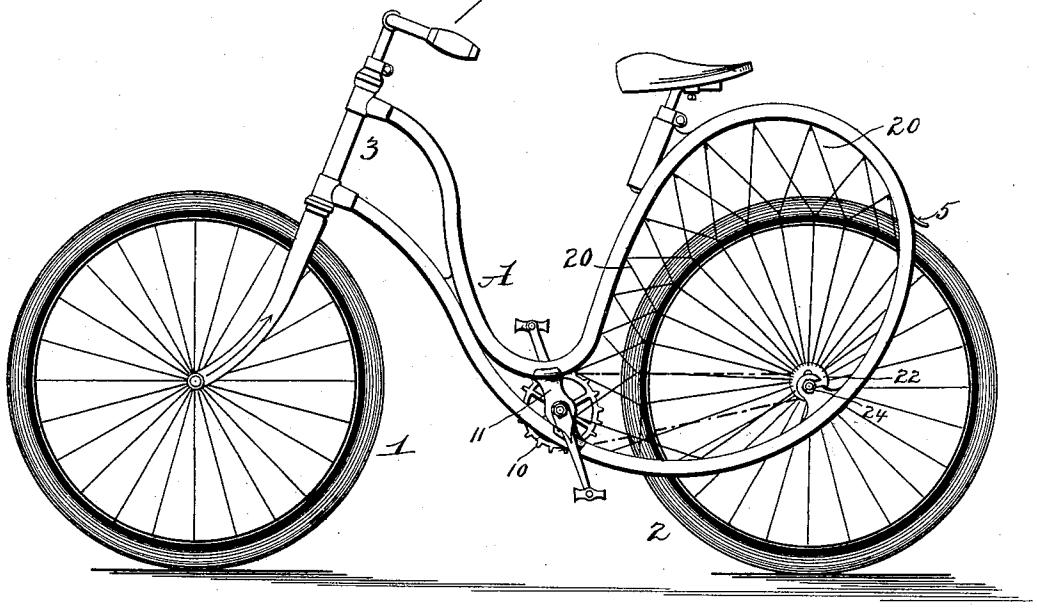
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C. R. HARRIS.

BICYCLE.

No. 600,001. Patented Mar. 1, 1898.

Fig. 1.



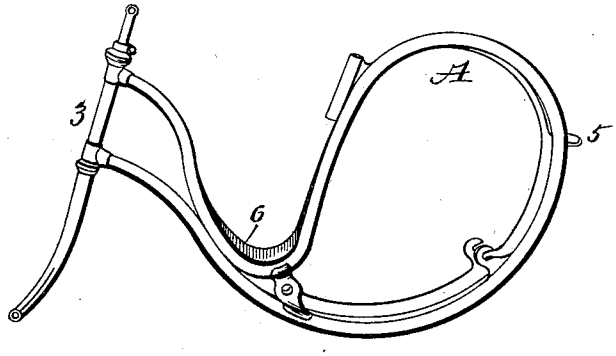


Fig. 2.

Witnesses
E. J. Nottingham.
G. F. Downing.

Inventor
C. R. Harris
By H. A. Seymour
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

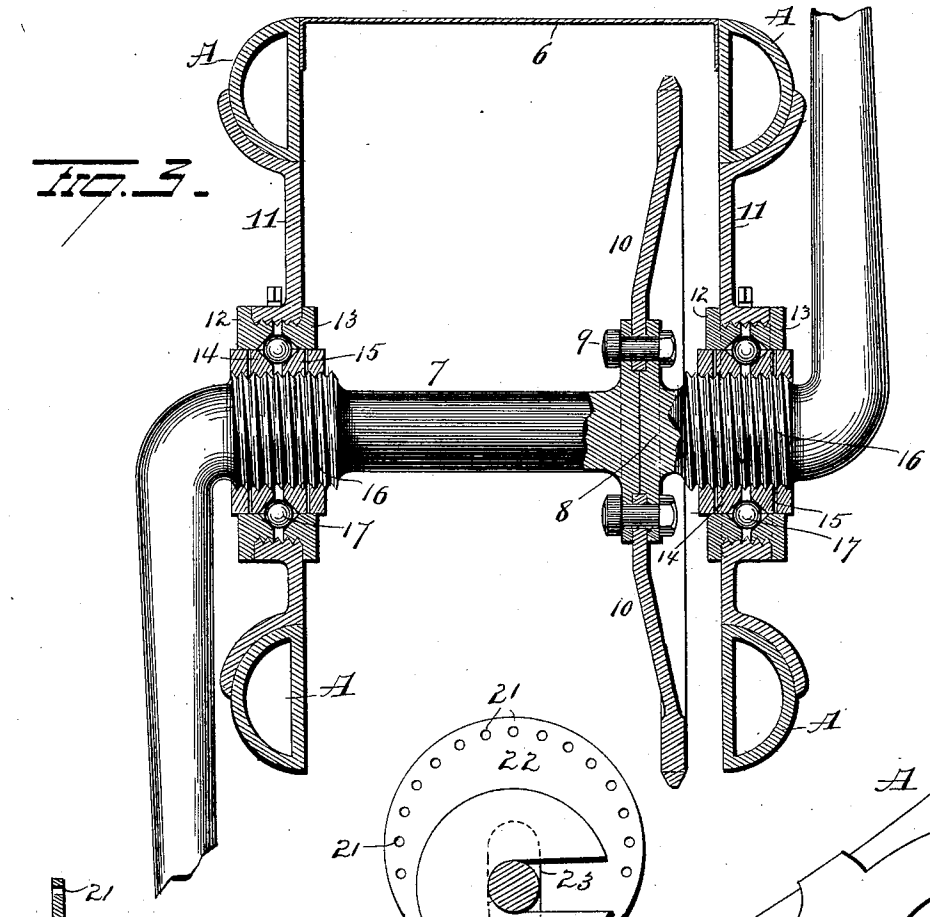
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FIG. 3.



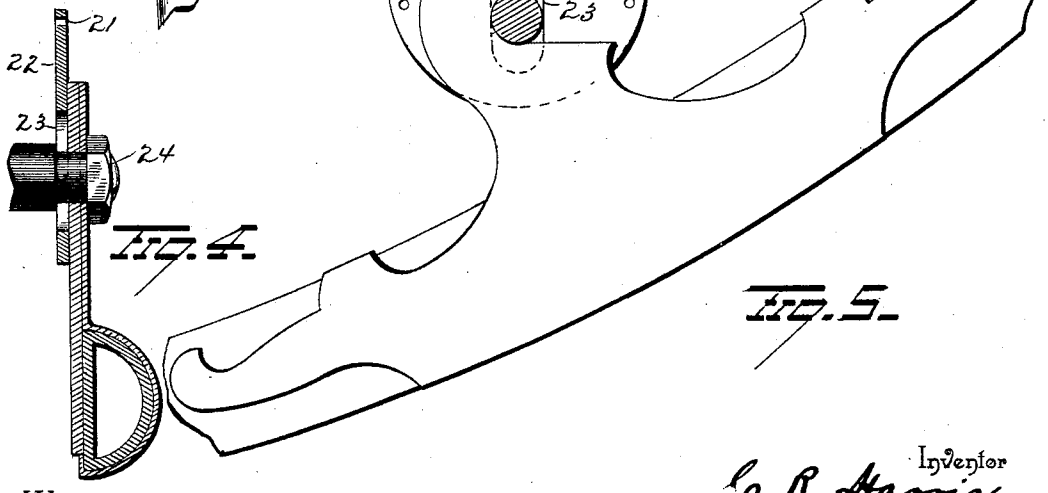


FIG. 4.

FIG. 5.

Witnesses
E. J. Nottingham
G. F. Downing

Inventor
C. R. Harris
By H. A. Seymour
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES R. HARRIS, OF WILLIAMSPORT, PENNSYLVANIA.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 600,001, dated March 1, 1898.

Application filed January 29, 1897. Serial No. 621,226. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. HARRIS, a resident of Williamsport, in the county of Lycoming and State of Pennsylvania, 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 an improvement in bicycles, and more particularly to the variety ridden by ladies, the objects being to provide an improved crank-axle and bearings, means for tightening the lacing of the skirt-guard, and to prevent the spattering of mud; and it consists in certain novel features of construction and combinations of parts which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of my improved bicycle. Fig. 2 is a view of the frame in perspective. Fig. 3 is an enlarged detail view. Fig. 4 is an enlarged sectional view. Fig. 5 is an elevation of Fig. 4.

A represents the frame of the machine. 1 and 2 are the front and rear wheels, respectively, and 3 is the steering-head or fork. The frame itself is distinctive and, as illustrated in the drawings, it is composed of two semicylindrical or D-shaped tubes in cross-section. These are secured together face to face at the forward ends and present the appearance of a single round tube. They are spread apart at the rear to straddle the rear wheel 2, and they are also spread laterally at the lowest part of the dip to brace and truss the frame and counteract any tendency to twist laterally. This much of my machine is disclosed in another application and forms no part of the present invention, save to form a groundwork for the present improvements, which are, with slight modifications, adaptable to any machine, but particularly applicable to the present invention.

In addition to the mud-guard 5 over the rear wheel, which also is illustrated in a former application, I provide a front mud-guard 6 in the space formed at the dip of the frame. This mud-guard is made of sheet metal and is securely held in position between the tubing, thus constituting a brace for the frame as well as a mud-guard and a protection against the skirts catching in the sprocket-wheel below.

Immediately beneath the dip and in the converging space formed between the parts of the frame the pedal crank-shaft and its bearings are located. This shaft is composed of two parts 7 and 8, and these are secured together at their adjacent ends by means of bolts 9 9, so that the entire shaft, with its pedal-arms, is virtually one single piece of metal, and the objectionable feature of the usual external bolts and screws, which are liable to work loose and drop off and which are constantly in peril of catching in the rider's clothing, is obviated. The sprocket-wheel 10 is held between the adjacent ends of the shaft and by the same bolts which fasten the parts of the shaft together, so that the sprocket-wheel also is in effect an integral part of the shaft or axle.

The numerals 11 11 indicate the bearing-hangers. They are constructed with outer curves at their ends to embrace the tubes of the frame from the outside, and they are secured in this position by brazing or equivalent means. The bearings each consist of four rings 12, 13, 14, and 15. These are screwed on the threaded portions 16 16 of the crank-axle and the threaded portion of the bearing-hangers, and they each bear upon the balls 17 17, so that the ball-race is square instead of round and the point of contact between the balls and race and attendant friction is reduced to a minimum. By this construction it will be seen that the sprocket-wheel and the bearings are all located between and housed in the frame of the machine, and, furthermore, that there are no nuts, bolts, or other projections on the outer surface where they will interfere with perfect freedom of movement of the rider's feet and legs in propelling the machine.

The lacing 20 is strung across from one side to the other of the frame, and it is threaded through holes 21 21 in the disks 22 22. These disks are provided with elongated slots 23,

which receive the rear axle of the machine, the object of the elongated slot being to admit of adjustment of the disks for tightening and loosening the lacing. Nuts 24 24 on the ends of the axle are turned to hold the disks in place when they are adjusted to regulate the tension of the lacing. By this means a single operation is sufficient to tighten the entire lacing on a side of the machine, whereas heretofore it has generally been the custom to tighten each lead of the lacing separately, and even then it was impossible to tighten it very much, because the lacing had hitherto generally been connected with the mud-guard.

It is evident that slight changes might be made in the form and arrangement of the several parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact construction herein set forth; but,

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

1. In a bicycle, the combination with a frame, and bearings, of a two-part pedal-shaft, the ends of which are secured together between the bearings and a sprocket-wheel interposed and secured between these adjacent ends of the shaft.

2. In a bicycle, the combination with a dip-frame for ladies' wheels composed of two rods or tubes spread apart to receive the rear wheel of the machine and also at the bottom of the dip, of a mud-guard secured in the space formed at the bottom of the dip,

3. In a bicycle, the combination with a dip-frame for ladies' wheels composed of two rods or tubes secured together at the forward end and spread apart at the rear to receive the rear wheel of the machine between them and also spread apart at the bottom of the dip, of two mud-guards, one secured in the space formed between the two rods or tubes at the bottom of the dip and the other in the space between the rods or tubes above the rear wheel.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES R. HARRIS.

Witnesses:

CLARENCE E. SPROUT,

W. D. CRANE.

Correction in Letters Patent No. 600,001.

It is hereby certified that in Letters Patent No. 600,001, granted March 1, 1898, upon the application of Charles R. Harris, of Williamsport, Pennsylvania, for an improvement in "Bicycles," an error appears in the printed specification requiring correction, as follows: Page 2, line 28, the compound word "sprocket-wheel" should read *gear-wheel;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 15th day of March, A. D., 1898.

[SEAL.]

WEBSTER DAVIS,
Assistant Secretary of the Interior.

Countersigned:

C. H. DUELL,
Commissioner of Patents.