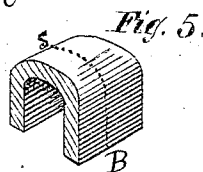
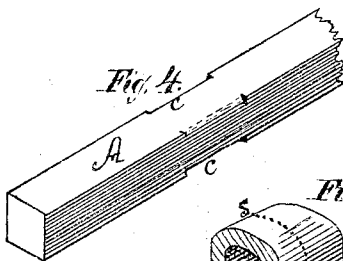
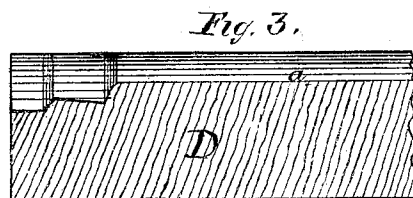
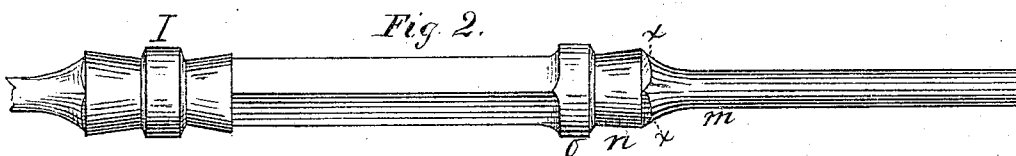
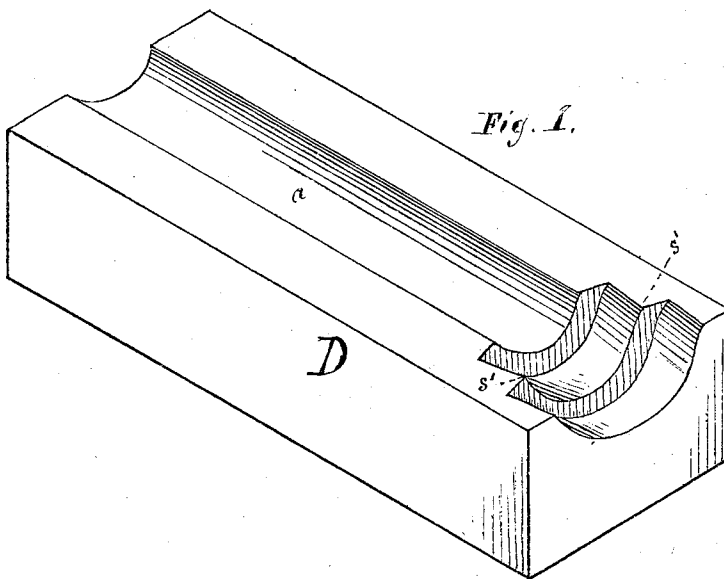


A. & J. SCHIRCK & J. SMITH.

Manufacture of Carriage Axles.

No. 136,460.

Patented March 4, 1873.



Witnesses.
B. F. Parsons
James B. Edwards.

Alexander Schirck
Joseph Schirck
Joseph Smith
Inventors
H. P. K. Peck, Atty.

UNITED STATES PATENT OFFICE.

ALEXANDER SCHIRCK, JOSEPH SCHIRCK, AND JOSEPH SMITH, OF
ROCHESTER, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF CARRIAGE-AXLES.

Specification forming part of Letters Patent No. 136,460, dated March 4, 1873.

To all whom it may concern:

Be it known that we, ALEXANDER SCHIRCK, JOSEPH SCHIRCK, and JOSEPH SMITH, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in the Manufacture of Metal Axles for Carriages; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention consists in the mode of applying and forming the collars of carriage-axles; and to this end it consists in nicking the corners of the bar, bending a strap around it at the point nicked, and then welding said strap to the bar, and drawing out and forming of said strap the extended or double collar by means of dies, all of which is hereinafter more fully explained.

Figure 1 represents a perspective view of one-half of the die in which our axle is formed. Fig. 2 represents a square bar of metal, upon which two axle spindles and collars are formed by our method. Fig. 3 represents a longitudinal vertical section of the die shown in Fig. 1. Fig. 4 represents a metal bar prepared for the reception of the collar-ring. Fig. 5 represents the collar-piece prepared for use.

We make our improved axles by the use of a trip-hammer, which is provided with a counter-die upon its face precisely like that represented in Fig. 1. These two dies are made to inclose a transversely oval aperture, as indicated at *a* in Fig. 1, when they are brought together. By thus forming the dies we are enabled to form axles of different sizes by their use.

The square bar *A* of metal is provided with a seat for the collar-piece *B* by depressing its corners, as represented at *C*, and this collar-piece is placed upon its seat and formed into a ring upon its seat preparatory to the operation of swaging the axle in the dies; and, after subjecting the end of the bar *A*

with its ring to a welding heat, the workman, who holds the bar by one of its ends, places the heated end upon the die *D*, which is seated and secured in proper position beneath the trip-hammer; and as the operation of swaging proceeds the workman revolves the bar by hand, thus causing it to be rounded by the oval-shaped dies into the form of the spindle *m* and collars *n o*. The collar-piece *B* has the dotted line *s*, (in the drawing,) which indicates the portions of metal formed into the collars *o n*, respectively, by the operation of swaging.

The workman, after the bar is properly heated, will so place it upon the die *D* that the line *s* of the ring *B* will rest upon the transverse edge *s'* of the die; and, as the workman revolves the bar during the process of the manufacture, the collars *o* and *n* are formed, and the spindle *m* is drawn out into the shape as represented in Fig. 2. After the square bar *A* is furnished with its ring for the collars a single heat is sufficient to complete the axle ready for the lathe, in which the true taper is formed, and the metal at the shoulder *x* is turned off.

This manner of making axles is much more economical and expeditious than either of the ordinary methods; and the article is improved, as the fibers of the metal in the bar retain their longitudinal position and perfect integrity, while the collar with its fibers wound around the axle at its shoulder confers upon it all the necessary support.

The inclined surface of the die in which the collar *n* is formed will cause that portion of the collar-ring which constitutes that collar to be drawn out without being sunken to any considerable degree into the faces of the square bar, upon which it is welded by the swaging operation.

That form of axle represented at *I*, Fig. 2, is designed for carriages of a particular construction, and may be made in dies of analogous form by our process, herein fully described.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

The method herein described of applying and forming the collars of carriage-axes—that is to say, nicking the corners of the square bar A, bending the strap B around it at the point nicked, and then welding said strap to the bar, and drawing out and forming of said strap the extended or double collar *n o* by means of dies, as set forth.

In witness hereof we have hereunto set our hands this 5th day of March, 1872.

ALEXANDER SCHIRCK.
JOSEPH SMITH.
JOSEPH SCHIRCK.

Witnesses:

H. P. K. PECK,
B. F. PARSONS.