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C. K. MONTGOMERY ET AL

DISK WHEEL

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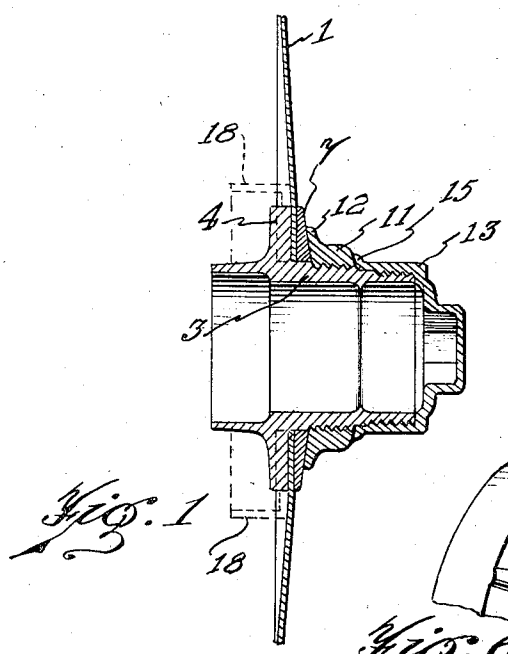



Fig. 1

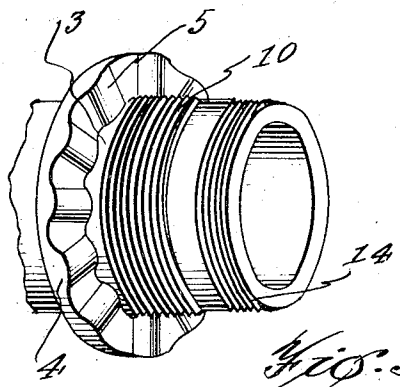



Fig. 3

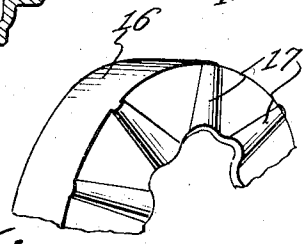



Fig. 6

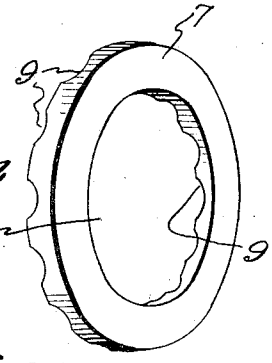



Fig. 4

Fig. 5

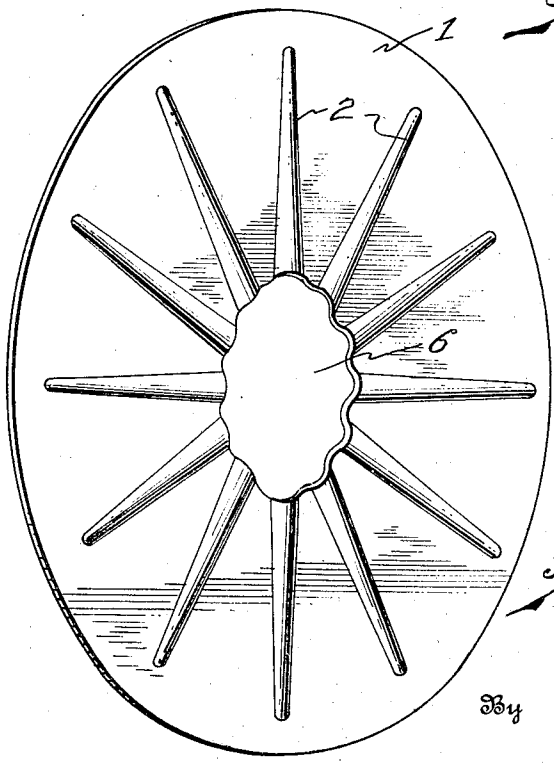
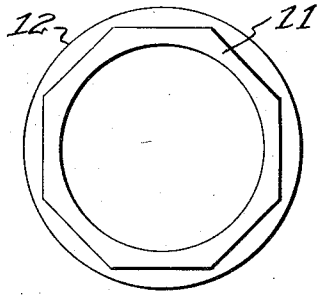



Fig. 2

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# UNITED STATES PATENT OFFICE.

CLAUDE K. MONTGOMERY AND CLAUD R. TROMLEY, OF DETROIT, MICHIGAN.

## DISK WHEEL.

Application filed July 19, 1920. Serial No. 397,479.

*To all whom it may concern:*

Be it known that we, CLAUDE K. MONTGOMERY and CLAUD R. TROMLEY, citizens of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Disk Wheels, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to disk wheels and the object of the invention is to provide a disk wheel in which the disk when assembled is solidly secured to the wheel hub. Another object of the invention is to provide a device of the character described in which the disk is corrugated radially thereby providing a disk of exceptionally strong construction which will not bend under strain. A further object of the invention is to provide a corrugated disk adapted to fit over a wheel hub, the wheel hub being provided with a shoulder having corrugations thereon fitting the corrugations of the disk, the parts of the wheel when assembled binding the disk to the said shoulder. A still further object of the invention is to provide a disk wheel of the character described in which the disk is removable from the hub by withdrawal of a single hub nut. These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawings in which—

Fig. 1 is a section through a disk and hub embodying our invention.

Fig. 2 is a perspective view of the disk.

Fig. 3 is a perspective view of the wheel hub, with the disk removed.

Fig. 4 is a perspective view of an outer ring fitting the corrugations of the disk.

Fig. 5 is an elevation of the nut by which the hub parts and disk are secured together.

Fig. 6 is a perspective view of a portion of a brake drum adapted to be used with the wheel.

The wheel consists of a disk 1, shown more particularly in Fig. 2, and it is to be understood that a wheel rim may be secured to the outer edge of this disk in any approved manner. The disk 1 is fluted radially or provided with a series of radial corrugations 2 which strengthen the disk and provide a stiff disk which will not easily bend. A hub member 3 is provided, as shown in Fig. 3, and on the hub member 3 is a shoulder 4 having a corrugated face 5. If desired the member 4 may be a ring provided with corrugations 5 and may be shrunk onto the hub 3. The aperture 6 in the disk 1 is adapted to fit over the hub 3 so that the corrugations 2 fit the corrugated face 5 of the member 4. A ring or washer 7, as shown in Fig. 4, is provided with an aperture 8 adapted to be passed over the hub 3 and this ring 7 is provided with a corrugated face 9 fitting the corrugations 2 of the disk 1 at the center. The hub 3 is threaded at 10 and on this threaded portion a nut 11, as shown in Fig. 5, is adapted to be threaded. As is shown in Fig. 1, the nut 11 is provided with a flange 12 adapted to engage the outer face of the ring 7 when turned up. When the parts are assembled as shown in Fig. 1, the nut 11 is turned up on the threads 10 thereby tightly binding the corrugated member 4 of the hub, the corrugated center of the disk and the corrugated ring 7 together. When this has been done a hub cap 13 is threaded onto the outer threads 14 of the hub 3 thereby providing a wheel of neat appearance. It is to be noted that by this method of securing the disk to the hub it is impossible to rotate the hub in relation to the disk which would occur were it not for the corrugations. This type of disk wheel may be used for the driving wheels of a vehicle as well as for steering wheels as under the most difficult driving conditions the disk cannot be loosened. To absolutely prevent the disk from loosening the threads 10 for the nut 11 may be left hand threaded and the threads 14 for the hub cap 13 may be right hand threaded. Thus when the nut 11 has been turned up tightly on the left hand threads the cap 13 may be threaded onto the right hand threads until the flange 15 thereof tightly engages the outer edge of the nut 11. In this manner the disk is securely locked to the wheel hub and cannot come loose.

One of the particular features of this invention is the ease with which the disk may be removed from the hub. In use an extra disk with rim and inflated tire thereon may be carried on the rear of the machine. Should a puncture occur the hub cap 13

and nut 11 may be removed from the hub at which time the disk 1 and ring member 7 may be easily removed and the spare disk with the rim and inflated tire may be slipped onto the hub, and the ring 7 moved to position at which time the nut 11 may be turned up to bind the parts together and the hub cap threaded onto the hub. In this manner a very quick and simple wheel change may be made without the necessity of removing a series of bolts as is common in disk wheels. It is to be noted that no bolts are used with this disk wheel, the disk being secured to the hub by the fitting together of the corrugations on the disk, hub shoulder and ring 7.

As shown in Fig. 6 a brake drum 16 may be used with this device. This brake drum is provided with the usual flange and is apertured at the center to fit over the hub. The perpendicular face of the brake drum about the central aperture is provided with corrugations 17 similar to the corrugations 2 of the disk 1. In assembly the brake drum is first positioned on the hub with the corrugations thereof fitting the corrugations of the shoulder 4. At this time the disk 1 is positioned over the hub with the corrugations thereof fitting the corrugations 17 of the brake drum. The ring 7 is then slipped on the hub and the parts are bound together as before by the nut 11. In this manner the brake drum is secured to the wheel in a very solid manner and is held as strongly as though bolts were used. When the brake drum has been thus secured to the wheel the flange thereof projects inwardly in the proper position as shown in dotted lines 18 in Fig. 1. It is to be particularly noted that the aperture 6 of the disk may be considerably larger than the hub 3 and when the parts are secured together movement of the disk in relation to the hub is impossible even when very heavy loads are carried by the wheel. To illustrate this let us suppose that there is a clearance of one-quarter of an inch between the edge of the disk adjacent the aperture and the wheel hub. When the parts are locked together and a heavy load is applied to the wheel the vertical pressure will be taken up by the radial flutings or corrugations which are in the horizontal position and thus movement of the disk in relation to the hub is entirely prevented. It can thus be seen that the load is not carried on the thin edge of the disk or on a series of bolts as is usual with disk wheel construction but that the load is supported by the radial flutings or corrugations which allow a very thin metal disk to be used without sacrificing strength and at the same time provide a wheel of exceptional strength. It is further to be noted that this disk and hub are not limited to use with a vehicle wheel but may be used with belt pulleys, fly wheels and wheels in general in which case the interior of the wheel hub, which forms no part of this invention, may be varied to conform to the use for which the wheel is designed.

From the foregoing description it becomes evident that the device is very simple and efficient in operation, of strong construction, is easily assembled or disassembled and provides a disk wheel which accomplishes the objects desired.

Having thus fully described our invention, its utility and mode of operation, what we claim and desire to secure by Letters Patent of the United States is—

In a disk wheel, a hub having a flange provided with a radially corrugated outer face, a cylindrical portion adjacent the said face, a succeeding threaded portion adjacent the cylindrical portion, a second cylindrical portion adjacent and of less diameter than the said threaded portion, a second threaded portion adjacent the said second cylindrical portion extending to the hub end, one of said threaded portions being left hand threaded, a tapered clamping member having an inner corrugated face complemental to that of the hub flange and apertured to fit the first cylindrical portion of the hub, the two corrugated parts being adapted to secure a radially corrugated disk therebetween, a nut having a flange engaging against the said tapered clamping member, and a second nut providing a cap for the hub end and having a cylindrical part engaging over the said second cylindrical portion of the hub with the inner end seating against the first nut.

In testimony whereof, we sign this specification.

CLAUDE K. MONTGOMERY.
CLAUD R. TROMLEY.