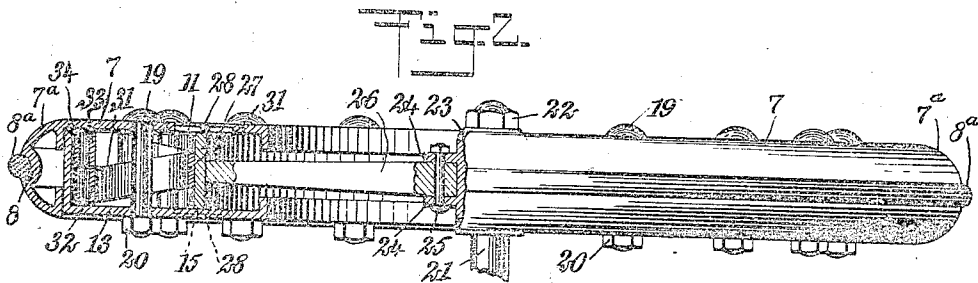
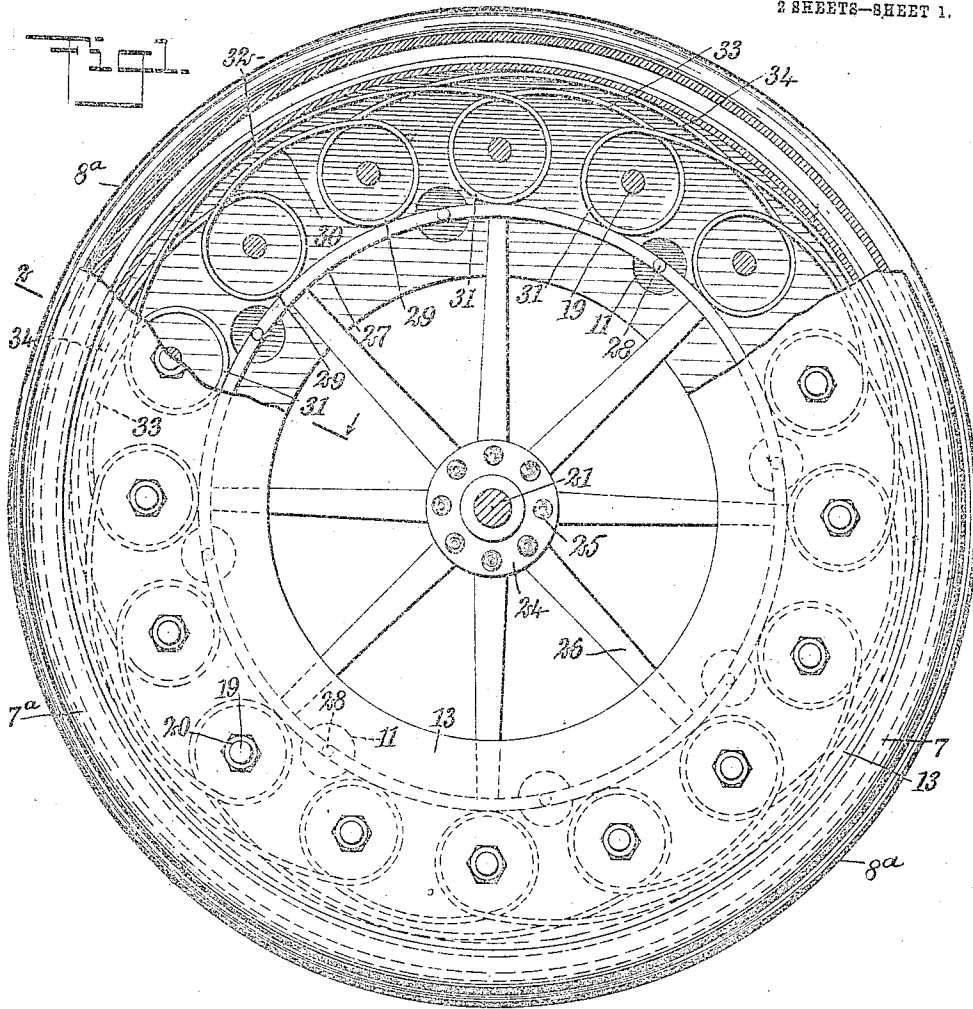


L. Y. LEÓN.
WHEEL.

APPLICATION FILED DEC. 23, 1908.

986,000.

Patented Oct. 5, 1909.
2 SHEETS—SHEET 1.



WITNESSES

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936,000.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 2.

Fig. 3.

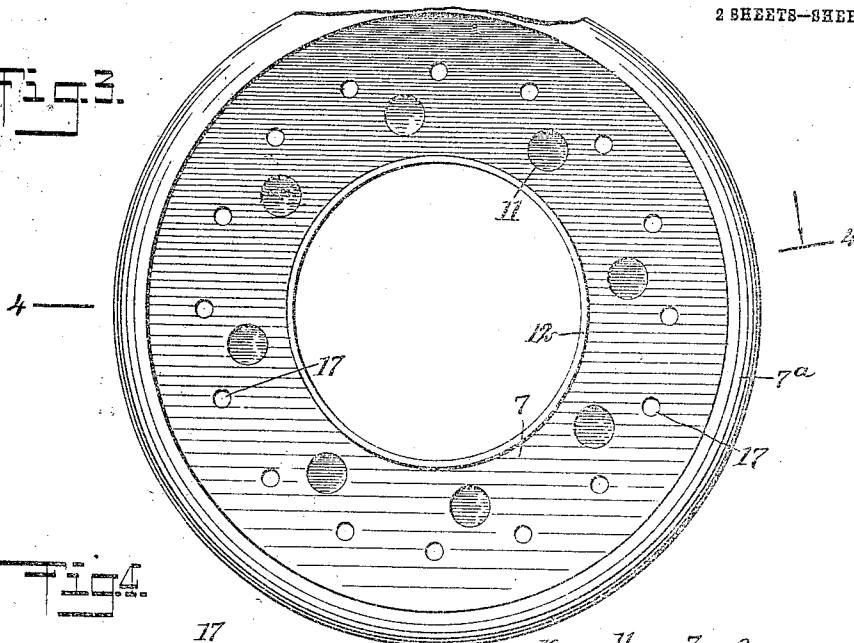


Fig. 4.

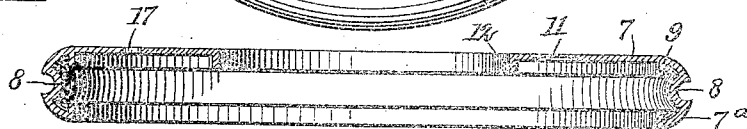


Fig. 5.

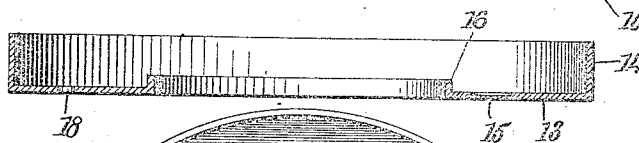
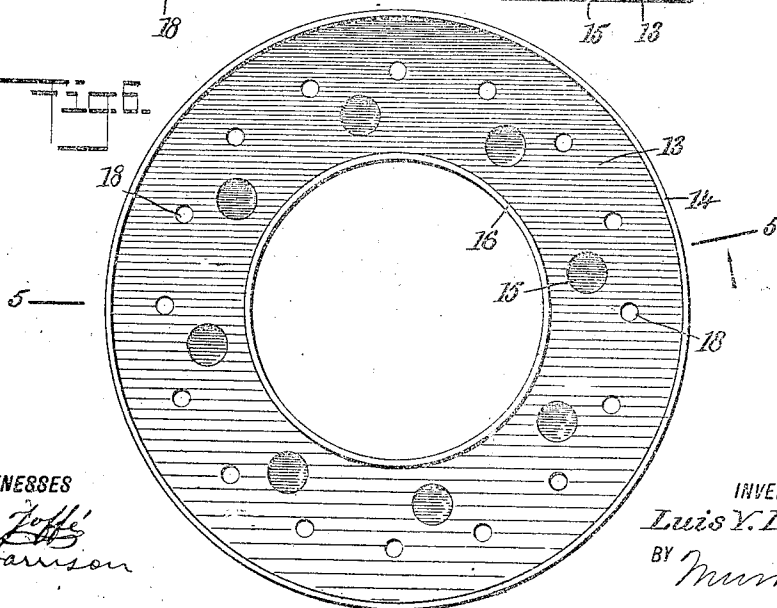


Fig. 6.



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UNITED STATES PATENT OFFICE.

LUIS Y. LEÓN, OF SAN JUAN, PORTO RICO.

WHEEL.

936,000.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed December 23, 1908. Serial No. 468,960.

To all whom it may concern:

Be it known that I, LUIS Y. LEÓN, a subject of the King of Spain, and a resident of San Juan, Porto Rico, have invented a new and Improved Wheel, of which the following is a full, clear, and exact description.

My invention relates to wheels for general use, my more particular purpose being to provide an improved construction of wheel suitable for a road vehicle, and having a considerable degree of resilience due to the type of springs employed within the wheel and to the manner in which they are mounted and kept in position.

My invention further relates to the various details in the construction of the wheel, whereby its general efficiency is improved.

The springs employed in the construction of my improved wheel are, generally speaking, of the type described in my Patent No. 903,587, dated November 10, 1908. In my improved wheel the springs of the type mentioned serve to increase the elasticity of the wheel to such an extent as to practically take the place of a pneumatic tire, and in doing this they are much more economical on account of the cheapness of the material employed in their construction, and of the fact that springs of this type may wear indefinitely before becoming useless. As described in the patent mentioned, the springs in question comprise a pair of ribbons each provided with convolutions disposed closely together in groups, the groups being separated by wide intervals, the ribbons being generally parallel with each other and so disposed that a group of convolutions of each ribbon meet an interval between groups of convolutions of the other ribbon. By this arrangement the ribbons occupy two distinct planes, the ribbons crossing back and forth from one plane to the other. In seeking a manner for applying springs of this type to my new wheel, I provide several parts, the shapes of which are somewhat unrelated to any parts ordinarily found in wheel construction.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view partly in elevation and partly in section, showing my improved

wheel applied; Fig. 2 is a view partly in plan and partly in section, showing how the springs are mounted and how the outer part of the wheel has, within certain limits, freedom of movement relatively to the inner part thereof; Fig. 3 is a plan view of the outer member of the wheel casing and felly of the wheel; Fig. 4 is a section upon the line 4—4 of Fig. 3, looking in the direction of the arrow; Fig. 5 is a section upon the line 5—5 of Fig. 6, showing the inner member of the wheel casing; and Fig. 6 is a plan view of the inner member of the wheel casing.

The outer member 7 of the casing is provided with a rounded portion 7^a and with an annular sunken portion 8 for holding the tire 8^a. The outer member is further provided with annular flanges 9, 10, projecting inwardly, and with circular depressions 11, as will be understood from Figs. 3 and 4. The outer member 7 is still further provided with an annular flange 12 of comparatively small diameter and extending inwardly. The inner member 13 is provided with an annular flange 14 and with depressions 15, these depressions mating the depressions 11 of the outer member 7. The inner member 13 is further provided with an annular flange 16 mating the annular flange 12 of the outer member. The outer member 7 and the inner member 13 are provided with bolt holes 17, 18 for securing the outer and inner members together by aid of bolts 19 and nuts 20, as will be understood from Figs. 1 and 2. The axle is shown at 21 and is provided with a nut 22 for retaining the wheel upon it. The hub is shown at 23 and is provided with flanges 24. Disposed intermediate these flanges are spokes 26 held therein by aid of bolts 25.

Mounted rigidly upon the spokes 26 is a rim 27 and extending laterally from this rim in opposite directions are a number of bosses 28 integral with it and having generally the form of pins. Engaging the outer surface of the rim 27 and exerting a gentle pressure thereupon are convolutions 29 of metallic spring ribbon, these convolutions being connected together by portions 30. The rim 27 is also engaged internally by convolutions 31, the latter being connected together by portions 32 which lie directly over the portions 30. Similarly

portions 34, which constitute a continuation of the convolutions 29, are disposed in the same plane as the short portions 33 connecting together the convolutions 31 substantially as described in my patent above mentioned. By this arrangement the convolutions (see Fig. 2) are, in effect, disposed in two general planes parallel with each other. These convolutions encircle the bolts 19 which hold together the inner and outer members of the wheel casing and are large enough to allow considerable movement between the rim 27 and the casing, without forcing any part of any convolution into direct engagement with the bolt which it encircles. As the bosses 28 project into the depressions 11 and 15 of the casing, and as the depressions are of much greater diameter than the bosses, so that the bosses have considerable play in the general direction of the plane of the wheel, the casing has considerable freedom of movement relatively to the rim 27.

The tire 8^a which is made of rubber or fiber, merely takes up wear upon the outer member of the casing. The axle 21 has, by the arrangement above described, considerable freedom of movement relatively to the casing as a whole, and this desirable feature is attained without allowing distortion of any part of the casing or of any movable part relatively to the casing, except such distortion as is due to the parts moving normally in their predetermined respective planes.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:

1. In a wheel, the combination of a revolvable casing, a rim mounted therein and movable relatively thereto, said rim and said casing being concentric relatively to each other, a plurality of endless rings disposed intermediate said rim and said casing, said springs being bent to form convolutions, and bolts extending through said casing and also extending concentrically through said convolutions.

2. In a wheel, the combination of a revolvable casing, a rim mounted therein and movable relatively thereto, said rim and said casing being concentric relatively to each other, and a plurality of endless springs disposed intermediate said rim and said casing, said springs comprising a plurality of ribbons of resilient material, each ribbon being bent to form convolutions, the convolutions of each ribbon being spaced apart unequally so as to form pairs separated by intervals, the ribbons being closely intertwined so that a pair of convolutions of one ribbon is disposed intermediate successive pairs of convolutions of the other ribbon, and bolts extending through said casing and concentrically through said convolutions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LUIS Y. LEÓN.

Witnesses:

S. M. WOODSON,
ROSS DAVIS.