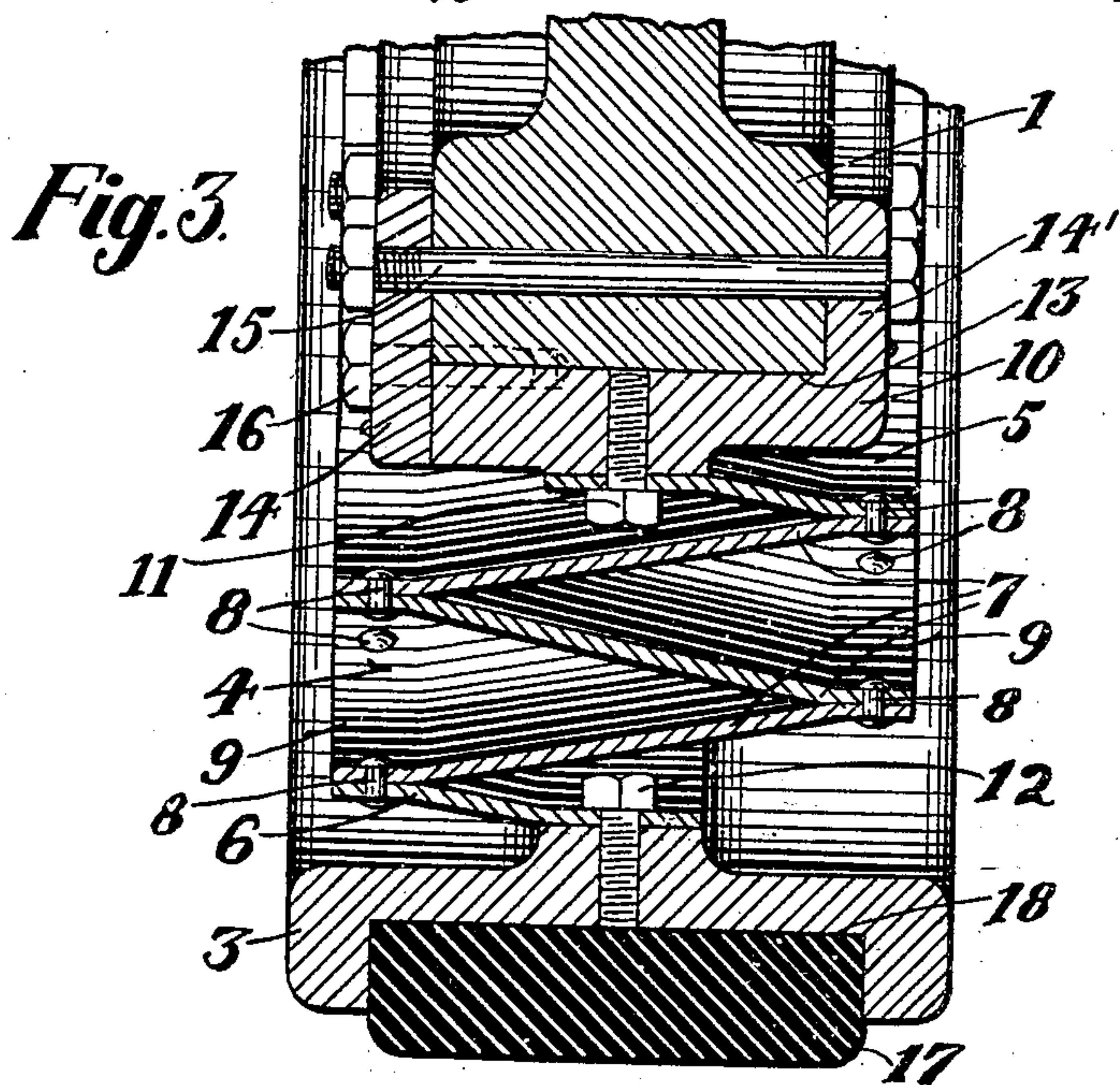
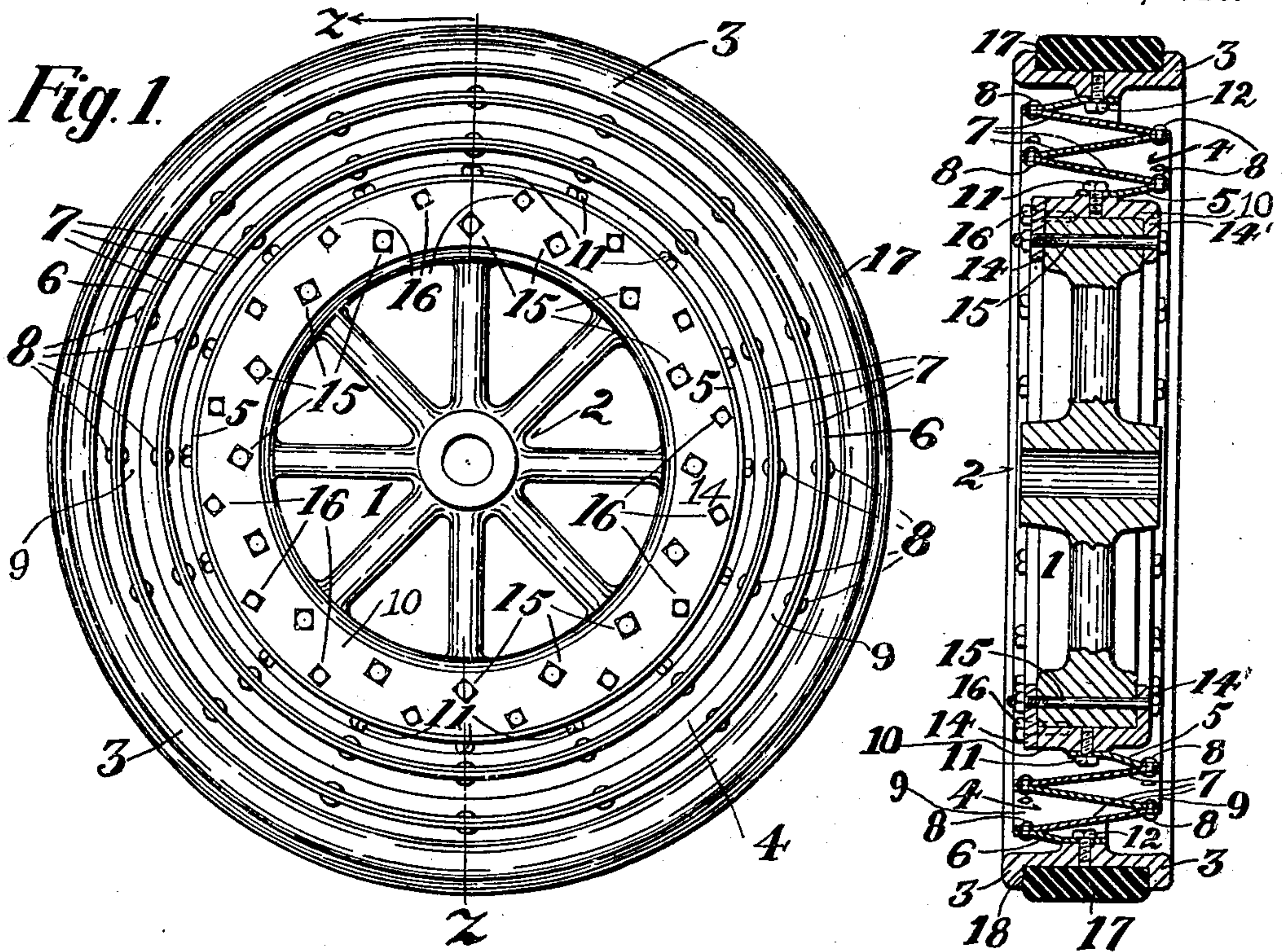


946,614.

Patented Jan. 18, 1910.



Witnesses

Jacob Agbollandu  
 Lillian Burnett

Inventor

Robert J. Moore,  
 by R. J. Verbeke  
 his attorney.



# UNITED STATES PATENT OFFICE.

ROBERT J. MOORE, OF CINCINNATI, OHIO.

## VEHICLE-WHEEL.

946,614.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed March 27, 1909. Serial No. 486,164.

*To all whom it may concern:*

Be it known that I, ROBERT J. MOORE, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Vehicle-Wheels, of which the following is a specification.

My invention relates to vehicle wheels, and has for its object the providing of an inner wheel-member and an outer rim between which a resilient member is interposed for the purpose of providing resiliency in the wheel and dispensing with pneumatic tires.

The invention consists in the novel construction and arrangement of the parts, and will be readily understood from the following description and claims, and from the drawing, in which latter:

Figure 1 is a side elevation of my improved device. Fig. 2 is a vertical central axial section of the same on the line  $z-z$  of Fig. 1; and Fig. 3 is an enlarged detail in section on the line  $z-z$  of Fig. 1.

1 represents an inner wheel-member, which comprises a hub 2.

3 is an outer wheel-member, instanced as an outer rim, between which and the inner wheel-member an annular resilient member 4 is provided, the latter being accordion-shaped or of zig-zag form in cross-section and the webs of which are preferably continuous about the annular resilient member. The resilient member 4 comprises an inner annular web 5 and an outer annular web 6, between which intermediate annular webs 7 are located, these webs, at their respective edges, being alternately connected as by means of rivets 8, or in other suitable manner, and spaced apart, as shown at 9, the webs slanting away from each other toward opposite sides of the wheel, and forming a structure which is zig-zag in cross-section. The webs are arranged in cross-section at slight angles with relation to each other, the differences in the radial distances of the respective edges of said respective webs from the rotary axis of the wheel being but slight, whereby I obtain the full effect of the resilient action of the metal. The webs are shown in the form of truncated cones having sides which extend at slight angles to the rotary axis of the wheel and are connected at alternate ends. Adjacent webs are also preferably supported from each other

at points spaced from the outer ends of their meeting edges, whereby the resilient action of one web is obtained by using its adjacent web as a fulcrum. The inner web 5 is rigidly secured to an inner rim 10, as by means of bolts 11, and the outer web 6 is rigidly secured to the outer rim 3, as by bolts 12. These webs extend continuously around the wheel and are respectively preferably uninterrupted or unbroken in their circle around the wheel for purposes to be presently described.

The inner and outer rims are stiff structures, between which the annular resilient member is secured, and form inner and outer stiff frames for the annular resilient member, the webs of the latter being preferably of thin spring metal. The inner rim is provided with an inwardly opening mouth 13 in which the inner wheel-member is received. The walls 14 14' of the inwardly opening mouth 13 are secured to the inner wheel-member by means of bolts 15. One of these walls may be releasably secured to the body of the inner rim by means of bolts 16. The tread 17 is received in an annular outwardly opening mouth 18 of the outer rim, and is preferably of rubber or similar resilient material.

When pressure or weight is applied to the hub, the lower portion of the annular resilient member will tend to collapse or close, while the upper portion thereof will have a tendency to spread, the remaining portions of the annular resilient member having a tendency to counteract the first-named tendencies, and thereby distributing the pressure or weight upon the hub throughout the whole of the annular resilient member, the points of stress continuously progressing about the wheel while the same is rotating and the directions of stress upon given parts of the annular resilient member also continually changing during rotation. Thus the yield of portions of the annular spring structure is partially counteracted by the resistance of other portions of said structure.

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

1. A vehicle-wheel comprising an inner wheel-member, an outer wheel-member, and an annular resilient member located between said inner wheel-member and outer wheel-member, the said annular resilient member comprising an annular resilient spring-



metal structure which is accordion-shaped in cross-section and the webs of which are connected alternately at opposite edges, said webs having portions at said edges which  
5 extend in cross-sectional planes parallel with the rotary axis of the wheel and portions intermediate of said parallel portions which extend in cross-sectional planes at but slight angles to said rotary axis of said  
10 wheel, substantially as described.

2. A vehicle-wheel comprising an inner wheel-member, an outer wheel-member, and an annular resilient member located between said inner wheel-member and outer wheel-  
15 member, the said annular resilient member comprising an annular resilient spring-metal structure which is accordion-shaped in cross-section and comprises webs which are supported from each other at short distances  
20 from alternate opposite edges and provided with tapering spaces between said alternate opposite edges, substantially as described.

3. A vehicle-wheel comprising an inner wheel-member, an outer wheel-member, and  
25 an annular resilient member located between said inner wheel-member and outer wheel-

member, the said annular resilient member comprising an annular resilient spring-metal structure comprising webs of the form of truncated cones having sides which extend  
30 at slight angles in cross-section to the rotary axis of the wheel and are connected at alternate ends, substantially as described.

4. In a vehicle-wheel, the combination of a pair of annular stiff rims and an annular  
35 resilient structure between said rims, said resilient structure comprising annular spring-metal webs of the form of truncated cones whose sides are at but slight angles to the rotary axis of the wheel and extend con-  
40 tinuously and annularly between said annular stiff rims and are alternately connected and spaced apart at the respective ends thereof, substantially as described.

In testimony whereof I have signed my  
45 name hereto in the presence of two subscribing witnesses.

ROBERT J. MOORE

Witnesses:

CONSTANT SOUTHWORTH,  
LILLIAN BUNRETT.