CLAIMS

What is claimed is:

1. A cylindrical composite bridge anti-collision device, comprising an anti-collision unit (1), wherein the anti-collision unit (1) is formed of a cylindrical shell (2) and a filling material body (3) filled in the cylindrical shell (2), characterized in that the anti-collision unit (1) comprises straight cylindrical anti-collision members (4) and curved cylindrical anti-collision members (5), nonadjacent straight cylindrical anti-collision members (4) are connected in series or connected in parallel through connection rods (6) to form a strip anti-collision device, straight cylindrical anti-collision members (4) which are adjacent and connected to each other, or a straight cylindrical anti-collision member (4) and a curved cylindrical anti-collision member (5), or curved cylindrical anti-collision members (5) are fixedly connected through a flange (7) arranged on the cylindrical shell (2) and by use of bolts (8) to form an annular or C-shaped anti-collision structure; the inside of the anti-collision unit (1) is provided with a movable device (9)~~.~~, wherein the movable device (9) comprises a universal wheel, a nylon or metal roller, and a polytetrafluoroethylene sliding plate.

2. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that the cylindrical shell (2) is formed of an outer cylindrical shell (10), or formed of an outer cylindrical shell (10), an inner cylindrical shell (11) and a filling material body (3) between the outer cylindrical shell (10) and the inner cylindrical shell (11), or formed of an outer cylindrical shell (10), an intermediate cylindrical shell (12), an inner cylindrical shell (11) and a filling material body (3) between the outer cylindrical shell (10) and the inner cylindrical shell (11).

3. The cylindrical composite bridge anti-collision device according to claim 1 or 2, characterized in that a flange (7) arranged along a circumferential direction of an end of the cylindrical shell (2) is arranged on the cylindrical shell (2), and the flange (7) is located at the inside of and/or the outside of the outer cylindrical shell (10) and/or the inner cylindrical

shell (11).

4. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that the outside of the flanges (7) adjacent and connected to each other is provided with a hoop (13) arranged along a circumferential direction of the cylindrical shell (2).

5. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that a perfusion hole (14) is arranged on the cylindrical shell (2), and the perfusion hole (14) is arranged along a radial direction of the cylindrical shell (2).

6. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that the cylindrical shell (2) is made of one of a light wood or foam composite sandwich pipe, a composite sand sandwiched pipe, plastic, and a metal skeleton with the surface layer wound with a composite; the cylindrical shell (2) is made of one of glass fiber cloth, carbon fiber cloth, basalt fiber cloth, and aramid fiber cloth, and resin, wherein the glass fiber cloth is one of biaxial cloth, multi-axial cloth, gridding cloth and fiber felt, and the resin is one of unsaturated polyester, vinyl resin, phenolic resin, epoxy resin and inorganic resin.

7. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that the filling material body (3) is a buffering and energy consuming material (15) or a combination of a buffering and energy consuming material (15) and a hollow device (16) or one of concrete and a hollow latticed body.

8. The cylindrical composite bridge anti-collision device according to claim 7, characterized in that the buffering and energy consuming material (15) is made of one or several of polyurethane foam, polyurethane elastomer, polyphenyl foam, PVC foam, PMI foam, polyimide foam, sand, a mixture of polyphenyl particle foam and sand, polyphenyl particle mortar, rubber particles, rubber blocks, haydite, pebbles, coal gangue powder, foamed aluminum, liquid, air-entrained foam concrete, foam, a pipe material, a round ball and Mao bamboo; the hollow device (16) is made of one of a closed steel pipe, a composite winding

pipe, a composite pultrusion pipe, a plastic pipe, Mao bamboo, plastic hollow balls, composite hollow balls, and metal hollow balls.

9. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that the connection rod (6) comprises a cable, a stainless steel chain, a mooring rope, and a steel strand; the bolt (8) comprises a metal bolt, a polytetrafluoroethylene bolt, a plastic bolt and a composite bolt~~; the movable device (9) comprises a universal wheel, a nylon or metal roller, and a polytetrafluoroethylene sliding plate~~.

10. The cylindrical composite bridge anti-collision device according to claim 1, characterized in that the straight cylindrical anti-collision member (4) comprises a straight cylindrical anti-collision member with a constant cross-section and a straight cylindrical anti-collision member with a variable cross-section.