CLAIMS

1. An assembly of a sleeper block and a track bed, the assembly comprising ~~A~~ a connection reinforcing structure of recess type between ~~a~~ the sleeper block and ~~a~~ the track bed, the connection reinforcing structure being configured to reinforce a connection between a prefabricated sleeper unit and the track bed in a ballastless track, the prefabricated sleeper unit comprising two or more sleeper blocks and a connection member for connecting the sleeper blocks to one another in a transverse direction of the track, the sleeper block being formed by means of concrete pouring, the connection member being configured to be arranged in a mold for manufacturing the sleeper block and integrated with the sleeper block by means of concrete pouring during a pouring process of the sleeper block, a reinforcing member being provided on one or more sidewalls of the sleeper block in a longitudinal direction of the track, the reinforcing member being a recess recessed inward from the sidewall of the sleeper block; during a pouring process of the track bed, the recess and a certain height of the sleeper block are buried in concrete of the track bed and integrated with the track bed by means of concrete pouring, and the concrete being directly filled into the recess to reinforce the connection between the sleeper block and the track bed.

2. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 1, wherein the reinforcing member of recess type is eccentrically arranged in a direction which is deviated downward from an overall center of a longitudinal vertical cross- section of the track.

3. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 1, wherein the connection member is a plurality of concrete-filled steel tubes, the concrete-filled steel tubes being configured as follows: hollow steel tubes are arranged in a mold for manufacturing two sleeper blocks adjacent to each other; and then, by means of concrete pouring during the pouring process of the sleeper block, the hollow steel tubes are

integrated with the sleeper blocks and filled with the concrete at the same time; during the pouring process of the track bed, the concrete-filled steel tubes and the sleeper blocks are buried in the track bed, whereby the sleeper blocks, the concrete-filled steel tubes and the track bed are integrated together by means of concrete pouring.

4. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 3, wherein the recess extends along the transverse direction of the track, and extends throughout a transverse sidewall.

5. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 4, wherein ~~the same transverse sidewall~~ the transverse sidewall comprises a plurality of through recesses which are arrayed in parallel with one another along a vertical direction.

6. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 3, wherein the recess extends along the transverse direction of the track, ~~a same transverse sidewall~~ a transverse sidewall comprising a plurality of recesses which are arranged with an interval in a longitudinal direction of the sleeper block.

7. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 6, wherein ~~the same transverse sidewall~~ the transverse sidewall comprises a plurality of sets of the recesses arranged with an interval, the sets being arranged in parallel with one another along the vertical direction, and for the plurality of sets of the recesses arranged with an interval and in parallel with one another along the vertical direction, the interval between the recesses in each set being gradually reduced in a direction from bottom to top.

8. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of any one of claims 4 to 7, wherein in a cross-section of the sleeper block, a size of a cross-section of each of the recesses arranged in the vertical direction is sequentially increased, in a direction from top to bottom;

or when the recess extends from a transverse middle portion of the track in a direction towards a transverse outside, a center height of a cross-section of the recess in a cross-section of the sleeper block is gradually increased;

or when the recess extends from a transverse middle portion of the track in a direction towards a transverse outside, a depth of the recess in a cross-section of the sleeper block is gradually reduced;

or when the recess extends from a transverse middle portion of the track in a manner of enlarging-diminishing-enlarging, a depth of the recess in a cross-section of the sleeper block is repeatedly fluctuated in a manner of enlarging-diminishing-enlarging, such that a bottom surface of the recess is corrugated.

9. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of any one of claims 4 to 7, wherein projection of the recess on a horizontal plane has a horizontal length component, and projection of the recess on a longitudinal vertical cross- section of the track has a vertical height component.

10. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of any one of claims 4 to 7, further comprising a recess which extends on the sidewall of the sleeper block along a vertical direction.

11. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 10, wherein a lower end of the recess penetrates through a bottom surfaceof the sleeper block.

12. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of claim 10, wherein in a cross-section of the sleeper block, a depth of the recess, which extends along the vertical direction, is gradually increased in a direction from top to bottom;

or, in a cross-section of the sleeper block, a depth of the recess, which extends along the vertical direction, is repeatedly fluctuated from top to bottom in a manner of enlarging-diminishing-enlarging, such that a bottom surface of the recess is corrugated;

or, projection of the recess on a cross-section of the track has a vertical height component, and projection of the recess on a horizontal plane has a horizontal length component transverse to the track;

or, a plurality of recesses, which extend along the vertical direction, are arranged with an interval in the transverse direction of the track, and lengths of the plurality of recesses which extend along the vertical direction are sequentially reduced in a direction towards a transverse outside from a transverse middle portion of the track;

or a plurality of recesses, which extend along the vertical direction, are sequentially arranged with an interval in the transverse direction of the track, and lengths of the plurality of recesses which extend along the vertical direction are repeatedly fluctuated in a manner of enlarging-diminishing-enlarging.

13. The assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between the sleeper block and the track bed~~ of any one of claims 4 to 7, wherein a depth at which the sleeper block is buried in the track bed is 150 mm; a center axis of the lowermost recess is 30-50 mm from a bottom surface of the sleeper block, and a diameter of the recess is 20-50 mm.

14. An assembly of a sleeper block and a track bed, the assembly comprising ~~A~~ a connection reinforcing structure of recess type between the sleeper block and the track bed, the connection reinforcing structure being configured to reinforce a connection between a prefabricated

sleeper unit and the track bed in a ballastless track, the prefabricated sleeper unit comprising two or more sleeper blocks and a connection member for connecting the sleeper blocks to one another in a transverse direction of the track, the sleeper block being formed by means of concrete pouring, the connection member being integrated with the sleeper block by means of concrete pouring, a reinforcing member being provided on one or more sidewalls of the sleeper block in a longitudinal direction of the track, the reinforcing member being a recess recessed inward from the sidewall of the sleeper block; during a pouring process of the track bed, the recess and a certain height of the sleeper block are buried in concrete of the track bed and integrated with the track bed by means of concrete pouring, and the concrete being directly filled into the recess to reinforce the connection between the sleeper block andthe track bed.

15. A construction method for the assembly of a sleeper block and a track bed~~connection reinforcing structure of recess type between thesleeper block and the track bed~~ of any one of claims 3 to 14, comprising the following steps:

S1: producing a plurality of hollow steel tubes of a predetermined dimension for subsequent production of concrete-filled steel tubes;

S2: producing two molds of a predetermined dimension, and detachably installing a protrusion of a predetermined dimension on an inner side of the mold at a height of 30-50 mm from a mold bottom, the protrusion being configured to form a recess at a sidewall of the sleeper block after pouring concrete; and inserting two ends of each of the plurality of hollow steel tubes into the two molds;

S3: pouring the concrete to fill the concrete into the hollow steel tubes to form the concrete-filled steel tubes, filling periphery of the protrusions with the concrete, and pressing the concrete to compact the concrete;

S4: performing maintenance of the sleeper together with the molds;

S5: removing the protrusion, disconnecting the protrusion from the sides of the molds, demolding the protrusion and the molded sleeper, separating the protrusion and the molded sleeper, to obtain a prefabricated sleeper unit having the recess;

S6: transporting the prefabricated sleeper unit to construction site of the track, pouring the concrete of the track bed, directly filling the recess with the concrete, and ensure the sleepers and the concrete-filled steel tubes to meet a designed buried depth, such that the sleepers, the concrete-filled steel tubes and the track bed are integrated together by means of concrete pouring.