J. E. HART & A. BENZINGER.

SPRING TIRE.

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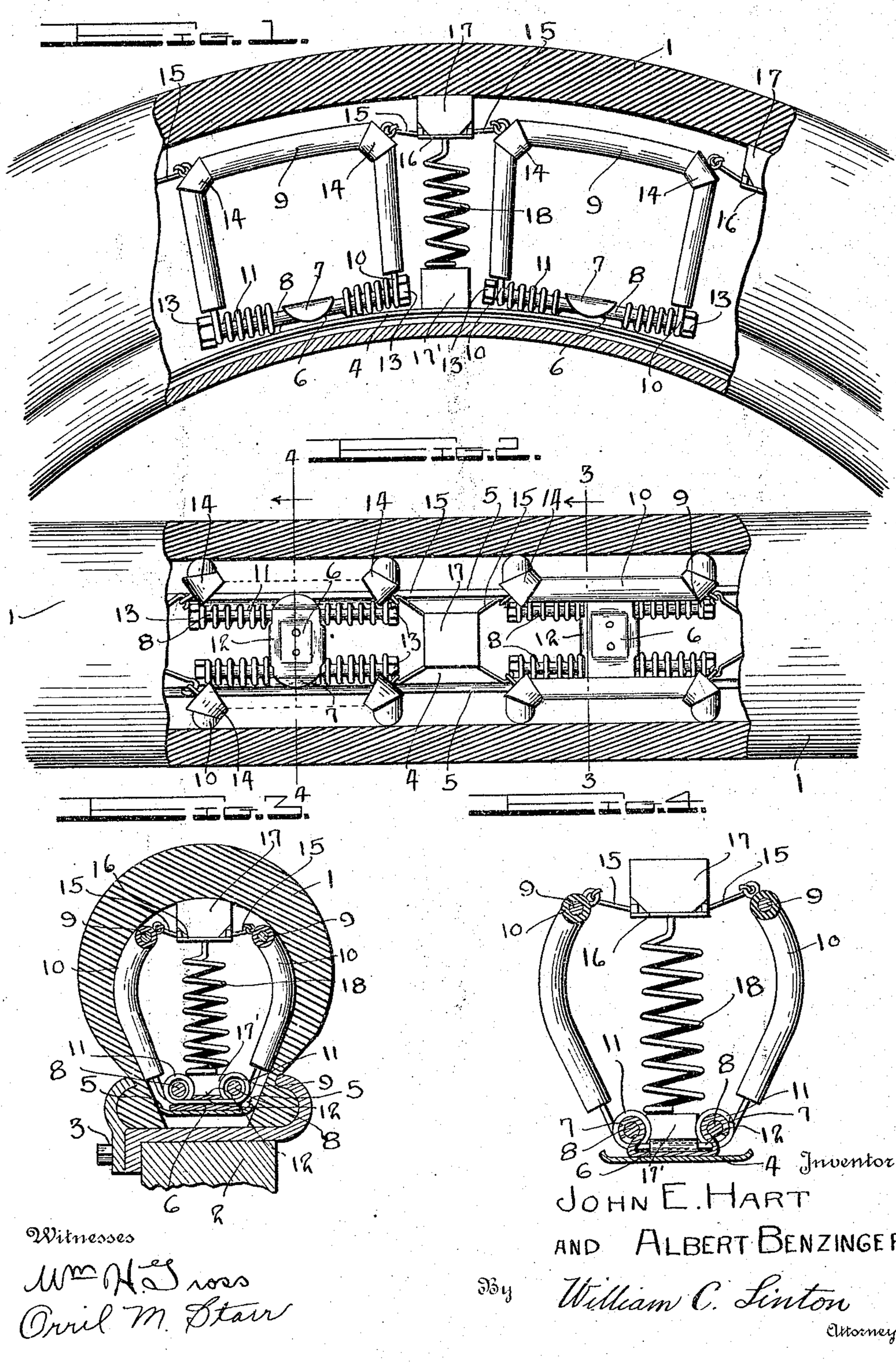
1,191,894.

Patented July 18, 1916.



Witnesses

Wm H. Ross

Orril M. Stair

Inventor

JOHN E. HART

AND ALBERT BENZINGER.

By William C. Linton

Attorney

UNITED STATES PATENT OFFICE.

JOHN E. HART AND ALBERT BENZINGER, OF COLUMBUS, OHIO.

SPRING-TIRE.

1,191,894. Specification of Letters Patent. Patented July 18, 1916.

Application filed October 28, 1915. Serial No. 58,381.

To all whom it may concern:

Be it known that we, JOHN E. HART and ALBERT BENZINGER, citizens of the United States, residing at Columbus, in the county of Franklin and the State of Ohio, have invented new and useful Improvements in Spring-Tires, of which the following is a specification.

This invention relates to a novel tire for automobiles and similar vehicles which is so constructed that it possesses great resiliency combined with superior durability and one that may be readily applied to a conventional wheel felly.

An object of the invention is to provide an inner tube for tires that shall effectively serve to resiliently cushion the load like the ordinary inflated tubes of pneumatic tires.

With the above and other objects in view the invention consists of the novel features of construction, combination, formation and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings has been illustrated the simple and preferred forms of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but the right is hereby reserved to make any changes, alterations and modifications to which recourse may be had that come within the scope of the invention without departing from the spirit thereof and sacrificing the efficiency of the same.

In the drawings:—Figure 1, is portion of a tire having part thereof broken away to illustrate the invention. Fig. 2, is a plan view of the same. Fig. 3, is a vertical section taken on the line 3—3 of Fig. 2 illustrating the tire as attached to the felly of a wheel, and Fig. 4, is a detail view taken on the line 4—4 of Fig. 2.

Like and similar parts are designated by similar reference characters throughout the several views.

In the drawings we have shown a shoe or casing 1, which may be of any conventional construction and is adapted to be detachably secured to the felly 2 of the wheel by any suitable or well-known construction as that illustrated by the numeral 3 in Fig. 3 of the drawing. To cause the shoe 1 to retain its shape and serve as a resilient cushion for the load carried by the wheel, we provide a filling for the shoe forming the subject matter of the present invention.

Arranged within the shoe is a plate 4 having its lateral edges curved outwardly as at 5 and which rest against the inner edges of the shoe to keep the sides of the shoe properly spread apart or retained within the grooves of the clamps which detachably secure the shoe to the felly of the wheel. Secured to the plate 4 at spaced intervals are transversely extending clamping plates 6. The opposite ends of these clamping plates are provided with clamps 7 in which are mounted the rods 8. Secured to each of the rods 8 are U-shaped load sustaining springs 9 which have a curved configuration to conform to the inner walls of the shoe 1 and these load sustaining springs are covered with a rubber coating 10 so as to protect the shoe from the springs which in a course of time would have forced its way through the shoe. These load sustaining springs, as carried by the rods 8 of each clamping plate, are formed of one continuous strand of spring metal. Each end of the U-shaped springs 9 are coiled around the opposite ends of each of the bars 8 as at 11 and the opposite ends of each of these coils extend transversely as at 12 under the clamping plate where they are clamped between the plate 6 and the plate 4. The ends of the bars 8 are threaded and have adjustably mounted thereon the nuts 13 whereby the tension of the coils 11 may be increased or diminished according to the amount of strength that is desired to give to each spring.

Encircling the load sustaining springs are bands 14 having eyelets formed integral therewith to each of which are connected the hook rods 15. The opposite ends of these hook rods are swivelly connected to the plate 16. This plate 16 and the rods 15 prevent the outer ends of the U-shaped load sustaining springs from spreading too far apart which would, in a course of time, have a tendency to force the shoe or casing 1 from the felly or the wheel and at the same time this connection between the U-shaped load sustaining springs will permit either of the springs to operate independently. Mounted upon the outer face of the plate 16 is a rubber block 17 upon which rests the center

portion of the shoe or casing 1 and depending from the plate 16 is a coil spring 18. The inner end of this coil spring 18 rests upon a rubber block 17′ which is mounted upon the plate 4 and is similar to the rubber block 17. This resilient connection between the load sustaining springs will assist in causing the shoe or tire casing to obtain its normal shape and prevent any sagging of the tire casing between the load sustaining springs. It will be noted that in Figs. 1 and 2 of the drawing that these load sustaining springs are arranged in pairs and in spaced relation within the shoe or casing 1 and that any number of these load sustaining springs may be used within the shoe or casing as is desired or that the circumference of the felly of the wheel may permit.

Having fully described our invention and what we claim as new and desire to secure by Letters Patent is:

1. A spring tire comprising a circumferentially arranged plate, rods secured to said plate in pairs, U-shaped load sustaining springs connected to said rods, connecting rods for connecting the springs together and resilient means carried by said connecting rods.

2. A spring tire comprising a circumferentially arranged plate, U-shaped load sustaining springs secured to said plate and arranged in pairs thereupon, connecting plates connecting the load sustaining springs, rubber cushions mounted upon the outer faces of said connecting plates, and coil springs depending from the inner faces of said connecting plates.

3. A spring tire comprising a circular plate adapted to rest within the casing of a tire for normally holding the opposite edges of the casing in spaced relation, clamping plates secured to the circular plate, rods carried by said clamping plates, U-shaped load sustaining springs adapted to rest upon the inner face of the tire casing, the ends of the load sustaining springs being coiled about said rods and means for adjusting said coils upon said rods.

4. A spring tire comprising a casing, a circular plate mounted with the casing, a plurality of load sustaining springs arranged in pairs upon said plate, means for connecting said springs together, a coil spring carried by each of said connecting means and resilient blocks carried by the opposite ends of said coil springs whereby the blocks at one end of the coil springs may rest upon said plate and the blocks at the opposite ends of the coil springs will rest upon the inner face of the tire casing.

5. A spring tire comprising a casing, a circular plate arranged therein, U-shaped load sustaining springs, means for connecting the ends of said springs to said plate and the medial portions of said springs extending outwardly from said plate, flexible means for connecting the medial portions of the springs together and resilient means carried by said flexible means for retaining the tire casing in spaced relation with said plate.

6. A spring tire comprising a circular plate adapted to rest within the casing of the tire for normally holding the opposite edges of the casing in spaced relation, clamping plates arranged transversely upon said circular plate, rods carried by said clamping plates and tangentially arranged upon said circular plate, coil springs encircling said rods having their medial portions extending outwardly therefrom to form U-shaped load sustaining springs and means for limiting the outward movement of said U-shaped load sustaining springs.

In witness whereof, we hereunto subscribe our names to this specification in the presence of two witnesses.

JOHN E. HART.
ALBERT BENZINGER.

Witnesses:
HERBERT M. MYERS,
MAUDE M. RECOB.