A. K. STONE.
Vehicle-Axle.

No. 196,719. Patented Oct. 30, 1877.

Fig. 1.

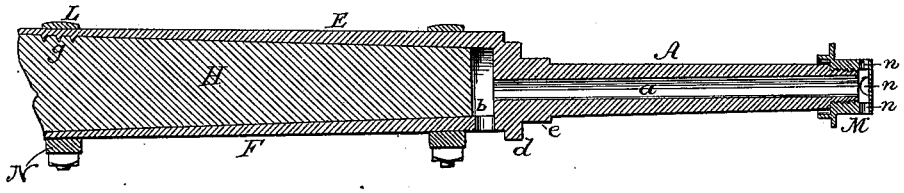


Fig. 2.

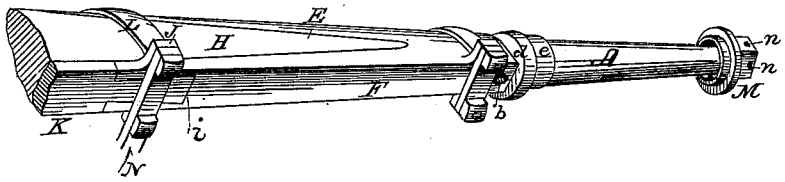
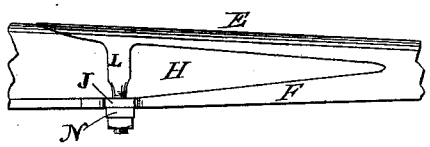


Fig. 3.



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UNITED STATES PATENT OFFICE.

ANSON K. STONE, OF PINE ISLAND, MINNESOTA.

IMPROVEMENT IN VEHICLE-AXLES.

Specification forming part of Letters Patent No. **196,719,** dated October 30, 1877; application filed February 17, 1877.

To all whom it may concern:

Be it known that I, ANSON K. STONE, of Pine Island, in the county of Goodhue, in the State of Minnesota, have invented a new and useful Improvement in Carriage-Axles, of which the following is a full and clear description.

This invention relates to an improvement in metallic axles for wheeled vehicles; and consists, first, in an axle-bearing constructed with a socket for the reception of the end of the wooden axle, and clip-lugs to retain the clip in proper place; second, in a detachable dovetail and clip connection between the axle-bearing and the metallic stiffening-piece laid along the under side of the wooden axle; third, in transverse ribs inside the socket to engage in grooves in the wooden axle and prevent displacement.

My clips are attached directly to the metallic portions of the axle by means of the clip-lugs. Also, so far as I am aware, the metallic axle-bearing has always been permanently united to the metallic stiffening-strip by welding, and therefore they could not be readily separated.

That others may fully understand my invention, I will more particularly describe it, having reference to the accompanying drawings, wherein—

Figure 1 is a longitudinal section of my axle. Fig. 2 is a perspective view of the same. Fig. 3 is an elevation, showing modified clip.

A is the axle-bearing—meaning thereby that portion of the axle which is fitted to the hub-box, and upon which the wheel turns. This bearing is made of any suitable metal, and by any proper method. It is traversed longitudinally by the tubular opening *a*, which opens freely to the atmosphere at the outer end, and communicates with the same at the inner end by the tube-orifice *b*, so that a current of air may pass through the axle freely to keep the same cool.

At all times when the wheel is running such a current of air will be in motion through the tube *a*, both in consequence of the higher temperature caused by the friction of the wheel upon the bearing A, and also from the partial exhaustion due to the forward motion of the axle through the air.

The wheel is retained by means of a nut, M, as usual. The inner end of the hub runs against the collar *d*, and if the hub is wooden, with end boxes only, the bearing A may be constructed with an enlargement, *e*, next to the collar *d*, whereby the central portion of the hub will not touch the bearing A, and the wear will be confined to the metallic boxes at the ends.

My axle-bearing A is attached at its inner end to a socket, the upper and lower sides of which are extended in plates E F, which embrace and inclose the end of the wooden portion of the axle, and render the attachment of the same so firm that no metallic axle will be required more than a simple stiffening-plate, which will also serve to prevent any separation of the axle-bearings A at each end of the wooden axle.

The plate E is provided with interior transverse ribs *g*, and the plate F may be similarly provided, if desired; but it is not supposed to be necessary. These ribs *g* indent the wood of the axle H, or engage in indentations therein provided for them, so that when the plates E F are clamped fast to the axle H, any displacement in an endwise direction will be prevented.

The socket is clamped fast to the axle H by means of clips similar to those ordinarily used, except that the lower cross-bar is omitted, and lugs J J, projecting laterally from the edges of the plate F, are substituted. Through these lugs the screw ends of the clips L L are inserted, and the nuts screwed on.

It is evident the clip can never move from its place, even though the nuts should become loosened.

On the rear axle the ends of the braces N may be secured by the clip-nuts, as usual.

A stiffening-plate along the lower side of the axle is useful; but it is objectionable to make said plate rigidly attached to the axle-bearings A, because if so made it is impossible to insert the ends of the wooden axle H in sockets so as to secure them firmly, and it renders it difficult to remove one bearing for repairs or replacement, if the same should be necessary from any cause.

I therefore form the plates F with recesses *i*, of dovetail or other form, to interlock with corresponding parts on the ends of the stiffen-

ing-plates K. These interlocking ends are kept in engagement by the clip, which clamps them together and to the wood.

If deemed to be desirable, the clip L may be made a part of the plate E, as shown in Fig. 3.

On wagons or carts it would not be considered objectionable to leave the ends of the tubular axle open; but on carriages of the better sort, for pleasure or otherwise, it is desirable, for appearance' sake only, to cover said open end, and I therefore construct the nut M with a covering-plate to hide the hole leading into the hollow axle, and side openings *n n*, to permit the free flow of the ventilating current.

Having described my invention, what I claim as new is—

1. An axle-bearing constructed with the plates E F, to form a socket for the end of the wooden axle H, and perforated lugs J J, to receive the screw ends of the clips, substantially as set forth.

2. An axle-bearing constructed with the plates E F, to form a socket for the end of the wooden axle H, combined with the interior transverse ribs *g g*, for the purpose set forth.

3. An axle-bearing constructed with the plates E F, to form a socket for the end of the axle H, and a recess, *i*, combined with the stiffening-plate K, provided with corresponding projections to interlock with said recess, as and for the purpose set forth.

ANSON K. STONE.

Witnesses:
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