6 which faces a central axis A of the soundproof wheel 1. In an outer peripheral surface of the rim section 5, a flange 7 protrudes, at one side with respect to the direction along the central axis A, in the opposite direction to the central axis A.

[0023]

In the rim section 5, a groove 8, which opens up in a direction toward the central axis A, is formed in an annular shape around the central axis A in the inner peripheral surface 6 on one side (the same side of the flange 7) with respect to the direction along the central axis A. The soundproofing device 3 is fitted in the groove 8 over the entire circumference of the groove 8.

[0024]

The soundproofing device 3 includes a fixing ring 10, a first elastic body section 11A, an additional mass section 12, and a second elastic body section 11B. The first elastic body section 11A is stuck to an outer peripheral surface 10a of the fixing ring 10. The additional mass section 12 is stuck to a side of the first elastic body section 11A opposite to the fixing ring 10. The second elastic body section 11B is stuck to a side of the additional mass section 12 opposite to the first elastic body section 11A. The fixing ring 10 is made of a high rigidity material such as a metal including steel. The fixing ring 10 has an outer peripheral side portion in the radial direction to be fitted in the groove 8 and fixed to the rim section 5. The fixing of the fixing ring 10 to the rim section 5 can be performed by, for example, welding, caulking, bonding, etc.

[0025]

A width (length in an axial direction of the soundproofing device 3) of the fixing ring 10 is about the same as a width of the groove 8, and the opening part of the groove 8 is sealed by the fixing ring 10. The first elastic body section 11A, the additional mass section 12, and the second elastic body section 11B are disposed within this sealed space in the groove 8. Widths of the first and second elastic body sections 11A, 11B and the additional mass section 12 are narrower than the width of the fixing ring 10, and the first and second elastic body sections 11A, 11B and the additional mass section 12 are spaced apart from the inner wall of the groove 8. The second elastic body section 11B is in contact with the bottom of the groove 8.

[0026]

The first elastic body section 11A and the second elastic body section 11B may be made of the same kind of material, or kinds of materials which are different from each other. The first and second elastic body sections 11A, 11B may be made of, for example, rubber. The vibration generated in the wheel 2 while a vehicle is travelling is transmitted to the first and second elastic body sections 11A, 11B, and the additional mass section 12 through the fixing ring 10 and the rim section 5, thereby causing the first and second elastic body sections 11A, 11B and the additional mass section 12 to vibrate.

[0027]

The first and second elastic body sections 11A, 11B and the additional mass section 12 are disposed within the groove 8 of the rim section 5. Moreover, the fixing ring 10 fixed to the rim section ~~8~~5 is present on an opening side of the groove 8 with respect to the first and second elastic body sections 11A, 11B and the additional mass section 12. For that reason, even if the first elastic body section 11A is separated from the fixing ring 10 or the additional mass section 12, and the second elastic body section 11B is separated from the bottom of the groove 8 or the additional mass section 12, the additional mass section 12 is not likely to fall off the soundproof wheel 1.

[0028]

Due to the configuration that the fixing ring 10 which is one of the components constituting the soundproofing device 3 is fixed to the rim section 5 of the wheel 2, there will be no rubbing between the soundproofing device 3 and the rim section 5 of the wheel 2. Moreover, due to the configuration that the additional mass section 12 is present in the groove 8 which is sealed by the fixing ring 10, even if the first and second elastic body sections 11A, 11B deteriorate, resulting in decline in elasticity thereof, the additional mass section 12 will not collide with any member (for example, a brake disc) outside the groove 8. Therefore, the soundproof wheel 1 is highly durable.

[0029]

FIG. 2 is a plan view to show an example of the soundproofing device 3.

The first elastic body section 11A includes a plurality of first elastic body pieces 13A spaced apart from each other in a circumferential direction of the