

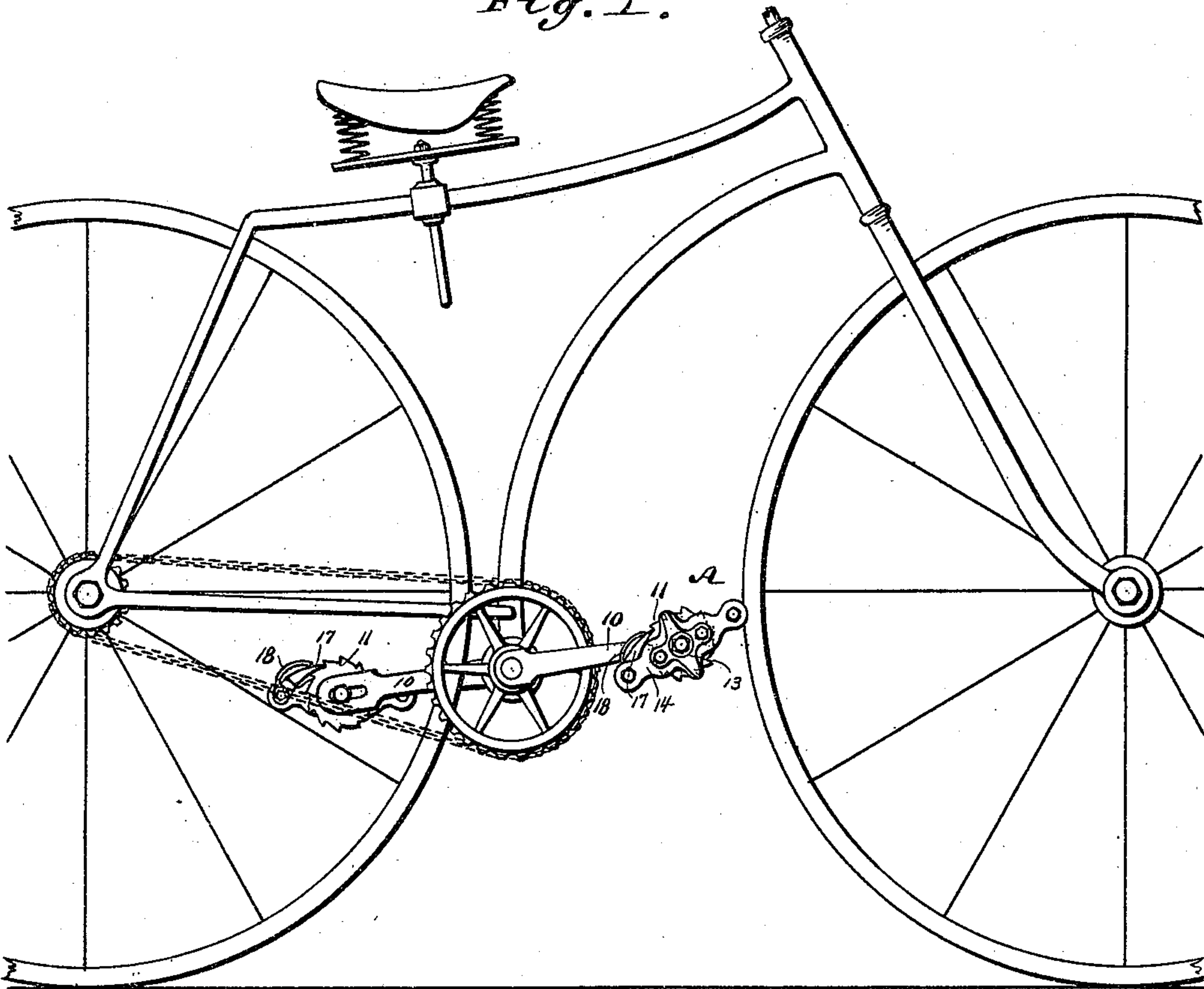
(No Model.)

G. W. CUSHMAN.  
PEDAL FOR VELOCIPEDES.

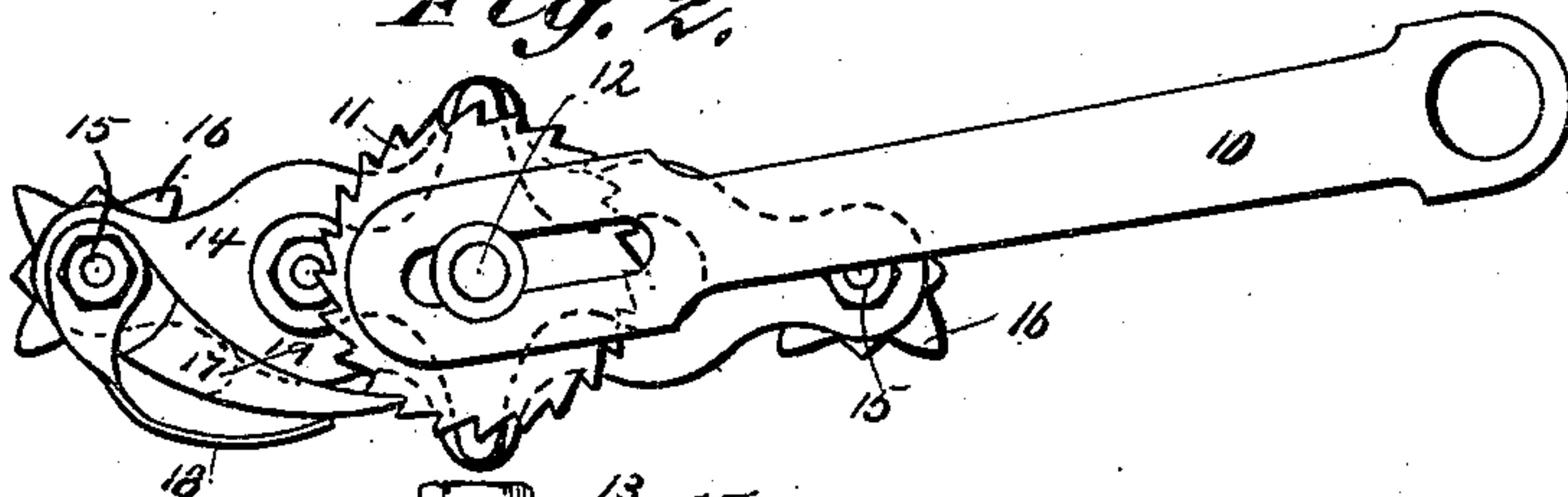
No. 447,145.

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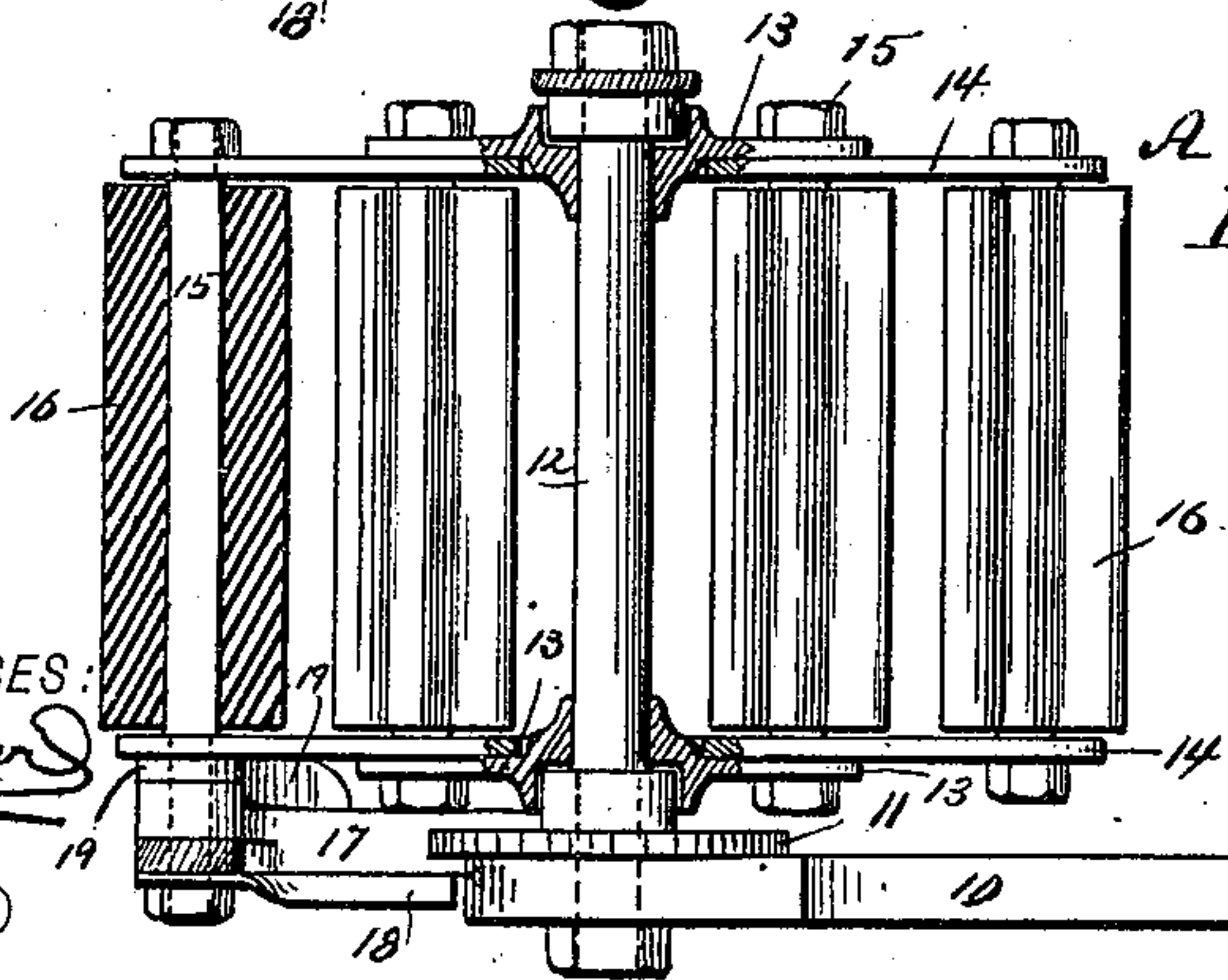
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

*John H. Deemer*  
*C. Sedgwick*

INVENTOR:

*G. W. Cushman*

BY

*Mumford*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

GEORGE W. CUSHMAN, OF NEW YORK, N. Y.

## PEDAL FOR VELOCIPEDES.

SPECIFICATION forming part of Letters Patent No. 447,145, dated February 24, 1891.

Application filed September 12, 1890. Serial No. 364,769. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. CUSHMAN, of New York city, in the county and State of New York, have invented a new and useful  
5 Attachment for Bicycles and Similar Machines, of which the following is a full, clear, and exact description.

My invention relates to bicycles and similar machines, and has for its object to provide an  
10 attachment to or a reconstruction of the pedals whereby the work of hill-climbing will be materially facilitated, and wherein also upon the downward stroke of the pedals the latter and the cranks of the drive-shaft will act as  
15 integral parts; and a further object of the invention is to provide a means whereby the leverage upon the downward stroke of the crank-arms will be greatly increased over the present leverage, and whereby, also, the pedals  
20 may be more readily recovered than heretofore.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter more fully set forth,  
25 and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the  
30 views.

Figure 1 is a side elevation of a bicycle having the improvement applied. Fig. 2 is a side elevation of one of the pedals attached to the crank-arm in position to make a downward  
35 stroke; and Fig. 3 is a plan view of the pedal shown in Fig. 2, a portion of the pedal being in section.

The pedal A is attached to the crank-arm 10 of the drive-shaft in the usual manner; but  
40 a ratchet-wheel 11 is firmly attached to the crank-spindle 12, upon which the pedal turns, the attachment of the ratchet-wheel being effected between the inner of the pedal side plates 13 and the opposed face of the crank-  
45 arm, as is best illustrated in Figs. 2 and 3.

To the usual side plates 13 of the pedal auxiliary side plates 14 of much greater length are secured, the attachment of the two side plates being ordinarily accomplished by the  
50 bolts 15, which pass through the foot-rest bars

16, which bars are usually constructed of rubber; but additional retaining devices may be employed, if desired.

Two foot-rests 16 have heretofore been used in connection with the pedal, one being located at each side of the crank-spindle; but by reason of the auxiliary plates I am enabled to locate two foot-rests at each side of the crank-spindle, or more than two if in practice it is found desirable.  
60

Upon one auxiliary side plate 14 a pawl 17 is pivoted, adapted for engagement with the ratchet-wheel 11, which pawl is likewise held in engagement with the wheel by a spring 18 of suitable construction, and in order to render the action of the pawl and ratchet noiseless, or comparatively so, a washer or deadening-strip 19, of rubber, leather, or equivalent material, is made to intervene the pawl at its pivotal point and the opposed auxiliary side  
70 plate and engage with the inner face of the pawl. It is immaterial whether the pawl engages with the ratchet at the top or at the bottom of the latter.

In operation upon the upward movement  
75 of the pedals A the pawls 17 slip readily over the ratchet-wheels; but the very moment that the crank-arms 10 assume an approximately horizontal position at the downward stroke the pawls engage with the ratchet-wheels in  
80 such manner as to effectually prevent the pedals from revolving upon their crank-spindles 12, thus tying the pedals to the crank-arms and virtually rendering them integral parts. The utility of the additional outer  
85 foot-rest is now obvious, as, instead of bearing downward in the usual way directly over the crank-spindle, the operator is enabled to press downward with much greater force upon the forward outer foot-rest, and the leverage  
90 is thereby so increased that a maximum of power may be imparted to the downward stroke of the pedal with comparatively little exertion upon the part of the rider. It is also obvious that by extending the pedals a rider  
95 losing the pedal is enabled to readily and expeditiously recover it, and, again, the increased length of the pedals is another advantage, in that it serves to overcome a dead-center, as the rider is enabled to bear with his heel  
100



quickly upon one outer foot-rest and follow it with a pressure by the toe upon the opposite foot-rest.

I desire it to be distinctly understood that  
5 in the construction of the pedal the ordinary plates 13 may be dispensed with. These plates are illustrated only to render the fact obvious that the improvement may be readily attached to any pedal now in use.

10 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. As an improved article of manufacture, a pedal for bicycles and similar machines,  
15 consisting of side bars apertured to receive a spindle and two foot-rests secured laterally side by side between the said side bars at each side of the spindle-opening, substantially as and for the purpose specified.

20 2. The combination, with the crank-arm of a bicycle or similar machine and the crank-spindle, of a pedal loosely mounted upon the spindle, a ratchet-wheel secured to the spindle, a pawl attached to the pedal and locking  
25 with the ratchet-wheel upon the downward movement of the pedal only, substantially as shown and described, whereby at the downward movement of the pedal the pedal and

crank-arm are connected, as and for the purpose specified. 30

3. The combination, with the crank-arm and crank-spindle of a bicycle or similar machine, of a treadle held to revolve around the spindle and provided with two foot-rests at each side of the spindle, a ratchet-wheel fast  
35 upon the spindle, and a spring-pressed pawl pivoted to the treadle and adapted for engagement with the ratchet-wheel, substantially as and for the purpose set forth.

4. In a bicycle or similar machine, the combination, with the crank-spindle of the machine and a ratchet-wheel firmly secured to said spindle, of a pedal held to revolve around the spindle, provided with two rest-bars at each side of the latter, a pawl pivoted to the pedal  
45 and adapted to engage with the ratchet-wheel, and a washer intervening the pivotal portion of the pawl and the pedal and engaging with one face of the pawl, substantially as shown and described, whereby the action of the pawl and  
50 ratchet is rendered noiseless, as specified.

G. W. CUSHMAN.

Witnesses:

JOSEPH H. STINER,  
B. A. CUSHMAN.