

E. BALL.  
Vehicle-Axle.

No. 168,208.

Patented Sept. 28, 1875.

Fig. 1.

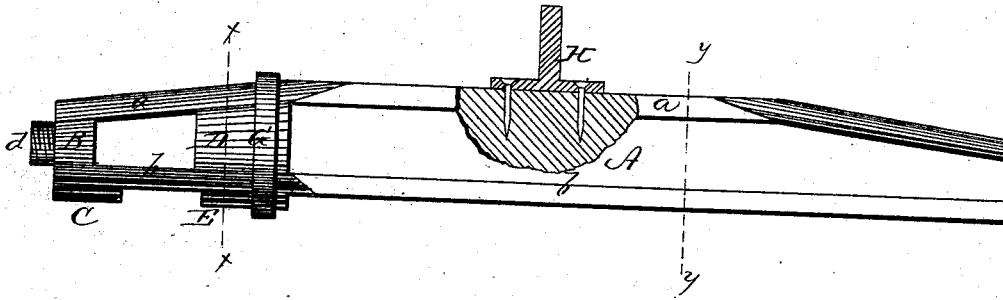


Fig. 2.

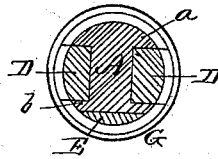
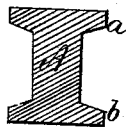


Fig. 3.



WITNESSES  
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By

INVENTOR  
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# UNITED STATES PATENT OFFICE.

EPHRAIM BALL, OF CLARKSVILLE, TENNESSEE, ASSIGNOR TO THE CLARKSVILLE IRON WAGON MANUFACTURING COMPANY, OF SAME PLACE.

## IMPROVEMENT IN VEHICLE-AXLES.

Specification forming part of Letters Patent No. 168,208, dated September 28, 1875; application filed March 6, 1875.

*To all whom it may concern:*

Be it known that I, EPHRAIM BALL, of Clarksville, in the county of Montgomery and in the State of Tennessee, have invented certain new and useful Improvements in Wagon-Axles; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consist in the construction and arrangement of an iron axle for wagons, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side view of my improved iron axle. Fig. 2 is a cross-section of the same through the line *x x*, Fig. 1. Fig. 3 is a similar section through the line *y y*, Fig. 1.

A represents the axle, made of a single piece of iron, with flanges *a* and *b* extending on both sides along the upper and lower edges, as shown, making the cross-section of the form of a letter H. The ends of the axle are placed under a hammer and properly tapered to form spindles, and the top flange *a* rounded, forming just that much of the spindle-circle. At the point another piece, B, of iron is doubled over and welded to the web and flanges of the spindle, making a solid end and a perfect spindle as far back as the weld-piece B extends, except on the bottom, and at this point the circle is finished by bolting or riveting the bearing C. The front or outer end of the welded piece B is drawn out, as shown at *d*, and a thread cut on it to hold the wheel on. At the back end of the spindle, after the top has been oveled, as shown, the side cavities are filled up by riveting or bolting to the web-blocks D D, of proper shape to form a spindle their entire length, as far around as to the bottom flange *b* of the axle, and the circle is completed by the bottom bearing E

being riveted or bolted on; and then, for the double purpose of helping to hold firmly in their places said blocks and bearing, and to make a shoulder to the spindle, a band, G, of iron is shrunk around the entire spindle. This band is prevented from giving back from the thumping of the hub against it by the taper of the irons around which it is shrunk. H represents the king-bolt, which is turned upside down, and the head riveted or bolted to the axle.

I do not broadly claim a wagon-axle made in the form of the letter H, as I am aware that such is not new.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The axle A, formed with top and bottom flanges *a b*, and having its ends hammered down in tapering form, with the top flange *a* rounding to spindle shape, substantially as set forth.

2. In combination with the axle A, the end piece B, welded to the end of the axle and drawn out to form the screw *d*, substantially as set forth.

3. In combination with the axle A, the side pieces D D, riveted or bolted to the axle, for the purposes set forth.

4. The bottom pieces C and E, in combination with axle A and the pieces B and D D, substantially as and for the purposes set forth.

5. The band G, in combination with the axle A, side pieces D D, and bottom piece E, substantially as and for the purposes set forth.

6. The reversed king-bolt H, having its head fastened by rivets or bolts to the axle, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of February, 1875.

EPHRAIM BALL.

Witnesses:

C. L. EVERT,  
W. A. SKINKLE.