CLAIMS

1. A rail vehicle, comprising:

a chassis frame;

a set of wheels coupled to the chassis frame; and

a milling device coupled to the chassis frame for finishing a running surface of track rails during travel of the rail vehicle along the track rails, wherein the milling device includes a milling head and a framework arranged on the chassis frame with a milling head receptacle that is displaceable vertically and transversely in relation thereto, the milling head receptacle being supported for vertical guiding via a guide shoe on the running surface and being supported for transverse guiding in parallel to a milling head shaft via a guide stop laterally on a railhead, wherein the milling head receptacle forms a transverse carriage which supports the guide shoe and the guide stop, the transverse carriage having a guide path that is parallel to the milling head shaft and that is vertically displaced and provided on a side of the milling head receptacle facing toward the guide shoe and wherein a diameter of the milling head is less than or equal to half of a wheel diameter of the wheel sets.

2. The rail vehicle according to Claim 1, wherein the guide shoe is arranged below the guide path of the transverse carriage.

3. The rail vehicle according to Claim 1, further comprising:

a motor for the milling head drive arranged on the side of the milling head receptacle opposite to the guide path.

4. The rail vehicle according to Claim 1, further comprising:

a vertical guide for the milling head receptacle provided on a side of the guide path for the transverse carriage.

5. The rail vehicle according to Claim 1, further comprising:

a feed carriage mounted to be vertically displaceable in the framework to vertically guide the transverse carriage.

6. The rail vehicle according to Claim 1, wherein the transverse carriage is vertically guided via an articulated parallelogram on the framework.

7. The rail vehicle according to Claim 1, wherein the guide stop is applied below the milling head to the railhead.

8. A milling device for a rail vehicle for finishing a running surface of track rails during travel of the rail vehicle along the track rails, comprising:

a milling head;

a milling head receptacle that is displaceable vertically and transversely in relation to the milling head, the milling head receptacle being supported for vertical guiding via a guide shoe on the running surface and being supported for transverse guiding in parallel to a milling head shaft via a guide stop laterally on a railhead, wherein the milling head receptacle forms a transverse carriage which supports the guide shoe and the guide stop, the transverse carriage having a guide path that is parallel to the milling head shaft and that is vertically displaceable and provided on a side of the milling head receptacle facing toward the guide shoe and wherein a diameter of the milling head is less than or equal to half of a wheel diameter of the wheel sets.

9. The milling device according to Claim 8, wherein the guide shoe is arranged below the guide path of the transverse carriage.

10. The milling device according to Claim 8, further comprising:

a motor for the milling head drive arranged on the side of the milling head receptacle opposite to the guide path.

11. The milling device according to Claim 8, further comprising:

a vertical guide for the milling head receptacle provided on a side of the guide path for the transverse carriage.

12. The milling device according to Claim 8, further comprising:

a framework arranged on a chassis frame of the rail vehicle; and

a feed carriage mounted to be vertically displaceable in the framework to vertically guide the transverse carriage.

13. The milling device according to Claim 8, further comprising:

a framework arranged on a chassis frame of the rail vehicle,

wherein the transverse carriage is vertically guided via an articulated parallelogram on the framework.

14. The milling device according to Claim 8, wherein the guide stop is applied below the milling head to the railhead.