

May 4, 1926.

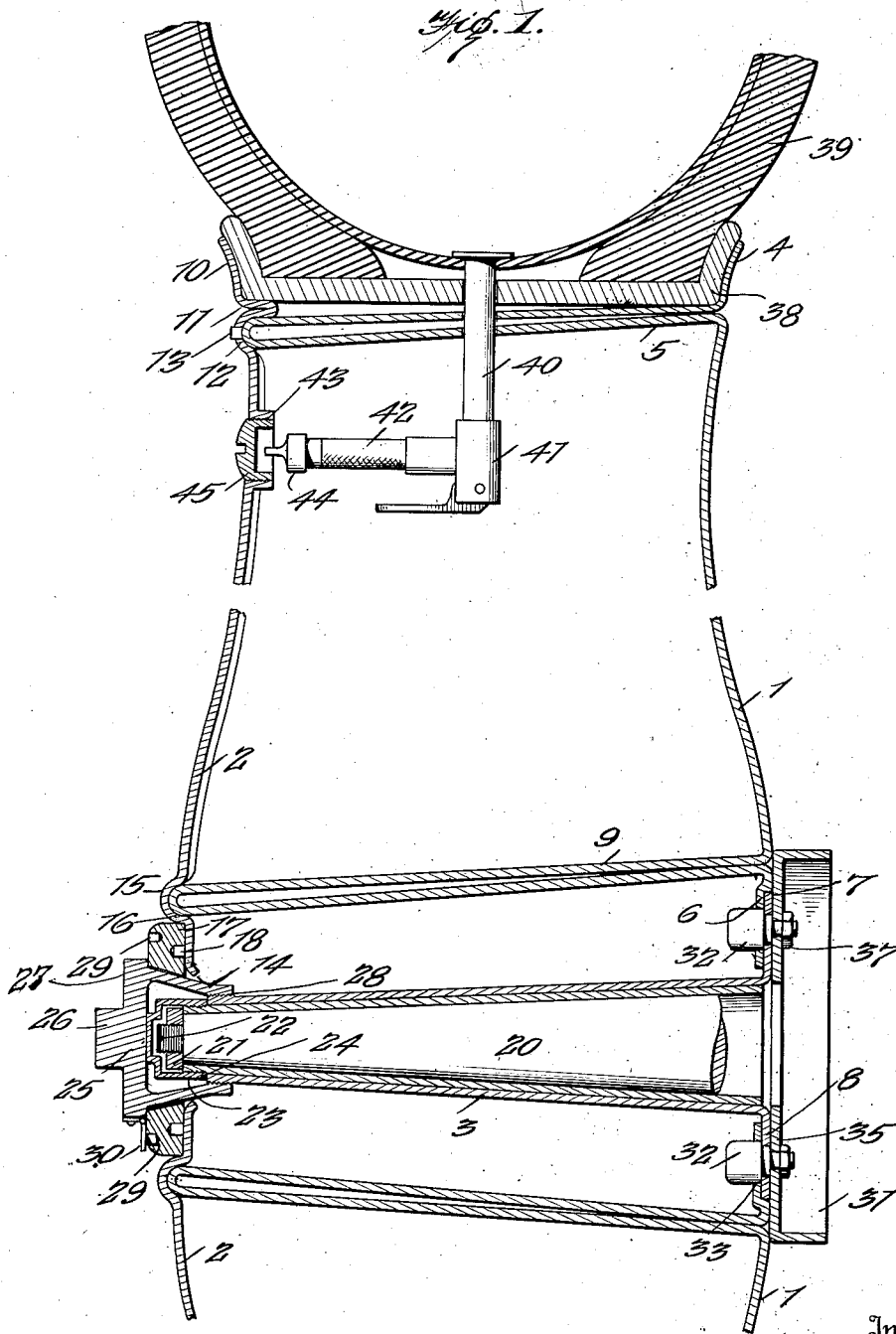
1,583,218

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DISK WHEEL

Filed Dec. 19, 1925

2 Sheets-Sheet 1



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Fig. 2.

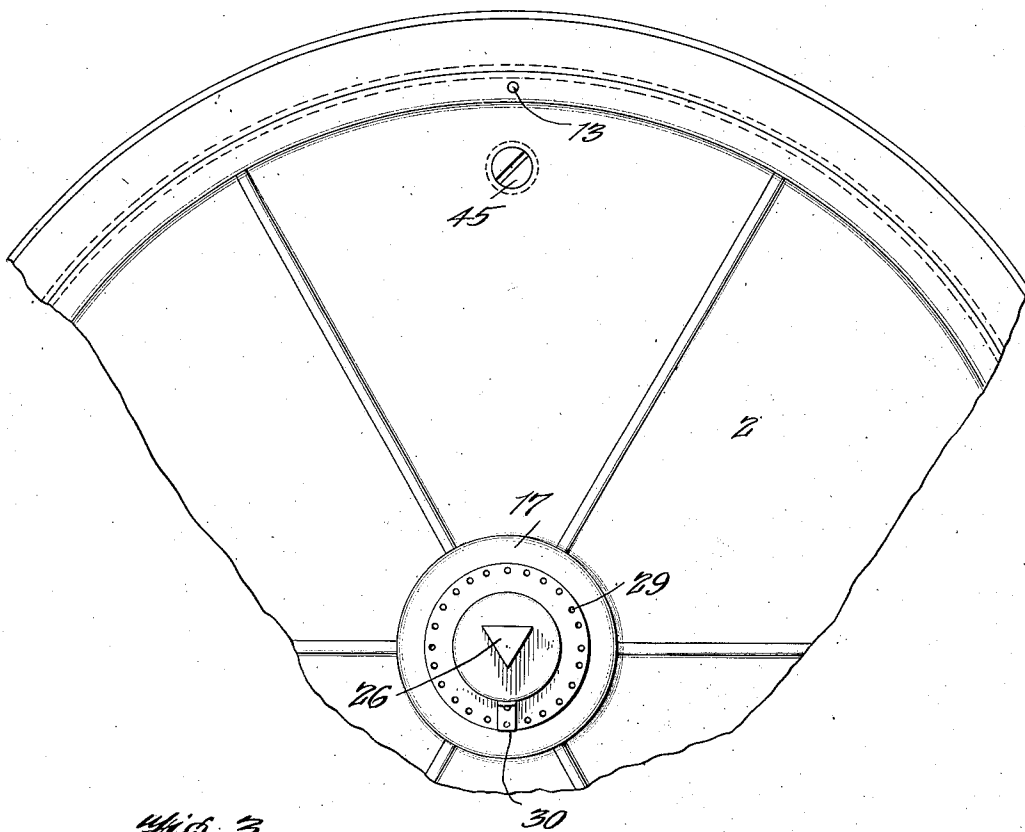


Fig. 3.

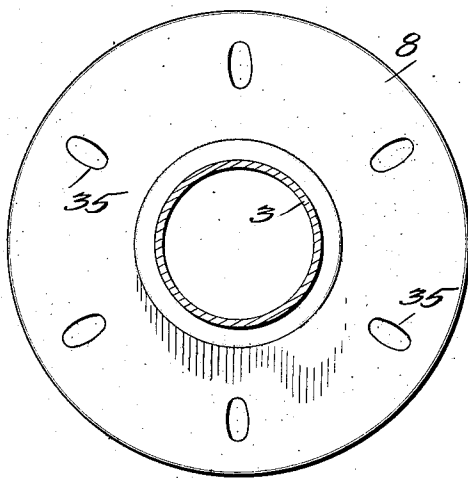
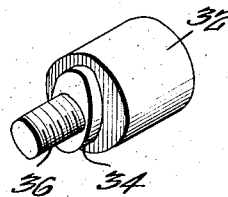


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS C. YOHO, OF CUMBERLAND, OHIO.

DISK WHEEL.

Application filed December 19, 1925. Serial No. 76,530.

To all whom it may concern:

Be it known that I, THOMAS C. YOHO, a citizen of the United States of America, residing at Cumberland, in the county of Guernsey and State of Ohio, have invented certain new and useful Improvements in Disk Wheels, of which the following is a specification.

This invention relates to an improvement in disk wheels, involving relatively spaced inner and outer disk sections, so formed and interconnected as to provide a rigid construction when in use.

The wheel proper is designed to provide for the convenient removal of the outer disk section when desired to remove the demountable rim, this outer section being held in place through the use of a single nut, and associated with the inner section so that the load stresses ordinarily borne by the outer section are transferred in large part to the inner section.

An object of the invention is the utilization of the main nut, whereby the hub of the wheel is held on the axle, as a means for overlying and securing the retaining disk in bearing and interlocked connection with the outer disk section; the removal of this nut freeing the retainer and permitting it and the outer disk section of the wheel to be readily removed when desiring to move or apply the usual demountable tire rim.

The invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a broken vertical sectional view illustrating the construction of the improved wheel.

Fig. 2 is a broken elevation of the improved wheel viewed from the outer side.

Fig. 3 is an end view of the hub showing the flange formed with the oval openings for receiving the bolts for the inner edge of the inner disk section.

Fig. 4 is a perspective view of one of the bolts used to secure the brake drum, hub flange, and inner disk section of the wheel in relative positions.

The improved wheel is made up of an inner disk section 1, and an outer disk section 2, combined with a hub section 3. The inner disk section 1 is formed at its outer edge to provide a demountable rim receiving lip 4, and inwardly of the lip the section is extended laterally, in return bend form, to provide what will be termed the wheel felly 5.

This section 1 is centrally formed with an opening 6 of a diameter slightly exceeding that of the inner end of the hub 3, and beyond the edge of this opening is laterally offset at 7 to form an annular shoulder to snugly engage and bear upon the outer edge of an outturned flange 8 at the inner end of the hub. Outwardly beyond the shoulder 7, the inner disk section 1 is extended laterally in return bend form to provide a brace column 9, of the full width of the wheel at this point.

The outer disk section 2 which constitutes the removable section of the wheel is formed at its outer edge to provide a lip 10, similar to and cooperating with the lip 4, to engage the tire rim, being at the inner margin of this lip inwardly extended to provide a ledge 11 to directly underlie the tire rim. Immediately inwardly of the ledge, the disk 2 is recessed at 12 to accurately receive the free edge of the wheel felly 5, this felly being formed at an appropriate point with a pin 13 to pass through an opening in the recess portion of the section 2 to prevent relative rotary movement of the sections.

The central portion of the disk section 2 is formed with an opening 14 to permit the passage therethrough of the outer end of the hub 3, and beyond the edge of this opening, said section 2 is formed with an annular channel 15 to receive the free end of the brace column 9 of the section 1, the inner portion of this channel 15 forming an abrupt shoulder 16. A retaining disk 17 of appropriate thickness is designed to fit over the free end of the hub 3 and snugly within the shoulder 16, bearing against that portion of the disk 2 inwardly of the shoulder. A pin 18 projects from the underlying portion of the disk section 2 and seats in an appropriate opening 19 in the inner face of the retainer 17, thus securing the inner portion of the disk 2 against independent rotative movement relative to the retainer.

The hub 3 is, for rear wheel construction, keyed in the usual manner to the axle 20, the free end of the axle projecting beyond the hub to receive a nut 21, fixed by a cotter pin 22. A cap nut 23 forming a grease reservoir is placed over the nut 21 and has a threaded skirt to engage a reduced portion 24 of the hub 3. A retaining nut 25 of sufficient size and ornamentation to serve as a hub cap is formed with a wrench engaging portion 26

and a cylindrical flange 27, which extends through the retainer 17 and has threaded connection at 28 with the hub 3. The retaining nut 25 is adapted to interlock with the retainer 17, the latter being formed with an annular series of openings 29 in its outer face and the retaining nut being provided with a spring pressed pin 30, adapted to engage any one of the openings 29 to secure the retaining nut against movement. The spring pressed pin 30 is here shown as a spring leaf connected at one end to the retaining nut 25 and carrying the pin 30 at the opposite end, though equivalent constructions are contemplated.

The rear wheel requires the use of a brake drum shown at 31, and this drum is secured to the inner portion of the improved disk wheel by a peculiar type of bolt, shown more particularly in Fig. 4. This bolt comprises a cylindrical terminal 32 adapted to be more or less freely engaged by an opening 33 in the inner disk section 1 adjacent the inner edge thereof. Immediately beyond the cylindrical terminal 32, the bolt includes an oval section 34 adapted to seat in a correspondingly sized and shaped opening 35 in the flange 8 of the hub 3. Beyond the oval section, the nut includes a reduced threaded terminal 36 adapted to be passed through the wall of the brake drum and said brake drum secured thereon by nuts 37. The projection of the cylindrical terminal 32 beyond the oval portion 34 forms a shoulder which bears against the inner face of the hub flange 8, thus preventing movement of the bolt toward the brake drum, while the cooperation of the oval portion 34 of the bolt, with the oval holes 35 in the hub flange, prevents turning of the bolt, permitting the nuts 37 to be tightened. It will be apparent that the inner disk section 1 is retained in position by the cylindrical terminals 32 of the bolts, hence in dismantling the wheel, this inner disk section is readily separated. There are preferably six of the bolts described used in securing the brake drum in place, though obviously any appropriate number may be used.

It will be apparent that with the disk section 2 removed, the demountable rim 38 carrying the tire 39, may be readily applied, following which the disk section 2 is properly positioned and the wheel is ready for use. It is to be noted that the felly 5 inclines toward the outer face of the wheel, thus enabling the felly to carry a greater portion of the load on the rim.

In order to avoid difficulty in inflating a tire applied to the wheel described, I contemplate using with the usual valve stem 40 a conventional clamp 41 which secures in communication with such valve stem, a lateral tube 42 which extends to and terminates adjacent an opening 43 formed in the disk

section 2. The tube 42 is provided with a cap 44 readily accessible through the opening 43, and the latter is preferably provided with a removable cap 45, through which, as will be apparent, the tire may be readily inflated with all the facility of the usual single disk or spoke wheel.

If desired, and as preferred, the outer disk 2 may be strengthened by a radial rib formation, as indicated. Furthermore, it is desirable that the felloe engaging edge of the outer disk have the maximum gripping effect to prevent separation at this point. To this end, the dish of the disk section 2 is such that it will engage the felloe of the wheel before it engages the end of the brace column 9, so that as the disk is forced to position by the nut, the pressure on the free edge of the felloe will increase, thereby tending to prevent separation at this point in the use of the wheel.

Claims:

1. A disk wheel, comprising inner and outer disks, the inner disk having an integral extension forming the wheel felly and provided adjacent its central point with a laterally extended column to interfit with and brace the outer disk.
2. A disk wheel, made of spaced inner and outer disk sections, and a hub, the inner disk section having a shoulder to interfit with the edge of an inner flange of the hub, the outer disk section having an annular shoulder to receive a retaining disk to overlie and hold the outer disk in place; an axle nut overlying and securing the retaining disk, whereby on removal of such nut, the outer disk is free.
3. A disk wheel, comprising inner and outer disk sections, and a hub having an inner flange, the inner disk section having an annular shoulder to overlie the edge of the flange, and being provided with a lateral extension to provide a bracing column, the outer disk being recessed to interfit with the free edge of the bracing column and formed with a central opening to permit the passage of the hub therethrough, a retaining disk to overlie the hub and bear against the outer disk section, and a single nut to engage the axle with which the hub cooperates to hold the retaining disk in place.
4. A disk wheel, comprising inner and outer disk sections, and a hub having an inner flange, the inner disk section having an annular shoulder to overlie the edge of the flange and being provided with a lateral extension to provide a bracing column, the outer disk being recessed to interfit with the free edge of the bracing column and formed with a central opening to permit the passage of the hub therethrough, a retaining disk to overlie the hub and bear against the outer disk section, and a single nut to engage the axle with which the hub cooperates

to hold the retaining disk in place, and means to interlock the single nut and retaining disk.

5 5. A disk wheel, comprising inner and outer disk sections, a hub, integral bracing elements extending from one disk section to the other, a brake drum, and bolts held against rotative movement in the hub and extending through the brake drum to permit
10 of securing the latter in place, said bolts being formed with cylindrical portions to cooperate with openings adjacent the inner edge of one of the disk sections.

15 6. A disk wheel, comprising inner and outer disk sections, a hub, integral bracing elements extending from one disk section to the other, one of the bracing elements serving as the felly of the wheel, a brake drum, and bolts held against rotative
20 movement in the hub and extending through

the brake drum to permit of securing the latter in place, said bolts being formed with cylindrical portions to cooperate with openings adjacent the inner edge of one of the disk sections.

25 7. A disk wheel, comprising inner and outer disk sections, bracing elements between the sections integral with one of said sections and interfitting with the other, a hub with which one of the sections is inter-
30 connected, and a retaining disk to overlie the hub and bear against the other disk section, said retaining disk being interlocked with the outer disk section, each of the disk sections being formed at their edges to co-
35 operate with a demountable rim.

In testimony whereof I affix my signature.

THOMAS C. YOHO. [L. S.]