

No. 786,591.

PATENTED APR. 4, 1905.

W. S. McNAMARA.

CUSHION TIRE.

APPLICATION FILED NOV. 20, 1903.

FIG. I.

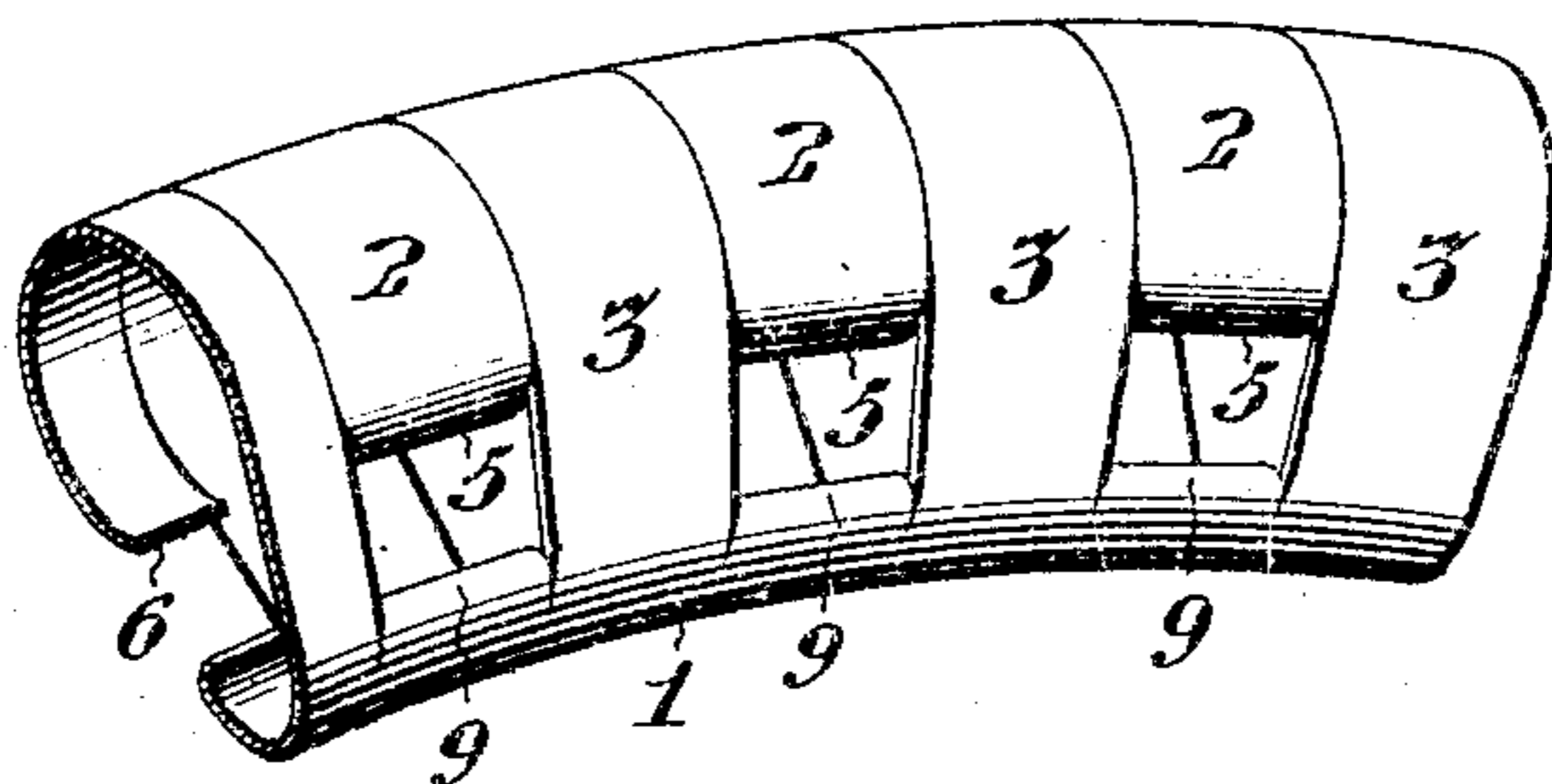


FIG. II.

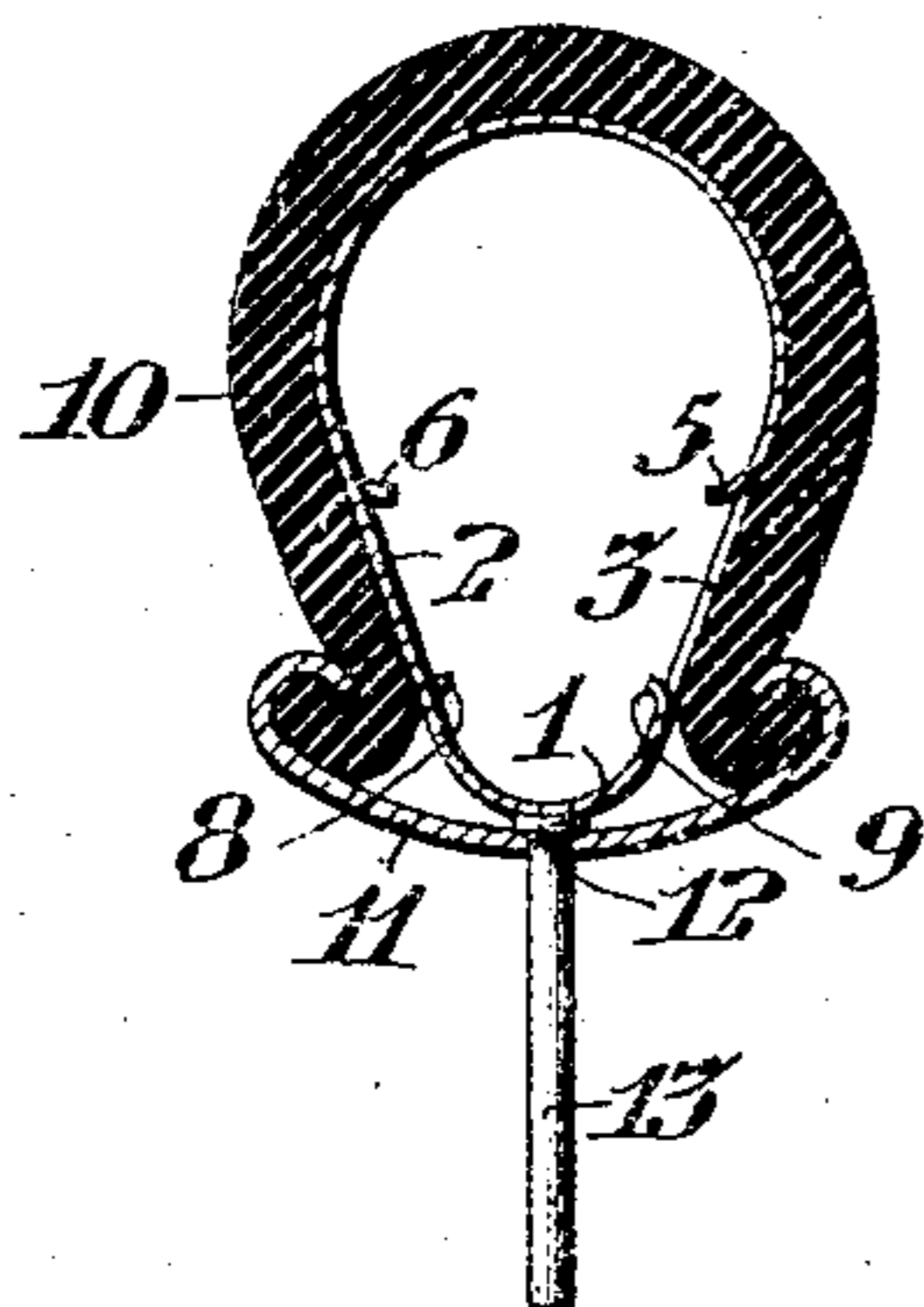


FIG. III.

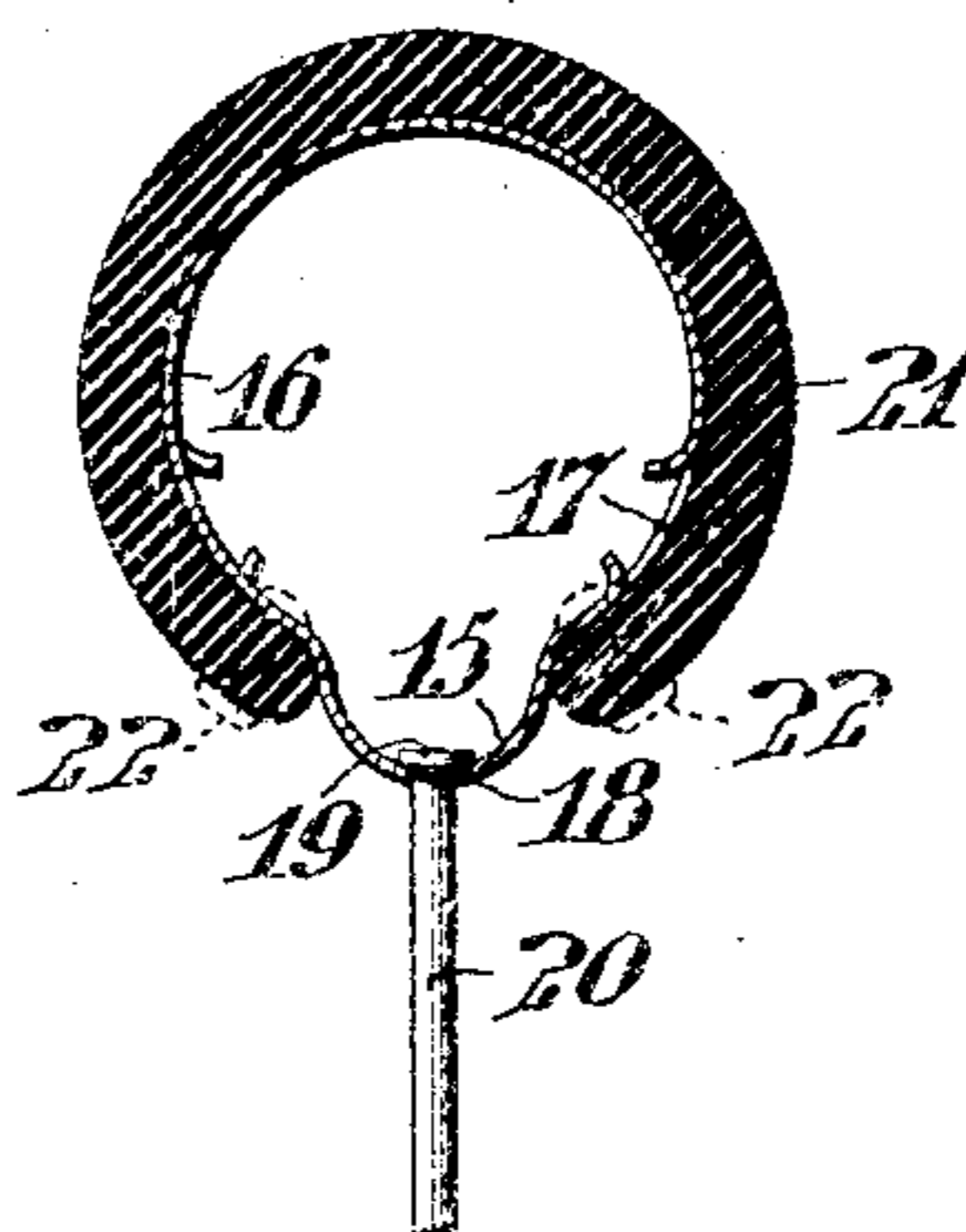
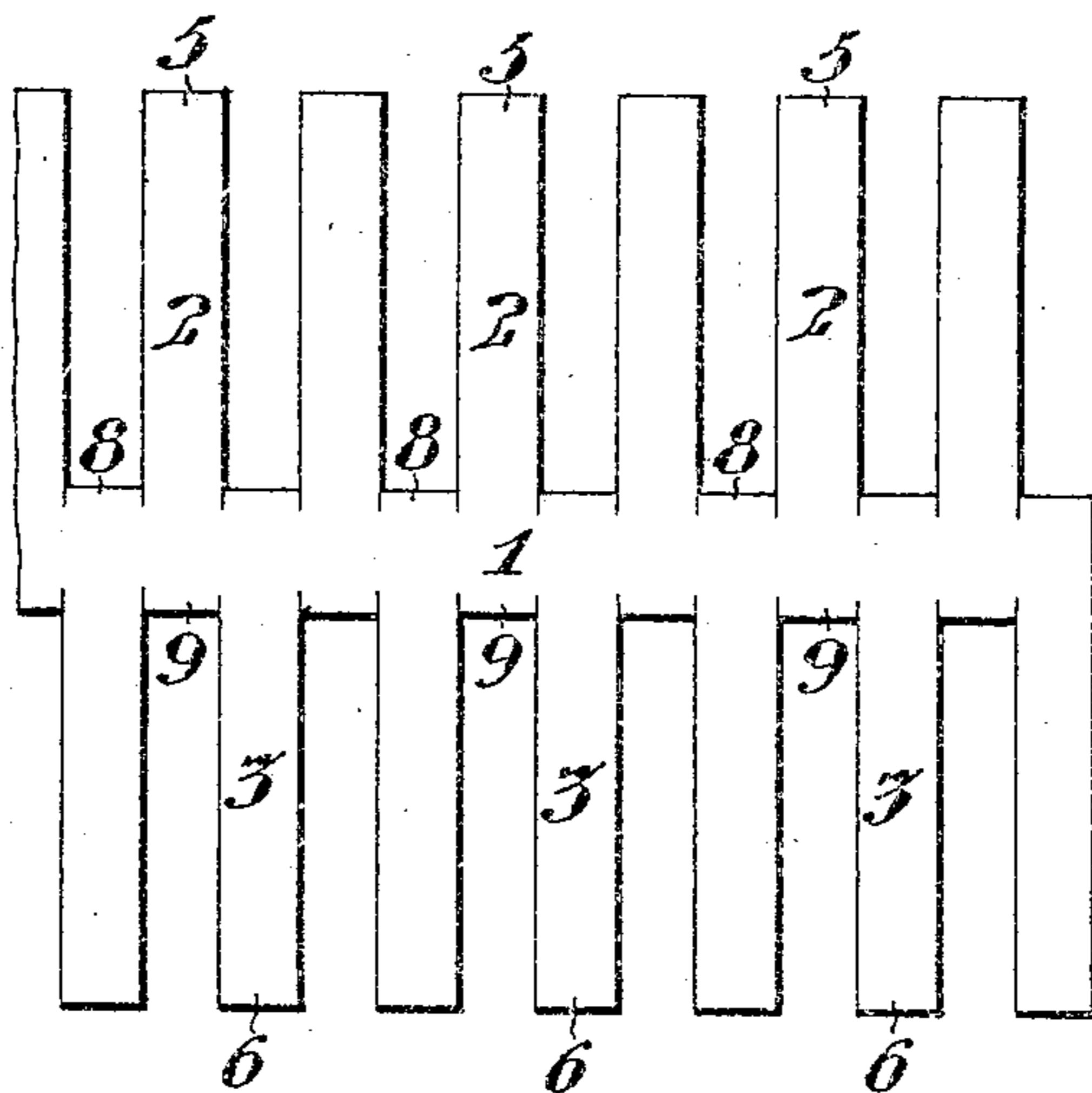


FIG. IV.



WITNESSES:

Clifton C. Halliwell  
A. F. Getzfreed.

INVENTOR:

WILLIAM S. McNAMARA,  
by Paige, Paul & Fralry,  
Atys.

# UNITED STATES PATENT OFFICE.

WILLIAM S. McNAMARA, OF PHILADELPHIA, PENNSYLVANIA.

## CUSHION-TIRE.

SPECIFICATION forming part of Letters Patent No. 786,591, dated April 4, 1905.

Application filed November 20, 1903. Serial No. 181,903.

*To all whom it may concern:*

Be it known that I, WILLIAM S. McNAMARA, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Cushion-Tires, whereof the following is a specification, reference being had to the accompanying drawings.

My improvements relate particularly to tires provided with springs and adapted for embodiment in vehicle-wheels.

As hereinafter described, my invention comprises a tubular sheet-metal spring formed of a longitudinal web provided with two series of spring-leaves which respectively extend from its opposite edges, the leaves of the two series being oppositely curved in alternate relation to form adjoining sections of a substantial continuous tread and the free ends of said leaves being capable of independent movement toward and away from said web. My invention contemplates such construction of said spring-web as to adapt it to serve as the wheel-felly.

My invention also includes the various novel features of construction and arrangement hereinafter more definitely specified and claimed.

In the accompanying drawings, Figure I is a perspective view showing a sheet-metal spring embodying my improvements. Fig. II is a cross-sectional view of a wheel-tire and felly inclosing such a spring as is shown in Fig. I. Fig. III is a cross-sectional view of a wheel-tire, showing a modified form of my invention wherein the longitudinal web of the spring serves as a felly. Fig. IV is a plan view of the sheet-metal blank from which the spring shown in Fig. I is formed.

Referring to the form of my invention shown in Figs. I, II, and IV, the web 1 of the sheet-metal spring is adapted to extend longitudinally and circumferentially with respect to the wheel-tire and is provided upon its opposite longitudinal edges with the two series of spring-leaves 2 and 3 so disposed in alternation that when bent as shown in Fig. I they form alternate sections in alinement with each other in the direction of the length of said web. As shown in Figs. I and II, the free ends 5 6 of said spring-leaves 2 and 3 and the longitudinal edges 8 and 9 of said web 1 are

bent inwardly, so as to avoid abrasion of the tire-shoe 10, (shown in Fig. II,) which may be of rubber or any other suitable material, engaging in any convenient manner with the felly 11.

In the form of my invention shown in Fig. II the felly 11 is separate and distinct from the spring-web 1 and engages the heads 12 of the spokes 13 independently thereof. However, said spring may be so constructed that its web serves as a felly to directly engage the spokes. For instance, in Fig. III the web 15 is provided with oppositely-curved spring-leaves 16 17 of the general arrangement shown in Figs. I and II and is formed to engage its apertures 18 the heads 19 of the wheel-spokes 20. In this form of my invention the tire-shoe 21 may be so constructed and arranged as to be retained upon the spring by the resiliency of said shoe, or it may be connected therewith by any convenient attaching means, such as rivets 22.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim—

1. A tubular sheet-metal tire-spring comprising a longitudinal web at its inner circumference; spring-leaves extending in opposite directions from said web and forming alternate bights in alinement in the direction of the length of said web; and inwardly-turned edges 5, and 6, at the free ends of said leaves extending within the plane of the adjoining bights, substantially as set forth.

2. A tubular sheet-metal tire-spring comprising a longitudinal web at its inner circumference; spring-leaves extending in opposite directions from said web and forming alternate bights in alinement in the direction of the length of said web; and inwardly-turned edges 8, and 9, on said web extending within the plane of the adjoining bights, substantially as set forth.

3. A tubular sheet-metal tire-spring comprising a longitudinal web at its inner circumference; spring-leaves extending in opposite

directions from said web and forming alternate bights in alinement in the direction of the length of said web; inwardly-turned edges 5, and 6, at the free ends of said leaves extending within the plane of the adjoining bights; and inwardly-turned edges 8, and 9, on said web extending within the plane of the adjoining bights, substantially as set forth.

4. A tire-spring comprising a longitudinal web and spring-leaves extending in opposite directions from said web and forming alternate bights in alinement in the direction of the length of said web; said web and the ends of said leaves being curved transversely, and the radius of curvature of the web being substantially one-half that of the leaves, substantially as set forth.

5. A tire-spring comprising a longitudinal

web and spring-leaves extending in opposite directions from said web, and forming alternate bights in alinement in the direction of the length of said web, said web and the ends of said leaves being curved transversely; the radius of curvature of the web being substantially one-half that of the leaves, and the curved portions of said web and leaves being connected by straight portions of the latter, substantially as set forth.

In testimony whereof I have hereunto signed my name, at Philadelphia, Pennsylvania, this 18th day of November, 1903.

WILLIAM S. McNAMARA.

Witnesses:

ARTHUR E. PAIGE,

A. F. GETZFREAD.