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METALLIC CASING FOR PNEUMATIC TIRES.  
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975,693.

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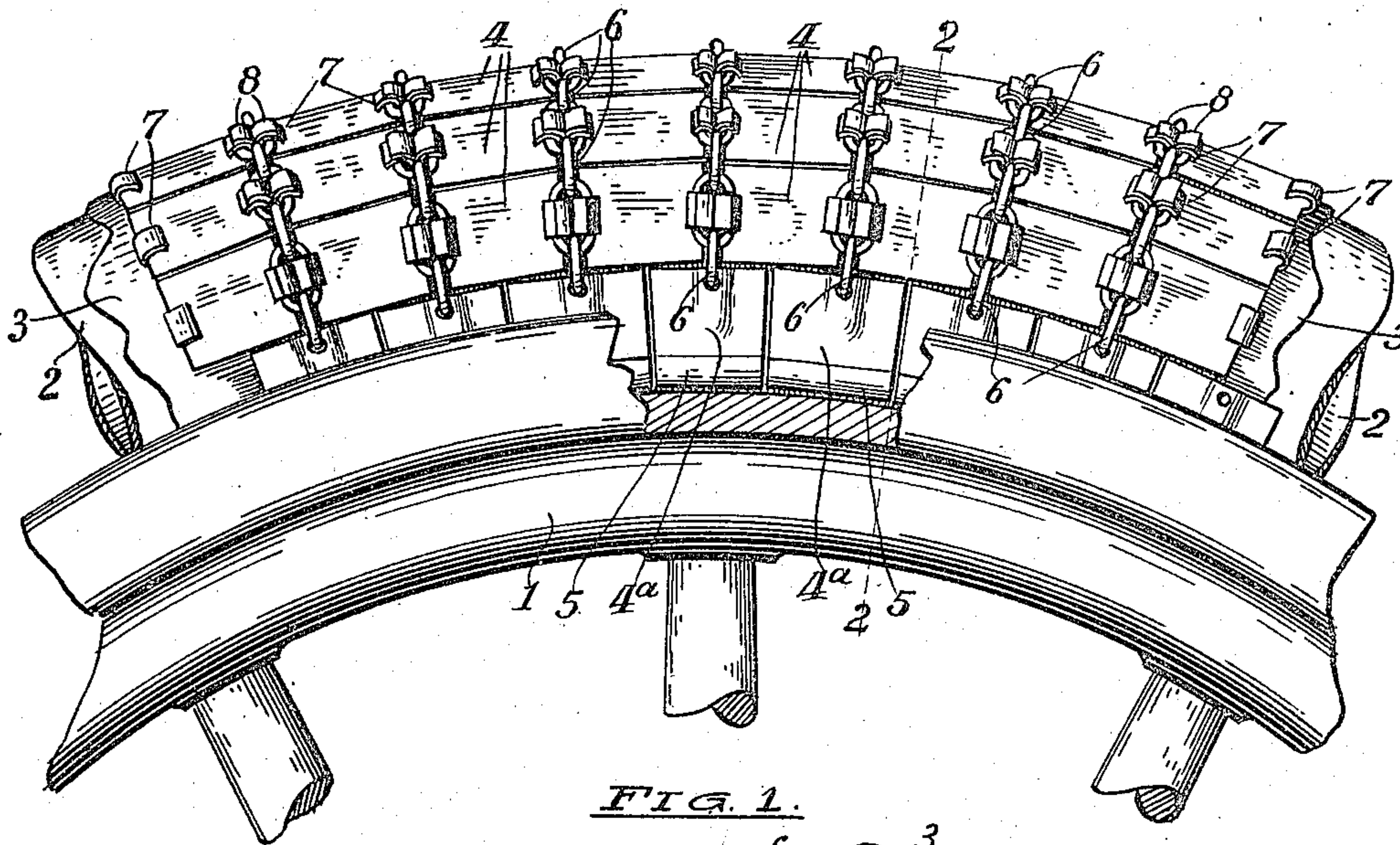


FIG. 1.

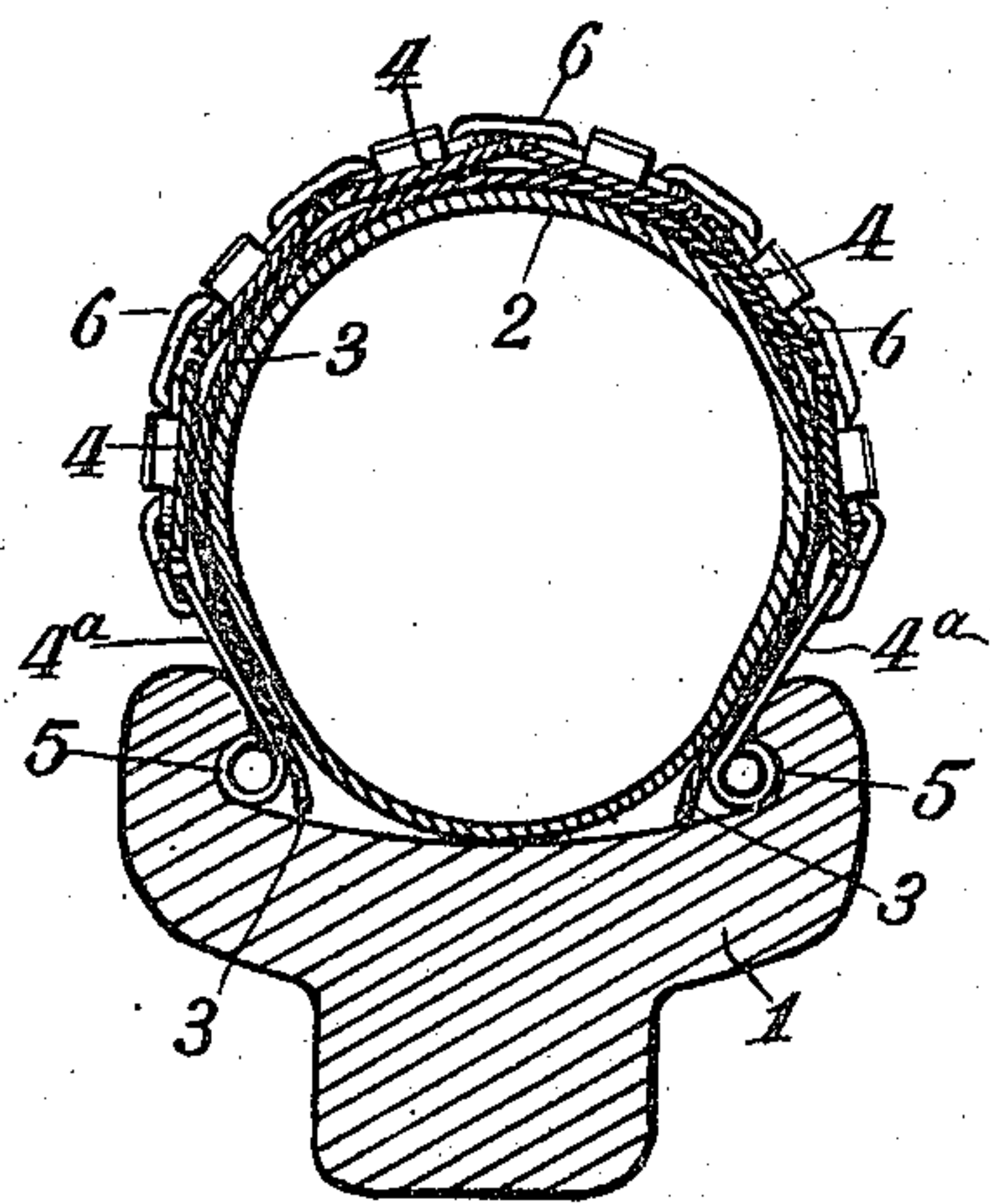


FIG. 2.

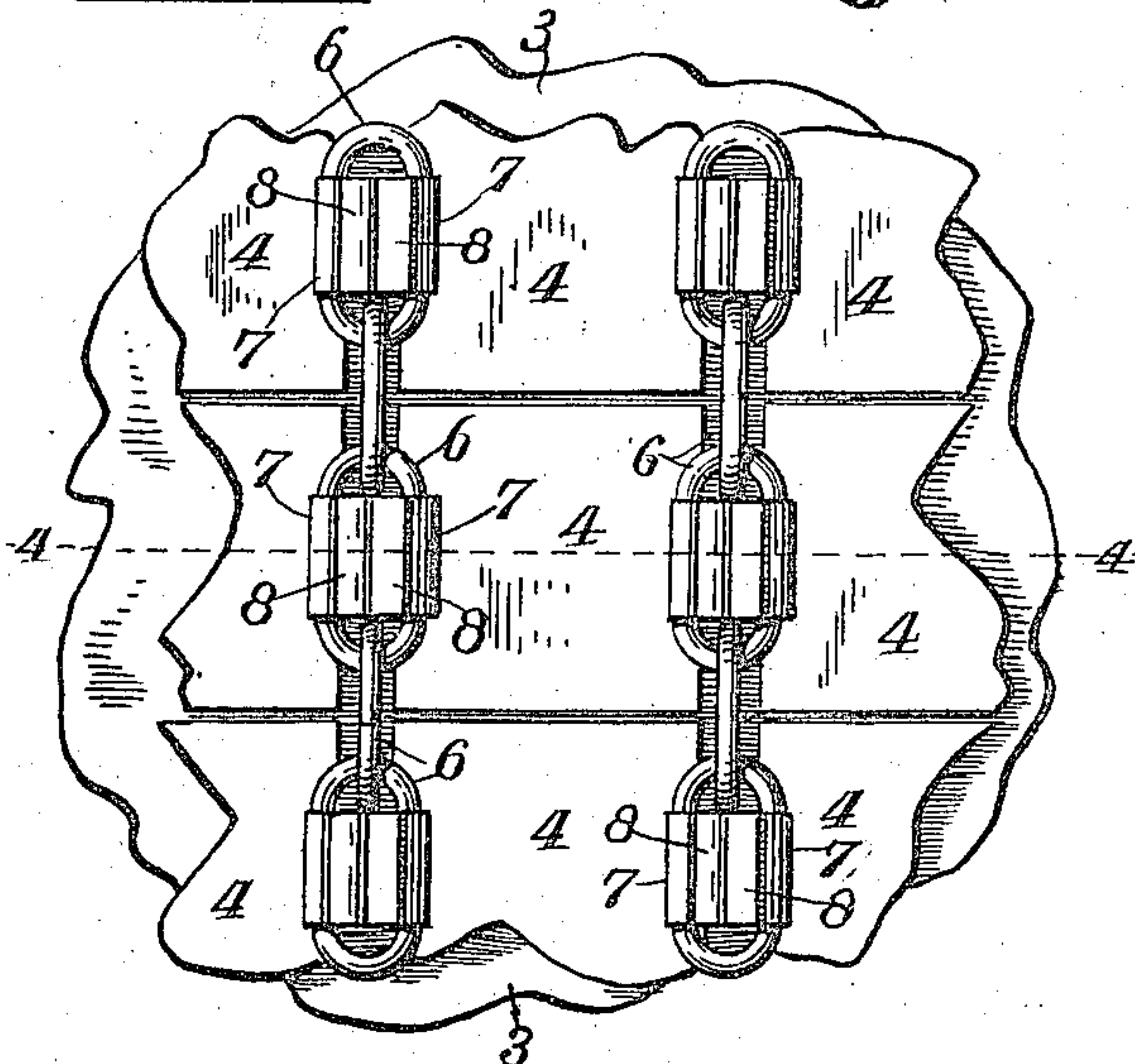


FIG. 3.

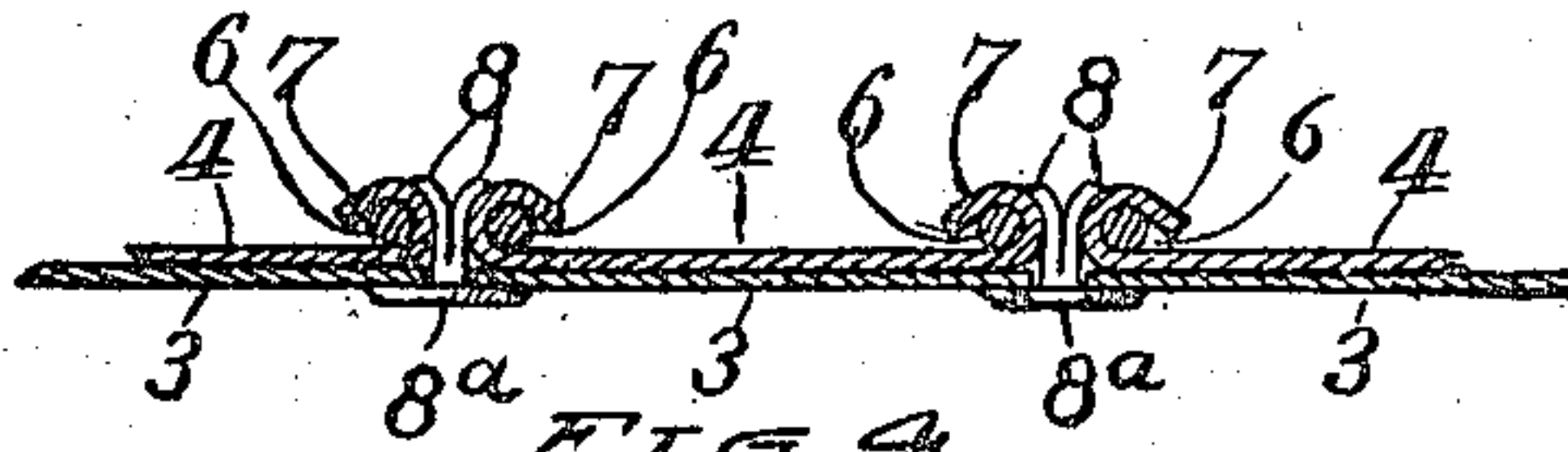


FIG. 4.

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# UNITED STATES PATENT OFFICE.

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## METALLIC CASING FOR PNEUMATIC TIRES.

975,693.

Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed February 12, 1910. Serial No. 543,466.

*To all whom it may concern:*

Be it known that we, BERA J. KINGSTON and JOHN H. LANE, citizens of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Metallic Casings for Pneumatic Tires; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in metallic casings for pneumatic tires.

The usual rubber casing is objectionable in many respects. It is easily punctured, runs hard because it flattens out or rises up in a projecting portion ahead of contact with the ground, and adheres to the ground at the rear where leaving the same by suction or vacuum. The casing also heats when running and is expensive to maintain.

The object of our invention is to dispense with the usual casing; to provide a cheaper and more durable structure; to provide a device that will not heat or be punctured, and to provide the same with various new and useful features, hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which:

Figure 1 is an elevation of a portion of the wheel with a portion of our device applied thereto; Fig. 2 a transverse section of the same on the line 2—2 of Fig. 1; Fig. 3 an enlarged detail in plan view; and, Fig. 4 a sectional detail of the same on the line 4—4 of Fig. 3.

Like numbers refer to like parts in all of the figures.

1 represents the rim of a wheel of the usual construction and adapted to receive and hold a tire; 2 an elastic inner tube to contain and retain the compressed air under pressure.

3 is a covering for the same of leather, heavy canvas, or other suitable material to protect the same from wearing contact with the metallic casing. This casing consists essentially of numerous small plates 4, each terminating at its ends in hooks 7 adapted to enter and be clenched and pivoted to the links of small chains 6 extending transversely around the tire, and at the ends pro-

vided with plates 4<sup>a</sup> attached to the end link of the respective chain at one side, and at the other side turned or rolled in tubular form as at 5 or otherwise adapted to engage and be retained by the groove in the rim of the wheel. These plates are thus yieldably and pivotally secured to each other, both laterally and longitudinally throughout and each free to independently yield as the same contacts the ground.

To secure the covering 3 at frequent intervals so that the same will be retained in place, fasteners 8 extend through the covering and are clenched within the links and superposed upon the hooks 7. These fastenings have an inner flat head, as illustrated in Fig. 4, and are split and clenched within the links and preferably upon the outer surface of the hooks 7. These portions of the hooks 7 and fasteners 8 which extend outward and are clenched around the respective sides of the various links, and together with the chains, form a yieldable non-slipping device.

The device is well adapted to wholly supersede the usual vulcanized rubber casing; is practically puncture proof, and at the same time each plate is free to move inward and thus affords a yielding and very durable casing, which together with the covering 3, affords a complete protection for the inner air tube 2, without operating to heat unduly, and without the necessity of any other casing. Our device is also very easily repaired and the inner covering when worn by the casing can very quickly and cheaply be replaced, thus providing a very satisfactory and durable tire.

What we claim is:—

1. A pneumatic tire comprising an inner air retaining tube, a covering partially surrounding the inner tube, chains extending transversely of the covering and spaced apart at regular intervals, means for attaching the ends of the chains to a wheel rim transverse rows of small plates between the chains, means for attaching the ends of the plates to the chains and means for attaching the covering to the chains.

2. In a pneumatic tire, an outer casing consisting of numerous small plates having hooks at their ends, chains arranged transversely of the casing and having each alternate link engaged by said hooks to pivotally

connect the plates to the chains, and means for securing the ends of the chains to the rim of a wheel.

3. A pneumatic tire, comprising an inner  
5 tube, chains arranged transversely of the  
tire, plates extending between the chains,  
hooks on the respective ends of the plates  
engaging the links of the chain, a covering  
interposed between the inner tube and the  
10 plates, and fasteners extending through the

covering and outward through the chain and  
clenched down upon the same.

In testimony whereof we affix our signatures in presence of two witnesses.

BERA J. KINGSTON.  
JOHN H. LANE.

Witnesses:

JOHN HELMER,  
FRED J. PATTERSON.