R. R. Miller,

Carriage Iron.

No. 110,773. Patented Jan. 3. 1871.

Fig. 1.

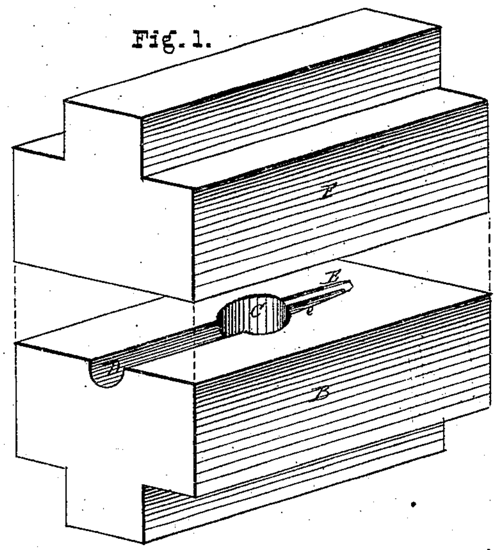


Fig. 2.

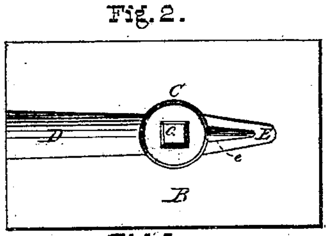


Fig. 4.

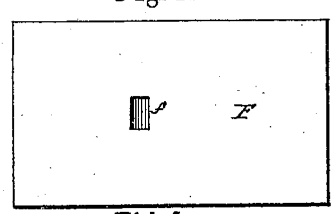


Fig. 3.

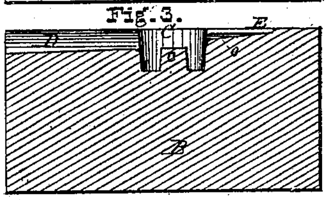


Fig. 5.

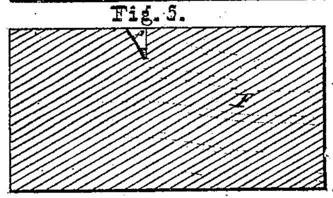


Fig. 6.

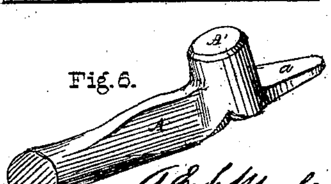
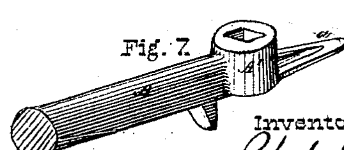


Fig. 7.



Witnesses. Albert H. Merle, W. S. Marr

Inventor. Robert R. Miller, by Prindle & Dyer Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT R. MILLER, OF PLANTSVILLE, CONNECTICUT.

IMPROVEMENT IN THE METHOD OF FORMING BODY-LOOPS FOR CARRIAGES.

Specification forming part of Letters Patent No. **110,773**, dated January 3, 1871.

To all whom it may concern:

Be it known that I, ROBERT R. MILLER, of Plantsville, in the county of Hartford, and in the State of Connecticut, have invented certain new and useful Improvements in the Method of Forming Body-Loops for Carriages; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the dies used for forming the body-loop. Fig. 2 is a plan view of the face of the lower die. Fig. 3 is a vertical longitudinal section of the same on the line *x x* of Fig. 2. Fig. 4 is a plan view of the face of the upper or swaging die. Fig. 5 is a vertical longitudinal section of the same on the line *x x* of Fig. 4. Fig. 6 is a perspective view of the blank for forming the body-loop, and Fig. 7 is a like view of the finished article.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is the forming of body-loops for carriages in such a manner and by such means as to not only secure to the finished article a better and more accurate shape, but also to economize time and labor in their construction, to which end it consists in the hereinafter-described method, substantially as set forth.

In the manufacture of body-loops by or under my invention, I take a piece of five-eighths round iron, and by means of a drop or other suitable hammer upset one end of the bar, so as to form a blank, which, as seen in Fig. 6, has upon its end a lip, *a*, (about one inch in length and tapered edgewise toward its outer end,) placed in a line with the under surface of said blank, while immediately at the inner end of said lip is a cylindrical boss, A′, having a diameter of about three-fourths of an inch and a length of one and one-fourth inch, placed with its axis at a right angle to the line of the bar A and to the face of the lip *a*. The sides of the bar A, immediately in rear of the boss A′, are flattened, so as to increase the vertical diameter of said bar at that point. As thus constructed, the blank is ready for the dies, which are constructed as follows: The lower or female die, B, is provided at or near the center of its face with a circular opening, C, about three-fourths of an inch deep, one inch in diameter at its upper end, and three-fourth of an inch in diameter at its lower end, and having at the radial center of the latter a boss, *c*, about three-eighths of an inch square, which projects vertically upward to a corresponding height. A half-round groove, D, about one-half inch deep at its inner end, and slightly deeper and broader at its outer end, is cut within the face of the die from the opening C to its outer end, while upon the opposite side of said opening is provided a second groove, E, one and one-half inch long and one-half inch wide at its inner end, from whence it narrows to its outer end, at which point it has a width of about one-fourth of an inch. It has a semicircular form transversely, and decreases in depth from its inner to its outer end, at which point it is quite shallow.

Within the bottom of the groove E is cut a V-shaped groove, *e*, which extends from near the outer end of the former to the opening C, its width and depth regularly increasing from its outer to its inner end. The upper or male die, F, corresponds in general shape and size to that before described, and has within its otherwise plane face a recess, *f*, having a vertical depth of about one-half inch, which recess is so placed within said die as to bring it over the groove D at its inner end, immediately in rear of the opening C. The edges of the recess, together with its side contiguous to the opening C, are vertical, while its opposite side extends from the upper end downward and outward at an angle of about forty degrees, so as to give said recess a Λ shape longitudinally. The dies are now complete, and being placed within a suitable drop-press are ready for use. After being suitably heated, the blank is placed within the depressions in the lower or female die, and caused to fill and conform thereto by means of one or more blows from the upper die, during which operation a portion of the surplus metal is forced upward, so as to fill the recess within said upper die, after which the fin formed by the outward pressure of the metal between said dies is trimmed off by any suitable means, and the body-loop, as seen in Fig. 7, completed. As thus formed, the finished article has a more accurate shape, is

stronger and more perfect, and costs less in time, labor, and material than those heretofore made by the usual process.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

The hereinbefore-described method of forming body-loops from a solid bar of iron without welding, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of November, 1870.

ROBERT R. MILLER.

Witnesses:
SIMEON H. NORTON.
JOHN COLLINS.