

No. 791,502.

PATENTED JUNE 6, 1905.

A. H. ROCHFORD.  
PROTECTIVE COVERING FOR VEHICLE WHEELS.  
APPLICATION FILED NOV. 3, 1904.

Fig. I.

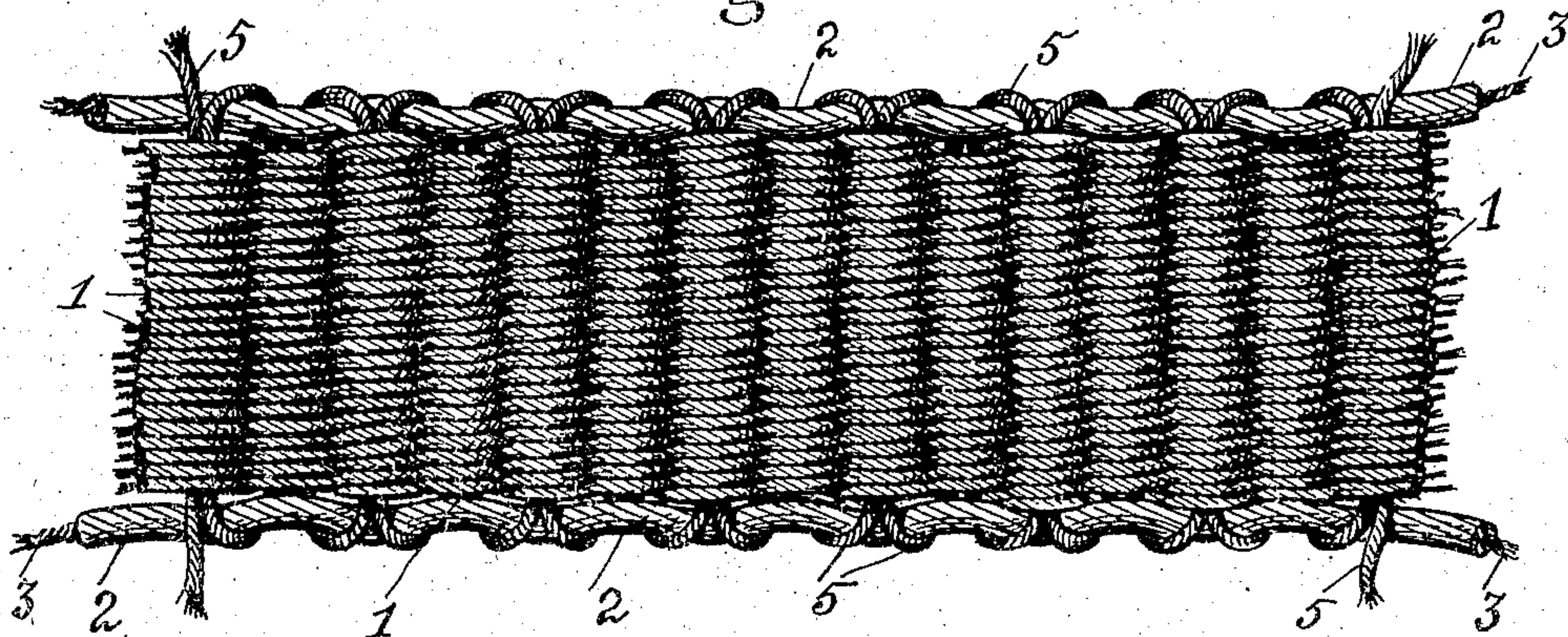


Fig. II.

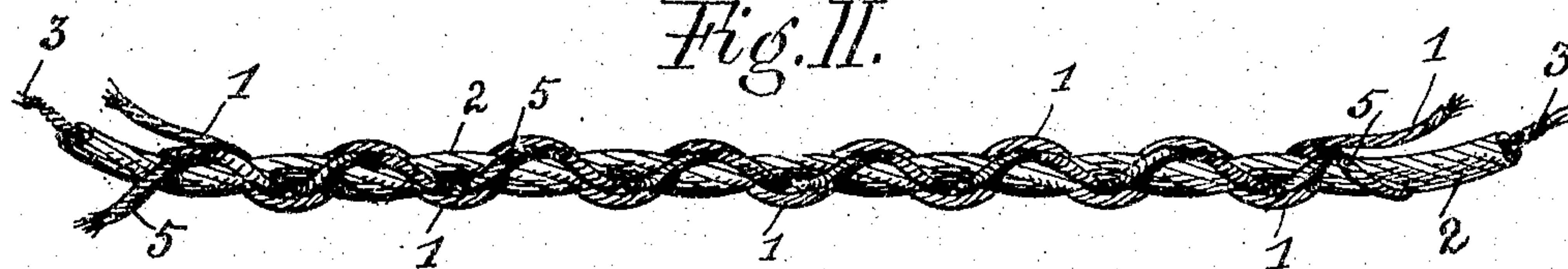
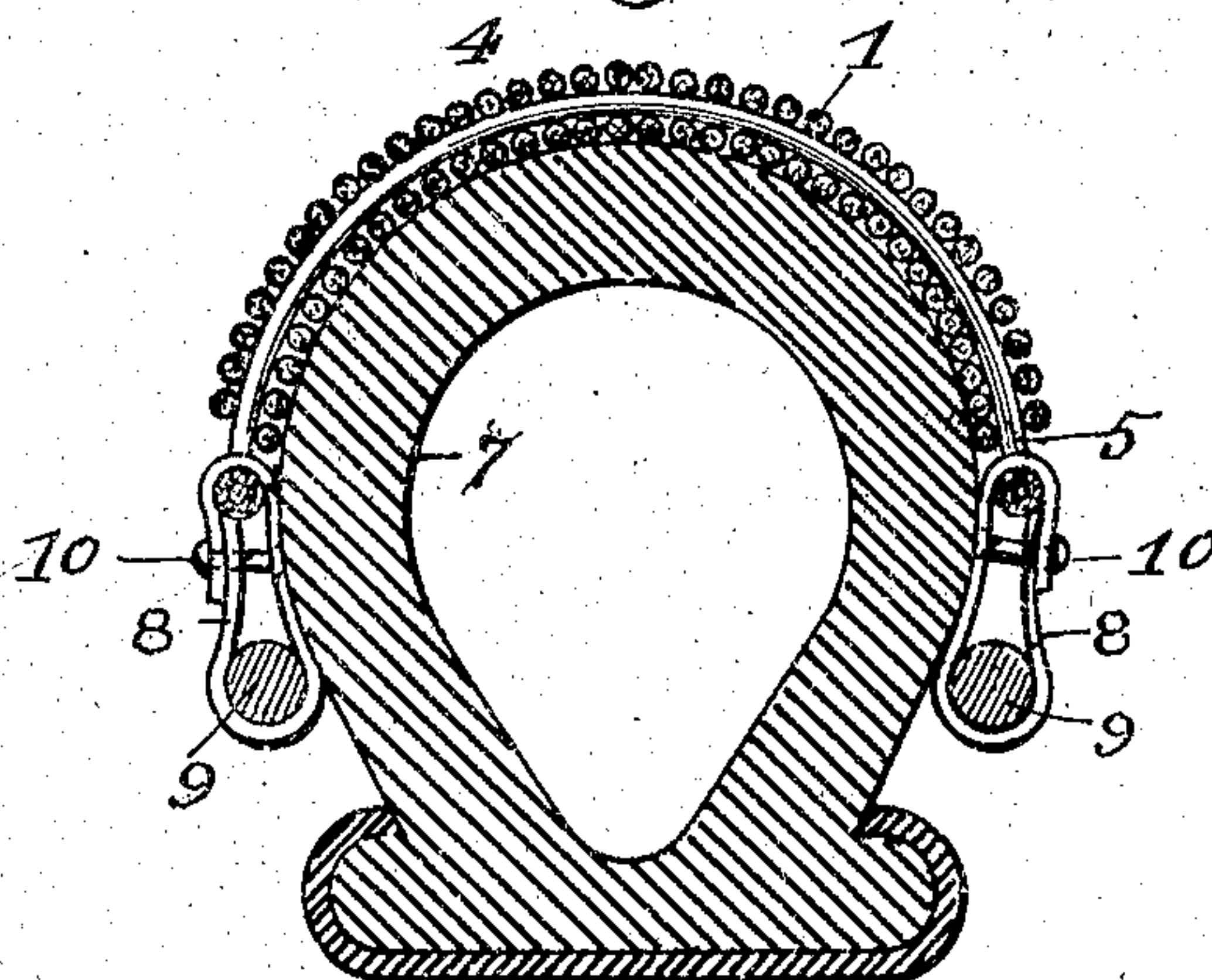


Fig. III.



Witnesses:

*Elmer Wickes*  
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Inventor

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*J. Richards & Co.*  
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# UNITED STATES PATENT OFFICE.

ARTHUR HOGAN ROCHFORD, OF POINT REYES, CALIFORNIA.

## PROTECTIVE COVERING FOR VEHICLE-WHEELS.

SPECIFICATION forming part of Letters Patent No. 791,502, dated June 6, 1905.

Application filed November 3, 1904. Serial No. 231,252.

*To all whom it may concern:*

Be it known that I, ARTHUR HOGAN ROCHFORD, a citizen of the United States of America, residing at Point Reyes, county of Marin, and State of California, have invented certain new and useful Improvements in Protective Coverings for Vehicle-Wheels; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to an improved covering or shield to protect vehicle-wheels from abrasive wear, especially wheels of the resilient type—such as are employed for automobiles, bicycles, and the like—as described in the following specification and illustrated by drawings that form a part thereof.

My improvement consists in a reversible overtire or shield composed of a reticulated web having its warp composed of numerous twisted strands of fine metallic wire laid about an elastic fibrous core and a woof of the same nature and material woven in a peculiar manner, commonly called "twill," whereby the warp alone is exposed to wear and the woof protected from abrasion, the whole forming a construction whereby is attained certain qualities and functions that give operative endurance not hitherto accomplished by such shields or coverings.

The object of my invention is to provide a covering or shield for resilient wheels that will be flexible, elastic, non-corrosive, reversible, and as near as possible without inherent sliding action of the members one upon the other, which action with abrasive wear on the surface limits the endurance of such devices.

To accomplish these ends, I provide protective coverings for vehicle-wheels as illustrated in the drawings.

Figure I is a flat view of a section of my improved covering or shield; Fig. II, an edge view of the same, and Fig. III a transverse section through the rim of a pneumatic wheel with my improved covering applied thereto.

The adaptation to the desired end and the endurance of reticulated coverings for resilient vehicle-wheels have both been limited be-

cause of either external abrasive wear or internal wear by the members sliding one upon the other, either result soon destroying the integrity of the structure. The qualities of flexibility and endurance of such coverings are determined by certain mechanical laws or rules on which my invention is predicated—namely, first, that flexure without crystallization or rupture is best attained by subdivision of the bending member, and hence I provide for the warp of my reticulated covering of the width shown a thousand or more strands of twisted wires, as indicated in the drawing Fig. I; second, endurance of abrasive wear is attained by the independent stability of the strands composing the warp and woof, so that if a part is worn away the remainder will continue to perform the required function and be held by the manner of their reticulation; third, in any reticulated web in which both the warp and woof are exposed to wear the latter is soon destroyed because disposed transverse to the tractive force and to sliding action on the ground. This is the theory on which my improvement is based and produces a protective covering, as shown in the drawings, now to be described.

The warp 1 being composed of twisted strands of non-corrosive wire sufficient in number to produce the desired width, each warp-strand 1 is composed of six minor strands twisted about a fibrous core. Each minor strand is also composed of six twisted wires, so that each strand 1 contains thirty-six wires, and a web, as shown in Fig. I, with fifty strands 1, composing the warp, contains eight-hundred separate wires. The border or major strands 2 are made in a similar manner, with a fibrous core 3, and have each thirty-six wires, preferably of a larger size, because not exposed to so much flexure as the body or convex face 4.

The manner of weaving or reticulation is technically known as "twill." (Indicated in Fig. II.) The woof-strands 5, also consisting of thirty-six wires, are double—that is, two strands cross at each intersection and are wound about the major strands 2 at each side, by means of which latter the covering is held in place on the wheel-rim 7. In this manner



it will be seen that the transverse woof-  
strands 5 are not exposed to wear, and the  
warp-strands 1 being twisted and held at each  
crossing or intersection can be quite worn  
5 away without destroying the action and pur-  
pose of the covering. It will be understood  
that the number of strands and of wires in  
each strand can be varied to suit the diame-  
ter of wheels, the nature of roads where the  
10 wheels are used, and that other subordinate  
structural changes may be necessary or ad-  
visable, the general features of my invention  
remaining the same.

In Fig. III, I show a manner of attaching  
15 the covering by means of clips 8, connecting  
to a ring or wire 9, disposed around and be-  
low the extreme diameter of the wheel-rim 7.  
This ring or wire is at this point rigidly held  
by expansion of the elastic rim when pres-  
20 sure falls on the face at 4 or at the time when  
the protective covering has to be held firmly  
in place. When one side of the protective  
covering is worn, the rivets 10 are taken out,  
the clips 8 removed, and the covering is re-  
25 versed or the worn side turned inward against  
the wheel-tire 7, so there will be a new face  
with an endurance much the same as in the  
first use.

Having thus described the nature and ob-  
30 jects of my invention and manner of its use,  
what I claim as new, and desire to secure by  
Letters Patent, is—

1. In resilient vehicle-wheels, a protective  
covering consisting of reticulated web, twill-

woven, the warp alone exposed to wear, the 35  
warp-strands composed of multiple twisted  
wires disposed and operating in the manner  
substantially as described.

2. In resilient vehicle-wheels, a protective  
covering consisting of a reticulated web, twill- 40  
woven to expose the warp alone, the warp and  
woof composed of multiple strands of metal-  
lic wire, the woof double and passing over  
border or major strands at each side of the web,  
substantially as specified. 45

3. In a resilient vehicle-wheel, a reversible  
protective covering, consisting of a reticulated  
web, woven to protect the woof, the strands  
composed of multiple twisted wires wound  
about a fibrous core and means to removably 50  
attach the covering to the resilient tire of a  
vehicle-wheel, substantially as specified.

4. In a resilient vehicle-wheel, a protective  
covering composed of a reticulated web dis-  
posed in twisted strands of multiple wires, a 55  
major strand at each side of the web around  
which the woof passes, and removable clips  
or other suitable fastenings that permit the  
covering to be reversed when worn on one side,  
substantially as specified. 60

In testimony whereof I have signed my name  
to this specification in the presence of two sub-  
scribing witnesses.

ARTHUR HOGAN ROCHFORD.

Witnesses:

ALFRED A. ENQUIST,  
ELMER WICKES.