

W. A. LEWIS.

Improvement in Wheels for Vehicles.

No. 129,041.

Patented July 16, 1872.

Fig. 1.

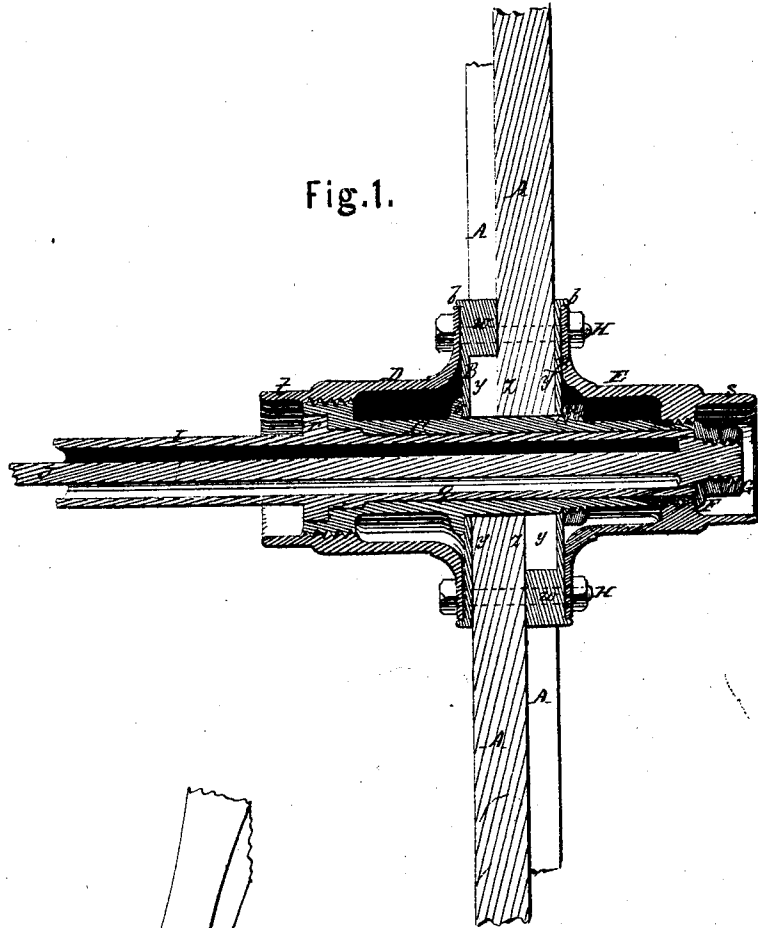
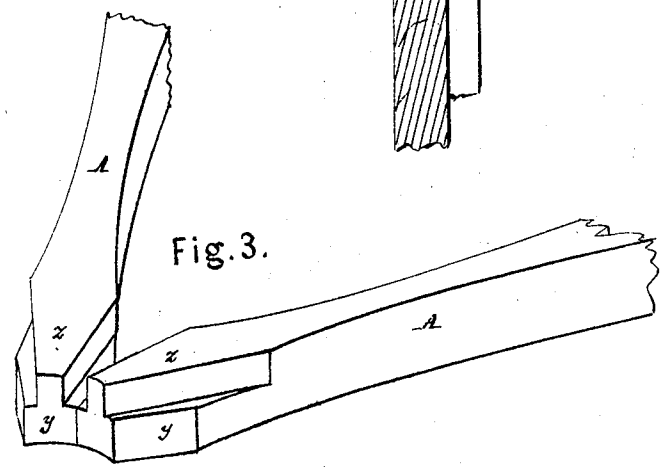


Fig. 3.



Witnesses.

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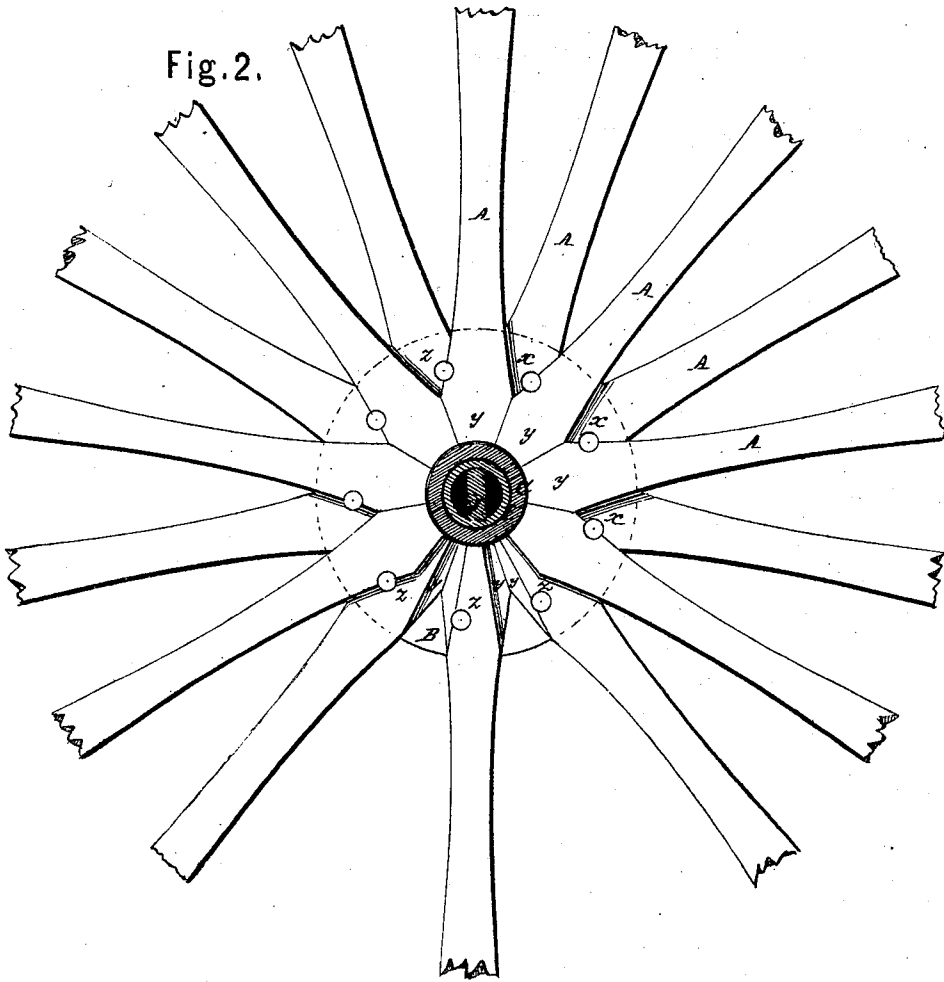
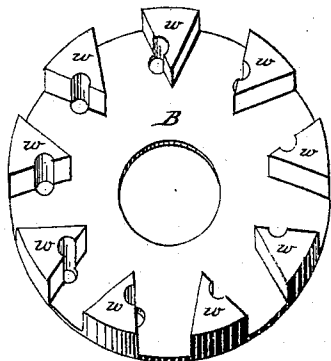


Fig. 4.



Witnesses.
Geo. L. Ewin
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UNITED STATES PATENT OFFICE.

WILLIAM A. LEWIS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN WHEELS FOR VEHICLES.

Specification forming part of Letters Patent No. 129,041, dated July 16, 1872.

Specification describing an Improvement in Carriage Wheels and Axles, invented by WILLIAM ARNOLD LEWIS, of Chicago, in the county of Cook and State of Illinois.

The first part of this invention relates to wooden spokes for double-faced "sector-wheels;" and consists in a peculiar construction of the inner or adjoining ends of the same for forming the solid center or hub section. The second part of the invention relates to metallic hubs; and consists in a peculiar construction and combination of parts in a hub to be secured at its outer end. The third part of the invention relates to hollow metallic axles; and consists in the combination, with a tube of uniform diameter or depth, of a vertical longitudinal flat bar to increase the strength. This axle is made with cylindrical arms or spindles, (not tapered,) and the ends of the supporting-bar may receive the screw-threads for the hub-attaching nuts.

In the accompanying drawing, Figure 1 is a horizontal longitudinal section of a wheel and axle illustrating the invention. Fig. 2 is a transverse section of the hub and axle, and a face view of the spokes with two removed. Fig. 3 is a perspective view of the adjoining ends of two spokes of one set. Fig. 4 is a perspective view of one of the supporting-disks of the hub.

The wooden spokes A are designed to form a double-face sector-wheel of superior strength. Outside the hub-line they may have any approved shape. Within said line each spoke is formed with two "sectors," $z y$, to constitute inner and outer hub-sections, the inner being of half the width of the outer, so that those of the respective sets may interlock and the several spokes break joints, as set forth in my previous patent, No. 122,471, dated January 2, 1872. The relative depth of the sectors determines the convexity of the respective faces, and is variable. In the present invention the outer sectors y are made relatively short, the spokes tapering outward therefrom, for the purpose, primarily, of economizing material without impairing the strength of the center. Interdental spaces x are thus formed in the faces of the respective sets within the hub-line, which spaces are utilized for the reception of radial wedges w formed on supporting-disks or face-

plates B. These furnish extended support and also lock the spokes together against radial separation by reason of the outwardly-tapering shape of the spokes between the same. Marginal flanges or ribs b may serve to center or support the disks B in the hub. The metallic hub proper is composed of a box or sleeve, C, with circumferential flange v and screw-nut u to clamp the inner ends of the spokes A, through their supporting-disks B and shells D E, formed, respectively, with a dust-guard, t , and a terminal flange, s , and screwed on the respective ends of said sleeve C, as represented in Fig. 1; and the hub thus formed abuts against the axle-flange r , and is attached, by means of nut F and jam-nut G, on the projecting end of the axle-arm or spindle. Clamping-bolts H, or their equivalent, unite the lips of the hub-shells D E, through the spokes A and disks B, as usual. The new hollow metallic axle is composed of a tube, I, and a center bar, J. The former is made of uniform depth and preferably with parallel sides throughout, its arms or spindles q being cylindrical instead of tapering. The longitudinal center bar J is flat and arranged in upright position to support vertical strain. It is driven into the tube I, and may be held upright and in place by two or more rivets or bolts. The screw-threads for the hub-attaching nuts F G may be cut on the projecting ends p of this bar, as in the illustration; or with other form of hub the bar may be of uniform shape and terminate at the ends of the arms.

What is claimed as new herein is—

1. The spokes A for double-faced carriage-wheels constructed with inner and outer sectors or hub-sections $z y$, the latter relatively short, as shown and described, for the purpose set forth.

2. The supporting-disks B with projections w to occupy interdental spaces x in the faces of the united spokes, substantially as shown and described.

3. The combination of spokes A, tapering outward from within the hub-line and supporting disk B, with wedge-shaped projections w occupying the interdental spaces x thus formed, substantially as and for the purposes herein set forth.

4. The hollow metallic axle composed of the

tube I of uniform depth and the upright longitudinal bar J driven within the same, substantially as shown and described.

5. The center bar J formed with screw-threaded projecting ends *p*, as herein shown and described.

To the above specification of my improve-

ment in wheels and axles for vehicles I have hereunto set my hand this 14th day of February, 1872.

WM. A. LEWIS.

Witnesses:

OCTAVIUS KNIGHT,
WALTER ALLEN.