

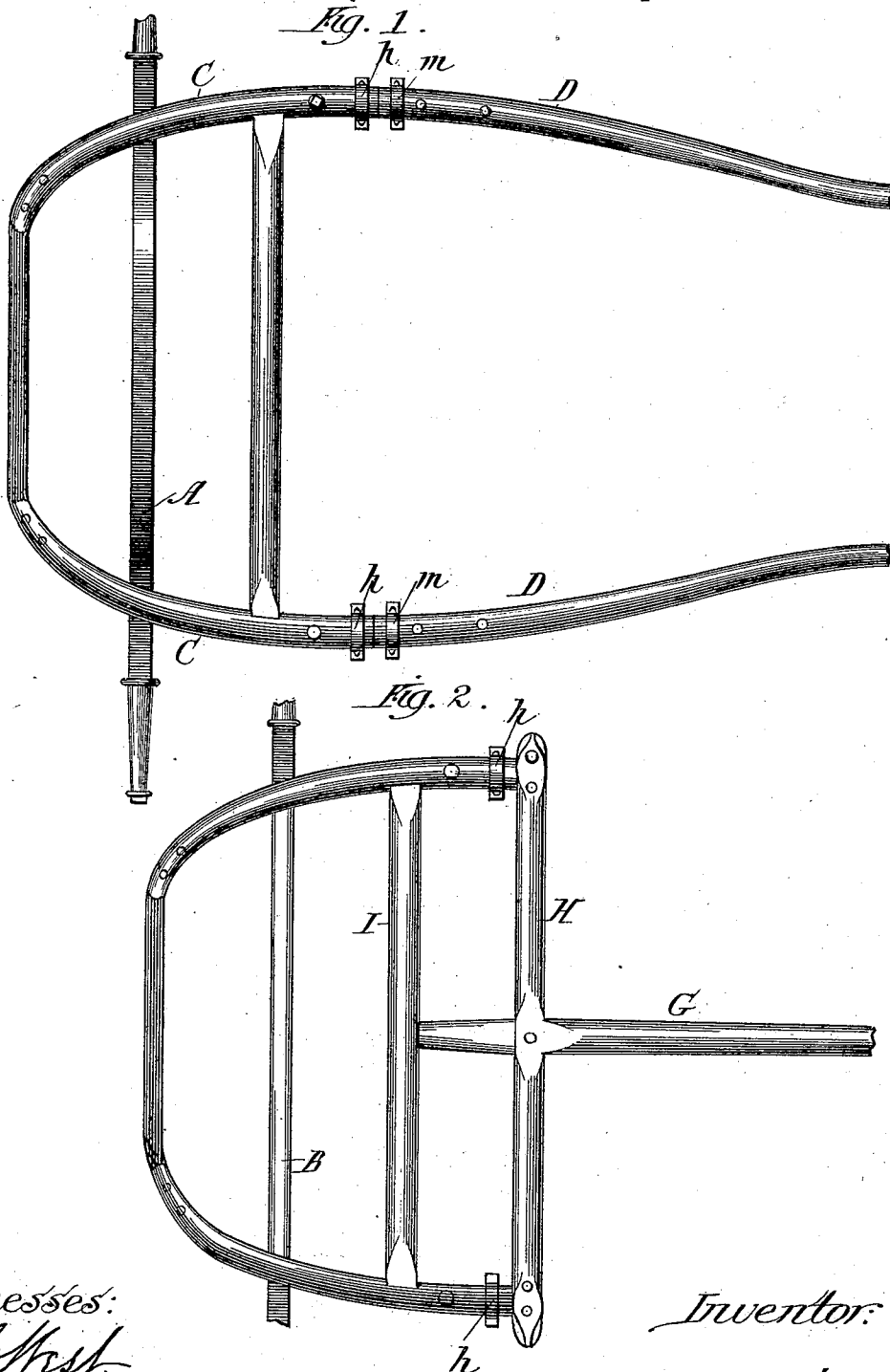
(No Model.)

3 Sheets—Sheet 1.

W. S. FRAZIER.
TWO WHEELED VEHICLE.

No. 361,685.

Patented Apr. 26, 1887.



Witnesses:
E. A. West
Albert H. Adams.

Inventor:
Walter S. Frazier

(No Model.)

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Fig. 3.

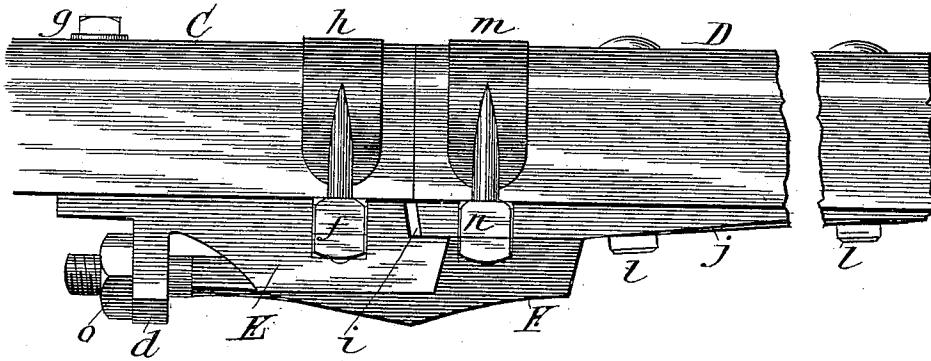


Fig. 4.

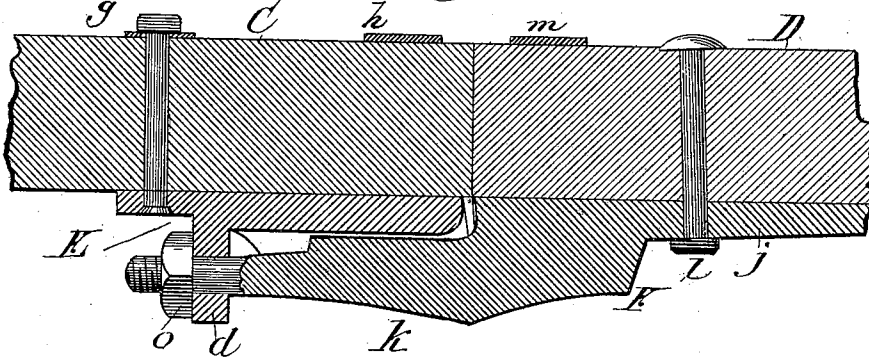
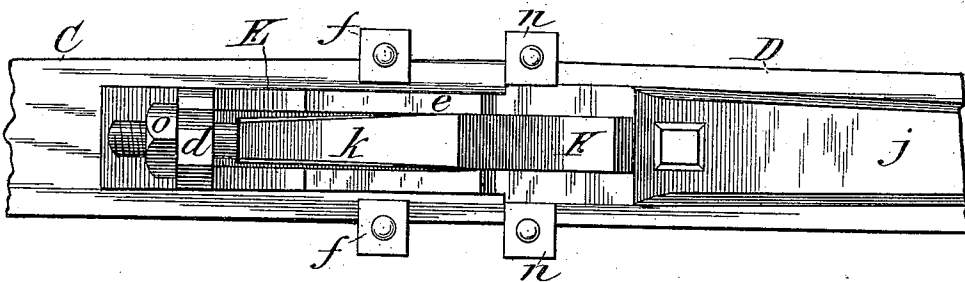


Fig. 5.



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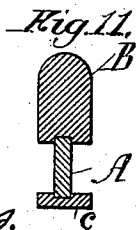
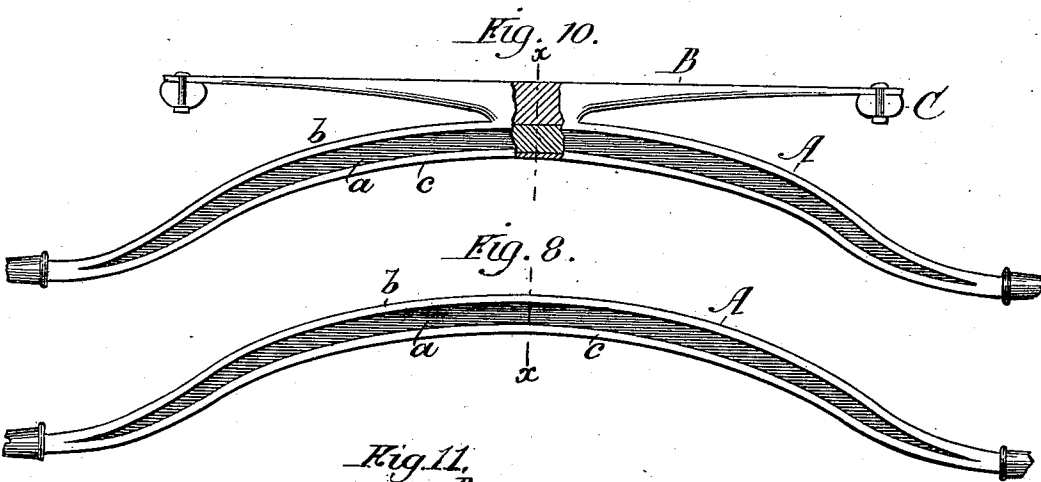
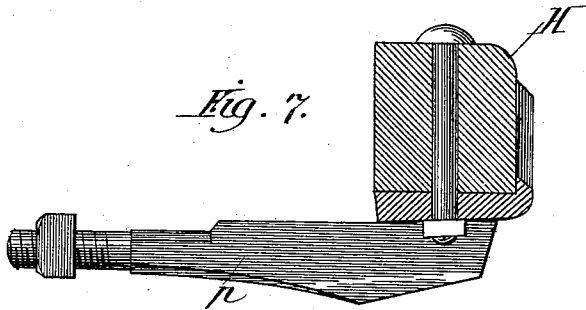
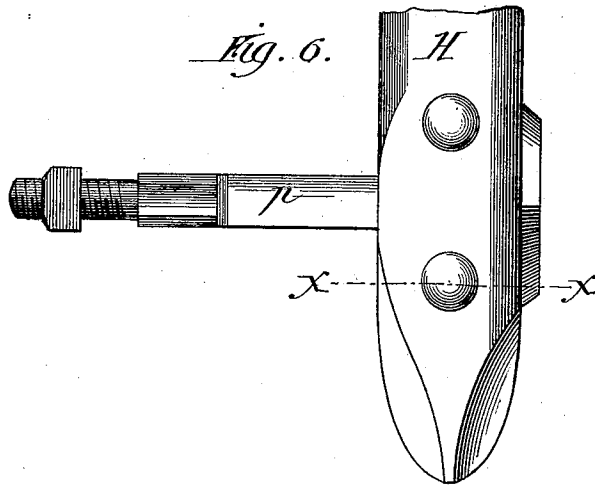


Fig. 9.



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UNITED STATES PATENT OFFICE.

WALTER S. FRAZIER, OF AURORA, ILLINOIS.

TWO-WHEELED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 361,685, dated April 26, 1887.

Application filed January 8, 1887. Serial No. 223,770. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. FRAZIER, residing at Aurora, in the county of Kane and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Two-Wheeled Vehicles, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan showing the shafts made in two parts. Fig. 2 is a plan showing a pole, a portion of the shafts being removed. Fig. 3 is a detail, being a side view of a portion of a shaft, showing the same made in two parts and united by couplings. Fig. 4 is a vertical longitudinal section through the parts shown in Fig. 3. Fig. 5 is an under side view of the parts shown in Fig. 3. Fig. 6 is a detail showing the top of one end of the cross-bar which is attached to the pole with a connecting-iron secured thereto. Fig. 7 is a section at line *x* of Fig. 6. Fig. 8 is an elevation showing the axle. Fig. 9 is a section at line *x* of Fig. 8. Fig. 10 is a modification showing an axle substantially the same as that shown in Fig. 8, with a tie-bar made integral with the upper portion of the axle. Fig. 11 is a section at line *x* of Fig. 10.

The objects of my invention are to provide an arched axle made of wood which shall be light, stiff, and strong, so that the weight of the driver and the motion of the vehicle will spring it as little as possible; to provide a tie-bar made integral with the upper portion of the axle; to provide a two-wheeled vehicle with shafts made in two parts, so that a portion of each shaft can be removed and a pole of peculiar construction be used, which I accomplish as illustrated in the drawings, and as hereinafter described. Those things which I claim as new will be set forth in the claims.

In the drawings, A represents my improved axle. It is made of three pieces of wood, a central piece, *a*, Figs. 8 and 9, an upper piece, *b*, and a lower piece, *c*, the center piece, *a*, being mortised or let into the upper and lower pieces, *b c*. As shown, the center piece, *a*, is made of a single piece; but it might be made of two or more vertical pieces secured together, and the grain of the several pieces running in somewhat different directions would

make this piece somewhat stiffer than if made in a single piece. The pieces *b c* are to be bent in the usual manner. The center piece, *a*, does not extend quite to the extreme ends of the axle, and the pieces *b c* are brought together and made of a proper form to receive the usual irons.

In Fig. 10 I have shown an axle made as before described, except that the axle in this figure is provided with a tie-bar, B, which is made integral with the upper piece, *b*, of the axle proper. The piece *b* and the tie-bar B can be readily formed from a single piece by cutting out so much as may be necessary from a single solid piece and bending the piece *b* into proper form. The ends of this tie-bar are designed to be secured to the tops of the shafts. Each shaft is made of two pieces.

CC represent the rear portions of the shafts, and D D represent the remaining portions of the shafts.

E is a piece of metal, preferably made of wrought-steel. This piece E is of peculiar construction, consisting of what may be termed a "plate," from which projects downward a piece, *d*, near the rear end, and from each side there is also a downward-projecting flange, *e*.

f f are ears, which, as shown, are made integral with E. This piece E is secured to the front end of the rear portion, C, of the shaft by means of a bolt, *g*, at the rear end of E, and by means of a clip, *h*, the ends of the clip passing through the ears *f*. At the forward end of this metal piece E there is a recess, *i*, on each side.

F is another piece of metal, preferably made of wrought-steel of the form shown in the drawings. It has a plate portion, *j*, with which is connected a piece, *k*, which extends rearward, and the rear end is provided with a screw-thread, and is adapted to enter a hole in the downward projection, *d*. This piece *k* fits in between the downward flanges *e e*. As shown, this metal piece F is secured to the portion D of the shaft by means of two bolts, *l l*, and a clip, *m*, the ends of which clip pass through ears *n* on F.

When the two parts of the shaft are together, as shown in Fig. 3, the end of *k* passes through the hole in *d*, and the rear end of that which I have called the "plate" portion of F enters the recesses *i*, and a single nut, *o*, will hold the

two parts of the shaft together. The form of the irons E F is such that when the two parts of the shaft are together, as shown in Fig. 3, there will be sufficient strength, practically equal to the strength of an undivided shaft.

G, Fig. 2, is the main portion of a pole.

H is a cross-bar secured to G. To each end of this cross-bar an iron, *p*, is bolted, the rear end of which is screw-threaded and adapted to pass through one of the projections *d*. The rear end of the pole G may enter a socket secured to the cross-bar I, which socket is not shown in the drawings.

The front portions, D D, of the shafts can be easily removed by removing the nuts *o*, and then the pole can be substituted for the removed portions of the shafts by passing the ends of the irons *p* into the holes in the downward projection *d*, and securing them by nuts *o*.

I thus provide a very strong high-arched axle made of wood. I also provide such an arched axle with a suitable tie-bar made integral with the upper portion of the axle. I also provide a two-wheeled vehicle from which the forward portions of the shafts can be easily removed and a pole be substituted therefor. If the central portion, *a*, of the axle be made from two vertical pieces, a thin strip of metal of proper form might be placed between such pieces to give additional strength. Such a piece of metal might be placed on the outside of the central piece, *a*; but I do not think this metal piece necessary.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. An arched axle made of wood and comprising the upper piece, *b*, the lower piece, *c*, and the central piece, *a*, said pieces being each continuous and solid from one end of the axle to the other, substantially as described.

2. An arched axle made of wood, consisting

of three pieces, *a b c*, in combination with a tie-bar, B, made integral with the upper piece, *b*, of the axle, substantially as and for the purpose specified.

3. The combination, with a vehicle-shaft made in two detachable parts, C D, of a plate, E, secured to the under side of the part C, and having a downward projection, *d*, and depending lateral flanges *e e*, and a plate, F, secured to the under side of the part D, and projecting rearward to engage the projection *d* and flanges *e e*, substantially as described.

4. The combination, with a vehicle-shaft made in two detachable parts, C D, of the plate E, secured to one of said parts, and provided with projection *d*, flanges *e e*, and ears *f f*, the plate F, secured to the other part and provided with projection *k* and ears *n n*, and the bolts *g l*, clips *h m*, and nut *o*, substantially as described.

5. In a vehicle-shaft made in two detachable parts, the rear part, C, having secured to its under side a plate, E, provided with a depending perforated projection, *d*, and depending lateral flanges *e e*, whereby it is adapted to be engaged either with the projecting portion of a plate secured to the front part of the shaft or with a rearward projection on the cross-bar of a pole, substantially as described.

6. The combination, with the rear portions of divided vehicle-shafts, and plates E, secured thereto, and provided with depending side flanges, *e e*, and depending perforated projections *d*, of the pole G, having a cross-bar, H, provided at each end with a rearward projection, *p*, adapted to engage said flanges *e*, and projections *d*, substantially as described.

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Witnesses:

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