

Wheel assembly incorporating an outer tire



This is an outer tire applicable in wheel assembly for automobiles. The outer tire comprising a tread profile and fitted snugly over the inflatable inner tire and its two shoulders on outer edges are fastened to the rim circumference at equal intervals by plurality of flexible linkages with spring loaded tensioners symmetrically from both sides. The outer tire keeps the vehicle in contact with the road surface and protects the inner tire from damage and wear during propulsion and rest. The outer tire is detachable from the rest of wheel assembly to replace when worn out.

Detailed description of the new design

A generalized design of the present new component depicts in Figure 1, Figure 2, Figure 3 and Figure 4. The aforesaid wheel assembly applicable in automobiles and carriages is a combination of a rim 13, inflatable inner tire 12, and protective outer tire 11, bundled together forming an annular assembly by a multiple of spring loaded tensioners 14 by straddling outer tire, over the inner tire 12, to periphery of rim 13; so that, the assembly of said components is having inner surfaces of two tires facing inwardly towards the rim center.

The outer tire 11 is having a narrow width due to reduced side walls spread over the surface of inner tire 12 and comprises a pair of beads 18 on both shoulders over which tensioners 14 are connected to the periphery of the rim 13 at symmetrical intervals around the rim circumference. Therefore outer tire 11 is fitted snugly over the inflatable inner tire 12 while the shoulders 20 on outer edges of outer tire 11 are fastened to the rim circumference by plurality of spring loaded tensioners 14 symmetrically on both sides at equal intervals. The outer tire 11 essentially having a tread profile 17 and keeps the vehicle in contact with the road surface and protects the inside tire 12 from damage and wear during propulsion.

Both inner tire and out tire are largely composed of elastic materials such as rubber, synthetic rubber or like; reinforced with fabric or steel cords that provide for tensile strength and flexibility. Therefore the inner tire 12 become inflatable and elastically deformable, providing a flexible cover with an impermeable lining to contain and restrain the compressed air. The valve 22 is mounted on the inward surface of rim 13, to inflate the inner tire with an external source. The inner tire 12 of the wheels is protected by the outer tire 11. So that the liability of damaging the expensive pneumatic tire due to punctures and road hazard is prevented.

The outer tire essentially consists of a tread profile 17 having raised pattern of road-engaging surface and being formed an elastomeric compound such as rubber, synthetic rubber or the like, liable to worn out on contact with the road surface.

Shoulder edges of both sides in two tires are composed of beads made with strong and flexible cable materials such as steel, alloy metal, chrome or composite materials. Having beads on inner tire it will seat properly against rim flanges.

Outer tire beads provide to fasten the tensioners 14 that grip the rim circumference and hold in place. The outside tire 11 is replaceable from the rest of the wheel assembly, by loosening its tensioners 14.

Bolt holes 21 are provided around the rim center to connect to the hub of vehicle axel or spindle to hold the wheels in place. Spring loaded cables may bind to outer tire periphery using reversibly produced hooks and fasteners, eye closures or loops.

Figure. 6. Shows a fixing arrangement of cable and tensioner spring between outer rim and periphery of rim. In this design hole are provided over the bead at symmetrical locations around the outer tire bead and strengthened the insert hole by metallic protection to insert cable and grip. The other is attached to a spring connected to a protruded arm of rim.

Beneficially, a bonding agent that will not water soluble may apply between the mating surfaces of inner tire and outer tire. So that this bonding agent will fill the gaps and bind uneven surfaces together, that is removable when the outer tire has to replace.

Advantageously cables and springs may encased with abrasion resistant flame retardant protective sleeves in order to prevent metallic parts rubbing against inner tire, resulting heating up of the surfaces and degradation of material.

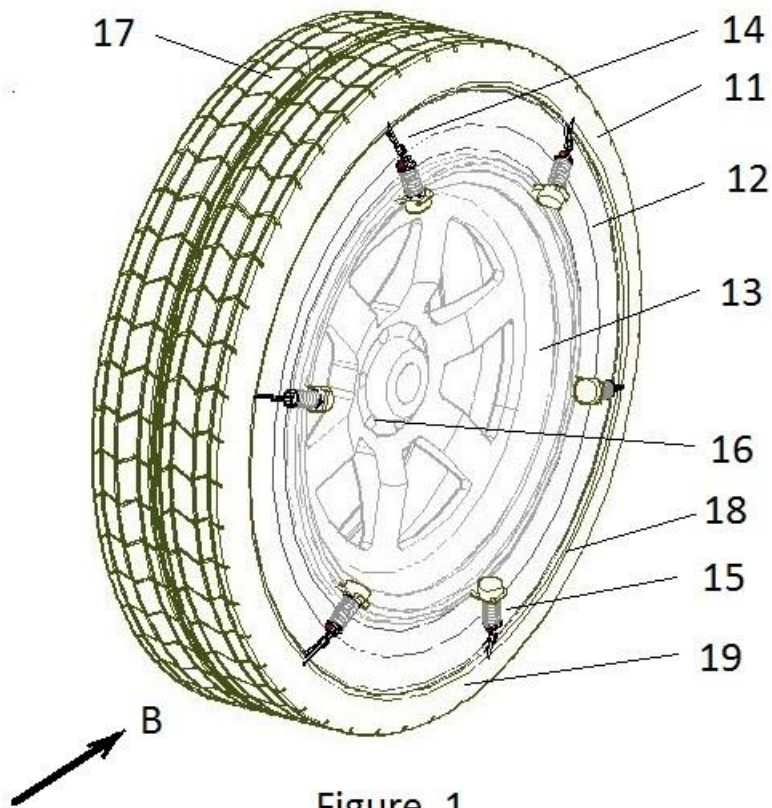


Figure. 1

The details shown in the figures are:

- | | |
|----------------------------------|----------------------------|
| 11. Outer tire | 22. Nozzle |
| 12. Inner tire | 23. Center bore of the rim |
| 13. Rim | 24. Harness |
| 14. Tensioner cable | |
| 15. Tensioner Spring | |
| 16. Bolt holes | |
| 17. Tread profile | |
| 18. Circular beads of outer tire | |
| 19. Narrow carcass | |
| 20. Outer tire shoulders | |
| 21. Bolt holes | |

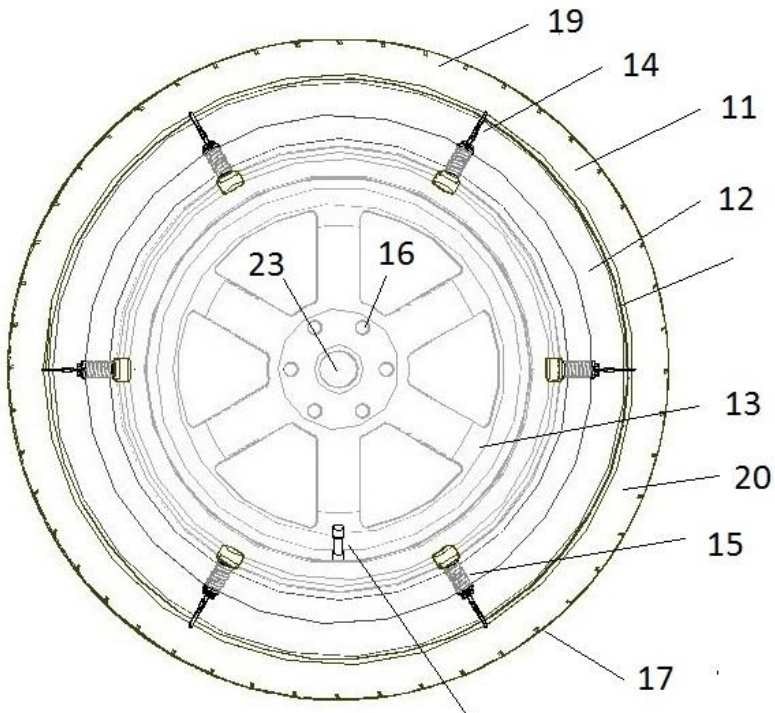


Figure.2

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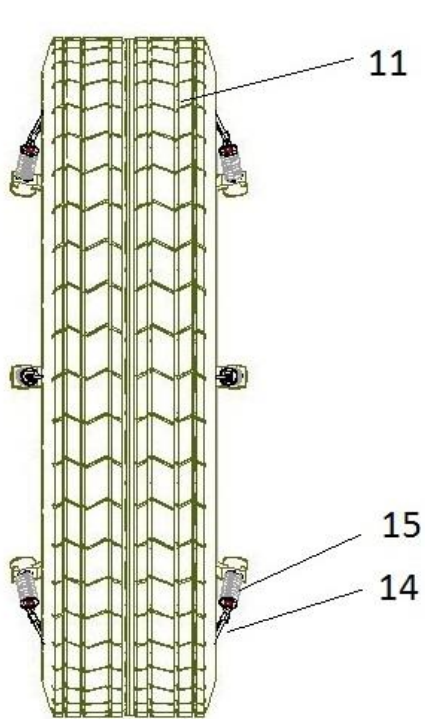


Figure. 3

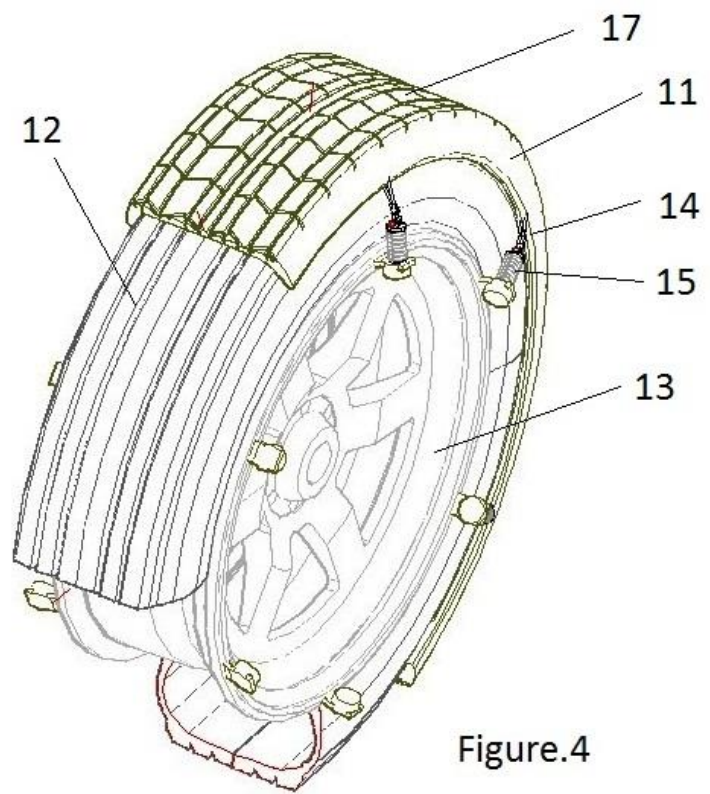


Figure.4

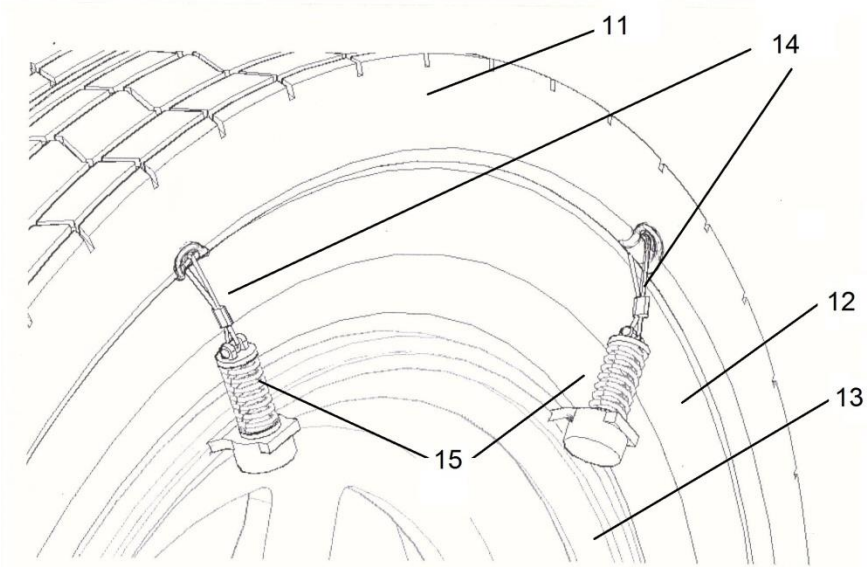


Figure.6

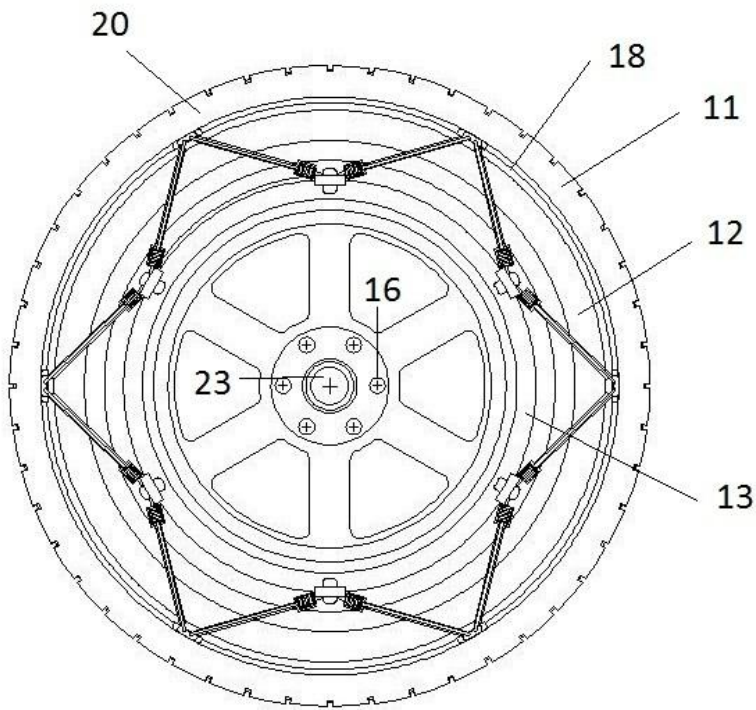


Figure.5