## CLAIMS

1. A railcar steering bogie comprising:

a bogie frame including a cross beam supporting a carbody;

a pair of axles arranged along a car width direction;

axle boxes accommodating respective bearings rotatably supporting the respective axles;

axle box suspensions each including a coupling member coupling the corresponding axle box and the bogie frame while allowing relative displacement of the bogie frame and the axle box in a car longitudinal direction;

a plate spring extending in the car longitudinal direction and including

both car longitudinal direction end portions extending obliquely upward along the car longitudinal direction and supported above the respective axle boxes and

a car longitudinal direction middle portion arranged under the cross beam so as not to be fixed to the cross beam;

support seats including respective inclined upper surfaces and supporting the both respective longitudinal direction end portions of the plate spring;

gap bodies each provided between an upper surface of the corresponding axle box and a lower surface of the corresponding support seat and configured to allow displacement of the axle box and the support seat in the car longitudinal direction; and

an interlock mechanism coupling the bogie frame and the corresponding support seat and configured to move the support seat in the car longitudinal direction in accordance with a movement of the corresponding car longitudinal direction end portion of the plate spring in the car longitudinal direction.

2. The railcar steering bogie according to claim 1, wherein each of the gap bodies is an elastic member including upper and lower surfaces, the upper and lower surfaces including respective horizontal surfaces, the elastic member being elastically deformable in a horizontal direction.

3. The railcar steering bogie according to claim 1 or 2, further comprising a steering mechanism configured to steer at least one of the pair of axles, wherein:

the bogie frame supports the carbody or a bolster such that the carbody or the bolster is swingable relative to the bogie frame about a vertical axis; and

in accordance with the swinging of the carbody or the bolster relative to the bogie frame, the steering mechanism displaces the corresponding axle box in the car longitudinal direction to steer the axle.

4. The railcar steering bogie according to any one of claims 1 to 3, wherein:

the interlock mechanism is a link mechanism including a link member turnably attached to at least one of a support seat-side bracket provided at the corresponding support seat and a bogie frame-side bracket provided at the bogie frame; and

when the bogie frame moves downward, and therefore, the bogie frame-side bracket moves downward, the link member of the link mechanism displaces the support seat through the support seat-side bracket toward the cross beam in the car longitudinal direction.

5. The railcar steering bogie according to claim 4, wherein:

the link mechanism is configured such that a displacement magnitude x of the support seat is represented by Formulas (1) and (2) below,

$$x = D - L\cos\theta \quad \dots (1)$$

$$\theta = \sin^{-1}((H+\delta)/L) \quad \dots (2)$$

where D denotes a car longitudinal direction distance between a turning center of the link member at the support seat-side bracket and a turning center of the link member at the bogie frame-side bracket, H denotes a vertical direction distance between the two turning centers, $\delta$ denotes a deflection amount of the plate spring in an upward/downward direction, and L denotes a length of the link member; and

the length L of the link member, the car longitudinal direction distance D, and the vertical direction distance H are set such that an absolute value $|x-x_0|$ of a difference between the displacement magnitude x of the support seat with respect to the deflection

amount δ and a displacement magnitude $x_0$ of the longitudinal direction end portion of the plate spring with respect to the deflection amount δ becomes 5 mm or less.

6. The railcar steering bogie according to claim 4 or 5, wherein:

the link member is turnably coupled to at least one of the support seat-side bracket and the bogie frame-side bracket through a pin member; and

the pin member is attached to the at least one bracket through an adjustment plate.

7. The railcar steering bogie according to claim 6, wherein the pin member includes a spherical bushing supporting the link member such that the link member is swivelable.

8. The railcar steering bogie according to claim 4 or 5, wherein:

the link member is a flat plate-shaped member extending in the car longitudinal direction, a width of the flat plate-shaped member in the car width direction being larger than a thickness of the flat plate-shaped member in a vertical direction; and

the link member is arranged above the plate spring so as to overlap the plate spring in a plan view.