W. E. WILLIAMS.

VEHICLE DISK WHEEL.

APPLICATION FILED JULY 26, 1920.

1,416,149. Patented May 16, 1922

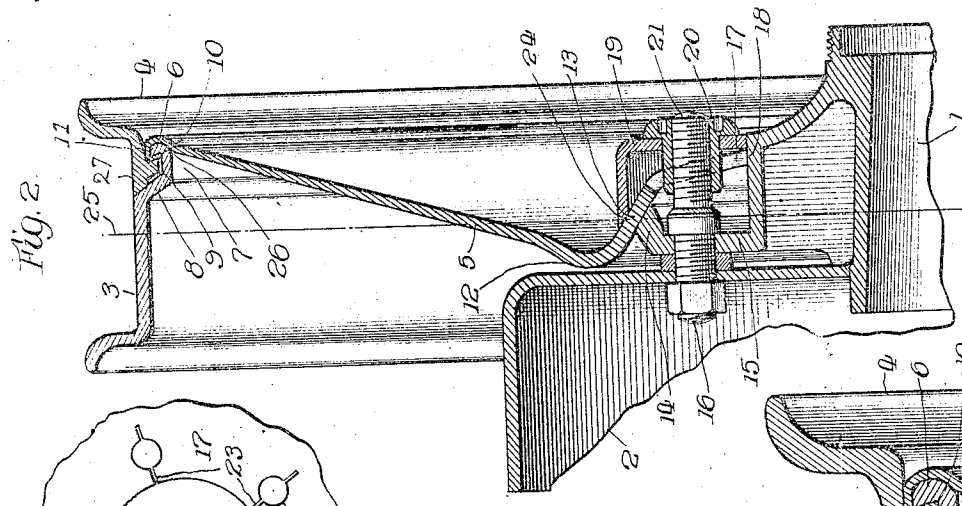


Fig. 2.

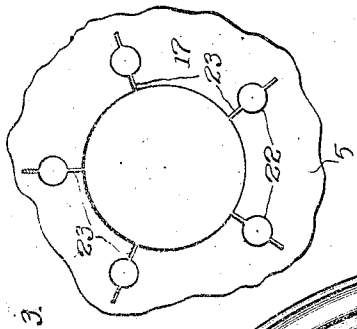


Fig. 3.

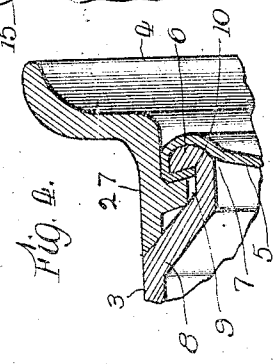


Fig. 4.

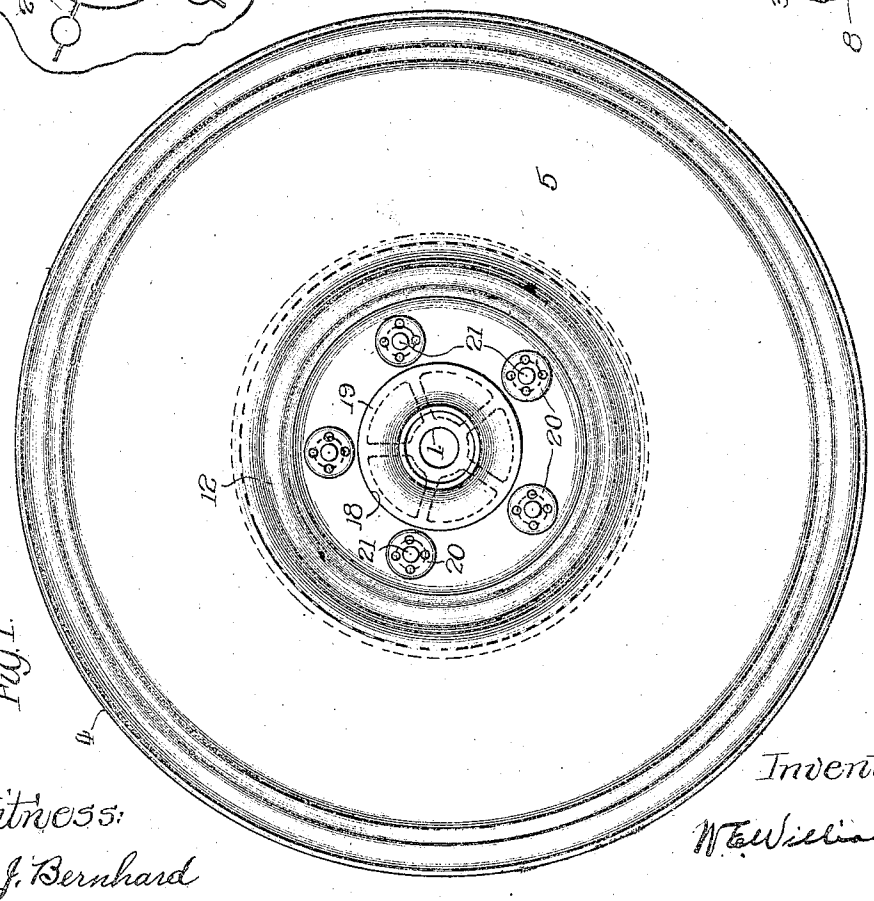


Fig. 1.

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UNITED STATES PATENT OFFICE.

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VEHICLE DISK WHEEL.

1,416,149. Specification of Letters Patent. Patented May 16, 1922.

Application filed July 26, 1920. Serial No. 398,928.

To all whom it may concern:

Be it known that I, WILLIAM ERASTUS WILLIAMS, a citizen of the United States, a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Vehicle Disk Wheels, of which the following is a specification.

My invention relates to disk wheels wherein a disk demountable from the hub is peripherally turned over and locked to a portion of the rim.

The object of the invention is to produce an inexpensive, strong, easily washed, and readily demounted structure having the hub, disk, and rim securely connected.

Reference will be had to the accompanying drawings in which Figure 1 is a front elevation of the wheel. Figure 2 is a sectional elevation.

Figure 3 is a front elevational detail of a part of the disk.

Figure 4 is a detail of the rim on an enlarged scale.

In the drawing 1 indicates the hub of an ordinary automobile wheel, here shown as the rear hub and 2 indicates the brake drum. 3 indicates the main rim portion provided with a specially arranged quick detachable flange 4. 5 indicates the body of the disk. The disk is made tapered, being thinner at its outer edge and getting thicker toward the center to take care of the increased moments of resistance encountered around the hub.

The peculiar merit of the rim structure is that the companion flange 4, or the quick detachable ring 4 is provided with a seat 27 which enters into and under the bead of the tire and thus the load on the tire holds this rim in place as it is cut transversely in order to be sprung in and out of its engagement with the main rim portion.

The main rim portion is provided with a small flange 6 which in connection with the surface 7 and inclined wall 8 provides a seat for the projection 9 of the flange 4 and the metal of the disk is turned over as is indicated by 10 and embraces this flange 6 of the main rim. The under portion 11 of the flange 4 rests on the turned over metal of the edge of the disk and thus aids in holding the metal of the disk to its turned over or spun over position.

The side thrust or side pressure of a tire when it is inflated causes an outward pressure of the flange 4 and this causes the flange 9 of the flange 4 to press sidewise against the turned over edge of the disk and also hold the same in its interlocked position.

The metal of the disk is turned into a swell 12 in the hub region and this merges into an inclined surface 13 which bears on to the inclined shoulder of a flange 14 on the hub. The flange 14 merges into a vertical flange 15 to which the brake drum is secured through the medium of the bolts 16.

The inner hub zone of the disk terminates in an inclined portion 17 which bears on a hub barrel 18 and the disk is clamped to the hub by means of a clamping ring 19 secured by round flat headed nuts 20 secured on the outer ends 21 of the screws or bolts 16. These nuts 20 enter into holes 22 in the disk and slots 23 in the disk at this region permit a slight bending of the flange 17 into engagement with the hub barrel surface 18 when the clamping ring 19 is clamped tightly on to the disk.

The clamping ring 19 is provided with a wall 24 which overlaps the surface 13 of the disk and supports the latter, transferring to the ring tension strains on the disk. It is thus apparent that loads on the wheel will be shared by compression or strut-like members below the axle and tension members above the axle.

The central load line of the wheel is indicated by the line 25 and it will be noticed that it passes through the main bearing surfaces of the part 13, of the disk, of the flange 14 and of the ring 19, or in other words the hub fastening itself provides load carrying surfaces in the neutral load plane.

The nuts 20 lie in the holes 22 of the disk and therefore when the nuts are taken out the disk readily clears itself from the bolts and is easily removed and replaced because of the inclination of the bearing surfaces.

The disk which fits over the upper portion of the flange 6 is also bent inwardly at that side of the flange nearest the center of the wheel, as indicated at 26, increasing the security of the locking.

The disk being made saucer shape as indicated, gives it great strength for skid shocks from the outside where skid shocks are encountered and at the same time the swelled and inclined connection of the disk around the hub region allows a slight degree

of elasticity in the travel of the wheel which is a desideratum.

What I claim is:—

1. The combination with a hub barrel having a flange provided with an annular, inclined, peripheral bearing surface, of a wheel disk provided with a laterally inclined portion bearing on said surface and with a centrally perforated portion extending obliquely outward with respect to the plane of the wheel from said surface to said barrel, and a clamping ring resting against the body of said disk only near its contact with said surface and against the hub in front of said perforated portion.

2. In a device of the class described a detachable disk forming the web of the wheel secured to the hub in a detachable manner, in which there is a flange on the hub having an outward inclined bearing surface and a bearing surface on the hub barrel, the said disk having an inclined portion around the hub zone adapted to bear on the inclined surface of the hub flange and an inclined surface around the hub aperture of the disk; in combination with a clamping flange and means for clamping the said flange against the inclined surface of the disk at the hub flange and also against the margin of the inclined portion of the disk around the hub barrel.

3. In a device of the class described a disk demountably secured to the hub through the medium of a bearing of the disk on a flange of the hub and simultaneous bearing of the said disk on the hub barrel, the said bearing of the disk on the said flange of the hub being in an inclined direction adapted to take direct and side loads and the bearing of the disk on to the hub barrel adapted to take direct loads only; in combination with a clamping flange adapted to bear on the inclined portion of the disk at the inclined bearing on the hub flange and to press inward the inner margin of the disk around the hub barrel, with means for binding the said flange, disk and hub together.

4. In a device of the class described, a disk demountably secured to the hub through the medium of a bearing of the disk on a flange of the hub and simultaneous bearing of the said disk on the hub barrel, the said bearing of the disk on the said flange of the hub being in an inclined direction adapting to resist both vertical and lateral thrusts and the bearing of the disk on to the hub barrel adapted in itself to resist vertical strains only; in combination with a clamping flange adapted to bear on the inclined portion of the disk at the inclined bearing on the hub flange and upon the hub barrel at the inner margin of the disk with clamping bolts passing through the hub flange, disk and clamping flange.

5. The combination with a hub provided with a flange having an oblique peripheral face, of a disk bearing laterally upon said face, thereby resisting vertical and lateral strains, and further bearing on a non-oblique face portion of the hub supporting vertical strains only, a clamping ring arranged for pressing the disk against said oblique face and inwardly along the non oblique face, and bolts passing through the hub flange, disk, and clamping ring, forcing the disk and ring toward the hub flange and gripping the disk firmly in two regions, and in somewhat widely separated planes.

6. The combination with a hub barrel having a flange provided with an annular, peripheral, inclined bearing face in the load plane, of a disk having an inclined zone fitting against said face and a less inclined central portion fitting against a non-inclined portion of said barrel, and a clamping ring for urging the outer, inclined marginal portion of the disk inwardly along the hub gripping the latter through change in the inclination of said marginal portion, and having at its outer margin a cylindrical flange pressing said inclined zone, whereby the disk is clamped against the barrel and against said inclined bearing face.

Signed at Chicago, in the county of Cook and State of Illinois, this 21st day of July, 1920.

WILLIAM ERASTUS WILLIAMS.

Witnesses:
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B. J. BERNHARD.