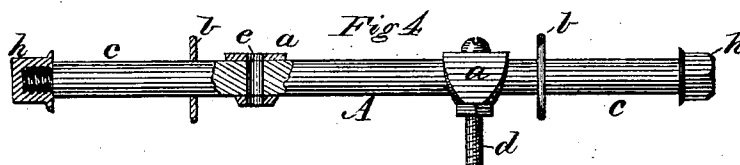
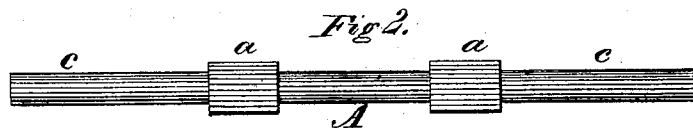


B. B. NOYES & O. G. STRATTON.
Carriage-Axles.

No. 149,950.

Patented April 21, 1874.



Witnesses.

Harry King.
H. W. Dodge.

Inventors.

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UNITED STATES PATENT OFFICE.

BAXTER B. NOYES AND OSCAR G. STRATTON, OF GREENFIELD, MASS.

IMPROVEMENT IN CARRIAGE-AXLES.

Specification forming part of Letters Patent No. **149,950**, dated April 21, 1874; application filed June 23, 1873.

To all whom it may concern:

Be it known that we, BAXTER B. NOYES and OSCAR G. STRATTON, of Greenfield, in the county of Franklin and State of Massachusetts, have invented certain Improvements in Carriage-Axles, of which the following is a specification:

Our invention has relation to axles for carriages, more especially to that class denominated children's carriages; and the invention consists in making the axle of a bar or rod of round iron, and forming thereon flat or angular shoulders for attaching them to the frame or body of the carriage, as hereinafter more fully explained.

Figure 1 represents the rod of iron cut to the proper length to form an axle. Fig. 2 represents the same upset to form the shoulders; and Fig. 3 represents the axle completed, ready for use. Figs. 4 and 5 represent the same style of axle in a modified form.

Heretofore it has been customary in making axles to take a flat or rectangular bar of iron and form the spindles or journals for the wheels by forging or turning, or both. This operation requires considerable time and labor, besides much care, to get them of the exact size required.

In making an axle on our plan we take a rod of round iron of the proper diameter to fit the wheels, and cut it off of a length somewhat greater than the finished axle is to be, the object of the added length being to obtain an excess of metal, so that when the rod is upset, as hereinafter described, it will be of the exact length required for a finished axle, A, Fig. 1, representing such a rod before it is upset.

We then take this rod A and heat it at the two points where the shoulders are to be formed, and upset it by forcing the metal together endwise, thereby forming the enlargements or shoulders *a*, as represented in Fig. 2. These shoulders may be formed by simply upsetting the metal first, and then by means of a hammer or drop-press give them the required form; but a better and more speedy method is to place the rod, when heated at

the points where the shoulders are to be formed, in a clamp or die having cavities of the form of the shoulders made therein at the required distances apart, and then upsetting the rod, by which means the metal will be upset, and the shoulders formed complete at one operation. After the shoulders are formed, holes *e* are made for bolts, which fasten the axle to the sills or frame of the carriage. Washers *b* are then shrunk, welded, or brazed on the rod at a suitable distance from each end to form a shoulder for the inner end of the hub to bear against, and a screw-thread cut on the outer ends, as shown in Fig. 3, and the axle is complete.

The same result may be accomplished by making the shoulders *a* of a separate piece of metal, with a hole through them of the proper size to allow them to be slipped onto the rod A, as represented in Figs. 4 and 5, these separate shoulders being secured in place on the rod by simply compressing them, or by welding, brazing, or soldering, if desired. As, however, the holes *e* for the bolts *d* are made through both the shoulder and the axle, as shown in Figs. 4 and 5, they will be held in place by the bolts *d* when inserted. Hence a slight compression of the shoulders upon the rod is all that is required, simply to hold them in place until the bolts are inserted. Or, as is obvious, the same result may be accomplished by constructing suitable rolls, and rolling out a rod of metal, with the shoulders or enlargements formed thereon, and then cutting the rod into suitable lengths to form the axles. In that case the rolls would, of course, be made with grooves to form the body of the rod, and with suitable-shaped recesses or dies at the proper distances apart to form the shoulders, thus doing the whole at one operation. This, although requiring more expensive machinery, would be the best and most expeditious plan for making them on a large scale.

It will thus be seen that by this method of construction much time and labor may be saved, and the axle, therefore, made much cheaper and more rapidly.

While this improvement is especially adapted to the formation of axles for children's carriages, it is obvious that it may also be used in the manufacture of axles for larger carriages, if desired, the spindles in such case being tapered to fit the boxes of the wheels.

Having thus described our invention, what we claim is—

The axle Δ for a child's carriage, formed

from a round rod of metal, and having the shoulders *a* for attaching the springs or body of the carriage, substantially as described.

BAXTER B. NOYES.
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Witnesses:

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