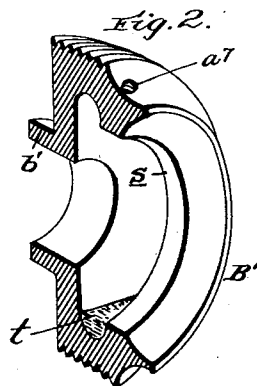
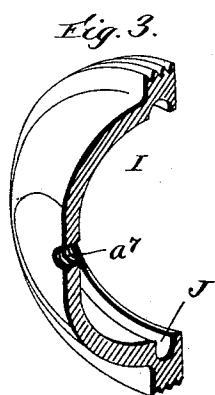
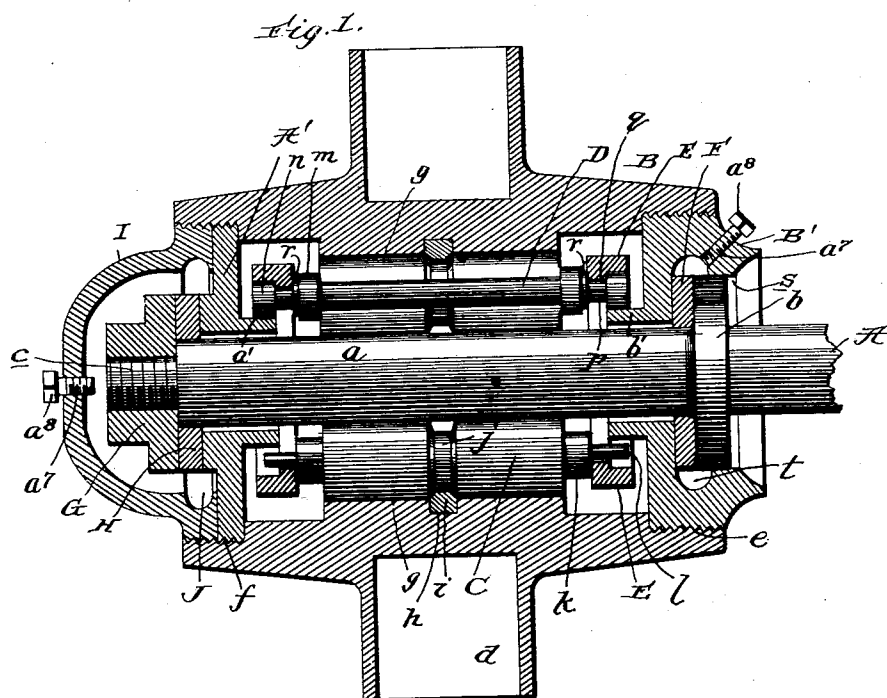


(No Model.)

J. D. MATTISON.
WAGON WHEEL HUB.

No. 587,841.

Patented Aug. 10, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES D. MATTISON, OF NEW YORK, N. Y.

WAGON-WHEEL HUB.

SPECIFICATION forming part of Letters Patent No. 587,841, dated August 10, 1897.

Application filed June 7, 1897. Serial No. 639,714. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. MATTISON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Wagon-Wheel Hubs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in hubs for wagon and other wheels; and its novelty and many advantages will be fully understood from the following description and claims when taken in conjunction with the annexed drawings, in which—

Figure 1 is a diametrical sectional view of my improved hub in position upon an axle-spindle. Fig. 2 is a perspective sectional view of the annular oil-receptacle, and Fig. 3 is a similar view of the cap.

Referring by letter to the said drawings, A indicates an axle having a spindle *a* with the usual collar *b* at its inner end and the threads *c* at its outer end, and B indicates the body of my improved hub, which is formed in one piece of steel or other suitable metal. This body B is provided with the usual radially-disposed spoke-sockets *d*, and it has the interior threads *e f* at its inner and outer ends and also has its interior reduced in diameter at its middle, so as to afford the interior bearing-surface *g*, which is designed to serve the purpose of a housing, the proportion being much larger than illustrated. The said bearing-surface or housing *g* is provided at its middle with the groove *h*, and in said groove is arranged a ring *i*, which may be split, if desired, and is designed to serve a purpose presently described.

A' indicates an exteriorly-threaded ring, which is arranged in the threaded end *f* of the hub-body B and loosely surrounds the axle-spindle and is provided with the inwardly-directed annular flange *a'*. B' indicates an annular oil-receptacle, which is exteriorly threaded to engage the threaded end *e* of the body B and is provided with the inwardly-extending annular flange *b'*, and C indicates main bearing-rollers, which have peripheral grooves *j* at their middle receiving the ring *i*, whereby they are held against

endwise movement. The said main rollers C are interposed between and bear against the bearing-surface or housing *g* and the axle-spindle *a*, and they are provided adjacent to their ends with reduced portions *k* and the bosses *l*, the purposes of which will be presently described.

Intermediate of the main bearing-rollers C are arranged the rollers D, the purpose of which is to hold the rollers C the proper distance apart and to further assist said rollers C in reducing the friction to a minimum. These intermediate rollers D are small in diameter for the greater part of their length, and they are provided adjacent to their ends with the enlarged portions *m*, which bear against the reduced portions *k* of the rollers C, and are further provided with the end portions *n*, which bear against the flanges *a' b'* of the ring A' and oil-receptacle B', and with the grooves *p* to receive the inwardly-extending flanges *q* of the movable or revoluble rings E and the reduced portions *r*, which bear against the inner sides of the rings, as illustrated. The said rings E serve to hold the intermediate rollers D in their proper relative positions, and through the medium of said rollers D said rings E also serve to hold the main bearing-rollers C in their proper relative positions. It will be further seen that while the bosses *l* of the rollers C do not in operation engage the rings E or the flanges *a' b'*, yet they extend to points between the rings and the flanges *a' b'* and consequently are enabled to serve the important function of preventing the rollers C from dropping out of place when the hub is removed from the axle-spindle.

The annular oil-receptacle B' is provided with a flange *s*, which snugly receives the collar *b* of the axle-spindle, so as to assist in excluding dust, and it also has the annular oil-chamber *t*, into which lubricant is introduced in a manner presently described. In this oil-chamber *t* is arranged a washer F of phosphor-bronze or other suitable material which snugly fits the axle-spindle and is interposed between the collar *b* and the inner wall of the receptacle B', as shown. The bearing between this washer F of phosphor-bronze and the collar *b* is lubricated, and in consequence the friction between the hub and the spindle

incident to end thrust is reduced to a minimum.

G indicates a nut which is mounted on the threaded end *c* of the axle-spindle and serves to hold the hub thereon. H indicates a washer of phosphor-bronze or other suitable material interposed between the nut G and ring A', and I indicates a cap which is exteriorly threaded to engage the threaded end *f* of the hub-body B and serves to close the outer end of the hub, so as to assist in excluding dust from the interior thereof. This cap I has the interior annular recess J adjacent to its inner edge, as shown, which recess holds the lubricant and applies the same to the contiguous surfaces of the washer H, ring A', and nut G, so as to assist in reducing the friction incident to end thrust to a minimum. The cap I further serves to prevent lubricant from working out between the cap I and the body and consequently obviates the collection of oil on the outside of the hub, and by keeping the exterior of the hub dry reduces the collection of dust thereon to a minimum, which is an important advantage.

Lubricant is introduced to the oil-receptacle B' and cap I through apertures *a'*, normally closed by screws *a''*, and it is applied to the washers F H and the parts against which they bear only and does not find its way to the roller-bearing, such bearing requiring no lubrication, which is an important advantage.

I prefer to form the washers F H of phosphor-bronze, but do not desire to be understood as confining myself to the same, as they may in some cases be formed of other hard metal.

It will be observed from the foregoing that my improved hub may be made of the same size and shape as the hubs of ordinary wagon-wheels and may as quickly and easily be secured upon and removed from an axle-spindle. It will also be observed that by reason of the construction of the hub and the manner in which the end bearing parts are lubricated the friction incident to the turning of the wheel will be reduced to a minimum.

Having thus described my invention, what I claim is—

1. The hub described, comprising the body having the interior threads at its opposite ends and the interior bearing-surface at an intermediate point of its length, the annular, threaded oil-receptacle arranged in the inner end of the body and having the annular oil-chamber and also having the inwardly-directed annular flange, the hard-metal washer arranged in the oil-chamber of the oil-receptacle, the threaded ring arranged in the outer end of the body and having the inwardly-di-

rected annular flange, the ring arranged in a groove in the interior bearing-surface of the body, main bearing-rollers having peripheral grooves receiving said ring and also having the reduced portions adjacent to their ends and the bosses at their ends, rollers arranged intermediate of the main bearing-rollers and having the reduced intermediate portions and the enlarged portions adjacent to their ends, the latter engaging the reduced portions adjacent to the ends of the main bearing-rollers, and also having end portions bearing on the inwardly-directed flanges of the oil-receptacle and the ring, movable rings surrounding and engaging the intermediate rollers and also surrounding the bosses of the main bearing-rollers, and the threaded cap arranged in the outer end of the body and having the interior recess or channel for the reception of oil, substantially as specified.

2. The hub described, comprising the body having the interior threads at its inner end, the annular threaded oil-receptacle arranged in the inner end of the body and having the annular oil-chamber, the hard-metal washer arranged in the oil-chamber of the oil-receptacle, and antifriction-rollers carried by the body and adapted to bear on an axle-spindle, substantially as specified.

3. The combination of an axle-spindle having a collar at its inner end and threads at its outer end, and a hub comprising a body having the interior threads at its ends, the annular, threaded oil-receptacle arranged in the inner end of the body and receiving the collar of the spindle and having the annular oil-chamber and the inwardly-directed annular flange, the threaded ring arranged in the outer end of the body and having the inwardly-directed annular flange, main bearing-rollers interposed between the body and the axle-spindle, intermediate rollers interposed between the main bearing-rollers and bearing on the flanges of the oil-receptacle and ring, the threaded cap arranged in the outer end of the body and having the oil-receiving channel, the nut arranged within said cap and mounted on the threaded end of the spindle, the hard-metal washer interposed between the collar on the axle-spindle and the inner wall of the oil-receptacle, and the hard-metal washer interposed between the nut and the threaded ring, substantially as specified.

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

JAMES D. MATTISON.

Witnesses:

WILLIAM B. TULLIS,
MAT. A. BURKE.