June 3, 1941. F. PIGNANI 2,244,570

DEMOUNTABLE WHEEL

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Fig. 1.

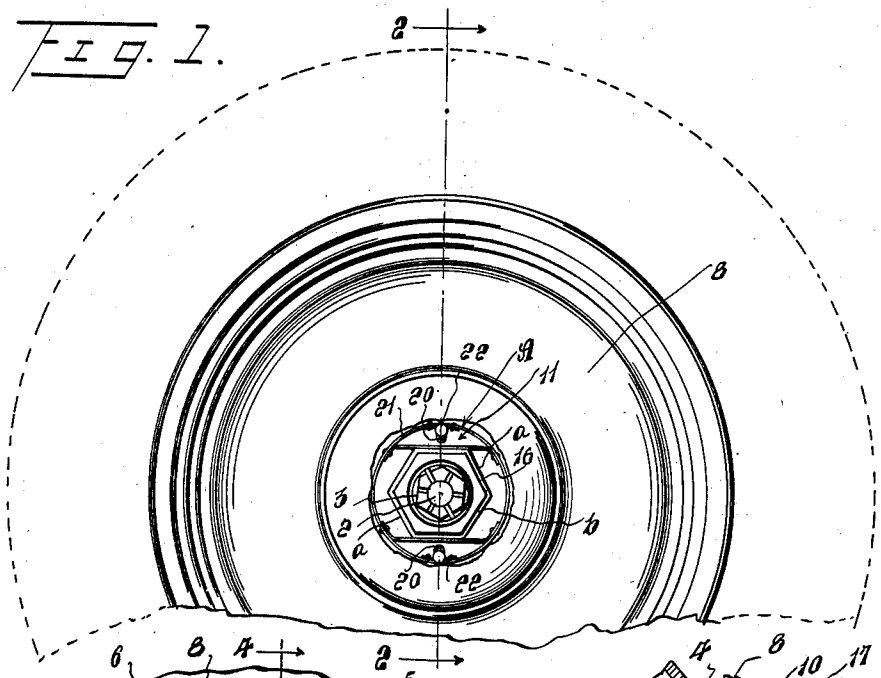
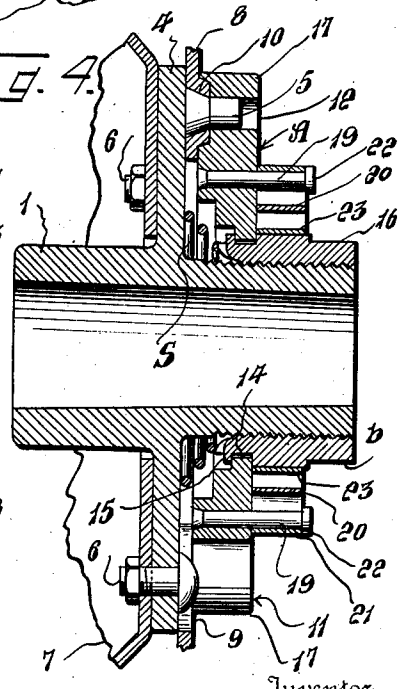


Fig. 4.



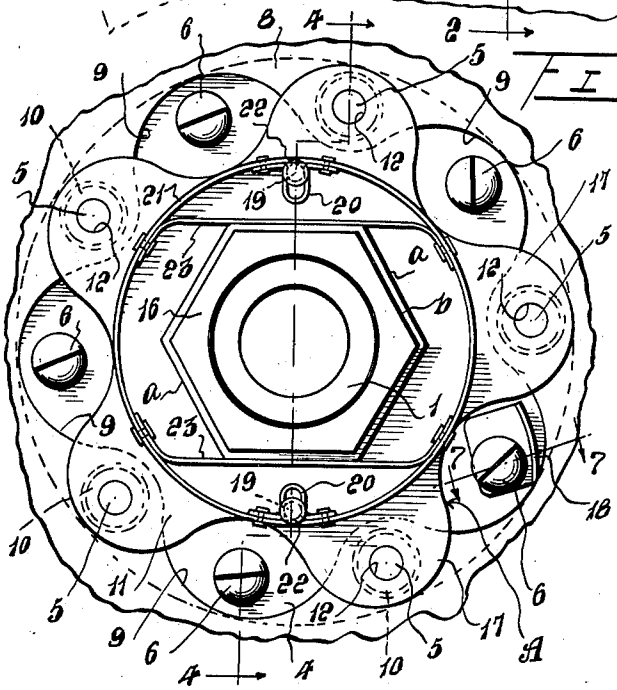


Fig. 3.

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Fig. 2.

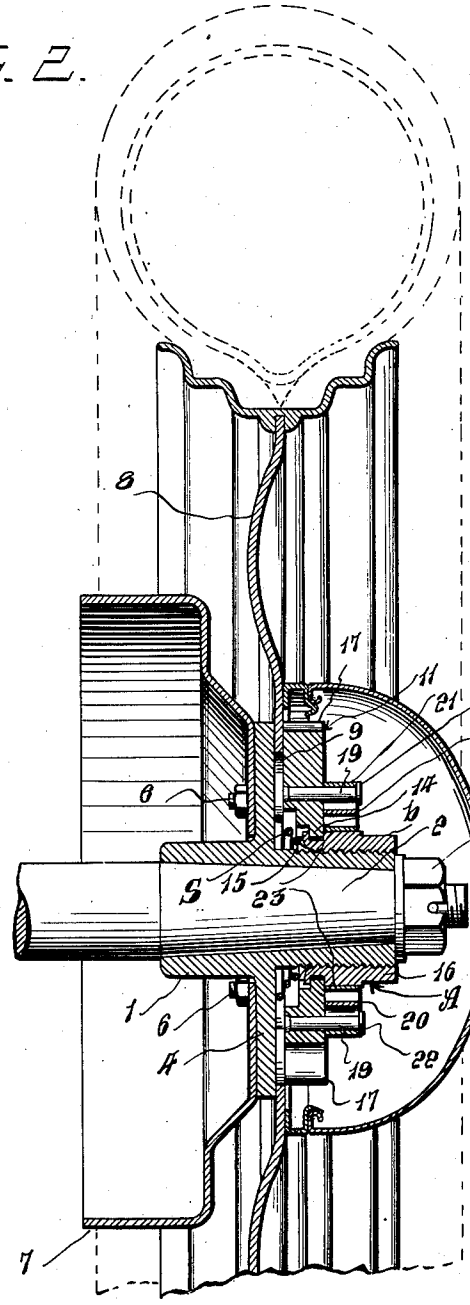


Fig. 5.

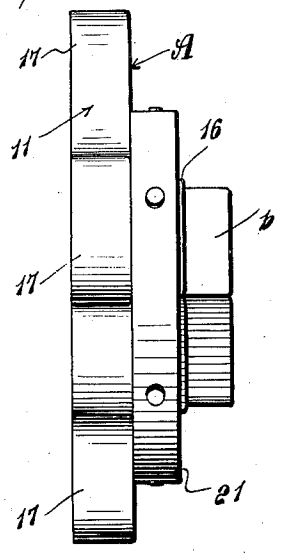


Fig. 6.

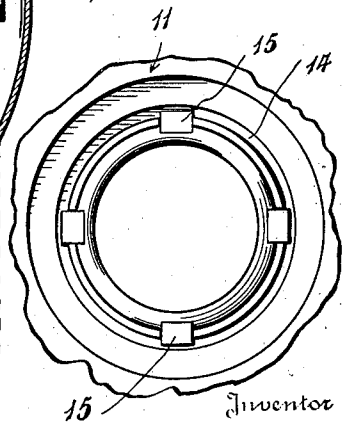
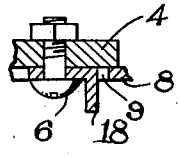


Fig. 7.



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2,244,570

DEMOUNTABLE WHEEL

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Application August 12, 1939, Serial No. 289,872

2 Claims. (Cl. 301—9)

This invention relates to a demountable wheel, and it is primarily an object of the invention to provide means whereby a wheel may be applied or removed without handling a plurality of nuts as is now generally required.

It is also an object of the invention to provide means for detachably maintaining a wheel upon its spindle requiring the use of but a single nut together with means for holding the applied nut against retrograde rotation.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved demountable wheel whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:—

Figure 1 is a fragmentary view in side elevation illustrating a detachable wheel constructed in accordance with an embodiment of my invention, the applied tire being diagrammatically indicated by broken lines;

Figure 2 is an enlarged sectional view taken substantially on the line 2—2 of Figure 1 looking in the direction of the arrows, the applied tire being also diagrammatically indicated by broken lines;

Figure 3 is an enlarged fragmentary elevational view of the central or hub portion of the wheel;

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 3;

Figure 5 is a view in side elevation of the nut assembly unapplied;

Figure 6 is a detailed rear elevation of the central portion of the assembly illustrated in Figure 5;

Figure 7 is a detailed sectional view taken substantially on the line 7—7 of Figure 3.

As disclosed in the accompanying drawings 1 denotes the hub of a wheel for mounting in the usual way upon the spindle 2. As herein disclosed, the hub 1 is held to the spindle 2 by the nut 3. The hub 1 is provided at a desired point intermediate its ends with a surrounding flange 4. This flange 4 is provided in its peripheral portion with the outwardly and laterally disposed and circumferentially directed lugs 5 rigidly secured to the flange 4 as may be desired. Secured to the inner face of the flange 4 by the bolts 6 is a conventional brake drum 7.

The web 8 of the wheel structure is provided with an enlarged central opening, the edge of which is undulating to provide the recessions 9 to permit ready access to the bolts 6 to facilitate the application or removal of the drum 7.

The marginal portion of the web 8 defining the central opening is such as to assure said marginal portion of the web 8 lapping or overlying the outer face of the peripheral portion of the flange 4. The peripheral portion of the web 8 is provided therearound with a series of circumferentially spaced openings 10 through each of which a lug 5 passes when the web 8 is in assembled position. The coaction of the lugs 5 with the web 2 effectively locks the web 8 and hub 1 for unitary rotation.

The nut assembly for maintaining the hub 1 and web 8 in assembled relation comprises, as herein disclosed, a relatively heavy annular plate 11 of desired design and which is provided with the circumferentially spaced openings 12 which receive the outer end portions of the lugs 5. This member or plate 11 has the inner portion of its central opening stepped whereby is provided an annular internal flange 14 with which is rotatably connected, as at 15, the inner end portion of a nut 16 which threads upon the outer end portion of the spindle 2.

After the web 8 has been properly engaged with the lugs 5 the nut 16 is threaded upon the outer end portion of the hub 1 to move the member 11 into clamping engagement with the inner portion of the web 8 and to receive the outer portions of the lugs 5 within the openings 12. By this means it will be at once understood that the web 8 is effectively held in assembled position with respect to the hub 1 by the operation of only a single nut 16 and upon desired unthreading of the nut 16, the web 8 and the parts of the wheel structure associated therewith can be readily and quickly removed. It is also to be stated that by the tightening or loosening of only the one nut 16 the web 8 can be easily removed or applied in the dark.

As herein disclosed, the peripheral edge of the member or plate 11 is also undulating resulting in an outstanding arm 17 and each of these arms 17 is provided with an opening 12. Held to the flange 4 by one of the bolts 6 and between two adjacent arms 17 is a stop member 18 which is contacted by one of the adjacent arms 17 to hold the member 11 against rotation with the

nut 16 before the arm 17 leaves or moves free of the lug 5.

It is of importance to provide means for holding the nut 16 against retrograde rotation. Carried by and extending outwardly beyond the annular member 11 are the diametrically opposed pins 19. The outer or extended portions of these pins 19 are freely disposed thru the inwardly and radially disposed loops 20 carried by a resilient continuous band 21. The outer ends of the pins 19 are provided with the heads 22 of a diameter in excess of the inside transverse diameters of the loops 20 whereby the band 21 is maintained in applied position upon the member 11 and in a manner whereby it may contract or expand in a direction determined by the longitudinal diameters of the loops 20.

Carried by the band 21 and extending across the field defined thereby are the resilient strips 23 substantially in parallelism and also substantially equidistantly spaced at opposite sides of the axial center of the nut 16. These bands or strips 23 are also spaced apart a distance closely approximating the distance between opposed flat faces *a* of the nut 16 so that when the bands 23 contact the opposed faces *a* of the nut 16 will be effectively held against rotation. The resiliency, however, of the bands 23 and 21 readily permits the nut 16 to be rotated as desired. As is clearly illustrated in Figures 2, 4 and 5, the nut 16 has an outer portion *b* extending beyond the bands 23 with which is adapted to be engaged a conventional socket wrench or kindred implement to effect the desired rotation of the nut.

Interposed between the flange 4 and the plate 11 is a coil spring S encircling the hub 1. This spring S provides means to prevent the plate 11 from wobbling and also holds the same in place when changing the wheel. Furthermore when the nut 16 is loosened this spring S will force the plate 11 free of the lugs 5. This spring S also serves to maintain the plate 11 in its correct position.

From the foregoing description it is thought to be obvious that a demountable wheel constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A wheel structure comprising a hub having a radial surrounding flange, a web defining a central opening through which the hub passes, the marginal portion of the web defining said opening overlying the outer marginal portion of the flange, said marginal portion of the flange being provided with laterally disposed lugs, the marginal portion of the web defining the central opening having openings through which said lugs extend, an annular member having openings to also receive the lugs of the flange, a nut rotatably attached to the annular member, said nut threading upon the hub, means carried by the annular member for holding the nut against turning movement independently of the annular member, and means independent of the lugs for holding the annular member against rotation with the nut.

2. A wheel structure comprising a hub having a radial surrounding flange, a wheel web defining a central opening through which the hub passes, the central portion of the web overlying the outer marginal portion of the flange, said marginal portion of the flange being provided with laterally disposed lugs, the central portion of the web having openings through which said lugs extend, an annular member having openings to also receive the lugs of the flange, a nut rotatably attached to the annular member, said nut threading upon the hub, the periphery of the annular member having outstanding spaced arms, the edge of the central opening of the web being undulated to provide recessions registering with the spaces between the outstanding spaced arms of the annular member, and a part carried by the flange and extending between said arms for contact with one of said arms to provide means independent of the lugs for holding the annular member against rotation with the nut.

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