J. F. HOWER.

BUTT END INNER TUBE.

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1,317,976. **Patented Oct. 7, 1919.**

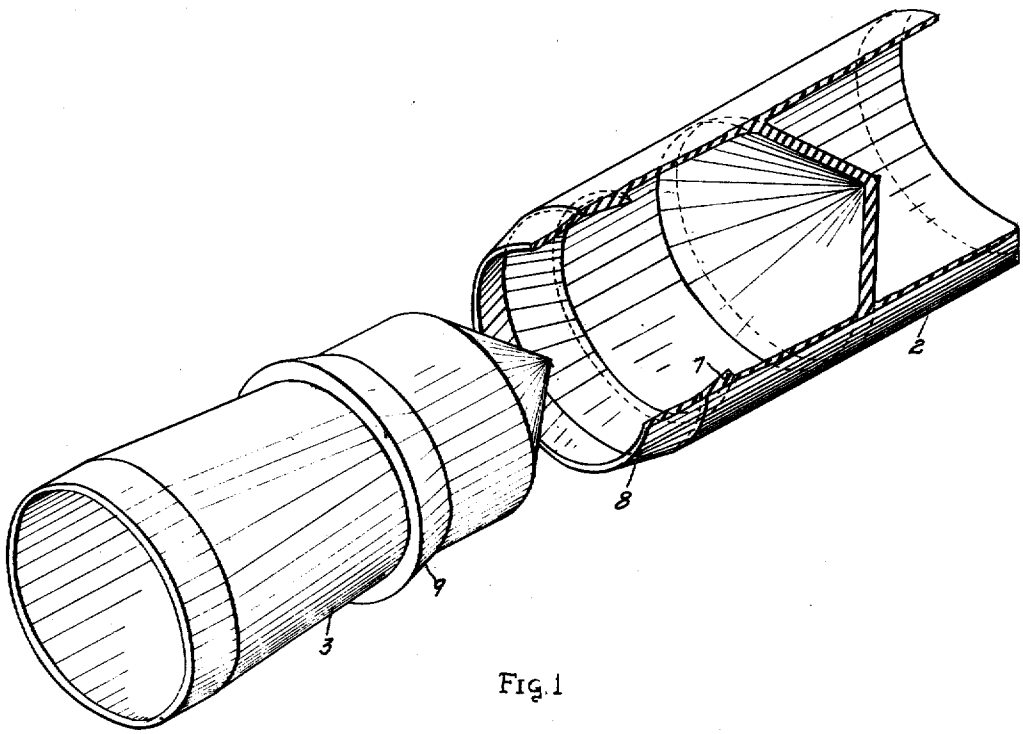


Fig. 1

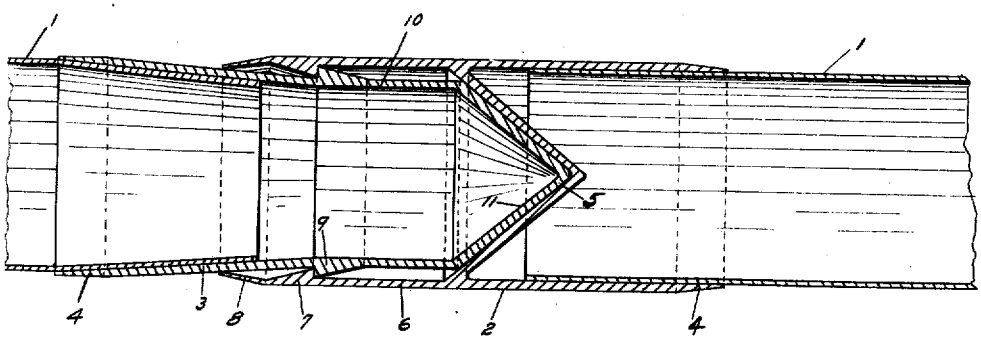


Fig. 2

WITNESSES:

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JOHN F. HOWER, OF AKRON, OHIO, ASSIGNOR TO THE FIRESTONE TIRE & RUBBER COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

BUTT-END INNER TUBE.

1,317,976. Specification of Letters Patent. Patented Oct. 7, 1919.

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To all whom it may concern:

Be it known that I, JOHN FREDERICK HOWER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Butt-End Inner Tubes, of which the following is a specification.

As is well known, tubes for bicycle or motorcycle tires are made discontinuous, so that they can be taken from the machine for repairing, without removing the wheels from the forks. In order to provide a locking connection for the ends of the tubes, various forms of joints have been devised, but they have been more or less unsatisfactory, and it has been the purpose of this invention to improve tubes of this type in order to make a perfect holding joint.

The improved form of tube is made with interlocking formations on male and female ends, the internal pressure on the tube serving to force the locking points of the joint together and any pull on the tube in a direction to separate the ends, will make the joint hold more securely. When even a small degree of air pressure is present in the tube, it becomes almost impossible to separate the ends by pulling them apart, and under the normal pressure in use, the tube is to all appearances and purposes, a continuous tube, and is in this condition absolutely inseparable.

In the drawings in which like reference numerals refer to like parts, is shown one embodiment of the invention.

Figure 1 is a perspective view of the two ends of the tube slightly separated.

Fig. 2 is a section through the tubes joined together.

The main portion of the tube is represented in 1 and is an open ended tube. To the one end thereof, is secured the female or socket member 2 of the joint, and to the other end, the male or plunger member 3 of the joint. At the point nearest the inner end, these parts are skived away as shown at 4, in order not to present a well defined ridge or projection on the surface of the tube.

The part 2 will first be described, and it consists generally of a short section of tube made of slightly stouter material than the main portion of the tube, and provided at about its midway point with a transverse web 5, in the form of a cone, pointing inwardly, serving to close this end of the air tube. Beyond the web or closure 5, the socket or female portion is extended a short distance as designated at 6, and is then formed with a projecting ridge or bead 7, providing a lug or toothed formation. In the form shown, this toothed or beaded formation is ratchet shaped, the vertical face being on the inside of the bead, and a long inclined face on the outside. It is not essential that the lug be in this shape, however, as any interlocking projection will answer the purpose. From the base of the bead to its outer edge, the socket is gradually tapered away and contracted in diameter as shown at 8, the outer edge being very flexible.

The plunger portion consists of a short section of heavier material secured to the other end of the main portion of the tube, and is given a gradual taper for about one half its length. At the end of this tapered portion there is formed a bead or ridge 9, which is preferably of the same shape as the bead 7, but oppositely turned. It is not essential, however, that the two beads be of the same configuration. From the base of the bead 9, this end of the tube is formed as a cylindrical tube 10, for a short distance and, when uninflated, of less diameter than the inner diameter of the female end, which terminates in a conical tip 11, of the same form as the socket 5.

When the tube is connected as shown in Fig. 2, and inflated, the internal pressure on the male end of the tube at the part 10, will expand the portion 10 which will tend to keep the tooth or ridge 9 straightened out, and prevent it from turning over or collapsing, and the tendency of the edge of the socket to contract, will hold the ridge or tooth 7 against bending over or collapsing. Conversely, any longitudinal strain on the teeth 7 and 9 tending to bend them over and release the ends of the tube, will move the part 8 outwardly, which action will be resisted by its contracted formation, and the part 10 inwardly, which action will be resisted by the pressure of the air in the tube. The conical tip 11 and the closure 5 fit snugly together, and will act in the same manner as though the tube were open at this point.

It is obvious that various changes and modifications might be made in the exact

form of the invention shown, without departing from the spirit thereof, or sacrificing any of its benefits, as set forth in the appended claims.

Claims:

1. A butt-end inner tube comprising a male and a female portion, the male portion being provided at a point spaced from the end thereof with an interlocking formation, a corresponding interlocking formation on the inside of said female portion, a normally cylindrical body on said male end which expands to prevent the overturning of said interlocking formation on the male end when the tube is inflated, and an inturned flexible lip at the mouth of said female portion which prevents the overturning of the interlocking formation on the female end.

2. A butt-end inner tube comprising a male and a female portion, the male portion being provided at a point spaced from the end thereof with an interlocking formation, a corresponding interlocking formation on the inside of said female portion, and an inturned flexible lip at the mouth of said female portion which prevents the overturning of the interlocking formation on the female end.

JOHN F. HOWER.

Witness:
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