(No Model.)

J. C. LIGHTHOUSE.

BICYCLE TIRE.

No. 589,733. Patented Sept. 7, 1897.

Fig. 1.

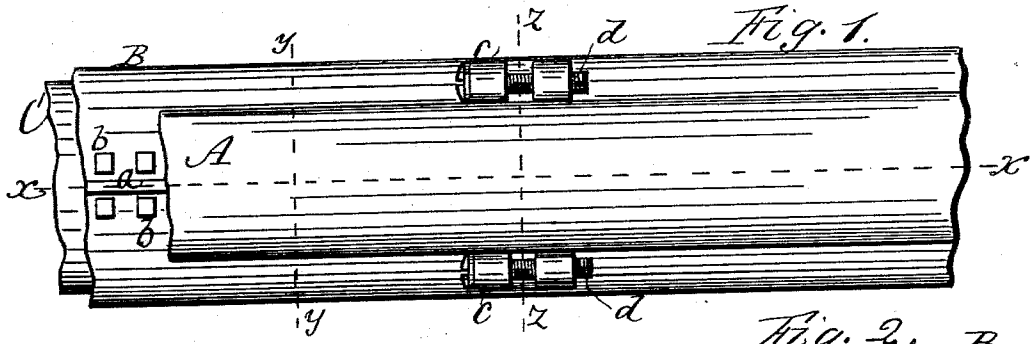


Fig. 2.

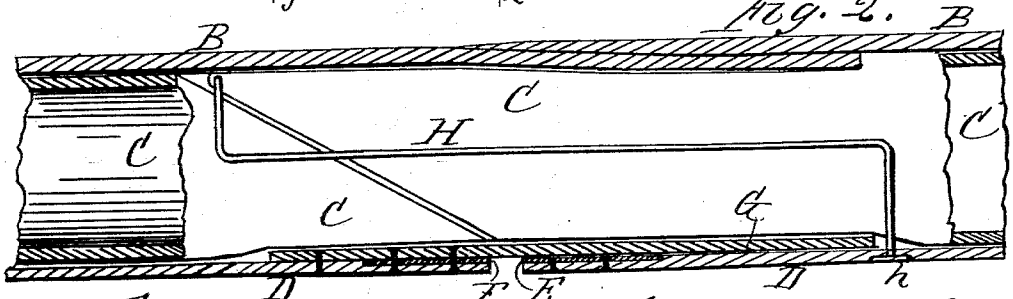


Fig. 3.

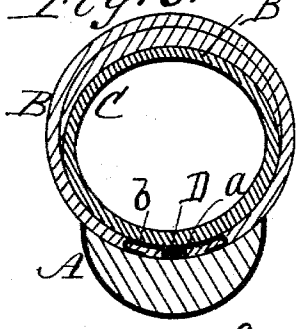


Fig. 4

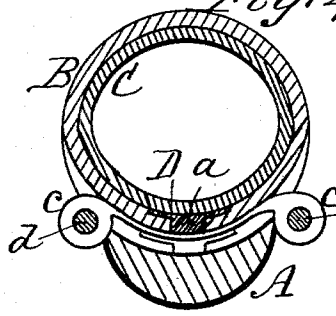


Fig. 6

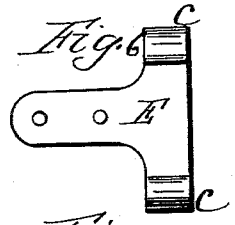


Fig. 7



Fig. 5.

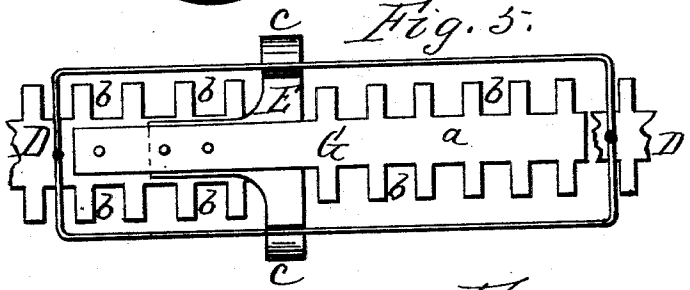


Fig. 8.



Fig. 9.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN C. LIGHTHOUSE, OF ROCHESTER, NEW YORK.

BICYCLE-TIRE.

SPECIFICATION forming part of Letters Patent No. 589,733, dated September 7, 1897.

Application filed May 19, 1896. Serial No. 592,231. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. LIGHTHOUSE, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Bicycle-Tires; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

My improvement relates to an exterior tube inclosing the inflatable air-tube and resting within the ordinary wooden rim of the wheel.

The invention consists in the construction and arrangement of the parts composing the coupling whereby the ends are joined together and the whole clamped tightly within the hollow of the rim, as hereinafter described, and embodied in the claims.

In the drawings, Figure 1 is an inside or back view of the rim and tire. Fig. 2 is a longitudinal vertical section in line *x x* of Fig. 1. Figs. 3 and 4 are cross-sections, respectively, in lines *y y* and *z z* of Fig. 1. Fig. 5 is a diagram showing the parts forming coupling. Fig. 6 is a plan view of one of the coupling-pieces. Fig. 7 is an end view, in modified form, of the flexible strap that unites the exterior covering-tube. Fig. 8 is an end view of the guard for lapping the ends of the air-tube. Fig. 9 is a sectional view of the coupling similar to the section in Fig. 2, but showing a modification in the attachment of the coupling-pieces.

A indicates the ordinary wooden wheel-rim, B the external leather covering-tube, and C the inflatable air-tube. The reinforcing-piece B' is placed between the exterior and interior tubes for the purpose of preventing puncture. The tubes are not continuous or in a complete circle, but are broken at one point, and at this point the coupling is attached by which the ends of the tubes are drawn together to tighten them in the hollow of the rim.

The external tube B is made of a narrow strip of leather or other suitable material folded over in tubular form and the edges united by a flexible metallic binding-strip D, which extends around the whole circle. This binding-strip consists of a thick center portion *a*, which is of the same thickness as the leather, and laterally-projecting teeth *b b*, which are inserted through cuts made in the edges of the leather and turned down on the outside in hook form, as shown in Fig. 3. This binding-strip rests within the hollow of the wheel-rim A. Fig. 7 shows a binding-strip of modified form in which the thickened center is formed by doubly bending the metal itself.

E E are two coupling-pieces riveted, respectively, to the ends of the binding-strips D D on the inner side. These coupling-pieces have laterally-projecting lugs *c c*, which project outward through the leather covering and are exposed on the outside of the same. Through the lugs of these two coupling-pieces pass screws *d d*, and by tightening up these screws at any time the two coupling-pieces are drawn toward each other, thereby contracting the circle of the outer tube and binding the same closely in the hollow of the wheel-rim.

G is a supplementary strip forming an extension to the binding-strip D at one end and projecting beyond the same a distance equal to the telescoping of the ends of the tube together. It is riveted to the end of the binding-strip on top of the coupling-strip E, as shown in Fig. 5. This extension is also provided with transverse teeth *b b*, similar to those on the binding-strip. The leather tube on this side is extended beyond the end of the binding-strip and as far out as the extension G, and the edges of the leather are united by the teeth of the extension G, thereby making the end of the tube of less diameter than the main tube. This projecting end forms the lap which is telescoped into the opposite end of the main tube. (Shown in Fig. 2.) A close joint is therefore made between the ends of the tube, thereby leaving no opening at any adjustment of the coupling.

Fig. 9 shows a modification in which the extension G is made integral with the binding-strip at one end, and in which the coupling-piece D is placed on the outside instead of the inside of the binding-strip. The coupling-piece has headed studs *f f*, which extend up through keyhole-openings *g g* in the binding-strip, by which means the coupling-piece can be adjusted forward or back.

The inflatable air-tube C is also separated or broken at one point, and in the act of telescoping the outer tube the ends of the air-tube are made to overlap, as shown in Fig. 2. In order to accomplish this, the end of the

air-tube on one side, as at the left in Fig. 2, is made fast. The opposite end of the air-tube is attached to the upper projecting end of the wire guard H, which extends backward and is attached at *h* to the binding-strip D. In the act of telescoping the parts together the guard H, with the air-tube attached, is projected into the opposite end of the leather tube until the parts meet, as shown in Fig. 2, said parts thereby overlapping and fitting the space and insuring proper distention of the tubes at that point.

By the means above described the tubes are clamped and held in the hollow of the rim without further attachment. The leather is made waterproof by any suitable composition.

Having described my invention, I claim—

1. In a bicycle-tire, the combination of a concave wheel-rim, an external covering-tube resting therein provided with telescoping ends, an inflatable air-tube provided with lapping ends at the telescopic joint, coupling-pieces at the ends of the covering-tube provided with lugs extending out laterally through holes in the covering-tube, and means for connecting the coupling-pieces on opposite sides, for tightening and closing the telescopic joint, as herein shown and described.

2. The combination of the hollow wheel-rim, the covering-tube and air-tube resting therein, a flexible binding-strip provided with hooks uniting the edges of the covering-tube, coupling-pieces at the ends of the binding-strip provided with lugs extending out laterally through the tube, and means uniting the lugs of said coupling-pieces whereby the ends of the tube may be drawn toward each other as and for the purpose specified.

3. In a bicycle-tire, the combination of a concave wheel-rim, an external covering-tube provided with telescoping ends, a binding-strip uniting the inner edges of the tube, an inflatable air-tube inside the covering-tube provided with overlapping ends at the telescopic joint, coupling-pieces at the ends of the covering-tube provided with lugs extending out laterally through holes in the covering-tube, and screws connecting said lugs on opposite sides for tightening the same and closing the telescopic joint, as herein shown and described.

4. The combination of the open-ended covering-tube, a binding-strip uniting the edges of the same, coupling-pieces attached to the ends of the binding-strips, screws connecting the coupling-pieces together, and an extension to the binding-strip at one end for the purpose of uniting the lapping edges of the lap portion of the tube as specified.

5. The combination of the exterior covering-tube, the binding-strip for attaching the edges of the same, an extension to said binding-strip for securing the edges of the lapping end of the tube, coupling-pieces attached to the binding-strip, that on one side being provided with studs which enter adjusting-holes of the binding-strip, and screws uniting the coupling-pieces as and for the purpose specified.

6. The combination with the telescopic covering-tube and disconnected air-tube of the guard H, to which one end of the air-tube is attached and to which it is projected into the opposite end of the covering-tube in the act of telescoping the parts together as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN C. LIGHTHOUSE.

Witnesses:
F. B. HUTCHINSON,
R. F. OSGOOD.