

E. T. LIGON.

Car Axle.

No. 87,687.

Patented March 9, 1869.

Fig. 1

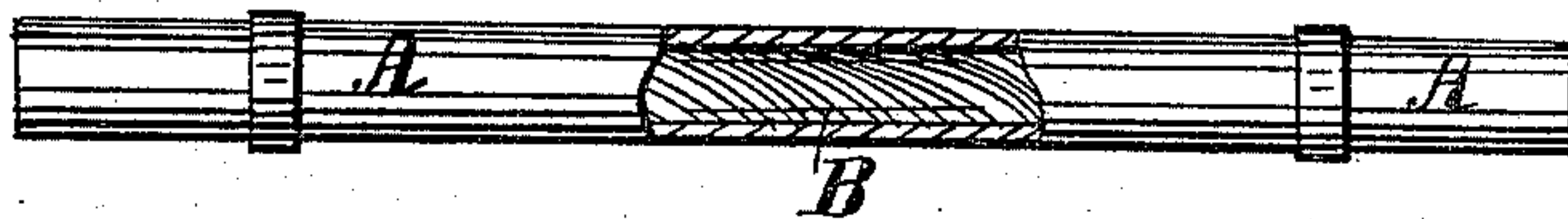
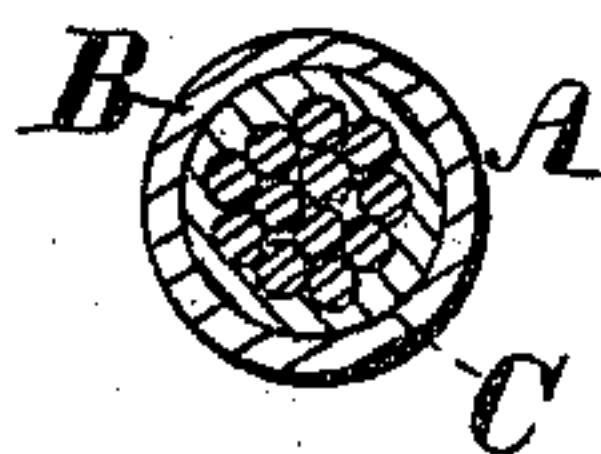


Fig. 2



Witnesses,

A. M. Almqvist  
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per *[Signature]*  
Attorneys.

# United States Patent Office.

E. T. LIGON, OF DEMOPOLIS, ALABAMA.

*Letters Patent No. 87,687, dated March 9; 1869.*

## IMPROVED RAILWAY-CAR AXLE.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, E. T. LIGON, of Demopolis, in the county of Marengo, and State of Alabama, have invented a new and improved Car-Axle; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of my improved car-axle, part being broken away to show the construction.

Figure 2 is a cross-section of the same.

Similar letters of reference indicate corresponding parts.

My invention has for its object to improve the construction of car-axles, so as to make them stronger, less liable to break, and less liable to fail or part suddenly when injured, or when there may be a flaw in the metal; and

It consists in the construction of the axle, as hereinafter more fully described.

A is an iron or steel tube, made of the desired form and size, and which is coated upon the inside with copper, tin, zinc, or other suitable and comparatively soft metal.

B is a wire cable, made of steel, iron, or copper wire. The cable B is also coated with copper, tin, zinc, or

other suitable and soft metal, and is made of a suitable size to fit into the tube A.

The whole is then brazed, or united by galvanic process into a solid mass.

By this construction, the axle is made stronger and less liable to break, the softer metal C interposed between the outer tube or shell A and the inner cable B, acting as a cushion to interrupt or check the vibrations, and consequently preventing the crystallization of the metal.

The interior filling also braces and strengthens the axle in case of fracture, or if there should be a flaw in the outer shell, and enables it to hold together until it can be replaced.

Having thus described my invention,

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

An improved car-axle, formed of an outer iron or steel tube or shell, an inner wire cable, and an interposed filling of softer metal, substantially in the manner herein shown and described, and for the purpose set forth.

E. T. LIGON.

Witnesses:

THOS. J. FOSTER,  
W. J. BRASWELL.