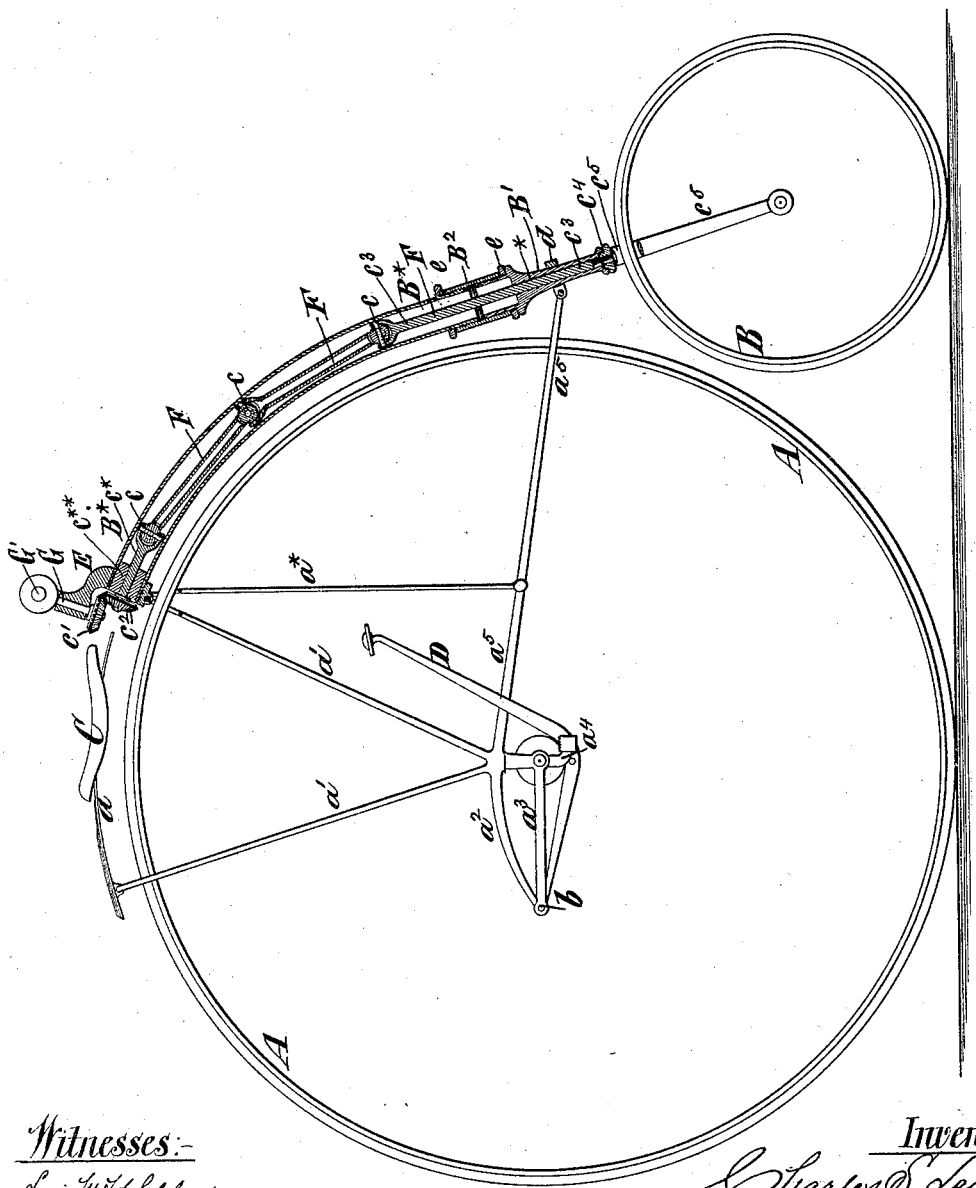
(No Model.)

C. S. LEDDELL.

BICYCLE.

No. 306,499. Patented Oct. 14, 1884.



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UNITED STATES PATENT OFFICE.

CHARLES S. LEDDELL, OF MORRISTOWN, NEW JERSEY.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 306,499, dated October 14, 1884.

Application filed May 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. LEDDELL, of Morristown, in the county of Morris and State of New Jersey, have invented a new and useful Improvement in Bicycles, of which the following is a specification.

My invention relates, generally, to bicycles in which the larger or driving wheel is in a frame, from which extends a tubular backbone curved correspondingly to the circumference of the driving-wheel, and through which extend connections for controlling the smaller steering-wheel.

The invention is equally applicable whether the larger wheel is operated by cranks or by a treadle-and-ratchet movement.

The invention consists in novel combinations of parts and details of construction, hereinafter described, and pointed out in the claims.

The accompanying drawing represents a partly-sectional side view of a bicycle embodying my invention.

A designates the driving-wheel, and B the smaller steering-wheel, which may be arranged in front of or behind the driving-wheel. I have shown only the rims of these wheels, in order to simplify the drawing; but they may be of any well-known or suitable construction. The driving-wheel is journaled in a frame which is fixed relatively to the backbone B*, and which, as here shown, consists of a top piece, a, on which is supported the saddle C, downwardly-diverging arms a', portions $a^2a^3a^4$, and a brace, a^5, extending toward the steering-wheel B.

D designates one of two treadles, fulcrumed at b, and having a ratchet connection with the driving-wheel. These parts I do not show in detail, as I do not claim them as of my invention.

E designates the head or top piece, with which the parts $a\,a'$ of the fixed frame are connected, and from which braces a^* extend to the forwardly or rearwardly extending braces a^5. The backbone B* is also connected with or projects from the piece E. The backbone B* consists of a tube curved to approximate to the curvature of the large driving-wheel, and one end of which is or may be secured in the piece or head E.

Through the hollow and curved backbone B* extends a shaft, F, composed of sections united by "Hook's joints," or any other suitable kind of universal couplings, c. The upper end of the universally-jointed shaft consists of a section, c^*, fitted to a bearing, c^{**}, and connected by bevel-wheels $c'\,c^2$ with a short shaft, G, on which are the steering-handles G'. By turning the shaft G in one direction or the other the shaft F will be also turned. The shaft G may be hollow, and through it may extend a rod or spindle for operating a brake; but such a construction I do not here claim, as it forms the subject of another application for Letters Patent, filed May 20, 1884, and of which the serial number is 132,142. The lower section, c^3, of the jointed shaft F is supported in a bearing, *, formed in the end piece, B', which is at the lower end of the backbone B*, and said shaft-section c^3 is provided with a shoulder, c^4, which abuts against the lower end of the bearing *, and below said shoulder said shaft-section has formed with or rigidly secured to it a fork, c^5, which is virtually a part of said shaft-section, and in which the steering-wheel B is journaled. The joints c of the shaft F are of such external form as to fit the interior of the backbone, and the lower end of the piece B', in which is the bearing *, and against which the shoulder c^4 bears, takes all the upward thrust on the shaft F, and so relieves the joints c of pressure and upward thrust.

In order to provide for properly adjusting the backbone to the exact length required to relieve the universal joints of thrust, I provide for extending the backbone. In this example of my invention this result is accomplished by providing the end piece, B', and the lower part of the backbone above it with right and left hand screw-threads, upon which is screwed a sleeve or nut, B^2, provided with corresponding threads. By turning the sleeve or nut the backbone may be elongated slightly or shortened, as may be desired. The braces a^5 are connected with the lower end portion of the backbone B* by a split collar or divided clamp, d, which embraces the end piece, B', and holds the backbone against springing outward. Before the sleeve or nut B^2 is turned

to elongate or contract the length of the backbone the clamp *d* should be loosened, and after such adjustment it should again be tightened.

The sleeve B^2 may be held against accidental turning by jam-nuts *e*.

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

1. The combination, with the driving and steering wheels, of a frame wherein said driving-wheel is journaled, a curved tubular backbone extending from said frame and capable of elongation and contraction, and a universally-jointed shaft extending through said curved backbone, and in the lower end of which the steering-wheel is journaled, and which has a thrust-bearing at the lower end of said curved backbone, whereby the universal joints of the shaft are relieved of strain, substantially as herein described.

2. The combination, with the driving and steering wheels, of a frame wherein said driving-wheel is journaled, a curved tubular backbone extending from the top of said frame and capable of elongation and contraction, braces extending from the lower part of said frame to the lower portion of the backbone, and provided with a clamp-connection with the backbone, and a universally-jointed shaft extending through said curved backbone, having a thrust-bearing in the lower end of the backbone, and in the lower end of which the steering-wheel is journaled, substantially as herein described.

3. The combination, with the curved tubular backbone B* and the end piece, B′, thereof, having an adjustable connection with B* to provide for elongating or contracting the backbone, of the universally-jointed shaft F, extending through said curved backbone, and comprising the lower section, c^3, which is fitted to a bearing, *, in the end piece, B′, and which is constructed with a shoulder, c^4, and a fork, c^5, to receive the steering-wheel, all substantially as herein described.

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