(No Model.)

F. H. BOLTE.

BICYCLE FRAME.

No. 478,391. Patented July 5, 1892.

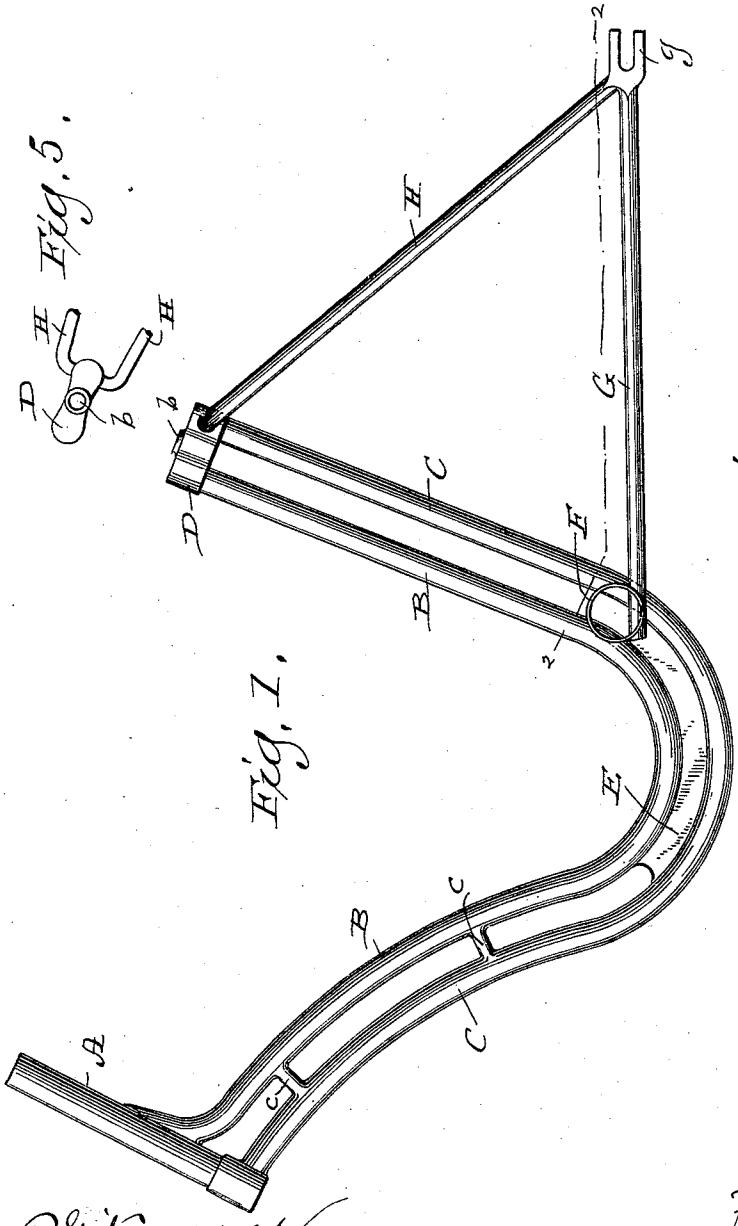

Fig. 1.

Fig. 5.

Fig. 2.

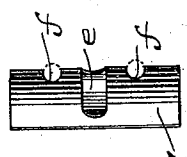

Fig. 4.

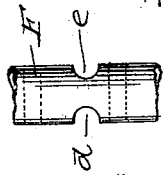

Fig. 3.

Witnesses
Geo. W. Young
N. E. Oliphant

Inventor
Frank H. Bolte
By H. G. Underwood
Attorneys

UNITED STATES PATENT OFFICE.

FRANK H. BOLTE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE SERCOMBE-BOLTE MANUFACTURING COMPANY, OF SAME PLACE.

BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 478,391, dated July 5, 1892.

Application filed February 13, 1892. Serial No. 421,375. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. BOLTE, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Bicycle-Frames; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to obtain a maximum of strength and minimum of weight in frames especially designed for ladies' bicycles; and to this end the said invention consists in certain pecularities of construction and combination of parts to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a side elevation of a bicycle-frame constructed according to my invention; Fig. 2, a plan view of the same, partly in section, on line 2 2 of the preceding figure; Fig. 3, a plan view of a portion of a crank-hanger forming part of the frame and embodied in my improvements; Fig. 4, a rear elevation of the crank-hanger, and Fig. 5 a detail plan view of the saddle-supporting portion of said frame.

Referring by letters to the drawings, A represents a steering-head in the form of a vertically-disposed front tube that forms part of my frame, and this tube serves as a sleeve for the shank of the fork in which the front wheel of the complete bicycle is hung, as is usual in the art to which my invention relates. Brazed or otherwise rigidly secured to the front tube A are continuous parallel reach rods or tubes B C, one above the other, that extend downward and toward the rear for a certain distance of their length, then turn on curves to form what is commonly termed the "loop," and continue upward and toward the rear. The upper rear ends of the parallel parts B C are brazed or otherwise rigidly secured in a socket-cap D, that has a central aperture *b* for engagement with a saddle-post. The upward continuations of the parallel parts B C is one of the features of my invention, inasmuch as I am thus enabled to utilize both of said parts as a support for the rider of the bicycle.

Intermediate of the front tube A and lower curved portions of the parts B C, I prefer to arrange the usual braces *c*, the latter being brazed or otherwise rigidly secured in position.

In order to compensate for the strain that comes upon the lower curved portions of the parts B C, I employ a brace-plate E, that is set on edge and brazed or otherwise rigidly secured to said parts B C at this point for approximately the whole length of the curve, as shown in Fig. 1, said brace-plate being preferably of spring-steel and of such length and thickness as will give the requisite rigidity without excess of weight.

A crank-hanger in the form of a sleeve F is arranged between the rods or tubes B C in rear of the brace-plate E, and this crank-hanger is cut out at the center in front and rear to form seats *d e*, (as best shown in Fig. 3,) each of which engages one of said rods or tubes, the latter being preferably brazed in its respective seat. The under portion of the crank-hanger F is also cut out on opposite sides of the seats *e* therein to form other seats *f f* for rearwardly-extending horizontal rods or tubes G G, the latter being brazed or otherwise rigidly secured in the latter seats.

Rods or tubes H H have their upper ends brazed or otherwise rigidly connected to the socket-cap D, and the lower ends of these rods and the rear ends of the ones G G are brazed or otherwise rigidly connected to supports *g g* for the axle of the rear wheel of the complete bicycle.

I do not wish to be understood as limiting myself to the above-described crank-hanger in connection with the loop-frame herein shown, inasmuch as the said crank-hanger may be as readily employed in connection with various styles of frames.

The aforesaid crank-hanger is practically a section of tubing, and the seats therein are cut just deep enough to take the engaging frame rods or tubes without having the latter come into contact with the crank of the complete bicycle.

The crank-hanger I have shown and described can be very cheaply manufactured, and by its use I avoid the necessity of casting or forging such devices.

The tube A, above described, constitutes that

form of steering-head necessary in a bicycle having ball-bearings for the shank of its front fork; but I do not wish to be understood as confining myself to this form of steering-head, as it is possible to join the forward ends of the tubes B C and pivotally connect them to a solid steering-head, this being an expedient common in the art to which my invention relates.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A bicycle-frame in which two continuous reach rods or tubes are arranged one above the other parallel throughout their length extended downward from the front, then curved, continued upward, and joined at their rear upper ends, and a brace-plate that stands on edge between the lower curved portions of the rods or tubes, conforms to the curve, and extends approximately the whole length of the same, substantially as set forth.

2. A bicycle-frame in which parallel rods or tubes joined to a vertically-disposed steering-head extend down and toward the rear, then turn on curves, and continue upward, and a crank-hanger in the form of a sleeve having seats engaging said parallel rods or tubes, substantially as set forth.

3. A bicycle-frame comprising a vertically-disposed steering-head, parallel rods or tubes that join the front one, extend down and toward the rear, then turn on curves, and continue upward, and a socket-cap that joins the upper rear ends of the parallel tubes and is provided with an aperture for engagement with a saddle-post, substantially as set forth.

4. A bicycle-frame comprising a vertically-disposed steering-head, parallel rods or tubes that join the front one, extend down and toward the rear, then turn on curves, and continue upward, a socket-cap that joins the upper rear ends of the parallel rods or tubes and is provided with an aperture for engagement with a saddle-post, and a brace-plate set on edge between the lower curved portions of said parallel rods or tubes, substantially as set forth.

5. A bicycle-frame comprising a vertically-disposed steering-head, parallel rods or tubes that join the front one, extend down and toward the rear, then turn on curves, and continue upward, a socket-cap that joins the upper rear ends of the parallel rods or tubes and is provided with an aperture for engagement with a saddle-post, and a crank-hanger in the form of a sleeve having seats engaging said parallel rods or tubes, substantially as set forth.

6. A bicycle-frame comprising a vertically-disposed steering-head, parallel rods or tubes that join the front one, extend down and toward the rear, then turn on curves, and continue upward, a socket-cap that joins the upper rear ends of the parallel rods or tubes and is provided with an aperture for engagement with a saddle-post, a brace in the form of a plate set on edge between the lower curved portions of said parallel rods or tubes, a crank-hanger in the form of a sleeve positioned in rear of the brace-plate and provided with seats that engage the aforesaid parallel rods or tubes, rearwardly-extended rods or tubes having their front ends seated in the crank-hanger, other rods or tubes that have their upper ends joined to the socket-cap, and axle-supports joining the lower ends of the latter rods or tubes with the rear ends of those that extend horizontally from said crank-hanger, substantially as set forth.

7. A bicycle-frame provided with a crank-hanger in the form of a section of tubing cut out to form seats that engage the adjacent frame rods or tubes, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

FRANK H. BOLTE.

Witnesses:
N. E. OLIPHANT,
JOHN E. WILES.