Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
BACKGROUND OF THE INVENTION

Description

[Field of the Invention]

[0001] The present invention relates to a straddle type vehicle such as a motorcycle and particularly relates to a technology for fixing a load on this straddle type vehicle.

[Description of the Related Art]

[0002] Conventionally, on a straddle type vehicle such as a motorcycle for example, a load such as a commercially available external bag may be attached to the vehicle body. As methods for this attachment, there are known a method using a fixing band (see, for example, Patent Document 1), a method using a fastener, and the like.

[0003] Further, in a straddle type vehicle having a space in the vicinity of the feet of an occupant, such as a scooter, a load may be mounted on a footboard where the feet of the occupant are placed. For example, Patent Document 2 discloses a structure in which an engagement portion (see "a peg 36 for tying a string") for fixing a load is provided on a side of the footboard for securely fixing a load mounted on the footboard.

[0004] However, the footboard is usually disposed at a low position of the vehicle body, and when the engagement portion for fixing a load is provided on the side of the footboard as described above, the operator (for example, the occupant) who performs an operation of mounting or dismounting the load from above cannot easily see the engagement portion. Thus, there is a concern that workability in operation of mounting or dismounting a load on the vehicle body decreases.

SUMMARY OF THE INVENTION

[0005] Accordingly, the present invention is made in view of the above-described situation, and has an object to increase workability in operation of mounting or dismounting a load on a vehicle body of a straddle type vehicle, by making engagement portions for fixing a load easily viewable.

[0006] A straddle type vehicle according to the present invention has a seat on which an occupant can sit, a pair of right and left footboards provided diagonally below and in front of the seat in a side view of the vehicle body, and allowing the occupant to place his or her feet thereon, a projecting portion provided between the footboards and projecting upward, wherein a pair of right and left engagement portions for fixing a load mounted on the projecting portion is provided on an upper face side of the pair of footboards, a pair of right and left insertion holes in which the engagement portions are inserted is formed in a center portion in the right and left direction of the footboards, and upper edges of the engagement portions are disposed at the same height as the upper faces of the footboards.

[0007] By thus providing the engagement portions for fixing the load to the upper face sides of the footboards, the operator who performs an operation of mounting or dismounting the load from above can easily see the engagement portions, as compared to the case where the engagement portions are provided on sides of the footboards. Thus, workability in operation of mounting or dismounting the load can be increased.

[0008] By employing such a structure, the engagement portions are not exposed above the footboards. Thus, in the case where the engagement portions are not used, or the like, the feet of the occupant would not be caught on the engagement portions, and the riding comfort of the straddle type vehicle improves.

[0009] Each of the engagement portions is provided to be positioned in the vicinity of the plantar arch of a foot of the occupant in a state that the occupant places the foot on the footboard.

[0010] By employing such a structure, contact of the feet of the occupant with the engagement portions is suppressed, and it is possible to alleviate the sense of discomfort during riding.

[Patent Document 2] Japanese Laid-open Patent Publication No. 2-158468 JP 2004-323017 A, on which the preamble of independent claim 1 is based, discloses a structure in which a stay 37 and a floor panel 27 are fixed each other by screwing a bolt 39 located inside a depressed portion of the floor panel 27 with a nut 38. However, the disclosed structure is not constructed to fix a load. Also, even if a fixing member at the load side is engaged with the bolt 39, the feet of the occupant are caught because the fixing member and a fixing belt at the load side are disposed to project on the floor panel 27 because it lacks insertion trenches. JP 2007-30829 A discloses a structure in which footrests 34 are detachably bolt-coupled with a foot-resting floor 9. However, the footrests 34 are projecting totally upward the foot-resting floor 9 and are not suitable for fixing a load. JP S61-58179 U discloses a structure in which side members 3 are welded to plural hook pieces 5 located at a lower part of a foot board 4. However, the feet of the occupant are caught because the fixing member and the fixing belt at the load side are disposed to project on the foot board 4. EP 1 584 550 A2 discloses a structure in which the compartment 1 can be releasely coupled with three sides 17, 18, 19 known as the "central tunnel".
BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Fig. 1 is a left side view illustrating a motorcycle according to one embodiment of the present invention; Fig. 2 is a perspective view illustrating the motorcycle according to one embodiment of the present invention; Fig. 3 is an I-I cross-sectional view of Fig. 1 illustrating a state that feet of an occupant are not mounted on footboards in the motorcycle according to one embodiment of the present invention; Fig. 4 is a plan view illustrating the vicinity of a footboard in the motorcycle according to one embodiment of the present invention; Fig. 5 is a perspective view illustrating the vicinity of the footboard in the motorcycle according to one embodiment of the present invention; Fig. 6 is a perspective view illustrating a bag fixed to the motorcycle according to another different embodiment, not belonging to the invention; Fig. 7 is an I-I cross-sectional view of Fig. 1 illustrating a state that the feet of the occupant are placed on the footboards in the motorcycle according to one embodiment of the present invention; Fig. 8 is a cross-sectional view illustrating a motorcycle according to another different embodiment, not belonging to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] Hereinafter, preferred embodiments of the present invention will be described based on the drawings. Hereinafter, words indicating directions, such as up and down, right and left, front and rear, and the like are used with reference to the direction seen from occupants 2, 3 (see Fig. 1) of a motorcycle 1. Further, unless particularly specified otherwise, when "outside" is described, it indicates an outside in a right and left direction (vehicle width direction), and when "inside" is described, it indicates an inside in the right and left direction (vehicle width direction). Note that an arrow Fr described appropriately in diagrams indicates the front of the motorcycle 1.

[0013] To begin with, the overall structure of the motorcycle 1 as a straddle type vehicle will be described.

[0014] As illustrated in Fig. 1, the motorcycle 1 is what is called a scooter type, and has a body frame 4 forming the framing of the vehicle body. The body frame 4 has a pair of right and left upper frames 5 extending in a front and rear direction, and a pair of right and left lower frames 6 provided below the upper frames 5.

[0015] A front fork 7 is supported on a front end portion of the body frame 4, a front wheel 8 is pivotally supported on a low end of the front fork 7, and a front fender 10 is provided so as to cover an upper side of the front wheel 8. A handlebar 11 is provided on an upper end of the front fork 7.

[0016] A side stand 12 is supported on a low portion of the body frame 4. On a rear portion of the body frame 4, a front end portion of a power unit 13 is supported, a rear wheel 14 is pivotally supported on a rear end portion of the power unit 13, and a rear fender 15 is provided so as to cover an upper side of the rear wheel 14. The rear portion of the body frame 4 is covered with a body cover 16.

[0017] A seat 17 on which the occupant (driver) 2 sits is provided on a rear upper side of the body frame 4, and a passenger's seat 18 on which the occupant (passenger) 3 sits is provided behind the seat 17. A front box 20 is provided in front of the seat 17, and a front box lid 21 is provided on a rear upper portion of the front box 20 to cover an intake port (not illustrated). A pair of right and left footboards 22 (only the footboard 22 on the left side is illustrated in Fig. 1) allowing the occupant 2 to place his or her feet is provided diagonally below and in front of the seat 17, and a pair of right and left passenger's footboards 23 (only the passenger's footboard 23 on the left side is illustrated in Fig. 1) allowing the occupant 3 to place his or her feet is provided behind the footboards 22.

[0018] Next, the vicinity of the pair of right and left footboards 22 will be described in detail.

[0019] Each footboard 22 is inclined rearward and upward forming a low floor shape. Each footboard 22 is located in an intermediate portion between the seat 17 and the front box 20 in the front and rear direction, and is recessed downward in a side view with respect to the seat 17 and the front box 20. Each footboard 22 forms an elongated shape in the front and rear direction (see Fig. 2).

[0020] As illustrated in Fig. 3, each footboard 22 is constituted of a board body 24 in a plate shape and a mat 25 in a plate shape, which is overlaid on the board body 24. As illustrated in Fig. 4, an insertion hole 26 circular in plan view is formed in a center portion in the right and left direction of the board body 24. Further, an insertion trench 27 communicating with the insertion hole 26 is formed in a portion from the center portion in the right and left direction to an inside portion of the mat 25. The insertion trench 27 has an outside portion curved in a semicircular shape.

[0021] As illustrated in Fig. 3, a frame member 28 is provided under the body board 24, and the footboard 22 is supported on this frame member 28. A body side engagement member 30 is fixed detachably in an inside portion of the frame member 28. The body side engagement member 30 is what is called an eyebolt and has its portion of the frame member 28. The body side engagement member 30 is fixed to the frame member 28, and an annular engagement portion 31 is formed on its upper end. The engagement portion 31 is inserted in the insertion hole 26 of the board body 24 and the insertion trench 27 of the mat 25, and is located to an upper face side of the mat 25 (which also corresponds to an upper face side of the entire footboard 22). An upper edge of the engage-
As illustrated in Fig. 3, a projecting portion 32 projecting upward is provided in the center in the right and left direction of the vehicle body between the footboards 22, and the engagement portion 31 is disposed beside this projecting portion 32. The projecting portion 32 is supported from an under side by the pair of right and left upper frames 5, and a housing space 34 for housing a fuel tank 33 is formed below the projecting portion 32. As illustrated in Fig. 5, a body side fastener face 35 is formed in a front portion of the projecting portion 32.

To the motorcycle 1 structured as above, a bag 36 as a load can be secured. This bag 36 will be described below.

As illustrated in Fig. 2, the bag 36 has a bag body 37 in which an item storage space (not illustrated) is formed, and this bag body 37 is mounted on an upper face of the projecting portion 32. As best illustrated in Fig. 6, a bag height adjusting fastener 38 is provided in an upper portion of the bag body 37. A pair of right and left fixing pieces 40 is attached on a front lower portion of the bag body 37. Each fixing piece 40 extends forward and downward, and a bag side fastener face 41 is provided on an inside face of each fixing piece 40. This bag side fastener face 41 is joined detachably to the body side fastener face 35 of the projecting portion 32 (see Fig. 5). Note that Fig. 5 illustrates a state in the course of joining the bag side fastener face 41 to the body side fastener face 35.

As illustrated in Fig. 6, a fixing band 42 is attached on a front portion of each of both right and left side faces of the bag body 37. The fixing band 42 extends downward, and a bag side fixing member 43 is attached to a lower end of the fixing band 42. The bag side fixing member 43 has an attaching portion 44 clamping the lower end of the fixing band 42, a J-shaped hook portion 45 extending downward and outward from one end side of the attaching portion 44 (rear end side in this embodiment), and a fastening portion 46 having a straight bar shape provided on the other end side of the attaching portion 44 (front end side in this embodiment).

The hook portion 45 is engaged detachably with (hooked on) the engagement portion 31 of the body side engagement member 30. As illustrated in Fig. 3, an outside portion of the hook portion 45 is inserted in the insertion trench 27 of the mat 25. On the other hand, an inside portion of the hook portion 45 is slightly exposed to an upper side of the insertion trench 27 of the mat 25. As indicated by two-dot chain lines in Fig. 4, the fastening portion 46 can be engaged with a free end of the hook portion 45 as necessary. That is, the bag side fixing member 43 is what is called a carabiner structure.

In the above-described structure, when the bag 36 is fixed to the motorcycle 1, the bag body 37 is mounted on the projecting portion 32 of the motorcycle 1, and the hook portion 45 of each bag side fixing member 43 is engaged with (hooked on) the engagement portion 31 of each body side engagement member 30, and the bag side fastener face 41 is joined to the body side fastener face 35. Thus, as illustrated in Fig. 1, the bag 36 is fixed at a position sandwiched by legs 49 of the occupant 2 between the seat 17 and the front box 20.

When the bag 36 is fixed thus to the motorcycle 1, as illustrated in Fig. 3, the fixing bands 42 of the bag 36 are disposed along side faces of the projecting portion 32. Further, as illustrated in Fig. 7, when the feet 47 of the occupant 2 are placed on the footboards 22 in a state that the bag 36 is fixed to the motorcycle 1, the engagement portions 31 and the bag side fixing members 43 are located immediately below plantar arches 48 of the feet 47 of the occupant 2 (corresponding to the vicinities of the plantar arches 48 of the feet 47 of the occupant 2). Note that if the fixing bands 42 move in this state, the hook portions 45 are locked by the feet 47 of the occupant 2 to restrict floating of the hook portions 45. Thus, a positional displacement or the like of the fixing bands 42 is difficult to occur, and the fixing state of the bag 36 can be maintained securely.

In this embodiment, the engagement portions 31 for fixing the bag 36 are provided on the upper face sides of the footboards 22, and thus the operator who performs an operation of mounting or dismounting the bag 36 from above can easily see the engagement portions 31, as compared to the case where the engagement portions 31 are provided on sides of the footboards 22. Thus, workability in operation of mounting or dismounting the bag 36 can be increased.

Further, since it is structured to hook the hook portion 45 of the bag side fixing member 43 attached to each fixing band 42 to the engagement portion 31 of the body side engagement member 30, the fixing band 42 need not be tied on the motorcycle body, and thus the operation of mounting or dismounting the bag 36 becomes much easier. Further, since the surrounding of the engagement portion 31 is guided by the board body 24, a problem of positional displacement or the like of the engagement portion 31 is difficult to occur even if the feet 47 of the occupant 2 come in contact with the engagement portion 31.

Further, when the projecting portion 32 is provided between the footboards 22 as in this embodiment, if the engagement portions 31 are provided on the sides of the footboards 22, the fixing bands 42 coupling the bag body 37 mounted on the projecting portion 32 and the bag side fixing members 43 traverse above the footboards 22. Accordingly, it is difficult for the occupant 2 to place his or her feet 47 on the footboards 22, and there is a concern that riding comfort is impaired. However, in this embodiment, since the engagement portions 31 are provided in the respective centers in the right and left
direction of the footboards 22, the fixing bands 42 do not traverse above the footboards 22, and there is no concern that riding comfort is impaired by the fixing bands 42. Note that when easiness of placing the feet 47 of the occupant 2 on the footboards 22 is considered, it is preferred that each engagement portions 31 be provided in a center portion in the right and left direction of the footboard 22 or provided more inside than the center portion in the right and left direction.

[0032] Further, by inserting each engagement portion 31 in the insertion hole 26 of the board body 24 and the insertion trench 27 of the mat 25, the upper edge of the engagement portion 31 is disposed at substantially the same height as an upper face of the mat 25, and the engagement portion 31 is not exposed above the mat 25 (see Fig. 3). Accordingly, in the case where the engagement portions 31 are not used, or the like, the feet 47 of the occupant 2 would not be caught on the engagement portions 31, and the riding comfort of the motorcycle 1 improves. Further, since not only the engagement portion 31 but also the outside portion of the hook portion 45 of the bag side fixing member 43 is inserted in the insertion trench 27, it is difficult for the feet 47 of the occupant 2 to be caught on the bag side fixing members 43, and thus the riding comfort of the motorcycle 1 improves further.

[0033] Moreover, since the engagement portions 31 are located immediately below the plantar arches 48 of the feet 47 of the occupant 2 in a state that the occupant 2 places his or her feet 47 on the footboards 22, contact of the feet 47 of the occupant 2 with the engagement portions 31 is suppressed, and it is possible to alleviate the sense of discomfort during riding. Further, in a state that the occupant 2 places his or her feet 47 on the footboards 22, not only the engagement portions 31 but also the most parts of the bag side fixing members 43 are located immediately below the plantar arches 48 of the feet 47 of the occupant 2, and hence contact of the feet 47 of the occupant 2 with the bag side fixing members 43 can be prevented. Accordingly, it is possible to further alleviate the sense of discomfort during riding.

[0034] The case where each engagement portion 31 is disposed in the center portion in the right and left direction of the footboard 22 has been described in this embodiment, but in another different embodiment not belonging to the invention, the upper edge of the engagement portion 31 may be disposed at a position lower than the upper face of the mat 25. In this case, the same operation and effect as those in this embodiment can be exhibited by providing the insertion trench 27 in the upper face of the board body 24.

[0035] The case where each engagement portion 31 is disposed at substantially the same height as an upper face of the mat 25 has been described in this embodiment, but in another different embodiment, the engagement portion 31 may be formed of a hook (not illustrated) to be fixed to the frame member 28, or the engagement portion 31 may be formed by deforming a part of the frame member 28.

[0036] The case where each engagement portion 31 is disposed in the center portion in the right and left direction of the footboard 22, but in another different embodiment, the body side engagement member 30 may be fixed to the frame member 28 located inside the projecting portion 32, thereby disposing the engagement portion 31 along the side face of the projecting portion 32. That is, “the upper face side of the footboard 22” need not always be in contact with the footboard 22 as long as it is not a lateral side or lower side of the footboard 22.

[0037] The case where part of the board body 24 and the mat 25 has been described in this embodiment, but in another different embodiment, the footboard 22 may be formed only of the board body 24. In this case, the same operation and effect as those in this embodiment can be exhibited by providing the insertion trench 27 in the upper face of the board body 24.

[0038] The case where the upper edge of the engagement portion 31 is disposed at substantially the same height as the upper face of the mat 25 has been described in this embodiment, but in another different embodiment not belonging to the invention, the upper edge of the engagement portion 31 may be disposed at a position lower than the upper face of the mat 25. In this case, catching of the feet 47 of the occupant 2 on the engagement portion 31 can be prevented more effectively.

[0039] Although it is neither illustrated nor described in this embodiment, when the engagement portion 31 is not in use, it is preferred that the insertion trench 27 be covered with a cover (not illustrated) which covers the engagement portion 31. By employing such a structure, the engagement portion 31 can be hidden when not in use, which improves its appearance, and clogging of foreign matters such as sands or dirt in the insertion hole 26 or the insertion trench 27 is prevented, which improves component durability. Further, it is preferred that the above-described cover be formed integrally with the mat 25, and by employing such a structure, losing of the cover can be prevented.

[0040] The case where part of the bag side fixing member 43 (outside part of the hook portion 45) is inserted in the insertion trench 27 of the mat 25 has been described in this embodiment, but in another different embodiment, the entire bag side fixing member 43 may be inserted in the insertion trench 27.

[0041] The case where both the fastener mechanism (see the body side fastener face 35 and the bag side
fastener face 41) and the hook mechanism (see the engagement portion 31 and the hook portion 45) are used to fix the bag 36 securely to the motorcycle 1 has been described in this embodiment. On the other hand, in another different embodiment, a load such as a bag may be fixed to the motorcycle 1 by using only the hook mechanism.

[0042] The case where the structure of the present invention is applied to the motorcycle 1 of scooter type has been described in this embodiment, but in another different embodiment, the structure of the present invention may be applied to another different straddle type vehicle such as an electric wheelchair, an off-road traveling vehicle, a personal watercraft, or the like.

[0043] According to the present invention, it is possible to increase workability in operation of mounting or dismounting a load on a vehicle body of a straddle type vehicle, by making the engagement portions for fixing a load easily viewable.

[0044] It should be noted that the above embodiments merely illustrate concrete examples of implementing the present invention, and the technical scope of the present invention is not to be construed in a restrictive manner by these embodiments.

Claims

1. A straddle type vehicle (1) comprising a seat (17) on which an occupant can sit, a pair of right and left footboards (22) provided diagonally below and in front of the seat (17) in a side view of the vehicle body, and allowing the occupant to place his or her feet thereon, a projecting portion (32) provided between the footboards (22) and projecting upward, a pair of right and left engagement portions (31) for fixing a load (36) mounted on the projecting portion (32), provided on an upper face side of the pair of footboards (22), characterized in that a pair of right and left insertion holes (26) in which the engagement portions (31) are inserted is formed in a center portion in the right and left direction of the footboards (22), a pair of right and left insertion trenches (27) communicating with the insertion holes (26) and in which the engagement portions (31) are inserted is formed in a portion from the center portion in the right and left direction to an inside portion of the upper face of the footboards (22), and upper edges of the engagement portions (31) are disposed at the same height as the upper faces of the footboards (22).

2. The straddle type vehicle (1) according to claim 1, wherein each of the engagement portions (31) is provided to be positioned in the vicinity of the plantar arch of a foot of the occupant in a state that the occupant places the foot on the footboard (22).
(26) dans laquelle les parties de mise en prise (31) sont insérées, est formée dans une partie centrale dans la direction droite et gauche des repose-pieds (22), une paire de tranchées d’insertion droite et gauche (27) communiquant avec les trous d’insertion (26) et dans laquelle les parties de mise en prise (31) sont insérées, est formée dans une partie allant de la partie centrale dans la direction droite et gauche jusqu’à une partie intérieure de la face supérieure des repose-pieds (22), et des bords supérieurs des parties de mise en prise (31) sont disposés à la même hauteur que les faces supérieures des repose-pieds (22).

2. Véhicule de type à selle (1) selon la revendication 1, dans lequel chacune des parties de mise en prise (31) est prévue pour être positionnée à proximité de la voûte plantaire d’un pied de l’occupant dans un état dans lequel l’occupant met le pied sur le repose-pied (22).
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

• JP 61058179 U [0003]
• EP 1584550 A2 [0003]