J. A. MACKINNON.

Vehicle Wheel-Hubs.

No. 211,858. Patented Feb. 4, 1879.

Fig. 1.

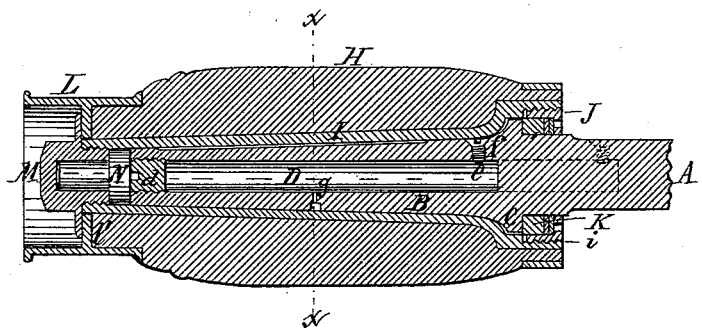


Fig. 2

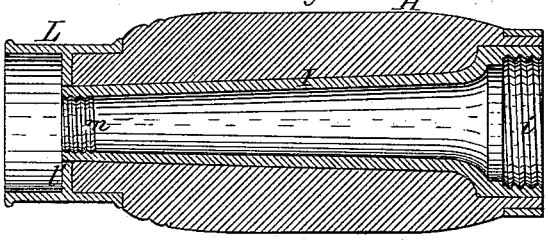


Fig. 4.

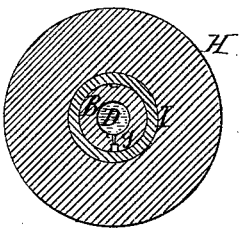


Fig. 8.

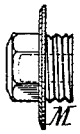


Fig. 9.

Fig. 7.

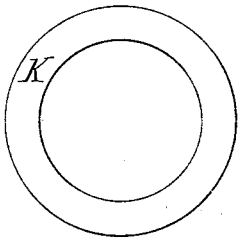


Fig. 3.

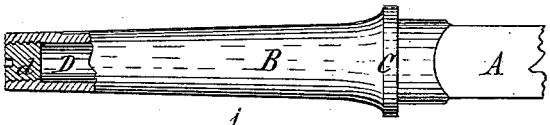


Fig. 5.

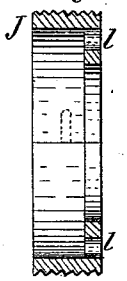
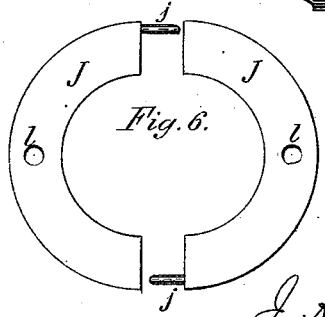


Fig. 6.



Witnesses

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JOHN A. MACKINNON, OF CALEDONIA, NEW YORK.

IMPROVEMENT IN VEHICLE-WHEEL HUBS.

Specification forming part of Letters Patent No. **211,858**, dated February 4, 1879; application filed May 7, 1878.

To all whom it may concern:

Be it known that I, JOHN A. MACKINNON, of Caledonia, in the county of Livingston and State of New York, have invented a new and useful Improvement in Axle-Boxes for Vehicles, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to that class of vehicle-axle boxes in which the spindle upon which the box turns is made hollow, so as to form a reservoir for the lubricating material, thereby rendering the axle-box self-oiling.

My invention consists of the particular construction of the device so as to insure a uniform and proper supply of the lubricating material to the surfaces in frictional contact, and to prevent the escape of the oil and ingress of dust, while at the same time rendering the axle-box strong, durable, and neat and attractive in appearance, as will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved axle-box applied to the spindle. Fig. 2 is a longitudinal section of the axle-box detached. Fig. 3 is a detached view of the spindle. Fig. 4 is a cross-section in line *x x*, Fig. 1. Fig. 5 is a detached sectional view of the screw-collar. Fig. 6 is a rear elevation thereof, the two parts being separated. Fig. 7 is an elevation of the wooden washer. Fig. 8 is an elevation of the hollow screw. Fig. 9 is an elevation of the wooden follower.

Like letters of reference refer to like parts in each of the figures.

A represents the axle; B, the spindle, and C the collar, arranged between the axle and the spindle, and having a square shoulder adjacent to the axle, and a fillet connecting it with the spindle. D is the axial cavity, formed in the spindle by boring into the same from the end thereof, and made of a suitable length to form an oil-reservoir of the required size. The front end of the cavity D is closed hermetically by a plug, *d*, or in any other suitable manner. E is the opening through which the oil is supplied to the cavity D.

As shown in Fig. 1, the opening *e* is arranged so as to be covered by the axle-box; but, if preferred, the cavity D may be extended into the axle, and the opening *e* be arranged on the inner side of the collar, as shown in dotted lines in Fig. 1, to enable oil to be supplied without removing the wheel. The opening *e* is closed hermetically by a screw, *f*, the countersunk seat of which is preferably formed of soft metal, to enable an air-tight joint to be produced.

g represents the passage by which the oil is fed from the cavity D to the outside of the spindle. It is made in the form of very fine or hair opening, so that the oil is slowly fed from the air-tight reservoir D to the spindle by the capillary action of the opening *g*, which insures a sufficient and uniform lubrication of the parts.

H represents the hub of the wheel, and I the axle-box, secured therein and made to conform to the shape of the spindle. The rear end of the box I is made a trifle wider than the collar, so as not to bear against the circumference thereof.

i is an internal screw-thread formed in the inner end of the axle-box I, on the inner side of the collar; and J is a screw-collar or annular nut, engaging with the thread *i*; and surrounding the axle K is a wooden ring or washer, surrounding the axle and arranged between the screw-collar J and the collar C of the axle, against which it is held by the screw-collar J. The latter is preferably made in halves, provided with tenons or pins *j* and corresponding mortises or recesses, so that the screw-collar can be applied after the axle is welded, the pins and mortises serving to keep the two parts in their proper relative position; but, if preferred, the collar J may be made in one piece, and applied to the axle previous to welding the two parts thereof together. The screw-collar J is provided with two openings, *l*, in which the jaws of a suitable wrench can be inserted for applying and unscrewing it. When the wooden washer K has become so much worn that it cannot be tightened any longer by means of the screw-collar J, thin washers of paper, leather, or other suitable material may be interposed between the washer K and the collar J, as shown in Fig. 1.

From the foregoing it is evident that the

wheel is held on the spindle by means of the screw-collar J, on the inner side of the spindle, so that the wheel is readily removed by unscrewing the collar J without disturbing any of the other parts.

L is a metallic band or ferrule surrounding the outer end of the hub H, and preferably provided with an annular partition, *l'*, bearing against the outer face of the hub, and imparting a finished and ornamental appearance thereto. The band L is held in place on the hub by a hollow screw, M, engaging in a thread, *m*, cut into the outer end of the axle-box I.

N is a wooden follower, arranged between the end of the spindle B and the screw M. It is composed of a cylindrical head, fitting snugly in the outer portion of the axle-box I and against the end of the spindle B, and a smaller cylindrical shank, inserted in the bore of the hollow screw M, so that by adjusting the latter the follower N can be held in close contact with the end of the spindle. Both the follower N and the wooden washer K are preferably so constructed that the end of the grain of the wood bears against the contiguous metallic parts. The screw M performs the triple function of holding the follower N against the spindle, and securing the band L and the axle-box I to the hub, thereby dispensing with separate fastenings for that purpose.

In my improved axle-box the oil is prevented from escaping at either end of the spindle, and the dust and other impurities are effectually prevented from entering the box, thereby saving the oil and keeping the parts clean and in good running order, while at the same time the box is perfectly loose on the spindle, so as to run with the least possible amount of friction.

I claim as my invention—

1. The spindle B, provided with an air-tight cavity, D, forming an oil-reservoir, and having a capillary escape opening, *g*, which only permits the escape of the oil when the wheel is in motion, and without the use of a pin or other regulating device in the escape-opening, substantially as and for the purpose set forth.

2. The combination, with the axle-box I, provided with internal screw-thread *i*, of the screw-collar J, made in halves and provided with tenons *j* and corresponding mortises, substantially as and for the purpose set forth.

3. The combination, with the spindle B and box I, provided with internal screw-thread *m*, of the hollow screw M and follower N, substantially as and for the purpose set forth.

4. The combination, with the spindle B, provided with oil-reservoir D, of the box I, provided with internal screw-threads *i* and *m*, screw-collar J, washer K, hollow screw M, and follower N, substantially as and for the purpose set forth.

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