R. W. & A. W. DAVIS.

Axles for Vehicles.

No. 152,974. Patented July 14, 1874.

Fig. 2

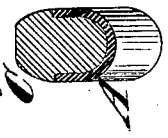


Fig. 3

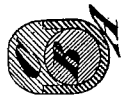
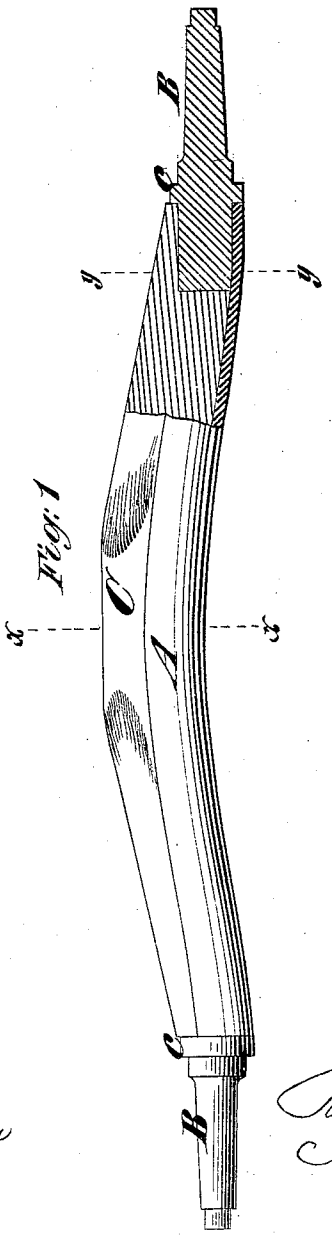


Fig. 1



Witnesses:
Michael Ryan
Fred Haynes

Robert W. Davis
Arthur W. Davis
by their Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

ROBERT W. DAVIS AND ARTHUR W. DAVIS, OF BATH, ASSIGNORS OF ONE-HALF THEIR RIGHT TO EDWIN ELDRIDGE, OF ELMIRA, NEW YORK.

IMPROVEMENT IN AXLES FOR VEHICLES.

Specification forming part of Letters Patent No. **152,974**, dated July 14, 1874; application filed November 1, 1873.

To all whom it may concern:

Be it known that we, ROBERT W. DAVIS and ARTHUR W. DAVIS, of Bath, in the county of Steuben and State of New York, have invented Improvements in Axles for Wagons and other Vehicles, of which the following is a specification:

This invention consists in a novel, simple, and cheap construction of a steel axle, whereby lightness is combined with great strength; also, in the novel application of wood in connection with such axle to give it additional stiffness.

In the accompanying drawing, Figure 1 is a side view of the improved axle, partly in section. Fig. 2 is a transverse section of the same, taken at the dotted line *x x* in Fig. 1; and Fig. 3 is another transverse section taken at the line *y y*.

Similar letters of reference indicate corresponding parts in all the figures.

The axle represented is formed in three pieces—a metallic tree-piece, A, end pieces or journal-pieces B B, besides the filling C of wood. The tree-piece A consists of a shell of spring-steel, which is given a U shape in its transverse section by being put into a drop, and swaged or struck up into shape. It is slightly arched in a longitudinal direction to give it the requisite strength to sustain the load it is likely to bear. The end pieces or journal-pieces B B may be of round bar-steel, and in that case the journals will be turned, and collars may be shrunk on them to form shoulders *c c* at the ends of the tree-piece, for the hubs of the wheel to bear against; otherwise they may be formed of the requisite shape with the shoulders on them, as illustrated by the drawing. They fit snugly into the U-shaped ends of the axle-tree, and are united therewith by brazing or by welding. We prefer to effect the union by brazing, as it is sufficiently strong and less difficult than welding. The wooden filling C is shaped to fill the concavity of the tree-piece, and projects slightly above it all the way along. Its ends extend to the shoulders on the journal-pieces B B. The U-shaped cross-section of the tree-piece and its longitudinal arch give it great strength in a vertical direction, and the filling of wood, by preserving its U-shaped cross-section intact, affords it stiffness and strength in a lateral direction. It is not necessary that the wood filling be used at all. Its only function is that just mentioned, and for some purposes the tree-piece will be stiff enough without it.

This is a very simple and cheap way of making steel axles, and possesses the advantages of combining requisite strength with lightness.

What we claim as our invention is—

The axle composed of a metallic shell or tree-piece, A, arched longitudinally, and having a concave U-shaped cross-section, the journal-pieces B B, made of round bar-steel, with collars *c c* shrunk thereon, and secured within the ends of shell by brazing or welding, and the wooden filling C, all combined substantially as set forth.

R. W. DAVIS.
A. W. DAVIS.

Witnesses:
CLINTON RICHARDSON,
A. V. DEAN.