(No Model.) 2 Sheets—Sheet 1

D. T. DEMAREST.

BICYCLE.

No. 603,006. Patented Apr. 26, 1898.

Fig. 1.

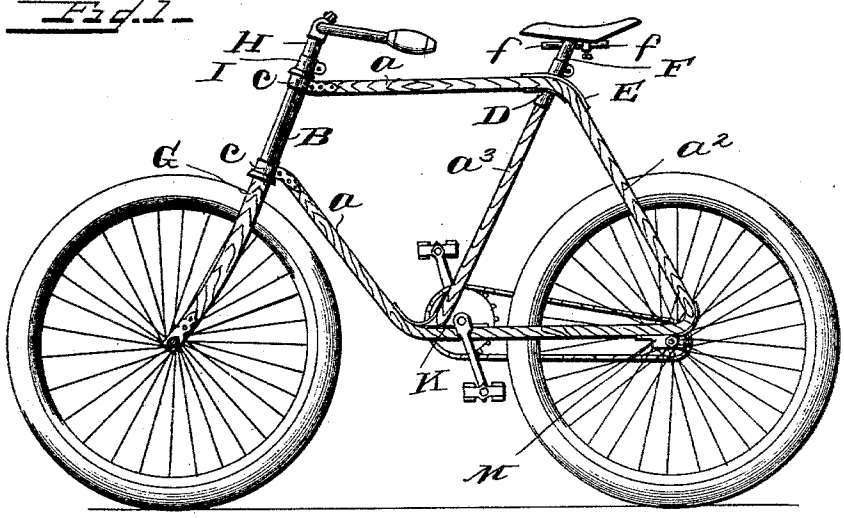
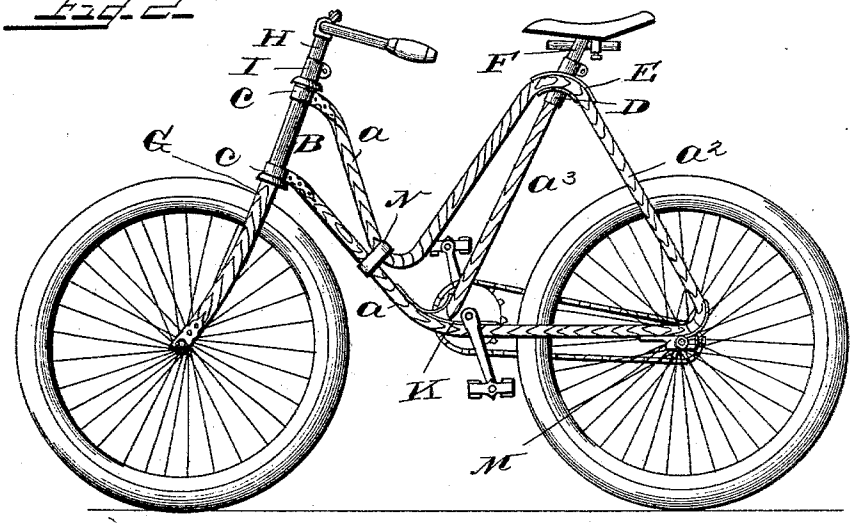


Fig. 2.



Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

D. T. DEMAREST.

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Fig. 3.

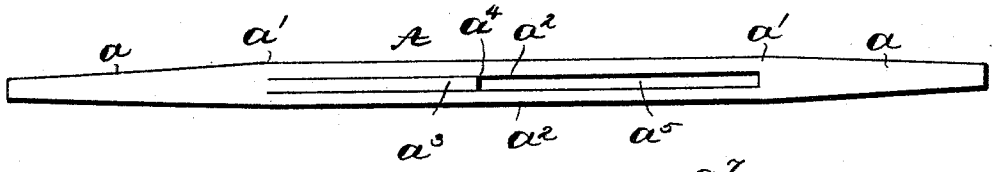


Fig. 4.

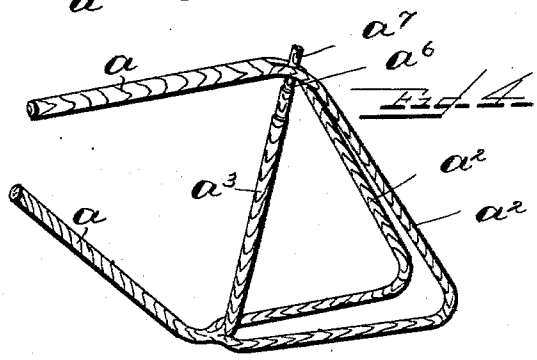


Fig. 5.

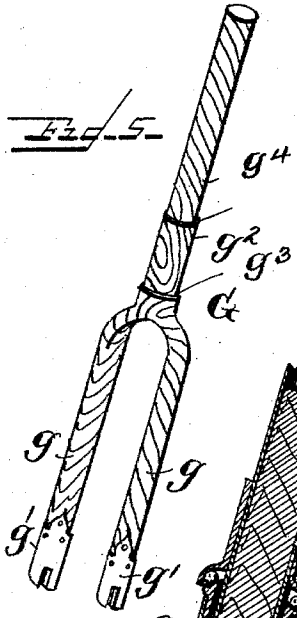


Fig. 8.

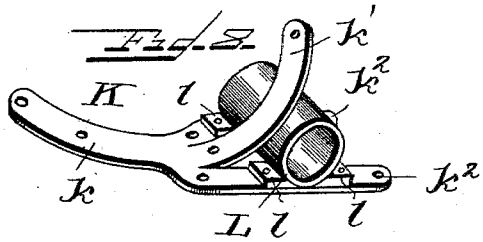


Fig. 6.

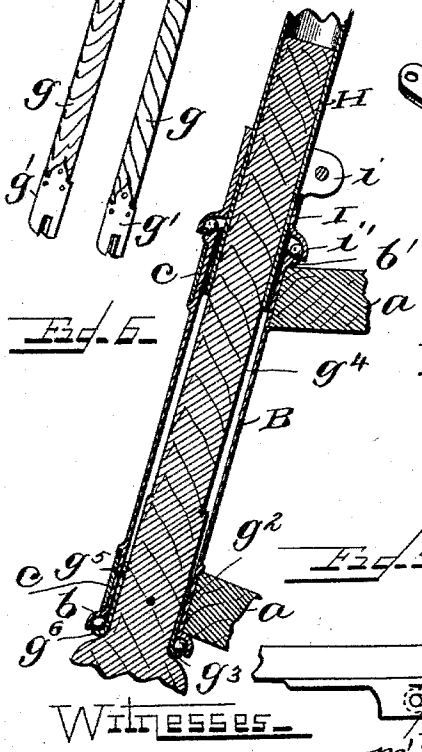


Fig. 7.

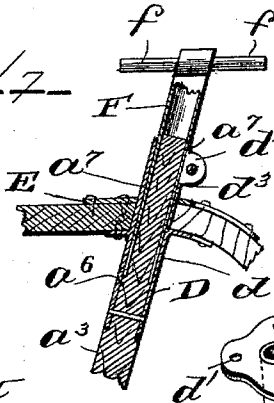


Fig. 10.

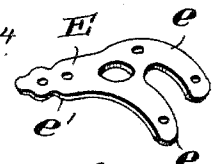


Fig. 9.

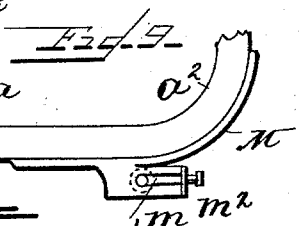
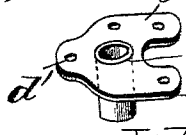


Fig. 11.



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UNITED STATES PATENT OFFICE.

DAVID T. DEMAREST, OF ALEXANDRIA, VIRGINIA.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 603,006, dated April 26, 1898.

Application filed April 23, 1897. Serial No. 633,455. (No model.)

To all whom it may concern:

Be it known that I, DAVID T. DEMAREST, a citizen of the United States, residing at Alexandria, in the county of Alexandria and State of Virginia, have invented certain new and useful Improvements in Bicycles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in bicycles; and it consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the drawings, Figure 1 represents a side view of a diamond-frame bicycle constructed according to my invention. Fig. 2 is a similar view of a drop-frame or lady's bicycle. Fig. 3 is a top plan view of the blank from which the entire frame is bent and shaped. Fig. 4 is a detail perspective view of the frame after bending and shaping. Fig. 5 is a detail perspective view of the front fork and steering-post, which are formed in one piece. Fig. 6 is a vertical sectional view, on a larger scale, of the head or sleeve of the machine, the steering-post, and handle-bar support. Fig. 7 is a detail sectional view of the saddle-post and its connections. Fig. 8 is a detail perspective view, on an enlarged scale, of a brace for stiffening the frame and supporting the crank-hanger. Fig. 9 is a detail view of the support for the rear axle. Figs. 10 and 11 are detail views of parts of the mechanism hereinafter described.

The frame of my improved machine is composed of a single piece of wood, which in the rough is constructed in the general outline indicated in Fig. 3. The end pieces $a\ a$ of the blank A increase gradually in size from the ends to points a'. Between these points the blank is divided into three longitudinal portions, the outer portions $a^2\ a^2$ being continuous and the central portion a^3 being cut away at the point a^4, leaving an open space a^5 from the point a^4 to the point a', in rear of the same. The frame is then bent after being steamed or otherwise treated to prevent breaking and is caused to assume the general form shown in Fig. 4, the end portions of the blank forming the main bars $a\ a$ of the frame, the short central arm a^3 forming the vertically-disposed connecting-bar and saddle-support, and the portions $a^2\ a^2$ forming the rear fork of the frame, between the parts of which the rear wheel revolves.

The forward ends of the bars $a\ a$ may be connected directly to the steering-head; but in order to give greater rigidity to the frame I prefer to connect the said bars to a sleeve B, formed, preferably, of steel, through which the steering-post passes. These bars are connected to the said sleeve preferably by bands of steel or other suitable metal $c\ c$, which are passed around said sleeve and preferably lie in annular recesses therein, so as to be flush with the surface of the sleeve, and said bands c are secured to the bars a by means of rivets or bolts or screws, as found most desirable.

The vertically-disposed connecting-bar a^3 is provided at its upper end with a slightly-reduced portion a^6, above which is a still further reduced portion a^7. Upon the reduced portion a^6 I place a tubular socket D, preferably of steel, which is riveted or otherwise secured to the bar a^3 and extends to the end of the said bar, leaving an annular space between the reduced portion a^7 and the inside of the tubular guide B. The said guide, it will be seen, will lie flush with the exterior surface of the bar a^3 and will be provided about midway of its length with a collar d, provided with horizontal flanges $d'\ d^2\ d^2$, the said collar being brazed or otherwise secured to the sleeve D and the said flanges being secured by screws or rivets to the under side of the bar a and forked bars $a^2\ a^2$. (See Figs. 1 and 7.) I also prefer to provide a brace-plate E (shown in detail in Fig. 10) for the upper side of the joint made at this point. The plate E is provided with forked portions $e\ e$, adapted to engage the upper side of the forked bars $a^2\ a^2$, and said plate is also provided with an aperture e', which fits snugly the sleeve or socket D, as shown in Fig. 7. The plate E is placed in position and secured by screws or rivets, as desired.

F represents the usual hollow saddle-post, which engages the recess between the reduced portion a^7 of the bar a^3 and the sleeve or socket D and is provided at its upper end with

the horizontal saddle-supporting arms *f f*. The sleeve or socket D is preferably slit on its rear side adjacent to the top of the same, as indicated at d^3, and the edges of the said slit are provided with clamping-lugs d^4, through which is passed the usual adjusting-screw. By means of this construction it will be seen that the saddle-post F may be adjusted vertically and clamped in any desired position between the sleeve or socket D and the reduced portion of the bar a^3.

G represents the front fork of the machine, which is made of a single piece of wood bifurcated at its lower end to form the fork-arms *g g*. The lower ends of the arms *g g* are provided with longitudinal open slots, and said slotted portions are preferably incased in sheet-steel sockets *g' g'*, as shown in Fig. 5, so that the said slotted portions receive the axle of the front wheel of the machine. The upper portion of the fork, which I term the "steering-post," is provided with a slightly-reduced portion g^2, forming a shoulder g^3, and above the portion g^2 is a further-reduced portion g^4. A collar g^5 is placed on the reduced portion g^2 with its lower end abutting against the shoulder g^3 and provided externally with a ball race or cone g^6. The lower end of the sleeve B is provided with a ball-race *b*, between which and the cone g^6 are placed a series of steel balls to form the usual ball-bearings. It will be observed that there is an annular space between the reduced portion g^4 of the steering-post and the interior of the sleeve B, and within this annular space the hollow stem H, which supports the handle-bars, may be adjusted vertically, the said hollow stem being preferably slit for a portion of its length on one side in order that it may be clamped rigidly to the reduced portion of the steering-post.

I represents a clamping-collar provided with lugs *i* to receive the clamping-bolts and secure the hollow stem of the handle-bars to the steering-post. The said collar I will also be provided with a ball-race *i'*, between which and a cone *b'* on the upper end of the sleeve B are placed a series of balls to form a second ball-bearing for the steering-post. The handle-bar proper may be of any desired or usual pattern.

In Fig. 8 I have shown a plate which I prefer to employ for reinforcing my improved wood frame at the juncture of the arms a^3 a^2. a^2 and which also serves to support the crank-hanger of the machine. This plate K is provided with an arm *k*, adapted to lie upon the upper side of the lower arm *a*, a central upwardly-extending tongue *k'*, adapted to be secured to the arm a^3, and rearwardly-extending arms k^2 k^2, which engage and are secured to the fork-arms a^2 a^2. This plate K reinforces the parts of the frame at this point and prevents spreading, splitting, or cracking of the same.

L represents the crank-hanger, which is of any ordinary or usual construction and is provided at each end with lateral arms *l l*, adapted to be secured by bolts to the plate K.

In Fig. 9 I have shown a brace-bar adapted to engage each of the curved rear portions of the arms a^2 a^2 to reinforce the same and at the same time to provide means for holding and adjusting the axle of the rear wheel. This reinforcing-plate M has a curved portion engaging and secured to the curved portions of the arm a^2 and is provided on its lower side with a fork *m*, adapted to receive the axle of the rear wheel and provided with a suitable form of adjusting mechanism, as shown, consisting in this instance of an eye-bolt *m'*, engaging the axle and provided with an adjusting-nut m^2.

By making my improved frame from a single piece of wood it is obvious that it can be constructed very cheaply and will dispense with a number of joints which would otherwise have to be used, the construction at the same time affording ample strength and providing a neat and attractive appearance.

In Fig. 2 I have shown my improved frame adapted for use by women, in which the upper main frame-bar is bent down, preferably into engagement with the lower frame-bar, to which it is secured by a band N or other suitable means, thus forming a drop-frame. The other details of construction are the same as those previously described. The machine will be fitted with wheels, driving mechanism, handle-bars, and saddles of any usual or preferred construction.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described blank for a bicycle-frame consisting of a single piece, having the end portions, intermediate side portions, connecting the end portions and separated from each other, and the central arm intermediate the side portions, substantially as described.

2. A bicycle having its frame consisting of the main bars, the side portions continuous therewith connecting the rear ends of said bars and bent to form the rear fork, the vertically-disposed central bar connected to one of said main bars and the sleeve secured to the forward ends of the main bars, said main bars, continuous side portions and central bar being formed of one piece, substantially as described.

3. A bicycle having its frame consisting of the main bars, the side portions continuous therewith connecting the rear ends of said bars, separated from each other and bent to form the rear fork, the vertically-disposed central bar connected to the lower of said main bars, and having its upper end connected to the juncture of the upper main bar with said side portions, and a sleeve connected to the forward ends of said main bars, said main bars, continuous side portions and central bar being formed of one piece, substantially as described.

4. A bicycle comprising among its members, the main bars, the separated side portions con-

tinuous therewith, connecting the rear ends of said bars, and bent to form the rear fork the vertically-disposed central bar extending from the rear end of the lower main bar and secured to the juncture of the upper main bar with said continuous side portions, said main bars, continuous side portions and central bar, being formed of one piece, and a front fork having its steering-post pivotally connected to the forward ends of said main bars, substantially as described.

5. A bicycle comprising among its members the main frame-bars, the separated side portions continuous therewith connecting the rear ends of said main bars, bent to form the rear fork and provided with means for supporting the rear wheel the central bar extending from a point intermediate said side portions at one end of the same upwardly and connected to the juncture of the upper main frame-bar and the other ends of said side portions, said main bars, side portions and central bar being formed of one piece, a sleeve rigidly secured to the forward ends of said main bars and the brace-plate having portions secured to the lower main frame-bar, the lower end of said central bar and said side portions and provided with a crank-hanger, substantially as described.

6. A bicycle comprising among its members, the main frame-bars, the side portions continuous therewith connecting the rear ends of said main bars, separated and bent to form the rear fork, the central bar extending from the juncture of the lower main frame-bar with said side portions, upwardly, and secured to the juncture of the upper main frame-bar with said side portions, said main bars, side portions and central bar being formed of one piece, said central bar having a sleeve on its upper end, and a reduced portion within said sleeve, the hollow saddle-post engaging said reduced portion, within said sleeve and means for clamping said hollow saddle-post to said reduced portion of the bar between said sleeve and said bar, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID T. DEMAREST.

Witnesses:
L. P. WHITAKER,
J. D. KINGSBERY.