Fig. 9 is a hydraulic pressure circuit diagram illustrating a configuration of a car body tilting mechanism in the embodiment.

Fig. 10 is a block diagram in the embodiment, which is equivalent to Fig. 4.

Fig. 11 is a ~~side~~plan view in a third embodiment of the present invention, which is equivalent to Fig. 1.

Fig. 12 is a side view in the embodiment, which is equivalent to Fig. 2.

Fig. 13 is a front view in the embodiment, which is equivalent to Fig. 3.

Fig. 14 is a block diagram in the embodiment, which is equivalent to Fig. ~~4~~9.

Fig. 15 is a hydraulic pressure circuit diagram in the embodiment, which is equivalent to Fig. ~~9~~4.

Fig. 16 is a plan view in a fourth embodiment of the present invention, which is equivalent to Fig. 1.

Fig. 17 is a side view in the embodiment, which is equivalent to Fig. 2.

Fig. 18 is a front view in the embodiment, which is equivalent to Fig. 3.

Fig. 19 is a front view in a fifth embodiment of the present invention, which is equivalent to Fig. 3.

Fig. 20 is a block diagram in a sixth embodiment of the present invention, which is equivalent to Fig. 4.

41; the air reservoir (not illustrated), and a pipe 62 for suctioning compressed air.

[0079]

The car body tilting mechanism 211 tilts the car body 5 relative to the bogie 6 in the vehicle lateral direction. The car body tilting mechanism 211 includes a tilt angle controlling apparatus 60 and a tilt adjustment apparatus 61. The tilt angle controlling apparatus 60 adjusts the height of the air spring 31 while bypassing the leveling valve 41 operated by the adjustment rod 45. The tilt adjustment apparatus 61 restricts (prevents) the leveling valve 41 from adjusting the height of the air spring 31 when the tilt angle controlling apparatus 60 adjusts the height of the air spring 31.

[0080]

The tilt angle controlling apparatus 60 includes a first 3-way electromagnetic switching valve 63; a bypass pipe 65; and a second 3-way electromagnetic switching valve 64. The first 3-way electromagnetic switching valve 63 and the second 3-way electromagnetic switching valve 64 are control valves configured to perform an opening and closing operation based on a control command from the tilt control unit ~~13~~213. The tilt adjustment apparatus 61 is made up of the first 3-way electromagnetic switching valve 63 and the second 3-way electromagnetic switching valve 64.

[0081]

The first 3-way electromagnetic switching valve 63 can switch pipe communication between a state in which a pipe 66 communicating with the air reservoir communicates with a pipe 62 connected to the leveling valve 41, and a state in which the pipe 66 communicates with the bypass pipe 65.

[0082]

The second 3-way electromagnetic switching valve 64 can switch pipe communication between a state in which a pipe 69 connected to the air spring 31 communicates with a pipe 68 connected to the leveling valve 41, and a state in which the pipe 69 communicates with the bypass pipe 65. The second 3-way electromagnetic switching valve 64 can discharge compressed air inside the air spring 31. A pressure sensor 70 is attached to each of the pipes 69, and detects an internal compressed air pressure of the air spring 31. A detection result from the pressure sensor 70 is transmitted to the tilt control unit ~~13~~213.

[0083]

A differential pressure valve 71 is attached to a pipe between two pipes 68. The differential pressure valve 71 allows the two pipes 68 to communicate with each other when an internal pressure difference between two air springs 31 separate from each other in the vehicle lateral

restricted from adjusting the height of the air spring 31. Accordingly, it is possible to adjust the height position of the car body 5 relative to the bogie frame 26 similar to when the height of each of the air springs 31 is individually adjusted. Accordingly, the heights of the end portions of the car body 5 in the vehicle lateral direction are set to be different from each other, and thus the car body 5 is tilted. As a result, it is possible to more reliably prevent ride quality from deteriorating when the guide-rail track vehicle travels on a curved portion of the track.

[0097]

Subsequently, a guide-rail track vehicle in a fourth embodiment of the present invention will be described. Since the configuration of a car body tilting mechanism is the only difference between the guide-rail track vehicle 1 of the third embodiment and the guide-rail track vehicle 1 of the fourth embodiment, referring to Fig. 15, a description will be given with the same reference signs assigned to the same parts.

[0098]

As illustrated in Figs. 16 and 18, the guide-rail track vehicle in the fourth embodiment includes the car body 5 and the bogie 6. The bogie 6 includes the travelling wheels 7; the steering device 8; the suspension

[0105]

Accordingly, similar to the third embodiment, during a normal operation of the guide-rail track vehicle of the fourth embodiment, it is possible to automatically control the height of the air spring 31 using the leveling valve 41 and the adjustment rod 45 such that the car body 5 is not brought into a tilted state. In contrast, in order to tilt the car body 5, it is possible to change the neutral position of the torsion bar 81 by allowing the actuator 87 to twist the torsion bar 81 in a state where the leveling valve 41 is restricted from adjusting the height of the air spring 31. Accordingly, similar to when the height of each of the air springs 31 is individually adjusted, it is possible to adjust the height position of the car body 5 relative to the bogie frame 26. In addition, the heights of the end portions of the car body 5 in the vehicle lateral direction are set to be different from each other, and thus the car body 5 is tilted. As a result, it is possible to more reliably prevent ride quality from deteriorating when the guide-rail track vehicle travels on a curved portion of the track.

[0106]

Subsequently, a guide-rail track vehicle in a fifth embodiment of the present invention will be described. Since part of a car body tilting mechanism is the only

from each other in the vehicle lateral direction. That is, since only the control target of the tilt control unit 313 in the fifth embodiment is changed from the "car body lifting up and down apparatus 74" illustrated in Fig. 15 to the "car body tilting drive apparatus 91", a detailed description thereof will not be given herein.

[0114]

Accordingly, similar to the third embodiment, during a normal operation of the guide-rail track vehicle of the fifth embodiment, it is possible to automatically adjust the height of the air spring 31 using the leveling valve 41 and the adjustment rod 45 such that the car body 5 is not brought into a tilted state. In contrast, in order to tilt the car body 5, it is possible to change the height of each of the pair of air springs 31 by allowing the actuator 96 to press the suspension frame 29 in the vehicle lateral direction in a state where the leveling valve 41 is restricted from adjusting the height of the air spring 31. Accordingly, similar to when the height of each of the air springs 31 is individually adjusted, it is possible to adjust the height position of the car body 5 relative to the bogie frame 26. In addition, the heights of the end portions of the car body 5 in the vehicle lateral direction are set to be different from each other, and thus the car body 5 is tilted. As a result, it is possible to more reliably

the curvature radius of the track 2 from the degree of turning of the guiding frame 19 using the curvature radius calculation unit 56 (step S03).

The tilt control unit 513 obtains normal lateral acceleration applied to passengers in the vehicle calculated by the normal acceleration calculation unit 457 based on information regarding the vehicle speed, the cant, and the curvature radius (step S14).

[0133]

The tilt control unit 513 acquires the normal lateral acceleration detected by the acceleration detection unit 103 (step S21: acceleration detection step and running condition acquisition step). The tilt control unit 513 controls the acceleration comparison unit 104 to compare the normal lateral acceleration calculated by the normal acceleration calculation unit 457 with the normal lateral acceleration detected by the ~~normal acceleration detection unit 104~~acceleration detection unit 103 (step S22: acceleration comparison step). As described above, when the acceleration comparison unit 104 determines that a difference between the calculated result from the normal acceleration calculation unit 457 and the detection result from the acceleration detection unit 103 exceeds a pre-set threshold value, the acceleration detection unit 103 outputs information indicative of a failed state to the

tilt angle calculation unit 58 such that the tilting of the car body 5 is not controlled.

[0134]

Subsequently, when information regarding the normal lateral acceleration obtained by the normal acceleration calculation unit 457 is input to the tilt control unit 513 via the acceleration comparison unit 104, the tilt control unit 513 obtains the lateral tilt angle of the car body 5 calculated by the tilt angle calculation unit 58 based on the normal lateral acceleration (step S05). The tilt control unit ~~13~~513 controls the driving of the tilt drive unit 53 such that the tilt angle is equal to the calculated tilt angle (step S06).

[0135]

Accordingly, in the guide-rail track vehicle of the seventh embodiment, it is possible to detect normal lateral acceleration actually applied to passengers using the acceleration detection unit 103. For this reason, also when the value of the normal lateral acceleration calculated by the normal acceleration calculation unit 457 is abnormal, it is possible to detect the abnormality of the value and optimally control the tilting of the car body 5.

[0136]

The present invention is not limited to the

26: bogie frame

27: guiding frame coupling portion ~~27~~

28: reinforcement member

29: suspension frame

30: parallel link device

31: air spring

32: fixation portion

33: parallel link receiving portion

34: vehicle floor surface

35: car body underframe

36: parallel link

37: upper link member

38: lower link member

39: bogie frame

40: height adjustment apparatus

41: leveling valve

42: adjustment valve support bar

43: bracket

44: lever

45: adjustment rod

46: displacement valve

47: link portion

48: horizontal rod

49: horizontal detection link

50: vertical rod

Claims

[Claim 1]

A guide-rail track vehicle comprising:

a car body; and

a bogie configured to support the bottom of the car body,

wherein the bogie includes

a car body tilting mechanism configured to tilt the car body in a vehicle lateral direction;

a guiding frame configured to turn while being guided by guide rails provided along a track;

a detection unit configured to detect the degree of turning of the guiding frame; and

a tilt control unit configured to control the car body tilting mechanism to tilt the car body based on a detection result from the detection unit.

[Claim 2]

The guide-rail track vehicle according to claim 1,

wherein the detection unit includes a link mechanism configured to convert a displacement of the guiding frame in a turn direction into a linear displacement, and a displacement sensor configured to detect the linear displacement converted by the link mechanism.

[Claim 3]

The guide-rail track vehicle according to claim 1 or 2, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction;

a height adjustment apparatus configured to be able to individually adjust the height of each of the dampening apparatuses; and

an automatic height adjustment mechanism configured to maintain the height of the dampening apparatus in a pre-set range of height by operating the height adjustment apparatus,

wherein the car body tilting mechanism includes a height adjustment apparatus moving mechanism configured to be able to move the height adjustment apparatus in a height direction, and a drive apparatus configured to drive the height adjustment apparatus moving mechanism, and

wherein the tilt control unit controls the driving of the drive apparatus based on a detection result from the detection unit, and moves the position of the height adjustment apparatus in the height direction using the height adjustment apparatus moving mechanism.

[Claim 4]

The guide-rail track vehicle according to claim 1 or

2, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction;

a height adjustment apparatus configured to be able to individually adjust the height of each of the dampening apparatuses; and

an automatic height adjustment mechanism configured to maintain the height of the dampening apparatus in a pre-set range of height by operating the height adjustment apparatus,

wherein the car body tilting mechanism includes a tilt angle control apparatus that is configured to change the height of the dampening apparatus while bypassing the height adjustment apparatus, when tilting the car body, and a tilt adjustment apparatus configured to restrict the height adjustment apparatus from adjusting the height of the dampening apparatus, and

wherein the tilt control unit controls the driving of the tilt angle control apparatus based on a detection result from the detection unit such that the height of the dampening apparatus is adjusted.

[Claim 5]

The guide-rail track vehicle according to claim 1 or 2, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction;

a height adjustment apparatus configured to be able to individually adjust the height of each of the dampening apparatuses; and

an automatic height adjustment mechanism configured to maintain the height of the dampening apparatus in a pre-set range of height by operating the height adjustment apparatus,

wherein the car body tilting mechanism includes a car body lifting up and down apparatus that is configured to support the bottom of the dampening apparatus and to be able to move the position of the dampening apparatus in a vertical direction, and a tilt adjustment apparatus configured to restrict the height adjustment apparatus from adjusting the height of the dampening apparatus, and

wherein the tilt control unit controls the car body lifting up and down apparatus to displace the position of the dampening apparatus in the vertical direction based on a detection result from the detection unit.

[Claim 6]

The guide-rail track vehicle according to claim 1 or 2, further comprising:

dampening apparatuses that are disposed between the

bogie and the car body while being separate from each other in the vehicle lateral direction; and

an anti-rolling apparatus that is configured to include a torsion bar extending in the vehicle lateral direction, and to restrict the tilting of the car body using a restoring force of the torsion bar in a torsional direction,

wherein the car body tilting mechanism includes a rod expansion and contraction apparatus configured to displace a neutral position of the torsion bar in the torsional direction, and

wherein the tilt control unit controls the driving of the rod expansion and contraction apparatus based on a detection result from the detection unit such that the neutral position of the torsion bar is displaced.

[Claim 7]

The guide-rail track vehicle according to claim 5 or 6, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction,

wherein the bogie includes a suspension frame fixed to a floor portion of the car body,

wherein the car body tilting mechanism includes a right/left stopper that is disposed in a lateral center

portion of the floor portion of the car body and is configured to restrict the car body from being slid in the vehicle lateral direction while allowing the car body to be tilted in the vehicle lateral direction, and a car body tilting drive apparatus configured to apply force to the suspension frame in the vehicle lateral direction, and

wherein the tilt control unit controls the driving of the car body tilting drive apparatus based on a detection result from the detection unit such that force is applied to the suspension frame in the vehicle lateral direction.

[Claim 8]

The guide-rail track vehicle according to any one of claims 1 to 7,

wherein the tilt control unit includes

a running condition acquisition unit configured to acquire at least vehicle speed information as a running condition;

a curvature radius calculation unit configured to calculate the curvature radius of the track based on the degree of turning detected by the detection unit;

a normal acceleration calculation unit configured to obtain normal lateral acceleration applied to passengers in the vehicle based on the vehicle speed information and the curvature radius; and

a tilt angle calculation unit configured to calculate the lateral tilt angle of the car body based on the normal lateral acceleration.

[Claim 9]

The guide-rail track vehicle according to claim 8, further comprising:

a speed detection unit configured to detect a vehicle speed,

wherein the running condition acquisition unit acquires vehicle speed information from the speed detection unit, and

wherein the normal acceleration calculation unit calculates normal lateral acceleration based on information regarding the vehicle speed and the curvature radius.

[Claim 10]

The guide-rail track vehicle according to claim 8, further comprising:

a storage unit configured to pre-store information regarding the cant of the track and the vehicle speed,

wherein the running condition acquisition unit acquires information regarding the cant and the vehicle speed from information stored in the storage unit, and

wherein the normal acceleration calculation unit calculates normal lateral acceleration based on

information regarding the cant, the vehicle speed, and the curvature radius.

[Claim 11]

The guide-rail track vehicle according to claim 10, further comprising:

an acceleration detection unit configured to detect normal lateral acceleration,

wherein the running condition acquisition unit acquires information regarding the normal lateral acceleration detected by the acceleration detection unit, and

wherein the tilt control unit includes an acceleration comparison unit that is configured to compare the normal lateral acceleration calculated by the normal acceleration calculation unit with the normal lateral acceleration detected by the acceleration detection unit.

[Claim 12]

A car body tilt control method of a guide-rail track vehicle including a guiding frame that is configured to turn while being guided by guide rails provided along a track, the method comprising:

a detection step of detecting the degree of turning of the guiding frame; and

a tilt control step of controlling the tilting of a car body based on the degree of turning of the guiding

frame.

[Claim 13]

The car body tilt control method of a guide-rail track vehicle according to claim 12,

wherein the tilt control step includes

a running condition acquisition step of acquiring at least vehicle speed information as a running condition;

a curvature radius calculation step of calculating the curvature radius of the track based on the degree of turning of the guiding frame;

a normal acceleration calculation step of obtaining normal lateral acceleration applied to passengers in the vehicle based on the vehicle speed and the curvature radius; and

a tilt angle calculation step of calculating the lateral tilt angle of the car body based on the normal lateral acceleration, and

wherein the tilting of the car body is controlled in such a manner that the tilt angle is equal to the calculated tilt angle.

[Claim 14]

The car body tilt control method of a guide-rail track vehicle according to claim 13,

wherein information regarding a cant and the vehicle speed is acquired in the running condition acquisition

step, and

wherein the normal lateral acceleration is calculated based on the cant, the vehicle speed, and the curvature radius in the normal acceleration calculation step.

[Claim 15]

The car body tilt control method of a guide-rail track vehicle according to claim 14, further comprising:

an acceleration detection step of detecting normal lateral acceleration,

wherein information regarding the normal lateral acceleration detected in the acceleration detection step is acquired in the running condition acquisition step, and

wherein the tilt control step includes an acceleration comparison step of comparing the normal lateral acceleration calculated in the normal acceleration calculation step with the normal lateral acceleration detected in the acceleration detection step.

Claims

1. A guide-rail track vehicle comprising:
a car body; and
a bogie configured to support the bottom of the car body,
wherein the bogie includes
a car body tilting mechanism configured to tilt the car body in a vehicle lateral direction;
a guiding frame configured to turn while being guided by guide rails provided along a track;
a detection unit configured to detect the degree of turning of the guiding frame; and
a tilt control unit configured to control the car body tilting mechanism to tilt the car body based on a detection result from the detection unit,
wherein the detection unit includes
a link mechanism which is configured to convert a displacement of the guiding frame in a turn direction into a linear displacement, and
a displacement sensor which is fixed to a floor surface of the car body or a suspension frame attached to the car body, and which is configured to detect the linear displacement converted by the link mechanism.

2. The guide-rail track vehicle according to claim 1,
wherein the link mechanism is configured to convert the displacement of the guiding frame in the turn direction into a vertical displacement.

3. The guide-rail track vehicle according to claim 1 or 2, further comprising:
dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction;
a height adjustment apparatus configured to be able to individually adjust the height of each of the dampening apparatuses; and
an automatic height adjustment mechanism configured to maintain the height of the dampening apparatus in a pre-set range of height by operating the height adjustment apparatus,
wherein the car body tilting mechanism includes a height adjustment apparatus moving mechanism configured to be able to move the height adjustment apparatus in a height direction, and a drive apparatus configured to drive the height adjustment apparatus moving mechanism, and
wherein the tilt control unit controls the driving of the drive apparatus based on a detection result from the detection unit, and moves the position of the height adjustment apparatus in the height direction using the height adjustment apparatus moving mechanism.

4. The guide-rail track vehicle according to claim 1 or 2, further comprising:
dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction;

a height adjustment apparatus configured to be able to individually adjust the height of each of the dampening apparatuses; and

an automatic height adjustment mechanism configured to maintain the height of the dampening apparatus in a pre-set range of height by operating the height adjustment apparatus,

wherein the car body tilting mechanism includes a tilt angle control apparatus that is configured to change the height of the dampening apparatus while bypassing the height adjustment apparatus, when tilting the car body, and a tilt adjustment apparatus configured to restrict the height adjustment apparatus from adjusting the height of the dampening apparatus, and

wherein the tilt control unit controls the driving of the tilt angle control apparatus based on a detection result from the detection unit such that the height of the dampening apparatus is adjusted.

5. The guide-rail track vehicle according to claim 1 or 2, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction;

a height adjustment apparatus configured to be able to individually adjust the height of each of the dampening apparatuses; and

an automatic height adjustment mechanism configured to maintain the height of the dampening apparatus in a pre-set range of height by operating the height adjustment apparatus,

wherein the car body tilting mechanism includes a car body lifting up and down apparatus that is configured to support the bottom of the dampening apparatus and to be able to move the position of the dampening apparatus in a vertical direction, and a tilt adjustment apparatus configured to restrict the height adjustment apparatus from adjusting the height of the dampening apparatus, and

wherein the tilt control unit controls the car body lifting up and down apparatus to displace the position of the dampening apparatus in the vertical direction based on a detection result from the detection unit.

6. The guide-rail track vehicle according to claim 1 or 2, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction; and

an anti-rolling apparatus that is configured to include a torsion bar extending in the vehicle lateral direction, and to restrict the tilting of the car body using a restoring force of the torsion bar in a torsional direction,

wherein the car body tilting mechanism includes a rod expansion and contraction apparatus configured to displace a neutral position of the torsion bar in the torsional direction, and

wherein the tilt control unit controls the driving of the rod expansion and contraction apparatus based on a detection result from the detection unit such that the neutral position of the torsion bar is displaced.

7. The guide-rail track vehicle according to claim 5 or 6, further comprising:

dampening apparatuses that are disposed between the bogie and the car body while being separate from each other in the vehicle lateral direction,

wherein the bogie includes a suspension frame fixed to a floor portion of the car body,

wherein the car body tilting mechanism includes a right/left stopper that is disposed in a lateral center portion of the floor portion of the car body and is configured to restrict the car body from being slid in the vehicle lateral direction while allowing the car body to be tilted in the vehicle lateral direction, and a car body tilting drive apparatus configured to apply force to the suspension frame in the vehicle lateral direction, and

wherein the tilt control unit controls the driving of the car body tilting drive apparatus based on a detection result from the detection unit such that force is applied to the suspension frame in the vehicle lateral direction.

8. The guide-rail track vehicle according to any one of claims 1 to 7,

wherein the tilt control unit includes

a running condition acquisition unit configured to acquire at least vehicle speed information as a running condition;

a curvature radius calculation unit configured to calculate the curvature radius of the track based on the degree of turning detected by the detection unit;

a normal acceleration calculation unit configured to obtain normal lateral acceleration applied to passengers in the vehicle based on the vehicle speed information and the curvature radius; and

a tilt angle calculation unit configured to calculate the lateral tilt angle of the car body based on the normal lateral acceleration.

9. The guide-rail track vehicle according to claim 8, further comprising:

a speed detection unit configured to detect a vehicle speed,

wherein the running condition acquisition unit acquires vehicle speed information from the speed detection unit, and

wherein the normal acceleration calculation unit calculates normal lateral acceleration based on information regarding the vehicle speed and the curvature radius.

10. The guide-rail track vehicle according to claim 8, further comprising:

a storage unit configured to pre-store information regarding the cant of the track and the vehicle speed,

wherein the running condition acquisition unit acquires information regarding the cant and the vehicle speed from information stored in the storage unit, and

wherein the normal acceleration calculation unit calculates normal lateral acceleration based on information regarding the cant, the vehicle speed, and the curvature radius.

11. The guide-rail track vehicle according to claim 10, further comprising:

an acceleration detection unit configured to detect normal lateral acceleration,

wherein the running condition acquisition unit acquires information regarding the normal lateral acceleration detected by the acceleration detection unit, and

wherein the tilt control unit includes an acceleration comparison unit that is configured to compare the normal lateral acceleration calculated by the normal acceleration calculation unit with the normal lateral acceleration detected by the acceleration detection unit.

12. A car body tilt control method of a guide-rail track vehicle according to any one of claims 1 to 11, the method comprising:

a detection step of detecting the degree of turning of the guiding frame; and

a tilt control step of controlling the tilting of a car body based on the degree of turning of the guiding frame.

13. The car body tilt control method of a guide-rail track vehicle according to claim 12,

wherein the tilt control step includes

a running condition acquisition step of acquiring at least vehicle speed information as a running condition;

a curvature radius calculation step of calculating the curvature radius of the track based on the degree of turning of the guiding frame;

a normal acceleration calculation step of obtaining normal lateral acceleration applied to passengers in the vehicle based on the vehicle speed and the curvature radius; and

a tilt angle calculation step of calculating the lateral tilt angle of the car body based on the normal lateral acceleration, and

wherein the tilting of the car body is controlled in such a manner that the tilt angle is equal to the calculated tilt angle.

14. The car body tilt control method of a guide-rail track vehicle according to claim 13,

wherein information regarding a cant and the vehicle speed is acquired in the running condition acquisition step, and

wherein the normal lateral acceleration is calculated based on the cant, the vehicle speed, and the curvature radius in the normal acceleration calculation step.

15. The car body tilt control method of a guide-rail track vehicle according to claim 14, further comprising:

an acceleration detection step of detecting normal lateral acceleration,

wherein information regarding the normal lateral acceleration detected in the acceleration detection step is acquired in the running condition acquisition step, and

wherein the tilt control step includes an acceleration comparison step of comparing the normal lateral acceleration calculated in the normal acceleration calculation step with the normal lateral acceleration detected in the acceleration detection step.

16. The guide-rail track vehicle according to any one of claims 1 to 11,

wherein the bogie includes:

a pair of travelling wheels which are disposed in a vehicle lateral direction of the car body; and

a bogie frame having a kingpin that rotatably supports the pair of travelling wheels, and

wherein the pair of travelling wheels are steered by using the turning of the guiding frame.