J. M. WHITING.

Vehicle-Hub.

No. 202,208. Patented April 9, 1878.

Fig. 1.

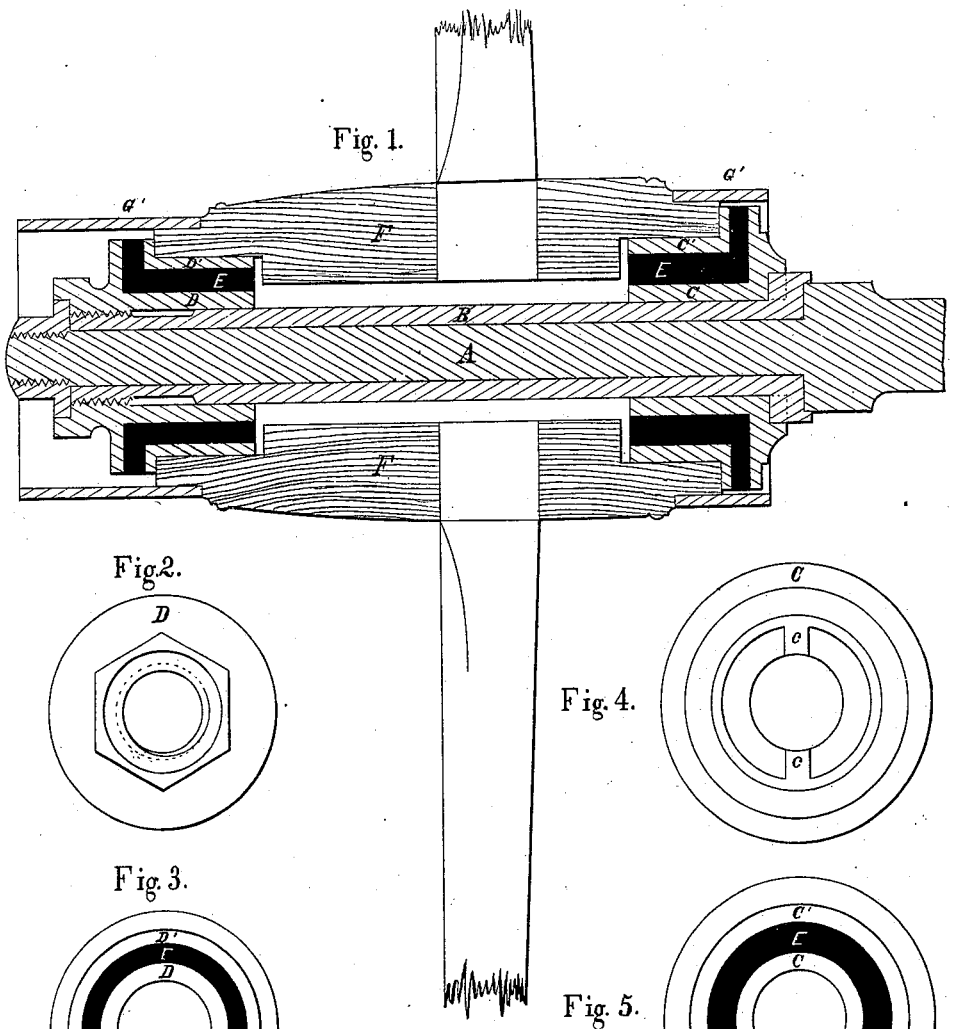


Fig. 2.

Fig. 3.

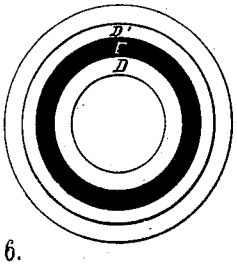


Fig. 4.

Fig. 5.

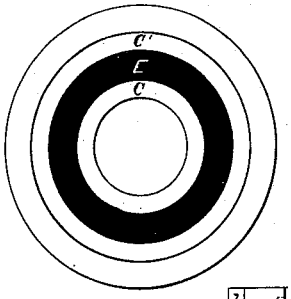


Fig. 6.

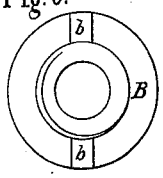
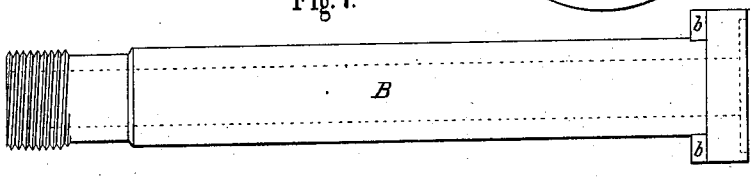


Fig. 7.



WITNESSES.

H. W. Hubbard.

J. Milledge Flagg

INVENTOR.

James M Whiting

UNITED STATES PATENT OFFICE.

JAMES M. WHITING, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO JULIUS CARROLL, OF SAME PLACE.

IMPROVEMENT IN VEHICLE-HUBS.

Specification forming part of Letters Patent No. **202,208**, dated April 9, 1878; application filed December 20, 1877.

To all whom it may concern:

Be it known that I, JAMES M. WHITING, of the city and county of Providence, and State of Rhode Island, have invented a new and valuable Improvement in Vehicle-Hubs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings represents my improved hub in longitudinal cross-section. Figs. 2, 3, 4, and 5 represent end views of the elastic bushings. Fig. 6 represents an end view of the axle-box, and Fig. 7 a side elevation of the same.

My invention relates to an improved construction of vehicle-hubs, whereby an elastic cushion is interposed to receive and lessen the jar and concussions to which they are necessarily subjected.

In the drawings, A is the axle-arm. B is the axle-box, provided at its inner end with an annular projecting flange, and with one or more lugs, *b*, fitted into corresponding recesses *c* in the sleeve C, to prevent it from turning upon the axle-box. C E C′ and D E D′ are what may be termed "elastic bushings," the construction and operation of which will be more fully described hereinafter.

F is the hub of the wheel, fitted to receive the spokes in the usual manner, and counterbored at each end to receive the elastic bushings with a close fit, and of such internal diameter as to leave a central annular space around the axle-box. The hub is provided with metallic bands G′ and G′, of the usual form.

The elastic bushings which comprise my invention are constructed with two flanged sleeves, as shown in Fig. 1, made of cast-iron or other suitable material, and interposed between them is an elastic substance of corresponding form. I prefer to make this elastic cushion of india-rubber, using the sleeves themselves as a mold, and vulcanizing the rubber after it has been filled in between them. I do not, however, limit myself to this method of construction.

The sleeve D is threaded internally at its outer end to fit a screw-thread cut upon the end of the axle-box, and the outside of the sleeve is squared at the end to receive a wrench.

In securing the hub and axle-box together, the bushing C E C′ is first driven tightly into its place, so that the hub will not turn upon it. The box is then passed through, and the bushing D E D′ is screwed up, so as to securely clamp the hub between the two bushings, the ends of the hub abutting against the flanges of the sleeves C′ and D′.

It will be readily seen that any strain transmitted from the axle-arm to the wheel must pass through the elastic sleeves E, the flanges on the sleeves being particularly calculated to receive the blows resulting from side motion.

A suitable space should be left at each extremity of the sleeve E, so as not to confine the rubber, and thus reduce its elasticity.

I do not claim, broadly, the use of an elastic cushion in a vehicle-hub, as I have already shown that feature in various Letters Patent previously granted to me; nor do I claim, broadly, the use of an elastic sleeve interposed between two metallic bushings. Such a device has been shown in patent granted to G. F. Wilson, November 24, 1868.

I have found in practice, however, that such an arrangement does not give a sufficient degree of stability to the wheel, and the object of my present invention is to overcome this defect, which I do by placing the vertical flange upon the elastic sleeve, thereby limiting the side movement of the wheel, so as to prevent any zigzag motion.

What I claim as new, and desire to secure by Letters Patent, is—

In a vehicle-hub, the elastic sleeve E, provided with an annular flange at right angles thereto, in combination with the rigid sleeves C and C′, provided with corresponding annular flanges, substantially as shown and described.

In testimony whereof I have hereunto set my hand and seal in the presence of two witnesses.

JAMES M. WHITING. [L. S.]

Witnesses:
JULIUS CARROLL,
JOEL BARDEN.