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949,572.

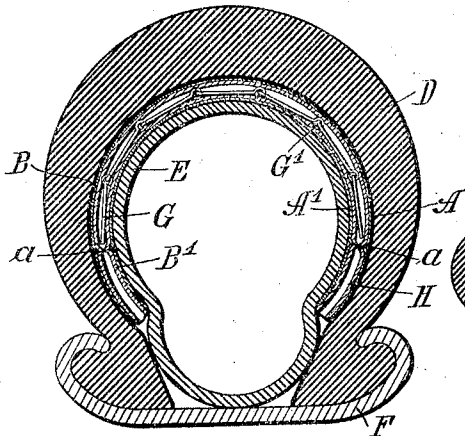


Fig. 2.

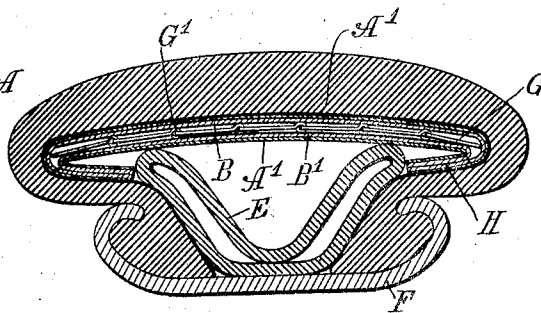


Fig. 3.

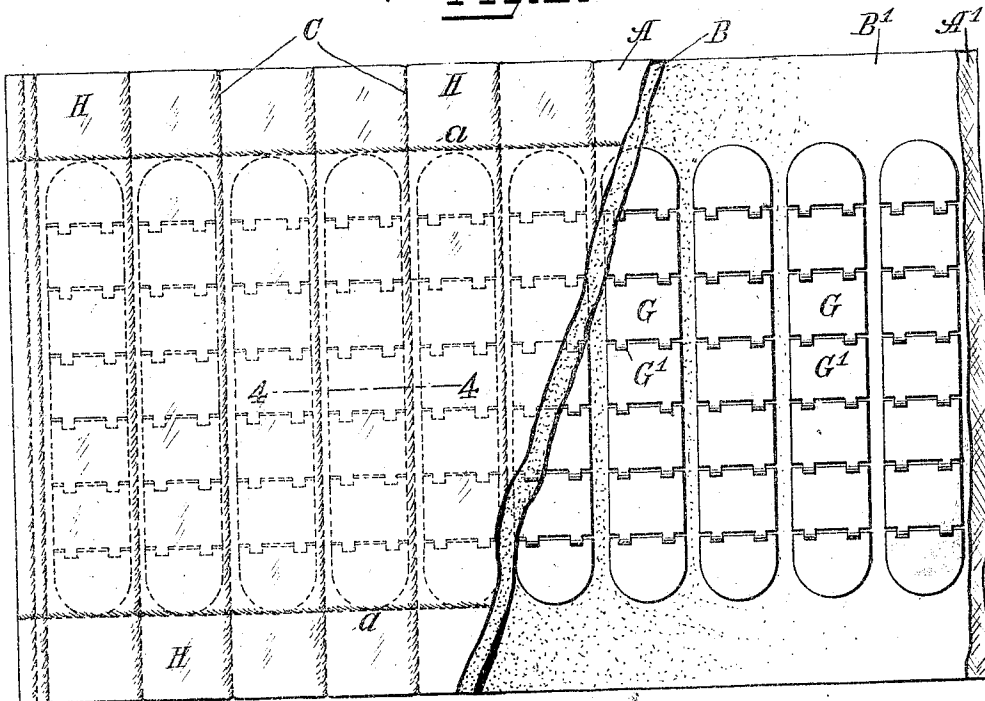
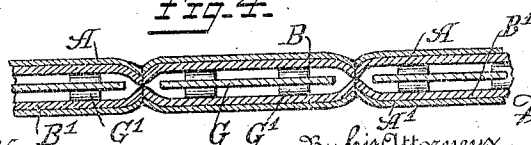


Fig. 4.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## TIRE-PROTECTOR.

949,572.

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*To all whom it may concern:*

Be it known that I, FRANK P. HAYES, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Tire-Proteectors, of which the following is a specification.

My invention relates to tire protectors of that class in which the protector is inserted loosely between the shoe or casing and the air-tube of a double tube tire.

The object of my invention is to provide an improved construction of this character, so as to afford an increased safeguard against injury to the air tube or shoe, even in the extreme case of the tire's collapsing, say on account of a leaking valve.

A specific embodiment of my invention will now be described in connection with the accompanying drawings and the novel features will then be pointed out in the appended claims.

Figure 1 is a cross-section of a tire with my device applied thereto; Fig. 2 is a similar view showing tire collapsed; Fig. 3 is a face view of my improved protector; Fig. 4 is a sectional view thereof on line 4-4 of Fig. 3.

The improved protector comprises a sheath made of flexible fabric and formed with transverse pockets, and resistant jointed strips contained in said pockets. In the particular construction shown, the sheath comprises four layers the outer or exposed layers A, A' being as a rule relatively thin, and inelastic (consisting, for instance of duck) while the inner or unexposed layers B, B', are made of thicker and softer, that is, somewhat elastic material, such as flannel. The four layers are sewed together at intervals by transverse lines of stitching C, and are of a width preferably more than half the transverse inner circumference of the shoe or casing D (see Fig. 2) while the length of the strips A, A', B, B', is equal to or slightly greater than the longitudinal inner circumference of the shoe D. The sheath may thus be interposed between the shoe D and the inner tube E in such a manner that the inner tube will be at no point in contact with the inner surface of the shoe's tread portion. The ends of the sheath will generally be overlapped slightly, and may shift or slide on each other when they

reach the lowermost position during the rotation of the wheel.

F indicates the wheel rim which may be of any usual or approved construction.

The seams C form transverse pockets or compartments within the sheath, and in each of these compartments I place a strip consisting of metal plates G which may be rectangular as shown or tapering, and which are hinged to each other as at G', to swing about axes which range crosswise of the strips, and therefore lengthwise of the protector. Sufficient space is left between the edges of adjoining strips to allow them to accommodate themselves to the variation in diameter, since obviously the central portion of the protector is when in use of a greater diameter than its edge portions. The friction of the metal against the soft layers B, B', may be sufficient to prevent the strips from sliding out of their pockets, but if desired, special means may be employed to guard against this contingency, for instance, the ends of the pockets may be closed by stitching, as at a.

It will be observed that the free ends of the last plates G of each strip are rounded, thus avoiding the perforating tendency they would have if pointed. Another feature of considerable importance is the fact that the length of the strips is materially less than the width of the protector, so that the sheath has at each side a free and extremely flexible marginal flap H, containing no metal plates. The advantage of this construction lies in the fact that the flexible marginal flaps H will give additional protection to the tire in case it should collapse. The metal plates of course, are sufficient to prevent the puncturing of the tire from the tread, nevertheless, a collapse of the tire might occur through such causes as leakage at the valve or porous condition of the air tube. In such a case there would be danger of injury to the tire by the ends of the strips. This danger is however avoided or at least minimized by the fact that in case of the tire's collapse, the flexible marginal flaps H, will fold inward so as to form cushions (see Fig. 2), which prevent the shoe or the tube from being pierced or injured by the strips, or by pressure upon the wheel rim. The soft fabric layers between which the metal strips are embedded also form cushions in which said strips are inclosed and serve to protect the

tube and shoe from injury by the hinges G' or other parts of the plates G.

If desired, the stitches C, instead of extending entirely across the protector may terminate at the rows of stitches a.

I claim as my invention:

1. A tire protector comprising a flexible sheath formed with circumferentially adjacent transverse pockets and adapted to be interposed between the air tube and the shoe of a pneumatic tire, flexible metallic strips of a length materially less than the width of the sheath contained in said pockets, said strips being composed of short metal plates so hinged end to end that each plate will have free movement to either side of the plane of its immediately adjacent plate.
2. A tire protector, comprising a flexible sheath formed with circumferentially adjacent transverse pockets and metallic strips located in said pockets and composed of hinged plates, the end plates having rounded outer ends.
3. In a tire protector having a flexible sheath provided with circumferentially adjacent transverse pockets, flexible metallic strips each comprising a series of short metallic plates arranged end to end and pro-

vided with coacting hinge members on adjacent edges, said hinge members being so made that each plate may swing freely to either side of the plane of the adjacent plate to which it is connected.

4. A tire protector comprising a flexible sheath formed with pockets extending transversely and having their edges circumferentially adjacent and abreast of each other, and separate flexible metallic strips contained in said pockets, each strip comprising a series of flexibly connected plates and being of a length materially less than the width of the protector, so as to leave at each side of the central portion which incloses the strips a flexible marginal flap.

5. A tire protector comprising a flexible sheath consisting of two superposed fabrics cross stitched at intervals to provide a series of transverse pockets having their edges abreast of each other and separate flexible metallic strips contained in said pockets, each strip comprising a series of flexibly connected plates.

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Witnesses:

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