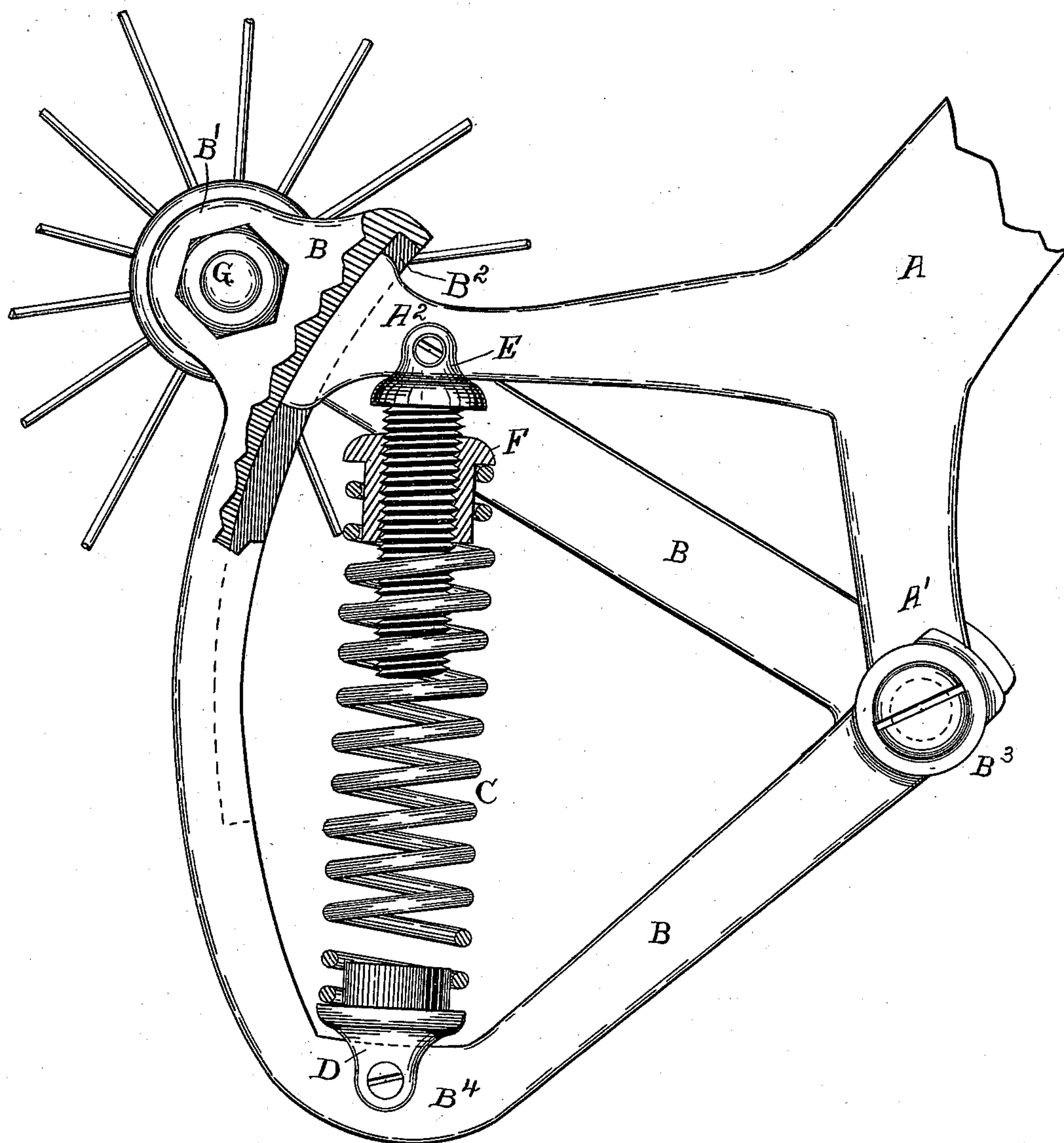


(No Model.)

C. F. WATKINS.  
BICYCLE.

No. 417,655.

Patented Dec. 17, 1889.



Witnesses:

Otto Hoddick.  
Charles R. Edwards.

Inventor.

Charles F. Watkins.



# UNITED STATES PATENT OFFICE.

CHARLES F. WATKINS, OF BUFFALO, NEW YORK.

## BICYCLE.

SPECIFICATION forming part of Letters Patent No. 417,655, dated December 17, 1889.

Application filed November 1, 1889. Serial No. 328,912. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. WATKINS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Bicycles; and the following is a description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

My invention relates more particularly to the steering-fork of the safety-bicycle and its application to the guiding-wheel.

My object is to greatly relieve the jarring sensation to the rider when the wheel moves over obstacles; also, to provide a desirable and accommodating movement forward or backward in the position of the steering-fork, and at the same time a firm device for turning the guiding-wheel, and to accomplish these things in a simple, practical, and desirable way.

In the drawing a repetition of the same letter indicates the same piece of mechanism, and any special portion of the same piece is noted by numbering its letter.

The figure shows a portion of the bicycle at its left side with my improvements.

The lower portion of the left prong of the steering-fork is shown at A A' A<sup>2</sup>, and at G is the axle of the guiding-wheel of the bicycle, to which the triangular frame B B' B<sup>2</sup> B<sup>3</sup> B<sup>4</sup> is attached at B'. The frame at B' is slipped onto the extended end of the axle G and suitably held there by means of a nut, or may be otherwise suitably attached at the axis in a manner firm enough for guiding the wheel. It is not necessary to show the other prong of the steering-fork, as the two sides are alike. The heel-extension A' of the prong is pivoted to work in the socket of the frame at B<sup>3</sup> in any suitable way, while its extension-toe A<sup>2</sup> may be held to work or slide in the groove of the frame at B<sup>2</sup>. The groove B<sup>2</sup> is adapted to allow the toe A<sup>2</sup> of the prong A to move therein as far as may be desirable for the steering-fork, and no farther.

The spiral spring C, at one of its ends, is held by the flange-piece D, which piece is pivoted to the frame at B<sup>4</sup>. The tongue-piece E is pivoted to the toe A<sup>2</sup> of the prong A.

This tongue is threaded and has on it the flanged nut F, which holds the other end of said spiral spring, the tongue E extending within the coil of the spring two inches more or less. This spring is adapted to push the toe A<sup>2</sup> outward to a stop in the groove B<sup>2</sup> with a force desirable for holding the steering-fork in a backward position, and yet the action of the spring is to be sufficiently yielding to allow the upper part of the fork to have a forward movement either at the will of the rider, when he presses the steering device forward, or as the wheel is raised by moving over some obstruction suddenly. The degree of the spring's pressure upon the toe A<sup>2</sup> may be changed by turning the adjusting-nut F. The spring-holder D and the tongue-piece E should be pivoted and adapted to have just enough rocking movement to accommodate the spiral spring in its action. The spiral spring may be four inches in length, more or less.

Instead of having the groove B<sup>2</sup> in the frame, a groove formed in the toe A<sup>2</sup> for the toe to straddle the frame could be used. What I have called the "axle" G may be regarded as axle or journal of the guiding-wheel of the bicycle.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a bicycle, the combination, with each prong of the fork of the steering device, as at A, one of the prongs, of the frame B, suitably attached to work on the axle G of the guiding-wheel of the bicycle, the heel-extension A' of said prong, the toe-extension A<sup>2</sup>, adapted to slide or work as in the groove B<sup>2</sup> of the frame B, the spiral spring C, the spring-holder D, pivoted to the frame B, the threaded tongue-piece E, pivoted to the toe A<sup>2</sup> and having the flanged nut F, for holding and adjusting the spring C, and the heel A' working upon a suitable bearing in the frame B<sup>2</sup>, all substantially as and for the purposes set forth.

2. In a safety-bicycle, a spiral spring C, in combination with an adjusting-nut F and other parts of the steering device adapted to produce the action of the said spring upon the prongs A of the fork and to allow the spring's force to be regulated more or less, substantially as and for the purposes set forth.

3. In the steering-fork of a bicycle, the



frame B, fastened to the axle G at B', and the prong A, having the heel A', pivoted to work in the frame at B<sup>3</sup>, and the toe-extension A<sup>2</sup>, adapted to slide in the groove B<sup>2</sup> or otherwise held to work on said portion of the frame, and the spiral spring C, suitably attached to said toe A' and to the frame B<sup>4</sup>, said spring being between the wheels, axle G, and the heel-bearing at B<sup>3</sup>, all substantially as and for the purposes set forth.

4. In the steering-fork of a bicycle, the combination of the spiral spring C, the tongue E, pivoted to the toe A<sup>2</sup> of the prong A of the fork, the adjustable nut F, the spring-holder D, pivoted to the frame B, and the said spring being located to operate between the bearing of the frame B' on the axle (or journal) G and the heel A' of the prong of the steering-fork, all substantially as and for the purposes set forth.

5. In a bicycle, the combination, with each prong of the fork of the steering device, as at A, one of the prongs, of the frame B B' B<sup>2</sup> B<sup>3</sup> B<sup>4</sup>, suitably attached and held at or on the axle G of the guiding-wheel and adapted to receive and work with the heel A' of the prong A, as at B<sup>3</sup>, and to hold the toe A<sup>2</sup> in the groove B<sup>2</sup> or in any equivalent way, and the spring C, held to the frame at B<sup>4</sup> in the holder D, while its opposite end is suitably attached to the toe A<sup>2</sup> of the prong A, all substantially as and for the purposes set forth.

6. In a steering-fork of a bicycle, the prong A, having the heel A' and the toe A<sup>2</sup>, in com-

bination with the frame B B' B<sup>2</sup> B<sup>3</sup> B<sup>4</sup>, the wheel's axle G, and the spiral spring C, the said spring being held to the frame at B<sup>4</sup> and its opposite end held to bear on the toe A<sup>2</sup> of the prong A, and the toe held to work on the frame at B<sup>2</sup>, the heel A' suitably pivoted to work on the frame at B<sup>3</sup>, and the frame at B' attached or held on the wheel's axle at G, all substantially as and for the purposes set forth.

7. The combination of the extension-heel A', the toe-extension A<sup>2</sup> on the lower end of each of the two prongs of the steering-fork of the safety-bicycle, with the frame B, fastened or bearing at or on an axle or journal G of the guiding-wheel, and the heel-bearing pivoted at B<sup>3</sup> to the heel of the prong A, and the toe of the prong A<sup>2</sup> held and working at the groove B<sup>2</sup> under pressure of the spring C, all substantially as and for the purposes set forth.

8. In combination with the axle of the guiding-wheel of a safety-bicycle, the frame B B' B<sup>2</sup> B<sup>3</sup> B<sup>4</sup>, the prong A, having the heel A' and the toe A<sup>2</sup>, said heel being pivoted to the frame at B<sup>3</sup>, and the toe adapted to be held and to slide on the frame at B<sup>2</sup>, and the spiral spring C, suitably attached or connected to the frame at B<sup>4</sup> and to the toe A<sup>2</sup> of the prong A, all substantially as and for the purposes set forth.

CHARLES F. WATKINS.

Witnesses:

CHARLES K. ROBINSON,  
CHARLES R. EDWARDS.