(No Model.)

A. A. UNRUH.

BICYCLE CRANK.

No. 563,821. Patented July 14, 1896.

Fig. 1.

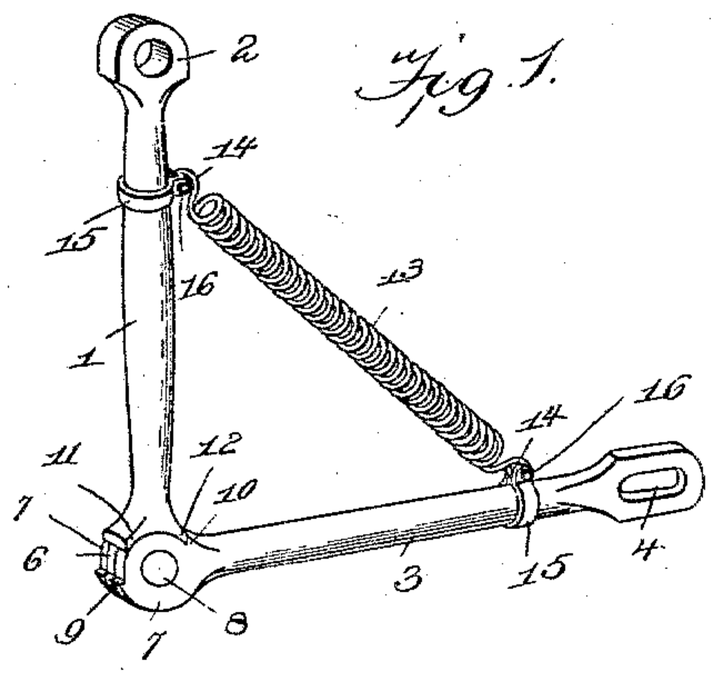


Fig. 2.

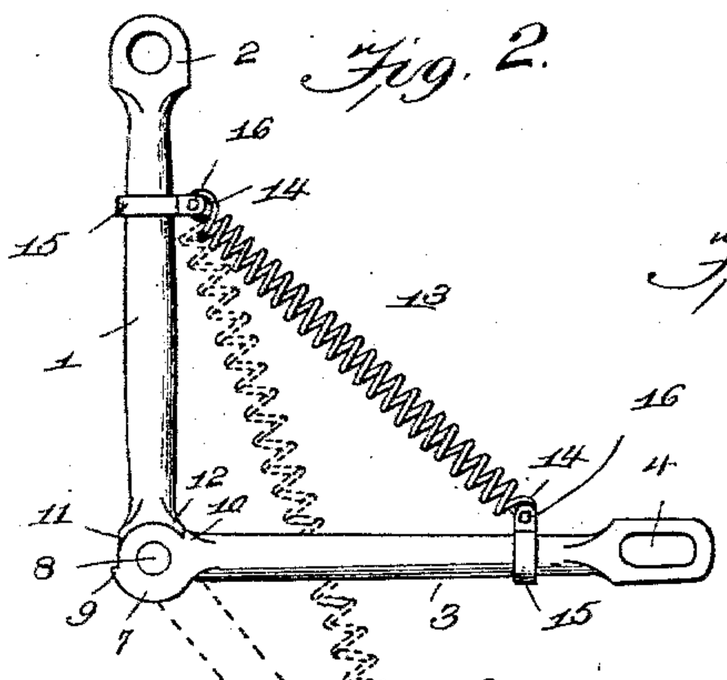
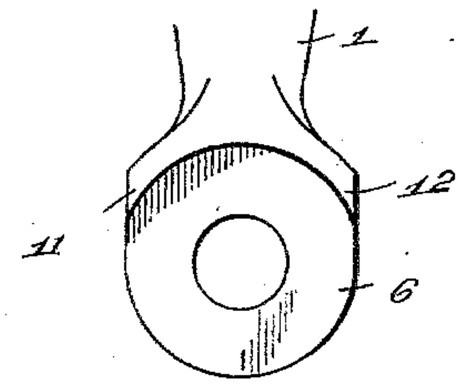


Fig. 3.



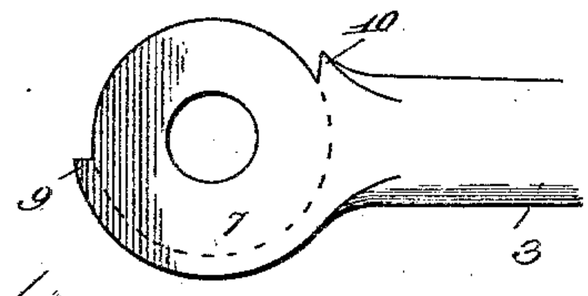
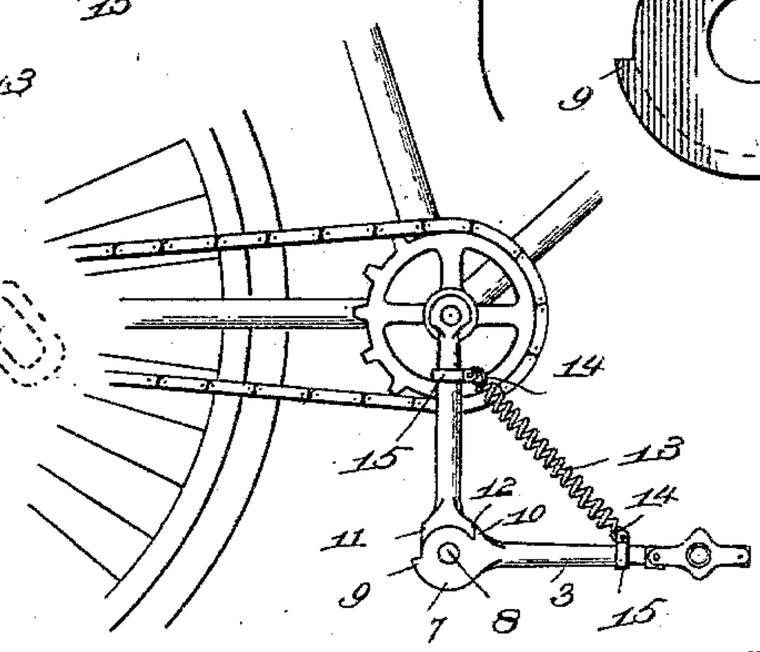


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

ALBERT A. UNRUH, OF McMINNVILLE, OREGON.

BICYCLE-CRANK.

SPECIFICATION forming part of Letters Patent No. 563,821, dated July 14, 1896.

Application filed April 12, 1895. Serial No. 545,515. (No model.)

To all whom it may concern:

Be it known that I, ALBERT A. UNRUH, a citizen of the United States, residing at McMinnville, in the county of Yam Hill and State of Oregon, have invented a new and useful Bicycle-Crank, of which the following is a specification.

This invention relates to an improvement in the construction of cranks for bicycles and other foot-power vehicles.

The object of the present invention is to construct a crank in such manner that its length and power shall be automatically increased in the forward and downward stroke thereof and automatically decreased and shortened in the backward or upward stroke thereof.

A further object of the invention is to provide said crank with means whereby the lengthening and shortening of the crank may be regulated to suit the strength or desire of the rider by means of a tension-spring and means for adjusting the tension and position of said spring.

To accomplish the objects above enumerated, the invention consists in the construction and novel combination of elements and features of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a crank constructed in accordance with this invention. Fig. 2 is a side elevation of the same, showing in dotted lines the position the outer section of the crank occupies when distended. Fig. 3 is an enlarged detail side elevation of the adjacent ends of the two crank-sections, the same being disengaged to better illustrate their construction. Fig. 4 is a side elevation of a sufficient portion of a bicycle to illustrate the application of the improved crank.

Similar numerals of reference indicate corresponding parts in the figures of the drawings.

The crank contemplated in this invention comprises two pivoted sections of about equal length. One of said sections (designated by the reference-numeral 1) is provided at one end with an enlarged and perforated end 2, by means of which it is connected to the end of the crank-shaft of an ordinary safety-bicycle, and the other section, 3, is provided at its end with a slot 4, which is adapted to receive the inner end of a pedal-pin in a manner well understood.

The two crank-sections may be made of any desired material, preferably of steel, being also made of approximately the same size in cross-section as the standard cycle-cranks now in use and of such length that when in their normal position, as indicated in full lines in the drawings, the distance between the pedal-shaft perforation and the pedal-pin slot will be equal to the length of a standard crank.

The two crank-sections are hinged together at their adjacent ends by means of a knuckle-joint. One of the sections, as, for example, the inner or crank-shaft section, is provided with a centrally-arranged perforated tongue or ear 6, which lies between a pair of similar ears formed integrally with the adjacent inner end of the pedal-pin section. These latter ears (indicated at 7) are perforated in alinement with the corresponding perforation in the tongue or ear 6 on the crank-shaft section, and the two sections are firmly connected by a common pin or rivet 8. The ears 7 are provided with offsets or projections 9 and 10 at suitable points for limiting the throw of the pedal-section, and the crank-shaft section is correspondingly shouldered, as indicated at 11 and 12, the stops 9 and 10 striking against the shoulders on the crank-shaft section, thereby limiting the lengthening and shortening of the crank as a whole.

The two crank-sections are normally held in the position indicated in full lines in the drawings by means of an interposed spiral spring 13, which is provided at either end, preferably, with an integrally-formed hook or loop 14, said hooks or loops being adapted to engage a pair of adjustable clamping-collars disposed around the two crank-sections. These clamping-collars are made each from a single piece of metal which is bent to form a loop 15, embracing one of the crank-sections, and provided with perforated terminals through which a set-screw 16 is threaded for binding the collar firmly in place at any desired point lengthwise of the crank-section.

One of these clamping-collars is provided surrounding each crank-section and the interposed spring 13 is engaged as to its hooked or looped ends with said collars. The spring 13 serves to hold the two crank-sections normally in the position indicated in full lines in the drawings, and is also adapted to yield for allowing the outer or pedal section of the crank to be thrown out into the position indicated in dotted lines in Fig. 2.

By means of the construction above described, after the pedal has passed by the center above the crank-shaft it will be automatically lengthened by the pressure of the rider's foot thereon overcoming the tension of the coil-spring between the two crank-sections, thereby affording greatly-increased power for hill-climbing, &c. As the pedal passes under the crank-axle, the spring will act to restore the crank-sections to their relative normal positions, thereby shortening the length of the crank as it moves upward. By altering the position of the shoulders or stops contiguous to the knuckle-joint, the length to which the crank may be extended may be increased or diminished and regulated according to the desire of the manufacturer or rider. It will be apparent also that by adjusting the clamping-collars lengthwise of the crank-sections, the tension of the spring may be regulated to suit the strength or wishes of the rider.

The device described is very simple in construction, strong, and durable, and will be found very efficient in practice, affording increased leverage and power at the point of the stroke where most needed.

It will be apparent that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. An extensible crank for bicycles, consisting of two sections hinged together and provided at their joint with stops for limiting the movement of one of said sections toward and away from the other section, and a retracting-spring crossing the smaller angle between said sections and attached at its opposite ends to said sections at points intermediate the ends of said sections, substantially as described.

2. An extensible crank for bicycles, consisting of two sections hinged together and provided at their joint with stops for limiting the movement of one of said sections toward and away from the other section, and a retracting-spring crossing the smaller angle between said sections and having at its opposite ends clamping-collars which encircle the crank-sections, at points intermediate the ends of said sections, said collars being capable of being adjusted longitudinally of their respective sections for varying the tension of the spring, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALBERT A. UNRUH.

Witnesses:
M. D. L. RHODES,
B. F. RHODES.