

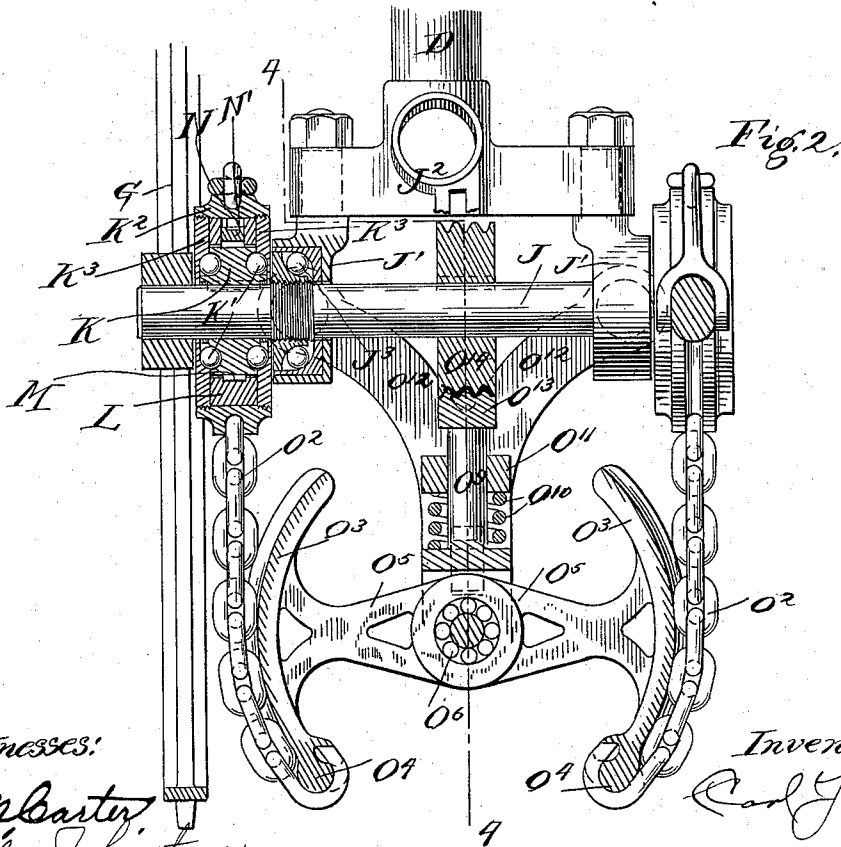
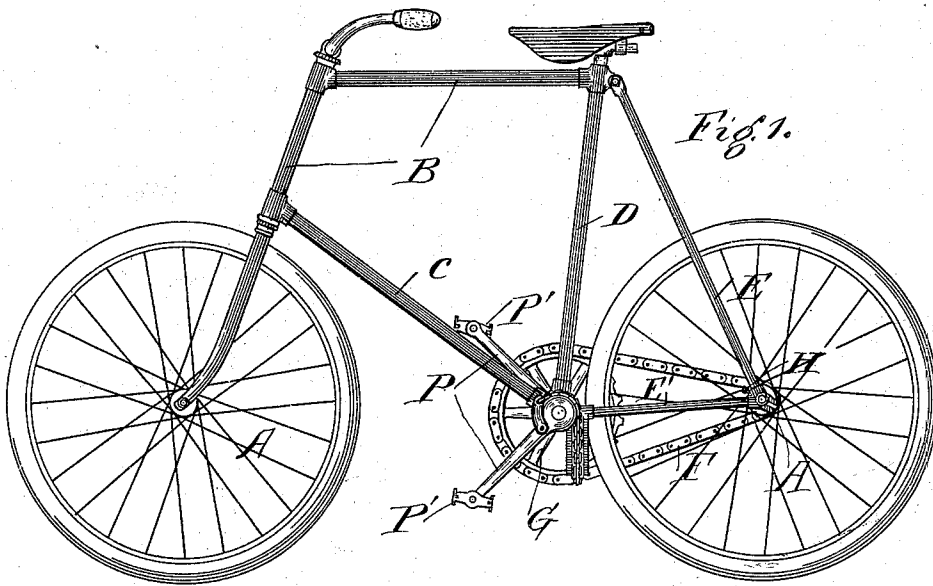
(No Model.)

2 Sheets—Sheet 1.

C. YOUNG.
BICYCLE.

No. 567,628.

Patented Sept. 15, 1896.



Witnesses:

D. M. Carter
Lilly Johnstone

Inventor:

Carl Young

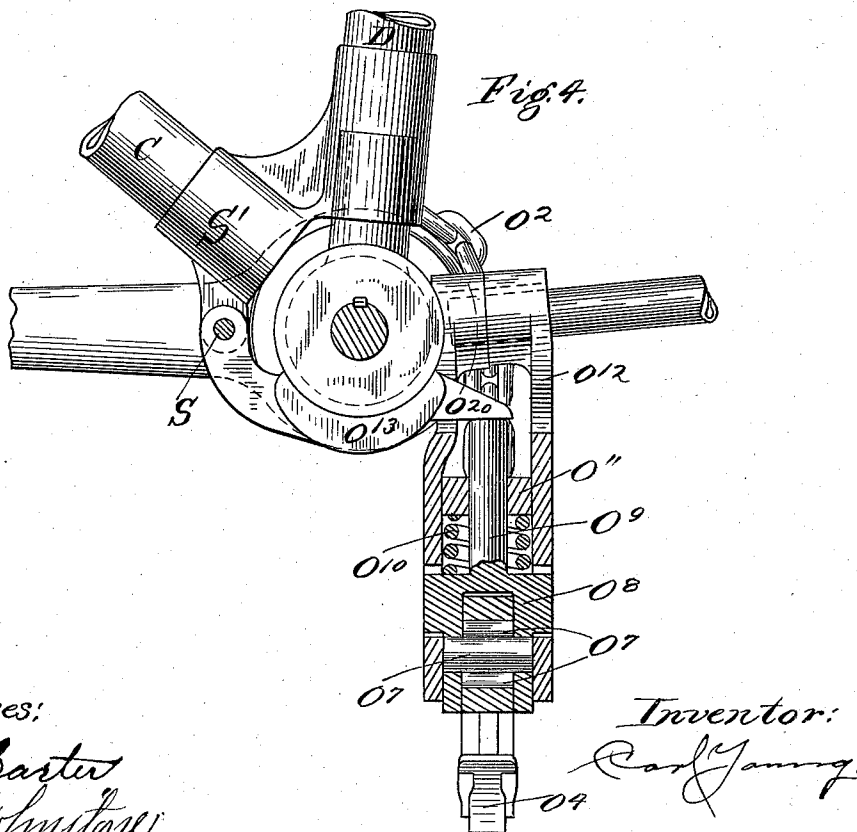
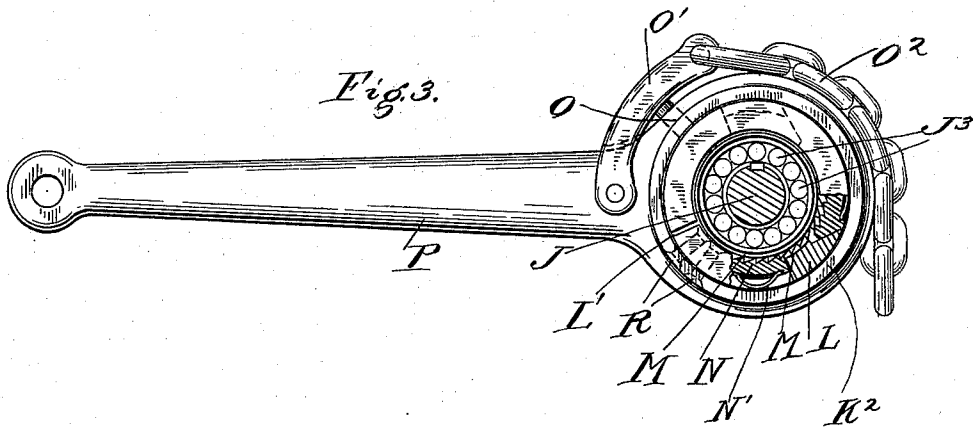
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2 Sheets—Sheet 2.

C. YOUNG.
BICYCLE.

No. 567,628.

Patented Sept. 15, 1896.



Witnesses:
L. M. Carter
Wm. Johnston

Inventor:
Carl Young

UNITED STATES PATENT OFFICE.

CARL YOUNG, OF CHICAGO, ILLINOIS.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 567,628, dated September 15, 1896.

Application filed October 7, 1895. Serial No. 564,926. (No model.)

To all whom it may concern:

Be it known that I, CARL YOUNG, 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, of which the following is a specification.

My invention relates to bicycles, and has for its object to provide certain new and useful improvements relating particularly to brake mechanism operated by means of the pedal.

The particular construction of the parts here shown may be modified considerably, and therefore the drawings are to be taken only as generally illustrative of what I desire to protect. With this view my invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of the entire bicycle. Fig. 2 is a vertical cross-section showing certain parts. Fig. 3 is a detail and section of the pedal-crank and associated parts. Fig. 4 is a view on the line 4 4, Fig. 2.

There is no attempt in these views to show every part, but only such parts as are necessary to be shown to give a correct understanding of the case.

A A are the bicycle-wheels; B B, portions of the frame; C, D, E, and E', other parts of the frame. F is the driving-chain; G, the sprocket-wheel, and H the small wheel on the shaft of the driving-wheel. J is the pedal-shaft, suitably journaled in the boxes J' J', which depend from the yoke J² on the frame-piece D. J³ J³ are the balls or ball-bearing within the boxes J'. The sprocket-wheel G is suitably secured on the shaft, and between the sprocket-wheel G and one of the boxes J' is interposed the clutch device, which consists of the annular portion K, keyed to the shaft and having the groove for the balls K' K' on its opposite faces.

K² is an annular or ring-like portion of the case. Secured into its sides are the washer-like pieces K³, which with it form a case for the clutch. These washer-like pieces are grooved so as to form the other portion of the groove in which the balls K' work. Within the annular chamber formed between the washers K³ K³, the ring K², and the annular part K is disposed the spring-ring L, which

is circumferentially grooved within, but toward its edges on the inner surface is smooth to form frictional contact with the exterior surface of the edges of the annular portion K. At the middle of this annular portion K is a surrounding ratchet-surface M. The ring is provided with a series of recesses in which lie the dogs N, each forwardly forced by the spring N'. This ring is slightly less than a complete ring, so that it can be cramped. The abutting ends are seen supported at L'.

Through the wall of the shell at one end projects the pin O, which is borne by the pivoted link O', to the other end of which link is attached the chain O². This chain passes down along the arc-shaped surface O³ and is secured at O⁴ to the lower end thereof. These two arc-shaped pieces are supported on the arms O⁵ O⁵, which unite at the center and are secured by ball or roller-bearings O⁶ about the shaft O⁷, which is journaled in the frame O⁸, from which frame upwardly projects the pin O⁹, surrounded by the spring O¹⁰. This spring is interposed between the frame O⁸ and the piece O¹¹, which surrounds the pin and is rigidly secured on the yokes or bifurcated support O¹².

The upper end of the pin engages the rock O²⁰ on the shoe O¹³, grooved and adapted to engage similar grooves in the brake-wheel O¹⁴ on the shaft J.

P P are the pedal arms or cranks, supporting the pedals P' P'. Each of these pedal-crank is formed continuous with the ring-shaped part K². The ring L is secured at one end to the shell or ring K² by means of the pins R R. The shoe O¹³ is pivoted at S on a projection from the part S', to which the frame-piece C is secured.

T is a screw-threaded bearing screwed onto the shaft J, and in opposition to the box portion J', furnishing with it the groove or space for the balls J³.

In the description we have been describing one part or side. It is understood, of course, that the parts may be duplicated, as indicated in Fig. 2.

As previously stated, the particular form and shape and arrangement of the several parts may be altered and varied without departing from the spirit of my invention, and

I do not wish to be limited to the particular construction shown:

I can illustrate, however, the operation of my invention by explaining the manner in which it is operated with the particular form of apparatus here shown.

Referring to the mechanism, it will be observed that each pedal is fixed so as to make a partial rotation or, so to speak, a reciprocation. The arc traversed may of course be varied according to the construction and desire of the user, but it may be substantially the distance indicated in Fig. 1. The two pedals are set so as to be in the opposite extremities at the same time. Each pedal, as indicated, is associated with an annular or ring-shaped portion or shell which encircles the pedal-shaft, and each such shell carries with it an internal spring-ring, which also surrounds the shaft and which is provided with a simple frictional bearing-surface to engage the annular part which is keyed to the shaft. Each spring-ring is also provided with a series of apertures in which rest blocks and springs, which springs tend to force the blocks inwardly. The annular part is toothed and the blocks are toothed, so that they mutually interlock, and the blocks are situated in my preferred form so that they are supported by an arc of different length, the result being that but one block will engage the opposed ratchet-tooth at the same time. The effect of this is that with a tooth of the given length there will be operative engagement with the ratchet and the ring shall be rotated more than one-fourth the length of such tooth if there be four blocks. Plainly the number of blocks may be varied at will and also the length of the tooth, so that by this simple device I am enabled to shorten the distance of rotation of the ring to whatever point may be found most desirable. Thus is to be insured prompt effective engagement of the clutch portions upon the beginning of the descent of the pedal. The shell, ball-bearings, and like parts are employed, but I do not claim any special invention as touching them. As the pedal in question descends under the pressure of the rider's weight or under the pressure of the rider's foot, the frame carrying the two arcs $O^3 O^3$ is rocked upon its pivotal point, and the other or opposite pedal is drawn upward to a point where it may begin an effective downward stroke. This relation can of course be varied so as to increase or diminish the pedal-stroke. Evidently the stroke may be varied at will to any range within the total range of excursion as determined by the construction of the parts.

Assuming that the operator desires to brake or stop the machine, he will push downwardly upon both pedals no matter what their positions may be. This of course tends to straighten out the chain O^2 , and in the first instance to put the pressure on the link O' ,

so as to force the pin O inwardly, and this pin, since it impinges against the outside of the ring L , cramps the same on the annular portion K , and this applies a pressure to the shaft to brake or tend to stop it. At the same time if the pressure applied to the pedals be great enough the pivotal point of the double-arc frame will tend to raise, thus lifting the frame O^8 against the spring O^{10} and forcing the pin O^9 upwardly, and since this pin impinges against a projection on the shoe O^{13} , the latter will be forced against the wheel O^{14} and will apply the pressure to it and thus tend to stop or brake the shaft of the machine.

I lay no particular stress on the construction of the frame or sprocket-wheels, as the ordinary frame and driving connections can be employed.

By the construction herein shown I am able to obtain long lever-arms and thereby obtain great power. It is, however, very desirable with such a construction to have some kind of brake mechanism, as otherwise the machine cannot be controlled, as it has been found by experience that it is impracticable to use a brake which operates upon the periphery of the bicycle-wheels, especially when pneumatic tires are used. I have therefore provided a brake which acts directly upon the pedal-shaft and which is operated by the pedal-levers.

I claim—

1. In a bicycle, the combination of pedal-levers, a driving-shaft with a surrounding toothed portion, an encircling spring-ring connected with the pedal-levers and provided with openings containing dogs adapted to engage said toothed portion, and a connection between the other lever and the shaft so as to rotate it when the pedals are moved, a brake-wheel on said pedal-shaft opposed to said ring, a connection between said levers so that a movement of one causes an opposite movement of the other, and a connection between said ring and the pedal connection whereby the brake is operated when pressure is simultaneously applied to both pedal-levers.

2. A bicycle comprising a driving-shaft with a brake-wheel thereon, two pedal-levers associated with said shaft, one of said pedal-levers being provided with an enlarged end which incloses said brake-wheel, a spring-ring interposed between said pedal-lever and said brake-wheel and within such end and connected with the former, a connection between the pedal-levers by which a movement of one causes an opposite movement of the other, and a connection from said spring-ring to the pedal connection so that when both are pressed, the spring-ring is cramped so as to retard the pedal-shaft.

CARL YOUNG.

Witnesses:

BERTHA C. SIMS,
LILLEY JOHNSTONE.