

J. A. J. SAWYER.  
CARRIAGE-SHAFTS.

No. 189,657.

Patented April 17, 1877.

Fig. 1.

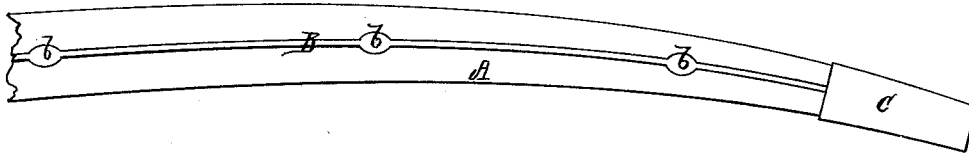


Fig. 2.

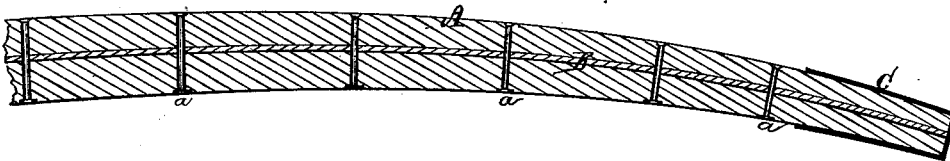
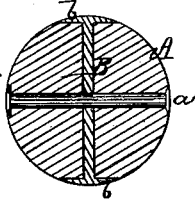


Fig. 3.



Witnesses  
S. W. Piper  
L. W. Miller

John A. J. Sawyer  
by his attorney  
R. H. Ledy

# UNITED STATES PATENT OFFICE.

JOHN A. J. SAWYER, OF LYNN, MASSACHUSETTS.

## IMPROVEMENT IN CARRIAGE-SHAFTS.

Specification forming part of Letters Patent No. **189,657**, dated April 17, 1877; application filed March 13, 1877.

*To all whom it may concern:*

Be it known that I, JOHN A. J. SAWYER, of Lynn, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Carriage-Shafts; and do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a horizontal section, and Fig. 3 a transverse section, of the front-end portion of a carriage-shaft provided with my invention.

In making carriage-shafts it is customary to first steam the wood, and while it is in such condition to bend it into shape. A shaft so made is very liable in course of use to straighten more or less at the bent parts. One object of my invention is to prevent this, another being to greatly strengthen the shaft in the portion which is to project beyond the tug of the saddle of the harness.

In carrying out my invention I insert within the wooden shaft A lengthwise of it from its lesser end a strip, B, of metal, it being extended throughout the curved part, which it may be desirable to strengthen. This strip I secure in place by a series of rivets, *a a*, going through it and the shaft. Furthermore, the strip or re-enforce is provided with short flanges *b b*, arranged to project from it at intervals, and at its upper and lower edges, or

they may be continued from end to end of it. In the drawings these flanges are shown as arranged over rivets, such an arrangement serving to there strengthen the shaft when weakened by the rivet-holes.

The strip or re-enforce extends lengthwise within the thimble or ferrule C, and thereby serves to prevent such from being broken off the shaft by a horse stepping on the shaft or the ferrule. The re-enforce also prevents the shaft from being broken when stepped on by a horse as it is very liable to be when without the re enforce.

I do not claim a whiffletree or evener-bar, having a metal plate arranged lengthwise within it, or between its layers of wood.

What I claim is—

1. The combination of a wooden carriage-shaft, A, and a metallic strip or re-enforce, B, arranged therein, and fastened thereto, and provided with flanges, as set forth.

2. The combination of a wooden carriage-shaft, A, and its metallic thimble or ferrule C, with a metallic strip or re-enforce, B, provided with flanges, and arranged within such shaft and thimble, and fastened to the shaft by rivets, all substantially as specified.

JOHN A. J. SAWYER.

Witnesses:

R. H. EDDY,  
J. R. SNOW.