H. FREDERICK.

Axles for Vehicles.

No. 145,165. Patented Dec. 2, 1873.

Fig. 1.

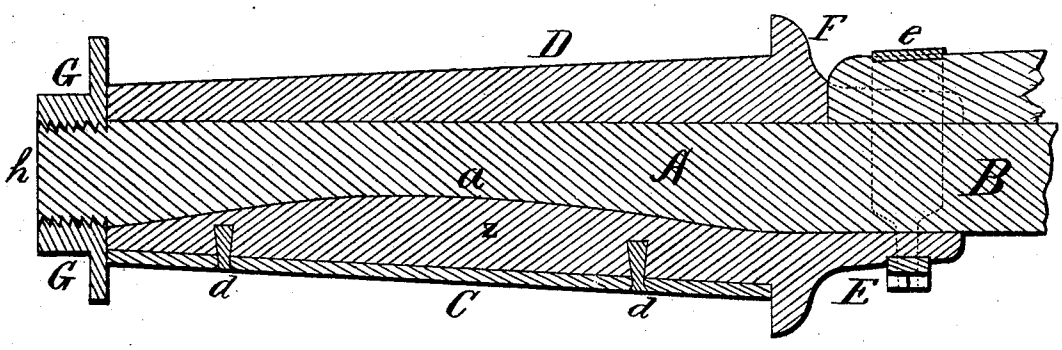
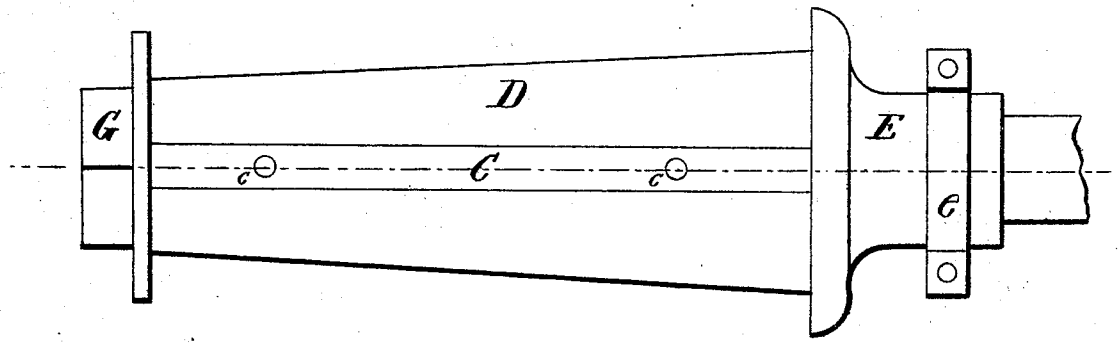


Fig. 2.



Witnesses.
E. A. Bates.
George E. Upham.

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UNITED STATES PATENT OFFICE.

HENRY FREDERICK, OF BUTLER, PENNSYLVANIA.

IMPROVEMENT IN AXLES FOR VEHICLES.

Specification forming part of Letters Patent No. **145,165**, dated December 2, 1873; application filed July 12, 1873.

To all whom it may concern:

Be it known that I, HENRY FREDERICK, of Butler, in the county of Butler and State of Pennsylvania, have invented a new and valuable Improvement in Wagon Axles and Skeins; 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 maing a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a sectional view of my wagon-axle. Fig. 2 is an under view of the same.

This invention has relation to axles and skeins; and it consists in casting within the metal of the skein the wrought-iron spindle-core, recessed or forged thinner on its under side, and in the lower or under side of the same casting a steel rib, whereby the wear of the skein is diminished. The object of the present invention is to strengthen the connection between the skein and axle-core, and to render the skein more durable in respect of wear.

In the accompanying drawings, the letter A designates the end or spindle-core of the wrought-iron axle B. This spindle-core is forged thinner or recessed at *a* on the under side. C indicates a strip of steel having rivet-holes at *c c*. The skein D is of cast metal. This is cast around the spindle end A, which is placed in the mold. In the same manner the strip C of steel is laid in the mold, and the metal of the skein is cast about it, and about the inner ends of the rivets *d*, thus securing it solidly and firmly in the under side of the skein. E indicates an extension or flange at the rear end of the skein, behind its collar F, designed to support the wrought-iron axle at this point, where it is usually secured to the wooden upper axle by a suitable clip, *e*. G indicates the nut, which engages with a thread formed on the projecting end *h* of the spindle-core, which extends beyond the casting D. In this manner the skein is firmly secured to the axle-core.

All the advantage of the wrought-iron spindle in preventing fracture is obtained, with the harder wearing-surface of the cast metal. The superior rigidity of the cast-metal skein enables it to keep its form against accident, and the resistance to the wear of the wheel is still further increased by the inlaid steel strip on the under side of the skein, which serves to sustain the main portion of the pressure and consequent friction in the rotation of the wheel-hub.

The diminishing of the cast metal at the seat of the steel strip is compensated by the fullness *z* which fills the recess *a* in the under side of the spindle-core. This formation, while strengthening and bracing the parts, also prevents both longitudinal and rotary movement of the cast metal on the core.

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

The recessed wrought spindle A, in combination with the cast sleeve D and steel plate C, as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HENRY FREDERICK.

Witnesses:
J. HENRY TRAUTMAN,
ADAM TROUTMAN.