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(54) Disposing structure of cable

(57) A disposing structure of a cable includes a hood release cable having an inner wire one end of which is coupled to a lock mechanism provided in a vehicle body and the other end is operable in a cabin and an outer

tube which covers a periphery of the inner wire so as to be able to relatively displace the inner wire, wherein the hood release cable is partially fixed to the vehicle body and has a slack portion between the lock mechanism and the cabin.

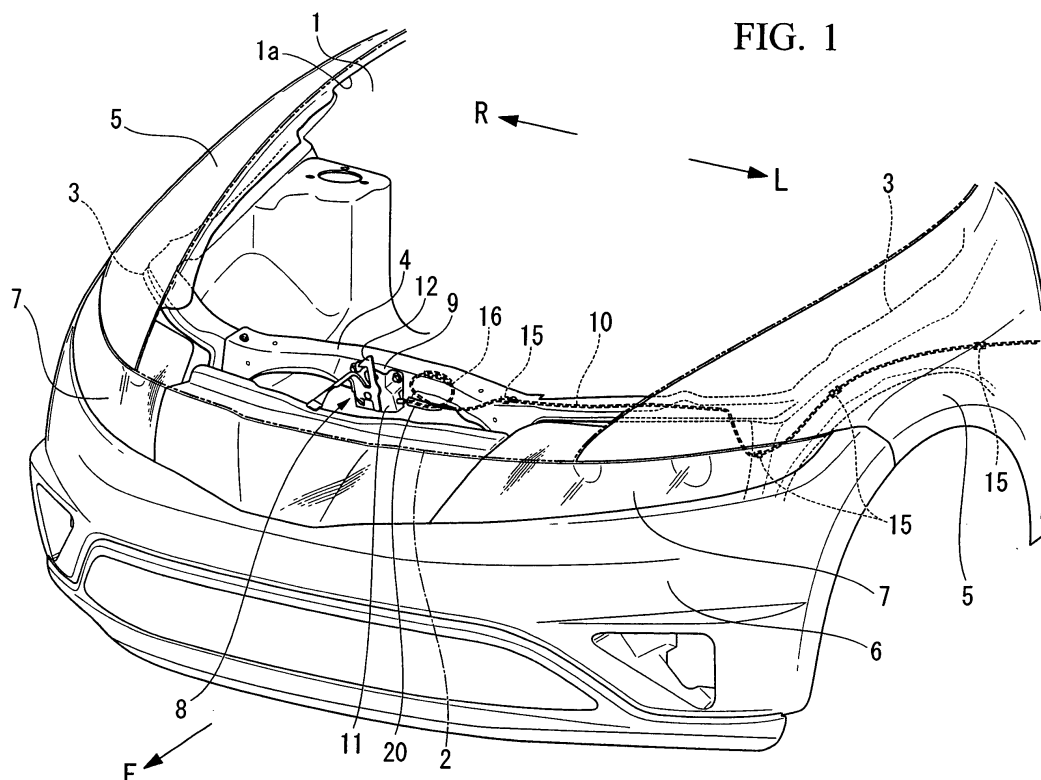


FIG. 1

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a disposing structure of a cable including a hood release cable which releases a lock mechanism of a hood of a vehicle.

Description of the Related Art

[0002] A lock mechanism is provided on an engine hood of a vehicle, and is operated in a cabin via a hood release cable. The hood release cable includes an inner wire and an outer tube. An end of the inner wire is coupled to the lock mechanism and the other end is coupled to a lever provided in the cabin. The outer tube covers the periphery of the inner wire so as to be able to relatively displace the inner wire. The hood release cable is disposed along a frame member or a panel member which surrounds an engine room of the vehicle and is fixed to these members so as to have no slack as a whole.

[0003] The lock mechanism is cancelled by pulling the inner wire in a state in which the outer tube of the hood release cable is reliably fixed to the vehicle. However, there is a possibility that the fixation of the outer tube near the lock mechanism is cancelled by an outer force due to deformation of the frame member or the panel member if the vehicle is in a collision.

[0004] For solving this problem, a disposing structure of a hood release cable including a detachment prevention mechanism for the outer tube is known (see, for example, Japanese Unexamined Patent Application, First Publication No. 2004-76574).

[0005] However, since this conventional disposing structure prevents the detachment of the outer tube by the detachment prevention mechanism if the vehicle is in a collision, it is difficult to stand an entire load when the outer tube is strongly pulled by the great deformation of the vehicle body, though it can stand a small load applied to the outer tube.

[0006] That is, when the outer tube is bound, for example, between the frame member and a component in the engine room such as a battery during a collision of the vehicle, there is a possibility that the outer tube is strongly pulled in accordance with the deformation of the frame member. In this case, the detachment prevention mechanism may be deformed or broken. When the detachment prevention mechanism is deformed or broken, the inner wire is pulled with the outer tube, and there is a possibility that the lock mechanism is unintentionally cancelled.

SUMMARY OF THE INVENTION

[0007] An object of the present invention is to provide a disposing structure of a cable including a hood release

cable which can reliably prevent an unintentional canceling of a lock mechanism if a vehicle is in a collision.

[0008] A first aspect of the present invention is a disposing structure of a cable including a hood release cable having an inner wire one end of which is coupled to a lock mechanism provided in a vehicle body and the other end is operable in a cabin and an outer tube which covers a periphery of the inner wire so as to be able to relatively displace the inner wire, wherein the hood release cable is partially fixed to the vehicle body and has a slack portion between the lock mechanism and the cabin.

[0009] According to the aforementioned constitution, the slack portion is pulled when the hood release cable is pulled toward the inside of the vehicle body by a collision of the vehicle. As a result, a pulling load to the lock mechanism is cancelled.

[0010] A plurality of portions of the slack portion may be fixed to the vehicle body. In this case, though the slack portion is usually fixed to the vehicle body in its initial state, it is made straight between the fixed portions by the pulling load toward the inside of the vehicle body if the vehicle is in a collision.

[0011] The slack portion may be formed by winding a portion of the hood release cable. In this case, portions of the hood release cable adjacent to the slack portion can be disposed straight and a sufficient length of the portion which is made straight if the vehicle is in a collision can be secured.

[0012] The disposing structure of a cable of the present invention may further include a cushioning member disposed at a portion of the slack portion where the hood release cable crosses. In this case, friction at the position where the hood release cable crosses can be prevented.

[0013] A portion of a first section which is a portion of the hood release cable nearer the lock mechanism than the slack portion and the vehicle body may sandwich a second section which is a portion of the hood release cable further from the lock mechanism than the slack portion. In this case, the second section can be reliably fixed between the first section and the vehicle body.

[0014] When a length of the hood release cable is defined as L, a length from the lock mechanism to the slack portion may be within 0.1 L to 0.3 L.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

FIG. 1 is a perspective view of a vehicle having a disposing structure of a cable according to an embodiment of the present invention.

FIG. 2 is an enlarged perspective view of a main portion of the embodiment.

FIG. 3 is an enlarged bottom view of the main portion of the embodiment.

FIG. 4 is an enlarged bottom view of a portion, which is identical to the portion shown in FIG. 3, of another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0016] An embodiment of the present invention shall be described below with reference to FIGS. 1 to 3. In the following description, the term "front", "right", and "left" are defined with reference to a traveling direction of a vehicle unless a different definition is presented. In these drawings, an arrow F is directed to front, and arrows R and L are respectively directed to right and left.

[0017] FIG. 1 shows a vehicle having a disposing structure of a cable of the present invention. In FIG. 1, reference numeral 1 indicates an engine room provided in a front portion of a vehicle body, and reference numeral 2 indicates a hood which opens and closes an opening 1a of the engine room 1. The hood 2 is coupled to the vehicle body with a hinge. A rear end of the opening 1a functions as a rotational axis of the hood 2.

[0018] An upper half of the engine room 1 is constituted of side members 3 and a bulkhead upper frame 4. The side members 3 are disposed at right and left sides of the front of the vehicle, and the bulkhead upper frame 4 couples the front ends of the side members 3. A front fender 5, a front bumper 6, and a headlamp 7 or the like are fixed to the side members 3 via support members (not illustrated). A radiator (not illustrated) is fixed to the bulkhead upper frame 4.

[0019] A hood lock device 8 for locking the hood 2 in a closed state is provided between the front end of the hood 2 and the bulkhead upper frame 4. The hood lock device 8 includes a striker (not illustrated), a lock mechanism 9, and a hood release cable 10. The striker is provided on the lower side of the front end of the hood 2, and the lock mechanism 9 locks the hood 2 to close by engaging with the striker. An end of the hood release cable 10 coupled to the lock mechanism 9, and the lock made by the lock mechanism 9 is cancelled by pulling the other end of the hood release cable 10 in a cabin of the vehicle.

[0020] Since the lock mechanism 9 has a known structure, the detailed description thereof is omitted. Once the lock mechanism 9 engages with the striker, the lock is maintained unless the hood release cable is pulled.

[0021] In a case 11 of the lock mechanism 9, a push-up mechanism (not illustrated) for biasing the front end of the hood 2 to the upper direction by a spring is housed. As shown in FIGS. 2 and 3, a latch 12 having a hook 12a and a lever 12b, each of which is approximately L-shaped, is rotatably mounted on the case 11. The push-up member assists an operator to open the hood 2 by slightly lifting the front end of the hood 2 when the lock mechanism 9 is cancelled. The latch 12 regulates the opening of the hood 2 by the hook 12a engaging with an engaging portion (not illustrated) of the hood 2 until the lever 12b is turned by the operator.

[0022] As shown in FIG. 3 as partially exposed, the hood release cable 10 includes an inner wire 13 made of metal and an outer tube 14. An end of the inner wire 13 is coupled to an operating portion of the lock mechanism 9 and the other end thereof is coupled to a lever (not illustrated) provided in the cabin. The outer tube 14 covers a periphery of the inner wire 13 so as to be able to displace the inner wire 13. The lock made by the lock mechanism 9 is cancelled by pulling the inner wire 13 by operating the lever.

[0023] The hood release cable 10 extends from the lock mechanism 9 towards the left side of the vehicle along the lower surface of the bulkhead upper frame 4 and the side surface of the side member 3 on the left side of the vehicle body, and enters the cabin. A plurality of portions of the hood release cable 10 are fixed to the bulkhead upper frame 4 and the side member 3 by members such as clips as shown in FIG. 1 (reference numeral 15 indicates the fixed portions). A slack portion 16 which is singly wound below the bulkhead upper frame 4 is provided in the hood release cable 10 near the lock mechanism 9. When the length of the hood release cable 10 is defined as L, it is preferable to provide the slack portion 16 so that the length of the portion of the hood release cable 10 between the lock mechanism 9 and the slack portion 16 is within 0.1 L to 0.3 L because the slack portion 16 is sufficiently near the lock mechanism 9 and easy for maintenance

[0024] A portion of the hood release cable 10 between the lock mechanism 9 and the slack portion 16 is defined as a first section 17, and a portion of the hood release cable 10 between the slack portion 16 and the cabin is defined as a second section 18. The slack portion 16 is maintained in its initial form so that each axis of the sections 17 and 18 is aligned substantially straight, and is mounted on the lower surface of the bulkhead upper frame 4.

[0025] As shown in FIG. 3, the slack portion 16 is formed substantially oval as a whole and is deformed so that the first section 17 and the second section 18 are substantially aligned. In this state, symmetrical positions in the oval of the slack portion 16 are fixed on the lower surface of the bulkhead upper frame 4 by a pair of clips 19. In the hood release cable 10, a first transiting portion from the first section 17 to the slack portion 16 is looped over a second transiting portion from the slack portion 16 to the second section 18 (lower of the vehicle body). The displacement of the second transiting portion is accordingly prevented. That is, since the first transiting portion is fixed to the bulkhead upper frame 4 by a portion of the lock mechanism 9 and the clips 19, the displacement of the second transiting portion can be prevented by being inserted between the first transiting portion and the bulkhead upper frame 4.

[0026] A cushioning member 20 covers the periphery of the first transiting portion, and friction at the portion where the hood release cable 10 crosses can be prevented by the cushioning member 20. A cushioning member 20a which is identical to the cushioning member 20 is provided at a position substantially symmetrical to the position where the cable 10 crosses for preventing friction with a step portion 21 of the bulkhead upper frame 4.

[0027] A cushioning member 20 covers the periphery of the first transiting portion, and friction at the portion where the hood release cable 10 crosses can be prevented by the cushioning member 20. A cushioning member 20a which is identical to the cushioning member 20 is provided at a position substantially symmetrical to the position where the cable 10 crosses for preventing friction with a step portion 21 of the bulkhead upper frame 4.

[0027] In the vehicle having the present embodiment, the slack portion 16 of the hood release cable 10 is fixed to the lower surface of the bulkhead upper frame 4 at points away from each other in the axial direction. Therefore, the form of the slack portion 16 can reliably be maintained at the fixed position on the bulkhead upper frame 4 when there is no collision. The operation of the lever in the cabin for canceling the lock can reliably be transmitted to the lock mechanism 9. Especially in the present embodiment, since the first section near the lock mechanism 9 sandwiches the second section 18 with the bulkhead upper frame 4, the form of the slack portion 16 can be reliably maintained.

[0028] The food release cable 10 is bound by surrounding members when the bulkhead upper frame 4 deforms due to a collision. When the outer tube 14 and the inner wire 13 are pulled together in the aforementioned condition, the slack portion 16 of the hood release cable 10 is extended by a pulling load. Since the pulling load is accordingly not transmitted from the inner wire 13 to the lock mechanism 9, an unintentional canceling of the lock made by the lock mechanism 9 can be reliably prevented.

[0029] Since the slack portion 16 is formed by winding a portion of the hood release cable 10 in the disposing structure of the present embodiment, the first section 17 and the second section 18, which are in the vicinity of the slack portion 16, can be aligned substantially straight. Therefore, the hood release cable 10 can easily be disposed on the lower surface of the bulkhead upper frame 4 in the same manner as when the cable 10 does not have a slack portion 16. Since a sufficient length of slack can be secured by providing the wound slack portion 16, the unintentional canceling of the lock mechanism 9 during a collision can be reliably prevented.

[0030] In addition, since the cushioning member 20 is provided at the position where the hood release cable 10 crosses, wear of the cable 10 due to the vibration of the vehicle can be prevented. The endurance of the cable 10 thus can be improved.

[0031] While preferred embodiments of the invention have been described and illustrated above, it should be understood that these are exemplary of the invention and are not to be considered as limiting. Additions, omissions, substitutions, and other modifications can be made without departing from the spirit or scope of the present invention. For example, though the present embodiment is applied to a left hand drive vehicle, it is also applicable to a right hand drive vehicle. When the lock mechanism 9 is commonly used in both cases of the left hand drive vehicle and the right hand drive vehicle, a slack portion 116 may be formed by turning the cable 10 to form an approximately U-shaped turning having an arc as shown in FIG. 4. The slack portion 116 may be fixed on the lower surface of the bulkhead upper frame 4 by the clips 19 or the like. In FIG. 4, identical components in the embodiment shown in FIGS. 1 to 3 have the same reference numerals.

[0032] Accordingly, the invention is not to be considered as being limited by the foregoing description, and is only limited by the scope of the appended claims.

Claims

1. A disposing structure of a cable, comprising a hood release cable (10) having:
 - an inner wire (13) one end of which is coupled to a lock mechanism (9) provided in a vehicle body and the other end is operable in a cabin; and
 - an outer tube (14) which covers a periphery of the inner wire (13) so as to be able to relatively displace the inner wire (14), wherein
 the hood release cable (10) is partially fixed to the vehicle body and has a slack portion (16, 116) between the lock mechanism (9) and the cabin.
2. The disposing structure of a cable according to claim 1, wherein a plurality of portions of the slack portion (16, 116) is fixed to the vehicle body.
3. The disposing structure of a cable according to any one of claims 1 and 2, wherein the slack portion (16) is formed by winding a portion of the hood release cable (10).
4. The disposing structure of a cable according to any of the preceding claims, further comprising a cushioning member (20) disposed at a portion of the slack portion (16) where the hood release cable (10) crosses.
5. The disposing structure of a cable according to any one of claims 1 to 4, wherein a portion of a first section (17) which is a portion of the hood release cable (10) nearer the lock mechanism (9) than the slack portion (16) and the vehicle body sandwich a second section (18) which is a portion of the hood release cable (10) further from the lock mechanism (9) than the slack portion (16).
6. The disposing structure of a cable according to any one of claims 1 to 5, wherein when a length of the hood release cable (10) is defined as L, a length from the lock mechanism (9) to the slack portion (16) is within 0.1 L to 0.3 L.

FIG. 1

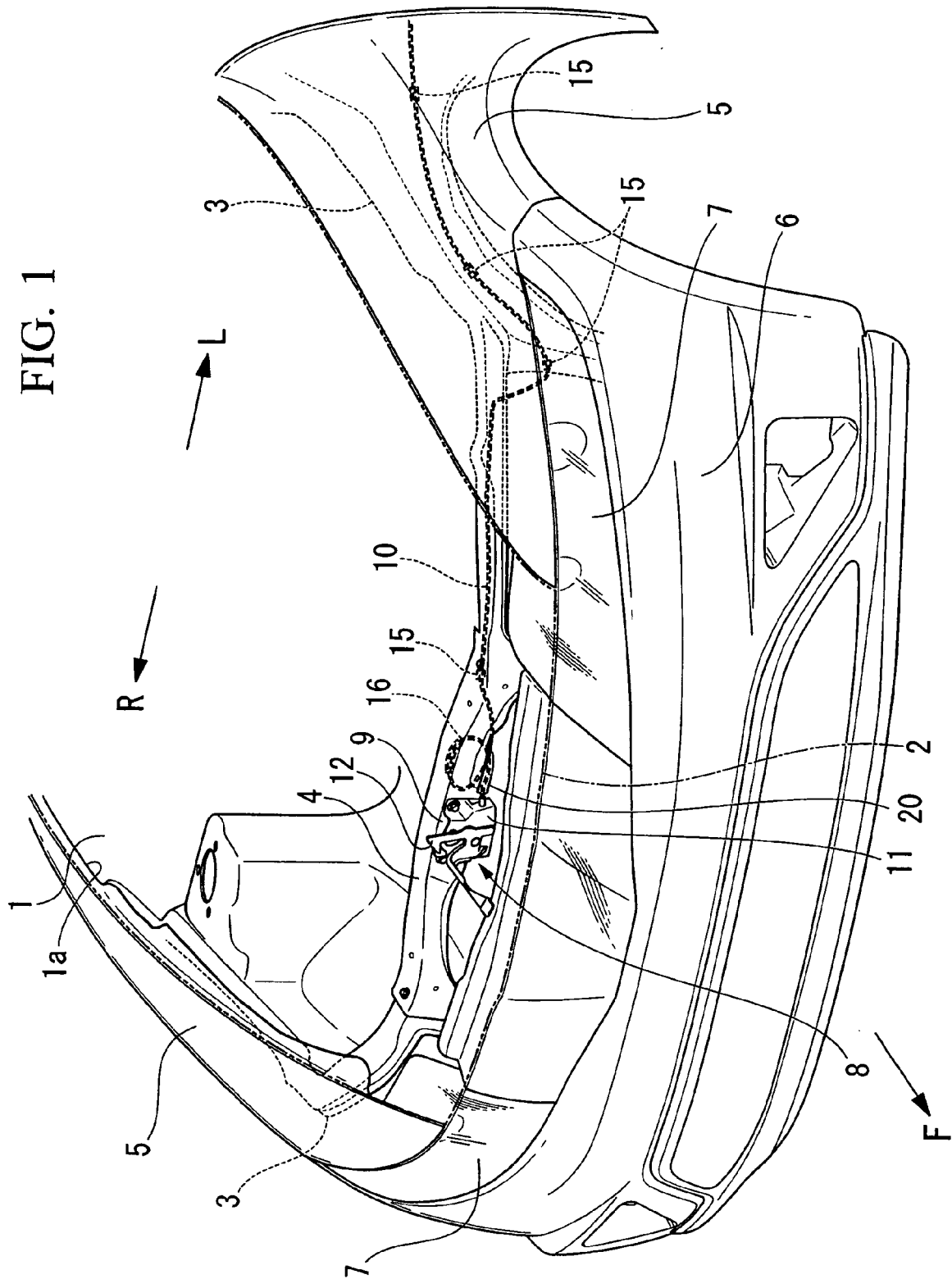


FIG. 2

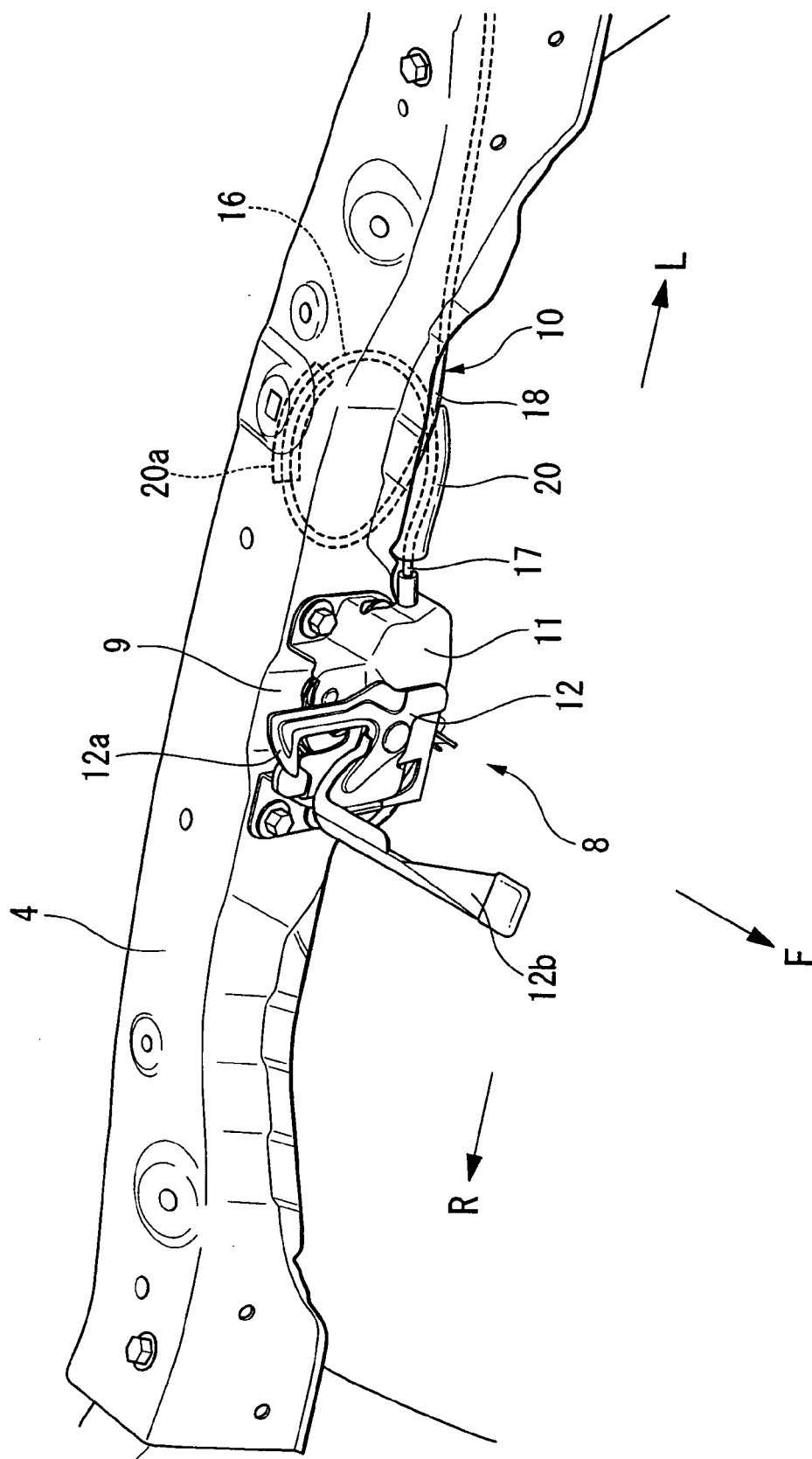


FIG. 3

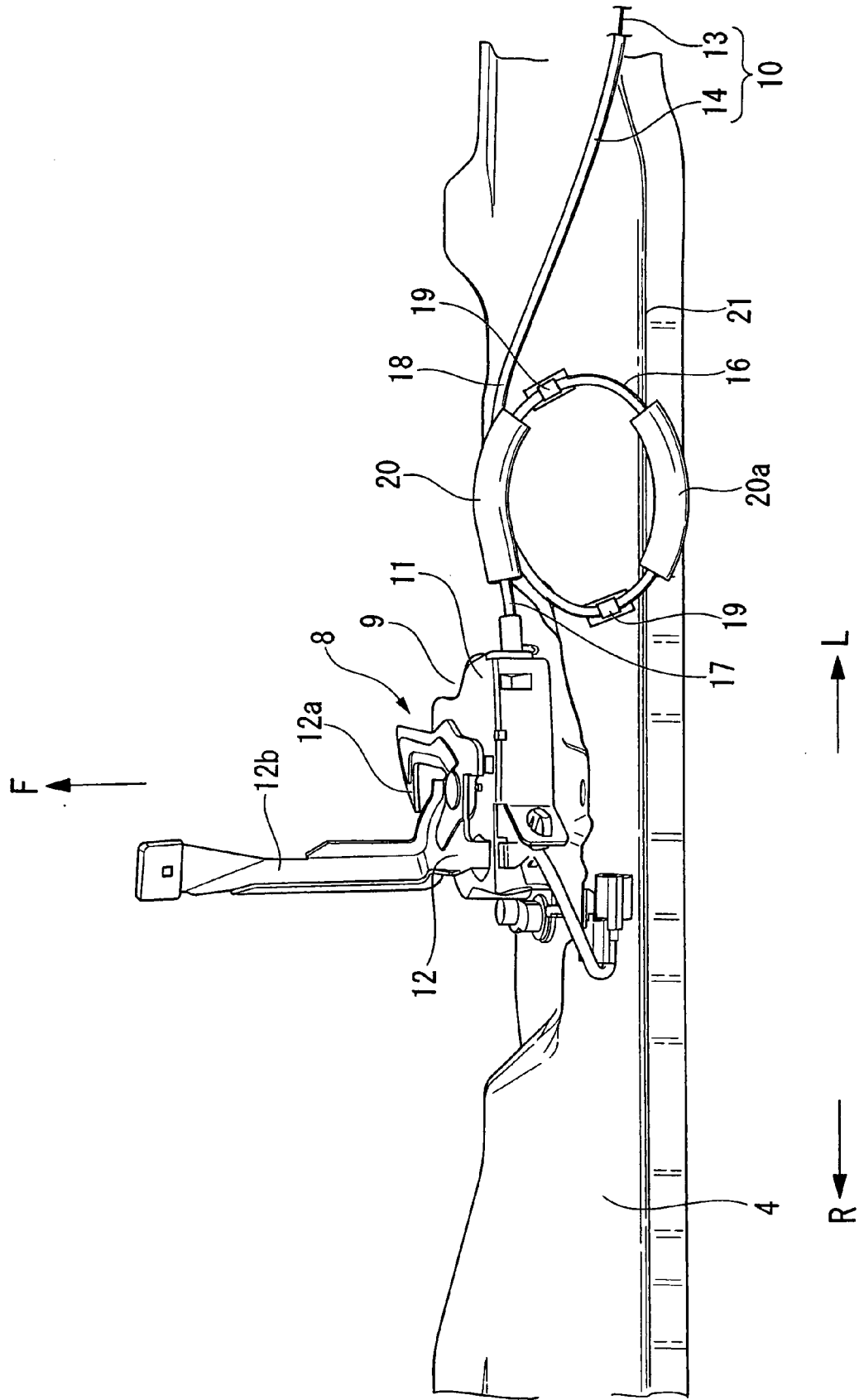
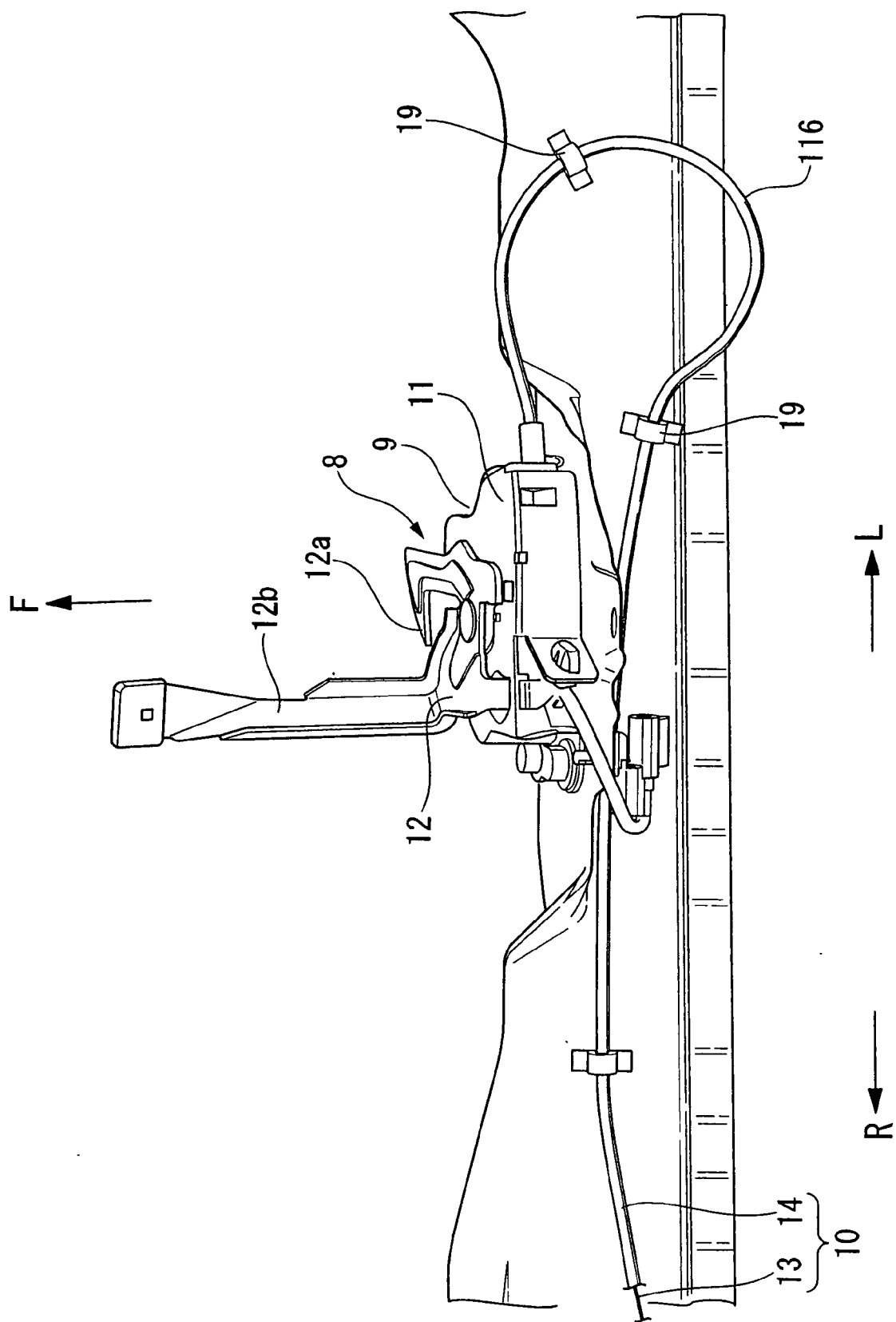


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2004076574 A [0004]