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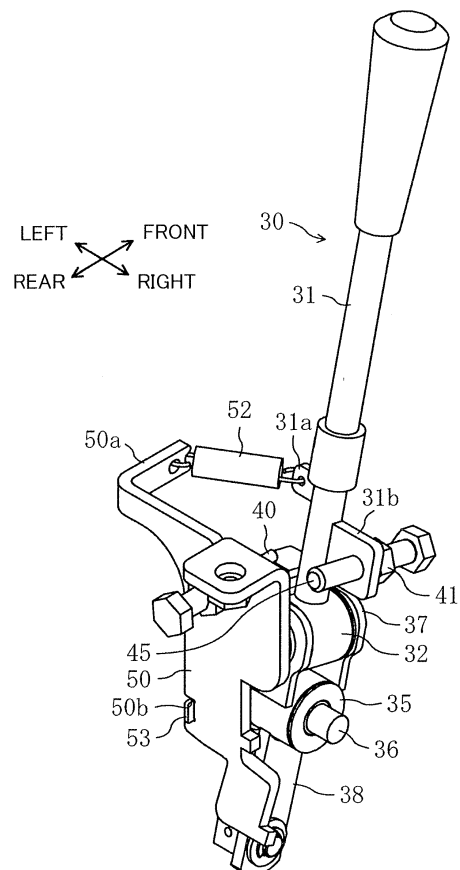
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(54) **Construction machine**

(57) Provided is a construction machine with an acceleration lever to be easily positioned at an intermediate-speed position. The construction machine includes an acceleration lever (30) movable in front and rear directions of an upper slewing body between a low-speed position and a high-speed position, an engine-speed operation member (39) to change engine speed in accordance with the moving amount of the acceleration lever (30) in front and rear directions, and an intermediate-speed stopper (40) to stop the acceleration lever (30) at an intermediate-speed position between the low-speed and high-speed positions. The intermediate-speed stopper (40) stops the acceleration lever (30) at the intermediate-speed position by restraining the acceleration lever (30) from movement. The intermediate-speed stopper (40) releases the restraint as the acceleration lever (30) moves from the intermediate-speed position to a release position in a direction different from front and rear directions.

FIG.4



Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a construction machine.

Description of the Background Art

[0002] Conventionally, there is known a construction machine including an upper slewing body slewably mounted on a lower propelling body, an engine housed in an engine room of the upper slewing body, and an acceleration lever to change the engine speed (see e.g. Japanese Utility Model Unexamined Publication No. Hei 02-070056). The construction machine is further including a regulator lever provided on the engine, and a wire interconnecting the tip end of the regulator lever and the acceleration lever. The wire is configured to move in association with a backward pivotal movement of the acceleration lever so as to shift the regulator lever from an idling state to the high-speed speed-side.

[0003] Constantly setting the engine speed to a high value maximizes the output of the engine while increasing the consumption amount of fuel, which may deteriorate the fuel consumption. For this reason, during an ordinary operation which does not require a large output of the engine, the engine speed is set to an intermediate one by suspending the backward pivotal movement of the acceleration lever. This makes it possible to suppress deterioration of fuel consumption while securing the output of the engine to some extent.

[0004] The conventional construction machine, however, requires an operator to carefully operate the acceleration lever in order to position the acceleration lever at the intermediate-speed position for suppressing deterioration of fuel consumption while securing the output of the engine to some extent: this operation by the operator is not easy.

[0005] An object of the invention is to provide a construction machine including an acceleration lever which can be easily positioned at an intermediate-speed position.

[0006] A construction machine to be provided by the invention includes: a lower propelling body; an upper slewing body slewably mounted on the lower propelling body; an engine loaded to the upper slewing body; an acceleration lever provided to the upper slewing body so as to be movable in front and rear directions of the upper slewing body between a low-speed position on one end side of the upper slewing body in the front and rear directions and a high-speed position on the other end side of the upper slewing body; an engine-speed operation member configured to change the engine speed in accordance with a moving amount of the acceleration lever in the front and rear directions; and an intermediate-

speed stopper configured to stop the acceleration lever at a predetermined intermediate-speed position between the low-speed position and the high-speed position. The intermediate-speed stopper is adapted to make restraint of the acceleration lever being moved from the low-speed position toward the high-speed position in the front and rear directions from movement in the front and rear directions midway to thereby stop the acceleration lever at the intermediate-speed position. The intermediate-speed stopper releases the acceleration lever from the restraint, in accordance with movement of the acceleration lever from the intermediate-speed position to a release position away from the intermediate-speed position in a direction different from the front and rear directions of the upper slewing body, to thereby allow the acceleration lever to be moved from the release position to the high-speed position.

[0007] These and other objects, features and advantages of the present invention will become more apparent upon reading the following detailed description along with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a side view of a construction machine according to an embodiment of the invention;

FIG. 2 is a perspective view of an acceleration lever and peripheral parts thereof of the construction machine;

FIG. 3 is a perspective view of a lever mechanism for the acceleration lever, as viewed from the right rear side;

FIG. 4 is a perspective view of the acceleration lever as viewed from the right rear side;

FIG. 5 is a perspective view of the acceleration lever as viewed from the left front side;

FIG. 6A is a plan view showing a state where the acceleration lever at a low-speed position;

FIG. 6B is a side view showing a state where the acceleration lever at the low-speed position;

FIG. 7A is a plan view showing a state where the acceleration lever is in an intermediate-speed position;

FIG. 7B is a side view showing a state where the acceleration lever in the intermediate-speed position;

FIG. 8A is a plan view showing a state where the acceleration lever in a release position;

FIG. 8B is a side view showing a state where the acceleration lever in the release position;

FIG. 9A is a plan view showing a state where the acceleration lever in a high-speed position; and

FIG. 9B is a side view showing a state where the acceleration lever is in the high-speed position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0009] An embodiment of the invention is described below referring to the drawings. The following description is, however, basically exemplary, thus not limiting the invention, an application thereof, or a usage thereof. In each of the drawings, up and down, front and rear, and left and right directions are indicated by the arrows. Unless specifically mentioned, up and down, front and rear, and left and right directions are described in accordance with the directions of arrows.

[0010] FIG. 1 is a side view showing a construction machine 10 according to an embodiment of the invention. The construction machine 10 is a compact model with a rear small slewing radius, including a crawler-type lower propelling body 11, an upper slewing body 12 slewably mounted on the lower propelling body 11, an attachment 13, and an engine 25.

[0011] The upper slewing body 12 includes an engine room 15, a side machine room 16, an operation space 17, a hood 18, a counterweight 19, and a slewing frame 20. The engine room 15 is provided on the rear portion of the upper slewing body 12 to house the engine 25 and the like. The side machine room 16, configured to house an shown fuel tank, hydraulic oil tank, and the like, is formed on the right portion of the upper slewing body 12. The operation space 17 is formed in the left portion of the upper slewing body 12 to house a driver's seat 21, an operation lever 22, and the like. The hood 18 is disposed to cover the operation space 17 at an upper side thereof.

[0012] The attachment 13 is mounted on the front portion of the upper slewing body 12, supported so as to be capable of being raised and lowered and being swung in left and right directions. The attachment 13, which is to perform excavation, includes a boom 13a, an arm 13b, a bucket 13c, and a plurality of hydraulic cylinders 13d. The boom 13a has a base end, which is pivotally mounted on a front bracket 26 of the upper slewing body 12 via a swing bracket 14. The arm 13b is pivotally mounted on the tip end of the boom 13a. The bucket 13c is pivotally mounted on the tip end of the arm 13b. The hydraulic cylinders 13d are provided for the boom 13a, the arm 13b, and the bucket 13c, respectively. The hydraulic cylinders 13d are expanded and contracted in association with operations applied to the operation lever 22 and the like, thereby pivotally moving respective members corresponding to the hydraulic cylinders 13d, out of the boom 13a, the arm 13b, and the bucket 13c to raise and lower the attachment 13. The attachment 13 is further attached with a not-graphically shown swing cylinder, which is adapted to be expanded and contracted to swing the attachment 13 in left and right directions.

[0013] The counterweight 19 is installed on the rear portion of the upper slewing body 12, and has such a large weight as to hold the balance in front and rear directions with respect to the attachment 13 operated as described above. The slewing frame 20 is supported on

the lower propelling body 11 slewably via an annular slewing bearing 24.

[0014] As shown in FIG. 2, a seat stand 23 is provided in the operation space 17. The seat stand 23 is provided with an operation box 27 including the operation lever 22, and a lever mechanism 28, in addition to the driver's seat 21.

[0015] The seat stand 23 extends in left and right directions. The driver's seat 21 is placed on the seat stand 23 in the middle portion thereof with respect to the left and right directions. The operation box 27 is disposed on a portion of the seat stand 23, the portion being on the right side of the driver's seat 21. The operation box 27A is provided with a plurality of operation switches 27a for operating not-graphically-shown various electrical components. The operation lever 22 is provided to the front end of the operation box 27. The lever mechanism 28, which is to change the speed of the engine 25, is provided to a portion of the seat stand 23, the portion being on the right side of the operation box 27.

[0016] As shown in FIG. 3 to FIG. 6B, the lever mechanism 28 includes an acceleration lever 30 pivotally movable in front and rear directions of the upper slewing body 12 and in other directions (in the embodiment, left and right directions of the upper slewing body 12), an opposition bracket 50 located on the rear side of the acceleration lever 30 and standing upright so as to be opposed to the acceleration lever 30, a fixation bracket 51 to fix the opposition bracket 50 on the seat stand 23, an urging spring 52, and a guide panel 56. The fixation bracket 51 is mounted on the right periphery of the opposition bracket 50 in a posture of standing upright so as to extend in front and rear directions.

[0017] The acceleration lever 30 includes a lever main body 31 extending in up and down directions, a front-rear pivotal body 35 supported on the fixation bracket 51 pivotally in front and rear directions, a left-right pivotal body 32 supported on the front-rear pivotal body 35 pivotally in left and right directions, and a pair of left and right support members 37.

[0018] The lever main body 31 is connected to the left-right pivotal body 32 so as to be integrally and pivotally moved in left and right directions with the left-right pivotal body 32. Specifically, the left-right pivotal body 32 is integrally connected to the lower end of the lever main body 31. The lever main body 31 integrally includes a spring mounting plate 31a projecting leftward from the outer periphery thereof, and a stopper mounting plate 31b projecting rightward from the outer periphery thereof.

[0019] The left-right pivotal body 32 is constituted of a bush pivotally movable in left and right directions relatively to the front-rear pivotal body 35 around a first support shaft 33 extending in front and rear directions. The front-rear pivotal body 35 is constituted of a bush pivotally movable in front and rear directions relatively to the fixation bracket 51 around a second support shaft 36 extending in left and right directions.

[0020] The support member 37 is mounted on the front-

rear pivotal body 35 so as to be moved pivotally in front and rear directions and integrally with the front-rear pivotal body 35. As shown in FIG. 5, the support member 37 includes a pair of front and rear wall portions 37b, a wall portion 37c interconnecting respective left portions of the wall portions 37b, and a stopper portion 37a, letting the space between the wall portions 37b be opened rightward. The first support shaft 33 is mounted on the pair of front and rear wall portions 37b across the wall portions 37b.

[0021] The stopper portion 37a extends rightward from the upper end of the left-side wall portion 37c of the support member 37. The stopper portion 37a has a tip end, which is adapted to make abutment against the outer periphery of the lever main body 31 when the lever main body 31 is moved leftward pivotally around the first support shaft 33 to thereby restrain the lever main body 31 from leftward movement.

[0022] A lever plate 38 is integrally joined to the lower portion of the front-rear pivotal body 35, extending downward from the lower portion. The lever plate 38 has a lower end, which is connected to a not-graphically-shown throttle lever of the engine 25 via a wire 39. Specifically, as shown in FIG. 6B, one end of the guide wire 39 is mounted on the lower end of the lever plate 38 and the other end of the guide wire 39 is mounted on the throttle lever. The guide wire 39 constitutes an engine-speed operation member, which is configured to be moved in association with the pivotal movement of the lever main body 31 in front and rear directions to operate the throttle lever so as to change the speed of the engine 25 in accordance with the movement amount of the lever main body 31 in front and rear directions.

[0023] The relationship between the position of the lever main body 31 and the position of the throttle lever, i.e., the relationship between the position of the lever main body 31 and the speed of the engine 25, is set such that:

- (i) the speed of the engine 25 is set lowest when the lever main body 31 is in a front end position with respect to front and rear directions of a vehicle; and
- (ii) the speed of the engine 25 is set highest when the lever main body 31 is in a rear end position with respect to front and rear directions of a vehicle.

[0024] In the following, the front end position and the rear end position are referred to as "low-speed position" and "high-speed position", respectively. Besides, a specific position between the low-speed position and the high-speed position is referred to as "intermediate-speed position"; the specific position is a position corresponding to the engine speed which allows deterioration of fuel consumption to be suppressed while securing the output of the engine 25 to some extent.

[0025] The urging spring 52 constitutes an urging member to urge the lever main body 31 leftward. The opposition bracket 50 includes a spring mounting portion

50a, which extends frontward at the upper left portion of the opposition bracket 50. The urging spring 52 is interposed between the spring mounting portion 50a and the spring mounting part 31a of the lever main body 31.

[0026] The lever mechanism 28 further includes a holding plate 53. The holding plate 53 is configured to hold the front-rear pivotal body 35 in cooperation with the fixation bracket 51 between the holding plate 53 and the fixation bracket 51. The opposition bracket 50 is formed with a cutaway portion 50b opened leftward in the lower left portion of the opposition bracket 50. The cutaway portion 50b receives a base end of the holding plate 53 so as to allow the base end to slide in left and right directions.

[0027] The second support shaft 36 is mounted across the holding plate 53 and the fixation bracket 51. The left end of the second support shaft 36 projects leftward through the holding plate 53. The left end of the second support shaft 36 forms an external thread portion, to which a plurality of disk springs 54 are fitted. A pressing nut 55 is screwed with the external thread portion of the second support shaft 36 and fastened to press the disk springs 54 and the holding plate 53. This causes the holding plate 53 to be moved rightward along the cutaway portion 50b of the opposition bracket 50 and thereby causes the front-rear pivotal body 35 to be held between the holding plate 53 and the fixation bracket 51 while a pressing force is applied to the front-rear pivotal body 35. The lever main body 31 pivotally movable in front and rear directions around the second support shaft 36 is thus enabled to be held at a specific position by the holding plate 53 and the fixation bracket 51.

[0028] The lever mechanism 28 further includes an intermediate-speed stopper 40. The intermediate-speed stopper 40 includes a tip end. The tip end is configured to abut against the outer periphery surface of the lever main body 31 of the acceleration lever 30 being pivotally moved backward from the low-speed position to thereby restrain the lever main body 31 from backward movement, midway, thereby stopping, as shown in FIGS. 7A and 7B, the lever main body 31 at a given intermediate-speed position between the low-speed position and the high-speed position.

[0029] The intermediate-speed stopper 40 is mounted on the opposition bracket 50 so as to make the tip end of the intermediate-speed stopper 40 project toward the acceleration lever 30 beyond the opposition bracket 50. The intermediate-speed stopper 40 includes an external thread portion located behind the tip end of the intermediate-speed stopper 40. The opposition bracket 50 is formed with an internal thread portion, into which the external thread portion is screwed and fastened by a fastening nut 41 to thereby fix the intermediate-speed stopper 40 to the opposition bracket 50.

[0030] The acceleration lever 30, though being adapted to be stopped by the intermediate-speed stopper 40 at the intermediate-speed position as described above, can be pivotally moved from the intermediate-speed po-

sition in left and right directions, specifically, rightward. This pivotal movement allows the lever main body 31 to be shifted to the release position away from the intermediate-speed position rightward. The shift to the release position allows the lever main body 31 to be released from abutment against the intermediate-speed stopper 40, as shown in FIG. 8A. In summary, the lever main body 31 is released from the movement restraint by the intermediate-speed stopper 40.

[0031] The lever mechanism 28 further includes a high-speed stopper 45. The high-speed stopper 45 is configured to restrain the lever main body 31 from backward movement from the release position to thereby stop the lever main body 31 at the high-speed position for maximizing the speed of the engine 25.

[0032] The high-speed stopper 45 is mounted on the stopper mounting plate 31b of the lever main body 31, projecting from the stopper mounting plate 31b toward the opposition bracket 50. The high-speed stopper 45 includes an external thread portion, while the stopper mounting plate 31b is formed with an internal thread portion. The external thread portion is screwed into the internal thread portion and fastened by a fastening nut; the high-speed stopper 45 is thus fixed to the stopper mounting plate 31b of the lever main body 31.

[0033] The high-speed stopper 45 includes a tip end projecting from the lever main body 31 backward. The tip end of the high-speed stopper 45 is adapted to abut against the opposition bracket 50 involved by backward pivotal movement of the acceleration lever 30 from the release position to thereby restrain the lever main body 31 of the acceleration lever 30 from the backward movement, thus stopping the lever main body 31 at the high-speed position, as shown in FIGS. 9A and 9B (see FIGS. 9A and 9B).

[0034] The guide panel 56 is mounted on respective upper portions of the opposition bracket 50 and of the fixation bracket 51 so as to cover the left-right pivotal body 32 and the front-rear pivotal body 35 of the acceleration lever 30. The guide panel 56 includes a guide hole 59 opened so as to extend along the moving path of the acceleration lever 30. The guide hole 59 allows an operator to visually recognize the moving path of the acceleration lever 30 therethrough. The lever main body 31 projects, through the guide hole 59, upward beyond the guide panel 56.

[0035] The guide hole 59 includes a low-speed-side portion 59a extending in front and rear directions along the low-speed-side moving path interconnecting the low-speed position and the intermediate-speed position, an intermediate-speed portion 59b extending in left and right directions so as to interconnect the intermediate-speed position and the release position, and a high-speed-side portion 59c extending in front and rear directions along the high-speed-side moving path connecting between the release position and the high-speed position, the portions 59a to 59c are continuously connected to each other in this order.

[0036] The operator is allowed to change the speed of the engine 25 by shifting the lever main body 31 along the opening shape of the guide hole 59.

[0037] Specifically, in the case of changing the speed of the engine 25 from the low speed to the intermediate speed, the acceleration lever 30 is operated to pivotally move along the moving path defined by the low-speed-side portion 59a of the guide hole 59 until the outer periphery of the lever main body 31 comes into abutment against the tip end of the intermediate-speed stopper 40. The intermediate-speed stopper 40 restrains the acceleration lever 30 from the movement as described above, thereby stopping the acceleration lever 30 at the intermediate-speed position.

[0038] Next, in the case of changing the speed of the engine 25 from the intermediate speed to the high speed, the acceleration lever 30 is firstly operated to pivotally move in left and right directions different from front and rear directions (in this example, orthogonal to front and rear directions) from the intermediate-speed position to the release position within the intermediate-speed portion 59b of the guide hole 59. This operation releases the lever main body 31 and the intermediate-speed stopper 40 from their abutments against each other. In other words, according to the above operation, the intermediate-speed stopper 40 releases the lever main body 31 from movement restraint with respect to front and rear directions. Thereafter, the acceleration lever 30 is operated to be pivotally moved along the moving path defined by the high-speed-side portion 59c of the guide hole 59 until the tip end of the high-speed stopper 45 mounted on the lever main body 31 comes into abutment against the opposition bracket 50. In other words, the high-speed stopper 45c is configured to stop the acceleration lever 30 at a high-speed position by restraining the acceleration lever 30 from backward movement.

[0039] Meanwhile, the urging spring 52 urges the acceleration lever 30, which is being located on the high-speed-side moving path interconnecting the release position and the high-speed position, in a direction toward the low-speed-side moving path interconnecting the low-speed position and the intermediate-speed position. Thus, when the operator shifts the acceleration lever 30 from the high-speed-side moving path toward the low-speed-side moving path, the urging spring 52 applies an urging force to the acceleration lever 30 to enable the acceleration lever 30 to be returned to the low-speed-side moving path.

[0040] The intermediate-speed stopper 40 functions as a prevention member for preventing the acceleration lever 30 positioned at the high-speed position from sudden movement toward the low-speed-side moving path in left and right directions as indicated by the arrow in FIG. 9A. Specifically, leftward movement of the acceleration lever 30 positioned at the high-speed position by the urging force of the urging spring 52 is prevented by abutment of the outer periphery of the lever main body 31 of the acceleration lever 30 against the outer periphery

of the intermediate-speed stopper 40.

[0041] As described above, the construction machine 10 of the embodiment allows an operator to easily position the acceleration lever 30 at the intermediate-speed position merely by moving the acceleration lever 30 to such a position that the lever main body 31 comes into abutment against the intermediate-speed stopper 40, for operating the acceleration lever 30 to change the speed of the engine 25 from the low speed rotation to the intermediate speed rotation. This eliminates the necessity for operator's careful operation of the acceleration lever 30 with visual recognition of his hand, thus enhancing the operability.

[0042] Besides, shifting the acceleration lever 30 from the intermediate-speed position to the high-speed position requires an operation of shifting the acceleration lever 30 from the intermediate-speed position to the release position in left and right directions which are different from front and rear directions to thereby release the acceleration lever 30 from the movement restraint by the intermediate-speed stopper 40; this prevents the acceleration lever 30 from sudden movement toward the high speed side against the operator's intention.

[0043] The invention is not limited to the foregoing embodiment, including, for instance, the following configurations.

[0044] While the intermediate-speed stopper 40 according to the above embodiment is mounted on the opposition bracket 50 side and the high-speed stopper 45 is mounted on the acceleration lever 30 side, the invention is not limited to this arrangement. For instance, both of the intermediate-speed stopper 40 and the high-speed stopper 45 may be mounted on the opposition bracket 50 side.

[0045] While the intermediate-speed stopper 40 according to the above embodiment is used as a prevention member, i.e., a member for preventing the acceleration lever 30 from movement to the low-speed-side moving path by the urging force of the urging spring 52, the restraint member may be independent one other than the intermediate-speed stopper 40. For instance, it is possible that the guide hole 59 of the guide panel 56 has such a small width that the inner periphery surrounding the guide hole 59 can abut against the lever main body 31 to thereby restrain the acceleration lever 30 from the movement to the low-speed-side moving path.

[0046] While the acceleration lever 30 according to the embodiment is operated to make pivotal movement in front and rear directions and in left and right directions, the acceleration lever according to the invention may be operated to make parallel movement in the directions.

[0047] As described above, according to the invention, provided is a construction machine including an acceleration lever which can be easily positioned at an intermediate-speed position. The construction machine to be provided by the invention includes: a lower propelling body; an upper slewing body slewably mounted on the lower propelling body; an engine loaded to the upper

slewing body; an acceleration lever provided to the upper slewing body and being movable in front and rear directions of the upper slewing body between a low-speed position on one end side of the upper slewing body in the front and rear directions and a high-speed position on the other end side thereof; an engine-speed operation member configured to change the engine speed in accordance with a moving amount of the acceleration lever in the front and rear directions; and an intermediate-speed stopper configured to stop the acceleration lever at a predetermined intermediate-speed position between the low-speed position and the high-speed position. The intermediate-speed stopper is adapted to make restraint of the acceleration lever being moved from the low-speed position toward the high-speed position in the front and rear directions from movement in the front and rear directions midway to thereby stop the acceleration lever at the intermediate-speed position. The intermediate-speed stopper releases the acceleration lever from the restraint, in accordance with movement of the acceleration lever from the intermediate-speed position to a release position away from the intermediate-speed position in a direction different from the front and rear directions of the upper slewing body, to thereby allow the acceleration lever to be moved from the release position to the high-speed position.

[0048] According to the construction machine, the intermediate-speed stopper restrains the acceleration lever being moved from the low-speed position toward the high-speed position side in the front and rear directions from its movement midway, thus allowing the acceleration lever to be easily positioned at the intermediate-speed position for enabling deterioration of fuel consumption to be suppressed while securing the output of the engine to some extent. Hence, in order to set the engine speed to the intermediate speed rotation, the operator only has to move the acceleration lever to such a position that the lever main body is stopped by the intermediate-speed stopper with no necessity for careful operation of the acceleration lever with visual recognition on his hand; the operability is thus enhanced. Besides, shifting the acceleration lever from the intermediate-speed position to the high-speed position requires an operation of moving the acceleration lever from the intermediate-speed position to the release position in left and right directions which are different from the front and rear directions to release the acceleration lever from the movement restraint by the intermediate-speed stopper; this enables the acceleration lever to be prevented from movement to the high speed-side against the operator's intention.

[0049] Preferably, the construction machine according to the invention may further includes: a high-speed stopper configured to stop the acceleration lever being moved from the release position toward the high-speed position in the front and rear directions at the high-speed position; and an opposition bracket located on the high-speed position side with respect to the acceleration lever and op-

posed to the acceleration lever in the front and rear directions, wherein the intermediate-speed stopper is mounted on the opposition bracket so as to abut against the acceleration lever that has moved from the low-speed position to the intermediate-speed position to thereby restrain the acceleration lever from the movement, and the high-speed stopper is mounted on the acceleration lever so as to abut against the opposition bracket when the acceleration lever has moved from the release position to the high-speed position to thereby restrain the acceleration lever from the movement.

[0050] Thus mounting the intermediate-speed stopper on the opposition bracket while mounting the high-speed stopper on the acceleration lever so as to allow the high-speed stopper to abut against the opposition bracket enables both of the intermediate-speed stopper and the high-speed stopper to be easily mounted with utilization of the opposition bracket for positioning the acceleration lever at both of the intermediate-speed position and the high-speed position. For instance, if the intermediate-speed stopper and the high-speed stopper were mounted on the opposition bracket, respective fastening members for fixing the intermediate-speed stopper and the high-speed stopper on the opposition bracket could come close to each other to thereby disable a sufficient working space for fastening each of the fastening members from being secured; meanwhile, individually mounting the intermediate-speed stopper and the high-speed stopper on the opposition bracket and on the acceleration lever, respectively, as described above allows the intermediate-speed stopper and the high-speed stopper to be smoothly mounted while preventing the fastening members from being close to each other.

[0051] Preferably, the construction machine of the invention further includes an urging member which urges the acceleration lever located on a high-speed-side moving path interconnecting the release position and the high-speed position, in the front and rear directions, toward a low-speed-side moving path interconnecting the low-speed position and the intermediate-speed position; and a prevention member configured to abut against the acceleration lever to prevent the acceleration lever located at the high-speed position from movement in the left and right directions toward the low-speed-side moving path by an urging force of the urging member.

[0052] The urging member urges the acceleration lever located on the high-speed-side moving path in the front and rear directions toward the low-speed-side moving path to thereby allow an operator to smoothly move the acceleration lever from the high-speed-side moving path toward the low-speed-side moving path. In addition, the prevention member prevents the acceleration lever positioned at the high-speed position from sudden movement in the left and right directions to the low-speed-side moving path due to the urging force of the urging member.

[0053] As a preferred aspect, the intermediate-speed stopper also can be disposed so as to abut against the acceleration lever at the high-speed position to function

as the prevention member. This eliminates the need for providing a dedicated member other than the intermediate-speed stopper, as a prevention member, thereby contributing to simplified structure.

[0054] This application is based on Japanese Patent Application No. 2013-116883 filed on June 3, 2013, the contents of which are hereby incorporated by reference.

[0055] Although the present invention has been fully described by way of example with reference to the accompanying drawings, it is to be understood that various changes and modifications will be apparent to those skilled in the art. Therefore, unless otherwise such changes and modifications depart from the scope of the present invention hereinafter defined, they should be construed as being included therein.

[0056] Provided is a construction machine with an acceleration lever to be easily positioned at an intermediate-speed position. The construction machine includes an acceleration lever (30) movable in front and rear directions of an upper slewing body between a low-speed position and a high-speed position, an engine-speed operation member (39) to change engine speed in accordance with the moving amount of the acceleration lever (30) in front and rear directions, and an intermediate-speed stopper (40) to stop the acceleration lever (30) at an intermediate-speed position between the low-speed and high-speed positions. The intermediate-speed stopper (40) stops the acceleration lever (30) at the intermediate-speed position by restraining the acceleration lever (30) from movement. The intermediate-speed stopper (40) releases the restraint as the acceleration lever (30) moves from the intermediate-speed position to a release position in a direction different from front and rear directions.

Claims

1. A construction machine, comprising:

- a lower propelling body;
- an upper slewing body slewably mounted on the lower propelling body;
- an engine housed in an engine room of the upper slewing body;
- an acceleration lever provided to the upper slewing body so as to be movable in front and rear directions of the upper slewing body between a low-speed position on one end side of the upper slewing body in the front and rear directions and a high-speed position on the other end side of the upper slewing body;
- an engine-speed operation member configured to change the engine speed in accordance with a moving amount of the acceleration lever in the front and rear directions; and
- an intermediate-speed stopper configured to stop the acceleration lever at a predetermined

intermediate-speed position between the low-speed position and the high-speed position, wherein:

the intermediate-speed stopper makes restraint of the acceleration lever being moved from the low-speed position toward the high-speed position in the front and rear directions, midway, from movement in the front and rear directions to thereby stop the acceleration lever at the intermediate-speed position; and
the intermediate-speed stopper releases the acceleration lever from the restraint in accordance with the movement of the acceleration lever from the intermediate-speed position to a release position away from the intermediate-speed position in left and right directions which are different from the front and rear directions to thereby allow the acceleration lever to move from the release position to the high-speed position.

wherein the intermediate-speed stopper is disposed so as to abut against the acceleration lever at the high-speed position to function as the prevention member.

2. The construction machine according to Claim 1, further comprising: a high-speed stopper configured to stop the acceleration lever being moved from the release position toward the high-speed position in the front and rear directions at the high-speed position; and an opposition bracket located on the high-speed position side with respect to the acceleration lever and opposed to the acceleration lever in the front and rear directions, wherein: the intermediate-speed stopper is mounted on the opposition bracket so as to abut against the acceleration lever having moved from the low-speed position to the intermediate-speed position to thereby restrain the acceleration lever from movement; and the high-speed stopper is mounted on the acceleration lever so as to abut against the opposition bracket when the acceleration lever has moved from the release position to the high-speed position to thereby restrain the acceleration lever from the movement.
3. The construction machine according to Claim 1 or 2, further comprising: an urging member which urges the acceleration lever located on a high-speed-side moving path interconnecting the release position and the high-speed position, in the front and rear directions, toward a low-speed-side moving path interconnecting the low-speed position and the intermediate-speed position; and a prevention member configured to abut against the acceleration lever so as to prevent the acceleration lever located at the high-speed position from moving in the left and right directions toward the low-speed-side moving path by an urging force of the urging member.
4. The construction machine according to Claim 3,

FIG.1

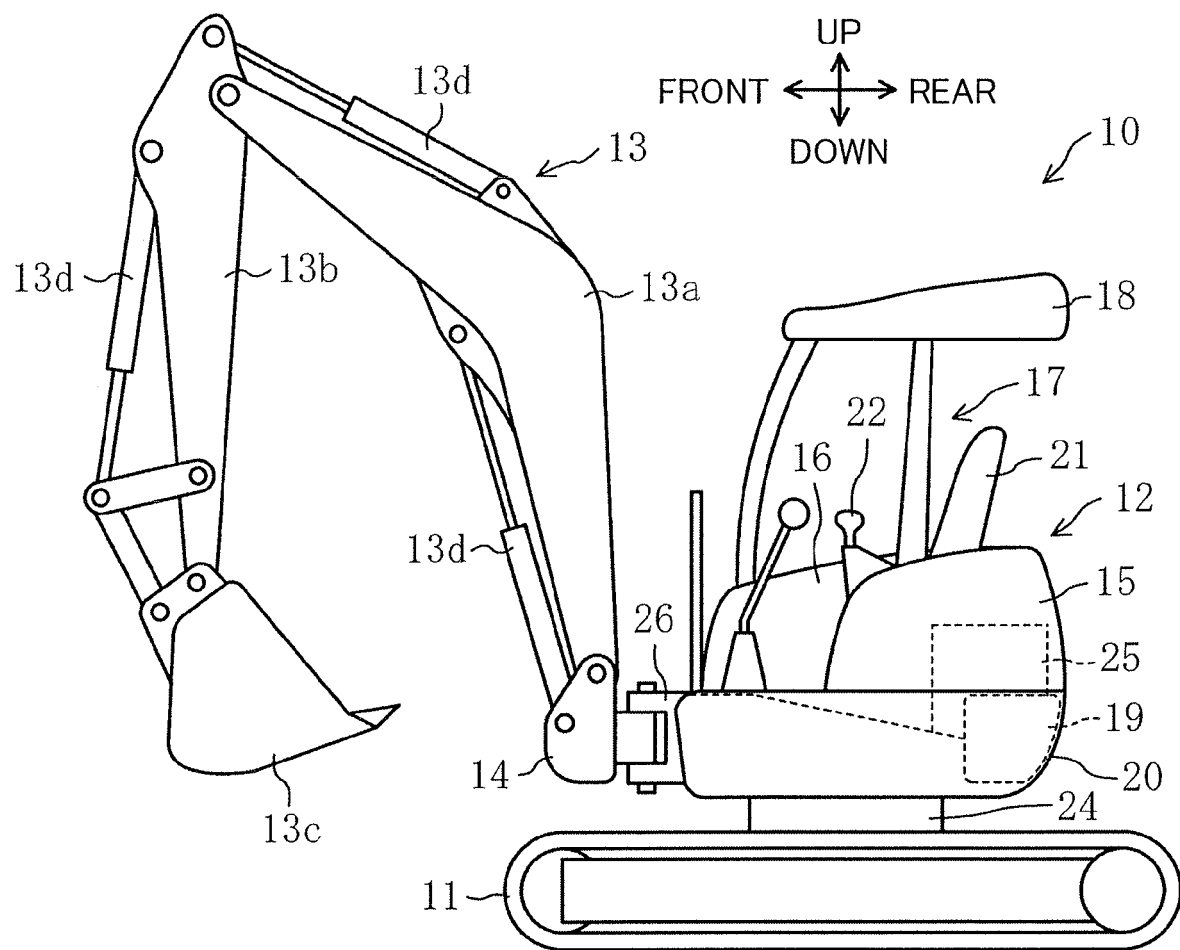


FIG.2

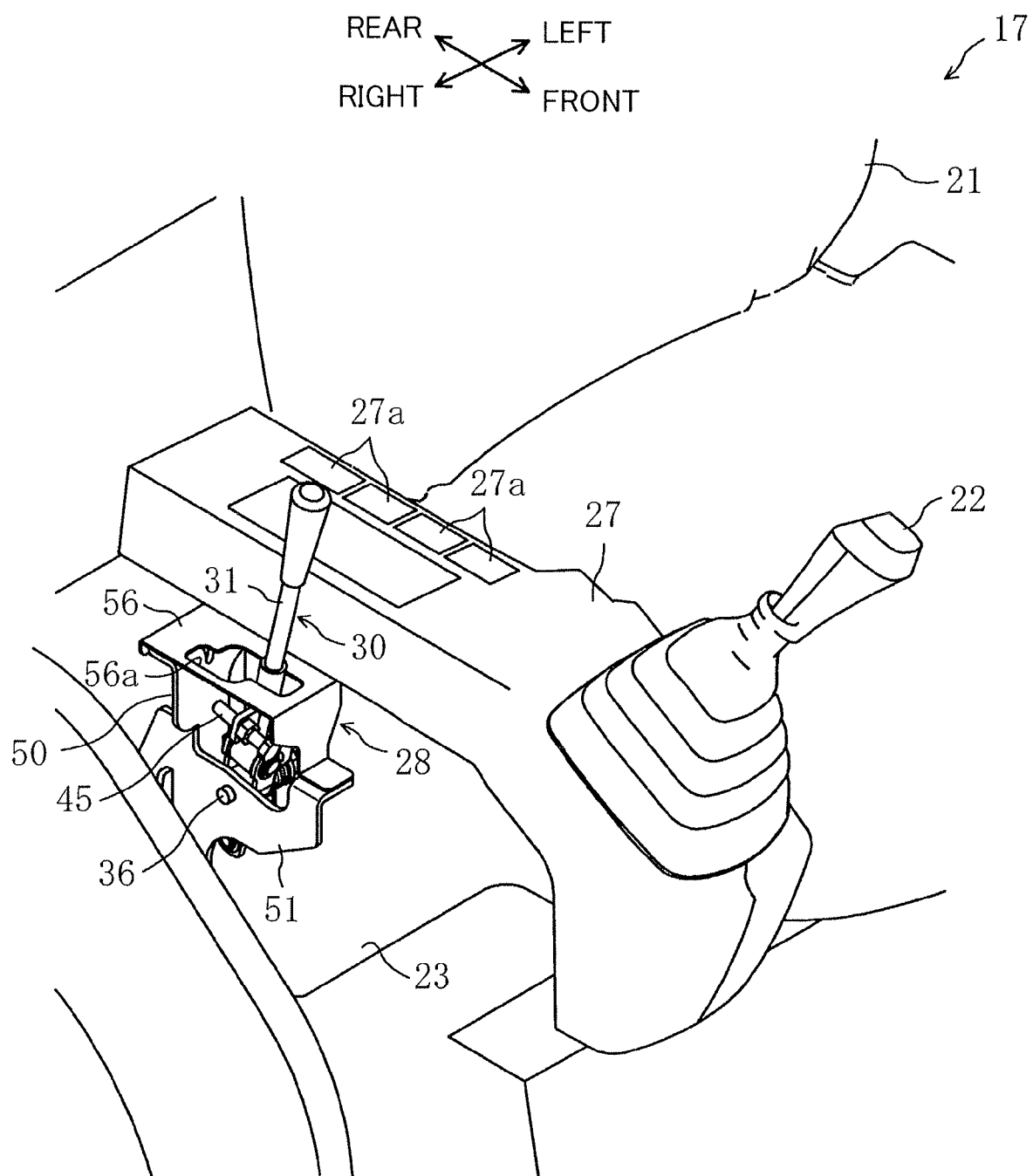


FIG.3

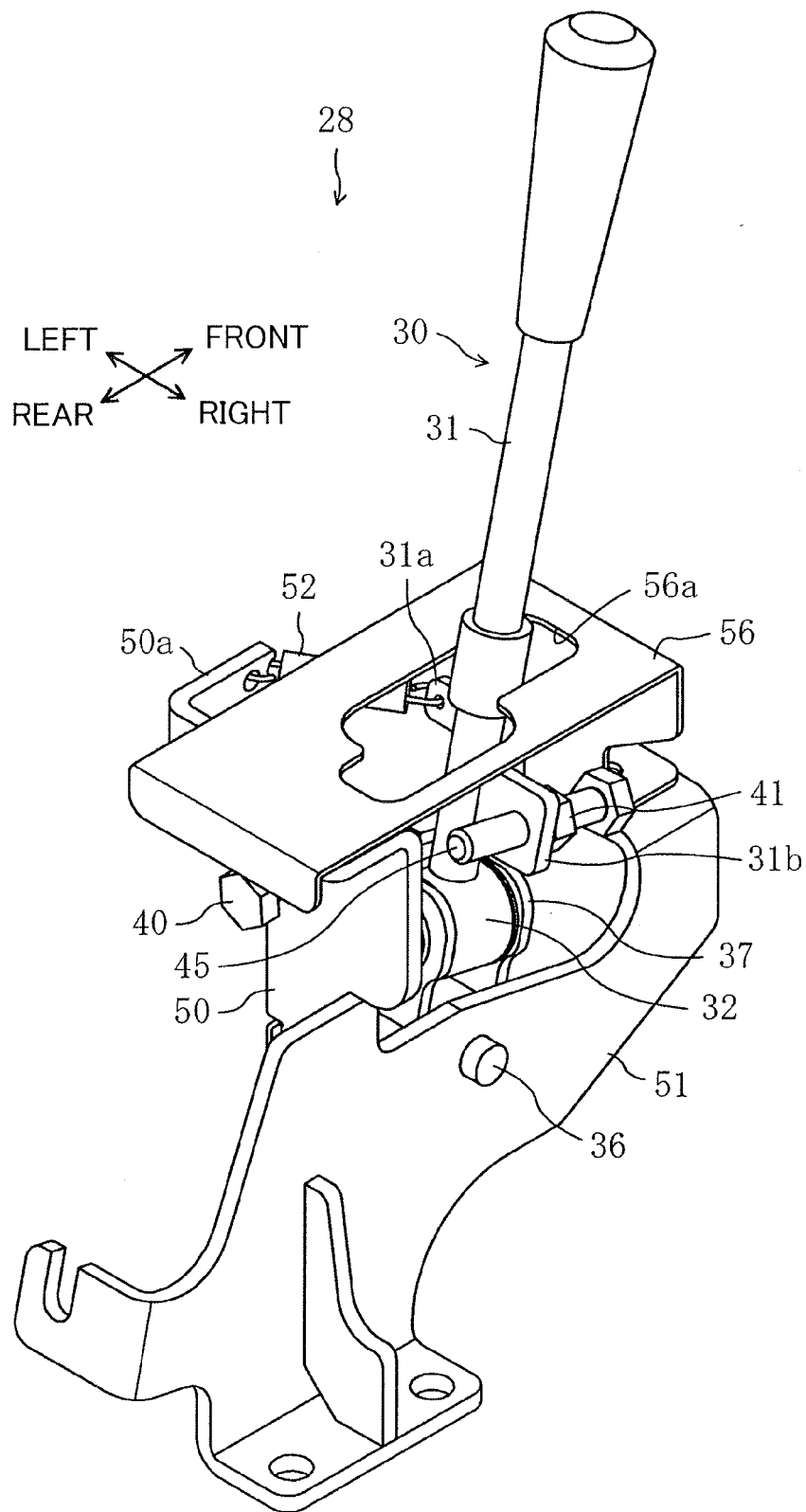


FIG.4

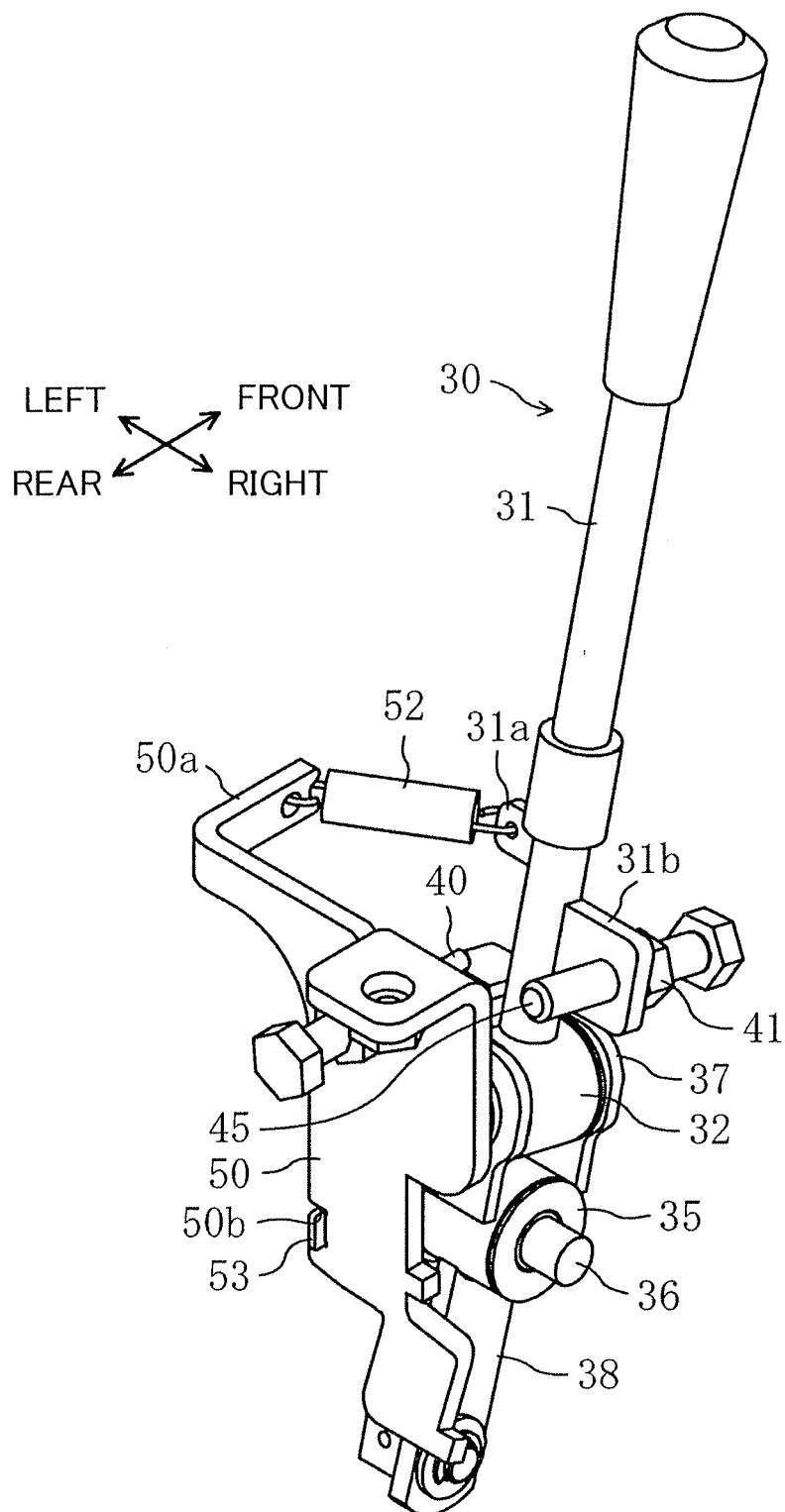


FIG.5

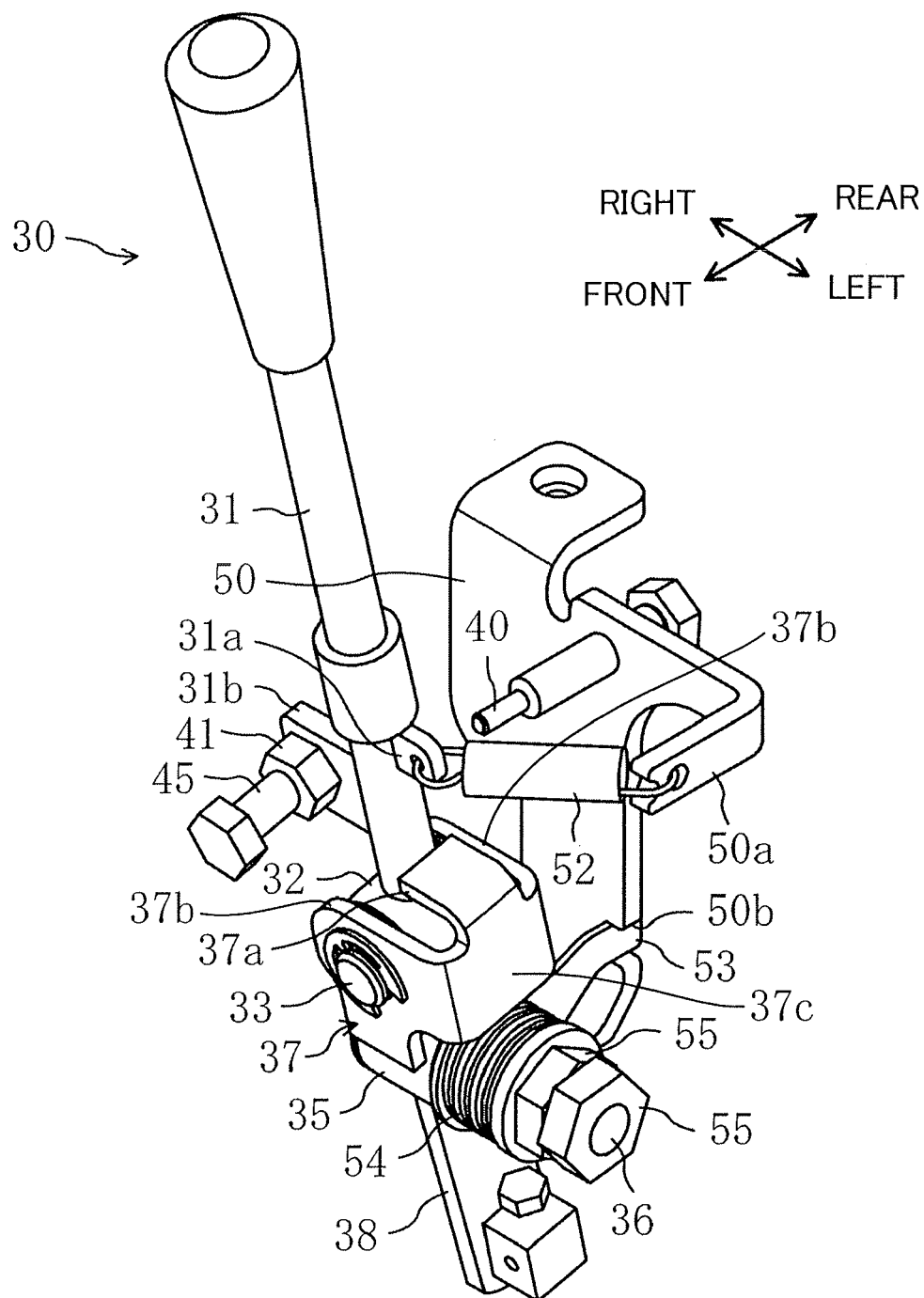


FIG.6A

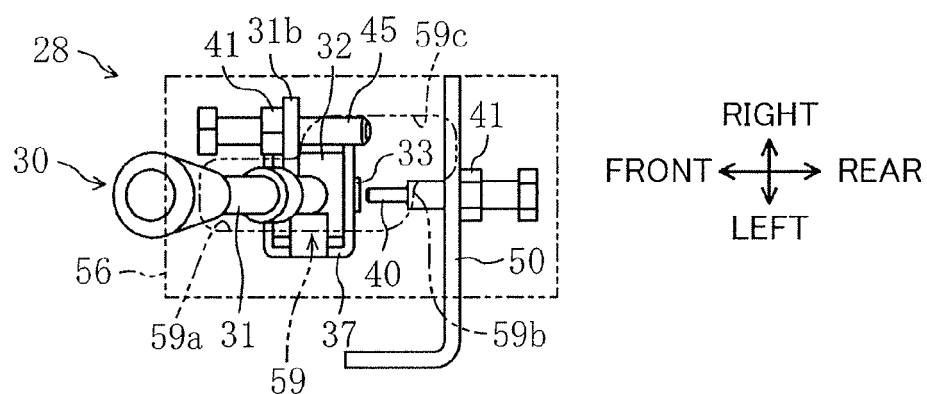


FIG. 6B

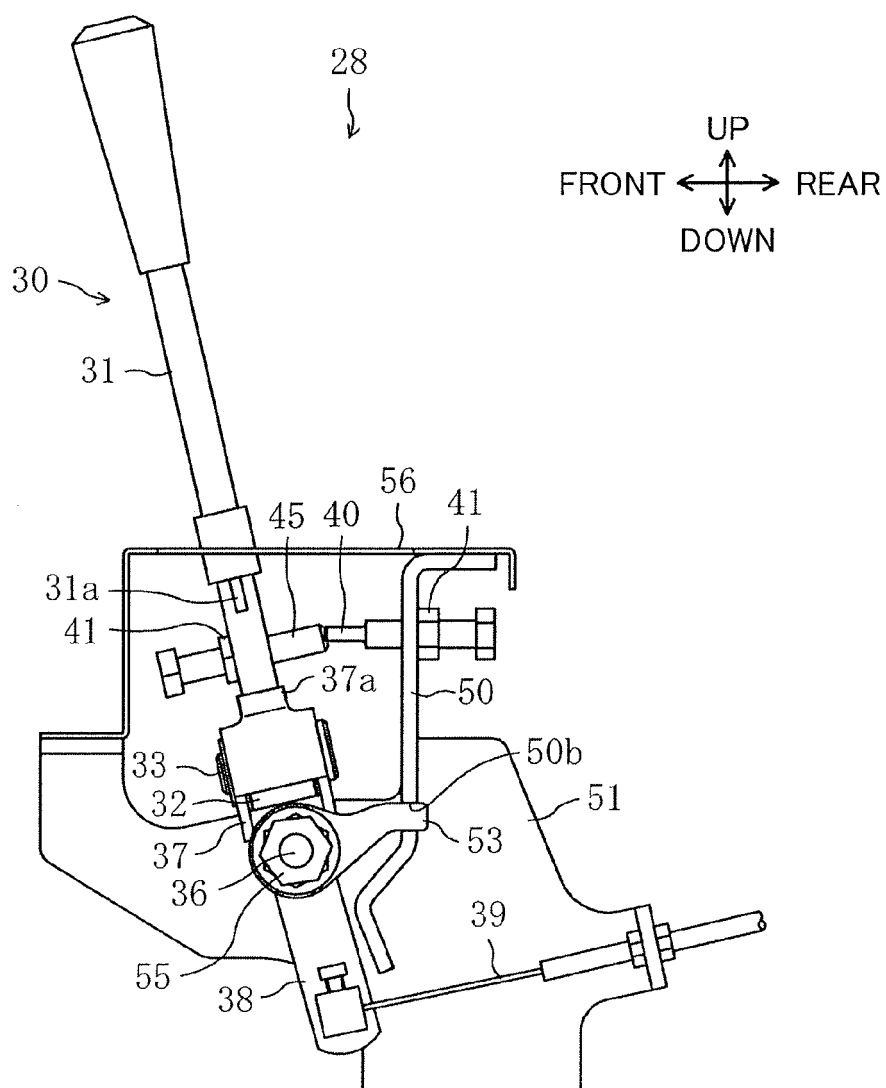


FIG.7A

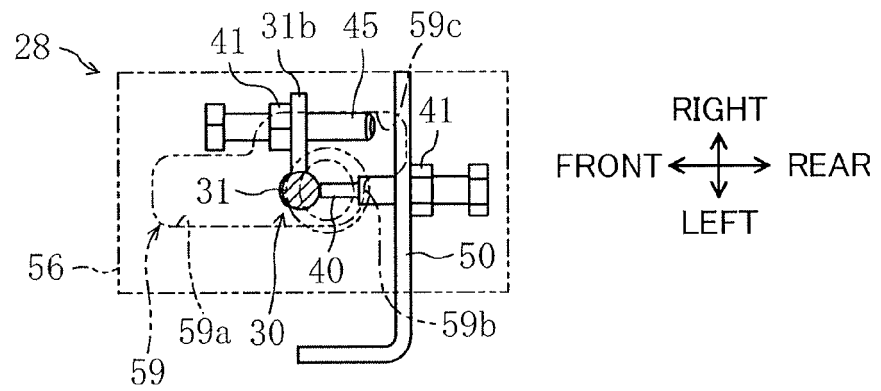


FIG.7B

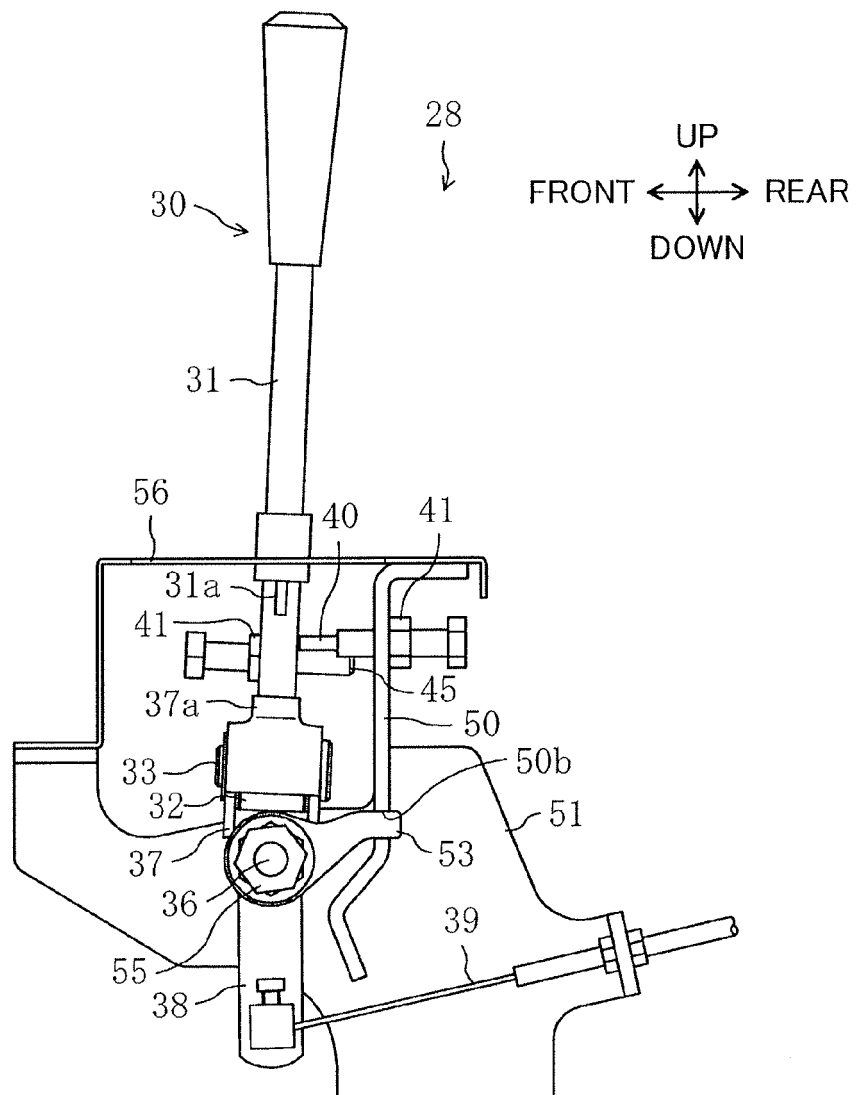


FIG.8A

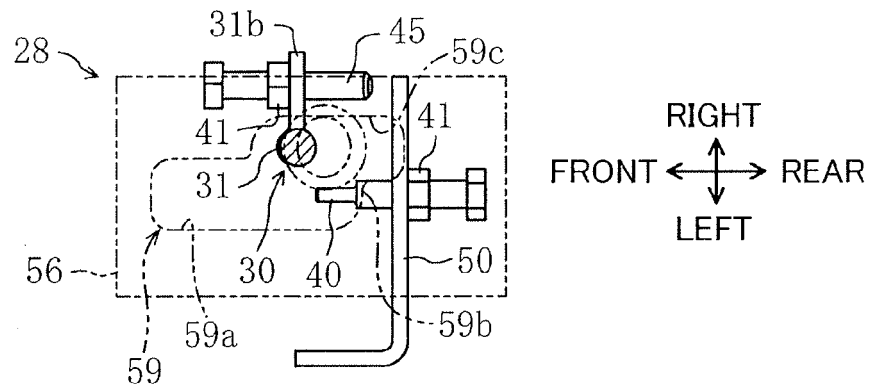


FIG.8B

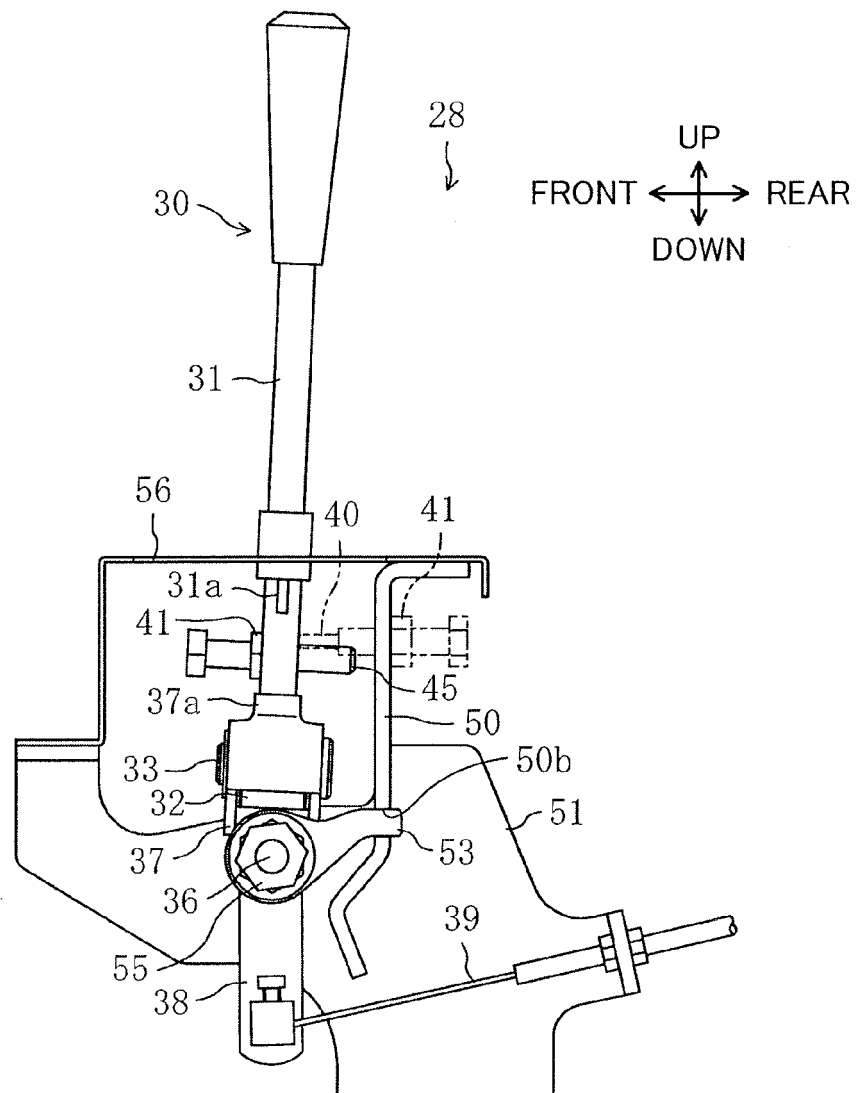


FIG.9A

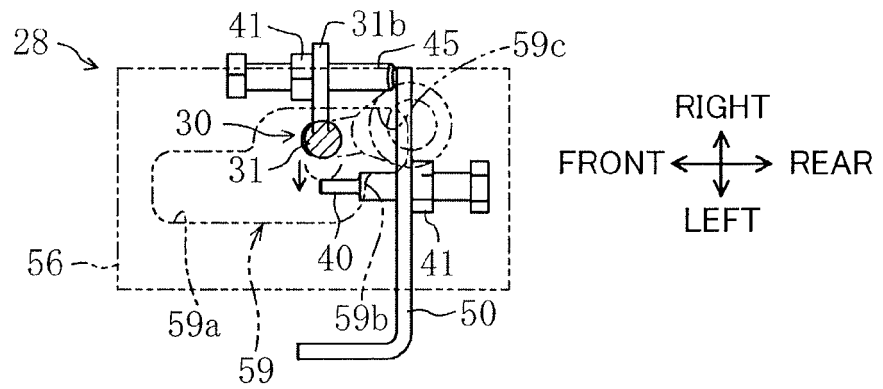
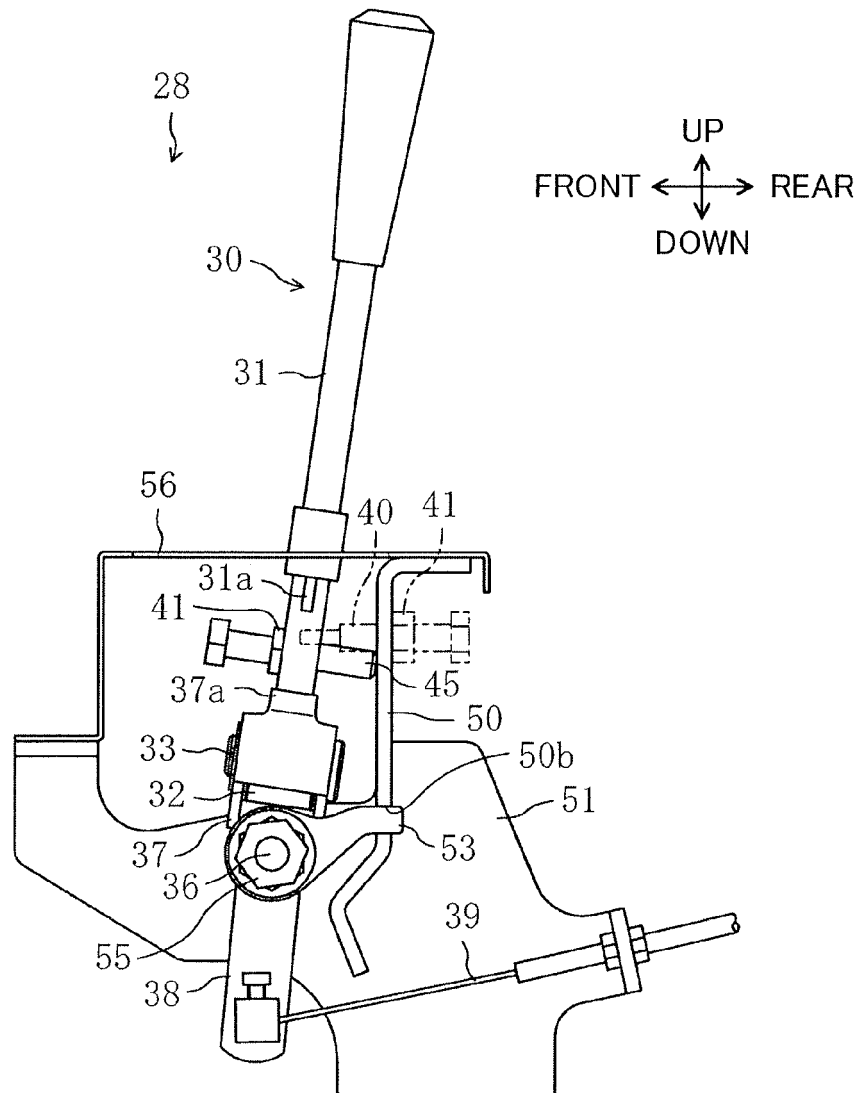


FIG.9B





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