

(No Model.)

G. C. MOORE.  
INNER TUBE FOR PNEUMATIC TIRES.

No. 581,962.

Patented May 4, 1897.

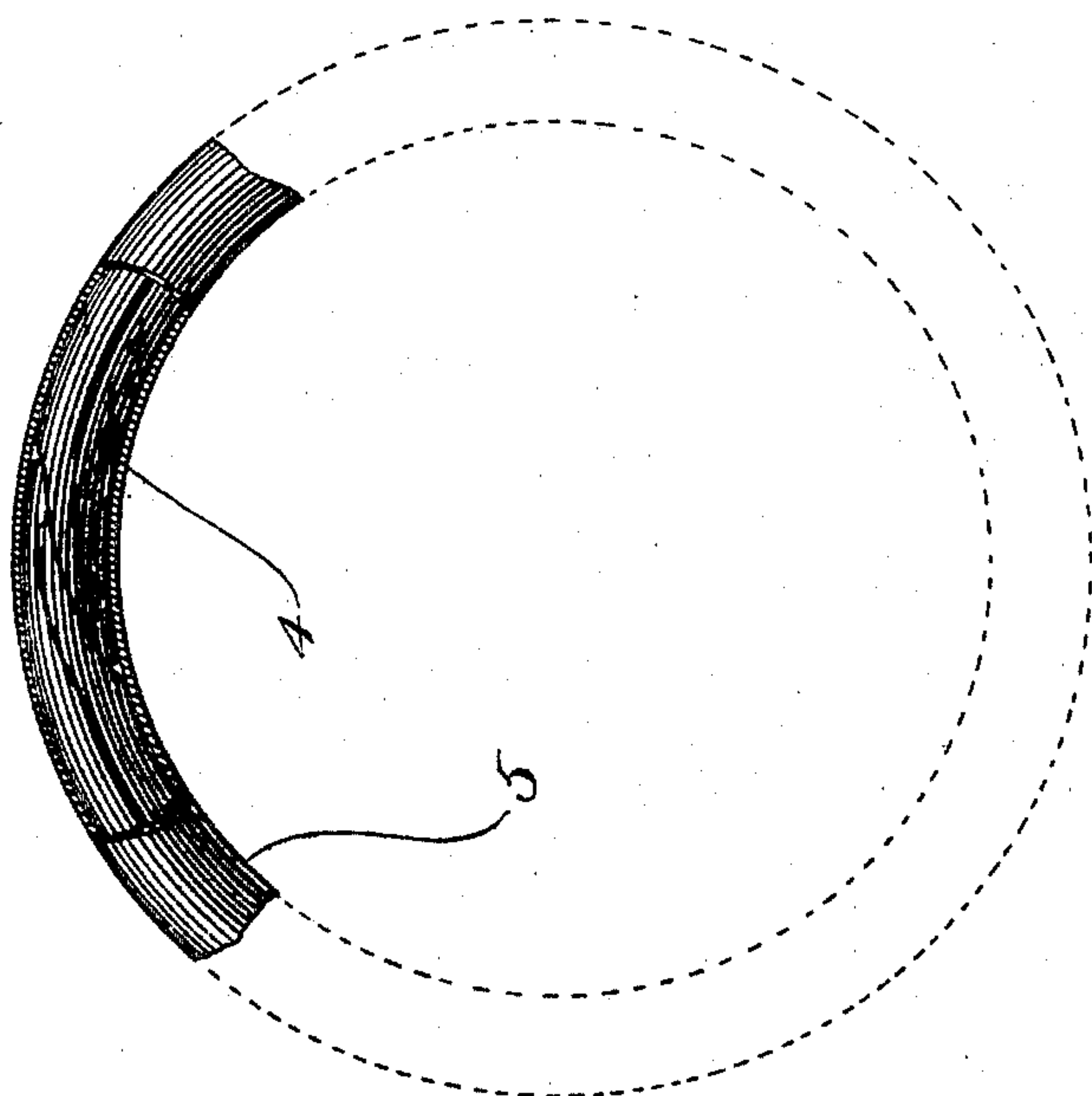


Fig. 3.

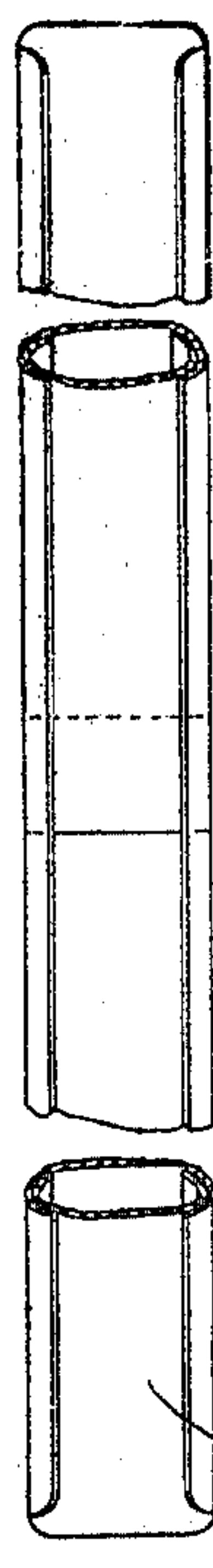


Fig. 1.



Fig. 2.

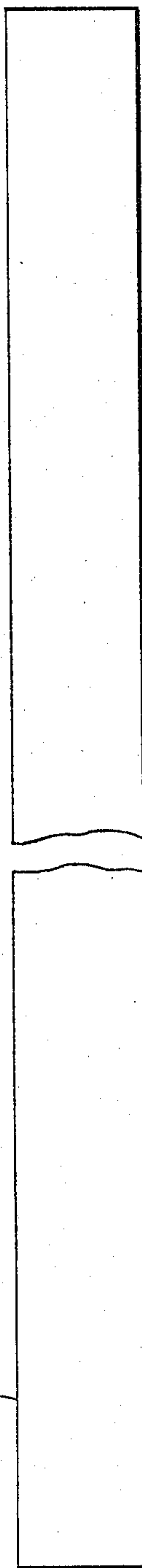


Fig. 4.



Fig. 5.

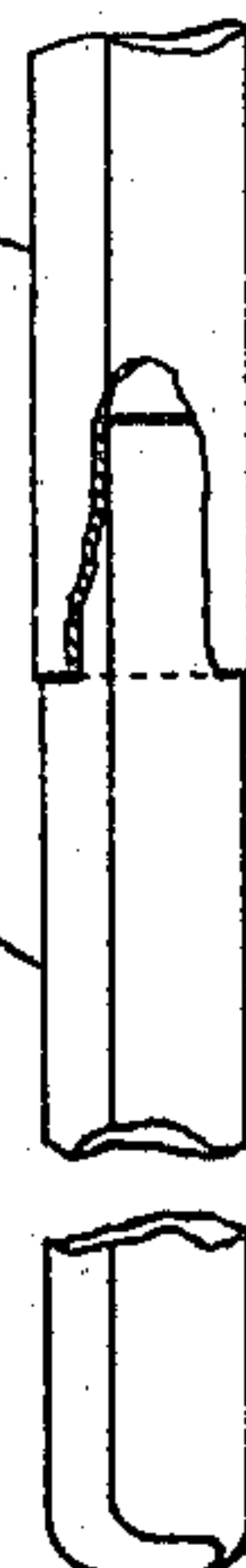


Fig. 6.

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# UNITED STATES PATENT OFFICE.

GEORGE C. MOORE, OF PROVIDENCE, RHODE ISLAND.

## INNER TUBE FOR PNEUMATIC TIRES.

SPECIFICATION forming part of Letters Patent No. 581,962, dated May 4, 1897.

Application filed February 19, 1897. Serial No. 624,111. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE C. MOORE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Inner Tubes for Pneumatic Tires for Vehicles, of which the following is a specification, reference being had therein to the accompanying drawings.

Certain classes of pneumatic tires for bicycles and other vehicles contain a separate inner air receiving and holding tube of elastic material.

My invention relates more particularly to these inner tubes; and it consists, essentially, of an inner tube of novel and improved character and construction which shall admit of being cheaply and expeditiously produced and shall be efficient and durable in use.

The invention will be described first with reference to the accompanying drawings and afterward will be distinctly defined in the claims at the close of this specification.

In the drawings, Figure 1 shows in plan a tube embodying my invention. Fig. 2 shows the same in side elevation. Fig. 3 is a view in side elevation of a pneumatic tire with my improved tube in place therein, partly sectional or broken away in order to illustrate interior features. Fig. 4 is a view in plan of a strip of caoutchouc or the like elastic material, such as I use in the production of my improved tube. Fig. 5 is a view in longitudinal section of the said strip and a form applied thereto, the ends of the said strip being bent over upon the said form. Fig. 6 shows a modified form of the tube.

In the production of my improved tube I employ usually a strip of caoutchouc or rubber, the same being in width equal to the diameter, approximately, of the tube to be produced and in length slightly greater than twice the length of the said tube. Such a strip I have shown at 1 in Fig. 1 of the drawings. In the process of forming the tube I double the said strip upon itself at two points, bringing the ends thereof together and slightly overlapping them. Fig. 5 shows the strip thus doubled over upon itself and the said ends slightly overlapped, but such ends are not secured together at this stage in the

manufacture, or, if secured together at all, are secured together only for a part of their width. The lateral edges of the upper and lower portions of the doubled-over strip then are caused to overlap each other slightly, as indicated in Figs. 1 and 2, and are caused to adhere together in suitable manner. If a strip of uncured rubber is used it is sufficient to moisten the surfaces of the said overlapping lateral edges which are to come in contact with each other with naphtha or other suitable liquid or solution, such as is used by rubber-workers in preparing surfaces that are to be united. If the strip is composed of cured or vulcanized rubber, I unite the overlapping edges by the aid of rubber cement. The process of manufacture is facilitated by the use of a core or form 2, Fig. 5, over which the strip is folded. The folding having been effected and the lateral edges having been united as aforesaid, the said form should be removed. In case the free ends of the strip meet and overlap at a point approximately at mid-length of the tube, as indicated in the drawings, then the form should be of so-called "breakable" construction—that is to say, made in two parts which are joined together in detachable manner at mid-length thereof, as indicated in Fig. 5, so as to enable the said parts to be separated from each other and separately withdrawn between the overlapping ends at the upper side of the tube. After the withdrawal of the parts of the form the said overlapping ends are caused to adhere to each other in suitable manner, as aforesaid.

In forming the tube care is to be taken to securely unite the overlapping edges at the ends of the tube, so as to leave no holes for the escape of air. If desired, the overlapping ends of the tube may be caused to meet and overlap at a point near one of the ends of the tube. When this is the case, it will be unnecessary to employ a breakable form, for a form in a single piece will then admit of readily being removed on slightly stretching the tube, so as to present the end of the form at the opening which is left between the overlapping ends, as before stated.

I have represented in Fig. 6 a modification of the invention in which I form two elongated bag-like portions 3 3, of rubber or elas-



tic material, each produced by folding over upon itself at mid-length a strip 1 on the order of that above referred to and having the side edges thereof overlapped and secured together, the open ends of the said bag-like portions being telescoped the one within the other and united in suitable manner. The characteristic feature of my improved tube is the fact that the ends thereof are seamless—that is to say, they present no seam or joint, but merely the continuous body of the rubber.

Fig. 3 shows a tube 4 embodying my invention inclosed within a shoe or covering 5 of usual character, as customary in a pneumatic tire for vehicles.

I claim as my invention—

1. The improved inner tube for use in pneumatic tires for vehicles, formed of rubber or other suitable elastic material in strip form bent upon itself to form the ends of the

tube, with the edge portions of the said strip united to each other along the sides of the tube, and the ends of the strip joined together, substantially as described.

2. The combination with the jacket or cover of a pneumatic tire for vehicles, the improved inner tube formed of rubber or other suitable elastic material in strip form bent upon itself to form the ends of the tube, with the edge portions of the said strip united to each other along the sides of the tube and the ends of the strip joined together, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. C. MOORE.

Witnesses:

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WM. A. MACLEOD.