G. R. NEBINGER.

CAR-WHEELS AND AXLES.

No. 194,499. Patented Aug. 21, 1877.

Fig. 1.

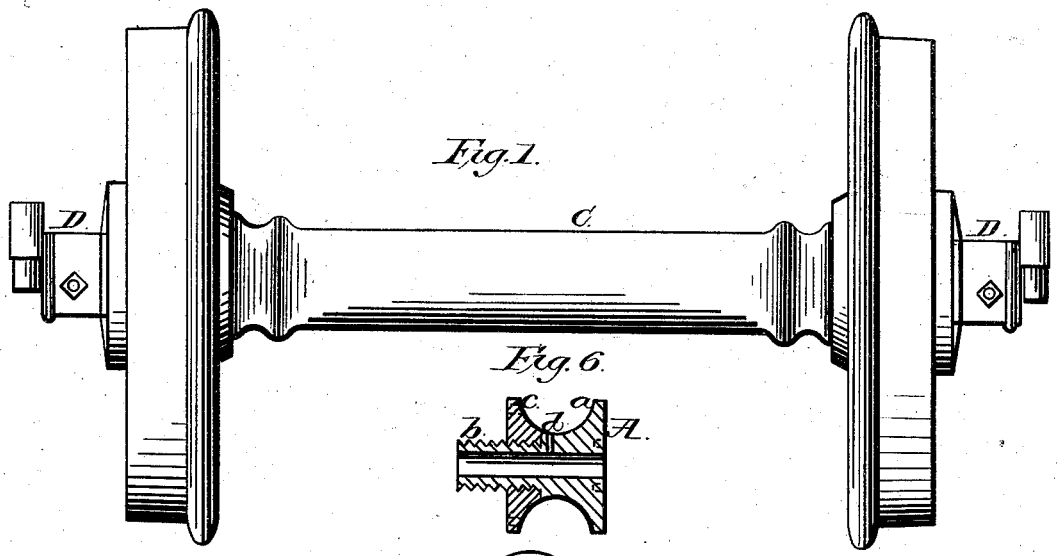


Fig. 6.

Fig. 7.

Fig. 2.

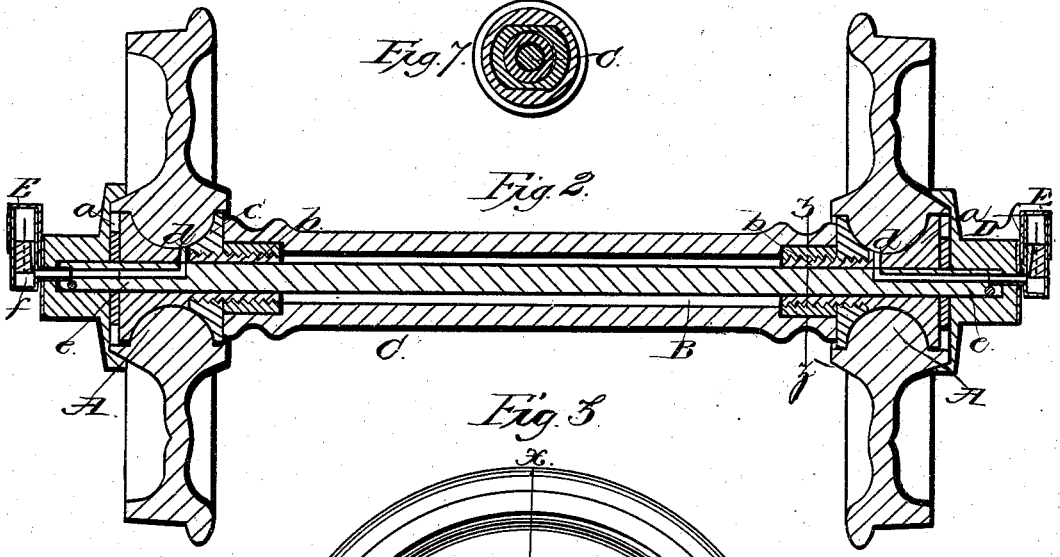


Fig. 3.

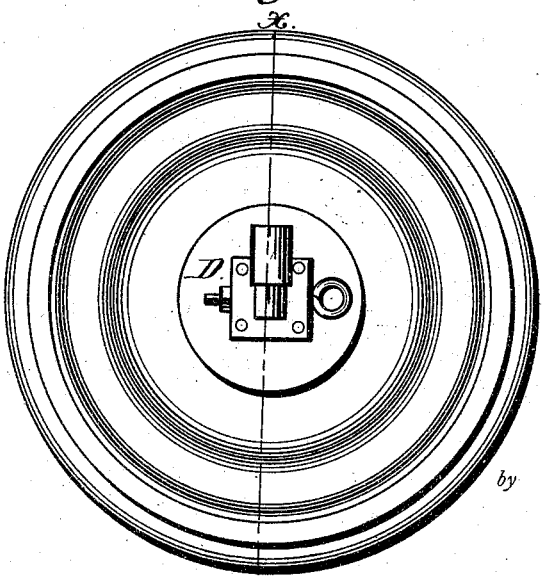


Fig. 4.

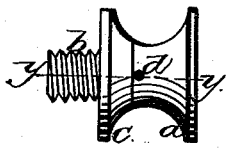
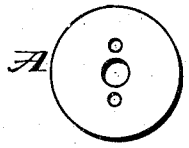


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE R. NEBINGER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CAR WHEELS AND AXLES.

Specification forming part of Letters Patent No. **194,499**, dated August 21, 1877; application filed December 11, 1876.

To all whom it may concern:

Be it known that I, GEORGE R. NEBINGER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Car-Wheels and Axles, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a face view of the wheels and axle embodying my invention. Fig. 2 is a central section thereof in line *x x*, Fig. 3. Fig. 3 is a side elevation thereof. Fig. 4 is a face view of a detached part. Fig. 5 is a side view thereof. Fig. 6 is a longitudinal section in line *y y*, Fig. 4. Fig. 7 is a transverse section in line *z z*, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of hollow journal-boxes having exterior faces of conical form on which the wheels are rotatingly fitted, and interior faces of cylindrical form which loosely encircle a non-rotary axle passing through a collar to which the journal-boxes are rigidly secured, whereby the wheels will be firmly and steadily supported, and they will move with ease in passing curves.

Referring to the drawings, A represents the journal-box, consisting of a conical part, *a*, formed with a shank, *b*, on which is fitted the conical part *c*, which comes in contact with the part *a*, so that the two parts form an exterior grooved face, as more readily shown in Figs. 4 and 6, and on which the wheel is supported, the central opening of the hub thereof being convex.

The journal-box is hollow, the interior face being of cylindrical form, and through the two boxes is passed a non-rotary axle, B, on which they are adapted to revolve.

The shank *b* of the part *a* of the box extends beyond the outer side of the part *c*, and the shanks of the two boxes are screwed or otherwise fastened to the ends of a collar or rotary axle, C, located between and connecting the two wheels and encircling the fixed axle B passed through it.

In each box A there is an opening, *d*, which extends from face to face thereof, and in the adjacent portion of each axle B there is a duct, *e*, which extends from the surface of the axle laterally to the end thereof.

D represents the pedestal-blocks, into which the ends of the axle B are fitted, and on which the car is supported in the usual manner, the pedestals and axle B being so connected that rotary motion will not be imparted to said axle.

To the pedestal-blocks are secured oil-chambers which have feed-openings communicating with the outer ends of the ducts *e* of the axle B, and in the chambers are regulating-plugs E, which have channels or flat portions as at *f*, so that when said flat portions or channels register with the feed-openings thereof, the oil will enter the ducts *e*, and thus lubricate the joints between the axle and journal-boxes, and, by means of the openings *d* of the journal-boxes, some oil will be drawn therethrough so as to lubricate the joints between the wheels and journal-boxes.

By properly rotating the plugs E the openings of the chambers leading to the ducts *e* will be closed, and the feed or flow of oil cut off.

In order to connect each wheel and journal-box, the part *a* is introduced into the central opening of the hub of the wheel of one side, and the part *c* screwed on the shank *b*, so that the convex wall of the central opening of the hub will be embraced by the concave or conical face of the journal-box. Then screw the shank *b* to the collar *c*, and proceed in a similar manner with the other wheel. Now pass the axle B through the journal-boxes and collar *c*, apply the pedestal-blocks, and connect said axle and blocks so that the former is prevented from rotation, and the parts are in operative position.

It will be seen that the wheels will be securely braced by the journal-boxes, and thus steadily supported.

When the cars are going straight forward the wheels and journal-boxes rotate as one on the fixed axle B, the collar *c* rotating with the wheels; but in passing on or over curvatures or bends of the roads, the flange of the outer wheel binds upon the rail and impinges upon the upper or outer side of the said outer wheel more strongly than it does upon the box of the

wheel on the inner rail, which has the effect of revolving the box in the hub of the inner wheel faster than the wheel itself revolves, while in effect the inner box is revolving around the rigid axle and the wheel on and around the outer side of the box, which features of double-revolution give to the box an inner and an outer bearing, or a box with two journal-bearings. The truck resting upon the pedestal-box on the top of the rigid axle presses the axle upon the under side of the inner bearing of the journal-box, the said inner bearing of the journal-box having less surface than the outer side of the box, and being further from the tread of the wheel, it revolves around the axle, carrying the wheel with it, until it strikes a curve in the road, when the outer wheel impinging upon the rail presses harder upon the outer box than the inner wheel, which pressure carries the collar with the outer wheel, and causes it to turn or revolve the box inside the inner wheel as much faster than the wheel revolves as is the distance in the curvature of the outer and inner rail of the track.

It will also be seen that the collar C strengthens the axles B and the connection of the wheels.

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

1. The hollow journal-box A, consisting of the sectional parts *a c*, exteriorly conical or grooved, in combination with the wheel having the inner wall of its hub of convex form or tongued, substantially as and for the purpose set forth.

2. The two parts *a c*, connected by a shank, *b*, in combination with the encircling axle C, secured to an extension of said shank, substantially as and for the purpose set forth.

3. The wheels with convex hubs, the sectional concave journal-boxes, inclosed axle B, and inclosing axle C, combined and operating substantially as and for the purpose set forth.

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