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(71) Applicant: **NIKKO Co., Ltd.**
Tokyo (JP)

(72) Inventors:
• **Sato, Shigeharu**
Tokyo (JP)
• **Imai, Nobuo**
Tokyo (JP)

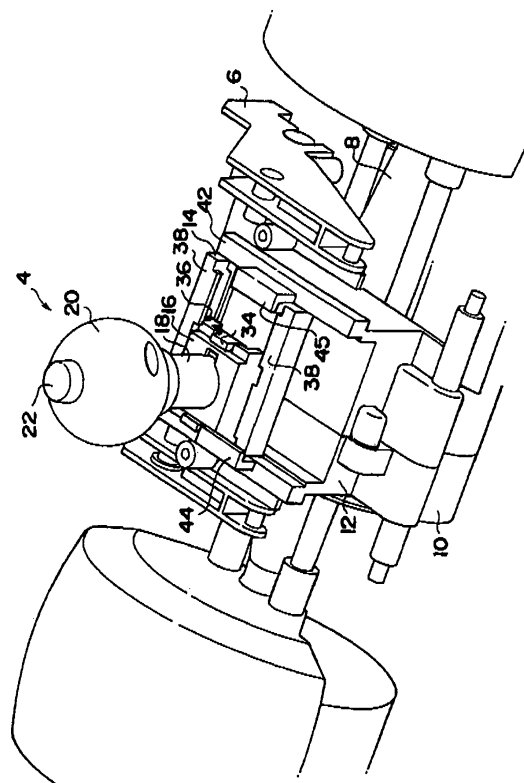
(74) Representative: **Grättinger & Partner (GbR)**
Wittelsbacherstrasse 5
82319 Starnberg (DE)

(54) **Traveling toy and radio controlled traveling toy**

(57) A traveling toy and a radio-controlled traveling toy having a transmission which brings about an operational feeling like a real car is provided.

Under a shift lever 4, there is provided a gear box 10 that covers the motor unit and is secured to a chassis rear portion 6, and a rear wheel shaft 8 extends through the gear box 10 covering a motor unit, with a crank box 12 being disposed on the gear box 10. A second slider 14 is disposed on the crank box 12, a first slider 16 is disposed on the second slider 14, and a shift shaft 18, which is a shaft portion of a shift lever 4, stands vertically from the first slider 16. On top of the shift shaft 18, a grasping section 20 is disposed to control the shift lever 4.

FIG. 2



Description

TECHNICAL FIELD

[0001] The present invention relates to a traveling toy and a radio-controlled traveling toy capable of shift transmission, in particular to a traveling toy and a radio-controlled traveling toy which provide an operational feeling like a real car.

BACKGROUND OF THE INVENTION

[0002] Speed alteration strategy of a traveling toy is quite similar to that of a real car, leading to improved satisfaction for a user of the traveling toy. Conventionally, actual speed alteration strategies for a radio-controlled traveling toy etc. have been proposed. As to a radio-controlled traveling toy, further instructions can be executed during traveling, and optional shift transmission can thus be achieved.

[0003] On the other hand, as to a traveling toy which is not radio controlled, there has been a request for speed alterations, and several methods therefor have been proposed.

[0004] For example, the Japanese Laid-open Patent Publication No. 11-239678 (KASHIMOTO) discloses that "Large/small two intermediate gears to mesh with a driving gear installed on a motor shaft are rotatably arranged on a shifting body by putting the shifting body on a motor mounted on a toy automobile so as to be rotatable with the motor shaft as the center, output gears capable of selectively meshing with a driven gear on an output shaft by shifting rotation of the shifting body are arranged on the respective intermediate gears so as to be coaxial with the intermediate gears and integrally rotatable with the intermediate gears, and a locking means to hold the shifting body in a shifting position is connected to the shifting body." KASHIMOTO is so configured that variable speed can be achieved using intermediate gears rotatable by a shifting body.

[0005] On the other hand, the Japanese Laid-open Patent Publication No. 2002-325980 (HIRAIDE) discloses that "The speed control mechanism has a gear mechanism increasing the rotation of the wheel axis of a wheel to drive and a gear mechanism decreasing it. The rotation of the rotation axis of a motor can be selectively transmitted to either of the two. A gear mechanism to which the rotation of the motor is transmitted can be altered by switching the rotation direction of the rotating axis of the motor." HIRAIDE is so configured that variable speed can be achieved by changing the position of a pinion gear attached to a motor with respect to face gears having different number of teeth attached to the axle.

[0006] These two laid-open patent publications disclose a shift transmission, and KASHIMOTO is so configured that shift transmission is conducted by controlling the direction of the cover attached to a motor whereby the gear combination is changed.

[0007] In contrast, HIRAIDE does not specifically disclose a method for operating a lever etc. that controls the shift transmission etc.

[0008] It is natural that an operational feeling is achieved when the shift transmission is controlled by operating a shift lever like a real car, leading to enhanced reality of the performance of the traveling toy and enhanced satisfaction of a user of the toy.

10 SUMMARY OF THE INVENTION

[0009] Accordingly, it is an object of the present invention to provide with a traveling toy and a radio-controlled traveling toy having a transmission which provides an operational feeling like a real car.

[0010] In a traveling toy which is the first aspect of the present invention, the traveling speed of the traveling body is controlled by the arranged positions of a shift lever projectingly mounted on a portion of the traveling body so as to achieve the aforementioned object.

[0011] Besides, the traveling toy according to the present invention comprises, in the rear portion of the body, a motor that drives the body; inside the body, a gear box that houses a gear to engage with the motor; and a crank box that is mounted to said gear box to house a crank, further comprising a shift lever; a first slider that is provided with said shift lever; a second slider that guides the first slider in a direction perpendicular to the movement direction and that guides said crank box in a direction parallel to the movement direction; a crank shaft that is caused to rotate by way of the crank, wherein a crank pin is fitted into a pin groove provided to the rear surface of said second slider and wherein said crank pin moves as said second slider moves; a shift element that has at an end thereof two gear holders projectingly mounted in the downward direction, causing the gear holders to freely rotate about said crank shaft in the direction perpendicular to the movement direction; a pinion gear that is provided to a leading end of the rotatable shaft of said motor; a second gear that is provided to a shift gear shaft disposed within said gear box so that the second gear is engaged with said pinion gear; a third gear that is provided to said shift gear shaft, wherein the third gear is adjacently coupled to said second gear and has a smaller diameter than that of said second gear; a fourth gear that is provided to said shift gear shaft, wherein the fourth gear has a smaller diameter than that of said third gear and is provided to a side of said second gear opposite to the third gear and about the shift gear shaft; a fifth gear that is provided in said gear box, and that is provided to the axle having wheels at the opposite ends thereof, and that is engaged with said third gear; and a sixth gear that is provided to said axle to engage with said fourth gear, wherein: said second slider moves as said shift lever moves; said crank is caused to rotate by way of said second slider, wherein a crank pin is fitted into the pin groove provided on the rear surface of said second slider; said shift element is caused to rotate as

said crank rotates; and either one of a first and a second combination can be selected, with the first combination being that the third and fifth gears are engaged with each other when said gear holders move in the vertical direction with respect to the movement direction as said shift element rotates and when the second gear retained in said gear holders moves so that the third and fifth gears are engaged with each other, and with the second combination being that the fourth and sixth gears are engaged with each other.

[0012] Further, said shift lever comprises: a shift shaft that stands vertically from the first slider; a grasping section that is disposed on said shift shaft; a shift button that extends from the top of the grasping section through inside the shift shaft; a button receiving section that abuts against the bottom of said shift button; a spring that is disposed between the button receiving section and the shift shaft bottom inside the shift shaft; a pressing shaft that extends through inside said spring, and that is secured to the button receiving section at the upper end of the pressing shaft, and that has a bottom plate, at the bottom end of the pressing shaft, to be provided to the first slider; and a pair of locking bosses that is provided to the opposite sides of said pressing shaft in the perpendicular direction with respect to the movement direction, and that is arranged to stand vertically to fit into a pair of grooves provided at the opposite sides of said first slider, wherein the traveling toy further comprises: a pair of first guide ribs that is provided to the second slider in the perpendicular direction with respect to the movement direction so as to guide the first slider ribs that are provided to the opposite sides of the first slider with respect to the movement direction; a pair of second guide ribs that are provided to the upper end of the crank box so as to guide the second slider ribs that are provided to the opposite sides of the second slider in the perpendicular direction with respect to the movement direction; and locking plates that are provided at both of said second guide ribs to lock said locking bosses, wherein: when said shift lever is fixed, either one of said first and second combinations is retained by locking either one of the locking bosses to either one of the locking plates, and when said shift lever is moved, the button receiving section and the pressing shaft are pressed down by pressing down the shift button so that the locking bosses can be pressed down.

[0013] The traveling toy can be so configured that the switch mode selection can be changed by the arranged positions of the shift lever.

[0014] A radio-controlled traveling toy having a body as the second aspect of the present invention is so configured that the traveling speed thereof can be controlled by the arranged positions of a shift lever projectingly mounted on a portion of the traveling body, and that said body comprises a radio-controlled receiving section.

[0015] Besides, the radio-controlled traveling toy according to the present invention comprises, in the rear portion of the body, a motor that drives the body; inside

the body, a gear box that houses a gear to engage with the motor; and a crank box that is mounted to said gear box to house a crank, further comprising: a shift lever; a first slider that is provided with said shift lever; a second slider that guides the first slider in a direction perpendicular to the movement direction and that guides said crank box in a direction parallel to said crank box; a crank shaft that is caused to rotate by way of the crank, wherein a crank pin is fitted into a pin groove provided to the rear surface of said second slider and wherein said crank pin moves as said second slider moves; a shift element that has at an end thereof two gear holders projectingly mounted in the downward direction, causing the gear holders to freely rotate about said crank shaft in the direction perpendicular to the movement direction; a pinion gear that is provided to a leading end of the rotatable shaft of said motor; a second gear that is provided to a shift gear shaft disposed within said gear box so that the second gear is engaged with said pinion gear; a third gear that is provided to said shift gear shaft, wherein the third gear is adjacently coupled to said second gear and has a smaller diameter than that of said second gear; a fourth gear that is provided to said shift gear shaft, wherein the fourth gear has a smaller diameter than that of said third gear and is provided to a side of said second gear opposite to the third gear and about the shift gear shaft; a fifth gear that is provided in said gear box, and that is provided to the axle having wheels at the opposite ends thereof, and that is engaged with said third gear; and a sixth gear that is provided to said axle to engage with said fourth gear, wherein: said second slider moves as said shift lever moves; said crank is caused to rotate by way of said second slider, wherein a crank pin is fitted into the pin groove provided on the rear surface of said second slider; said shift element is caused to rotate as said crank rotates; and either one of a first and a second combination can be selected, with the first combination being that the third and fifth gears are engaged with each other when said gear holders move in the vertical direction with respect to the movement direction as said shift element rotates and when the second gear retained in said gear holders moves so that the third and fifth gears are engaged with each other, and with the second combination being that the fourth and sixth gears are engaged with each other.

[0016] Further, said shift lever comprises: a shift shaft that stands vertically from the first slider; a grasping section that is disposed on said shift shaft; a shift button that extends from the top of the grasping section through inside the shift shaft; a button receiving section that abuts against the bottom of said shift button; a spring that is disposed between the button receiving section and the shift shaft bottom inside the shift shaft; a pressing shaft that extends through inside said spring, and that is secured to the button receiving section at the upper end of the pressing shaft, and that has a bottom plate, at the bottom end of the pressing shaft, to be provided to the first slider; and a pair of locking bosses that is provided

to the opposite sides of said pressing shaft in the perpendicular direction with respect to the movement direction, and that is arranged to stand vertically to fit into a pair of grooves provided at the opposite sides of said first slider, wherein the radio-controlled traveling toy further comprises: a pair of first guide ribs that is provided to the second slider in the perpendicular direction with respect to the movement direction so as to guide the first slider ribs that are provided to the opposite sides of the first slider with respect to the movement direction; a pair of second guide ribs that is provided to the upper end of the crank box so as to guide the second slider ribs that are provided to the opposite sides of the second slider in the perpendicular direction with respect to the movement direction; and locking plates that are provided at both of said second guide ribs to lock said locking bosses, wherein: when said shift lever is fixed, either one of said first and second combinations is retained by locking either one of the locking bosses to either one of the locking plates, and when said shift lever is moved, the button receiving section and the pressing shaft are pressed down by pressing down the shift button so that the locking bosses can be pressed down.

[0017] The radio-controlled traveling toy can be so configured that the switch mode selection can be changed by the arranged positions of the shift lever.

[0018] A traveling toy as the first aspect of the present invention enables a user to select a desired speed using a shift lever, which enables the user to enjoy an operational feeling like a real car.

[0019] Besides, the combinational configuration of a shift lever and a shift transmission mechanism allows for optional selection of two types of speed.

[0020] Further, installation of locking bosses in addition a shift lever ensures retention of the appropriate gear combination for each speed to be achieved by shift transmission.

[0021] In the present invention, an electrical speed change is achieved as well as a mechanical speed change, where the electrical speed change is conducted by a shift change by way of switching.

[0022] Additionally, a radio-controlled traveling toy as the second aspect of the present invention enables a user to select a desired speed by a shift lever, which allows the user to enjoy an operational feeling like a real car.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023]

FIG. 1 is an overall configuration diagram of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 2 is a magnified view of the internal shift lever 4 of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 3 is a longitudinal sectional view of the internal

shift lever 4 of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 4 is a perspective view of the crank of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 5 is a configuration diagram of parts starting from crank to gears of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 6 is a perspective view of the crank of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 7 is a perspective view of the crank of the radio-controlled car toy 2 in Embodiment 1 according to the present invention.

FIG. 8 is a longitudinal sectional view of the internal shift lever 80 of the radio-controlled car toy 2 in Embodiment 2 according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0024] The embodiments of the present invention will now be described in detail with reference to drawings.

Embodiment 1

[0025] The first embodiment will be described with reference to FIGS. 1 to 8 with respect to the traveling toy and the radio-controlled traveling toy according to the present invention.

FIG. 1 is an overall view of a radio-controlled car toy 2 according to the present invention. A shift lever 4 stands vertically from the rear part of the body.

FIG. 2 is a magnified view of the shift lever 4 of the radio-controlled car toy 2 according to the present invention. Under the shift lever 4, there is provided a gear box 10 that covers the motor unit and is secured to a chassis rear portion 6, and a rear wheel shaft 8 extends through the gear box 10, with a crank box 12 being disposed on the gear box 10. A second slider 14 is disposed on the crank box 12, a first slider 16 is disposed on the second slider 14, and a shift shaft 18, which is a shaft portion of a shift lever 4, stands vertically from the first slider 16. On top of the shift shaft 18, a grasping section 20 is disposed to control the shift lever 4.

[0026] With reference to FIG. 3, the inner structure of the shift lever 4 will be described. A shift button 22 extends from the top of the grasping section 20 and through the inner side of the shift shaft 18. The bottom of the shift button 22 abuts against a button receiving section 24.

[0027] A spring 28 is disposed between the button receiving section 24 and a shift shaft bottom 26, and the shift lever 18 surrounds the spring 28.

[0028] The upper end of a pressing shaft 32 that extends into said spring 28 is secured to the button receiving section 24 at the upper end of the pressing shaft 32, while

the bottom end of the pressing shaft 32 is secured to the bottom plate 30 placed under the shift shaft bottom 26. A pair of locking bosses 34 is projectingly mounted onto the opposite sides of the bottom plate 30 with respect to the movement direction. The pair of locking bosses 34 is arranged to stand vertically so that the locking bosses 34 will fit into a pair of grooves provided at the opposite sides of said first slider 16.

[0029] A first slider rib 36 is horizontally provided on each of the front and rear sides of the first slider 16 with respect to the movement direction. A pair of first guide ribs 38 is projectingly provided in a horizontal and inward direction so that the second slider 14 is engaged with the first slider rib 36, whereby the first slider rib 36 is slidably guided.

[0030] A pair of second slider ribs 40 is projectingly and horizontally mounted to both sides of the second slider 14 with respect to the movement direction. A pair of second guide ribs 42 is provided to the opposite sides of the upper end of the crank box 12 with respect to the movement direction in order to guide the pair of the second slider ribs 40, whereby the second slider rib 40 is slidably guided.

[0031] At this stage, a pair of second locking plates 44 and 45 is disposed facing each other over the pair of the second slider rib 40. The locking plate 44 is provided generally closer to the front with respect to the movement direction than the center of the second guide rib 42, while the locking plate 45 is provided generally closer to the rear with respect to the movement direction than the center of the second guide rib 42.

[0032] Next, the second slider rib 40 and a crank 46 disposed thereunder are described with reference to FIG. 4. As shown in FIG. 4, the crank 46 is rotatably secured to a crank shaft 48 at one end of the crank 46, and a crank pin 50 is projectingly mounted at the other end of the crank 46.

[0033] In contrast, a pin groove 52 that can receive the crank pin 50 is provided at one bottom end of the second slider rib 40 close to the front with respect to the movement direction.

[0034] FIG. 5 is a schematic view showing the crank 46, a shift element 54, gears, an axle and a motor.

[0035] Two gear holders 56 are projectingly mounted in the downward direction to an end of the shift element 54 opposite to the crank shaft 48.

[0036] A motor 60 is arranged in a gear box 10, the motor 60 having a pinion gear 58 at the leading end thereof. A second gear 64 is rotatably provided about a shift gear shaft 62 to engage with the pinion gear 58. The pinion gear 58 is as long as the moving range of the second gear 64, which can move within that range along the shift gear shaft 62.

[0037] A third gear 66 is provided to the shift gear shaft 62, where the third gear 66 is adjacently mounted to said second gear 64 and has a smaller diameter than said second gear 64.

[0038] Further, a fourth gear 68 is provided to the shift

gear shaft 62, where the fourth gear 68 has a smaller diameter than said third gear 66 and is provided to the opposite side of said second gear 64 about the shift gear shaft 62.

[0039] Meanwhile, a fifth gear 72 is provided to the axle 70 to engage with said third gear 66, and a sixth gear 74 is provided to the axle 70 to engage with said fourth gear 68.

[0040] Under the above-described configuration, the operation of the traveling toy according to the present invention with reference to FIGS. 2 to 7.

[0041] As shown in FIG. 2, the shift lever 4 is positioned at the first home position where the locking boss 34 (left) is located under the locking plate 44. At this stage, the crank 46 is located as shown in FIG. 4, and the crank pin 50 is arranged as shown in FIG. 4 (left below). Further, regarding the shift element 54, the gear holders 56 attached thereto, when in the position as depicted in FIG. 6, move leftward so as to cause the second gear 64 to move to the left as depicted in FIG. 6. Accordingly, the third gear 68 and the fifth gear 74 are engaged with each other. With this engagement of the third and fifth gears 68 and 74, the axle can rotate in low gear.

[0042] Subsequently, when the shift button 22 is pressed down, the button receiving section 24 and the pressing shaft 32 are pressed down acting against the spring 28, whereby the locking bosses 34 are also pressed down to be released from the locking plate 44 so that the shift lever 4 can move freely.

[0043] When the shift lever 4 is shifted backward with respect to the movement direction, with the shift button 22 being pressed down, the second slider 14 is caused to move backward with respect to the movement direction. Then, as the shift lever 4 is shifted from left to right with respect to the movement direction, the first slider 16 is shifted to the right with respect to the movement direction. When the first slider 16 comes adjacent to the locking plate 45, the shift lever 4 is, again, shifted backward with respect to the movement direction, with the shift button 22 being pressed down, so that the second slider 14 is caused to move backward with respect to the movement direction. At this stage, when the shift button 22 is no longer pressed, the locking bosses 34 are released from the first slider 16 but are retained by the locking plate 45.

[0044] Describing this operation by way of the operation of the crank 46 in FIG. 4, the crank pin 50 of the crank 46 is caused to move in a forward direction about the crank shaft 48. This means that the crank pin 50 causes the crank shaft 48 to rotate. The rotation of the crank shaft 48 causes the shift element 54 to rotate so that the gear holders 56 move. In other words, since the shift element 54 is inclined rightward as shown in FIG. 7, the gears are arranged in such a manner that the third gear 68 and the fifth gear 74 are released from each other while the fourth gear 66 and the sixth gear 72 are engaged with each other. As shown in FIG. 2, the shift lever 4 is positioned at the second home position where the locking

boss 34 (right) is located under the locking plate 45. As the fourth gear 66 is engaged with the sixth gear 72, the axle can rotate in high gear.

[0045] The above-described configuration enables a user to select the desired speed using a shift lever, thus providing the user with a real operational feeling. 5

Embodiment 2

[0046] A radio-controlled car toy according to the present invention is described with reference to FIG. 8 wherein the gear is shifted by handling a shift lever. 10

[0047] A shift lever 80 is arranged in a shift gear box 84 of a body 82. The shift lever 80 is rotatably secured to a crank pin 86 in the shift gear box 84. A weight 88 is provided to a side of the crank pin 86 opposite to the shift lever 80. Shift-shaped sliders are provided to both sides of the weight 88. 15

[0048] Now the operation of Embodiment 2 is described. 20

[0049] When the shift lever 80 is tilted leftward, the weight 88 moves rightward. As a result, the shifter 90 moves to the right, and the knob 94 of the switch 92 moves to the right edge.

[0050] On the contrary, when the shift lever 80 is tilted rightward, the weight 88 moves leftward. As a result, the shifter 90 moves to the left, and the knob 94 of the switch 92 moves to the left edge. Hence, the implementation of Embodiment 2 allows for controlling the mode selection of the switch 92. 25 30

[0051] A traveling toy and a radio-controlled traveling toy according to the present invention enables selecting a speed desired by a user using a shift lever, thus an operational feeling is provided like a real car. 35

Claims

1. A traveling toy wherein the traveling speed thereof is controlled by the arranged positions of a shift lever projectingly mounted on a portion of the traveling body 40
2. The traveling toy according to claim 1, comprising: 45
 - in the rear portion of the body, a motor that drives the body;
 - inside the body, a gear box that houses a gear to engage with the motor; and
 - a crank box that is mounted to said gear box to house a crank, further comprising: 50
 - a shift lever;
 - a first slider that is provided with said shift lever; 55
 - a second slider that guides the first slider in a direction perpendicular to the movement direction and that guides said crank box in

a direction parallel to the movement direction;

a crank shaft that is caused to rotate by way of the crank, wherein a crank pin is fitted into a pin groove provided to the rear surface of said second slider and wherein said crank pin moves as said second slider moves;

a shift element that has at an end thereof two gear holders projectingly mounted in the downward direction, causing the gear holders to freely rotate about said crank shaft in the direction perpendicular to the movement direction;

a pinion gear that is provided to a leading end of the rotatable shaft of said motor;

a second gear that is provided to a shift gear shaft disposed within said gear box so that the second gear is engaged with said pinion gear;

a third gear that is provided to said shift gear shaft, wherein the third gear is adjacently coupled to said second gear and has a smaller diameter than that of said second gear;

a fourth gear that is provided to said shift gear shaft, wherein the fourth gear has a smaller diameter than that of said third gear and is provided to a side of said second gear opposite to the third gear and about the shift gear shaft;

a fifth gear that is provided in said gear box, and that is provided to the axle having wheels at the opposite ends thereof, and that is engaged with said third gear; and a sixth gear that is provided to said axle to engage with said fourth gear, 5

wherein:

said second slider moves as said shift lever moves;

said crank is caused to rotate by way of said second slider, wherein a crank pin is fitted into the pin groove provided on the rear surface of said second slider;

said shift element is caused to rotate as said crank rotates; and

either one of a first and a second combination can be selected,

with the first combination being that the third and fifth gears are engaged with each other when said gear holders move in the vertical direction with respect to the movement direction as said shift element rotates and when the second gear retained in said gear holders moves so that the third and fifth gears are engaged with each other, and

with the second combination being that the fourth and sixth gears are engaged with each other.

3. The traveling toy according to claim 2, wherein said shift lever comprises:

a shift shaft that stands vertically from the first slider;
 a grasping section that is disposed on said shift shaft;
 a shift button that extends from the top of the grasping section through inside the shift shaft;
 a button receiving section that abuts against the bottom of said shift button;
 a spring that is disposed between the button receiving section and the shift shaft bottom inside the shift shaft;
 a pressing shaft that extends through inside said spring, and that is secured to the button receiving section at the upper end of the pressing shaft, and that has a bottom plate, at the bottom end of the pressing shaft, to be provided to the first slider; and
 a pair of locking bosses that is provided to the opposite sides of said pressing shaft in the perpendicular direction with respect to the movement direction, and that is arranged to stand vertically to fit into a pair of grooves provided at the opposite sides of said first slider,

wherein the traveling toy further comprises:

a pair of first guide ribs that is provided to the second slider in the perpendicular direction with respect to the movement direction so as to guide the first slider ribs that are provided to the opposite sides of the first slider with respect to the movement direction;
 a pair of second guide ribs that are provided to the upper end of the crank box so as to guide the second slider ribs that are provided to the opposite sides of the second slider in the perpendicular direction with respect to the movement direction; and
 locking plates that are provided at both of said second guide ribs to lock said locking bosses,

wherein:

when said shift lever is fixed, either one of said first and second combinations is retained by locking either one of the locking bosses to either one of the locking plates, and
 when said shift lever is moved, the button receiving section and the pressing shaft are pressed down by pressing down the shift button so that the locking bosses can be pressed down.

4. The traveling toy according to claim 1, wherein the switch mode selection can be changed by the arranged positions of the shift lever.

5. A radio-controlled traveling toy having a body wherein the traveling speed thereof can be controlled by the arranged positions of a shift lever projectingly mounted on a portion of the traveling body, and wherein said body comprises a receiving section that is radio-controlled.

6. The radio-controlled traveling toy according to claim 5, comprising:

in the rear portion of the body, a motor that drives the body;
 inside the body, a gear box that houses a gear to engage with the motor; and
 a crank box that is mounted to said gear box to house a crank, further comprising:

a shift lever;
 a first slider that is provided with said shift lever;
 a second slider that guides the first slider in a direction perpendicular to the movement direction and that guides said crank box in a direction parallel to said crank box;
 a crank shaft that is caused to rotate by way of the crank, wherein a crank pin is fitted into a pin groove provided to the rear surface of said second slider and wherein said crank pin moves as said second slider moves;
 a shift element that has at an end thereof two gear holders projectingly mounted in the downward direction, causing the gear holders to freely rotate about said crank shaft in the direction perpendicular to the movement direction;
 a pinion gear that is provided to a leading end of the rotatable shaft of said motor;
 a second gear that is provided to a shift gear shaft disposed within said gear box so that the second gear is engaged with said pinion gear;
 a third gear that is provided to said shift gear shaft, wherein the third gear is adjacently coupled to said second gear and has a smaller diameter than that of said second gear;
 a fourth gear that is provided to said shift gear shaft, wherein the fourth gear has a smaller diameter than that of said third gear and is provided to a side of said second gear opposite to the third gear and about the shift gear shaft;
 a fifth gear that is provided in said gear box,

and that is provided to the axle having wheels at the opposite ends thereof, and that is engaged with said third gear; and a sixth gear that is provided to said axle to engage with said fourth gear,

wherein:

said second slider moves as said shift lever moves;

said crank is caused to rotate by way of said second slider, wherein a crank pin is fitted into the pin groove provided on the rear surface of said second slider;

said shift element is caused to rotate as said crank rotates; and

either one of a first and a second combination can be selected,

with the first combination being that the third and fifth gears are engaged with each other when said gear holders move in the vertical direction with respect to the movement direction as said shift element rotates and when the second gear retained in said gear holders moves so that the third and fifth gears are engaged with each other, and

with the second combination being that the fourth and sixth gears are engaged with each other.

7. The radio-controlled traveling toy according to claim 6, wherein said shift lever comprises:

a shift shaft that stands vertically from the first slider;

a grasping section that is disposed on said shift shaft;

a shift button that extends from the top of the grasping section through inside the shift shaft;

a button receiving section that abuts against the bottom of said shift button;

a spring that is disposed between the button receiving section and the shift shaft bottom inside the shift shaft;

a pressing shaft that extends through inside said spring, and that is secured to the button receiving section at the upper end of the pressing shaft, and that has a bottom plate, at the bottom end of the pressing shaft, to be provided to the first slider; and

a pair of locking bosses that is provided to the opposite sides of said pressing shaft in the perpendicular direction with respect to the movement direction, and that is arranged to stand vertically to fit into a pair of grooves provided at the opposite sides of said first slider,

wherein the radio-controlled traveling toy further

comprises:

a pair of first guide ribs that is provided to the second slider in the perpendicular direction with respect to the movement direction so as to guide the first slider ribs that are provided to the opposite sides of the first slider with respect to the movement direction;

a pair of second guide ribs that is provided to the upper end of the crank box so as to guide the second slider ribs that are provided to the opposite sides of the second slider in the perpendicular direction with respect to the movement direction; and

locking plates that are provided at both of said second guide ribs to lock said locking bosses,

wherein:

when said shift lever is fixed, either one of said first and second combinations is retained by locking either one, of the locking bosses to either one of the locking plates, and

when said shift lever is moved, the button receiving section and the pressing shaft are pressed down by pressing down the shift button so that the locking bosses can be pressed down.

8. The radio-controlled traveling toy according to claim 5, wherein the switch mode selection can be changed by the arranged positions of the shift lever.

FIG. 1

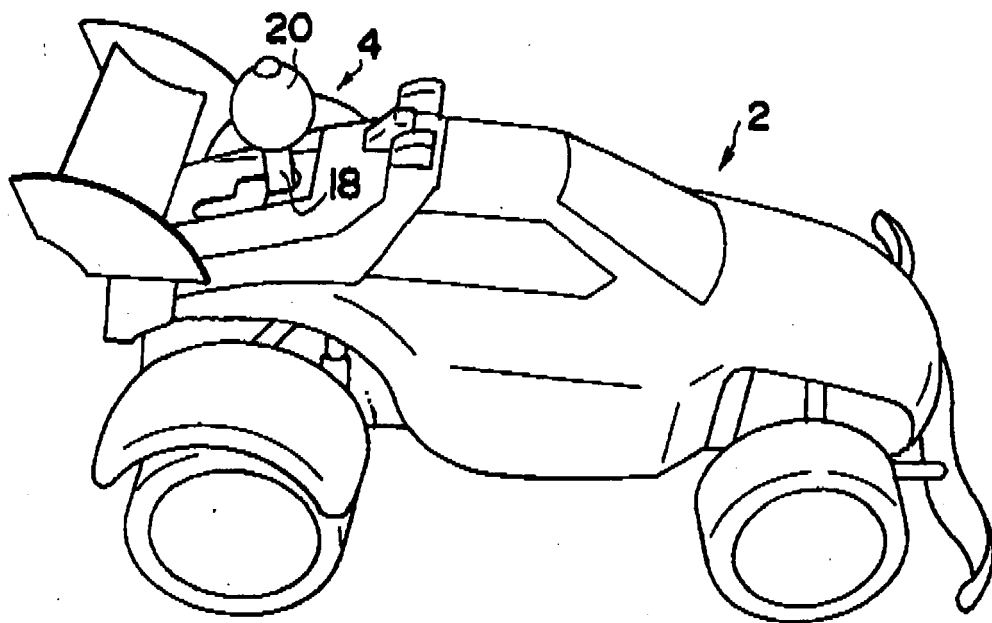


FIG. 2

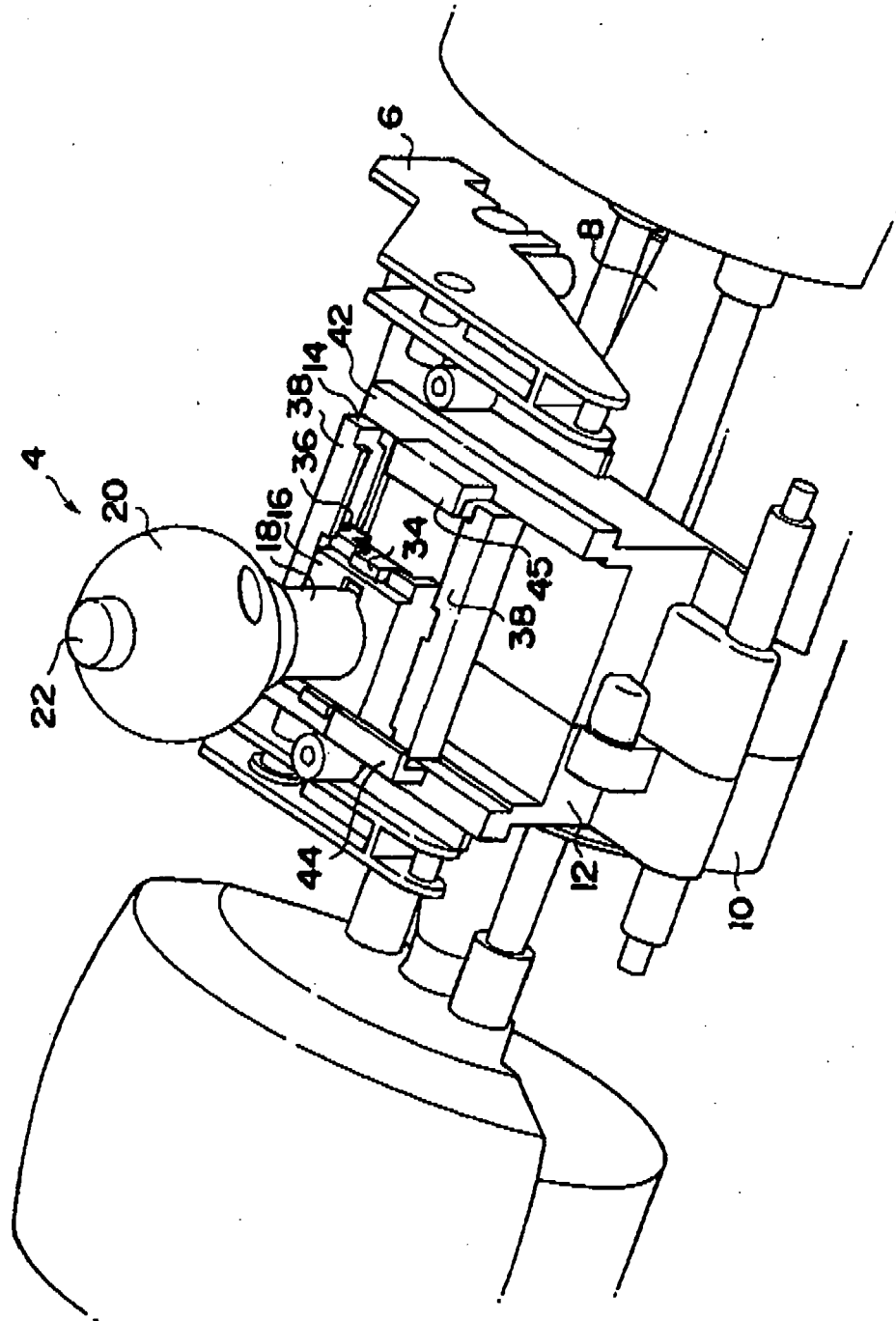


FIG. 3

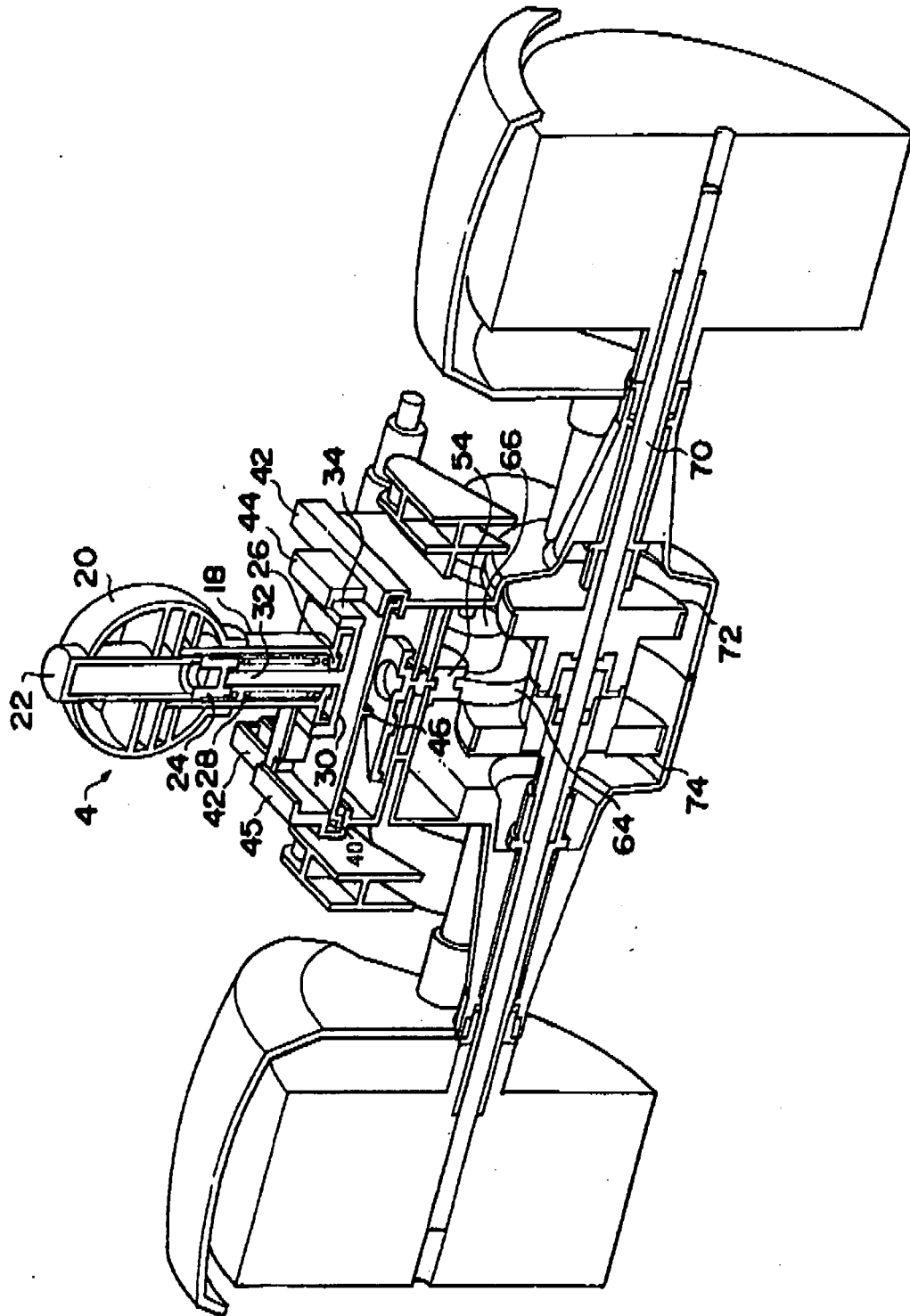


FIG. 4

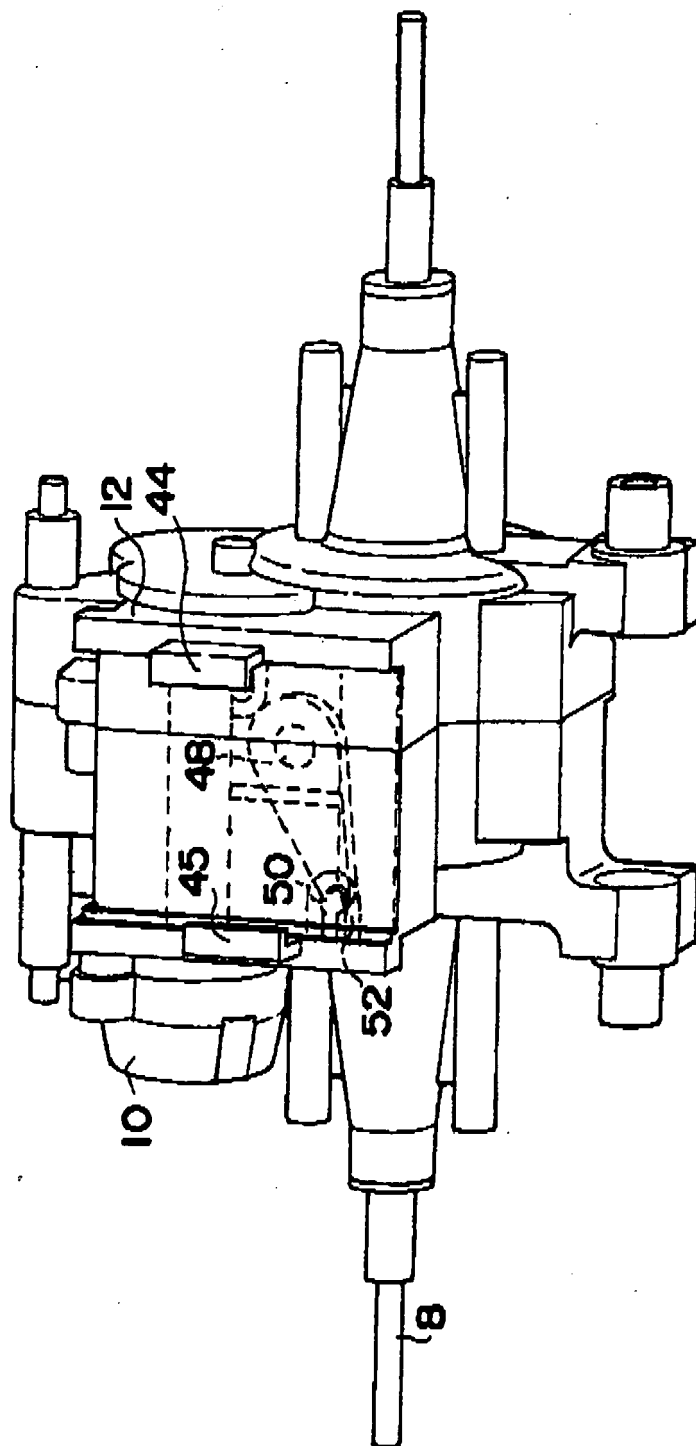


FIG. 5

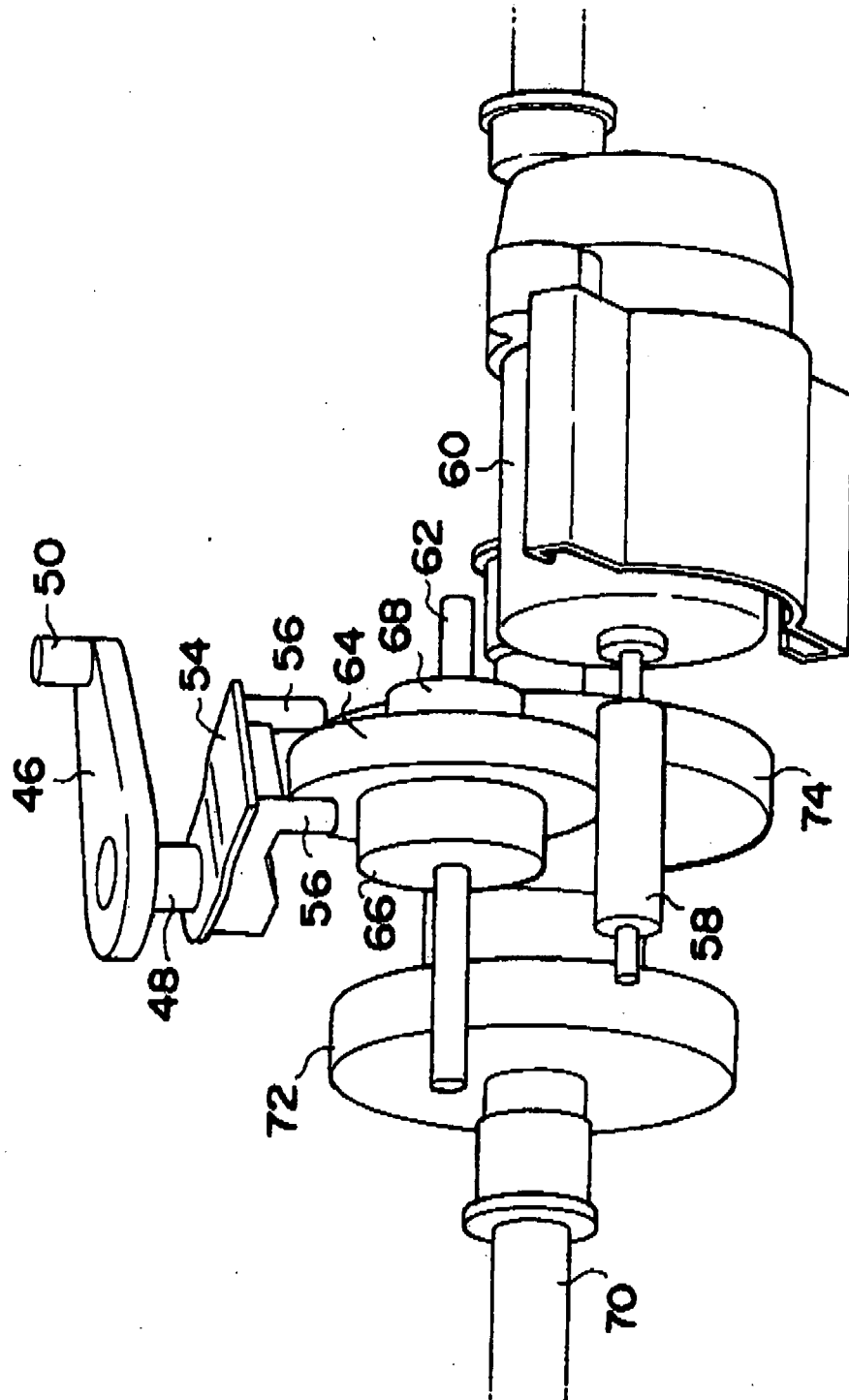


FIG. 6

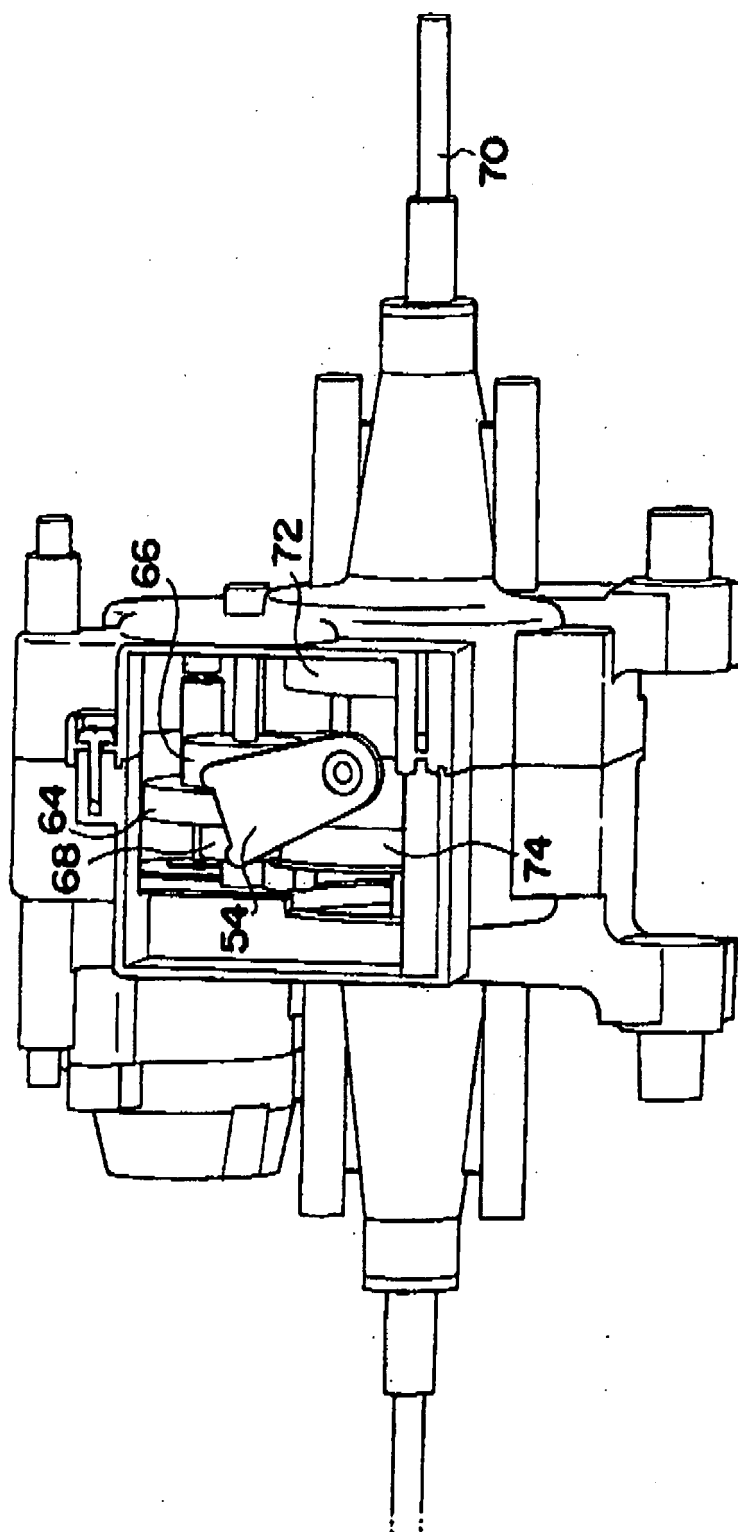


FIG. 7

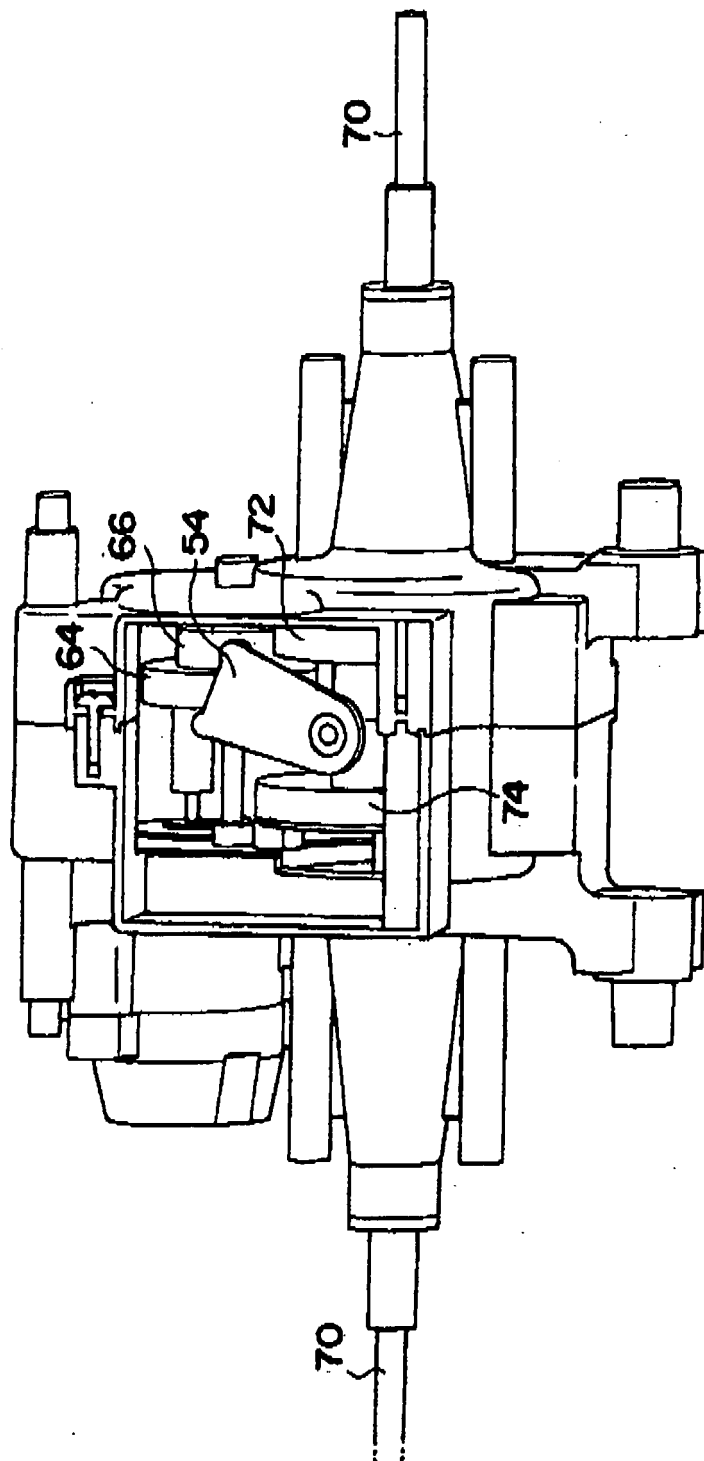
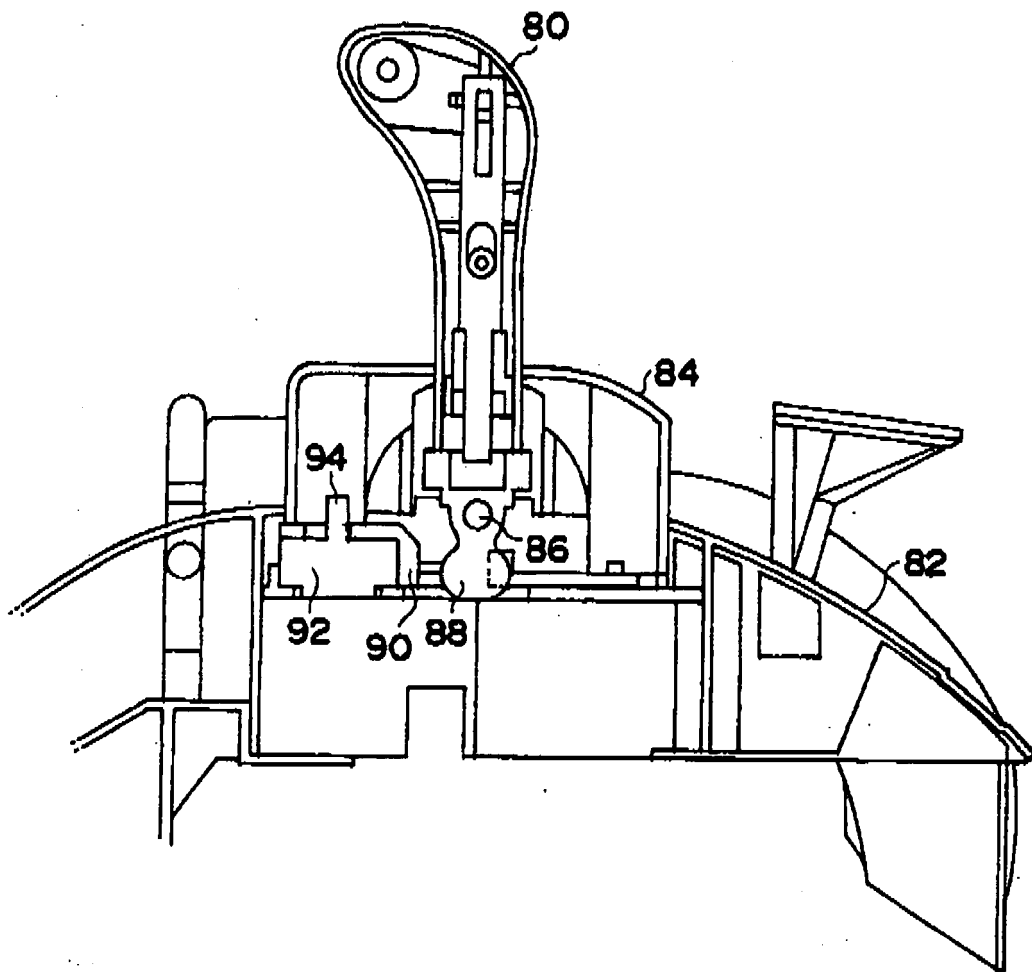


FIG. 8





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EUROPEAN SEARCH REPORT

Application Number
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Place of search Munich		Date of completion of the search 22 July 2008	Examiner Shmonin, Vladimir
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