

No. 622,817.

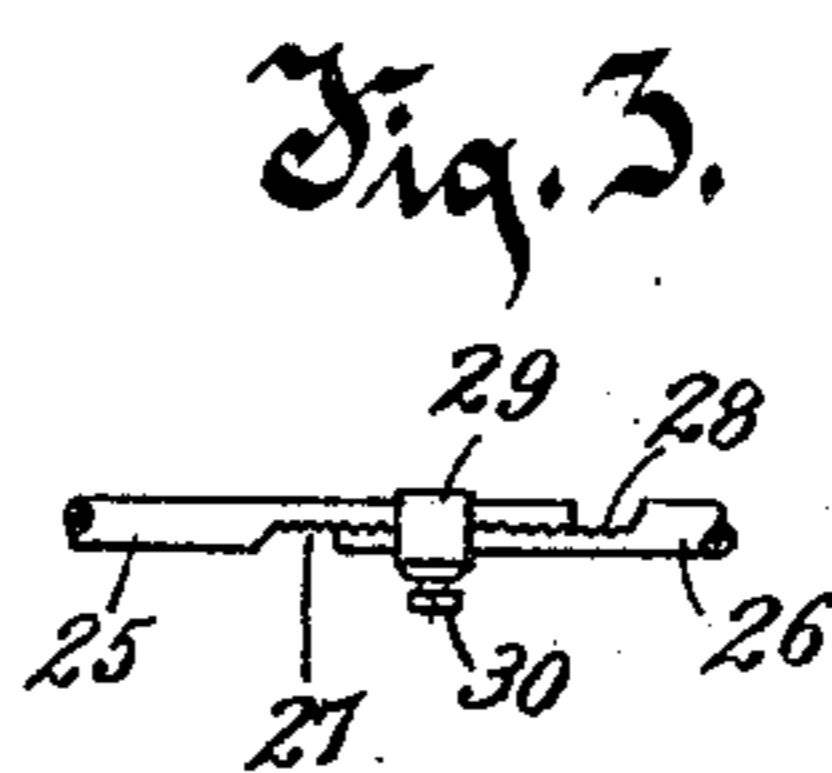
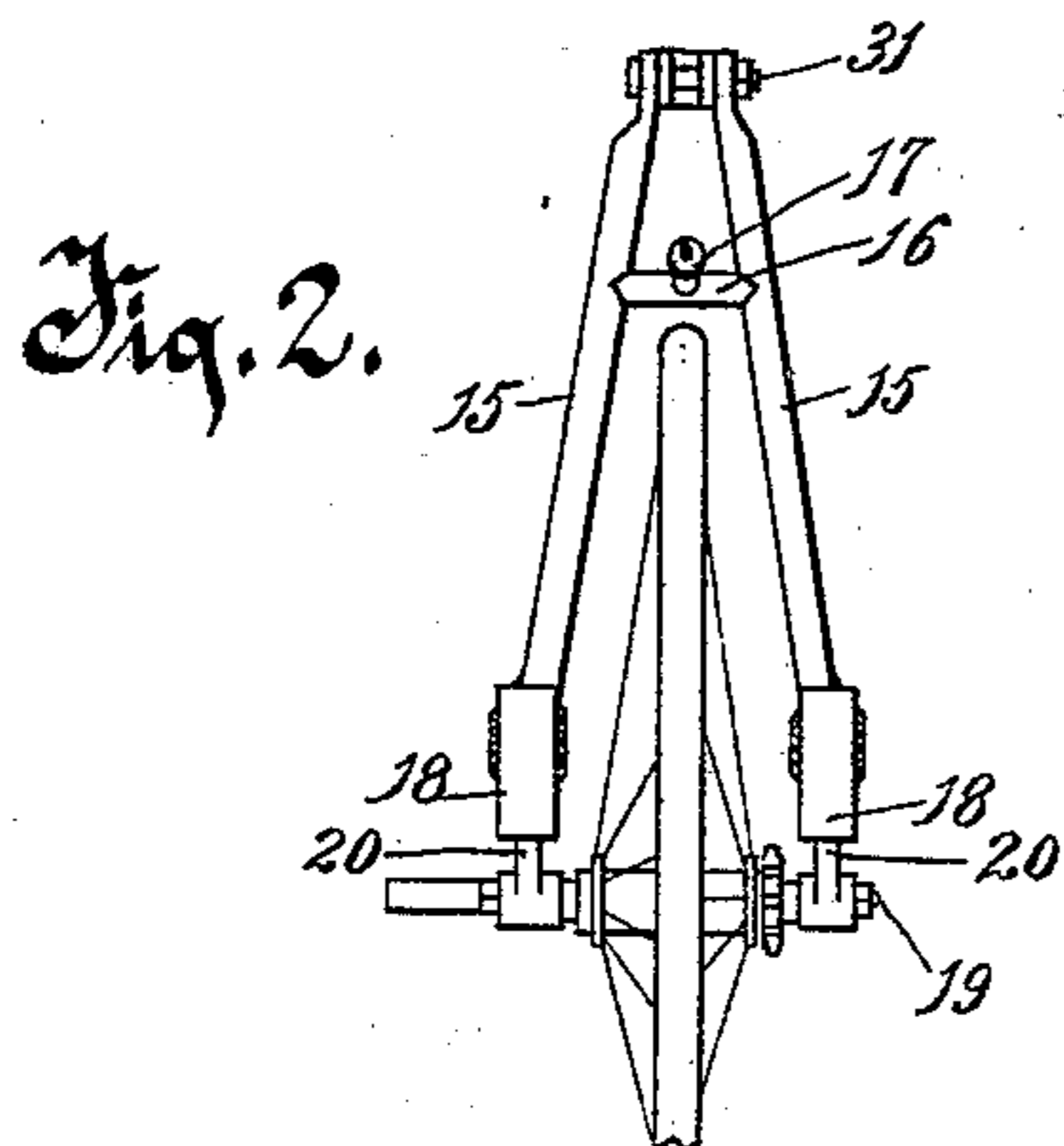
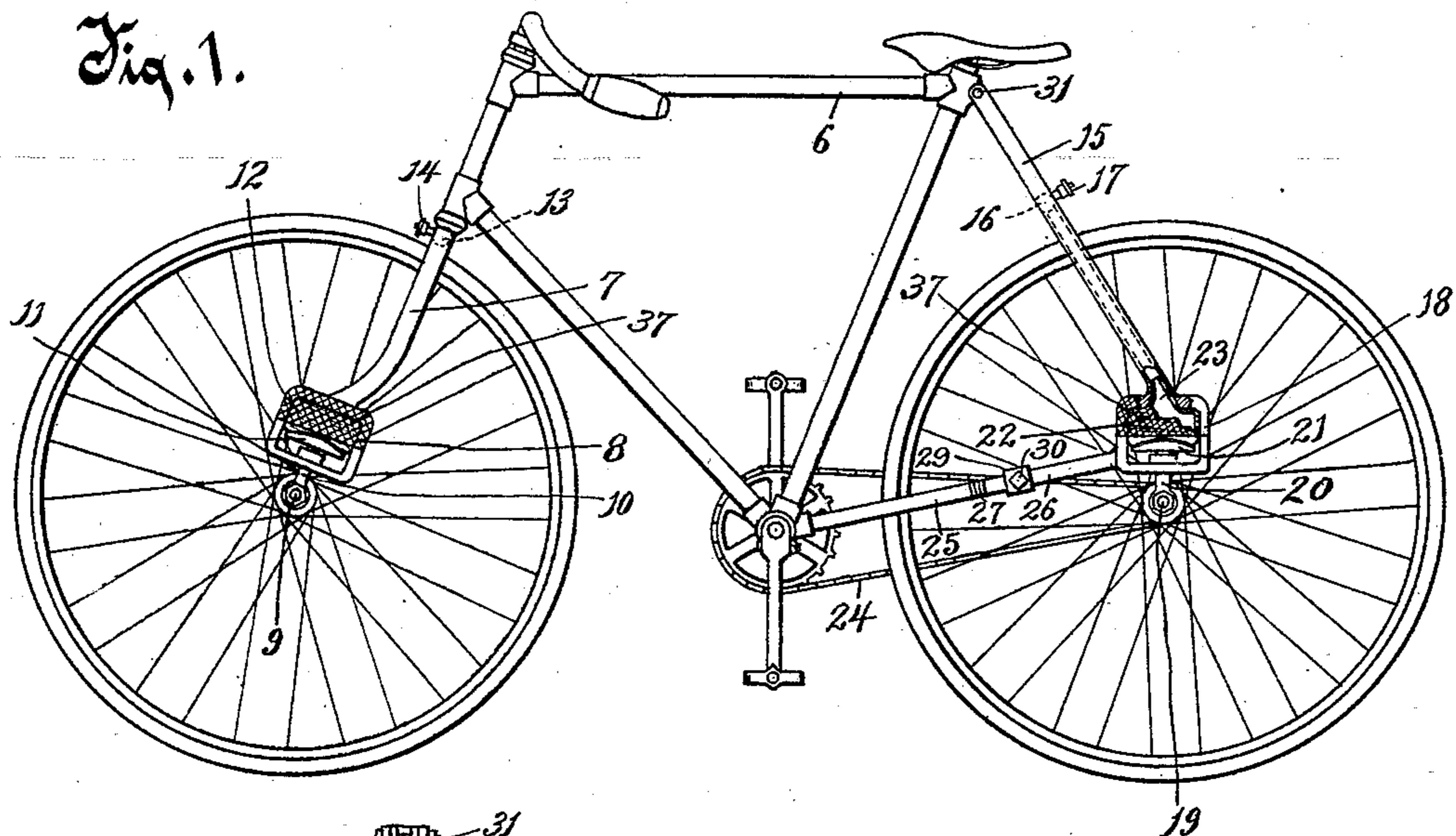
Patented Apr. 11, 1899.

C. L. MERKEL.

BICYCLE.

(Application filed May 25, 1896.)

(No Model.)



Witnesses.

Ch. Keeney,
Anna C. Faust.

Inventor.

Charles L. Merkel.
By Benedict and Morsell,
Attorneys.

Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES L. MERKEL, OF MILWAUKEE, WISCONSIN.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 622,817, dated April 11, 1899.

Application filed May 25, 1896. Serial No. 593,035. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. MERKEL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Bicycles, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in bicycles.

The object is to provide an improved construction of bicycle-frame adapted to take up and successfully resist all jars and jolts to which it may be subjected during riding and, if desired, dispensing altogether with the necessity of employing the ordinary cushion and pneumatic tubes now generally used.

With the above primary object in view the invention consists of the devices and parts or their equivalents, as hereinafter more fully set forth.

Referring to the drawings, Figure 1 is an elevation of a bicycle equipped with my improvements. Fig. 2 is a view of the rear portion of the bicycle-frame. Fig. 3 is a detail view of the adjusting mechanism for the sprocket-chain.

Referring to the drawings, the numeral 6 indicates the frame of an ordinary bicycle. The tubular arms 7 of the front fork of this frame are formed or provided at their lower ends with frames 8, preferably, although not necessarily, of rectangular form. The front axle of the bicycle is indicated by the numeral 9, and upon the extended ends of this axle are secured upwardly-extending arms 10, which pass through the lower bars of the frames 8, being provided at their upper extremities with plates or stirrups 11. Located within the frames, between the plates 11 and the upper bars of said frame, are air-cushions 12, advisably of rubber or like material. These cushions have tubes (not shown) extending therefrom, which tubes extend through openings in the top bars of the frame 8 and into the tubes 7 of the front forks. The connecting tubular cross-piece 13 for the upper ends of the front forks (indicated by the numeral 13 and shown by dotted line in Fig. 1) is provided with an ordinary air-valve 14, adapted for the connection thereto of an air-pump. It is obvious that when a pump is ad-

justed to this valve and worked the air will be forced down the tube 7 into the cushions 12, whereby said cushions are simultaneously inflated and caused to press firmly against the plates 11.

While Fig. 1 only shows one of the frames 8, upwardly-extending arms 10, and air-cushions 12, it will of course be understood that these parts are duplicated upon the opposite side of the front wheel of the bicycle.

The numerals 15 indicate the rear tubes of the bicycle-frame, which are connected near their upper ends by a cross-tube 16, which cross-tube is provided with an air-valve 17, adapted to admit of the adjustment thereto of an air-pump. The lower ends of the tubes 15 are also formed or provided with frames 18, which frames are also preferably rectangular in form and similar in all respects to the front frames 8. The rear axle is indicated by the numeral 19, and upon the extended ends of this axle are secured upwardly-extending arms 20, which arms project through the lower bars of the frames 18 and are provided at their upper extremities with plates or stirrups 21, which plates bear against hollow air-cushions 22, confined between said plates and the upper bars of the frames 18. These cushions are provided with the tubes 23, which extend through openings in the frame and into the tubes 15. The tubes extending from the front cushions 12 are similar to these tubes 23. It is obvious that the cushions 22 may be inflated simultaneously in the same manner as the front cushion merely by attaching an air-pump to the air-valve 17.

It will be seen that the entire mechanism is disposed within the open frames 8 and 18, and hence ready access to the working parts can at all times be secured.

In order to provide for the adjustment of the tension of the sprocket-chain 24 of the bicycle, I make the rear bottom braces of two pieces 25 and 26, respectively, the latter extending from the frames 18. The ends of these parts or sections 25 and 26 are adapted to overlap and are provided, respectively, with engaging serrations 27 and 28, as shown in Fig. 3, which are held together by means of a sleeve 29, embracing the parts, and a set-screw 30, passing through the sleeve and bearing against the part 26. It is obvious that

when it is desired to lengthen or shorten the sprocket-chain the set-screw is turned so as to permit of the disengagement of the parts 25 and 26, and thereby allow for their longitudinal adjustment. When properly adjusted, the set-screw is again turned up tightly. As the members 26 extend from the frames 18 and as said frames in turn are formed or provided at the lower ends of the tubes 15, it is necessary that when the adjustment just referred to is made the lower ends of the tubes 15 be permitted to move in the arc of a circle. The pivot-pin 31 therefore, at the upper ends of said tubes, is absolutely necessary to this form of adjustment.

In the drawings I have shown the front and rear wheels of the bicycle provided with the ordinary flat bands or non-elastic tires. It is obvious that when the air-cushions 12 and 22 are properly inflated, in the manner previously pointed out, all the desirable features of pneumatic tires are secured, owing to the resiliency and give afforded by said air-cushions. When they are used in connection with a machine equipped with pneumatic tires, the very best results in easy and smooth riding are obtained. Also from the fact that both axles of the machine are held downwardly by the pressure of the air-cushions in case any obstruction is passed over in the roadway a give is necessarily provided which relieves the machine of all jar and jolt.

In Figs. 1 and 2 the air-valves are shown as applied to cross-pieces connecting the front and rear tubes, so that when a pump is connected to the valve both air-cushions at one end of the machine can be inflated at the same time. This of course is the most convenient construction, although I do not wish to be understood as limiting myself thereto, as separate valves can be applied to each of the front and rear tubes.

In order to protect the rubber cushions 12

and 22, I provide the frames 8 and 18 with the wire or gauze side pieces 37, forming guards, as shown in Figs. 1 and 2. These guards not only protect the cushion from injury, but at the same time act to prevent said cushions from spreading out laterally under compression, thereby avoiding all danger of the inner sides of the cushions striking against the spokes of the wheels.

What I claim as my invention is—

1. The combination, of an axle, tubular arms supported by said axle, stirrups mounted on the axle, frames which terminate the tubular arms and overhang the stirrups, respectively, the tubular cavity of the arms leading through the inner surface or seat of the frames, inflated cushions interposed between such frames and stirrups respectively, and tubes extending from the cushions into the tubular arms.

2. In a bicycle, the combination of tubular end forks formed or provided at their lower ends with open rectangular frames or saddles, an air-valve applied to the tubing, an axle, upwardly-extending arms at opposite ends of the axle, said arms extending through the lower sides of the frames and formed or provided at their upper ends within the frames with plates or stirrups, and hollow cushions within the open frames, said cushions confined between the opposite sides of the frames, and between the tops of said frames and the plates or stirrups, said cushions provided with openings registering with openings in the tubing and adapted to be inflated by air forced through the tubing.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. MERKEL.

Witnesses:

C. T. BENEDICT,
ANNA V. FAUST.