

No. 624,315.

Patented May 2, 1899.

J. F. FININ.  
CUSHION TIRE.

(Application filed Sept. 26, 1898.)

(No Model.)

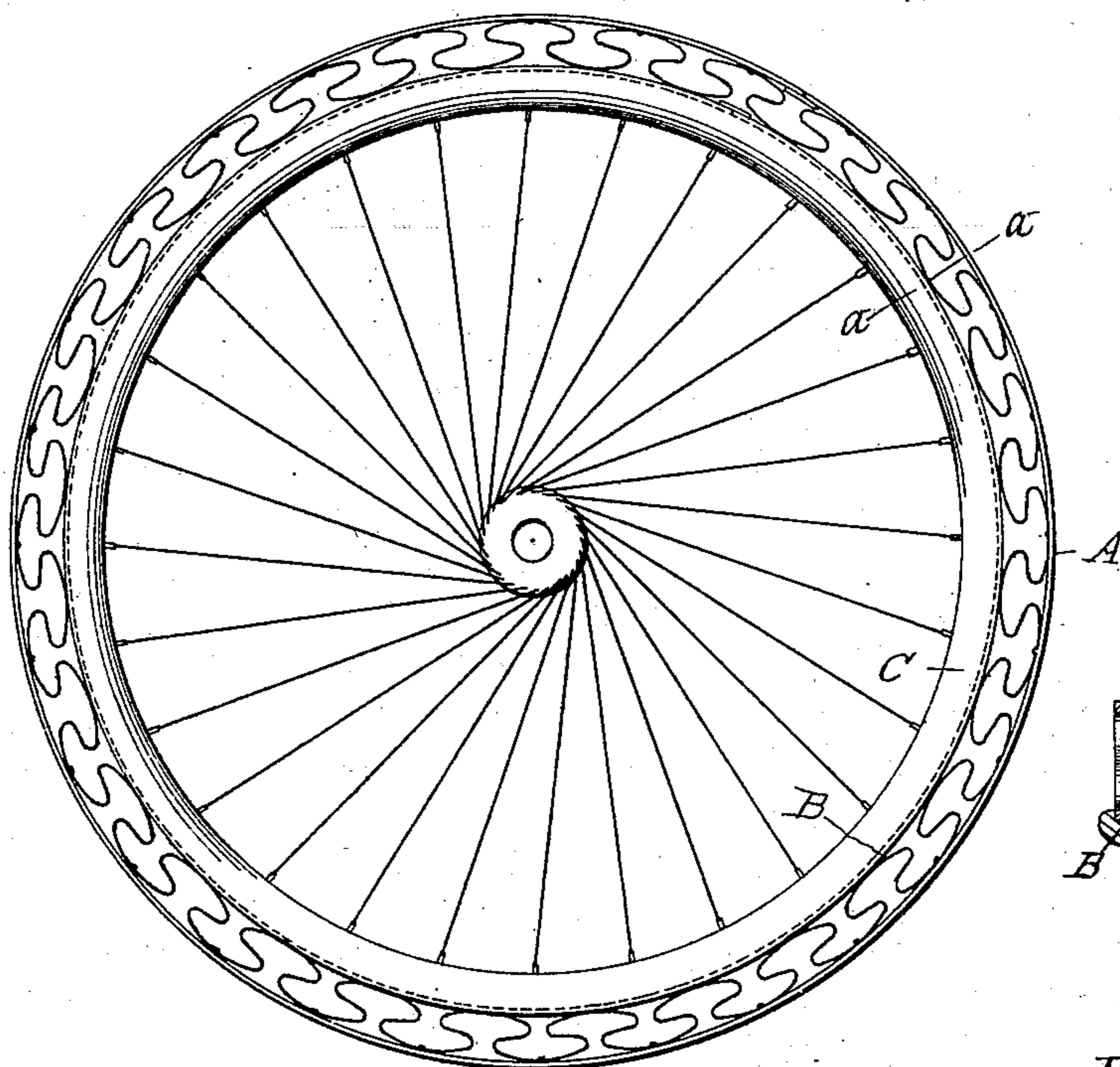


Fig. 1

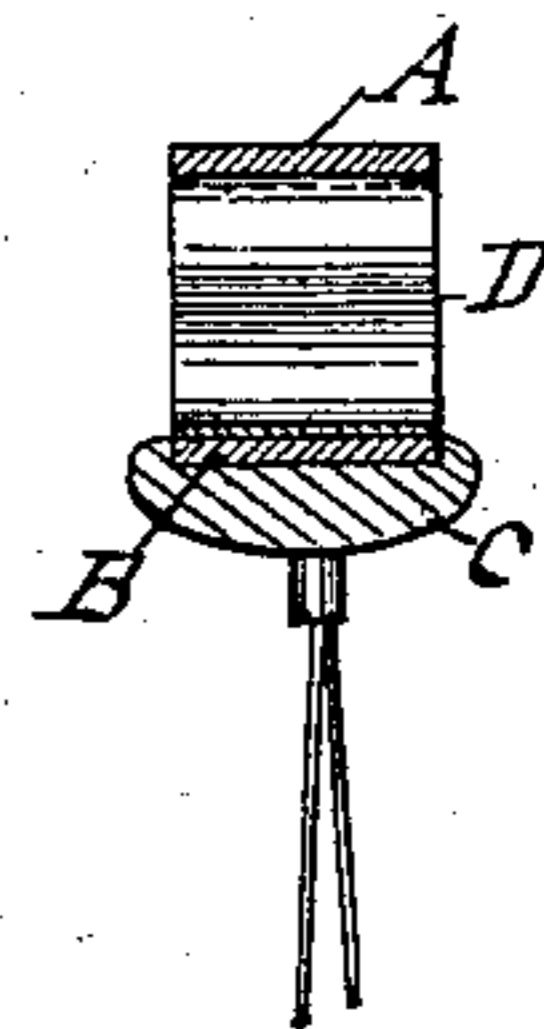


Fig. 4

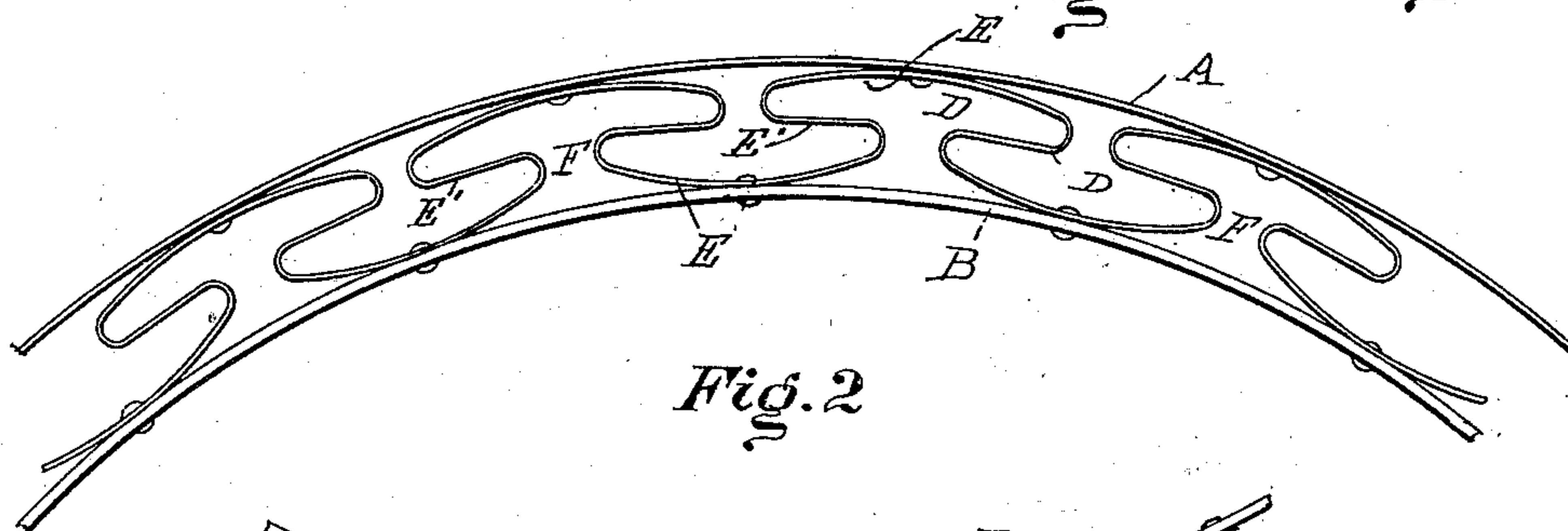


Fig. 2

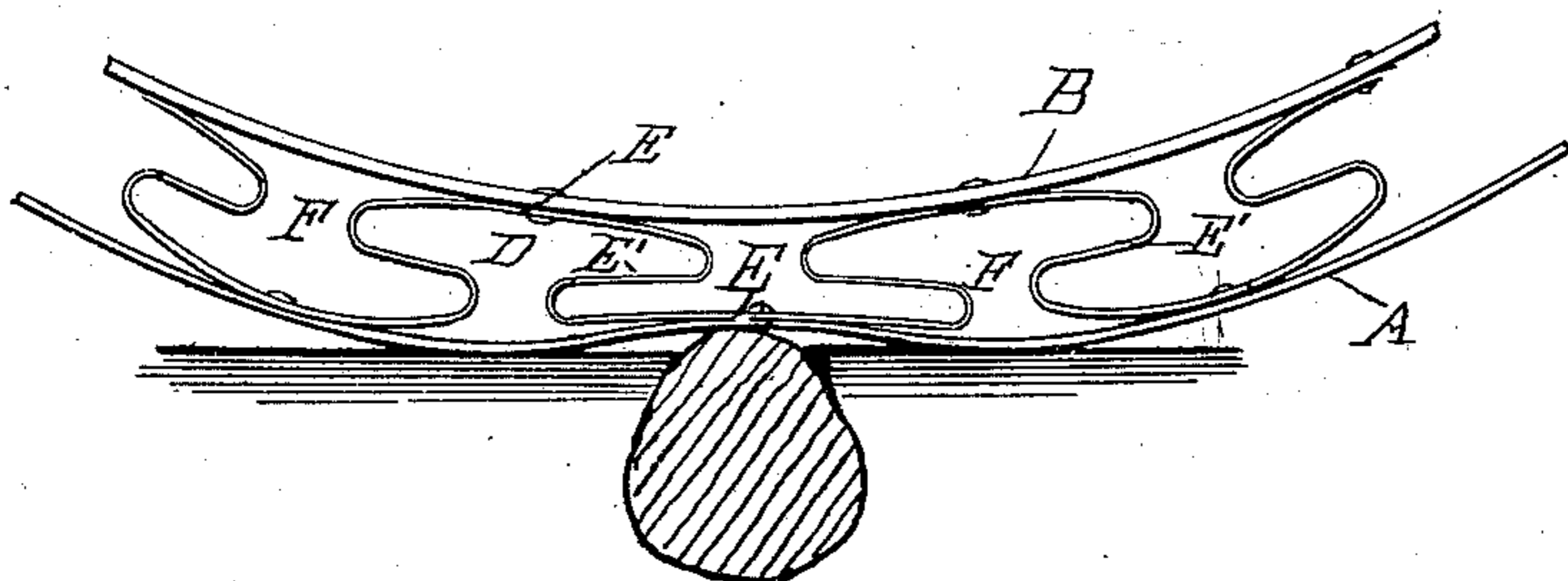


Fig. 3

Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN F. FININ, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO ROBERT  
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## CUSHION-TIRE.

SPECIFICATION forming part of Letters Patent No. 624,315, dated May 2, 1899.

Application filed September 26, 1898. Serial No. 691,928. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. FININ, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Cushion-Tires, of which the following is a specification.

This invention relates to cushion-tires for bicycles, buggies, and other vehicles of simple and improved construction.

The invention consists in the novel features of construction hereinafter fully described and claimed and illustrated by the accompanying drawings, in which—

Figure 1 is an elevation of a wheel constructed in accordance with my improvement. Fig. 2 is an enlarged view of a portion of the tire. Fig. 3 is a similar view showing the action of the tire when encountering an obstruction in the road. Fig. 4 is a cross-sectional view of the tire in position in the rim.

A designates the wheel-tread, and B a band encircling rim C, and arranged between tread A and band B are the cushion-springs. These springs are formed, preferably, from a continuous spring-metal band which extends entirely around the wheel, the same being bent to form the succession of alternately reversely-disposed double loops D. The loops are elongated radially with the tire, and the open side of each is contracted to form a narrow central neck F. The depth of each double loop is in extent approximately one-half the space or distance between bands A and B, and the point at which each loop merges into the adjacent loops is therefore midway between said bands. The loops are riveted centrally at their long closed sides E to the bands A and B, against which they bear, and said loop sides are of more abrupt curvature than the bands, so that the loops when under compression have rocking action thereon. Were the loop sides made to conform to the curvature of the bands, their resilient quality would be greatly lessened, if not entirely lost, whereas when formed as described they coact with the reversely-turned loop extremities E' and materially augment the elasticity and sensitiveness of the tire.

When an obstruction or unevenness in the

road is encountered, the spring tread-band A is forced upward and the adjacent loops compress, with the long sides E thereof flattened against the bands to which they are riveted somewhat in the manner illustrated in Fig. 3, and as soon as the roughness has been passed the spring-loops and spring tread-band resume their normal form. It will of course be understood that said parts are sufficiently sensitive to yield or flatten somewhat when in under position, the action of the springs and tread when encountering an obstruction, as just described, being an exaggeration of the normal action thereof when sustaining the load.

I am aware that I am not the first to propose a succession of spring-loop cushions in a tire, the same being inwardly and outwardly disposed alternately. My tire differs from those of prior design in that I employ a thin and flexible steel tread-band possessing a high degree of resilience, which, while answering every requirement of a perfect tread, is readily indented or distorted by obstructions and hollows in the path of the wheel, causing the spring-loops to act individually in cushioning the wheel, though not to such an extent as to unduly strain them, as the tread-band constitutes a tie for bracing the loops to each other. A further and most important distinction and advantage resides in the contour of the spring-loops, the backs of which are arc-shaped and of more abrupt curvature than the bands to which they are centrally secured. As the back of each loop thus stands away from the band directly at each side of the securing-rivet, it has when compressing a rocker action on the band, the effect of which is a gradual and easy compensation. This effect is very materially augmented by the rounded ends of the loops and their elongated inner sides E', the latter extending approximately concentrically with the tire-bands and having leaf-spring action in resisting compression.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A single piece of spring metal bent to form a succession of elongated oppositely-

disposed and overlapping loops D having their closed sides E rounded in rocker form and their open sides contracted to form loop extremities E', in combination with rim-band B to which the closed sides of the inner loops are centrally secured, and resilient tread-band A to which the outwardly-disposed loops are similarly secured, the curvature of the loop sides causing the same to stand away from the bands on opposite sides of the central securing-points, whereby when under compression the loop sides flatten against the tread and rim bands and coact with loop extremities E' in cushioning the wheel, substantially as shown and described.

2. In a cushion-tire, the combination of rim-band B, resilient tread-band A encircling and spaced from band B, and the elongated shallow spring-loops between the bands and inwardly and outwardly disposed alternately, the loops being formed of a continuous piece

and having the long intermediate sides E' disposed substantially concentrically with bands A and B and equidistant therefrom, the backs of the loops forming more abrupt curvature than the bands A and B to which the loops are centrally secured, whereby the loop-backs diverge from the bands immediately at the securing-points and when compressed have rocker action on the bands from the securing-points to their ends, the intermediate elongated loop sides E' coacting in leaf-spring fashion with resilient tread A and the arc-shaped loop-backs in the manner herein described and shown.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN F. FININ.

Witnesses:

J. M. NESBIT,  
C. C. LEAN.