

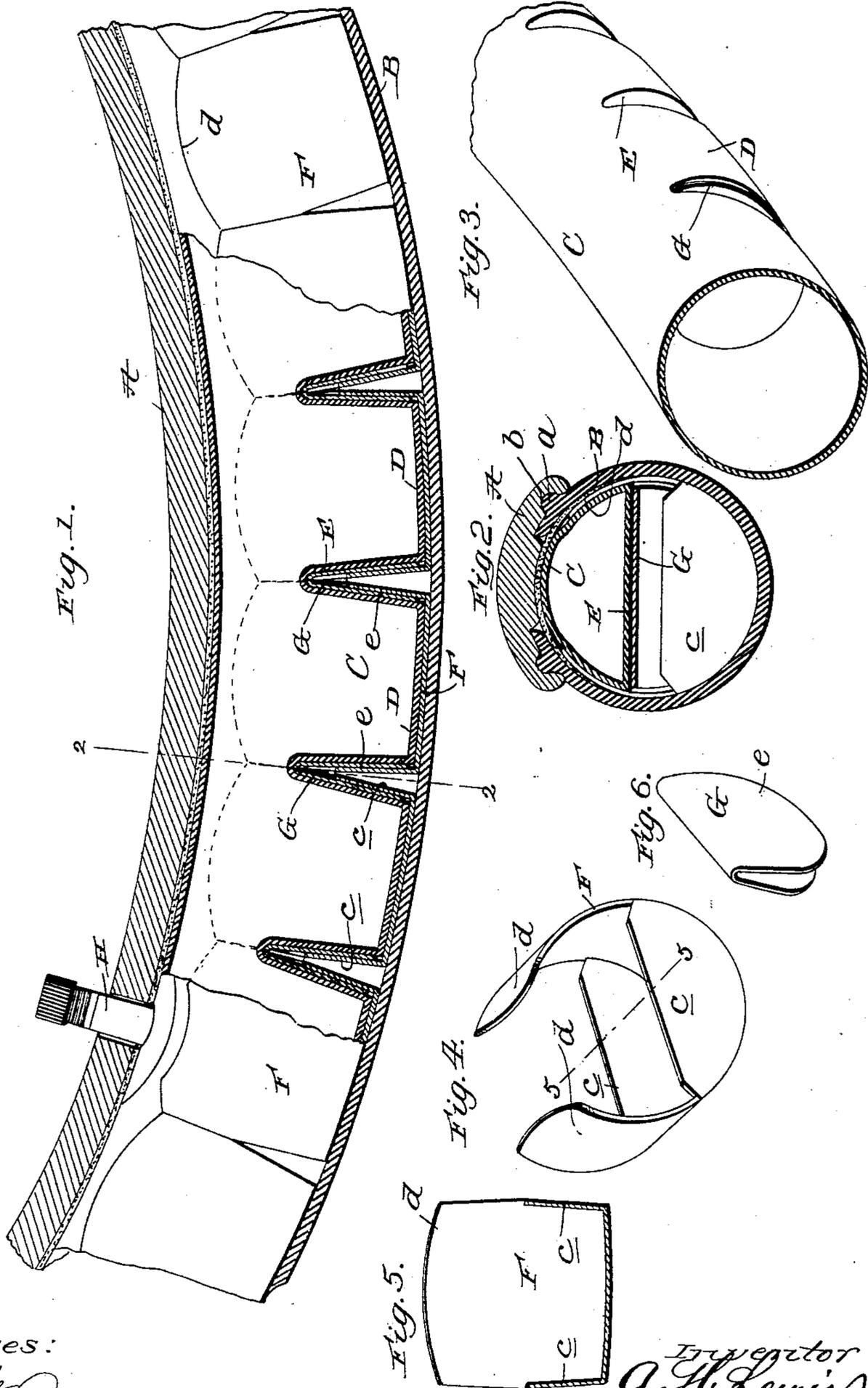
No. 664,766.

Patented Dec. 25, 1900.

A. H. LEWIS.
ARMORED PNEUMATIC TIRE.

(Application filed Sept. 20, 1900.)

(No Model.)



witnesses:

C. J. Ruder

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UNITED STATES PATENT OFFICE.

ALBERT H. LEWIS, OF MIDVALE, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO SAMUEL BRANNAN, CHARLES VALOT, AND JOHN A. NEWPORT, OF SOMERDALE, OHIO.

ARMORED PNEUMATIC TIRE.

SPECIFICATION forming part of Letters Patent No. 664,766, dated December 25, 1900.

Application filed September 20, 1900. Serial No. 30,596. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. LEWIS, a citizen of the United States, residing at Midvale, in the county of Tuscarawas and State of Ohio, have invented new and useful Improvements in Armored Pneumatic Tires, of which the following is a specification.

My invention relates to improvements in armored pneumatic tires; and it consists in a certain peculiar armored tire, the novelty, utility, and advantages of which will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a longitudinal central section of a portion of an armored pneumatic tire made in accordance with my invention. Fig. 2 is a transverse section taken in the plane indicated by the broken line 2 2 of Fig. 1. Fig. 3 is a broken perspective view illustrating a portion of the inner tube of the tire. Fig. 4 is a perspective view of one of the armor-sections. Fig. 5 is a longitudinal section of the same, taken in the plane indicated by the broken line 5 5 of Fig. 4 and illustrating the lengthwise curvature of the section in order to enable it to conform to the curvature of the inner tube. Fig. 6 is a perspective view of one of the V-shaped wear-plates.

In the said drawings similar letters of reference designate corresponding parts in all of the views, referring to which—

A is the rim of a wheel, and B is the outer tube of my improved tire, the same being detachably connected to the rim by reason of projections *a*, with which it is provided, being seated in grooves *b* in said rim or in any other manner suitable to the purposes of my invention.

C is the inner tube of my improved tire, which is made of rubber and, with the exceptions hereinafter noted, may be of the ordinary or any other approved construction. The said inner tube is peculiar in that it is provided with projections D, separated by transverse notches E, preferably of V shape in cross-section. The projections D are each covered by an armor-section F in order to protect the same against wear and injury and render the tire practically puncture-proof. The armor-

sections F are similar in construction, and therefore a detail description of the one shown in Figs. 4 and 5 will be sufficient to impart an understanding of all. Said armor-section is pressed or otherwise suitably formed of thin steel or other suitable thin sheet metal and is more or less resilient or springy in order to give when subjected to pressure. It is curved transversely, as shown in Fig. 4, and also in the direction of its length, as shown in Fig. 5 in order to conform to the curvature of the inner tube C and is provided with the end walls *c*, designed to rest in the notches E and adjacent to the transverse portions of the projection D, on which the section is placed, and is also provided with the curved arms *d*, which are designed to clasp the main portion of the inner tube and are of such length that they extend well within the plane of the rim A, whereby it will be seen that they are enabled to hold the armor-section upon its complementary projection D of the inner tube and yet are adapted to be readily removed from the projection D and tube C when the same is necessary.

G G are wear-plates which are preferably made of thin steel and are V-shaped in cross-section. These wear-plates are arranged in the notches E of the inner tube C and have their arms *e* interposed between the end walls *c* of the armor-sections and the transverse portions of the projections D of the tube. By virtue of this interposition of the wear-plates between the walls *c* of the armor-sections and the tube projections D it will be seen that when the armor-sections F are pressed toward the rim A by weight imposed on the wheel or by coming in contact with a stone or other obstruction in the path of the wheel frictional wear of the tube projections D will be effectually prevented and the usefulness of the tire thereby materially prolonged.

It will be observed by reference to Fig. 1 that the wear-plates G by virtue of their resiliency tend to remain in the notches E of the inner tube and are also held therein by the armor-sections F, while said armor-sections F are in turn entirely inclosed and held on the tube projections D by the case or outer tube B. It will also be observed that while

the armor-sections are calculated to prevent perforation and frictional wear of the projections D, so as to render the inner tube C practically puncture-proof, they are free to move toward and from the rim A, and hence do not detract from the resiliency or springiness of the inner tube C or the tire as a whole, which is an important advantage and a desideratum in the class of pneumatic tires designed for use on bicycle, motor-vehicle, carriage, and other wheels. Moreover, it will be observed that the parts of my improved tire are readily assembled, which contributes materially to cheapness in manufacture, and that the metallic parts, and hence the tire as a whole, are light in weight, as is desirable.

The inner tube C is provided with the usual inflation-tube H, and hence the arms *d* of the armor-section F, which embraces the portion of the inner tube adjacent to said inflation-tube, are recessed at their ends, as illustrated in Fig. 1, so as to prevent injury to the inflation-tube when the arms *d* of the said section F are pressed inwardly.

I have entered into a detail description of the construction and relative arrangement of the parts embraced in this, the preferred, embodiment of my invention in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my claims.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an armored pneumatic tire, the combination of an inflatable tube having portions separated by exterior spaces, armor-sections arranged on the said portions of the inflatable tube, and wear-plates arranged in the exterior spaces of the inflatable tube, and interposed between the said portions thereof and the armor-sections, substantially as specified.

2. The combination of a wheel-rim, an in-

flatable tube arranged thereon and having portions separated by exterior spaces, armor-sections arranged on the said portions of the inflatable tube, and an outer tube or case connected to the rim and inclosing the inner tube and armor-sections, substantially as specified.

3. In an armored pneumatic tire, the combination of an inflatable tube having the projecting portions separated by the transverse, exterior notches or spaces, the sheet-metal armor-sections arranged on the said projecting portions of the inflatable tube and having end walls resting in the exterior spaces or notches thereof and also having arms embracing the main portion of the tube, and V-shaped wear-plates arranged in the exterior spaces or notches of the inflatable tube and interposed between the end walls of the armor-sections and the projecting portions of the tube, substantially as specified.

4. The combination of a wheel-rim, an inflatable tube arranged thereon and having the projecting portions separated by the transverse exterior notches or spaces of V shape in cross-section, the sheet-metal armor-sections arranged on the said projecting portions of the inflatable tube and having end walls resting in the exterior spaces or notches thereof and also having curved arms embracing the main portion of the tube and extending to points within the plane of the rim, V-shaped wear-plates arranged in the exterior spaces or notches of the inflatable tube and interposed between the projecting portions thereof and the end walls of the armor-sections, and an outer tube or case inclosing the inflatable tube, the armor-section and the wear-plates, and connected to the rim, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALBERT H. LEWIS.

Witnesses:

W. M. TRACY,
CHARLES VALOT.