G. L. BOURQUIN.

WHEEL.

APPLICATION FILED MAR. 11, 1911.

1,053,778. Patented Feb. 18, 1913.

Fig. 1.

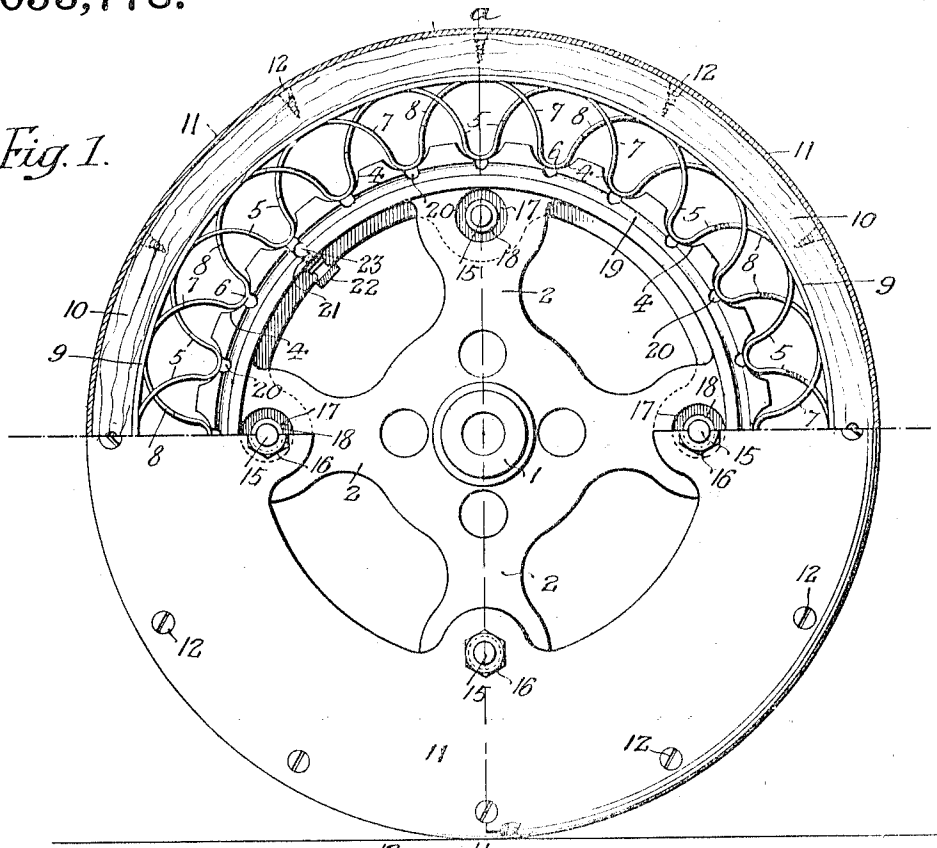


Fig. 2.

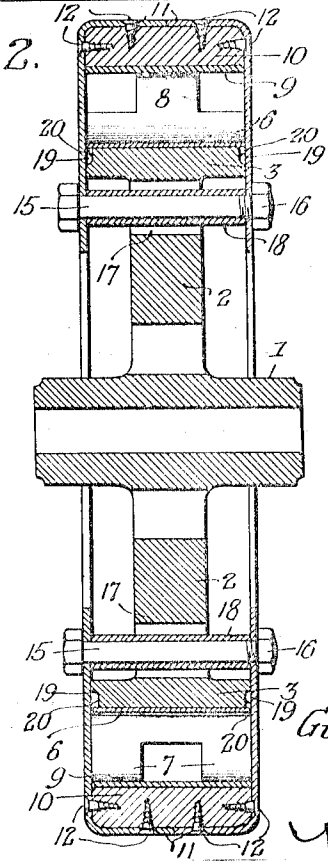


Fig. 3

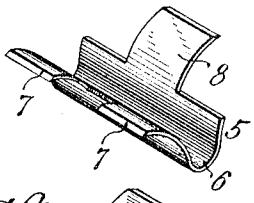


Fig. 4.

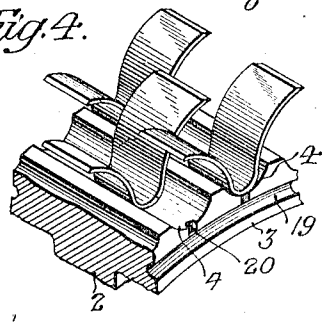


Fig. 5.

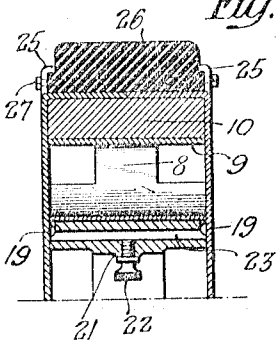
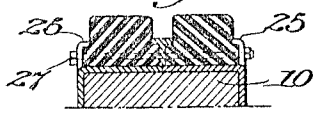


Fig. 6.



Witnesses.-

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UNITED STATES PATENT OFFICE.

GUSTAVE LOUIS BOURQUIN, OF SELLERSVILLE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO RUDOLF LOEB, OF CAMDEN, NEW JERSEY.

WHEEL.

1,053,778. Specification of Letters Patent. Patented Feb. 18, 1913.

Application filed March 11, 1911. Serial No. 613,691.

To all whom it may concern:

Be it known that I, GUSTAVE LOUIS BOURQUIN, a citizen of the United States, and a resident of Sellersville, Bucks county, Pennsylvania, have invented certain Improvements in Wheels, of which the following is a specification.

My invention relates to wheels; and the object of my invention is to provide a wheel suitable for use with automobiles and auto trucks that will have sufficient resiliency and yet avoid the danger of puncture common with pneumatic tired wheels. These and other features of my invention will be more fully pointed out hereinafter, reference being had to the accompanying drawings, in which:

Figure 1, is a view in elevation, partly broken away, showing a wheel embodying my invention; Fig. 2, is a sectional view on the line *a*—*a*, Fig. 1; Fig. 3, is a perspective view of one of the springs which I may employ; Fig. 4, is a perspective view of a modified spring arrangement embodying my invention, and Figs. 5 and 6, are views illustrating modified details within the scope of my invention.

In the wheel structure embodying my invention as shown in the drawings, I provide a central element, which is substantially a wheel, comprising a hub 1 with a web 2 radiating therefrom and forming substantially what may be termed spokes; such web carrying a rim 3. In the present instance, this rim is provided with grooves or recesses 4 in its outer face for the reception of springs 5. In one embodiment of my invention these springs are of a somewhat peculiar shape, shown more clearly in the perspective view, Fig. 3, and comprise a lower, substantially semi-circular portion 6, with curved leaves 7 and 8 extending upwardly therefrom; the leaves 7 being in pairs while the leaves 8 are single and are disposed on the opposite side of the portions 6. In lieu of the use of springs of this character I may employ other forms of springs and in Fig. 4, I have shown a plurality of single springs, set alternately in pairs and singly in the grooves or recesses 4 of the rim 3. The free ends of the springs bear against an annular wear-plate 9 carried by an outer rim or felly 10, which is preferably of wood. This wear-plate may be loose or secured to the wooden felly or rim.

The springs and wooden rim of the wheel are inclosed by a metallic shell 11 made in half sections, as shown; the outer flanged part of the same forming the tread of the wheel and overlying the wooden rim, and such shell may be secured to the wooden rim by screws 12. The shell structure is additionally secured together and to the wheel by means of bolts 15 and nuts 16; said bolts passing through apertures 17 in the web 2 whereby sufficient space is afforded to accommodate the various positions said bolts will assume during use of the wheel. To prevent crushing the shell at the points where the bolts are employed, I preferably surround the latter with sleeves 18; the ends of which sleeves engage the inner walls of the shell sections.

It is desirable to introduce oil into the spring chamber to reduce as much as possible the friction between the springs and the metal portions upon which they bear, and for this purpose I may provide the rim 3 of the wheel with annular grooves 19 on both sides of the same and short grooves 20 leading from said annular grooves to the spring pockets or the surface of the rim 3. An aperture 21 may be formed in said rim, closed by a plug 22; such aperture meeting a cross-bore 23 communicating with both of the annular grooves 19, as more clearly shown in Fig. 5. By this arrangement, oil or other lubricant in any desired quantity may be introduced into the spring chamber as desired, and such oil will be held by the side walls of the shell forming the spring chamber against escape.

The metal shell forms the tread of the wheel, and is preferably substantially flat, as indicated, and of considerable width. I may, however, provide the tread of the wheel with a tire of rubber or similar material, and to this end the tread of the shell may be struck up at points to form ears 25 to engage a tire as 26, as shown in Fig. 5; or a plurality of tires, as shown in Fig. 6, bolts 27 preferably passing through said ears and tire as indicated. This tire or tires may be of solid rubber or suitable equivalent material.

I claim:

1. The combination, in a wheel, of a central member comprising a hub, a felly and a suitable web integrally connecting the hub and felly, said felly having seats formed in its outer surface paralleling the axis of said

hub, an outer rim of wood, a plurality of independent and substantially unconfined springs substantially U-shaped in contour adapted to the seats in said felly, said springs having flaring ends disposed toward said outer rim and interposed between the same and the felly of the central portion, a wear plate carried by the outer rim in engagement with said free ends of the springs, shells inclosing said outer rim and the springs, means for securing said shells to said outer rim, and bolts passing through the central member for securing said shells together, the web of said central member having enlarged openings for the passage of the bolts, such arrangement providing for limited movement between said shells and the central member.

2. The combination, in a wheel, of a central member comprising a hub, a felly and a suitable web connecting the hub and felly, said felly having seats formed in its outer surface paralleling the axis of said hub, an outer rim of wood, a plurality of substantially U-shaped springs adapted to said seats, said springs having flaring free ends disposed toward said outer rim and interposed between the same and the felly of the central portion, an annular wear plate carried by the outer rim in engagement with said free ends of the springs, shells inclosing said outer rim and the springs, means for securing said shells to said outer rim, bolts passing through the central member for securing said shells together, the web of said central member having enlarged openings for the passage of the bolts, such arrangement providing for limited movement between said shells and the central member, means for introducing a lubricant to the spring seats formed in the rim of the felly, the latter having annular oil grooves on both sides of the same and passages communicating between said oil grooves and the seats for the springs, and means for introducing oil into said grooves, the shells in substantial contact with the felly forming the outer walls of said grooves and being also lubricated in their movement during use of the wheel.

3. The combination, in a wheel, of a central member having a hub, a felly, a suitable web integrally connecting the hub and felly, said felly having seats formed on its outer surface parallel with the axis of the hub, an outer rim of wood, a plurality of substantially U-shaped springs having free outer ends flaring from their centrally connected portion interposed between the outer rim and said felly, the connecting portions of said springs being curved and resting in the seats of said felly, a sectional shell inclosing said outer rim and the springs, bolts passing through the central member for securing sections of the shell together, said central member having enlarged apertures for the passage of said bolts, such arrangement permitting movement of the shell with respect to the central portion, the felly of said central portion having annular oil grooves on both sides of the same and channels leading from said grooves to the seats for the springs, a normally closed inlet passage formed in said rim for the introduction of oil, an annular wear plate carried by the outer rim for engagement with the outwardly flaring ends of the springs, and means for removably securing said shell to the outer rim.

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

GUSTAVE LOUIS BOURQUIN.

Witnesses:
MURRAY C. BOYER,
WM. A. BARR.