Inner Tube for Wheel

Field of the Invention

[0001] The present invention relates to a wheel. In particular, the invention relates to an inner tube for the wheel.

Background

[0002] Tire puncture can be very frustrating, especially for mountain bikers during a trail-riding session in the wilderness area and the biker has to change a punctured inner tube. When that happens, cyclists will want to solve this problem quickly and continue their ride as soon as possible.

[0003] To remove the punctured inner tube, the whole wheel has to be removed from the bicycle frame. The current method of changing a punctured inner tube is tedious as it involves lot of adjusting and dismantling bicycle's parts just to replace the punctured inner tube and hands are often stained with stubborn greasy lubricants from the chain, rear derailleur and gears.

[0004] For a front wheel with a quick release skewer, there may not be an issue for changing the inner tube, because dismantling and reassembly the front wheel to replace the inner tube require only to un-tightening/tightening of the quick release skewer. It may require to disconnect the brake when it interferes. However, to dismantle and reassemble a rear wheel of a bicycle involving more steps. Briefly, the

steps are: removing brake pad; unscrewing bolt and nut; shifting down to the lowest gear; pushing forward the rear derailleur; pulling out the rear wheel set; flipping out at least one side of tire beads with leverage so that half of the tire is off the rim; replacing the punctured inner tube with a new inner tube; flipping the tire bead back into the rim; pulling and holding the rear derailleur for assembling the wheel set; aligning the brake pad and securing it back; aligning the wheel while tightening the bolt and the nut; and pumping up the inner tube to the correct pressure and continue the journey.

[0005] With the help of a quick release skewer, the inner tube changing process is speeded up, especially for the front wheel. However, as there are more parts that are attached at the rear wheel, the steps involved are tedious and troublesome as described. Further, some components require fine-tuning after dismantling the same, and usually during the ride, it may not be possible as cyclist may not bring along all the necessary tools. Also, hands tend to get dirty after replacing the inner tube. Moreover, the lifespan of the parts is shorten due to the frequent dismantle and reassemble of the components when changing a punctured inner tube or tire.

Summary

[0006] In accordance with one aspect, the present invention provides an inner tube for a tire comprises an elongate tube having two closed ends, wherein the elongate tube is inflatable.

[0007] In accordance with one embodiment, the two closed end are flat. It is also possible that the two closed end featuring a interlocking configuration when splicing together.

[0008] In accordance with another embodiment, the elongate tube is curved naturally. If is also possible that the elongate tube is a straight tube.

[0009] In accordance with yet another embodiment, wherein each of the closed ends of the elongate tube is sealed by a stopper. It is also possible that the two closed ends of the elongate tube are sealed by a common stopper.

[0010] In accordance with another aspect of the present invention, there is provided a wheel comprises an inner tube in accordance with the aforesaid aspect.

[0011] In accordance with yet another aspect, there is provided a bicycle comprises two wheels, each fitted with an inner tube in accordance with the aforesaid aspect.

Brief Description of the Drawings

[0012] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0013] FIG.1 illustrates an inner tube for a tire of a bicycle in accordance with one embodiment of the present invention; and

[0014] FIG.2 illustrates an inner tube having two stoppers in accordance with one embodiment of the present invention.

Detailed Description

[0015] In line with the above summary, the following description of a number of specific and alternative embodiments are provided to understand the inventive features of the present invention. It shall be apparent to one skilled in the art, however that this invention may be practised without such specific details. Some of the details may not be described at length so as not to obscure the invention. For ease of reference, common reference numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0016] FIG. 1 illustrates an inner tube **100** for a tire of a bicycle (not shown) in accordance with one embodiment of the present invention. The inner tube **100** comprises an elongate tube **110** and an inner tube valve **120**. The inner tube valve **120** is attached along the length of the elongate tube **110**. The elongate tube **110** is made of elastic material such as rubber and it is inflatable through the inner tube valve **120**. The elongate tube **110** has two closed ends **130** and **140**. The rubber tube **110** is molded into a curve shape. When the two closed end **130** and **140** are abutted each other, the rubber tube **110** form a substantially close loop. As the inner tube **100** is an opened loop, it can be inserted into or removed from the tire without needing to dismantle wheels of the bicycle.

[0017] The inner tube valve **120** is attached to the elongate tube **110** near the closed end **130**. The inner tube valve **120** is suitably oriented to point inwardly to correspond with a valve hole of a common rim of a bicycle wheel. In the present embodiment, the inner tube valve **120** is placed near one of the closed end so that the inner tube **100** can be conveniently inserted into the tire from the closed end **130** as the part of the inner tube valve **120** is usually inserted into the tire first while replacing a inner tube. That allows user to work from one closed end to another. It is however understood that the inner tube valve **120** can be placed anywhere along the length of the elongate tube **110**, such as at the middle, and that will not affect the merit of the present invention.

[0018] The length of the elongate tube **110** depends on the tire size to which it is intended for fitting with. However, as the inner tube is open loop, it is possible that a shorter size inner tube can be used for a slightly bigger size tire.

[0019] In accordance with another embodiment, the elongate tube **100** can be molded as a straight long tube instead of a naturally curve tube.

[0020] In accordance with another embodiment, the two closed ends **130** and **140** can be made to have matching formation for coupling with each other, instead of just a flat surface. For example, the closed end **130** can have a concave surface and the closed end **140** can have a matching convex surface for coupling with each other when abutted.

[0021] It is understood that there are many possible ways and configurations for providing the matching formation. The matching formation can further provide interlocking features.

[0022] To replace an inner tube of a tire fitted with the inner tube **100**, the steps include: flipping out at least one side of the tire beads with leverage so that the half of the tire is off the rim while the wheel is still mounted on the bicycle; pulling out the existing inner tube **100** through the gap between the tire bead and the rim edge; slipping in a replacement inner tube **100** along the tire with the inner tube valve **120** of the inner tube slots through the valve hole on the rim; flipping the tire bead back into the rim; inflating the replacement inner tube **100** to a correct pressure. As there is no need to remove the wheel from the bicycle, fewer steps are involved when replacing an inner tube, even if the bicycle is featured with quick release skewer.

[0023] As the inner tire **100** is an opened loop, removing and replacing the inner tube **100** is possible without the need to dismantling the wheel from the bicycle. The inner tube replacement requires only the tire lever. Further, as there is no need to dismantling the wheel, hands are free from the bicycle chain, rear derailleur and gears which otherwise the hands will get dirty by the stubborn oil stain. Yet, the alignment of all parts of the bicycle will not be affected since dismantling of the bicycle is not involved, and that could prolong the parts lifespan.

[0024] The above embodiments, the inner tire for tires of bicycles is provided by way of illustrations, not limitations. It is understood to the skilled person that the inner tube of the present invention can be for any wheels that require inner tube.

[0025] **FIG. 2** illustrates an inner tube **200** having two stoppers **250** in accordance with another embodiment of the present invention. The inner tube **200** was a closed loop inner tube for tire of bicycle and it was cut opened at the middle of the inner tube **200**. The cut may be necessary, for example, when the inner tube is found punctured, and the punctured portion is usually being cut out. After the inner tube **200** is being cut out, the two opened end are sealed with the stoppers **250** to prevent air leak when the inner tube **200** is inflated. The stopper **250** is a plug sized to fit with common standard inner tubes for tire and has a groove **255** defined along its round surface. When the stopper **250** is inserted into the cut end, a cable tight can be used to tighten the inner tube on the stopper **250** along the groove **255** for further preventing air leak. Once the stoppers **250** are secured on the inner tube **200**, the inner tube **200** can be inserted into the tire with the two stoppers **250** abutting each other to form a close loop inner tube.

[0026] The stopper **250** is made of an elastic material such as rubber or the like. To avoid any noticeable weight imbalance occur in the tire as a result of using the stopper **250**, a lightweight rubber can be used.

[0027] In accordance with another embodiment, the stopper **250** is a common stopper having two sides for receiving the cut ends at each side.

[0028] With the stopper **250**, replacing or repairing inner tube will not longer require to dismantle the wheel from the bicycle.

[0029] While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the invention.