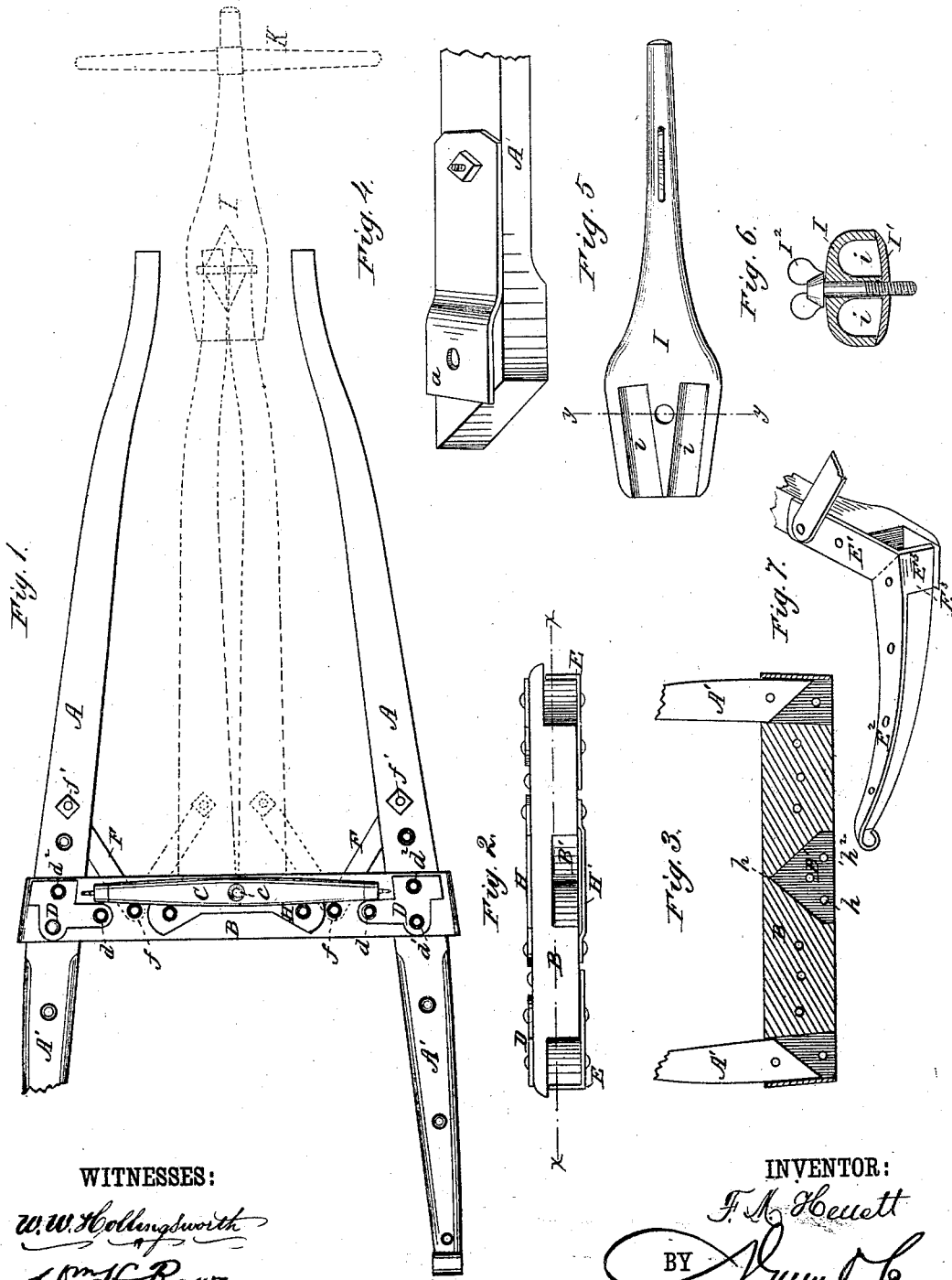


(No Model.)

F. M. HEUETT.  
Reversible Pole and Shaft for Vehicles.

No. 232,967.

Patented Oct. 5, 1880.



WITNESSES:

*W. W. Hollingsworth*  
*Wm. H. Row*

INVENTOR:

*F. M. Heuett*  
BY *Wm. H. Row*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

FRANCIS M. HEUETT, OF JUG TAVERN, GEORGIA, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO W. R. MCNINCH, OF CHESTER, SOUTH CAROLINA.

## REVERSIBLE POLE AND SHAFT FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 232,967, dated October 5, 1880.

Application filed June 18, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS M. HEUETT, of Jug Tavern, in the county of Walton and State of Georgia, have invented a new and useful Improvement in Reversible Poles and Shafts for Vehicles; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to so combine the parts of shafts for vehicles that they may be readily transposed and re-employed in an effectual and simple manner to form the tongue without removing the thill-arms or hounds from the axle; and the improvement consists in certain details of construction by means of which the above objects are obtained, as will appear more fully from the accompanying drawings, in which—

Figure 1 is a plan view of the parts arranged to form shafts, shown in full lines, and also arranged to form a pole, as shown in dotted lines; Fig. 2, a front elevation of the cross-bar with the thill-bars removed; Fig. 3, a horizontal section of the cross-bar detached in line  $xx$  of Fig. 2. Fig. 4 is a perspective view of the end of the thill, showing its under side; Fig. 5, a plan view of a coupling-horn for the end of the pole; Fig. 6, a transverse section in the line  $yy$  of Fig. 5, and Fig. 7 a perspective view of the under side of one of the brace-plates and its connecting parts.

The thill-bars are in this instance made in two parts,  $A A'$ . The rear parts,  $A'$ , are connected directly to the axle by means of any well-known form of thill-coupling, and are secured in a peculiar manner to the cross-bar  $B$ , to which the whiffletree  $C$  is bolted. The ends of the cross-bar  $B$  are cut away to form a lap-joint with the meeting ends of the parts  $A A'$  of the thill-bars. The sections of the thill-bars are connected with each other and secured to the end of the cross-bar  $B$  by means of upper plates,  $D$ , hereinafter described, and under plates,  $E$ , formed of three parts,  $E^1 E^2 E^3$ , arranged at an angle with each other.

The part  $E^1$  of the plate extends beneath the end of the cross-bar  $B$  about one-fourth its length, the part  $E^2$  extends beneath the thill-bar section  $A'$  from end to end, and the part  $E^3$  is bent at right angles to  $E^2$  and forms an

abutment opposite the cut portion at the end of the cross-bar  $B$ , which will bear against the outer side of the meeting end of the thill-bar  $A'$  and hold it securely thereto. The section  $A'$  of the thill-pole is additionally secured to the angle-plate  $E^2$  by means of rivets or bolts. A socket is thus formed by the cut end of the cross-bar and the plate  $E$ , into which the meeting ends of the thill-bar sections  $A A'$  are inserted from opposite sides. The ends of the bars  $A A'$  above referred to are each cut off at an angle of forty-five degrees with their sides, and when brought together will overlap each other, so that the joint between them will come diagonally across the socket at the end of the cross-bar.

The upper plate,  $D$ , is formed of three leaves, through each of which a bolt or rivet passes. The rivet  $d$  passes through the cross-bar  $B$ , and the rivet  $d'$  and bolts  $d^2$  pass, respectively, through the meeting ends of the thill-bars  $A A'$ . By this means a secure union is obtained between the ends of the cross-bar and the meeting ends of the thill-bars.

As an additional security to the joint a plate,  $a$ , is riveted or bolted to the under side of the meeting end of the thill-bar  $A$  and is properly bent to underlap the plate  $E$ . The bolt  $d^2$  will thus pass through the plate  $D$ , cross-bar  $B$ , thill-pole  $A$ , plate  $E$ , and plate  $a$ . A nut upon the lower end of the bolt serves to hold the parts securely together, but admits of their ready removal.

Diagonal braces  $F$ , pivoted to the cross-bar  $B$  by rivets  $f$ , each of which is arranged midway between the center of bolts  $d^2$  and the middle of cross-bar  $B$ , are secured at their opposite ends to the rear part of the thill-bar sections by bolts  $f'$  and serve to strengthen the joint. A whiffletree,  $C$ , pivoted to the middle of the cross-bar  $B$  by bolt  $c$ , will complete the shaft attachments.

In order to rearrange the above-named parts to form a pole for a double team, the cross-bar  $B$  is cut away upon its under front side, at its middle portion, to form a wedge-shaped recess,  $B'$ , the base of which would be at the front side of the cross-bar, and the angle formed by its sides would be just equal to the angles formed by both of the ends of the thill-bar sections  $A$

being placed together. A re-enforcing-plate, H, upon the upper side and a similar plate, H', upon the under side of the cross-bar, above and below the recess B', serve to strengthen the reduced portion of the bar, inclose the lower part of the recess B' to form a mortise, and are each provided with corresponding bolt-holes  $h$   $h'$   $h^2$ , one of which,  $h$ , serves to attach the whiffletree to the cross-bar, and the others,  $h'$   $h^2$ , serve to attach the inner ends of the thill-bar sections A A' to the middle part of the cross-bar when the parts are arranged to form a pole. This may be done readily in the following manner: The bolts  $d^2$  and  $f'$  are first withdrawn from the ends of the cross-bar B and thill-sections A, and the said thill-sections are removed from the end mortise and placed together in the middle mortise, one closely against the other, and are secured thereto by placing bolts  $d^2$  through the plates  $a$ , which plates underlap the re-enforcing-plate H', for the purpose described in their former employment. The braces F F are then reversed upon their pivots and secured to the ends of the thill-bars A A' in their new position by bolts  $f'$ . This is admissible, as the center of bolt  $f$  is equidistant from the center of bolt  $d^2$  and the center of bolt  $h'$  or  $h^2$ , respectively, and as the angle of the thill-bar A is at approximately the same angle with the cross-bar B in both positions. The forward ends of the thill-bars are then coupled together by a horn, I, of peculiar construction, and the ends of the cross-bar B are connected to the whiffletrees by swivel-bolts, which will complete the transformation of the shafts to a pole.

The whiffletree C and its bolt  $c$  may be used for one end of the cross-bar, and a similar bolt and whiffletree can be attached to the other end of the cross-bar.

The horn I is formed at its forward end in a well-known manner to receive the end of the yoke K, and at its rear end is formed with diverging channels to receive the forward ends of the thill-bars A. A plate, I', bears against the under side of the bars A, and, by means of a screw-bolt, I<sup>2</sup>, passing through the plate I' and horn I, will clamp the ends of the bars

and hold them closely within the channels  $i$  of the horn.

The advantages of the convertibility of the shafts and pole are well known, and the peculiar construction herein shown has the advantages of simplicity, lightness, strength, complete interchange and re-employment of parts, and but little change in the general form and appearance of shafts and poles of the usual construction.

I claim as my invention and desire to secure by Letters Patent—

1. A shaft for vehicles, formed of the combination of the thill-bar sections A A', provided with diagonal meeting ends, the cross-bar B, cut at its ends and secured to thill-bar sections A' by three-leafed plate E, to form a socket or mortise in the end of the bar B, and the bolts  $d'$   $d^2$ , that pass through the cross-bar plate and meeting ends of the thill-bars, substantially as and for the purpose described.

2. The combination of the thill-bar A A', cross-bar B, plate E, bolts  $d'$   $d^2$ , and plate  $a$ , secured to the meeting end of bar A and underlapping the plate E, substantially as and for the purpose described.

3. In a convertible shaft and pole for vehicles, the combination of the thill-bars A A', cross-bar B, provided with a wedge-shaped mortise, B', midway of its length, the sockets in its ends, the angular meeting ends of the thill-bars, that form a diagonal joint between them and snugly fit the wedge-shaped mortise in the middle part of the bar when brought together, and the bolts  $d'$   $d^2$ , for uniting the parts in either position, substantially as specified.

4. The combination of the cross-bar B and thill bars or hounds A' with a plate, E, formed of three leaves, E' E<sup>2</sup> E<sup>3</sup>, bolted together to form a socket in the ends of the cross-bar for the reception of the thill-bars A, substantially as specified.

FRANCIS MARION HEUETT.

Witnesses:

JAMES R. COKER,  
SINGLETON KYTLE.