A. E. SMITH.

Carriage Axle.

No. 106,086. Patented Aug. 2, 1870.

Fig. 1.

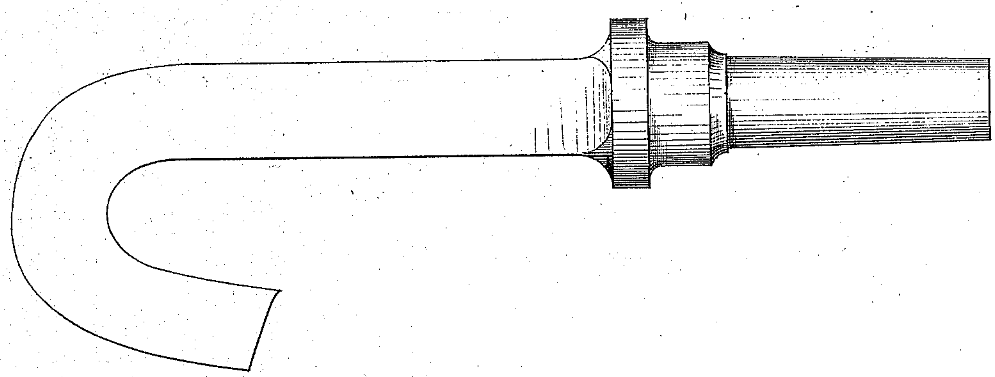
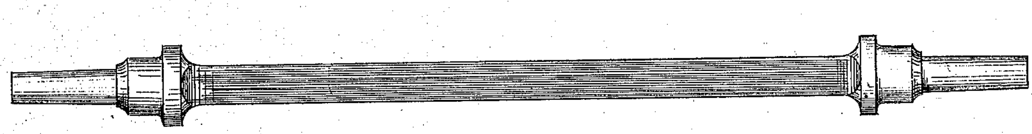


Fig. 2.



Witnesses:
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United States Patent Office.

ALFRED E. SMITH, OF BRONXVILLE, NEW YORK.

Letters Patent No. 106,086, *dated August* 2, 1870.

IMPROVEMENT IN THE MANUFACTURE OF CARRIAGE-AXLES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, ALFRED E. SMITH, of Bronxville, in the county of Westchester and State of New York, have invented a new and useful Improvement in Carriage-Axles; and I do hereby declare the following to be a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, making part of this specifiation, in which—

Figure 1 is a perspective view of an axle forged from a steel ingot, with one end bent, when in a cold condition.

Figure 2 is a view of an axle formed with both arms.

My invention consists in a steel axle, produced directly from the ingot.

It has been customary, hitherto, to produce articles of steel in the following manner:

Steel is first cast into ingots, then is either hammered or rolled into bars, to be sold to the manufacturers, and by them to be converted into axles and various other devices.

In carrying out my invention, I take the steel ingot and hammer, forge, or roll them into axles, instead of forming or making the ingots into bars, by which means the extra expense incurred and material used by converting them into such bars are dispensed with, at the same time all danger of burning or spoiling the axle is obviated, which heretofore has been a frequent and inevitable occurrence, when the ingot is formed into bars and sold to the manufacturer or manufacturers, and then is by them rolled or forged into axles.

The ingot is subjected to a proper heat, and is then forged, rolled, or hammered directly into axle-billets, thus dispensing with labor, fuel, and the expense of forming them into bars before they are forged, rolled, or hammered into axles or axle-billets.

A complete axle, that is, both journals and arms in one piece, may be made by my process, dispensing with welding the center or inserting an extra piece.

An axle is thus produced cheaper, and a better article offered to the public, since I obviate the necessity of working over the steel ingot into bars, and thus the molecular state of the metal is not deteriorated.

I do not, of course, limit myself to any peculiar form or shape of an axle or journal, as I can readily forge, roll, or hammer out any style of axle directly from the ingot.

What I claim is—

A steel axle produced directly from the ingot, substantially as described, as a new article of manufacture.

To the above I have signed my name this 9th day of May, 1870.

ALFRED E. SMITH.

Witnesses:

JOHN CHADBURN,

WILLIAM CHADBURN.