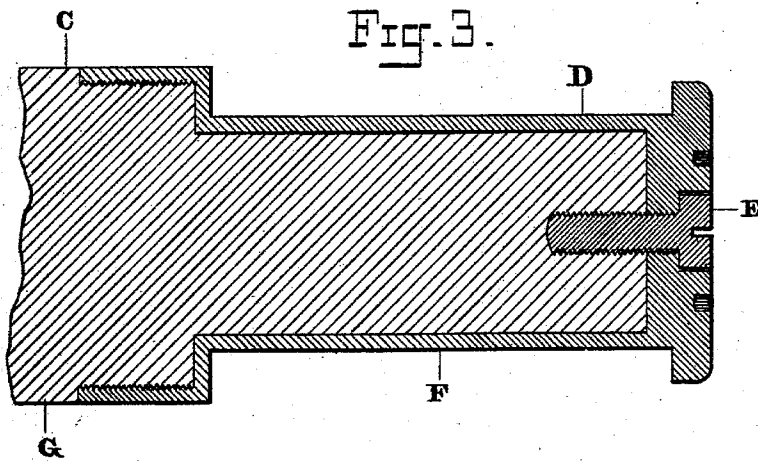
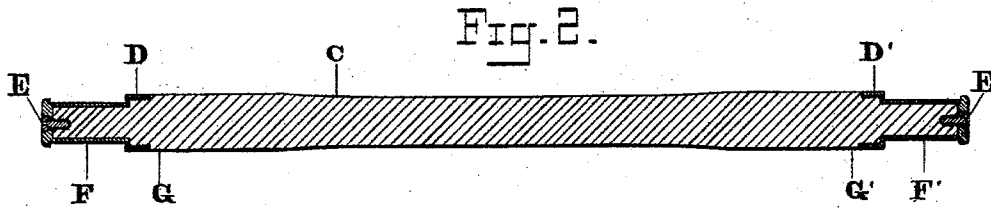
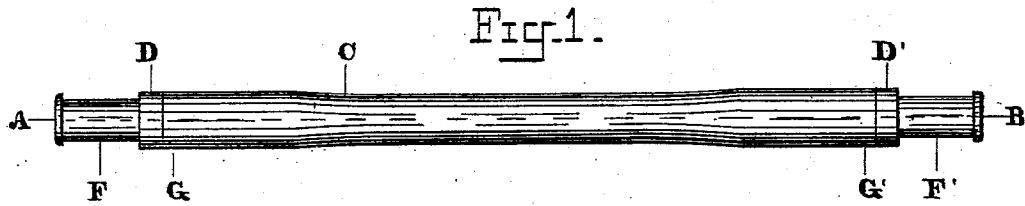


(No Model.)

A. ALFORD.  
CAR AXLE.

No. 470,651.

Patented Mar. 15, 1892.



Witnesses

*John L. Allison*  
*Oliver T. Holmes*

Inventor

*Allen Alford*

By his Attorney *R Byrne*.

# UNITED STATES PATENT OFFICE.

ALLEN ALFORD, OF BIRMINGHAM, ALABAMA, ASSIGNOR OF ONE-FOURTH TO NOBLE SMITHSON, OF SAME PLACE.

## CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 470,651, dated March 15, 1892.

Application filed September 19, 1891. Serial No. 406,283. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN ALFORD, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Axles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in car and other axles, by means of which I provide steel or other metallic sleeves for the same that when worn down to the limit of safety, instead of requiring a new axle, can be refitted or renewed and brought to its original size by fitting it with steel or other metallic sleeves, and when the sleeves get worn out they can be renewed by placing others on the axle, thereby using the old axle indefinitely.

In the drawings hereunto annexed, Figure 1 is a plan view of a car-axle fitted with steel or other metallic sleeves on the journal or end. Fig. 2 is a sectional view through the line A B, showing the steel or metallic sleeves on the end of the axle in section and the manner of securing the same to the axle. Fig. 3 is an enlarged sectional view of the end of the axle and showing the sleeves attached to the same.

Like letters of reference represent like parts in all the drawings.

C is a wrought or hammered iron axle. D D' is a steel sleeve placed over the end or journal of the same.

E E' is a left-hand screw-bolt, tapped into the end of the sleeve and axle, with the head recessed into the end of the sleeve, and when screwed to place prevents the sleeve from turning or coming off the axle.

F F' is the journal to work in the brasses, and G G' is the wheel-bearing to place the wheel on.

The steel or metallic sleeves can be used on new axles when first made or fitted up. The axle C can be turned up in the usual manner, making the journal F the thickness of

the sleeve D, smaller than the size intended to finish, and a right-hand thread chased on the collar between journal F and wheel-bearing G. The sleeve D is turned on the inside to fit, and a thread chased on the inner end, and when finished it can be screwed firmly on the end of the axle C.

To secure the sleeve D on the axle C and prevent its getting loose or unscrewing in any manner, a hole is drilled in the end of the sleeve D and the axle C, and recessed into sleeve D for the head of the bolt E. The hole is tapped with a left-hand thread and the bolt E securely screwed to place. It prevents the sleeve D getting loose or coming off until the bolt E is first taken out.

The fitting up of old or worn axles would be performed in the same manner as the above description for new. The axle C when once fitted does not require to be worked on any more. When worn so that it is necessary to renew it, the sleeves D D' are renewed and new ones put on axle C, which makes it as good as when first used, thereby creating a great saving in the cost of renewing worn axles.

I am aware that prior to my invention that car-axles have been made with metallic sleeves, and I do not claim such a combination, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

In a car-axle, the combination of the axle with screw-threads formed on the thick part outside of the wheel-bearing, and a steel or metallic sleeve with an internal thread chased to fit and screw on the axle at the above-described point, and a left-hand screw-bolt with the head recessed in the end of the sleeve, all substantially as described and set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALLEN ALFORD.

Witnesses:

NOBLE SMITHSON,  
JAS. F. ALLISON.