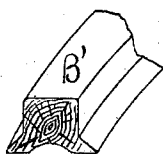
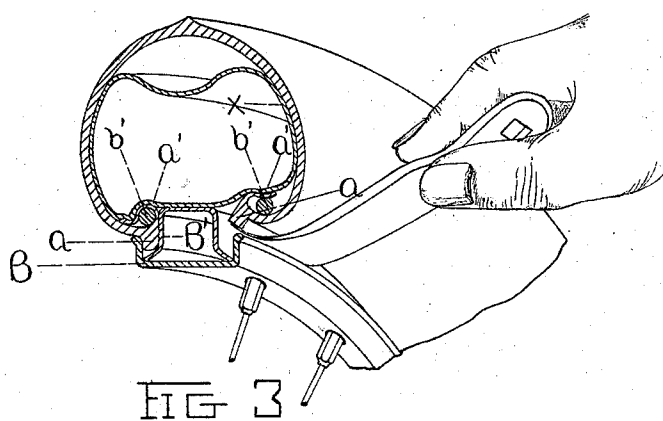
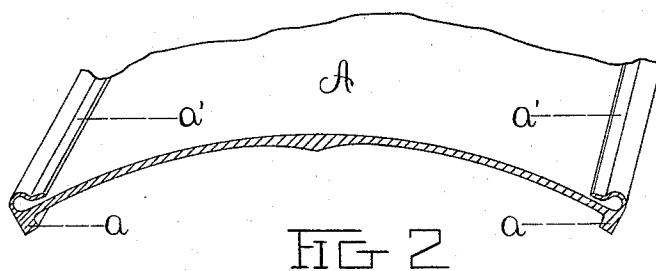
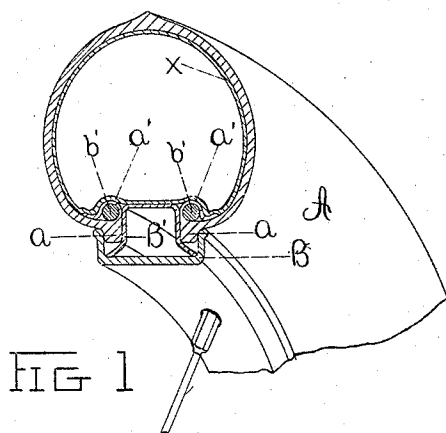


(No Model.)

F. WHITE.
BICYCLE TIRE.

No. 545,114.

Patented Aug. 27, 1895.



WITNESSES:

A. J. Crawford.
L. P. Glade.

FIG 4

INVENTOR:
Frederick White
by his attorney,
Edward S. Beach.

UNITED STATES PATENT OFFICE.

FREDERICK WHITE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO EDWARD S. BEACH, OF SAME PLACE, AND EMERSON W. LAW, OF CAMBRIDGE, MASSACHUSETTS.

BICYCLE-TIRE.

SPECIFICATION forming part of Letters Patent No. 545,114, dated August 27, 1895.

Application filed June 12, 1894. Renewed February 15, 1895. Serial No. 538,490. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WHITE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Bicycle and other Tires, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a cross-sectional and perspective view of my improved tire in place on the rim of a wheel. Fig. 2 is a cross-sectional and perspective view of my new sheath in the position it has upon the drum on which it is made. Fig. 3 shows the parts in process of assembly. Fig. 4 shows a modification.

The objects of my present invention are to produce a sheath which can be made on a drum, and also to produce a tire of extreme lightness and of requisite strength in which the quantity of rubber used is reduced to a minimum; and the main feature of my invention consists in the combination of a troughed rim and a sheath formed with a rib along each of its outer margins and a hoop-flap on each of its inner margins, and with a crosswise-divided hoop, between which and the sides of the rim the said ribs of the sheath are confined, and auxiliary hoops bearing upon the interior of the sheath.

Another feature of my invention is a sheath formed with ribs along its exterior margins and with flaps along its interior margins.

In the drawings, illustrating the features of my invention in the best form now known to me, A is the sheath formed with ribs *a* along each of its outer margins and flaps *a'* along each of its inner margins.

B is a troughed rim, which receives the spoke-heads in any suitable manner.

B' is a hoop, preferably three-sided—that is to say, hollow in cross-section, as shown—and preferably made of thin spring-steel. This is conveniently formed by rolling steel bands to proper length and of the desired cross-sectional contour and area, and then bending them into circular form to form the crosswise-divided hoop B'. If it is desired, the opposed ends of this crosswise-divided hoop may be secured together or confined by a shoulder on the usual valve-stem; but in

practice the hoop is so bent as to conform of itself to the circular form of the rim. Hoops *b'*, preferably of steel wire, are detachably mounted under flaps *a'* and rest against the inner margins of the sheath. Ribs *a* are tightly pinched between the sides of the troughed rim B and the sides of the hoop B', which, together with the auxiliary hoops *b'*, hold the sheath tightly in place, the hoops B' pressing inwardly upon the margin of the sheath. To keep hoops *b'* in place while the parts are being assembled or taken apart, the sheath A is provided with the interior flaps *a'*, which overlap the hoops and prevent their slipping out of position while being manipulated. Hoop B' is large enough in diameter to be between the hoops *b'* when the parts have been assembled, so that when the sheath is inflated the hoops *b'* bear laterally but indirectly against the sides of the hoop B', being separated therefrom by thin portions of the sheath at the base of the flaps. The inflatable lining tube *x* is shown in Figs. 1 and 3.

In Fig. 3 I show the parts in process of assembly, and this figure will be readily understood by all skilled in the art without further description.

In the course of manufacturing pneumatic tires of various constructions I find that it is practically essential to have a sheath which may be made on a drum instead of by molding, although the making of sheaths on a drum is not new with me, and its process is well understood by all skilled in the art of making pneumatic-tire sheaths.

The advantage which my present invention has over all others known to me is that the sheath may be made on a drum instead of in molds, and therefore has a maximum durability and resiliency, while at the same time my invention enables me to reduce the amount of rubber required in all prior tires known to me from twenty-five to thirty-three and one-third per cent. and greatly reduces the cost of manufacture and weight of the completed wheel.

In Fig. 4, showing a modification, hoop B' is solid and not hollow, and is preferably made of wood.

What I claim as my invention is—

1. The combination of a troughed rim; a sheath formed with ribs along its exterior margins and flaps along its inner margins; a cross-wise divided hoop exterior to the rim and
5 between the sides of which and the sides of the rim, the sheath ribs are confined; a pair of independent hoops bearing upon the inner surface of the sheath, and held by the flaps on the inner margin of the sheath, all substantially as and for the purpose set forth.
10 2. The combination of a rim; a sheath

formed with ribs along its outer margin and flaps along its inner margin; a cross-wise divided hoop hollow in cross-section; and a pair of independent hoops bearing upon the inner surface of the sheath, all substantially as described.

FREDERICK WHITE.

Witnesses:

EDWARD S. BEACH,
L. P. SLADE.