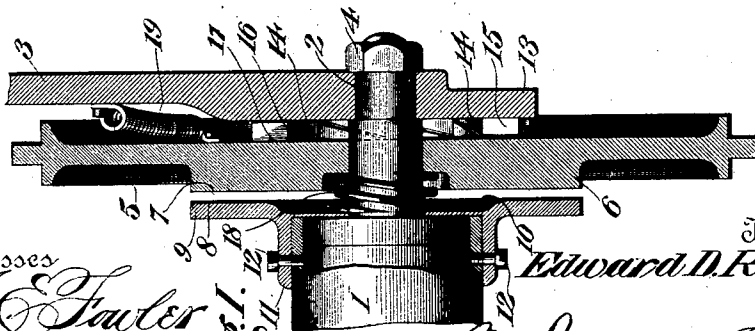
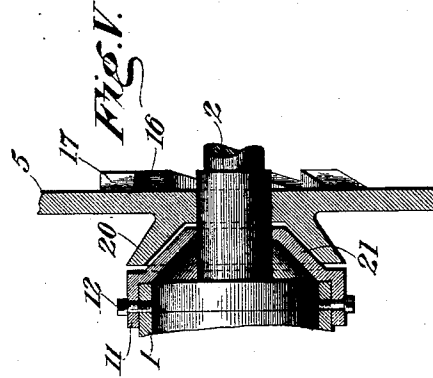
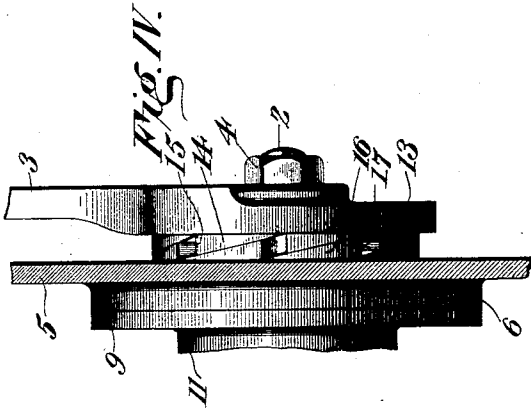
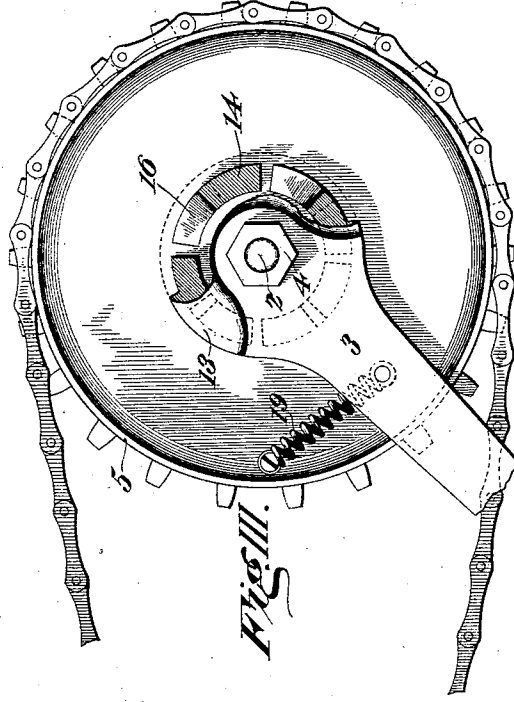
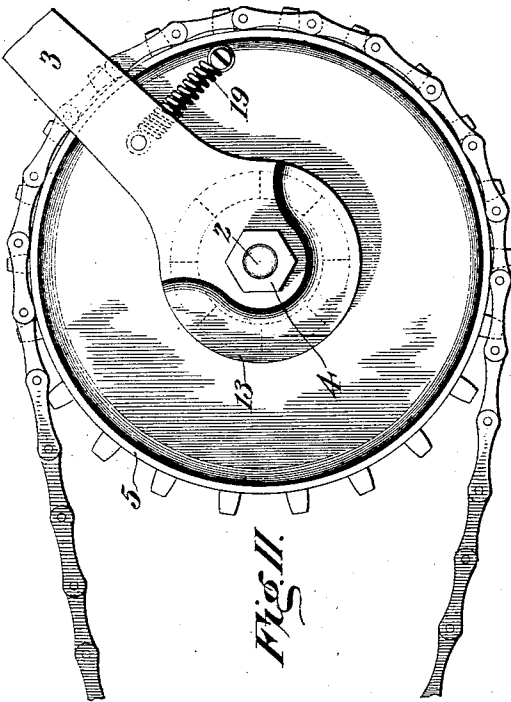


(No Model.)

E. D. ROCKWELL.
BICYCLE BRAKE.

No. 588,088.

Patented Aug. 10, 1897.



Witnesses

M. E. Fowler
M. Acker

Fig. I.

Inventor

Edward D. Rockwell

By Joseph L. Atkins
Attorney

UNITED STATES PATENT OFFICE.

EDWARD DAYTON ROCKWELL, OF BRISTOL, CONNECTICUT.

BICYCLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 588,088, dated August 10, 1897.

Application filed November 7, 1896. Serial No. 611,321.. (No model.)

To all whom it may concern:

Be it known that I, EDWARD DAYTON ROCKWELL, of Bristol, in the county of Hartford, State of Connecticut, have invented certain
5 new and useful Improvements in Bicycle-Brakes, of which the following is a complete specification, reference being had to the accompanying drawings.

My invention relates to improved brake
10 mechanism for bicycles or similar vehicles that can be manufactured at comparatively small cost, is light and strong in construction, that is easy to apply, and that possesses facility and efficiency of operation.

15 The object of my invention is to produce in improved bicycle-brake mechanism possessing the qualities above specified means for converting the ordinary operation of back-pedaling upon the part of a rider into a positive and effective brake action and without
20 the addition of material weight or complicated mechanism.

In the accompanying drawings, Figure I is a sectional view of a portion of a bicycle-frame
25 equipped with my invention. Fig. II is a side elevation of the same, showing the forward or driving movement of the pedal-bar. Fig. III is a similar view showing the rearward or back-pedaling movement of the pedal-bar.
30 Fig. IV is a detail illustration of the sprocket-wheel-shifting mechanism. Fig. V is a sectional view of a modification.

Referring to the figures on the drawings,
35 1 indicates that end of the crank-hanger of a bicycle-frame that is adjacent to the sprocket-wheel.

2 indicates a crank-shaft that is revolvably mounted within the crank-hanger 1 in any usual or suitable manner.

40 3 indicates a pedal-bar that is rigidly secured to the shaft 2 by any suitable means—as, for example, a nut 4.

5 indicates a sprocket-wheel of any ordinary or suitable construction that is loosely
45 mounted upon the shaft 2 between the pedal-bar 3 and the end of the crank-hanger 1.

Upon its side next to the crank-hanger 1 the sprocket-wheel may be provided with a boss 6. The boss may be made integral with
50 the sprocket-wheel, as illustrated, or separable therefrom. It may be formed in the shape of a circular disk or it may be an annular

boss. Such matters of mechanical detail are entirely non-essential. The object of the boss 6 is to oppose a plane face 7 to a corresponding face 8 of a friction-plate 9, that is
55 fixed to the crank-hanger 1. The plate 9 is preferably dish-shaped, as indicated by the depression 10, rendering the shape of its friction-face 8 annular. The plate may be provided with an annular flange 11, whose inner
60 diameter is slightly larger than the exterior diameter of the crank-hanger 1, so that the frame fits snugly over the end of the latter. Screws 12, passing through apertures in the
65 flange 11 and screwing into the crank-hanger 1, afford simple means for uniting the plate 9 to the crank-hanger.

That portion of the pedal-bar 3 which surrounds the shaft 2 consists of a disk 13. Upon
70 its inner face I provide a plurality of inclined shoulders or wedges 14, each of which is provided with a face 15, whose plane is perpendicular to the inner face of the disk 13. The shoulders 14 may be formed integrally with
75 the pedal-bar, or they may be detachably secured thereto. They may be of any preferred number or shape, adapted to perform the function required of them, and are arranged in the form of an annulus about a central line
80 coincident with the axis of the shaft 2.

Upon the outer face of the sprocket-wheel
5 I provide an annular series of shoulders 16, provided with faces 17, which correspond in position and arrangement upon the sprocket-
85 wheel with the shoulders 14 upon the disk 13, but are inversely located thereon, so that the faces 17 abut against the faces 15 when the pedal-bar 3 is driven forward.

The shoulders 16 may be formed integrally
90 with the sprocket-wheel 5, or they may be detachably secured thereto. Their number and shape correspond to those of the shoulders 14 upon the pedal-bar.

The shoulders 14 and 16 are designed to
95 unite in effect the sprocket-wheel with the pedal-bar while the latter is performing its driving function. To urge the sprocket-wheel toward the disk 13, I provide a coiled spring 18, surrounding the shaft 2 and set at
100 one end against the plate 9 or some other sustaining element upon the crank-hanger 1 and at the other end against the sprocket-wheel 5. The spring 18 need not be a strong one,

as there is very little force tending to separate the sprocket-wheel 5 from the pedal-bar during the forward movement of the latter.

To preserve the abutment of the faces 15 and 17 one against the other, any suitably-located spring may be employed—as, for example, a strong spring 19, secured at one end to the sprocket-wheel and at the other end to the pedal-bar.

The operation of my brake mechanism may be described as follows: The proper engagement of the faces 15 and 17 being compelled by the springs 18 and 19, respectively, during the forward movement of the pedal-bar, the movement of that element in that direction serves to drive the sprocket-wheel precisely in the same manner as if the sprocket-wheel were secured to the pedal-bar or to the shaft 2, which is the usual mode of constructing an ordinary bicycle. If the rider desires to check the movement of his wheel, he can, by the operation known as “back-pedaling,” retard the forward movement of the shaft 2.

It is desirable that a certain amount of back-pedaling should be admissible without positive application of the brake mechanism. For that reason the spring 19 is a strong one, so that considerable force is required to overcome its tensile power and separate the faces 15 and 17 of the shoulders 14 and 16, respectively. If, however, the force of the spring 19 is overcome and the faces 15 and 17 are sufficiently separated to bring the inclined faces of the shoulders together, (see Fig. IV,) the inclined faces of the respective shoulders, working against each other, tend to separate the sprocket-wheel from the disk 13. The sprocket-wheel being loose upon its shaft is thereby wedged against the plate 9, the faces 7 and 8, respectively, of those elements making frictional contact.

In the manner just described it is possible to gradually or suddenly retard the movement of the sprocket-wheel 5, so that the velocity of movement of the sprocket-wheel 5 may be gradually diminished or instantly checked, as occasion may require.

The distance between the faces 7 and 8 of the sprocket-wheel and plate 9, respectively,

is very small, so that the prolonged movement of the sprocket-wheel is unnecessary to effect their frictional contact. Consequently there is in the operation of my device practically no disalignment of sprocket-wheel from its chain-driven pinion. (Not illustrated.)

The distance between the faces 7 and 8, respectively, is less than the altitude of the faces 15 and 17, respectively. Consequently the same set of shoulders 14 and 16 at all times coöperate with each other and one shoulder 14 cannot slip over its coöperative shoulder 16.

In Fig. V, I illustrate a modified construction designed to amplify the frictional contact-surfaces of my brake elements. In that figure a cup-shaped disk 20 is substituted for the flat boss 6, and a corresponding truncated conical element 21 is substituted for the plate 9 to coöperate with the disk 20.

What I claim is—

1. In bicycle-brake mechanism, the combination with a frame, shaft, and pedal-bar secured thereto, of a sprocket-wheel loosely mounted upon the shaft between the pedal-bar and the frame, a friction-plate secured to the frame, wedging mechanism operatively located between the pedal-bar and the sprocket-wheel, and a spring connecting the pedal-bar and sprocket-wheel, substantially as set forth.

2. In a bicycle-brake mechanism, the combination with a frame and shaft, of a sprocket-wheel loosely mounted on the shaft and free to slide thereon to a limited extent, provided with a friction-surface, a friction-plate on the frame, a pedal-bar, wedging connections between the pedal-bar and the sprocket-wheel, a spring 18 which tends to separate the said friction members, and a strong spring, 19, connecting the pedal-bar and the sprocket-wheel and tending to hold them in driving engagement, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

EDWARD DAYTON ROCKWELL.

Witnesses:

G. E. ROOT,
C. A. BLAIR.