Claims

1. A rail-mounting assembly (S) for fastening a rail (3) to a fixed substrate (5) with an intermediate construction (2) between the rail (3) and the fixed substrate(5) that operatively connects to the fixed substrate (5) in an elastic manner, characterized in that the intermediate construction (2) comprises only an elastic intermediate layer element (1; 101) that has a variable elasticity distribution across its cross-section (6) in the direction (7A) of its longitudinal extension (8) and/or in the direction (7B) transverse to its longitudinal extension (8).

2. The rail-mounting assembly (S) according to claim 1, characterized in that the intermediate layer element (1; 101) bears directly against a lower face (10) of the rail (3).

3. The rail-mounting assembly (S) according to claims 1 or 2, characterized in that the intermediate layer element (1; 101) has an elastically deformable inner region (15) that is completely spaced from edges (18, 19, 20, 21) of the intermediate layer element (1; 101), and in particular the spacing from the edges (18, 19, 20, 21) is smaller than 30 mm, preferably smaller than 20 mm.

4. The rail-mounting assembly (S) according to claim 3, characterized in that a less elastically deformable outer region (16) completely surrounds the elastically deformable inner region (15).

5. The rail-mounting assembly (S) according to any one of claims 1 to 4, characterized in that the intermediate layer element (1; 101) has an elastically deformable inner region (15) that is concentric to a center point (17).

6. The rail-mounting assembly (S) according to any one of claims 1 to 5, characterized in that the intermediate layer element (1; 101) has a circular, elliptical or oval elastic inner region (15) that is designed more elastically than a less elastically deformable outer region (16) adjacent the circular, elliptical or oval elastic inner region (15).

7. The rail-mounting assembly (S) according to any one of claims 3 to 6, characterized in that the elastically deformable inner region (15) has a diameter (D) between 60 mm and 100 mm, preferably of 80 mm.

8. The rail-mounting assembly (S) according to any one of claims 3 to 7, characterized in that the elastically deformable inner region (15) is designed more thinly than an adjacent less elastically deformable outer region (16) of the intermediate layer element (1;101).

9. The rail-mounting assembly (S) according to any one of claims 3 to 8, characterized in that the elastically deformable inner region (15) has a thickness between 3 mm and 10 mm, preferably a thickness (d) of 5.5 mm.

10. The rail-mounting assembly (S) according to any one of claims 3 to 9, characterized in that the elastically deformable inner region (15) has a diameter-thickness ratio of 15:1.

11. The rail-mounting assembly (S) according to any one of claims 1 to 10, characterized in that the intermediate layer element (1; 101) has external dimensions with a ratio of width:depth:height of 21:15:1, preferably 210 mm x 148 mm x 10 mm.

12. The rail-mounting assembly (S) according to any one of claims 1 to 11, characterized in that the intermediate layer element (1; 101) has a supporting ratio of 1.2 with respect to a total coverage surface of the rail (3) to the actual load-bearing support surface of the intermediate layer element (1).

13. The rail-mounting assembly according to any one of claims 1 to 12, characterized in that the intermediate layer element (1; 101) has a static spring rate of 35 kN/mm that is measured as a secant between 28 kn and 78 kn.

14. The rail-mounting assembly according to any one of claims 1 to 13, characterized in that the intermediate layer element (1; 101) has a dynamic spring rate of < 45 kN/mm and at room temperature and at a frequency of 15 Hz this dynamic spring rate is measured as a secant between 28 kn and 78 kn.

15. The rail-mounting assembly (S) according to any one of claims 1 to 14, characterized in that the intermediate layer element (1; 101) has a relationship between dynamic spring rate and static spring rate with a stiffening factor of < 1.3.

16. The rail-mounting assembly (S) according to any one of claims 1 to 15, characterized in that the intermediate layer element (1; 101) has a body (22) made from microcellular rubber or polyurethane.

17. The rail-mounting assembly (S) according to any one of claims 1 to 16, characterized in that the intermediate layer element (1; 101) has an elongated notch (23, 24) on each of at least two of its edges (18, 20).

18. The rail-mounting assembly (S) according to claim 17, characterized in that the elongated notch (23, 24) extends in the direction of a long side edge (18, 20) of the intermediate layer element (1).

19. The rail-mounting assembly (S) according to any one of claims 1 to 18, characterized in that the intermediate layer element (1; 101) has two projecting teeth (25, 26, 27, 28) on each of at least two of its edges (18, 20).

20. The rail-mounting assembly (S) according to any one of claims 1 to 19, characterized in that the fixed substrate (5)

comprises polyvalent sleepers, and the intermediate construction (2) of the rail-mounting assembly (S) comprises a hard trapezoidal intermediate element (40; 140; 240; 340) having a trapezoidal part (41; 141; 241; 341), the hard trapezoidal intermediate element (40; 140; 240; 340) being between the intermediate layer element (1; 101) and a part (4) of the fixed substrate (5).

21. The rail-mounting assembly (S) according to claim 20, characterized in that the hard trapezoidal intermediate layer element (40; 140; 240; 340) is fixed to the fixed substrate (5) by means of lateral angle guide plates (90).

22. The rail-mounting assembly (S) according to claims 20 or 21, characterized in that the trapezoidal part (41; 141; 241; 341) of the hard trapezoidal intermediate layer element (40; 140; 240; 340) extends toward the fixed substrate (5).

23. The rail-mounting assembly (S) according to any one of claims 20 to 22, characterized in that the trapezoidal part (41; 141; 241; 341) is below the rail (4).

24. The rail-mounting assembly (S) according to any one of claims 20 to 23, characterized in that the trapezoidal part (41; 141) has a trapezoidal body (59; 159) created by a plurality of cross ribs (57; 157), the trapezoidal body (59; 159) being reinforced in particular by a central web part (170).

25. The rail-mounting assembly (S) according to any one of claims 20 to 24, characterized in that the trapezoidal part (241) has a tubular body (275).

26. The rail-mounting assembly (S) according to claim 25, characterized in that the tubular body (275) has a two-part cavity (276) that is spatially divided by a transverse inner web (277).

27. The rail-mounting assembly (S) according to any one of claims 20 to 26, characterized in that the hard trapezoidal intermediate layer element (40; 140; 240; 340) has an elongated notch (45, 46; 145, 146) on each of at least two of its edges (43, 44, 55, 56; 143, 144, 155, 156).

28. The rail-mounting assembly (S) according to claim 27, characterized in that the elongated notches (45, 46; 145, 146) extend in the direction (47; 147) of the longitudinal extension (48; 148) of the hard trapezoidal intermediate layer element (40; 140; 240; 340).

29. The rail-mounting assembly (S) according to any one of claims 1 to 28, characterized in that the hard trapezoidal intermediate layer element (41; 141; 241; 341) has two respective projecting teeth (49, 50, 51, 52; 149, 150, 151, 152) on each of at least two of its edges (43, 44, 55, 56; 143, 144, 155, 156).

30. The rail-mounting assembly (S) according to any one of claims 1 to 29, characterized in that the rail-mounting assembly (S) comprises an angle guide plate (90; 190) that has two recesses (92, 93) on at least one plate end (91) for receiving the teeth (25, 26, 27, 28; 49, 50, 51, 52; 149, 150, 151, 152).

31. The rail-mounting assembly (S) according to claim 30, characterized in that the two recesses (92, 93) are both on a long side (94) of the angle guide plate (90; 190).

32. The rail-mounting assembly (S) according to claims 30 or 31, characterized in that the two recesses (92, 93) are both at corners (95, 96) of the angle guide plate (90; 190).

33. The rail-mounting assembly (S) according to any one of claims 30 to 32, characterized in that the recesses (92, 93) only extend partially through the angle guide plate (90; 190) with respect to its plate thickness.

Claims

1. A rail-mounting assembly (S) for fastening a rail (3) to a fixed substrate (5) with an intermediate construction (2) between the rail (3) and the fixed substrate (5) that operatively connects to the fixed substrate (5) in an elastic manner, wherein the intermediate construction (2) comprises only an elastic intermediate layer element (1; 101) that has a variable elasticity distribution across its cross-section (6) in the direction (7A) of its longitudinal extension (8) and/or in the direction (7B) transverse to its longitudinal extension (8) wherein the fixed substrate (5) comprises polyvalent sleepers, and the intermediate construction (2) of the rail-mounting assembly (S) comprises a hard trapezoidal intermediate element (40; 140; 240; 340) having a trapezoidal part (41; 141; 241; 341), the hard trapezoidal intermediate element (40; 140; 240; 340) being between the intermediate layer element (1; 101) and a part (4) of the fixed substrate (5), and wherein the hard trapezoidal inter-mediate layer element (40; 140; 240; 340) is fixed to the fixed substrate (5) by means of lateral angle guide plates (90).

2. The rail-mounting assembly (S) according to claim 1, wherein the trapezoidal part (41; 141; 241; 341) of the hard trapezoidal intermediate layer element (40; 140; 240; 340) extends toward the fixed substrate (5).

3. The rail-mounting assembly (S) according to claim 1 or claim 2, wherein the trapezoidal part (41; 141; 241; 341) is below the rail (4).

4. The rail-mounting assembly (S) according to any one of the preceding claims, wherein the trapezoidal part (41; 141) has a trapezoidal body (59; 159) created by a plurality of cross ribs (57; 157), the trapezoidal body (59; 159) being reinforced in particular by a central web part (170).

5. The rail-mounting assembly (S) according to any one of the preceding claims, wherein the trapezoidal part (241) has a tubular body (275).

6. The rail-mounting assembly (S) according to claim 5, wherein the tubular body (275) has a two-part cavity (276) that is spatially divided by a transverse inner web (277).

7. The rail-mounting assembly (S) according to any one of the preceding claims, wherein the hard trapezoidal intermediate layer element (40; 140; 240; 340) has an elongated notch (45, 46; 145, 146) on each of at least two of its edges (43, 44, 55, 56; 143, 144, 155, 156).

8. The rail-mounting assembly (S) according to claim 7, wherein the elongated notches (45, 46; 145, 146) extend in the direction (47; 147) of the longitudinal extension (48; 148) of the hard trapezoidal intermediate layer element (40; 140; 240; 340).

9. The rail-mounting assembly (S) according to any one of the preceding claims, wherein the hard trapezoidal intermediate layer element (41; 141; 241; 341) has two respective projecting teeth (49, 50, 51, 52; 149, 150, 151, 152) on each of at least two of its edges (43, 44, 55, 56; 143, 144, 155, 156).