J. F. JINKNER.

DETACHABLE WIRE WHEEL.

APPLICATION FILED JULY 28, 1919.

1,340,773.

Patented May 18, 1920.

3 SHEETS—SHEET 1.

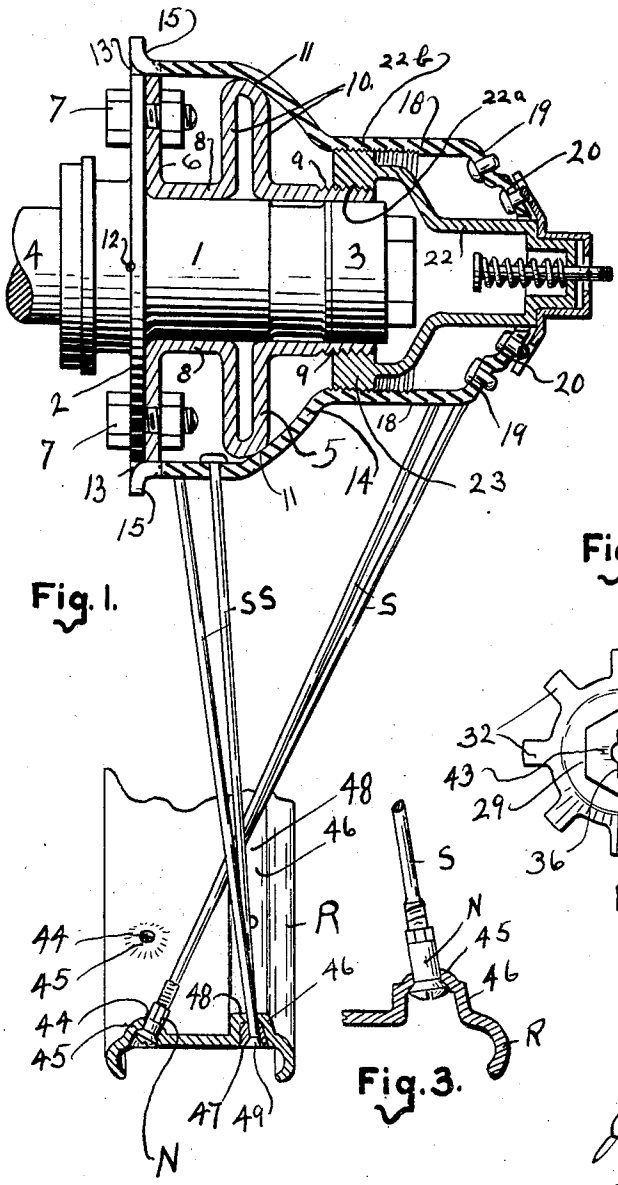

Fig. 1.

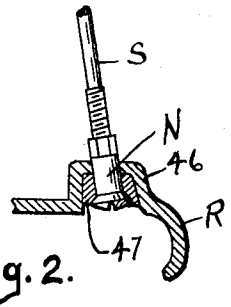

Fig. 2.

Fig. 3.

Fig. 4.

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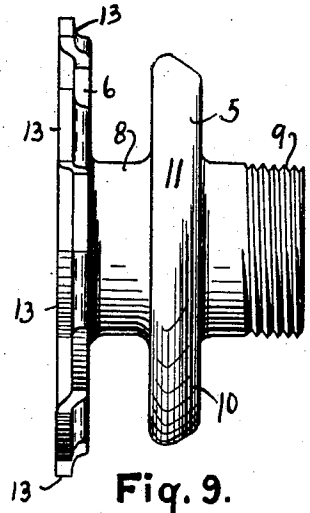

Fig. 9.

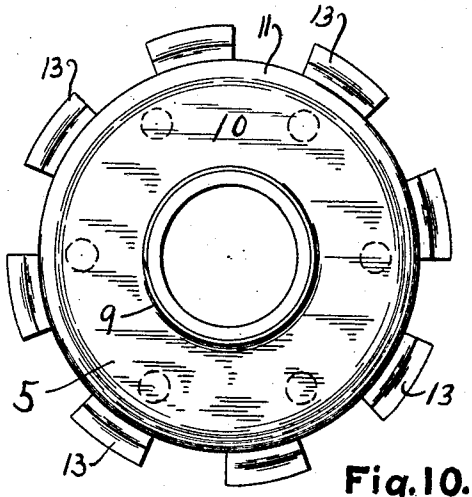

Fig. 10.

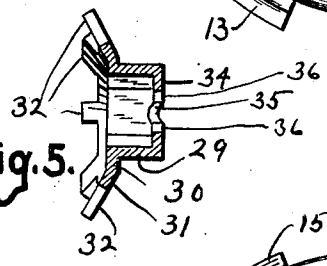

Fig. 5.

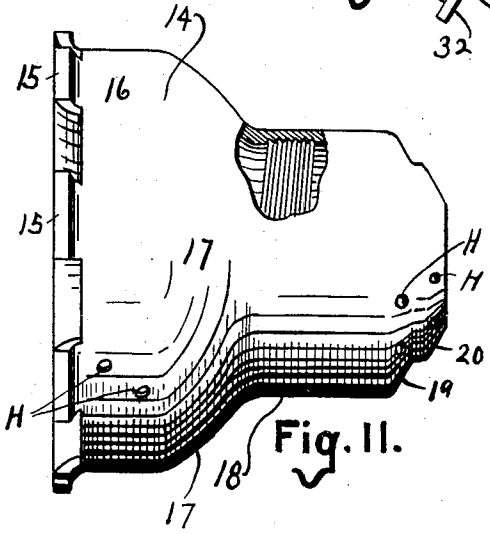

Fig. 11.

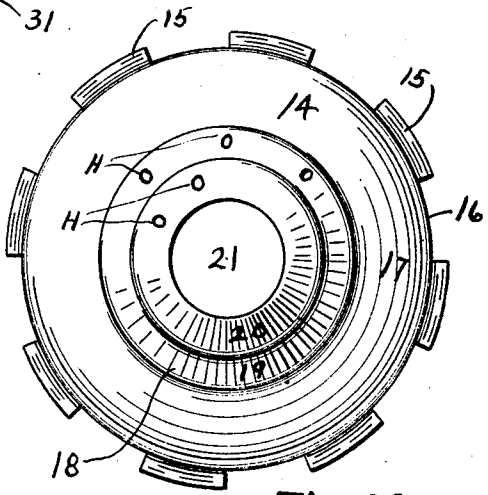

Fig. 12.

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3 SHEETS—SHEET 3.

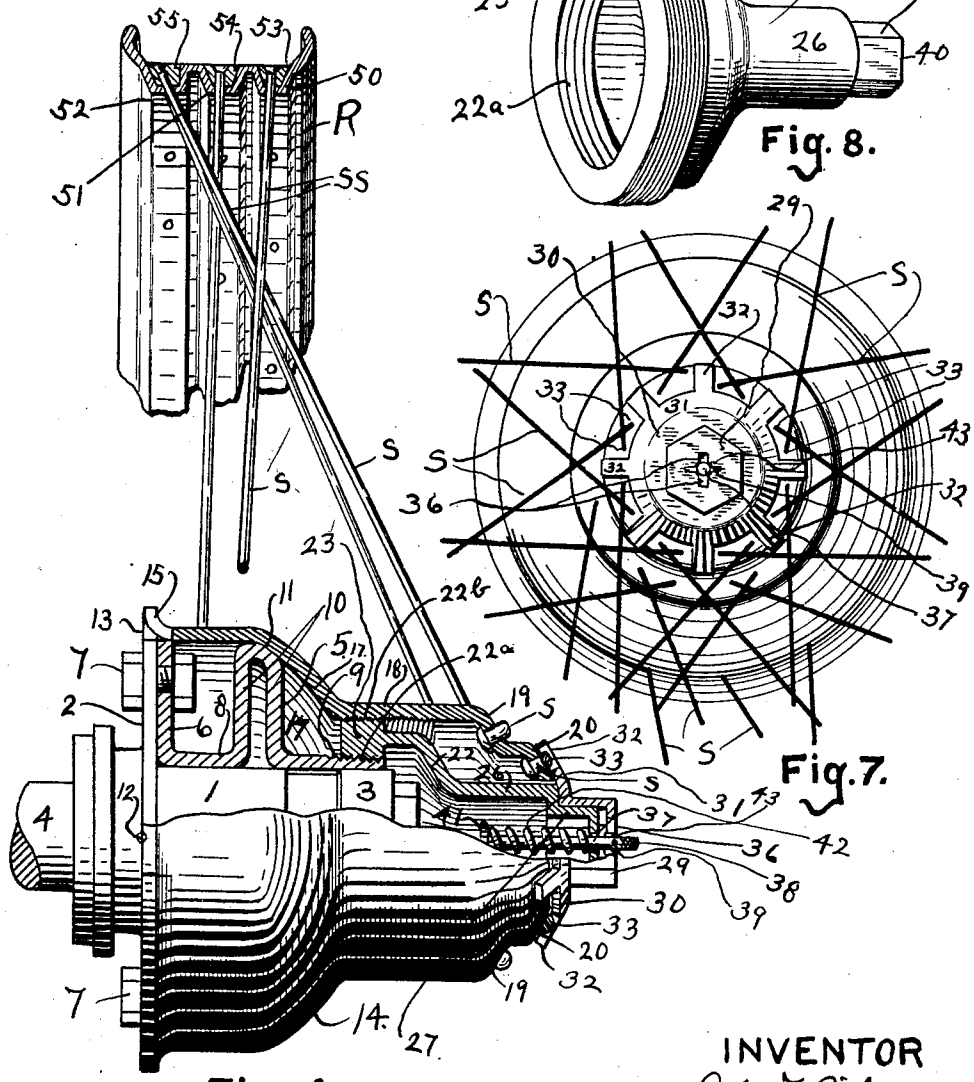

Fig. 6.

Fig. 8.

Fig. 7.

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UNITED STATES PATENT OFFICE.

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DETACHABLE WIRE WHEEL.

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To all whom it may concern:

Be it known that I, JOHN F. JINKNER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Detachable Wire Wheels; and I do hereby 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 appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form part of this specification.

Like figures of reference refer to like parts.

This invention relates to detachable wire wheels.

One of the objects of this invention is to provide a detachable wire wheel for vehicles, having an improved rim construction affording a better anchorage for the spokes.

Another object of this invention is to provide in a detachable wire wheel, a ribbed sheet metal rim giving a stiffness to the same to relieve the spokes of the requirement of keeping the rim in true circular form by means of the varied tensions now put upon the same to correct distortion in the body of the rim.

A further object in this connection is to provide a rim structure which will not require following the present distorting methods in preparing the rim for spoke anchorage.

With these and other objects my invention resides in certain constructions, a few embodiments of which are shown in the drawings, are hereinafter described, their functions are explained and what I claim is set forth.

In the drawings,

Figure 1 is a sectional elevation of a hub and fragment of rim embodying my invention. The hub structure here shown is that adapted to replace the hub of the present Ford wood wheel on the innermost hub structure.

Fig. 2 is a section of a rim fragment, showing a form of anchorage for a spoke and nipple.

Fig. 3 is a section of a modified form of spoke and nipple anchorage to that shown in Figs. 1 and 2. In all three figures are shown the ribbed reinforcement of the rim.

Fig. 4 is a front elevation of the spider of the nut lock.

Fig. 5 is a sectional elevation of the spider shown in Fig. 4.

Fig. 6 is a sectional elevation of a modified form of wheel structure to that shown in Fig. 1, and includes a triple rib formation in the rim.

Fig. 7 is a front elevation of an assembled hub and spokes and nut lock shown in section in Figs. 1 and 6.

Fig. 8 is a perspective view of the duplex nut used to secure the hub parts together.

Fig. 9 is a side elevation of the inner hub part of my detachable wheel.

Fig. 10 is a front end elevation of the inner hub part shown in Fig. 9.

Fig. 11 is a side elevation of the outer hub part of my detachable wheel.

Fig. 12 is an end elevation of the outer hub part shown in Fig. 11.

In the figures, there is shown a type of Ford hub 1, having a flange 2 and nut 3 upon a shaft 4, adapted to fit the usual type of wood wheel now in common use on Ford automobiles. Upon the hub 1 is fitted the sheet metal inner hub 5, of my wheel construction. This inner hub 5 has a rear flange 6, secured by bolts 7 passing through the usual holes in the flange 2 of the hub 1. There is a neck 8 and a threaded portion 9 fitting in contact with the hub 1 and its nut 3. An intermediate portion 10 forms a projecting flange having a spherical zone surface at 11, whose center is at 12. As shown more fully in Figs. 9 and 10, the inner hub 5 has a series of outwardly projecting teeth 13.

Referring now to the outer hub 14, there is a rear flange from which teeth 15 are cut and adapted to fit in between the teeth 13 of the inner hub 1. Extending outward from the teeth 15 is a cylindrical portion 16, which merges into a spherical zone portion 17, concentric with the spherical portion 11 of the inner hub 5. The spherical portion 17 merges into a cylindrical portion 18, spaced from the threaded portion 9 of the inner hub 1. The outer hub portion 18 merges into a conical portion 19 which is stepped back from another conical portion 20 hav-

ing a circular hole 21, concentric with the axis of the outer hub part. The cylindrical portion 16 and the conical portions 19 and 20 all have transverse holes H through which pass spokes S.

Extending forward of the inner hub 5 and in threaded engagement therewith is the hollow duplex nut 22, which is also in threaded engagement with the inner part of the cylindrical portion 18 of the outer hub 14. The inner thread 22^a of the nut 22 is made coarser than the outer thread 22^b, particularly evident in Fig. 8. These threads 22^a and 22^b are on a ring portion 23 of the nut 22, which extends into a cylindrical portion 24, merging into a conical portion 25, and from that into a cylindrical portion 26, terminating in a hexagonal prismatic portion 27, which extends outside the outer hub 14, the cylindrical portion 26 being loosely journaled and in sliding engagement with the hole 21. The threaded inner portion of the outer hub 14 is about twice as long as the threaded portion of the inner hub 5, when there are twice as many threads per inch at 22^b as at 22^a.

In sliding engagement with the hexagonal end 27 of the nut 22, is the hexagonal cap 29 of the spider 30. A conical flange 31 terminates in fingers 32, which, when in place, lie between the portions 33 of the spokes S. The central wall 34 of the spider 30 has a hole 35 with radiating slots 36. Through the hole 35 passes the rod 37, having a knurled end 38 and a pin 39 passing transversely through the center of the rod 37. The length and thickness of the pin 39 is such as to pass through the slots 36. The rod 37 also passes through the end wall 40 of the duplex nut 22, and terminates in a head 41, against which and the wall 40 is the compressed spring 42, which causes the pin 39 to bear against the depression 43 in the wall 34 to prevent the rod 37 from turning.

The hub construction including the locking device and the duplex nut is the same in all figures, but the rim construction shown in Fig. 1 differs from that shown in Fig. 6.

Referring to Fig. 1, the rim R is shown to have a series of holes 44, in sockets 45 such as are now found in the usual type of wire wheel. Running parallel to the rim R on one side is the annularly recessed rib 46 containing a split ring 47 fitting therein. Passing through the ring 47 and the wall 48 of the rib 46 are the spokes S S which have riveted heads 49. The spokes S terminate in the rim R in nipples N the heads of which rest within pockets 45. If it is desired to use the nipples N instead of the riveted spoke heads, in connection with the ring 47, the construction shown in section in Fig. 2 may be used. If, however, it is desired to dispense with the ring 47, then the construction shown in section in Fig. 3 may be used.

Referring now to the rim construction shown in section in Fig. 6, here we have a triple rib reinforcement each of which is similar to that marked 46 of Fig. 1. Each of the ribs 50, 51 and 52 is shown to contain respective rings 53, 54, and 55 fitting therein. The spokes S S are here shown having riveted heads, where they terminate in the rings 53, 54 and 55.

To construct a wheel having riveted spoke heads, an appropriate truing stand is used to hold the outer hub and the rim, firmly concentric and in proper relation with reference to the location of the rim and hub planes, so that the wheel will run in relation to the wheel opposite it on the vehicle to the desired gage or distance between wheels. After placing the spokes in their proper places in the hub and rim, besides in the desired lacing arrangement, the spokes are each held rigidly with other means at the desired tension while the heads are riveted in the rings contained in the ribs, or where no rings are used then they are riveted in the wall forming the bottom of the recess of the rib which they penetrate.

This wheel is mounted in the following manner: Take the Ford type of stock hub, for instance, inasmuch as this type has here been selected only as an illustration of an adaptation of one embodiment of my invention to a stock hub (any other make of stock hub might have been selected and the formation of the inner hub of my detachable hub been shown to conform thereto) having removed the stock wooden wheel which fits such a stock hub, the inner hub 5 is slipped onto the hub 1 and the bolts 7 are affixed securing the flange 6 of the inner hub 5 to the flange 2 of the stock hub 1, and left there. Next, having the duplex nut 22 in threaded engagement with the outer hub 14 and positioned thereon at the end of its path near the outer end of the outer hub shell, having the spider 30 removed, the wheel is next positioned having the hub parts concentric and the duplex nut 22 is turned to engage the threads on the inner hub at 9. This turning is continued while the teeth 15 of the outer hub 14, mesh with the teeth 13 of the inner hub 5. As the nut 22 continues to turn, it moves toward the large end of the outer hub 14 at half the rate that it moves onto the thread 9 toward the flanged end of the inner hub, providing that there are twice as many threads per inch on the outer hub as on the inner hub. The result will be a differential movement between the inner and the outer hubs, to bring them into forced contact at the spherical surfaces marked 11. After the hub parts are thus forced together, the cap of the spider 30 is fitted onto the hexagonal

end of the nut 22 and the rod 37 is pulled outward against the action of the spring to bring the pin 39 on the outside of the spider 30, where it is turned to be normally held against turning in the recess 36 of the spider 30. The fingers 32 find their place between the shoulders 33 of the spokes, which position prevents any turning of the spider on the head of the outer hub and consequently holds the nut 22 from turning within the outer hub 1. The use of the spherical contacting surfaces at 11, instead of the usual conical contacting surfaces, affords a better centering and fitting of the hub parts on one another, irrespective of their exact co-axial fitting.

To remove the wheel from the inner hub 5, the rod 37 is pulled partially outward and turned 90 degrees to position the pin to register and pass through the slots 36 in the head of the spider 30, to remove the spider for access of a wrench to the nut 22 for unscrewing the same. The unscrewing of the nut 22 produces a differential movement of the hub parts on one another to separate the same, while at the same time the nut 22 is caused to travel more securely toward the small end of the outer hub where it is retained, when the wheel is removed. The threads on the duplex nut 22 and the hub parts 5 and 14, may be both rights or both lefts and the inner one of a different pitch than the outer one, to get a differential movement of the hub parts, when the nut is turned.

Features of my invention herein shown and described but not claimed herein, will be claimed in divisional applications shortly to be filed.

Inasmuch as modifications in the specific embodiments of my invention, herein shown and described may be made without departing from the spirit and scope of said invention, I do not wish to be confined to these embodiments, hence I claim:

1. In a wheel, a hub, a rim, spokes connecting said rim with said hub, an annular recess projecting inwardly from said rim, and a ring fitting in said recess, some of said spokes being anchored in said ring.

2. In a wheel, a hub, a rim, spokes connecting said rim with said hub, an annular recess projecting inwardly from said rim, a zone of spoke pockets in said rim, spaced from said annular recess, a ring fitting in said annular recess, some of said spokes being anchored in said ring, and others of said spokes being anchored in said pockets.

3. In a wheel, a hub, a rim, spokes connecting said rim with said hub, an annular recess projecting inwardly from said rim, and a ring fitting in said recess, spokes having riveted heads anchored in said ring.

4. In a wheel, a hub, a rim, spokes connecting said rim with said hub, an annular recess projecting inwardly from said rim, a zone of spoke pockets in said rim spaced from said annular recess, a ring fitting in said annular recess, some of said spokes being anchored in said ring, and others of said spokes being anchored in said pockets, the spokes anchored in said ring having riveted heads.

JOHN F. JINKNER.