(No Model.)

H. E. BUTTS.

CAR WHEEL.

No. 499,778. Patented June 20, 1893.

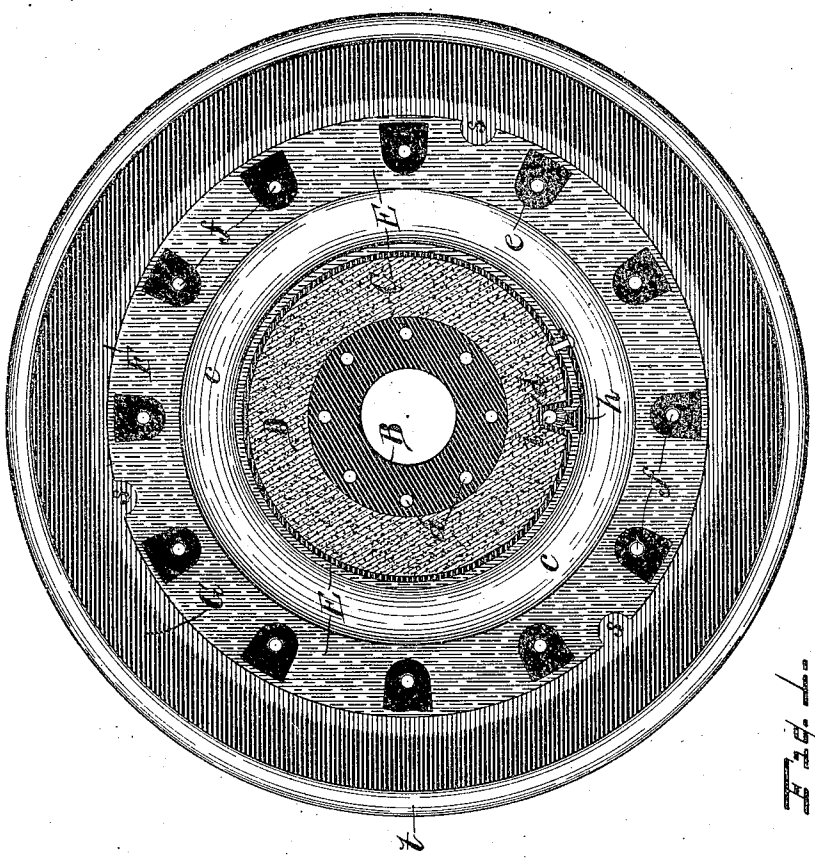

Fig. 1.

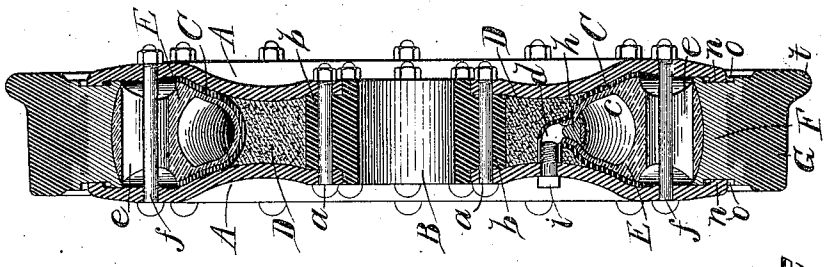

Fig. 2.

WITNESSES
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UNITED STATES PATENT OFFICE.

HENRY E. BUTTS, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO WILLIAM H. MERCER, OF SAME PLACE.

CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 499,778, dated June 20, 1893.

Application filed May 11, 1892. Serial No. 432,579. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. BUTTS, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Car-Wheels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in car-wheels, and consists in the construction and arrangement of parts, as hereinafter fully set forth, the essential features of which being pointed out particularly in the claims.

The object of the invention is to provide a car-wheel with a pneumatic or inflated cushion interposed between the hub and tread of the wheel, whereby the concussion caused by contact of the tread of the wheel with the rail, is absorbed by said cushion, and is not imparted to the car through the axle; making a wheel that travels along the rail with but little noise, and by means of which the shock and jar, incident to ordinary railway travel, may be greatly overcome, also obviating crystallization and breakage of the axle, and reducing the wear on the rail and wheel-tread. These objects are attained by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a central section through the circumference of a wheel embodying my improved features. Fig. 2 is a diametrical section through the same.

Referring to the letters of reference, A indicates the adjacent circular disks which form the web of the wheel. B indicates the hub, environed by said disks, which receive the peripheral shoulder *b* of said hub between their adjacent faces, and which are rigidly secured thereto by the transverse bolts *a*, as clearly shown in Fig. 2.

C is a concaved ring located between the disks A concentric with the hub and in the space around said hub, between its periphery and said ring is run cement or other suitable filling D.

Lying in the hollow of the ring C, and embraced by the disks A, is a ring of rubber or analogous material E, which is provided with a circular air space *c*, and a series of transverse apertures *e*, through which freely pass the bolts *f*, which couple the outer edges of the disks A. By which arrangement the untrammeled action of the rubber is permitted, and its native resiliency preserved.

The ring C is provided with a tube *d*, that communicates with an opening into the air-space in the rubber ring, controlled by a spring actuated valve *h*, and with an aperture through one of the side disks A of the wheel, through which air may be forced into the space *c*, until any desired pressure is attained. Said aperture through the disk being stopped by a screw-plug *i*, whereby double provision is made against leakage, and dust is excluded from the valve *h*.

F indicates a rolled-steel rim, to which the tread G, having the flange *t*, is cast. This rim is also embraced by the disks A, and bears upon the periphery of the rubber E, the inner edge of said disks being provided with the beads or flanges *n*, that lie in the circular ways *o* in the sides of said rim, which freely receive said flanges so as to permit of the diametrical reciprocation of said rim between said disks. By which construction the hub is suspended, by means of an air cushion, within the rim of the wheel. Whereby the vibration of the wheel traveling along the rail, is absorbed, and the sound caused by such travel is greatly reduced.

Instead of employing the rolled-steel rim F, and casting the tread thereto, said rim and tread may be formed integral if desired. The flanges *n* of the disks A engaging in the ways in the sides of the rim, prevent a segment of the rim from dropping out, should said rim become broken.

Having thus fully set forth my invention, what I claim as new and desire to secure by Letters Patent, is—

1. In a car-wheel, the combination of the opposed disks, the hub mounted therein, the diametrically adjustable tread embraced by said

disks, the resilient cushion interposed between said disks and lying against said tread, said cushion having a series of apertures passing transversely therethrough, the series of stay bolts coupling said disks and passing freely through said apertures in said cushion.

2. In a car-wheel, the combination of the hub, the web composed of the opposed disks, the tread embraced by said disks and having the diametrical lugs *s*, the resilient cushion interposed between the hub and tread and having recesses in its rim that receive the lugs of the latter.

3. In a car-wheel, the combination of the hub, the opposed disks forming a hollow web the diametrically adjustable tread, embraced by said disks the inflated cushion interposed between said disks and bearing on the tread, the non-metallic filling between said cushion and hub and tread.

4. In a car-wheel, the combination of the opposed disks, the hub mounted therein, the diametrically adjustable tread embraced by said disks, the pneumatic cushion interposed between said hub and tread, substantially as specified.

5. In a car-wheel, the combination of the opposed disks, the hub mounted therein, the diametrically adjustable tread embraced by said disks, and the inflatable cushion interposed between said hub and tread.

6. In a car-wheel, the combination of the opposed disks having a flange at their edges, the hub, the tread having ways therein that receive the flanges of said disks, and the inflatable cushion interposed between said tread and hub.

7. In a car-wheel, the combination of the hollow web, the diametrically adjustable tread, the inflatable cushion located in said web and bearing against the tread, the filling between said hub and cushion.

8. In a car-wheel, the combination of the hollow web, the hub, the tread, the hollow flexible cushion, interposed between said tread and hub, and bearing against the former the duct passing through the web and communicating with the space in said cushion, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY E. BUTTS.

Witnesses:
E. S. WHEELER,
W. H. MERCER.

Correction in Letters Patent No. 499,778.

It is hereby certified that in Letters Patent No. 499,778, granted June 20, 1893, upon the application of Henry E. Butts, of Detroit, Michigan, for an improvement in "Car-Wheels," an error appears in the printed specification requiring correction, as follows: In line 20, page 2, the words "and tread" should be stricken out; and that the said Letters Patent should be read with this correction therein to make the same conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 4th day of July, A. D. 1893.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

S. T. FISHER,
Acting Commissioner of Patents.