.

**[0085]** The first reinforcement member 20 includes the first reinforcement body 21 and the first connection flange 23 connected to the first reinforcement body 21. The first reinforcement body 21 is disposed on the longitudinal beam body 10. Moreover, the first connection flange 23 extends in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 5). In some embodiments of the present disclosure, the first connection flange 23 extends upward in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 5). The first connection flange 23 is connected to the sealing member 80. In some embodiments of the present disclosure, the first connection flange 23 is connected to the sealing member 80 by welding.

**[0086]** With such an arrangement, the first reinforcement member 20 and the sealing member 80 can be connected together. In this way, the first reinforcement member 20 and the sealing member 80 can share stress with each other, which can improve the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle.

**[0087]** In some embodiments of the present disclosure, as shown in FIG. 8 and FIG. 9, a plurality of first connection flanges 23 are provided, and are arranged around the sealing member 80.

**[0088]** The first reinforcement member 20 includes the first reinforcement body 21 and the first connection flange 23 connected to the first reinforcement body 21. The plurality of first connection flanges 23 are provided. For example, the number of first connection flanges 23 may be, but not limited to, four, six, eight, or the like. The plurality of first connection flanges 23 are arranged around the sealing member 80 in a circumferential direction of the sealing member 80.

**[0089]** In a specific embodiment of the present disclosure, as shown in FIG. 9, the number of first connection flanges 23 is four, and the four first connection flanges 23 are arranged around the sealing member 80.

**[0090]** By providing the plurality of first connection flanges 23, a contact area between

the first reinforcement member 20 and the sealing member 80 can be increased. By arranging the plurality of first connection flanges 23 around the sealing member 80, force can be uniformly transmitted between the first reinforcement member 20 and the sealing member 80, which can effectively improve the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle.

**[0091]** In some embodiments of the present disclosure, as shown in FIG. 1, FIG. 2, and FIG. 7, the vehicle body assembly 100 further includes a second reinforcement member 50. In the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the second reinforcement member 50 is partially located above the first reinforcement member 20, and the second reinforcement member 50 is connected to the first reinforcement member 20 and the longitudinal beam body 10.

**[0092]** In some embodiments of the present disclosure, the second reinforcement member 50 may have a plurality of flange structures. Some of the plurality of flange structures may be connected to the first reinforcement member 20, and some of the plurality of flange structures may be connected to the longitudinal beam body 10. In some embodiments of the present disclosure, some of the plurality of flange structures may be connected to the rear sill segment 480 of the sill beam 40.

**[0093]** In some embodiments of the present disclosure, a front end of the second reinforcement member 50 is connected to the first reinforcement member 20 in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 1), and two sides of the second reinforcement member 50 are connected to the longitudinal beam body 10 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1).

**[0094]** By providing the second reinforcement member 50 and locating a part of a structure of the second reinforcement member 50 above the first reinforcement member 20, stress on the first reinforcement member 20 and the longitudinal beam body 10 can be transmitted upward through the second reinforcement member 50, which is beneficial to an improvement in the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1). Moreover, by connecting the second reinforcement member 50 to the

longitudinal beam body 10, the second reinforcement member 50, the longitudinal beam body 10, the first reinforcement member 20, and the sealing member 80 can together share the stress on the first mounting member 13, which can improve the NVH performance of the vehicle.

**[0095]** In some embodiments of the present disclosure, as shown in FIG. 1, FIG. 2, and FIG. 7, the second reinforcement member 50 has at least one second connection flange 51 and at least one third connection flange 52. The second connection flange 51 is connected to the first reinforcement member 20, and the third connection flange 52 is connected to the longitudinal beam body 10.

**[0096]** In some embodiments of the present disclosure, the second reinforcement member 50 may have a second connection flange 51 and a third connection flange 52. Alternatively, in some embodiments of the present disclosure, the second reinforcement member 50 may have a second connection flange 51 and a plurality of third connection flanges 52. Alternatively, in some embodiments of the present disclosure, the second reinforcement member 50 may have a plurality of second connection flanges 51 and a third connection flange 52. Alternatively, in some embodiments of the present disclosure, the second reinforcement member 50 may have a plurality of second connection flanges 51 and a plurality of third connection flanges 52.

**[0097]** The second connection flange 51 may be connected to the first reinforcement member 20 by welding, and the third connection flange 52 may be connected to the longitudinal beam body 10 by welding.

**[0098]** By allowing the second reinforcement member 50 to have the at least one second connection flange 51 and the at least one third connection flange 52, connecting the second connection flange 51 to the first reinforcement member 20, and connecting the third connection flange 52 to the longitudinal beam body 10, firm connections can be achieved between the second reinforcement member 50 and the first reinforcement member 20 and between the second reinforcement member 50 and the longitudinal beam body 10. In this way, the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle can be improved, which is beneficial to the improvement of the NVH performance of the vehicle and the enhancement of the driving experience and the riding experience of the vehicle.

**[0099]** In some embodiments of the present disclosure, the first reinforcement member 20 may be disposed above the sealing flange 81 of the sealing member 80 in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1). Moreover, the first reinforcement member 20 may have a hole corresponding to the third avoidance hole 82. The first mounting member 13 may pass through a hole of the first reinforcement member 20 and be connected to the first reinforcement member 20.

**[00100]** In some embodiments of the present disclosure, as shown in FIG. 2, the second reinforcement member 50 is connected to the first mounting member 13.

**[00101]** In the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the first mounting member 13 may extend and be connected to the second reinforcement member 50. In some embodiments of the present disclosure, the first mounting member 13 and the second reinforcement member 50 may be connected by $CO_2$ welding.

**[00102]** By connecting the second reinforcement member 50 to the first mounting member 13, the stress on the first mounting member 13 can be directly transmitted to the second reinforcement member 50, which can improve the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle.

**[00103]** In some embodiments of the present disclosure, as shown in FIG. 1 and FIG. 2, the second reinforcement member 50 has a recessed portion 53, and the first mounting member 13 is partially disposed in the recessed portion 53.

**[00104]** The second reinforcement member 50 may have the recessed portion 53. The first mounting member 13 is connected to the second reinforcement member 50, and a part of a structure of the first mounting member 13 is disposed in the recessed portion 53. In some embodiments of the present disclosure, the recessed portion 53 is recessed towards an inner side of the second reinforcement member 50.

**[00105]** In some embodiments of the present disclosure, the number of recessed portions 53 is the same as the number of first mounting members 13. For example, the number of first mounting members 13 is two, the number of recessed portions 53 is two, and the two first mounting members 13 are arranged in one-to-one correspondence with the two recessed portions 53.

**[00106]** By allowing the second reinforcement member 50 to have the recessed portion 53

and disposing a part of the first mounting member 13 at the recessed portion 53, a contact area between the second reinforcement member 50 and the first mounting member 13 can be increased, and a connection between the first mounting member 13 and the second reinforcement member 50 can be firmer. Moreover, the stress on the first mounting member 13 can be smoothly transmitted to the second reinforcement member 50, thereby improving the dynamic stiffness of the mounting site of the rear suspension trailing arm, making it beneficial to the improvement of the NVH performance of the vehicle.

**[00107]** In some embodiments of the present disclosure, in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), an upper surface of the second reinforcement member 50 is adapted to be connected to a floor panel of the vehicle.

**[00108]** In some embodiments of the present disclosure, in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the upper surface of the second reinforcement member 50 may have a plurality of planar structures, and the second reinforcement member 50 may be connected to the floor panel of the vehicle through the planar structures of the upper surface. In some embodiments of the present disclosure, the second reinforcement member 50 may be connected to the floor panel of the vehicle by welding.

**[00109]** By connecting the second reinforcement member 50 to the floor panel of the vehicle, stress applied to the second reinforcement member 50 can be shared by the floor panel of the vehicle. Moreover, it is beneficial to an overall firm structure of the second reinforcement member 50, the first reinforcement member 20, the sealing member 80, and the first mounting member 13, thereby improving the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle, making it beneficial to the improvement of the NVH performance of the vehicle and the enhancement of the driving experience and the riding experience of the vehicle.

**[00110]** In some embodiments of the present disclosure, the vehicle body assembly 100 further includes a rear-seat mounting cross beam. In the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the rear-seat mounting cross beam is located above the first reinforcement member 20 and connected to the first reinforcement member 20; and/or, the vehicle body assembly 100 further includes a battery mounting cross

beam. In the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the battery mounting cross beam is located below the longitudinal beam body 10 and connected to the longitudinal beam body 10.

**[00111]** The rear-seat mounting cross beam may extend in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1). Moreover, in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the rear-seat mounting cross beam is located above the first reinforcement member 20 and connected to the first reinforcement member 20. For example, an end of the rear-seat mounting cross beam is located above the first reinforcement member 20 and is connected to the first reinforcement member 20 by welding. By allowing the rear-seat mounting cross beam to be located above the first reinforcement member 20 and be connected to the first reinforcement member 20, it is beneficial to the improvement of the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1).

**[00112]** The battery mounting cross beam may extend in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1). Moreover, in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the battery mounting cross beam is located below the longitudinal beam body 10 and connected to the longitudinal beam body 10. For example, an end of the battery mounting cross beam is located below the longitudinal beam body 10 and connected to the longitudinal beam body 10 by welding.

**[00113]** By making the battery mounting cross beam be located below the longitudinal beam body 10 and be connected to the longitudinal beam body 10, it is beneficial to the improvement of the dynamic stiffness of the mounting site of the rear suspension trailing arm of the vehicle in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1).

**[00114]** In some embodiments of the present disclosure, any two of the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 1), the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 1), and the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1) are perpendicular to one another.

**[00115]** It should be noted that with the vehicle body assembly 100 of the present disclosure, the stress on the first mounting member 13 can be dispersed in the height direction (i.e., the Z direction shown in FIG. 1), the first direction (i.e., the X direction shown in FIG. 1), and the second direction (i.e., the Y direction shown in FIG. 1) of the vehicle body assembly 100, which can effectively improve the dynamic stiffness and a local mode of the rear suspension trailing arm of the vehicle. Moreover, the overall dynamic stiffness and local mode of the longitudinal beam body 10 can be effectively improved, and it is beneficial to an improvement in collision-resistant performance of the vehicle.

**[00116]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two, and the number of sill beams 40 may be two. In the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 1), the two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other, and the two sill beams 40 may be arranged opposite to each other and spaced apart from each other. Moreover, the two longitudinal beam bodies 10 may be arranged in one-to-one correspondence with the two sill beams 40. Each longitudinal beam body 10 may be provided with the first reinforcement member 20, the first mounting member 13, the sealing member 80, and the second reinforcement member 50.

**[00117]** In some embodiments of the present disclosure, a distance between the rear suspension trailing arm of the vehicle and its surrounding components is greater than or equal to 15 mm.

**[00118]** In some embodiments of the present disclosure, as shown in FIG. 13 to FIG. 15, the first reinforcement member 20 includes: a first reinforcement body 21 and a first flange 22 connected to the first reinforcement body 21. In the second direction of the vehicle body assembly 100 (i.e., a Y direction shown in FIG. 10), the first flange 22 is sandwiched between the longitudinal beam body 10 and the sill beam 40.

**[00119]** In the first direction of the vehicle body assembly 100 (i.e., an X direction shown in FIG. 10), the first reinforcement member 20 is disposed at the end of the longitudinal beam body 10 close to the sill beam 40, i.e., the first reinforcement member 20 is arranged at a front end of the longitudinal beam body 10. The first reinforcement member 20 includes the first reinforcement body 21 and the first flange 22. The first reinforcement body 21 is disposed at

the longitudinal beam body 10. The first reinforcement body 21 and the longitudinal beam body 10 may be connected by means including, but not limited to, welding and screwing.

**[00120]** The first reinforcement body 21 and the first flange 22 are connected to each other. In some embodiments of the present disclosure, the first reinforcement body 21 and the first flange 22 may be integrally formed, i.e., the first reinforcement member 20 is an integrally molded part. In the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), the first flange 22 is sandwiched between the longitudinal beam body 10 and the sill beam 40. In an exemplary embodiment of the present disclosure, the first flange 22 is sandwiched between the longitudinal beam body 10 and the rear sill segment 480 of the sill beam 40. In some embodiments of the present disclosure, in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10) and from an outer side to an inner side of the vehicle, the rear sill segment 480, the first flange 22, and the longitudinal beam body 10 are arranged sequentially.

**[00121]** In some embodiments of the present disclosure, the first flange 22 may extend in the height direction of the vehicle body assembly 100 (i.e., a Z direction shown in FIG. 10). For example, as shown in FIG. 14, the first flange 22 may extend downward in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 10).

**[00122]** It should be noted that the end of the longitudinal beam body 10 close to the sill beam 40 may serve as a mounting site of a rear suspension of the vehicle. For example, the end of the longitudinal beam body 10 close to the sill beam 40 may serve as the mounting site of the rear suspension trailing arm of the vehicle. By arranging the first reinforcement member 20 at the end of the longitudinal beam body 10 close to the sill beam 40, dynamic stiffness of the rear suspension mounting site of the vehicle can be improved. Moreover, by sandwiching the first flange 22 between the longitudinal beam body 10 and the rear sill segment 480 of the sill beam 40, relative arrangement positions of the longitudinal beam body 10, the rear sill segment 480, and the first reinforcement member 20 can be made reasonable, and the dynamic stiffness of the rear suspension mounting site of the vehicle can be effectively improved.

**[00123]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two, and the number of sill beams 40 may be two. In the second direction of

the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), the two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other, and the two sill beams 40 may be arranged opposite to each other and spaced apart from each other. Moreover, the two longitudinal beam bodies 10 may be arranged in one-to-one correspondence with the two sill beams 40. Each longitudinal beam body 10 may be provided with the first reinforcement member 20.

**[00124]** Therefore, by arranging the first reinforcement member 20 at the end of the longitudinal beam body 10 close to the sill beam 40 and sandwiching the first flange 22 between the longitudinal beam body 10 and the sill beam 40, the dynamic stiffness of the rear suspension mounting site of the vehicle can be improved, and a structural design of the vehicle body assembly 100 can be made reasonable, which is beneficial to the improvement of the NVH performance of the vehicle, thereby enhancing the driving experience and the riding experience of the vehicle.

**[00125]** In some embodiments of the present disclosure, as shown in FIG. 10 to FIG. 11, the vehicle body assembly 100 further includes a first extension beam 30 connected to the longitudinal beam body 10. The first extension beam 30 corresponds to the first reinforcement member 20 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10).

**[00126]** The first extension beam 30 is connected to the longitudinal beam body 10 and extends in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10). Moreover, a plane is defined to be perpendicular to the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), i.e., a normal line of the plane is parallel to the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10). An overlapping region exists between an orthographic projection of the first extension beam 30 on the plane and an orthographic projection of the first reinforcement member 20 on the plane.

**[00127]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two. The two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other. The first extension beam 30 may be connected between the two longitudinal beam bodies 10, i.e., the first extension beam 30 is a cross beam

structure connected between the two longitudinal beam bodies 10.

**[00128]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two. The two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other. Each longitudinal beam body 10 may be provided with a first extension beam 30. The first extension beam 30 disposed at one of the two longitudinal beam bodies 10 may extend towards the other one of the two longitudinal beam bodies 10. A cross beam structure may be connected between the two first extension beams 30.

**[00129]** By providing the first extension beam 30 and making the first extension beam 30 correspond to the first reinforcement member 20 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), stress at the first reinforcement member 20 can be transversely transmitted through the first extension beam 30, which is beneficial to an improvement in dynamic stiffness of the rear suspension mounting site of the vehicle in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10) and the improvement of the NVH performance of the vehicle.

**[00130]** In some embodiments of the present disclosure, as shown in FIG. 10, FIG. 11 and FIG. 13 to FIG. 16, the vehicle body assembly 100 further includes: a second reinforcement member 50 and a third reinforcement member 60. The longitudinal beam body 10 defines a second receiving cavity 11. The third reinforcement member 60 is disposed in the second receiving cavity 11. Moreover, the first reinforcement member 20 is spaced apart from the third reinforcement member 60 in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10). The second reinforcement member 50 is partially located above the first reinforcement member 20 and connected to the third reinforcement member 60.

**[00131]** In some embodiments of the present disclosure, as shown in FIG. 10, FIG. 13, FIG. 15, and FIG. 16, the longitudinal beam body 10 may include a longitudinal beam bottom plate 16 and a longitudinal beam flange 15 disposed at each of two sides of the longitudinal beam bottom plate 16 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10). The longitudinal beam flanges 15 may extend upward, and the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15 may together define

the second receiving cavity 11.

**[00132]** The third reinforcement member 60 is disposed in the second receiving cavity 11 and is capable of being connected to the longitudinal beam body 10. In the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the third reinforcement member 60 is located behind the first reinforcement member 20 and spaced apart from the first reinforcement member 20. In some embodiments of the present disclosure, the third reinforcement member 60 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15. For example, the third reinforcement member 60 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15 by welding.

**[00133]** In the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 10), a part of the structure of the second reinforcement member 50 is located above the first reinforcement member 20. The second reinforcement member 50 is connected to the longitudinal beam body 10 and the first reinforcement member 20, and is also connected to the third reinforcement member 60.

**[00134]** In some embodiments of the present disclosure, in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the front end of the second reinforcement member 50 is connected to the first reinforcement member 20, and a rear end of the second reinforcement member 50 is connected to the third reinforcement member 60.

**[00135]** By providing the second reinforcement member 50 and locating a part of the structure of the second reinforcement member 50 above the first reinforcement member 20, the stress on the first reinforcement member 20 and the longitudinal beam body 10 can be transmitted upward through the second reinforcement member 50, which is beneficial to an improvement in dynamic stiffness of the rear suspension mounting site of the vehicle in the height direction of the vehicle body assembly 100 (i.e., the Z direction shown in FIG. 10). Moreover, by providing the third reinforcement member 60 spaced apart from the first reinforcement member 20, connecting the front end of the second reinforcement member 50 to the first reinforcement member 20, and connecting the rear end of the second reinforcement member 50 to the third reinforcement member 60, the first reinforcement member 20, the second reinforcement member 50, and the third reinforcement member 60 can be connected

sequentially in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10). In this way, dynamic stiffness of the rear suspension mounting site of the vehicle in the first direction of the vehicle body assembly 100 can be significantly improved, which is beneficial to the improvement of the NVH performance of the vehicle.

**[00136]** In addition, by connecting the first reinforcement member 20, the second reinforcement member 50, and the third reinforcement member 60 sequentially in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), rear crash performance of the vehicle can be improved, which is beneficial to an improvement in safety of the vehicle.

**[00137]** In some embodiments of the present disclosure, as shown in FIG. 11, FIG. 15, and FIG. 16, the vehicle body assembly 100 further includes a fourth reinforcement member 70 disposed in the second receiving cavity 11. In the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the fourth reinforcement member 70 is disposed at a side of the third reinforcement member 60 away from the first reinforcement member 20 and connected to the third reinforcement member 60.

**[00138]** The fourth reinforcement member 70 is disposed in the second receiving cavity 11. In some embodiments of the present disclosure, the fourth reinforcement member 70 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15. For example, the fourth reinforcement member 70 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15 by welding.

**[00139]** In the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the fourth reinforcement member 70 is disposed behind the third reinforcement member 60, i.e., at the side of the third reinforcement member 60 away from the first reinforcement member 20. Moreover, the fourth reinforcement member 70 is connected to the third reinforcement member 60.

**[00140]** By locating the fourth reinforcement member 70 at the side of the third reinforcement member 60 away from the first reinforcement member 20 and connecting the fourth reinforcement member 70 to the third reinforcement member 60, the first reinforcement member 20, the second reinforcement member 50, the third reinforcement member 60, and the fourth reinforcement member 70 can be connected sequentially in the first direction of the

vehicle body assembly 100 (i.e., the X direction shown in FIG. 10). In this way, the dynamic stiffness of the rear suspension mounting site of the vehicle in the first direction of the vehicle body assembly 100 can be more significantly improved, which is beneficial to the improvement of the NVH performance of the vehicle.

**[00141]** In addition, by connecting the first reinforcement member 20, the second reinforcement member 50, the third reinforcement member 60, and the fourth reinforcement member 70 sequentially in the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), crash performance of the vehicle can be effectively improved, which is beneficial to the improvement of the safety of the vehicle.

**[00142]** In some embodiments of the present disclosure, as shown in FIG. 11, FIG. 15, and FIG. 16, the vehicle body assembly 100 further includes a second mounting member 701 disposed in the second receiving cavity 11 and extending through the fourth reinforcement member 70. The second mounting member 701 is adapted to be cooperatively assembled with the rear suspension of the vehicle.

**[00143]** The second mounting member 701 is disposed in the second receiving cavity 11, and may be connected to the longitudinal beam body 10. Moreover, the second mounting member 701 extends through and is connected to the fourth reinforcement member 70. In some embodiments of the present disclosure, the fourth reinforcement member 70 may have a hole corresponding to the second mounting member 701, to enable the second mounting member 701 to extend through the fourth reinforcement member 70.

**[00144]** In some embodiments of the present disclosure, the longitudinal beam bottom plate 16 of the longitudinal beam body 10 may have the hole corresponding to the second mounting member 701, to facilitate the engagement and assembling of the second mounting member 701 with the rear suspension of the vehicle. In some embodiments of the present disclosure, the second mounting member 701 may serve as a front mounting site of the rear suspension of the vehicle. In some embodiments of the present disclosure, the second mounting member 701 may be constructed as a threaded pipe.

**[00145]** By providing the second mounting member 701, the mounting site can be provided for the rear suspension of the vehicle. Moreover, by making the second mounting member 701 extend through and be connected to the fourth reinforcement member 70, dynamic stiffness of

the front mounting site of the rear suspension of the vehicle can be improved, and the structural design of the vehicle body assembly 100 can be made reasonable, which is beneficial to the improvement of the NVH performance of the vehicle. In this way, the driving experience and the riding experience of the vehicle can be enhanced.

**[00146]** In some embodiments of the present disclosure, as shown in FIG. 10, FIG. 12, FIG. 15, and FIG. 16, the vehicle body assembly 100 further includes a fifth reinforcement member 71 disposed in the second receiving cavity 11. In the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the fifth reinforcement member 71 is disposed at a side of the fourth reinforcement member 70 away from the first reinforcement member 20.

**[00147]** The fifth reinforcement member 71 is disposed in the second receiving cavity 11. In some embodiments of the present disclosure, the fifth reinforcement member 71 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15. For example, the fifth reinforcement member 71 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15 by welding.

**[00148]** In the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the fifth reinforcement member 71 is disposed behind the fourth reinforcement member 70, i.e., the fifth reinforcement member 71 is disposed at an end of the fourth reinforcement member 70 away from the first reinforcement member 20. In some embodiments of the present disclosure, the fifth reinforcement member 71 is spaced apart from the fourth reinforcement member 70.

**[00149]** By providing the fifth reinforcement member 71, the structural strength of the longitudinal beam body 10 can be improved, and the dynamic stiffness of the rear suspension mounting site of the vehicle can be enhanced.

**[00150]** In some embodiments of the present disclosure, as shown in FIG. 12, FIG. 15, and FIG. 16, the vehicle body assembly 100 further includes a third mounting member 711 disposed in the second receiving cavity 11 and extending through the fifth reinforcement member 71. The third mounting member 711 is adapted to be cooperatively assembled with the rear suspension of the vehicle.

**[00151]** The third mounting member 711 is disposed in the second receiving cavity 11, and

may be connected to the longitudinal beam body 10. Moreover, the third mounting member 711 extends through and is connected to the fifth reinforcement member 71. In some embodiments of the present disclosure, the fifth reinforcement member 71 may have a hole corresponding to the third mounting member 711, enabling the third mounting member 711 to extend through the fifth reinforcement member 71.

**[00152]** In some embodiments of the present disclosure, the longitudinal beam bottom plate 16 of the longitudinal beam body 10 may have the hole corresponding to the third mounting member 711, to facilitate the engagement and assembling of the third mounting member 711 with the rear suspension of the vehicle. In some embodiments of the present disclosure, the second mounting member 701 may serve as a rear mounting site of the rear suspension of the vehicle. In some embodiments of the present disclosure, the third mounting member 711 may be constructed as a threaded pipe.

**[00153]** By providing the third mounting member 711, the mounting site can be provided for the rear suspension of the vehicle. Moreover, by making the third mounting member 711 extend through and be connected to the fifth reinforcement member 71, dynamic stiffness of the rear mounting site of the rear suspension of the vehicle can be improved, and the structural design of the vehicle body assembly 100 can be made reasonable, which is beneficial to the improvement of the NVH performance of the vehicle. In this way, the driving experience and the riding experience of the vehicle can be enhanced.

**[00154]** In some embodiments of the present disclosure, as shown in FIG. 10, FIG. 15, and FIG. 16, the vehicle body assembly 100 further includes: a second extension beam 31 and a third extension beam 32. The second extension beam 31 and the third extension beam 32 are connected to the longitudinal beam body 10. In the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), the second extension beam 31 corresponds to the fourth reinforcement member 70, and the third extension beam 32 corresponds to the fifth reinforcement member 71.

**[00155]** The second extension beam 31 and the third extension beam 32 are connected to the longitudinal beam body 10 and extend in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10).

**[00156]** Moreover, in the second direction of the vehicle body assembly 100 (i.e., the Y

direction shown in FIG. 10), the second extension beam 31 corresponds to the fourth reinforcement member 70. In other words, a plane is defined to be perpendicular to the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), i.e., a normal line of the plane is parallel to the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10). An overlapping region exists between an orthographic projection of the second extension beam 31 on the plane and an orthographic projection of the fourth reinforcement member 70 on the plane.

**[00157]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two. The two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other. The second extension beam 31 may be connected between the two longitudinal beam bodies 10, i.e., the second extension beam 31 is a cross beam structure connected between the two longitudinal beam bodies 10.

**[00158]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two. The two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other. Each longitudinal beam body 10 may be provided with a second extension beam 31. The second extension beam 31 disposed at one of the two longitudinal beam bodies 10 may extend towards the other one of the two longitudinal beam bodies 10. A cross beam structure may be connected between the two second extension beams 31.

**[00159]** By providing the second extension beam 31 and making the second extension beam 31 correspond to the fourth reinforcement member 70 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), stress at the fourth reinforcement member 70 can be transversely transmitted through the second extension beam 31, which is beneficial to the improvement of the dynamic stiffness of the rear suspension mounting site of the vehicle in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10) and the improvement of the NVH performance of the vehicle.

**[00160]** In the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), the third extension beam 32 corresponds to the fifth reinforcement member 71. In other words, a plane is defined to be perpendicular to the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), i.e., a normal line of

the plane is parallel to the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10). An overlapping region exists between an orthographic projection of the third extension beam 32 on the plane and an orthographic projection of the fifth reinforcement member 71 on the plane.

**[00161]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two. The two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other. The third extension beam 32 may be connected between the two longitudinal beam bodies 10, i.e., the third extension beam 32 is a cross beam structure connected between the two longitudinal beam bodies 10.

**[00162]** In some embodiments of the present disclosure, the number of longitudinal beam bodies 10 may be two. The two longitudinal beam bodies 10 may be arranged opposite to each other and spaced apart from each other. Each longitudinal beam body 10 may be provided with a third extension beam 32. The third extension beam 32 disposed at one of the two longitudinal beam bodies 10 may extend towards the other one of the two longitudinal beam bodies 10, and a cross beam structure may be connected between the two third extension beams 32.

**[00163]** By providing the third extension beam 32 and making the third extension beam 32 correspond to the fifth reinforcement member 71 in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10), stress at the fifth reinforcement member 71 can be transversely transmitted through the third extension beam 32, which is beneficial to the improvement of the dynamic stiffness of the rear suspension mounting site of the vehicle in the second direction of the vehicle body assembly 100 (i.e., the Y direction shown in FIG. 10) and the improvement of the NVH performance of the vehicle.

**[00164]** In some embodiments of the present disclosure, as shown in FIG. 10, FIG. 12, FIG. 15, and FIG. 16, the vehicle body assembly 100 further includes a sixth reinforcement member 72 disposed in the second receiving cavity 11 and located between the fourth reinforcement member 70 and the fifth reinforcement member 71.

**[00165]** The sixth reinforcement member 72 is disposed in the second receiving cavity 11 of the longitudinal beam body 10. In some embodiments of the present disclosure, the sixth reinforcement member 72 is connected to the longitudinal beam bottom plate 16 and the

longitudinal beam flanges 15. For example, the sixth reinforcement member 72 is connected to the longitudinal beam bottom plate 16 and the longitudinal beam flanges 15 by welding.

**[00166]** In the first direction of the vehicle body assembly 100 (i.e., the X direction shown in FIG. 10), the sixth reinforcement member 72 is disposed between the fourth reinforcement member 70 and the fifth reinforcement member 71, and is spaced apart from the fourth reinforcement member 70 and the fifth reinforcement member 71. That is, the sixth reinforcement member 72 is located at the side of the fourth reinforcement member 70 away from the first reinforcement member 20, and is located at a side of the fifth reinforcement member 71 close to the first reinforcement member 20.

**[00167]** In some embodiments of the present disclosure, the sixth reinforcement member 72 is adapted to correspond to a rear suspension spring of the vehicle.

**[00168]** By providing the sixth reinforcement member 72, the structural strength of the longitudinal beam body 10 can be improved, and the dynamic stiffness of the rear suspension mounting site of the vehicle can be enhanced. Moreover, by making the sixth reinforcement member 72 correspond to the rear suspension spring of the vehicle, it is beneficial to ensuring the stiffness of the mounting site of the rear suspension spring of the vehicle.

**[00169]** In some embodiments of the present disclosure, each of the fourth reinforcement member 70 and the fifth reinforcement member 71 may be constructed as a structure in the shape of a "几" character.

**[00170]** In some embodiments of the present disclosure, as shown in FIG. 18 and FIG. 19, the vehicle body assembly 100 may further include a first connection member 45.

**[00171]** The reinforcement beam 42 is disposed in the first receiving cavity 41, and the first connection member 45 may be at least partially located in the first receiving cavity 41. In some embodiments of the present disclosure, a part of a structure of the first connection member 45 may be located in the first receiving cavity 41, and another part of the structure of the first connection member 45 may be located between the inner panel connection plate 432 and the outer panel connection plate 442.

**[00172]** The first connection member 45 is connected between the sill beam 40 and the reinforcement beam 42. By providing the first connection member 45, the reinforcement beam 42 can be firmly fixed in the first receiving cavity 41. When the vehicle is subjected to a

side collision, the first connection member 45 can constrain a position of the reinforcement beam 42. When a collision force is small, the reinforcement beam 42 will not intrude towards the inner side of the vehicle due to the constraint of the first connection member 45. When the collision force is large, an intrusion amount of the reinforcement beam 42 towards the inner side of the vehicle can be reduced due to the constraint of the first connection member 45, which is beneficial to the improvement of an impact resistance capacity of the vehicle. Moreover, in the first direction of the vehicle (i.e., an X-direction shown in FIG. 17, the length direction of the vehicle), the first connection member 45 is disposed at each of two ends of the reinforcement beam 42. By providing the two first connection members 45, it is beneficial to the constraint on the position of the reinforcement beam 42.

**[00173]** As shown in FIG. 19 and FIG. 20, a spacing distance between the two first connection members 45 is F1, where 400mm≤F1≤500mm. That is, in the first direction of the vehicle (i.e., an X-direction shown in FIG. 20), the spacing distance between the two first connection members 45 may be any value ranging from 400 mm to 500 mm. For example, F1 may be, but not limited to, 400 mm, 450 mm, 500 mm, or the like. With such an arrangement, the spacing distance between the two first connection members 45 can be made reasonable, which is beneficial to the constraint on the position of the reinforcement beam 42.

**[00174]** The spacing distance between the two first connection members 45 may be understood as a minimum spacing distance between the two first connection members 45 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), i.e., a distance between an end of one of the first connection members 45 close to the other one of the first connection members 45 and an end of the other one of the first connection members 45 close to the one of the two first connection members 45 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17). Alternatively, the spacing distance between the two first connection members 45 may be understood as a maximum spacing distance between the two first connection members 45 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), i.e., a distance between an end of the one of the two first connection members 45 away from the other one of the first connection members 45 and an end of the other one of the first connection members 45 away from the one of the two first connection members 45 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17). Alternatively, (as shown

in FIG. 20, for example) the spacing distance between the two first connection members 45 may be understood as a distance between a midpoint of one of the first connection members 45 and a midpoint of the other one of the first connection members 45 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17).

**[00175]** Therefore, by disposing the first connection member 45 at each of the two ends of the reinforcement beam 42 and connecting the first connection members 45 between the sill beam 40 and the reinforcement beam 42, when the vehicle is subjected to a side collision, the first connection members 45 is capable of fixing the reinforcement beam 42, which can reduce an intrusion amplitude of the reinforcement beam 42 towards the inner side of the vehicle, thus can reliably protect a passenger in a passenger compartment of the vehicle, and is beneficial to the improvement of the safety of the vehicle.

**[00176]** In some embodiments of the present disclosure, as shown in FIG. 19 and FIG. 20, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 20), a length of the reinforcement beam 42 may be F2, and F1 and F2 may satisfy: $1.36 \leq F2/F1 \leq 1.45$. That is, F2/F1 may be any value ranging from 1.36 to 1.45. For example, F2/F1 may be, but not limited to, 1.36, 1.40, 1.45, or the like. As a specific embodiment of the present disclosure, the length of the reinforcement beam 42 may be 630 mm, and the spacing distance between the two first connection members 45 is 450 mm, i.e., F2/F1 may be 1.4. With such an arrangement, a reasonable proportional relationship between the length F2 of the reinforcement beam 42 and the spacing distance F1 between the two first connection members 45 can be achieved, such that the first connection members 45 can firmly fix the reinforcement beam 42 in the first receiving cavity 41, which is beneficial to the constraint on the position of the reinforcement beam 42.

**[00177]** In some embodiments of the present disclosure, as shown in FIG. 19 and FIG. 20, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), the length of the reinforcement beam 42 may be F2, where $580\text{mm} \leq F2 \leq 680\text{mm}$. That is, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), the length of the reinforcement beam 42 may be any value ranging from 580 mm to 680 mm. For example, F2 may be, but not limited to, 580 mm, 630 mm, 680 mm, or the like. With such an arrangement, the length of the reinforcement beam 42 can be made reasonable, which is beneficial to the improvement of

the safety of the vehicle.

**[00178]** In some embodiments of the present disclosure, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), the length of the reinforcement beam 42 may be adjusted based on a wheelbase of the vehicle, which can improve a generalization degree of the reinforcement beam 42.

**[00179]** In some embodiments of the present disclosure, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), the length of the reinforcement beam 42 is smaller than a length of the sill beam 40. With such an arrangement, it is beneficial to saving of a material of the reinforcement beam 42 and the lightweight design of the vehicle.

**[00180]** In some embodiments of the present disclosure, as shown in FIG. 18 and FIG. 19, the first connection member 45 may include a first connection plate 451 and a second connection plate 452 connected to the first connection plate 451. An angle may be formed between the first connection plate 451 and the second connection plate 452. In some embodiments of the present disclosure, a cross-section of the first connection member 45 may be constructed as an L-like shape, i.e., the angle between the first connection plate 451 and the second connection plate 452 may be 90° or approximately 90°. The first connection plate 451 may be connected to the reinforcement beam 42, and the second connection plate 452 may be connected to the sill beam 40. In some embodiments of the present disclosure, the first connection plate 451 and the second connection plate 452 may be integrally formed.

**[00181]** In some embodiments of the present disclosure, the first connection plate 451 may be connected to a top wall of the reinforcement beam 42. The second connection plate 452 may be connected to the inner panel connection plate 432 of the inner sill panel 43. Alternatively, the second connection plate 452 may be connected to the inner panel connection plate 432 of the inner sill panel 43 and the outer panel connection plate 442 of the outer sill panel 44. For example, the second connection plate 452 may be disposed between the inner panel connection plate 432 and the outer panel connection plate 442. With such an arrangement, a reasonable structural form of the first connection member 45 can be achieved, which can firmly connect the reinforcement beam 42 and the sill beam 40 together.

**[00182]** As shown in FIG. 18, the second connection plate 452 may have a notch 4521 that may extend through the second connection plate 452 in a thickness direction of the second

connection plate 452. In the embodiment where the second connection plate 452 is disposed between the inner panel connection plate 432 and the outer panel connection plate 442, by forming the notch 4521 on the second connection plate 452, the inner panel connection plate 432 and the outer panel connection plate 442 can be directly connected by welding through the notch 4521. Moreover, the second connection plate 452 can be directly connected to the inner panel connection plate 432 and the outer panel connection plate 442 by welding, such that any two of the inner panel connection plate 432, the outer panel connection plate 442, and the second connection plate 452 have a direct connection relationship, which is beneficial to an improvement in connection firmness between the reinforcement beam 42 and the sill beam 40.

**[00183]** In some embodiments of the present disclosure, as shown in FIG. 19, each of the second connection plate 452 and/or the first connection plate 451 may be provided with a reinforcement rib 4522. In some embodiments of the present disclosure, each of the second connection plate 452 and/or the first connection plate 451 may have a first lightening hole 4523.

**[00184]** In some embodiments of the present disclosure, as shown in FIG. 18 and FIG. 19, the vehicle body assembly 100 may further include a second connection member 46 that may be located in the first receiving cavity 41 and connected between the sill beam 40 and the reinforcement beam 42. By providing the second connection member 46, the sill beam 40 and the reinforcement beam 42 can be connected, which can firmly fix the reinforcement beam 42 in the first receiving cavity 41. When the vehicle is subjected to a side collision, the second connection member 46 can constrain the position of the reinforcement beam 42. When the collision force is small, the reinforcement beam 42 will not intrude towards the inner side of the vehicle due to the constraint of the second connection member 46. When the collision force is large, the intrusion amount of the reinforcement beam 42 towards the inner side of the vehicle can be reduced due to the constraint of the second connection member 46, which is beneficial to the improvement of the impact resistance capacity of the vehicle.

**[00185]** The second connection member 46 is disposed at each of the two ends of the reinforcement beam 42 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17). By providing the two second connection members 46, it is beneficial to the constraint on

the position of the reinforcement beam 42.

**[00186]** In the height direction of the vehicle (i.e., a Z-direction shown in FIG. 21), an overlapping region exists between an orthographic projection of the first connection member 45 and an orthographic projection of the second connection member 46.

**[00187]** In some embodiments of the present disclosure, a plane is defined to be perpendicular to the height direction of the vehicle (i.e., the Z-direction shown in FIG. 21), i.e., a normal line of the plane is parallel to the height direction of the vehicle (i.e., the Z-direction shown in FIG. 21). An overlapping region exists between an orthographic projection of the front one of the two first connection members 45 on the plane and an orthographic projection of the front one of the two second connection members 46 on the plane. An overlapping region exists between an orthographic projection of the rear one of the two first connection members 45 on the plane and an orthographic projection of the rear one of the two second connection members 46 on the plane. With such an arrangement, reasonable arrangement positions of the first connection member 45 and the second connection member 46 can be achieved, and a space of the first receiving cavity 41 can be fully utilized. Moreover, mounting firmness of the reinforcement beam 42 can be greatly increased, which can reliably protect the passenger in the passenger compartment of the vehicle and is beneficial to the improvement of the safety of the vehicle.

**[00188]** Any two of the length direction of the vehicle (i.e., the X-direction shown in FIG. 17), the width direction of the vehicle (i.e., the Y-direction shown in FIG. 17), and the height direction of the vehicle (i.e., the Z-direction shown in FIG. 21) are perpendicular to each other.

**[00189]** In some embodiments of the present disclosure, as shown in FIG. 19 and FIG. 20, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), a spacing distance between the two second connection members 46 may be F3, and F1 and F3 may satisfy: $0.8 \leq F3/F1 \leq 0.84$. That is, F3/F1 may be any value ranging from 0.8 to 0.84. For example, F3/F1 may be, but not limited to, 0.8, 0.82, 0.84, or the like. As a specific embodiment of the present disclosure, the spacing distance between the two first connection members 45 is 450 mm, and the spacing distance between the two second connection members 46 is 370 mm, i.e., F3/F1 may be 0.82. With such an arrangement, a reasonable proportional relationship between

the spacing distance F3 between the two second connection members 46 and the spacing distance F1 between the two first connection members 45 can be achieved, such that the first connection members 45 and the second connection members 46 can firmly fix the reinforcement beam 42 in the first receiving cavity 41, which is beneficial to the improvement of the impact resistance capacity of the vehicle.

**[00190]** In some embodiments of the present disclosure, as shown in FIG. 19 and FIG. 20, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), the spacing distance between the two second connection members 46 may be F3, where 320mm≤F3≤420mm. That is, in the first direction of the vehicle (i.e., the X-direction shown in FIG. 20), the spacing distance between the two second connection members 46 may be any value ranging from 320 mm to 420 mm. For example, F3 may be, but not limited to, 320 mm, 370 mm, 420 mm, or the like. With such an arrangement, the spacing distance between the two second connection members 46 can be made reasonable, which can firmly fix the reinforcement beam 42 in the first receiving cavity 41, and thus can further improve the impact resistance capacity of the vehicle.

**[00191]** The spacing distance between the two second connection members 46 may be understood as a minimum spacing distance between the two second connection members 46 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), i.e., a distance between an end of the one of the two second connection members 46 close to the other one of the two second connection members 46 and an end of the other one of the two second connection members 46 close to the one of the two second connection members 46 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17). Alternatively, the spacing distance between the two second connection members 46 may be understood as a maximum spacing distance between the two second connection members 46 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17), i.e., a distance between an end of the one of the second connection member 46 away from the other one of the second connection member 46 and an end of the other one of the second connection member 46 away from the one of the second connection member 46 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17). Alternatively, (as shown in FIG. 20, for example) the spacing distance between the two second connection members 46 may be understood as a distance between a midpoint

of the one of the two second connection members 46 and a midpoint of the other one of the two second connection members 46 in the first direction of the vehicle (i.e., the X-direction shown in FIG. 17).

**[00192]** In some embodiments of the present disclosure, as shown in FIG. 18 and FIG. 19, the second connection member 46 may include a connection member body 461, a first connection flange 462, and a second connection flange 463. Both the first connection flange 462 and the second connection flange 463 may be connected to the connection member body 461. In some embodiments of the present disclosure, the connection member body 461, the first connection flange 462, and the second connection flange 463 may be integrally formed.

**[00193]** The connection member body 461 may be connected to the reinforcement beam 42, the first connection flange 462 may be connected to a bottom wall of the first receiving cavity 41, and the second connection flange 463 may be connected to an inner side wall 411 of the first receiving cavity 41. In some embodiments of the present disclosure, the connection member body 461 may be connected to a bottom wall of the reinforcement beam 42, the first connection flange 462 may be connected to a bottom wall of the inner panel body 431 of the inner sill panel 43, and the second connection flange 463 may be connected to the inner side wall 411 of the first receiving cavity 41. The inner side wall 411 of the first receiving cavity 41 may be understood as a side wall of the inner panel body 431 of the inner sill panel 43.

**[00194]** With such an arrangement, it is possible to make a structural form of the second connection member 46 reasonable, allow the second connection member 46 to have a connection relationship with the reinforcement beam 42, the bottom wall of the first receiving cavity 41, and the inner side wall 411 of the first receiving cavity 41, and thus firmly connect the reinforcement beam 42 and the sill beam 40 together.

**[00195]** In some embodiments of the present disclosure, the connection manner between the outer sill panel 44 and the inner sill panel 43, the connection manner between the first connection member 45 and the reinforcement beam 42, the connection manner between the first connection member 45 and the sill beam 40, the connection manner between the second connection member 46 and the reinforcement beam 42, and the connection manner between the second connection member 46 and the sill beam 40 may be, but not limited to, welding, bolting, riveting, or the like.

**[00196]** In some embodiments of the present disclosure, as shown in FIG. 18 and FIG. 19, the connection member body 461 may include a first plate body 4611, a second plate body 4612, and a third plate body 4613. The first plate body 4611 and the third plate body 4613 are arranged opposite to each other and spaced apart from each other. The second plate body 4612 is connected between the first plate body 4611 and the third plate body 4613. In an exemplary embodiment of the present disclosure, an end of the second plate body 4612 may be connected to the first plate body 4611, and the other end of the second plate body 4612 may be connected to the third plate body 4613. In some embodiments of the present disclosure, the first plate body 4611, the second plate body 4612, and the third plate body 4613 may be integrally formed. The second plate body 4612 may be connected to the reinforcement beam 42. In some embodiments of the present disclosure, the second plate body 4612 may be connected to the bottom wall of the reinforcement beam 42.

**[00197]** In some embodiments of the present disclosure, both the first plate body 4611 and the third plate body 4613 may extend in the height direction of the vehicle (i.e., the Z-direction shown in FIG. 21) and in a direction away from the reinforcement beam 42. That is, the first plate body 4611, the second plate body 4612, and the third plate body 4613 may be constructed as a structure in the shape of a "几" character. With such an arrangement, it is possible to allow the second connection member 46 to have a high structural strength.

**[00198]** The first connection flange 462 may be disposed at an end of the first plate body 4611 away from the second plate body 4612, or an end of the third plate body 4613 away from the second plate body 4612, or each of the end of the first plate body 4611 away from the second plate body 4612 and the end of the third plate body 4613 away from the second plate body 4612. In some embodiments of the present disclosure, the first connection flange 462 may be disposed at each of the end of the first plate body 4611 away from the second plate body 4612 and the end of the third plate body 4613 away from the second plate body 4612. With such an arrangement, it is possible to allow the second connection member 46 to have more first connection flanges 462, and improve connection firmness between the second connection member 46 and the sill beam 40.

**[00199]** The second connection flange 463 may be disposed at a side edge of the first plate body 4611, or a side edge of the third plate body 4613, or each of the side edge of the first

plate body 4611 and the side edge of the third plate body 4613. In some embodiments of the present disclosure, the second connection flange 463 may be disposed at each of the side edge of the first plate body 4611 and the side edge of the third plate body 4613. With such an arrangement, it is possible to allow the second connection member 46 to have more second connection flanges 463, and further improve the connection firmness between the second connection member 46 and the sill beam 40.

**[00200]** It can be understood that the second connection member 46 may be supported between the reinforcement beam 42 and the sill beam 40.

**[00201]** In some embodiments of the present disclosure, each of the second plate body 4612 and/or the first connection flange 462 may have a first lightening hole 4523.

**[00202]** In some embodiments of the present disclosure, each of the first connection member 45 and the second connection member 46 may be a cold stamping member.

**[00203]** In some embodiments of the present disclosure, the second connection member 46 is arranged corresponding to a battery pack mounting point of the sill beam 40.

**[00204]** In some embodiments of the present disclosure, as shown in FIG. 17 and FIG. 18, an overlapping region exists between the orthographic projection of the first connection member 45 and an orthographic projection of the seat mounting cross beam 199 of the vehicle in the second direction of the vehicle (i.e., the Y-direction shown in FIG. 17).

**[00205]** In an exemplary embodiment of the present disclosure, a plane is defined to be perpendicular to the second direction of the vehicle (i.e., the Y-direction shown in FIG. 17). That is, the normal line of the plane is parallel to the second direction of the vehicle (i.e., the Y-direction shown in FIG. 17). The overlapping region exists between the orthographic projection of the first connection member 45 and the orthographic projection of the seat mounting cross beam 199 of the vehicle. The seat mounting cross beam 199 may include a front-seat front mounting cross beam 1 and a front-seat rear mounting cross beam 2. An overlapping region exists between an orthographic projection of the front one of the two first connection members 45 on the plane and an orthographic projection of the front-seat front mounting cross beam 1 on the plane. An overlapping region exists between an orthographic projection of the rear one of the two first connection members 45 on the plane and the orthographic projection of the front-seat rear mounting cross beam 2 on the plane. When the

vehicle is subjected to a side collision, the seat mounting cross beam 199 is capable of effectively supporting the first connection members 45, which can reduce a probability of the reinforcement beam 42 further intruding towards the inner side of the vehicle and into the passenger compartment, thus can reliably protect the passenger in the passenger compartment of the vehicle, and is beneficial to the improvement of the safety of the vehicle.

**[00206]** It should be explained that in the present disclosure, the height direction of the vehicle body assembly 100 is the same as the height direction of the vehicle, the first direction of the vehicle body assembly 100 is the same as the first direction of the vehicle, and the second direction of the vehicle body assembly 100 is the same as the second direction of the vehicle.

**[00207]** The vehicle according to the embodiments of the present disclosure includes the vehicle body assembly 100 according to the above embodiments. By forming the second avoidance hole 14, the rear suspension trailing arm of the vehicle can be avoided, and the mounting difficulty of the rear suspension trailing arm can be reduced. By providing the sealing member 80 shielding the second avoidance hole 14, the dynamic stiffness of the mounting point of the rear suspension trailing arm can be improved, which can improve the NVH performance of the vehicle as well as the driving experience and the riding experience of the vehicle.

**[00208]** In the description of the present disclosure, it should be understood that, the orientation or the position indicated by terms such as “center”, “longitudinal”, “lateral”, “length”, “width”, “thickness”, “over”, “below”, “front”, “rear”, “left”, “right”, “vertical”, “horizontal”, “top”, “bottom”, “inner”, “outer”, “clockwise”, “anti-clockwise”, “axial”, “radial”, and “circumferential” should be construed to refer to the orientation and the position as shown in the drawings, and is only for the convenience of describing the present disclosure and simplifying the description, rather than indicating or implying that the associated device or element must have a specific orientation, or be constructed and operated in a specific orientation, and therefore cannot be understood as a limitation of the present disclosure.

**[00209]** In the description of the present disclosure, “the first feature” and “the second feature” may include one or more of these features.

**[00210]** In the description of the present disclosure, “plurality” means two or more.

**[00211]** In the description of the present disclosure, the first feature “on” or “under” the second feature may mean that the first feature is in direct contact with the second feature, or the first and second features are in indirect contact through another feature between the first and second features.

**[00212]** In the description of the present disclosure, the first feature “above” the second feature means that the first feature is directly above or obliquely above the second feature, or simply means that the level of the first feature is higher than that of the second feature.

**[00213]** Throughout this specification, description with reference to “an embodiment”, “some embodiments”, “an illustrative embodiment”, “an example”, “a specific example”, “some examples”, or the like means that a particular feature, structure, material, or characteristic described in connection with the embodiment or example is included in at least one embodiment or example of the present disclosure. The appearances of the above phrases in various places throughout this specification are not necessarily referring to the same embodiment or example of the present disclosure. Further, the particular features, structures, materials, or characteristics described here may be combined in any suitable manner in one or more embodiments or examples.

**[00214]** Although embodiments of the present disclosure have been illustrated and described, it is conceivable for those of ordinary skill in the art that various changes, modifications, replacements, and variations can be made to these embodiments without departing from the principles and spirit of the present disclosure. The scope of the present disclosure shall be defined by the claims as appended and their equivalents.

## CLAIMS

What is claimed is:

1. A vehicle body assembly of a vehicle, comprising:

a longitudinal beam body;

a sill beam connected to the longitudinal beam body and defining a first receiving cavity;

a first mounting member, wherein the longitudinal beam body has a first avoidance hole, the first mounting member being disposed on the longitudinal beam body and corresponding to the first avoidance hole, and the first mounting member being adapted to be cooperatively assembled with a suspension trailing arm of the vehicle;

a sealing member, wherein the longitudinal beam body has a second avoidance hole formed at an end of the longitudinal beam body close to the sill beam, the sealing member being disposed on the longitudinal beam body and corresponding to the second avoidance hole to shield the second avoidance hole, wherein in a height direction of vehicle body assembly, the sealing member being recessed in a direction away from the second avoidance hole; and

a reinforcement beam disposed in the first receiving cavity.

2. The vehicle body assembly of the vehicle according to claim 1, wherein the sealing member has a sealing flange connected to the longitudinal beam body, wherein the sealing flange has a third avoidance hole, the first mounting member passing through the third avoidance hole and being connected to the sealing member.

3. The vehicle body assembly of the vehicle according to claim 1 or 2, further comprising a first reinforcement member disposed on the longitudinal beam body and arranged around the sealing member, the first reinforcement member being connected to the sealing member.

4. The vehicle body assembly of the vehicle according to claim 3, wherein the first reinforcement member comprises a first reinforcement body and a first connection flange connected to the first reinforcement body, the first connection flange extending in the height direction and being connected to the sealing member.

5. The vehicle body assembly of the vehicle according to claim 3 or 4, wherein:

the first reinforcement member is disposed at the end of the longitudinal beam body close to the sill beam in a first direction of the vehicle body assembly; and

the first reinforcement member comprises a first reinforcement body and a first flange connected to the first reinforcement body, wherein the first flange is sandwiched between the longitudinal beam body and the sill beam in a second direction of the vehicle body assembly, the second direction, the first direction, and the height direction being perpendicular to one another.

6. The vehicle body assembly of the vehicle according to any one of claims 3 to 5, further comprising a second reinforcement member partially located above the first reinforcement member in the height direction, wherein the second reinforcement member is connected to the first reinforcement member and the longitudinal beam body.

7. The vehicle body assembly of the vehicle according to claim 6, wherein the second reinforcement member is connected to the first mounting member.

8. The vehicle body assembly according to claim 6, further comprising a third reinforcement member, wherein:

the longitudinal beam body defines a second receiving cavity;

the third reinforcement member is disposed in the second receiving cavity and is spaced apart from the first reinforcement member in a first direction of the vehicle body assembly, the first direction being perpendicular to the height direction;

the second reinforcement member is connected to the third reinforcement member.

9. The vehicle body assembly of the vehicle according to claim 8, further comprising:

a fourth reinforcement member disposed in the second receiving cavity, wherein the fourth reinforcement member is disposed at a side of the third reinforcement member away from the first reinforcement member and connected to the third reinforcement member in the first direction; and

a second mounting member, wherein the first mounting member is disposed in the second receiving cavity and extends through the fourth reinforcement member, and wherein the second mounting member is adapted to be cooperatively assembled with a rear suspension of the vehicle.

10. The vehicle body assembly of the vehicle according to claim 9, further comprising:

a fifth reinforcement member disposed in the second receiving cavity, wherein the fifth reinforcement member is disposed at a side of the fourth reinforcement member away from the first reinforcement member in the first direction; and

a third mounting member disposed in the second receiving cavity and extending through the fifth reinforcement member, wherein the second mounting member is adapted to be cooperatively assembled with the rear suspension of the vehicle.

11. The vehicle body assembly of the vehicle according to claim 10, further comprising:

a first extension beam corresponding to the first reinforcement member in a second direction of the vehicle body assembly, the second direction being perpendicular to the first direction;

a second extension beam corresponding to the fourth reinforcement member in the second direction of the vehicle body assembly; and

a third extension beam corresponding to the fifth reinforcement member in the second direction of the vehicle body assembly,

wherein the first extension beam, the second extension beam, and the third extension beam are each connected to the longitudinal beam body.

12. The vehicle body assembly of the vehicle according to any one of claims 1 to 11, further comprising:

a first connection member connected between the sill beam and the reinforcement beam, wherein the first connection member is disposed at each of two ends of the reinforcement beam in a first direction of the vehicle body assembly.

13. The vehicle body assembly of the vehicle according to claim 12, wherein the first connection member comprises a first connection plate and a second connection plate connected to each other, wherein:

an angle is formed between the first connection plate and the second connection plate;

the first connection plate is connected to the reinforcement beam;

the second connection plate is connected to the sill beam; and

the second connection plate has a notch extending through the second connection plate in a thickness direction of the second connection plate.

14. The vehicle body assembly of the vehicle according to claim 12 or 13, further comprising a second connection member located in the first receiving cavity and connected between the sill beam and the reinforcement beam, wherein the second connection member is disposed at each of the two ends of the reinforcement beam in the first direction, and wherein in the height direction, an overlapping region exists between an orthographic projection of the first connection member and an orthographic projection of the second connection member.

15. A vehicle, comprising the vehicle body assembly of the vehicle according to any one of claims 1 to 14.