(No Model.)

R. McLEAN.

VEHICLE WHEEL.

No. 442,079. Patented Dec. 2, 1890.

Fig. 1.

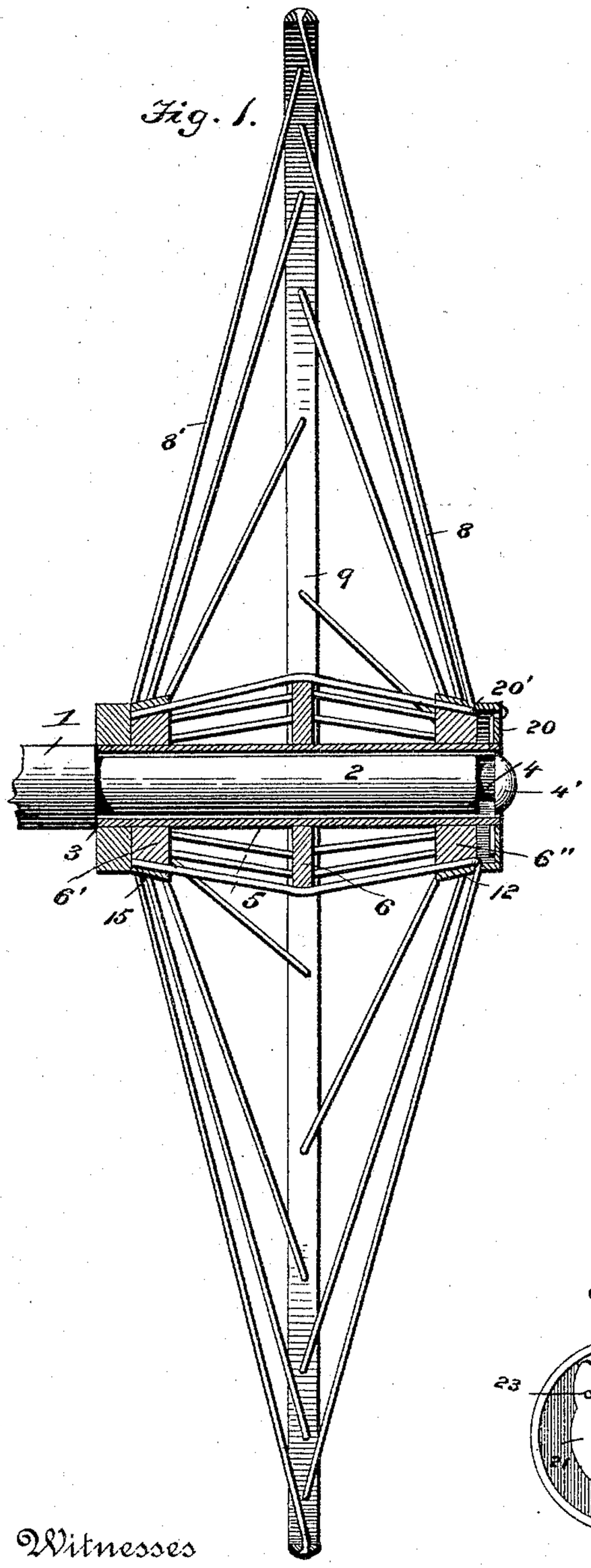


Fig. 2.

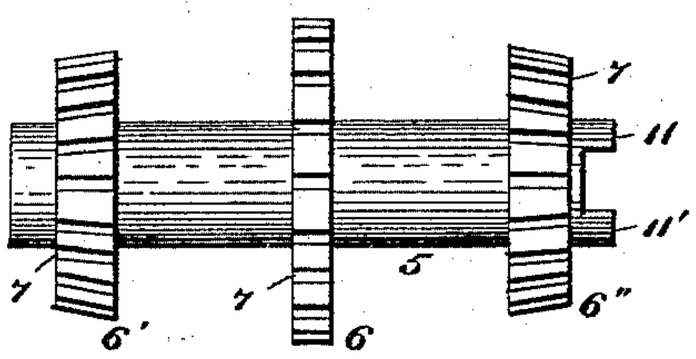


Fig. 3.

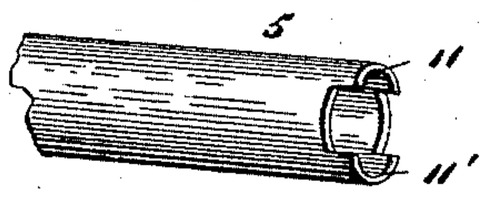


Fig. 4.

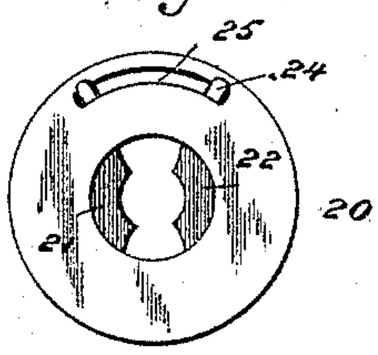
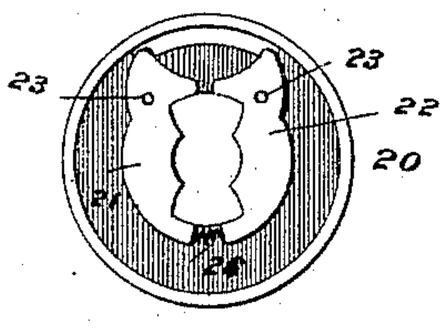


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT McLEAN, OF BELVIDERE, ILLINOIS.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 442,079, dated December 2, 1890.

Application filed May 27, 1890. Serial No. 353,302. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MCLEAN, a citizen of the United States of America, residing at Belvidere, in the county of Boone and State of Illinois, have invented certain new and useful Improvements in Metallic Vehicle-Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a metallic vehicle-wheel; and, among other things, my invention has for its object to obviate the casting of the sockets or holes for the metallic spokes, as it has been found that such holes or sockets are surrounded by hard metal edges, which are liable to cut the spoke; secondly, to secure the proper full shape to the wheel with as little weight as is consistent with the maximum strength; thirdly, to obviate gripping the spoke between two castings and to distribute the strain equally through the length of the spoke, whereby greater elasticity to the wheel is secured, and it is caused to run quietly and with more ease; fourthly, to obviate the use of fastening-nuts, which are constantly being lost, and subject the occupant to inconvenience and expense, and, finally, to lock the wheel to the axle in such a manner that it can turn freely thereon and at the same time be easily removed and replaced.

With these ends in view my invention consists in the combinations of devices and peculiar construction and arrangement of parts, as will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a vertical sectional view through a metallic wheel embodying my improvements, the section being taken in the direction of the length of the axle. Fig. 2 is a detail view of the hub detached from the axle. Fig. 3 is a detail view of the thimble. Figs. 4 and 5 are detail views of the clutch-box.

Like numerals of reference denote corresponding parts in all the figures of the drawings, referring to which—

1 designates the axle, which is slightly reduced to form the spindle 2, separated by the annular shoulder or ledge 3, and at its outer end the spindle is provided with an annular groove or keyway 4, into which the jaws of the clutch-box are fitted in order to connect the hub to the axle in such a manner that the wheel can freely rotate on the axle and at the same time be easily removed therefrom and replaced thereon, the outer extremity of the axle-spindle being preferably provided with an enlarged round head at 4′, which protrudes beyond the annular groove or keyway 4.

5 designates the thimble of the hub, which is fitted tightly or snugly over the axle-spindle and a portion of the axle, so as to be free to turn or rotate thereon, and said thimble has a series of three or more annular seats formed at suitable intervals thereon, as at 6 6′ 6″, the seats 6′ 6″ being at the ends of the thimble or hub, and the seat 6 being situated at a point between the outer seats and at the middle of the thimble, each seat having a series of grooves 7 formed therein parallel with the axle and spindle to receive the metallic spokes 8 8′.

9 designates the felly of the wheel, and the spokes 8 8′ extend from the felly and run alternately into the hub from opposite sides thereof. Thus the spokes 8 extend from the felly to the right-hand seat 6″ on the thimble, are then bent at right angles and extend across the seats 6 6′ and rest in the seats therein, while the alternate spokes 8′ extend from the felly to the left-hand seat 6′, are bent in a similar manner and extend across the seats 6 6″ and rest in the grooves therein, as clearly shown in Fig. 1. The outer end of the thimble is left open, and it is recessed transversely, so as to provide two protruding portions 11 11′, which are adapted to be expanded or forced radially into the clutch-box, so as to rigidly secure the clutch-box and the thimble of the hub together in order to insure the rotation of said parts together upon the axle-spindle.

The flange or seat 6″ at the right-hand or inner end of the hub, and the spokes fitted in the grooves in said seat, are held in place and protected by a casing 12, which fits snugly over and around said parts, is suitably secured in place, and has openings which permit the spokes to pass into and emerge from the casing, as shown.

15 designates the inner casing for the oppo-

site end of the hub, which embraces the seat 6′ on the inner side thereof, and is perforated for the passage therethrough of the spokes.

On the opposite side of the seat 6′ of the hub is arranged the clutch-box 20, which has a central opening provided with radial recesses 20′, which receives the bifurcated end of the thimble, and when the latter is expanded or forced radially the expanded portions enter the radial recesses in order to couple the clutch-box firmly and securely to the thimble and hub. This clutch-box is arranged close against the seat 6″, the end of the hub, and the spokes, so as to partially inclose said parts, and within the casing of the clutch-box is arranged the jaws 21 22, which are normally closed together by a suitable contrivance and fit in the annular groove or keyway in the end of the axle-spindle in order to connect the hub to the axle in such a manner as to permit the hub and wheel to rotate freely on the axle and at the same time permit its ready removal and replacement without unfastening nuts and other contrivances which are liable to become lost. The jaws 21 22 are each formed with a transverse perforation that receives the pintle or stud 23 integral with the casing of the clutch, and which serves as the pivot for said jaw, and each jaw is further provided with an outwardly-projecting thumb-piece 24, which passes through a radial slot 25, cut in the outer wall of the casing of the clutch, so as to permit the jaws to be readily moved on their pivots and thrown out of engagement with the keyway in the axle-spindle for the purpose of removing the wheel. The jaws are normally forced or closed together by means of a spring 26, or any equivalent thereof, and said jaws are preferably recessed on their opposing edges, as shown, to fit snugly in the keyway of the axle-spindle.

The operation and advantages of my invention will be readily understood and appreciated by those skilled in the art to which it relates from the foregoing description, taken in connection with the drawings.

Changes in the form and proportion of parts and details of construction can be made without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications as fairly fall within the scope of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a metallic wheel, the combination of an axle, the thimble having the grooved seats, the spokes bent and fitted in the grooves of the seats, and a clutch rigid with the thimble and engaging the axle, for the purpose described, substantially as set forth.

2. In a metallic wheel, the combination of an axle, a thimble fitted thereon, the spokes, and the clutch-box having the end of the thimble expanded into the same and engaging the axle, substantially as described.

3. The combination of an axle having the annular keyway, a hub, and a clutch rigid with the hub and having the movable jaw or jaws which fit in the keyway of the axle, substantially as described, for the purpose set forth.

4. In a metallic wheel, the combination of an axle having the annular keyway or groove, the thimble fitted on the axle, the spokes fitted in seats on the thimble, and the slotted clutch-box rigid with the thimble and having the spring-pressed jaws which normally fit in the keyway and have thumb-pieces that protrude through the slot in the casing of the clutch-box, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT McLEAN.

Witnesses:
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