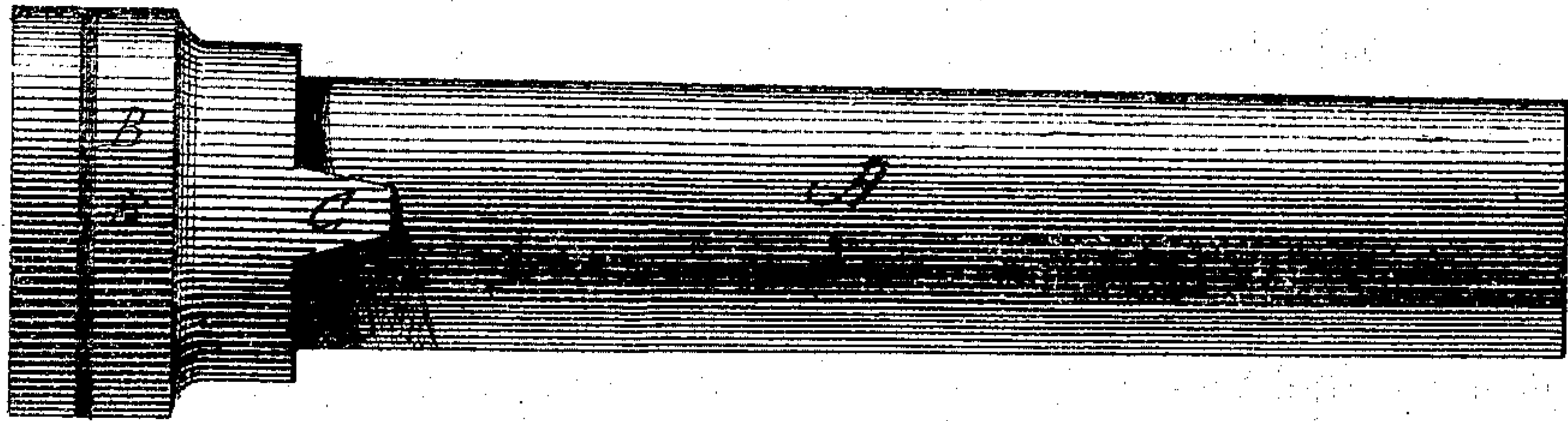


*Albert Goodyear 2<sup>nd</sup> Inpt in Axle Boxes.*

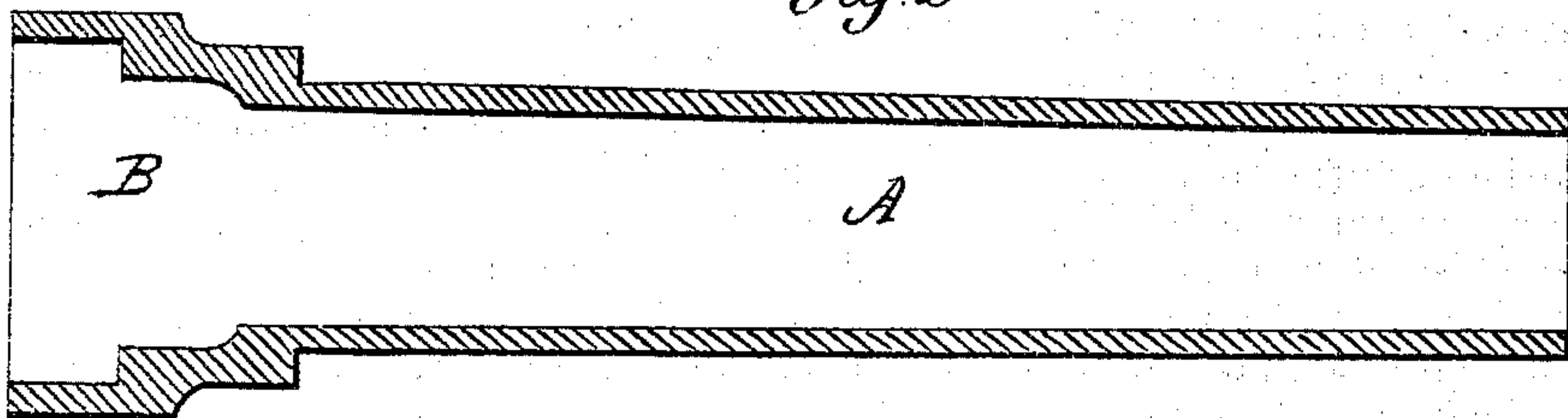
116702

PATENTED JUL 4 1871

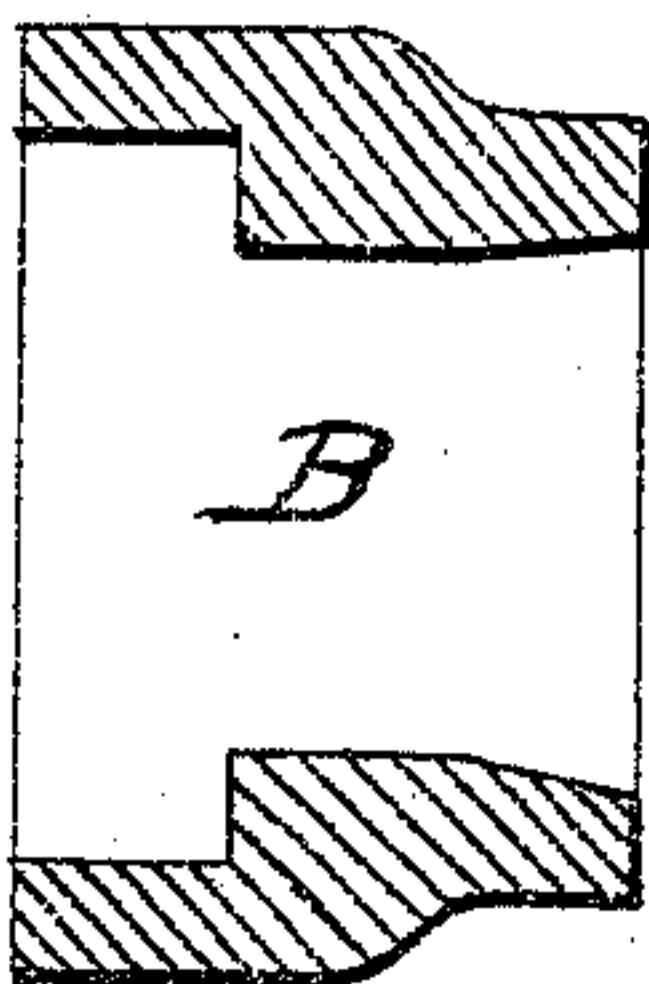
*Fig. 1.*



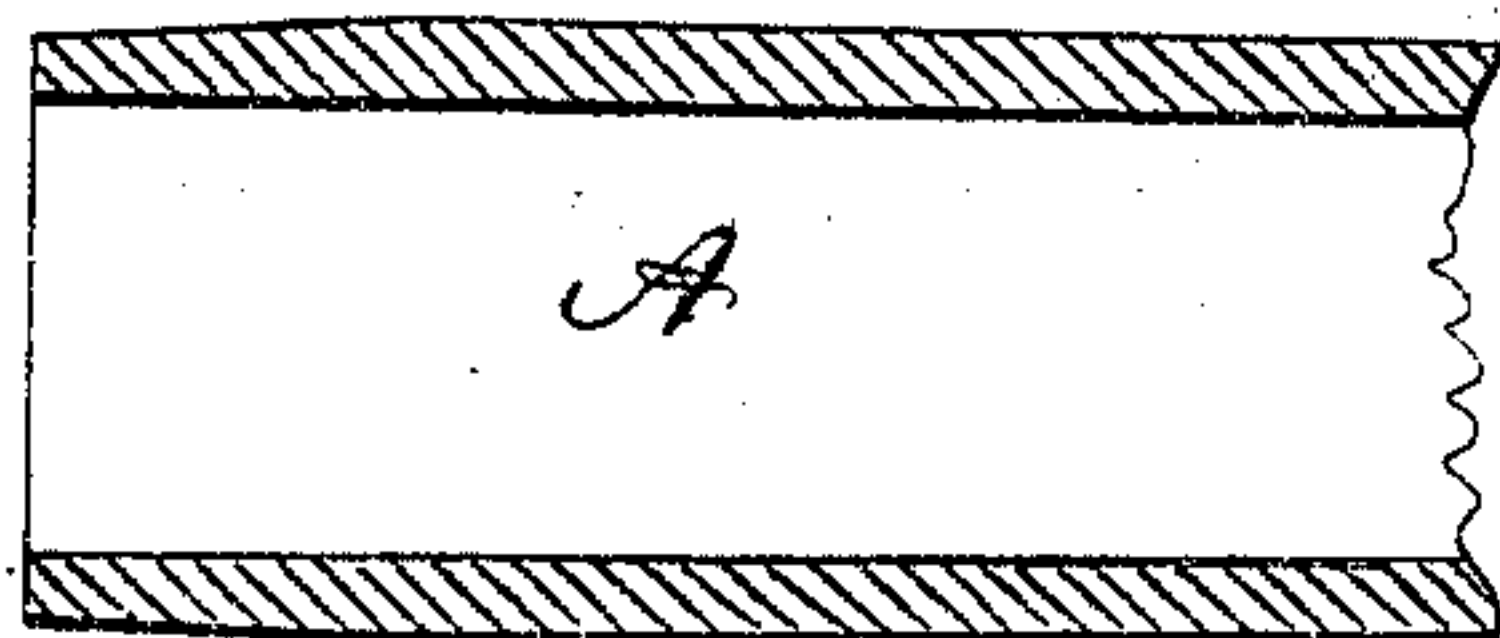
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witness.  
Wm. H. Summway  
A. J. Tibbitts

Albert Goodyear 2<sup>nd</sup>  
Inventor  
By his Atty.  
J. E. Earle

# UNITED STATES PATENT OFFICE.

ALBERT GOODYEAR, 2D, OF HAMDEN, CONNECTICUT.

## IMPROVEMENT IN AXLE-BOXES.

Specification forming part of Letters Patent No. 116,702, dated July 4, 1871.

*To all whom it may concern:*

Be it known that I, ALBERT GOODYEAR, 2d, of Hamden, in the county of New Haven and State of Connecticut, have invented a new Improvement in Axle-Boxes; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a side view of the box complete; Fig. 2, a longitudinal central section of the same; and in Figs. 3 and 4, the two parts detached preparatory to welding.

This invention relates to an improvement in axle-boxes for carriage-wheels, designed principally for that class of wheels in which the box must necessarily be very light; and it consists in a steel tube combined with a malleable-iron neck, the two parts heated, and while in a heated state welded together to form a perfect whole.

A is the tube, formed from sheet-steel or other suitable metal, lapped and welded. B is the neck, formed from malleable iron by casting the same in the usual manner for this class of castings, and constructed with one or more projections, C, to prevent the turning of the box in the hub. The tube is made slightly tapering at the neck end,

as seen in Fig. 4, and the interior of the neck of similar form, as seen in Fig. 3. Both parts are heated to a welding-heat, the tube placed upon a rod closely fitting the interior, and the neck set thereon, the two parts being held in such position that a great and sudden pressure may be brought to bear upon the neck, forcing it onto the tube, and in the highly-heated state of the metal causing the two to marry or unite together and become practically one and the same piece.

The advantages of the steel box over the common cast-iron box are too apparent to require defining.

The box thus constructed is bored out and finished in the usual manner, and, while it may be made extremely light, yet possesses sufficient strength for all practical purposes.

I claim as my invention—

As a new article of manufacture, the herein-described axle-box, consisting of the wrought-metal tube A and malleable-iron neck B, the two united by the process of welding, substantially in the manner described.

ALBERT GOODYEAR, 2D.

Witnesses:

A. J. TIBBITS,  
JOHN H. SHUMWAY.