CLAIMS

[Claim 1]

A cooling device comprising:

a cooling fin that is provided in a wheel of a running wheel having a brake device disposed therein and rotating integrally with a axle shaft and that is configured to produce an airflow passing through the brake device through a ventilation hole for allowing the inside and outside of the wheel to communicate with each other by the rotation of the wheel in both forward and reverse directions; and

a plate-like member that is provided at an end apart from the axle shaft, in a wheel hub that fixes the axle shaft and the wheel, and rotates together with the axle shaft,

wherein the cooling fin is formed in the plate-like member,

wherein a plurality of the cooling fins are formed on the circumference centered on the rotational axis of the axle shaft on the plate-like member, and

wherein each of the cooling fins extends so as to be inclined toward one side in a circumferential direction of the rotational axis as it becomes closer to a side apart from the axle shaft in the direction of the rotational axis from on the plate-like member, and a through-hole passing through the plate-like member is formed in a region on the plate-like member corresponding to a region where the cooling fin is provided on a side toward which the cooling fin is inclined.

[Claim 2]

The cooling device according to Claim 1,

wherein the cooling fin produces the airflow through a plurality of decorative holes that serve as the ventilation hole and are formed on the circumference centered on a rotational axis of the axle shaft in the wheel

[Claim 3]

The cooling device according to Claim 1 or 2,

wherein the cooling fin produces the airflow in a direction along the rotational axis of the axle shaft.

[Claim 4]

The cooling device according to any one of Claims 1 to 3, further

comprising:

a wind guide member that is provided in the wheel, rotates integrally with the wheel, and guides the airflow from the cooling fin, to the ventilation hole.

[Claim 5]

The cooling device according to Claim 4,

wherein the wind guide member has a tubular shape that covers the ventilation hole from an outer side in a radial direction of the rotational axis of the axle shaft and is centered on the rotational axis.

[Claim 6]

The cooling device according to Claim 5,

wherein the wind guide member includes

a body part having a tubular shape centered on the rotational axis of the axle shaft, and

a wind guide member fin that extends so as to be inclined toward one side in the circumferential direction of the rotational axis as it becomes closer to an outer side in the radial direction of the rotational axis of the axle shaft from an outer peripheral surface of the body part, and

wherein a through-hole passing through the body part is formed in a region on the outer peripheral surface of the body part corresponding to a region where the wind guide member fin is provided on a side toward which the wind guide member fin is inclined.

[Claim 7]

The cooling device according to Claim 4,

wherein the wind guide member has a tubular shape that surrounds an opening of the ventilation hole from an outer peripheral side thereof.

[Claim 8]

The cooling device according to any one of Claims 4 to 7,

wherein a rubber member is provided between the wind guide member and the wheel located at an end of the wind guide member in the direction of the rotational axis.

[Claim 9]

A steering bogie comprising:

a axle shaft that rotates with a rotational axis as a center;

a pair of left and right of running wheels each having a wheel and rotating integrally with the axle shaft;

a steering guide device that supports the pair of running wheels and is guided by a guide rail extending along a track; and

the cooling device according to any one of Claims 1 to 8 provided in the wheel.

[Claim 10]

The steering bogie according to Claim 9,

wherein the cooling fins are provided in the cooling devices provided in the respective wheels in the pair of running wheels so as to produce airflows that face the axle shaft from the wheel in both the cooling devices or produce airflows that face the wheel from the axle shaft in both the cooling devices.

[Claim 11]

The steering bogie according to Claim 9,

wherein the cooling fins are provided in the cooling devices provided in the respective wheels in the pair of running wheels so as to produce airflows that face one side in the direction of the rotational axis of the axle shaft in both the cooling devices.

[Claim 12]

A vehicle comprising:

a car body having a space formed therein; and

the steering bogie according to any one of Claims 9 to 11 that is provided in a lower part of the car body.