2 Sheets - Sheet 1

William A. Lewis'

Improved Hollow Axle for Railway Cars &c.

No. 119,866. Patented Oct. 10, 1871.

Fig. 1

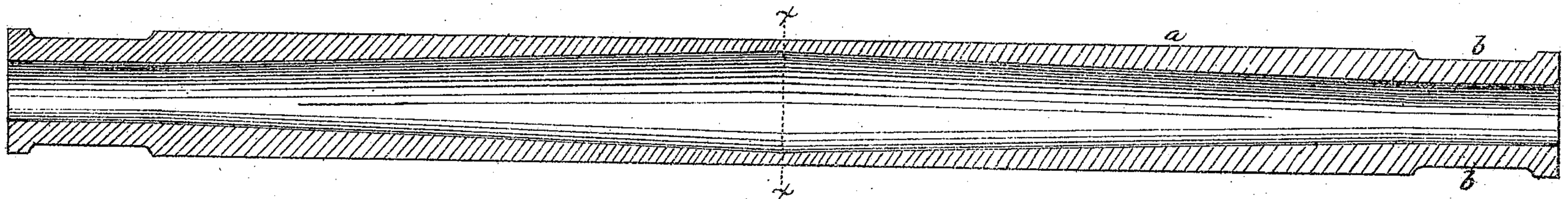
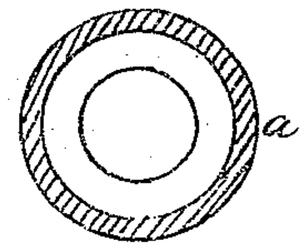


Fig. 2



Witnesses,
W. Morris Smith
F. C. Robbins

Wm A. Lewis Inventor,

2 Sheets - Sheet 2.

William A. Lewis.

No. 119,866.

Impd Hollow Axle for Railway Cars, &c.

Patented Oct. 10, 1871.

Fig. 3.

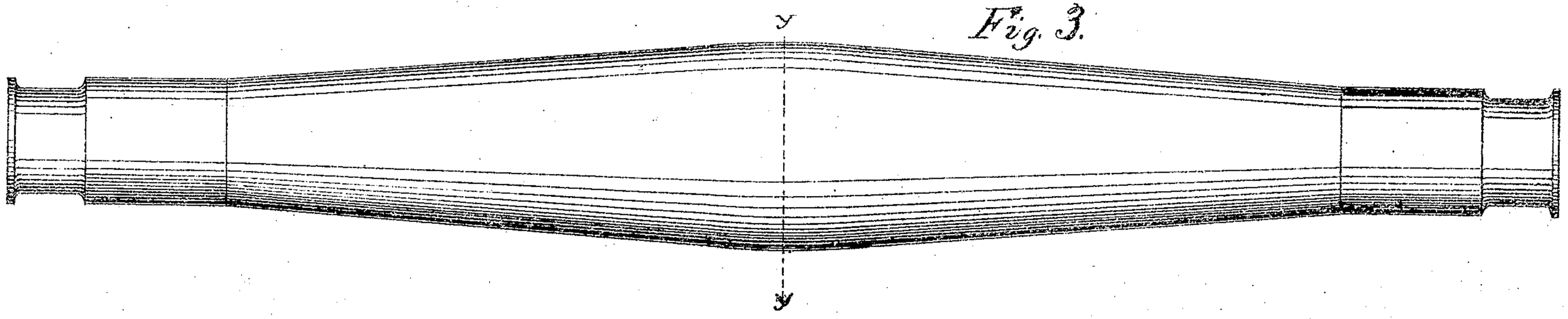


Fig. 4

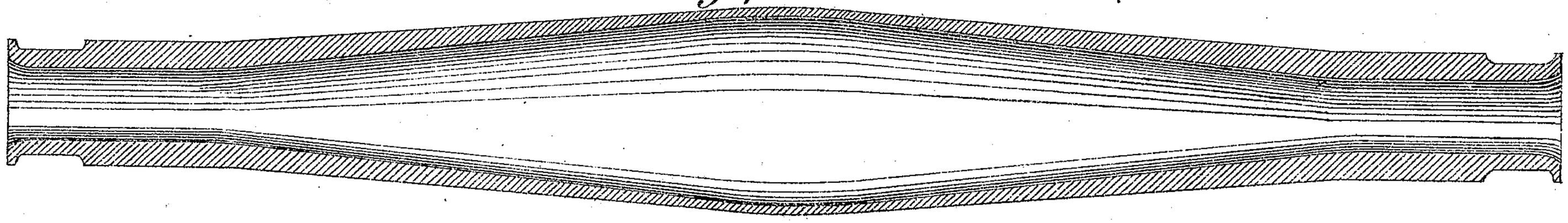


Fig. 5.

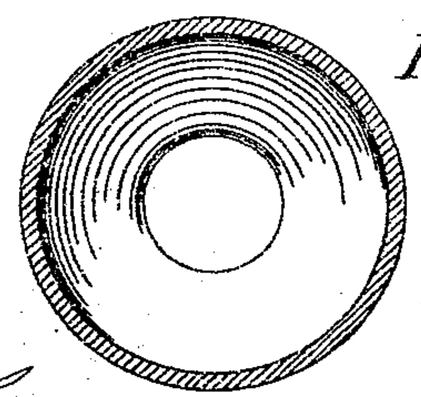
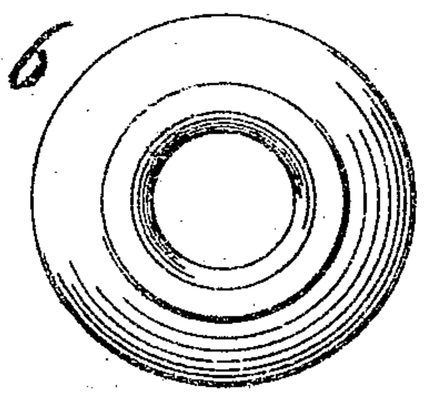


Fig. 6



Witnesses:
Fred Artos—
F. C. Robbins

Inventor:
Wm A. Lewis

UNITED STATES PATENT OFFICE.

WILLIAM A. LEWIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO HOLLOW-AXLE MANUFACTURING COMPANY, OF MISHAWAKA, INDIANA.

IMPROVEMENT IN HOLLOW AXLES FOR RAILROAD CARS.

Specification forming part of Letters Patent No. 119,866, dated October 10, 1871.

To all whom it may concern:

Be it known that I, WILLIAM A. LEWIS, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Hollow Axle for Railway Cars, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing of two of the various forms that can be given to said axle, which drawing constitutes a portion of this specification.

What distinguishes my improved hollow axle for railway cars, &c., from all other hollow axles heretofore produced is the fact of its being perfect in every particular while constituting but a single jointless piece of wrought metal.

I construct my said improved hollow axle of wrought-iron or steel, and by the following process or any other that may be found preferable. By means of a heating-furnace and a series of matrix and follower-rolls I first, by the usual rolling process, shape the metal into the form of half sections of said axle; then, by means of a properly-constructed die-box drop-press, located in immediate proximity to a broad opening in a heating-furnace and within the influence of the flame from said opening, I weld pairs of said axle sections, by a single heavy blow of the movable half of the die-box of said drop-press, into a single piece; and by the same blow I also give to said piece the desired perfect exterior shape of a hollow axle.

Figure 1 of the accompanying drawing is a longitudinal section of one of the forms I propose to give to my said improved hollow axle, and Fig. 2 is a transverse section of the same in the line *x x* of Fig. 1. Fig. 3 of the drawing is a side view; Fig. 4, a longitudinal section; Fig. 5, a transverse section in the line *y y* of Fig. 1; and Fig. 6, an end view of another of the forms I propose to give to my said improved hollow axle for railway cars.

The sides of the axle may be of uniform thickness from end to end, or may increase in thickness from the central to the end portions of the same, at the option of the manufacturer. It will be my intention to so proportion the thickness of the sides of my said improved hollow axle as to give the axle the greatest amount of strength at those points where the strain to be exerted thereupon shall be greatest.

The aforesaid peculiar construction and shape of my improved hollow axle for railway cars, &c., gives to it a degree of strength, toughness, and elasticity that will, it is believed, prevent its ever being weakened or injured by the severe shocks and torsion strains that have heretofore and will hereafter continue to weaken and finally to utterly destroy the fibrous character and strength of every description of solid axle that may be employed in railway locomotion.

The within-described welding-and-shaping process, which forms from previously-prepared sections my improved hollow axle, is performed in substantially the same manner as is with more particularity represented and described in Letters Patent bearing even date herewith, issued to me for an improvement for making hollow metallic axles and other hollow metallic articles.

I claim as my invention, and desire to secure by Letters Patent, as a new manufacture—

The within-described jointless wrought-metal hollow axle for railway cars, &c.

WM. A. LEWIS.

Witnesses:
Z. C. ROBBINS,
CHAS. S. WHITMAN.

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