CLAIMS

1. A railcar steering bogie comprising:

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

two wheelsets each including an axle and a pair of wheels;

axle box suspensions including respective axle beams coupling corresponding axle boxes to the bogie frame, the axle boxes accommodating respective bearings supporting the corresponding axles; and

a steering mechanism configured to steer at least one of the two wheelsets in accordance with the swinging of the carbody or the bolster relative to the bogie frame,

the steering mechanism including

a steering lever configured to turn relative to the bogie frame about a fulcrum axis,

a coupling link coupling the steering lever and the carbody or the bolster and configured to operate in conjunction with the swinging of the carbody or the bolster relative to the bogie frame, and

two steering links corresponding to the two wheelsets respectively and coupling the steering lever and the corresponding axle beam and configured to steer the corresponding wheelset by displacing the corresponding axle box through the corresponding axle beam in conjunction with the turning of the steering lever,

the steering lever including a turning center member configured to turn about the fulcrum axis, the turning center member being a shaft portion or a groove portion,

the turning center member being arranged at a position offset with respect to the two steering links in an axial direction.

2. A railcar steering bogie comprising:

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

two wheelsets each including an axle and a pair of wheels;

axle box suspensions including respective axle beams coupling corresponding axle boxes to the bogie frame, the axle boxes accommodating respective bearings supporting the corresponding axles; and

a steering mechanism configured to steer at least one of the two wheelsets in accordance with the swinging of the carbody or the bolster relative to the bogie frame,

the steering mechanism including

a steering lever configured to turn relative to the bogie frame about a fulcrum axis,

a coupling link coupling the steering lever and the carbody or the bolster and configured to operate in conjunction with the swinging of the carbody or the bolster relative to the bogie frame, and

at least one steering link coupling the steering lever and the corresponding axle beam and configured to steer the corresponding wheelset by displacing the corresponding axle box through the corresponding axle beam in conjunction with the turning of the steering lever,

the steering lever including a turning center member configured to turn about the fulcrum axis, the turning center member being a shaft portion or a groove portion,

the turning center member being arranged at a position offset with respect to the steering link in an axial direction,

wherein the steering link and the turning center member of the steering lever are arranged so as to partially overlap each other when viewed from the axial direction.

3. A railcar steering bogie comprising:

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

two wheelsets each including an axle and a pair of wheels;

axle box suspensions including respective axle beams coupling corresponding axle boxes to the bogie frame, the axle boxes accommodating respective bearings supporting the corresponding axles; and

a steering mechanism configured to steer at least one of the two wheelsets in accordance with the swinging of the carbody or the bolster relative to the bogie frame,

the steering mechanism including

a steering lever configured to turn relative to the bogie frame about a fulcrum axis,

a coupling link coupling the steering lever and the carbody or the bolster and configured to operate in conjunction with the swinging of the carbody or the bolster relative to the bogie frame, and

at least one steering link coupling the steering lever and the corresponding axle beam and configured to steer the corresponding wheelset by displacing the corresponding axle box through the corresponding axle beam in conjunction with the turning of the steering lever,

the steering lever including a turning center member configured to turn about the fulcrum axis, the turning center member being a shaft portion or a groove portion,

the turning center member being arranged at a position offset with respect to the steering link in an axial direction, wherein:

the steering mechanism includes a housing fixed to the bogie frame and covering at least a part of the steering lever;

the steering lever includes another turning center member arranged at a position spaced apart from the turning center member in the axial direction across the steering link; and

the turning center members forming a pair are provided at the housing so as to be turnable.

4. The railcar steering bogie according to claim 3, wherein:

the steering lever includes

a pair of plates at which the respective turning center members are formed and

a pin member including a spherical bushing and provided at the pair of plates so as to extend between the pair of plates in the axial direction; and

the steering link is provided at the spherical bushing of the pin member so as to be swivelable.

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

the two steering link<u>s</u> include~~s~~

a first steering link extending toward a first side in a car longitudinal direction and coupled to the axle box suspension located at the first side in the car longitudinal direction and

a second steering link extending toward a second side in the car longitudinal direction and coupled to the axle box suspension located at the second side in the car longitudinal direction; and

one end portion of the first steering link and one end portion of the second steering link are arranged so as to be spaced apart from each other in a direction perpendicular to the fulcrum axis of the steering lever and are coupled to the steering lever through the pin member.

6. The railcar steering bogie according to claim 5, wherein:
the steering lever includes an accommodating portion having a circular shape when viewed from the axial direction;
the accommodating portion includes
an accommodating space formed in the accommodating portion and
two openings that are open toward the respective first and second sides in the car longitudinal direction; and
the one end portion of the first steering link and the one end portion of the second steering link are accommodated in the accommodating space and project from the two respective openings to the respective first and second sides in the car longitudinal direction.

7. The railcar steering bogie according to any one of claims 1 to 6, wherein:
the steering lever is arranged such that the fulcrum axis thereof extends in a car width direction; and
the coupling link and the two steering links are arranged so as to be aligned in a car upward/downward direction when viewed from the car width direction.

8. The railcar steering bogie according to any one of claims 1 to 6, wherein:
the steering mechanism is arranged such that the fulcrum axis of the steering lever extends in a car upward/downward direction; and
the coupling link and the two steering links are arranged so as to be aligned in a car width direction when viewed from the car upward/downward direction.

9. A railcar steering bogie comprising:
a bogie frame supporting a carbody or a bolster such that the carbody or the bolster is swingable relative to the bogie frame about a vertical axis;
two wheelsets each including an axle and a pair of wheels;
axle box suspensions including respective axle beams coupling corresponding axle boxes to the bogie frame, the axle boxes accommodating respective bearings supporting the corresponding axles; and
a steering mechanism configured to steer at least one of the two wheelsets in accordance with the swinging of the carbody or the bolster relative to the bogie frame,
the steering mechanism including
a steering lever configured to turn relative to the bogie frame about a fulcrum axis,
a coupling link coupling the steering lever and the carbody or the bolster and configured to operate in conjunction with the swinging of the carbody or the bolster relative to the bogie frame, and
at least one steering link coupling the steering lever and the corresponding axle beam and configured to steer the corresponding wheelset by displacing the corresponding axle box through the corresponding axle beam in conjunction with the turning of the steering lever,
the steering lever including a turning center member configured to turn about the fulcrum axis, the turning center member being a shaft portion or a groove portion,
the turning center member being arranged at a position offset with respect to the steering link in an axial direction, wherein:
each of the axle beams includes
an axle beam main body portion extending in the car longitudinal direction,
an axle beam tip end portion extending from a tip end of the axle beam main body portion in the car longitudinal direction and coupled to the bogie frame, and

a link receiving portion extending from the axle beam main body portion, the steering link being coupled to the link receiving portion at a position offset with respect to the axle beam tip end portion in the car width direction; and

the wheelset is steered by displacing the axle beam in the car longitudinal direction, the axle beam being displaced by an operation of the steering link that operates in accordance with the swinging of the carbody or the bolster relative to the bogie frame.