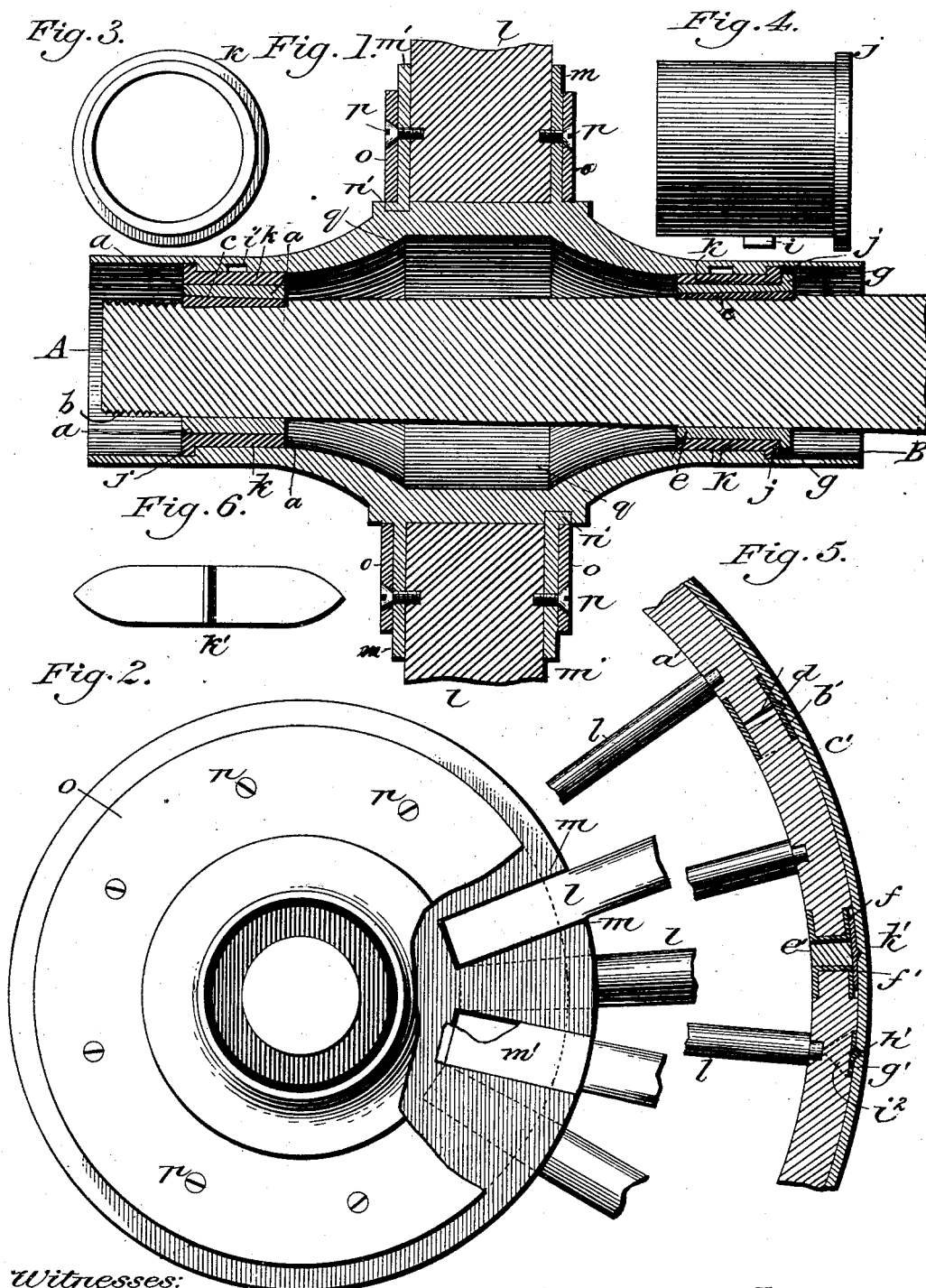


(No Model.)

J. R. WINSTON.
VEHICLE WHEEL.

No. 346,008.

Patented July 20, 1886.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN R. WINSTON, OF HYCOTEE, NORTH CAROLINA.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 346,008, dated July 20, 1886.

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To all whom it may concern:

Be it known that I, JOHN R. WINSTON, a citizen of the United States, residing at Hycootee, in Caswell county, and State of North Carolina, have invented certain new and useful Improvements in Vehicle-Wheels, of which the following is a specification.

My invention consists in the construction and combination of the various parts of a vehicle-wheel, as hereinafter fully set forth.

In the annexed drawings illustrating the invention, Figure 1 is a longitudinal section of the wheel-hub with spokes attached. Fig. 2 is an end view of the same, with hub partly broken away to show the manner of arranging and securing the spokes. Fig. 3 is an end view, and Fig. 4 a side view, of a cast-steel box, one of which is placed in each end of the hub in such a manner as to encircle a similar steel band on each end of the axle-spindle. Fig. 5 is a longitudinal section of the fellies and tire, showing the manner of connecting the same, and also showing the outer ends of the spokes. Fig. 6 is a plan view of a slip-iron used for connecting the fellies and tire.

The axle-spindle A has a cast-steel band, *a*, at its outer end next to the screw-threads *b*, on which the nut is placed. On the large end of the spindle is another cast-steel band, *c*, having a flange, *g*, which fits up to the wood of the axle. These bands are each fastened to the spindle by means of a key, *e*, entering a groove in the side of the spindle near each end, and a similar groove to match on the inside of each band. The band *a* on the smaller end of the spindle is somewhat thicker than the band *c*, which is placed on the larger end; but in each band the outside diameter is the same at both ends.

The hub B is made of cast metal. In each end of this hub is a cast-steel box, *k*, working over the bands *a* and *c*, respectively, and each box is fastened in the hub by means of a knob, *i*, formed on the outside of said box, entering a groove on the inside of the hub and dodging into a recess, *i'*, by being turned to one side. Each box *k* is formed at its outer end with a flange, *j*, which serves as a washer.

On the periphery of the hub are formed side flanges, *m m*, which are cut radially at alternate intervals on the opposite sides of the hub,

so as to admit the spokes *l* alternately from the right and left sides of the hub, as shown in Figs. 1 and 2. After the spokes *l* have been forced home they are secured by keys *m'*, fitting into the spoke-entrances or radial cuts formed in the hub-flanges, and the keys *m'* are in turn secured from endwise displacement by means of metallic bands or annular plates *o*, fastened to the hub-flanges *m* and keys *m'* by bolts *p*, as shown in Figs. 1 and 2. These bolts *p* also enter the spokes, and thereby secure them in place. On the inner or lower end of each key *m'* is a laterally-projecting toe, *n'*, and when the keys are put in place they are pushed down until these toes *n'* enter recesses formed in the body of the hub. The bands *o* fit tightly over these toes *n'*, as shown in Fig. 1, and so prevent the keys from working loose.

The hub B is hollowed out at *q*, so as to make it lighter, and also to receive packing or lubricants. If desired, the spindle between the steel bands *a* and *c* may be surrounded by an annular packing saturated with carriage-grease, so as to secure a perfect self-lubrication.

It will be observed that the spokes *l* are of the same diameter from the bottom of their sockets and a little beyond the upper ends of the same, so that they can be taken out and lengthened by putting a piece of metal or hard wood in the bottom of the socket, or the spokes can be shortened by sawing them off and reinserting them in place. Both ends of the spokes should be dipped into thick white-lead paint before being put into place in the hub and rim.

The fellies *a'*, Fig. 5, are not fastened together by dowel-pins, but by means of a band or ferrule, *b'*, inclosing the adjoining ends of the fellies. On the back of the ferrule *b'* is a knob or swell, *d*, that fits into a groove on the inside of the tire *c'*, to serve as a bolt or key to secure the fellies to the tire. At one joint in the rim, as at *e'*, are two ferrules, *f f'*, one on the adjoining ends of the two fellies. The opposing faces of these ferrules *f f'* are of metal, preferably corrugated or furrowed to afford a firm bearing for a hard wooden wedge, *e'*, and prevent its working back. These opposing faces of the ferrules *f f'* approach each other at a slight angle, to fit the wedge closely, and

are so made as to receive the wedge from the side of the wheel. The purpose of the wedge is to tighten the rim in the tire.

These ferrules *ff'* have no swells or knobs, but rest on malleable-iron slips *k'* long enough to afford a bearing for both the ferrules. On the back of this iron slip *k'* is a knob or swell to enter the groove in the tire. After the wedge *e'* has been driven in and smoothed off, the malleable-iron slip *k'* may be pressed up around the felly; also, smaller malleable-iron slips, *g'*, enter between the felly and the tire opposite the outer ends of the spokes. These slips *g'* have knobs or swells *h'*, to enter grooves on the inside of the tire, and the ends of these slips *g'* are pressed against the side of the felly, as shown at *v* in Fig. 5.

The tire *c'* is not held on by nails or bolts, but by means of the above-described knobs or swells entering grooves in its inner side.

It is apparent that in a wheel of this construction the hub will run evenly on the axle-spindle without liability of working either tight or loose, while the arrangement of the spokes and their fastening devices is such that they can be readily removed, replaced, and tightened with great ease and accuracy without removing or cutting the tire.

What I claim as my invention is—

1. In a vehicle-wheel, the combination, with the axle-spindle *A* and hub *B*, of the metal bands *a a* on opposite ends of said spindle, the keys *c*, for securing the bands to the spindle, and the metal boxes *k k*, inclosing said bands and secured within the hub, substantially as described.

2. In a vehicle-wheel, the combination, with the hub *B*, having flanges *m m*, provided with radial cuts or openings alternating on opposite

sides of the hub, and the spokes *l l*, inserted into their sockets alternately from opposite sides, of the keys *m' m'* and the bands *o o*, secured to said flanges and keys, substantially as described.

3. In a vehicle-wheel, the combination, with the hub *B*, having radially-cut flanges *m m* and the spokes *l l*, placed into their sockets alternately from opposite sides, of the keys *m' m'*, having toes *n' n'* set in recesses in the hub, and the bands *o o*, secured to said flanges and keys and resting over the toes *n'*, substantially as described.

4. In a vehicle-wheel, the combination, with the felly *a'* and tire *c'*, of the ferrules *ff'*, placed on the adjoining ends of the felly, the tightening-wedge *e'*, inserted between said ferrules, and the metal slip *k'*, inserted between the ferrules and tire, and having a knob or swell engaging a groove in the inner side of the tire, substantially as described.

5. In a vehicle-wheel, the combination, with the felly and tire, of a connecting-ferrule embracing the adjoining ends of the felly, and having a knob or swell engaging a groove in the inner side of the tire, substantially as described.

6. In a vehicle-wheel, the combination, with the felly and tire, of a metal slip inserted between the felly and tire opposite the outer end of the spoke, and having a knob or swell engaged in a groove in the inner side of the tire, the ends of said slip being turned down and pressed against the sides of the felly, substantially as described.

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Witnesses:

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