A. E. HENDERSON.

VALVE CONNECTION FOR PNEUMATIC TIRE TUBES.

APPLICATION FILED AUG. 20, 1915.

1,160,168. Patented Nov. 16, 1915.

Fig. 1.

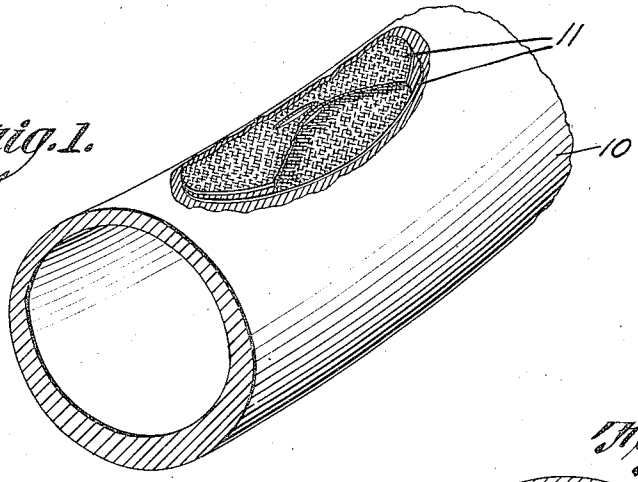


Fig. 2.

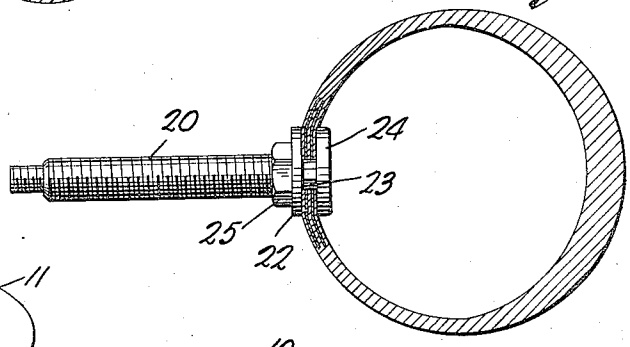


Fig. 3.

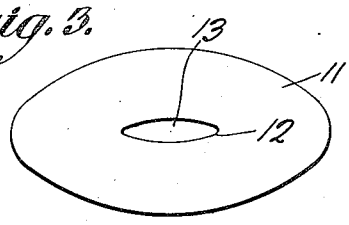


Fig. 4.

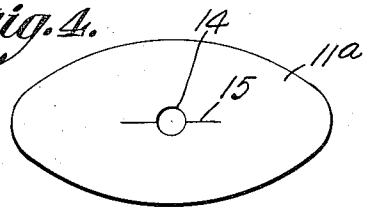


Fig. 5.

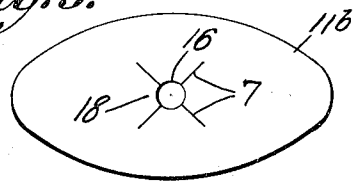
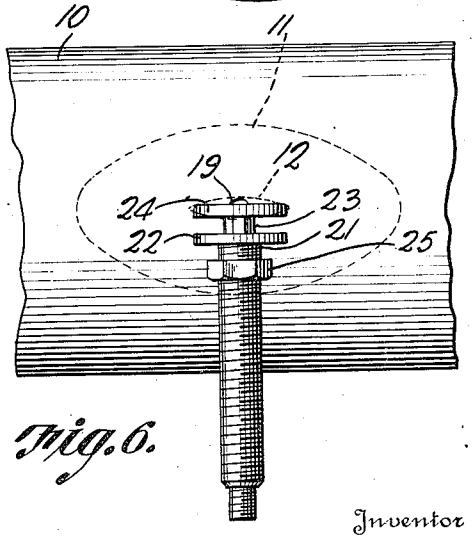


Fig. 6.



Witnesses

Ed. R. Lusby

C. T. Burnett

Inventor

Albert E. Henderson

By David Moore

Attorney

UNITED STATES PATENT OFFICE.

ALBERT ENNIS HENDERSON, OF TORONTO, ONTARIO, CANADA, ASSIGNOR TO SUPERIOR TUBES AND ACCESSORIES, LIMITED, A CORPORATION OF CANADA.

VALVE CONNECTION FOR PNEUMATIC-TIRE TUBES.

1,160,168. Specification of Letters Patent. Patented Nov. 16, 1915.

Application filed August 20, 1915. Serial No. 46,426.

To all whom it may concern:

Be it known that I, ALBERT ENNIS HENDERSON, a subject of the King of Great Britain, residing at Toronto, in the county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Valve Connections for Pneumatic-Tire Tubes, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in valve connections for pneumatic tire inner tubes, one of the objects of the present invention being the provision of a connection that dispenses with the usual patch or strip of rubber and fabric to which the valve stem is usually attached, in that the tube itself is provided with embedded fabric that receives the stem.

A further object of the present invention is the provision of a connection composed of one or more strips of fabric embedded within the material of the tube, and vulcanized therein, such strips being provided with openings, which will permit of the introduction therein or the removal therefrom without tearing the fabric, of the usual head or button carried by valve stems, such head or button in this instance being insertible from without and does not necessitate the projection of the stem from within the tube, as is the usual practice.

A still further object of the present invention is the cheapening of the cost of manufacture of valve stem connections, and at the same time making the same simpler, more durable and more practical than heretofore.

In the accompanying drawings:—Figure 1 is a perspective view of a portion of an inner tube adjacent the valve stem connection, a portion of the body of the tire being torn away to display two layers of fabric strips employed in the present invention. Fig. 2 is a cross-section through the tube at the valve stem connection, and showing a valve stem in place. Fig. 3 is a plan view of the type of fabric strip shown in Fig. 1. Figs. 4 and 5 are similar views of modifications. Fig. 6 is a plan view showing the method of inserting the button or head of a valve stem.

Referring to the drawings, the numeral 10 designates the inner tube, which may be of ordinary construction, or may be made according to the tube as set forth in my copending application filed March 7, 1914, Serial No. 823,182, wherein was shown originally the present form of valve connection, the same having been divided out and here set forth.

The patches or strips 11, here shown two in number are placed into the body material in any well known manner, such being made from a practically non-stretchable material saturated with an unvulcanized rubber, so that when vulcanized in the body of the tube, they are embedded therein as shown in Figs. 1 and 2. The patch as shown in Fig. 3, is provided with an elliptical opening or slot 12, which is primarily filled with a plug 13 of unvulcanized rubber, and just before the same is placed coextensive with the unvulcanized rubber that forms the tube 10. After the tube with the patches or strips 11 is properly vulcanized, an opening 19 is punched through the rubber centrally of the two alined slots or openings 12, such opening 19 not cutting the fabric, and being thus surrounded by the rubber in the ends of the slots, so that when the head or button 24, of the valve stem 20, is placed in the position as shown in Fig. 6, with the hand gripping the stem with the thumb upon the button 24, and the other hand pulling upon the body 10 to stretch the rubber within the area of the slots 12, the button 24 is pushed through the then elongated opening 19, and then assumes the position as shown in Fig. 2. The material of the tire then automatically, due to the elasticity of the rubber in the slots 12 and the tendency of the fabric to assume its natural position, slips in between the button 24 and the washer 22, which is limited in its movement upon the stem 23 by the shoulder 21. The lock nut 25 is then given a few turns to clamp the stem in place.

In the construction shown in Fig. 4, the patch or strip 11^a is provided with the circular opening 14 having the diametrically disposed slit 15, which will operate similarly to the slot 12, while in Fig. 5, the patch or strip 11^b is provided with the circular opening 17 having the slits 7 that provide the flaps 18.

In all these forms of openings, the head 24 of the valve stem may be forced through from the exterior of the tube to assume the position as shown in Fig. 2.

It is therefore apparent with this form of valve stem connection in which the fabric strips are embedded in the body of the rubber and provided with valve stem receiving opening of greater area than the cross sectional area of the valve stem, that the head of the valve stem may be readily inserted or withdrawn without tearing the fabric.

The construction shown in Figs. 1, 2 and 3, is identical with that shown in applicant's co-pending application for puncture proof tubes for pneumatic tires filed March 7th, 1914, Serial No. 823,182.

What I claim, as new, is:—

1. A tube for pneumatic tires having embedded therein a fabric strip which is provided with a valve stem receiving opening to permit the insertion or withdrawal of the head of the stem.

2. A tube for pneumatic tires having embedded therein a fabric strip which is provided with a valve stem receiving opening, the rubber of the tube projecting within the opening to permit sufficient elasticity to accommodate the insertion and withdrawal of the head of the valve stem without tearing the fabric.

3. A tube for pneumatic tires having embedded therein a fabric strip having an elongated opening, such opening being filled with the rubber of the tube, and the rubber therein and of the tube being provided with a valve stem receiving opening.

4. A tube for pneumatic tires having embedded therein a series of fabric strips, and said strips being separated from each other and the respective surfaces of the tube by rubber, each strip being provided with an opening, and all openings alining, the material of the tube adjacent to and within the openings in the strips being apertured to provide a valve stem receiving opening that permits the insertion and withdrawal of the valve stem button without tearing the fabric.

5. A rubber tube carrying a non-elastic flexible strip of material, the latter being provided with a valve stem receiving opening for the insertion and withdrawal of the head of a valve stem without tearing the strip.

6. A tube for pneumatic tires carrying a fabric strip which is provided with a valve stem receiving opening to permit, without tearing the fabric, the insertion or withdrawal of the head of the stem.

7. A rubber tube having vulcanized therewith a fabric strip previously provided with a valve stem receiving opening, the opening of the fabric being held by the rubber of the tube in its normal position after vulcanization to permit the insertion and withdrawal of the head of the valve stem without tearing the fabric.

8. A rubber tube having vulcanized therewith a fabric strip previously provided with a valve stem receiving opening, and such opening having been previously filled with unvulcanized rubber, the opening of the fabric being held by the rubber in its normal position after vulcanization.

9. A rubber tube having vulcanized therewith a fabric strip previously provided with a valve stem receiving opening, the rubber of the tube being provided with an opening of lesser area than the opening of the fabric, whereby after the valve stem is inserted, the rubber will cause the opening of the fabric to assume its normal position.

10. A rubber tube having vulcanized therewith a fabric strip previously apertured to permit the passage of a valve stem button therethrough without tearing the fabric, the tube being provided with a valve stem receiving opening of lesser area than the aperture of the fabric whereby after the insertion of the valve stem, the rubber will cause the aperture to assume its normal position about the stem.

11. The combination with a valve stem having a terminal button and a reduced portion adjacent thereto, of a tube having a fabric strip provided with a valve stem receiving opening of such a size as to permit the insertion and withdrawal of the button of the stem without tearing the fabric, the material of the tube holding the edge of the opening of the fabric adjacent to the reduced portion of the stem in its normal position and within the radius of the body of the stem.

In testimony whereof I affix my signature.

ALBERT ENNIS HENDERSON.