2. Sheets, Sheet. 1.

F. B. Morse,

Manf. Carriage Irons.

No. 110,385. Patented Dec. 20. 1870.

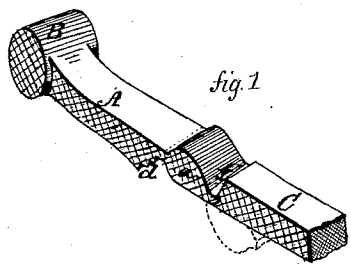
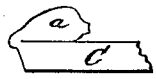


fig. 1

fig. 2.



Witnessed.
J. H. Shumway
A. J. Tibbits

Francis B. Morse
Inventor
By his Attorney.
Wm. E. Earle

F. B. Morse,

2. Sheets. Sheet 2.

Manf. Carriage Irons.

No. 110,335. Patented Dec. 20. 1870.

fig. 3.

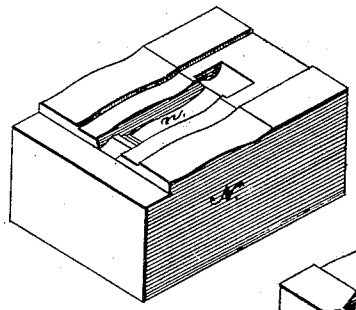
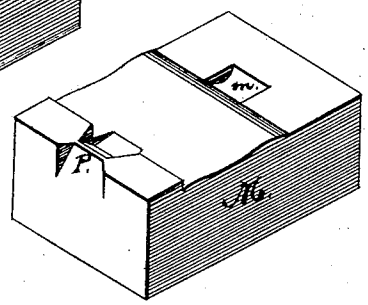


fig. 4.



Witnesses.

J. H. Shumway

A. J. Tibbits

Francis B. Morse

Inventor

By his Attorney

John E. Earle

United States Patent Office.

FRANCIS B. MORSE, OF PLANTSVILLE, CONNECTICUT, ASSIGNOR TO HIMSELF AND H. D. SMITH & COMPANY, OF SAME PLACE.

Letters Patent No. 110,385, dated December 20, 1870.

IMPROVEMENT IN THE METHODS OF FORMING SHAFT-IRONS FOR CARRIAGES.

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, FRANCIS B. MORSE, of Plantsville, in the county of Hartford and State of Connecticut, have invented a new Improvement in Process for Forging Shaft-Irons for Carriages; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a perspective view of a completely-formed shaft-iron, and of another partly formed, the completion of the one and the partial forming of the other being the result of one operation only of the dies, and in

Figure 2, a side view, further illustrating the process.

Figures 3 and 4, perspective views of the upper and lower dies for forging the shaft-irons.

This invention relates to an improvement in the process of forging the article of manufacture known to the trade as shaft-irons; that is, the eye and iron by which the shaft is attached to the shackle.

Heretofore these have been produced by taking a bar of iron the full width of the head, upsetting to give the thickness of the head, and then drawing down the shank.

The object of my invention is to use iron the size of the shank, and perform at the same time the operation for the enlargement of the head on one blank and for molding the shank and head of another, so that the work is performed to a certain extent upon the two at the same time.

A is the shank.

B, the head—the head necessarily wider than the shank, so that a shoulder is formed at the intersection of the shank and head. I take a bar of iron, C, of nearly the exact size required for the shank, and first turn over the end *a* on to the bar, as seen in fig. 2, so as to double the metal at that point. The heated bar is then placed in the dies and swaged, the enlarged end forming the head B, and the body C forming the shank A, the end of the shank being left of the usual form for the consumer to weld directly on to the extension. At the same time the blows are struck to form the head and shank, a depression, *f*, is made in the bar C, forming the part *a*. Thus one iron is completed and the second begun at the same operation. The first iron is separated from the second on the broken line, fig. 1, then the part A doubled under the part C, ready for the formation of the second iron and part of the third.

By this process the labor of drawing the shank is entirely dispensed with, and the cost of manufacture, by actual test, is as thirty to eighty-seven, thus reducing the cost of manufacture more than one-half from the process as heretofore practiced.

The dies by which I perform the process before described are represented in figs. 3 and 4, N being the lower and M the upper die, a recess, *n*, in the lower die the shape of the iron, save half the head, which is formed at *m* in the upper die, and in the upper die the construction is made as at P, to prepare the metal for doubling to form the head, as before described.

I do not claim anything new in the particular form of the shaft-iron complete as an article of manufacture; but

I do claim—

The process herein described for forming the shaft-iron of carriages.

F. B. MORSE.

Witnesses:

A. J. TIBBITS,

J. H. SHUMWAY.