

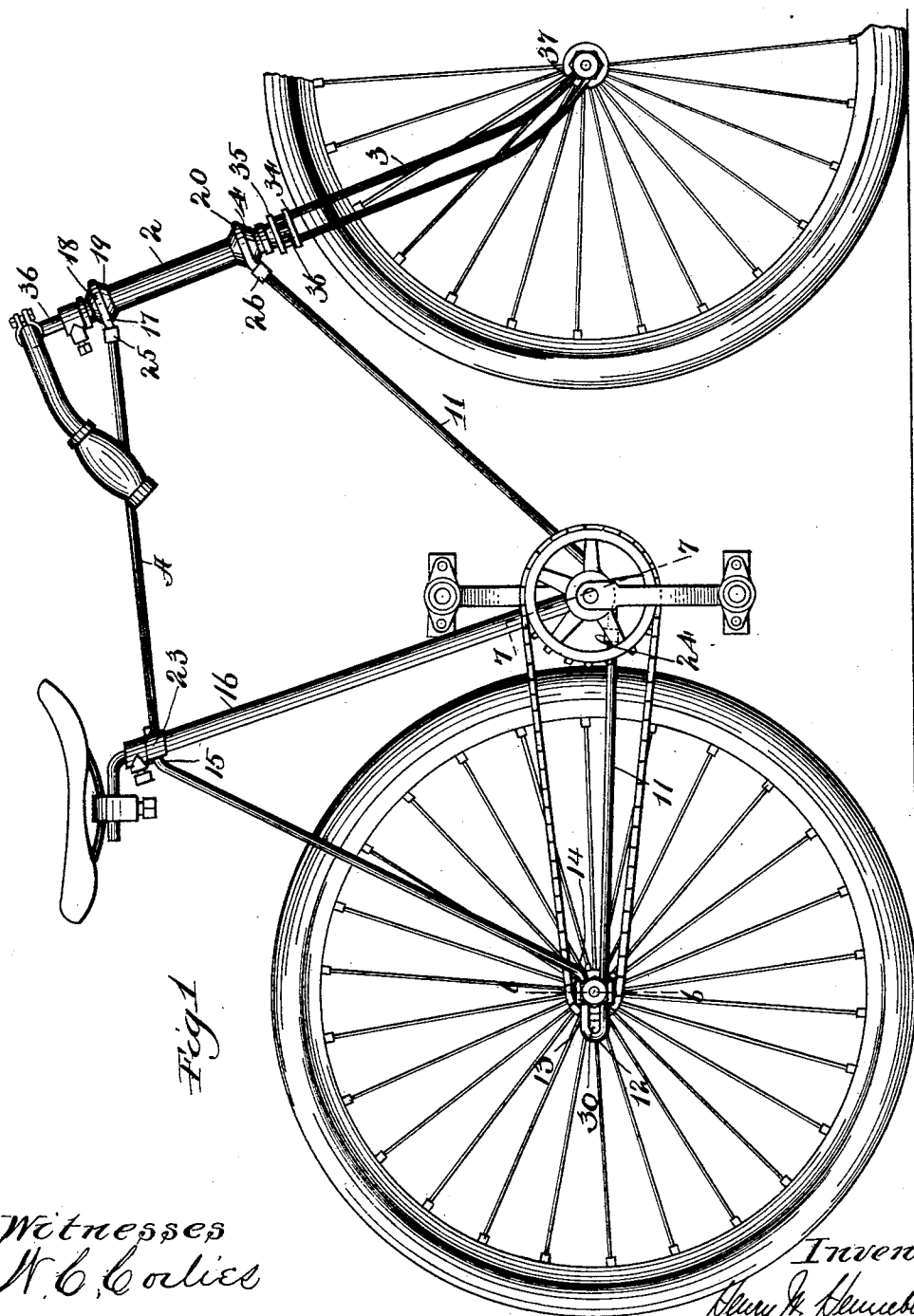
(No Model.)

2 Sheets—Sheet 1.

H. W. HENNEBERG.
BICYCLE.

No. 587,550.

Patented Aug. 3, 1897.



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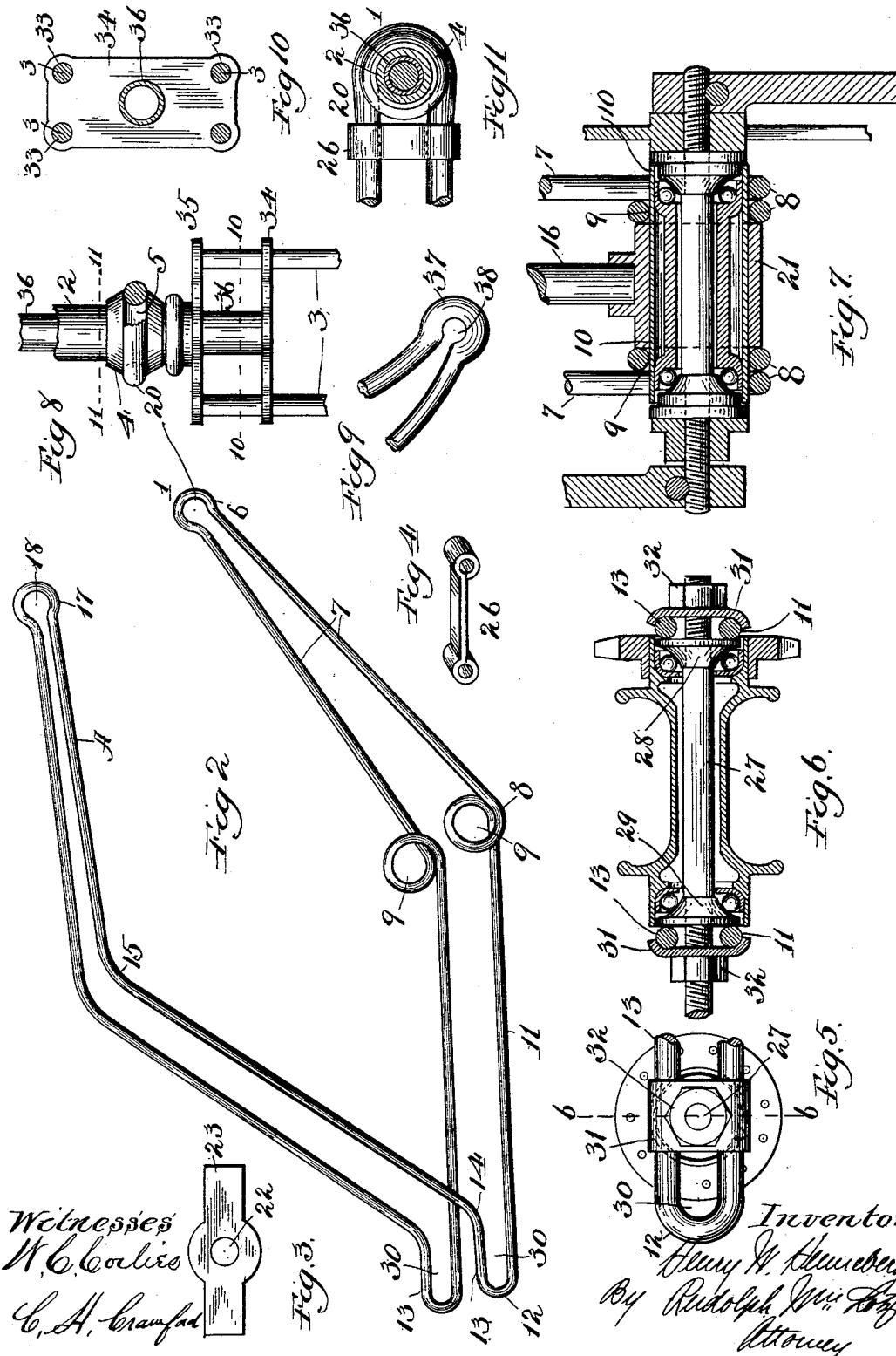
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UNITED STATES PATENT OFFICE.

HENRY W. HENNEBERG, OF CHICAGO, ILLINOIS.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 587,550, dated August 3, 1897.

Application filed April 7, 1896. Serial No. 586,524. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. HENNEBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, 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 relates to a novel construction in a bicycle, and more particularly to the frame thereof, the object being to provide a cheap and durable device of this character; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a bicycle constructed in accordance with my invention. Fig. 2 is a detail perspective view of the frame thereof. Fig. 3 is a detail top plan view of the clip by which the seat-support is secured to the frame. Fig. 4 is a detail perspective view of the clips I employ to strengthen the frame at various points adjacent the joints between the same and other parts of the bicycle. Fig. 5 is a detail side elevation of the guides formed in the rear end of the frame, in which the shaft of the rear wheel is adjustably secured. Fig. 6 is a detail sectional view taken on the line 6 6 of Fig. 1. Fig. 7 is a detail sectional view taken on the line 7 7 of Fig. 1. Fig. 8 is a detail front elevation of part of the fork. Fig. 9 is a detail side elevation of the lower end of the fork. Fig. 10 is a detail sectional view taken on the line 10 10 of Fig. 8. Fig. 11 is a detail sectional view taken on the line 11 11 of Fig. 8.

Referring now to said drawings, A indicates the frame of a bicycle constructed in accordance with my invention, which consists, preferably, of a single piece of heavy steel wire bent according to the following description to receive various other parts and provide means for suitably securing the same: Beginning at the point 1, where said frame is secured to the lower end of the sleeve 2, which forms a pivot for the fork 3, said wire is bent to fit around the collar 4 in the groove 5 thereof. This bend is equal to about one-third of the circumference of said collar beginning

from the foremost point of the same, and at the point 6 said wire is bent outwardly and extends straight downwardly, as indicated at 7, to the point 8, at which the bearing for the crank-shaft is to be secured, where it is bent upwardly to form a loop 9, in which the bearing 10 of the crank-shaft is to be secured. Said loop 9 is equal in inside diameter to the outer diameter of said bearing 10 and is completed on the inside of said wire at the point 8, thus decreasing the width of said frame behind said loop. From said loop 9 said wire extends straight back, as at 11, to the rear-most portion 12 of the frame, where it turns upwardly and back, as at 13, parallel with said portion 11, to the point 14. By means of this bend I form the equivalent of the slot usually made in bicycle-frames, in which the shaft of the rear wheel is adjustably secured. From the point 14 said wire is bent upwardly to the point 15, adjacent the point at which the seat-post 16 is usually connected and at which it is bent so as to continue at a very slight upward incline to the point 17, where it is bent to form a loop 18 to fit the groove in a collar 19 on the upper end of said sleeve 2 in a similar manner as said groove in said collar 4. From this loop 18 said wire continues back again, being subjected to the same operations as above described, though of course reversed, to form the other side of the frame, the two ends coming together at 1 and forming a loop 20 of the same shape as said loop 18 at that point. After said frame A has thus been formed the sleeve 2 is inserted in said loops 18 and 20 and said collars 4 and 19 brazed therein, thus forming a practically indestructible joint between the same. Said loop 19 is bent slightly upward and said loop 20 downward, so that they are parallel with each other and at right angles to the angle of inclination of said fork 3. The bearing 10 of said crank-shaft is secured in said loops 9 in the following manner: A hollow T-coupling 21, having an inner diameter equal to the inner diameter of said loops 9, is inserted between said loops, so that together they form a sleeve to receive said bearing 10, which is inserted therein and securely fastened in any suitable manner. The ends of said T-coupling 21 form collars against which said loops 9 abut, thus determining the width of said frame at this point,

while in the stem thereof the end of the seat-post 16 is secured, as shown in Fig. 7. Said seat-post 16 extends upwardly therefrom and passes through an opening 22 in a clip 23, which is mounted upon said frame adjacent the portion 15 thereof in an obvious manner. Clips 24, 25, and 26 are also mounted upon said frame A behind said loops 9, 18, and 20, respectively, to prevent the same from spreading. The shaft 27 of the rear wheel is secured to said frame A in the following manner: Said shaft is screw-threaded at its ends in the usual manner, and the collars 28 and 29, forming the cones of the ball-bearings for said wheel, are placed thereon in the desired position obviously after it has been inserted in the hub. The ends of said shaft 27 are then inserted in the guide-slots 30 of said frame, and a clip 31, bent at its ends to conform to the shape of said wire, is passed over each of said projecting ends of said shaft and clamped thereon by nuts 32, which clamp the portions 11 and 13 between the said collars 28 and 29 and said clips 31. In this manner I make the cheapest possible connection between said parts and at the same time afford means for adjusting the shaft 27 to regulate the tautness of the sprocket-chain.

It will be noted that by bending the wire of the frame A so as to form the upwardly-extending loops 9 I provide greater strength for said frame, as when pressure is brought to bear upon said loops they will contract and clamp the sleeve 10 more tightly between them and leave no possibility for said frame to give way, as would be the case if said loops extended downwardly.

The fork 3 is also formed of two pieces of wire secured at their ends in openings 33 in plates 34 and 35, secured to the lower end of the shaft 36 of said fork. Said wires extend downwardly in alinement with said shaft 36 and are curved slightly forward at their lower ends to conform to the usual shape of the forks of bicycles. At the lower end of said fork said wires are bent to form loops 37, in which the shaft 38 of the front wheel is adapted to be secured in the same manner as shaft 27 is secured in the guide-slot 30. As the inner diameter of said loop 37 is, however, greater than the space between the wires immediately above the same, I find it unnecessary to insert a washer or clip between the same and the nuts.

A bicycle constructed in accordance with the above is as strong as any now made from tubing and is exceedingly cheap to manufacture. Besides this it has the advantage that in case of accident a bend in the frame can easily be repaired by any blacksmith with small expense and small loss of time.

I do not of course wish to be limited to the exact construction in every detail as herein shown and described, as I contemplate varying the same as may be required to suit various conditions and circumstances. My device could obviously also be applied to a velocipede or tricycle with equal advantage.

I claim as my invention—

1. In a velocipede, a frame composed of wire bent to form loops at its forward ends to receive the pivot of the fork, and spiral loops at its lower middle portion to receive the bearing for the crank-shaft.

2. In a velocipede, a frame composed of wire bent to form upwardly-extending spiral loops at its lower middle portion to receive the bearing for the crank-shaft.

3. In a velocipede, a frame composed of wire bent to form upwardly-extending spiral loops at its lower middle portion to receive the bearing for the crank-shaft, and means for holding said loops against lateral movement consisting of a T-coupling mounted between the same against the ends of which said loops abut, and a clip adjacent said T-coupling adapted to hold said loops in contact with said T-coupling.

4. In a velocipede, a frame composed of a single piece of wire bent to form guide-slots at its rear end in which the shaft of the rear wheel is adapted to be adjustably secured, bent at its lower middle portion to form loops in which the bearing for the crank-shaft is adapted to be secured, and means for holding said loops against lateral movement consisting of a sleeve mounted between the same against the ends of which said loops abut, and a clip for holding said loops in contact with said ends of said sleeve mounted adjacent the same.

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

HENRY W. HENNEBERG.

Witnesses:

RUDOLPH WM. LOTZ,
FRANK H. GRAHAM.