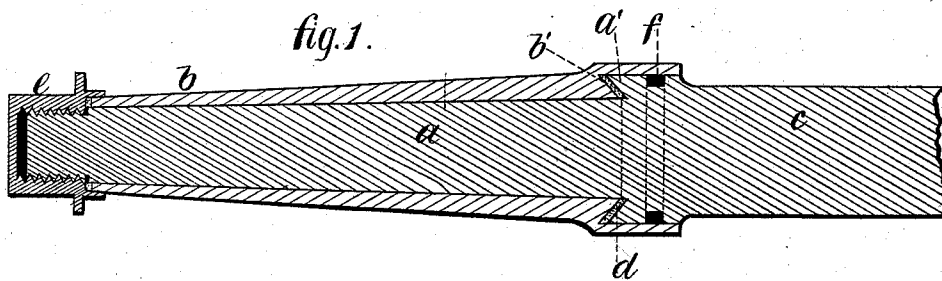
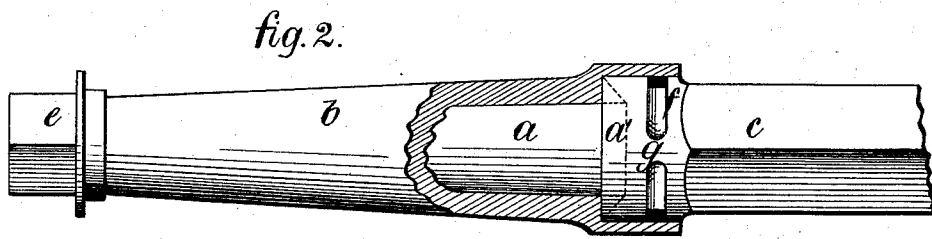


E. D. IVES.
Vehicle-Axle.

No. 216,276.

Patented June 10, 1879.



Witnesses:

R. J. Grayford,
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Inventor:

E. D. Ives

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Atty

UNITED STATES PATENT OFFICE.

ELLSWORTH D. IVES, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN VEHICLE-AXLES.

Specification forming part of Letters Patent No. 216,276, dated June 10, 1879; application filed April 3, 1879.

To all whom it may concern:

Be it known that I, ELLSWORTH D. IVES, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements pertaining to Vehicle-Axles, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 is a central longitudinal section of the axle-arm and axle-box. Fig. 2 is a partial central longitudinal section of the axle-box alone.

My invention has for one object the prevention of the rattling of the wheel on the axle, which is largely caused by an up-and-down motion of the box, there being space between the axle and box from wear or other reasons; and consists in making upon the arm of the axle a conical flange, which shall fit into a corresponding conical recess in the axle-box, or vice versa.

It has for another object the prevention of sand and dirt from getting into the axle-box—an object subserved somewhat by the construction already mentioned, and aided therein by a chamber made in the surface of the axle like to an annular groove, except that it is not entirely continuous, but has a bridge or partition in it acting on the inner surface of the axle-box with a scraping action.

Referring now to the drawings, the letter *a* represents the axle-arm; *b*, the axle-box, and *c* a portion of the main axle. At the inner end of the axle-arm is located the conical recess *a'*, with its mouth opening toward the outer end of the axle-arm. On the axle-box is a conical flange, *b'*, fitting to said conical recess *a'*.

It will be seen that when the nut *e* on the end of the axle-arm, and which holds the box to place, is screwed to its seat, the flange on the axle-box fits into the conical recess in or on the axle-arm, preventing all upward or downward play of the box on the axle.

A washer, *d*, may well be used between the

surfaces of the flange and the recess to prevent undue wear of the parts.

Just back of the recess *a'* is located a groove, *f*, which but for the bridge or partition *g* would be annular. This groove is for the purpose of collecting such dirt as may work in and prevent its access to the recess and flange.

It will be observed that the recess *a'* is formed in metal, and that the flange *b'* is also formed in metal. This is essential to attain and maintain the proper closeness of fit of the parts.

The recess *a'* is described as having its mouth toward the outer end of the axle-arm. This is essential to protect the meeting surfaces of the recess and flange from dust and dirt as far as may be, it being evident that if the recess had its mouth toward the inner end of the axle-arm dirt would much more readily work into this joint.

I am aware that axles have heretofore been made having a recess in a collar thereon, with its mouth opening toward the outer end of the axle-arm, the upper or outer side of this recess being substantially parallel to the surface of the axle, and the box having a corresponding projection fitting to this recess, and such a construction I do not claim.

I claim as my improvement—

1. The metallic axle-arm *a*, bearing the conical recess *a'*, formed in metal and opening toward the outer end of the axle-arm, in combination with the metallic axle-box *b*, bearing the metallic conical flange *b'*, all substantially as described, and for the purposes set forth.

2. The combination of the axle-arm *a*, bearing the outwardly-opening conical recess *a'*, the axle-box *b*, bearing the conical flange *b'*, and the groove *f*, provided with the bridge *g*, all substantially as described, and for the purpose set forth.

ELLSWORTH D. IVES.

Witnesses:

WILLIAM E. SIMONDS,
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