

No. 701,967.

Patented June 10, 1902.

A. B. TITUS.  
BICYCLE.

(Application filed Apr. 8, 1901.)

(No Model.)

FIG. 1.

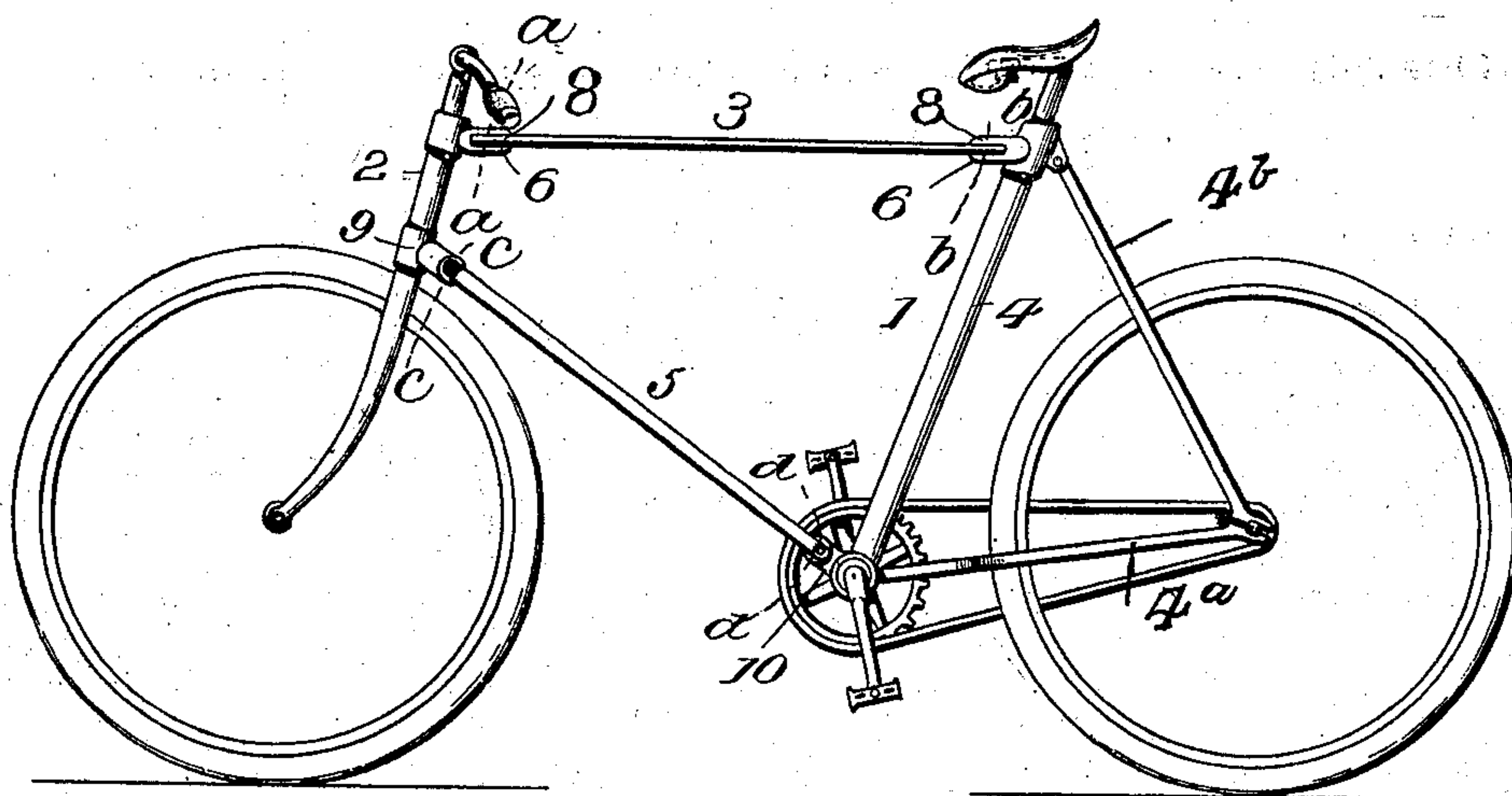


FIG. 2.

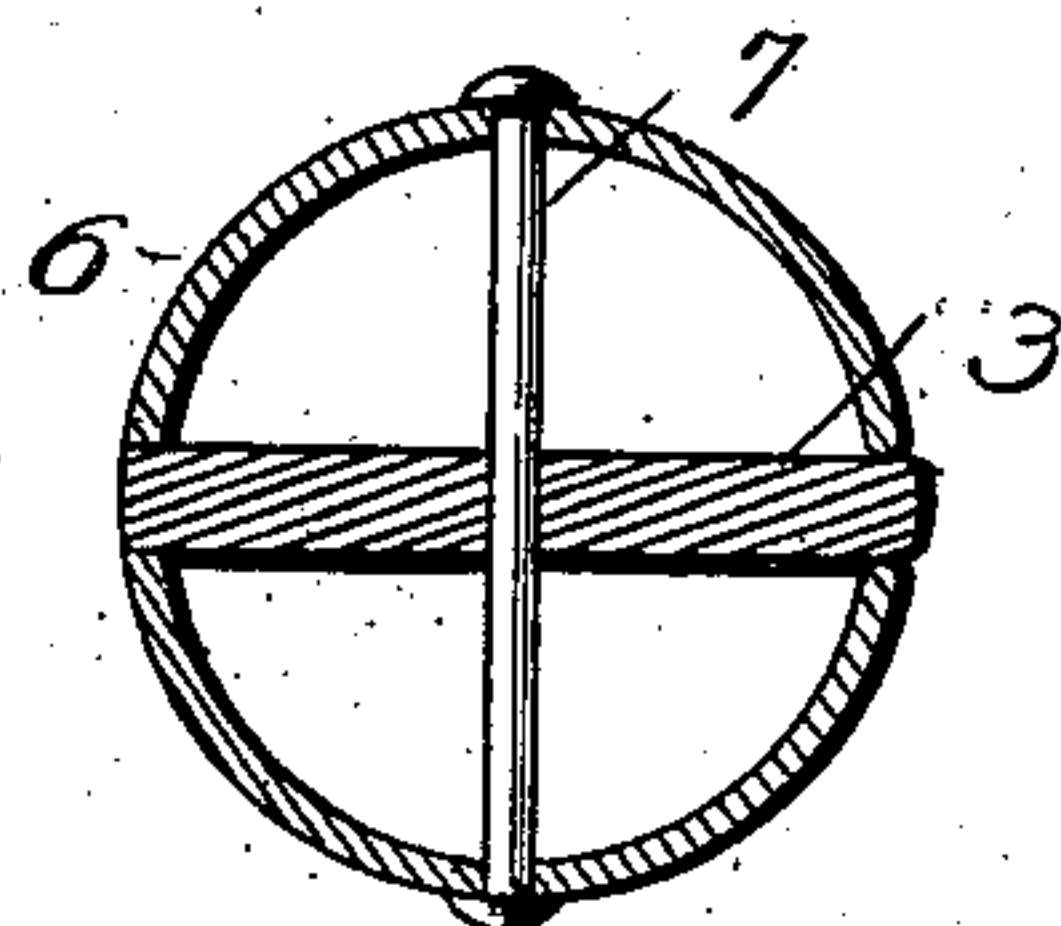


FIG. 3.

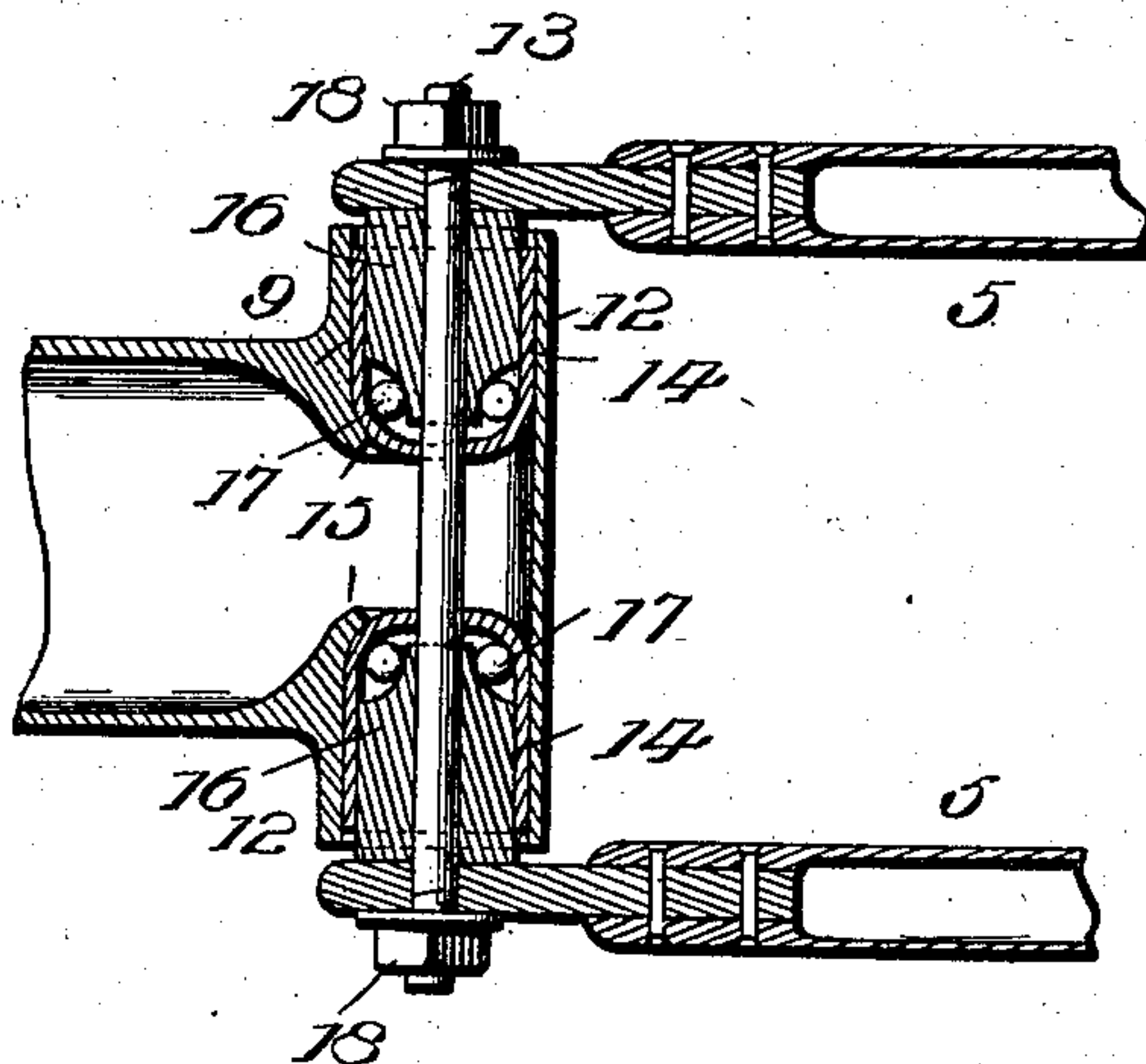
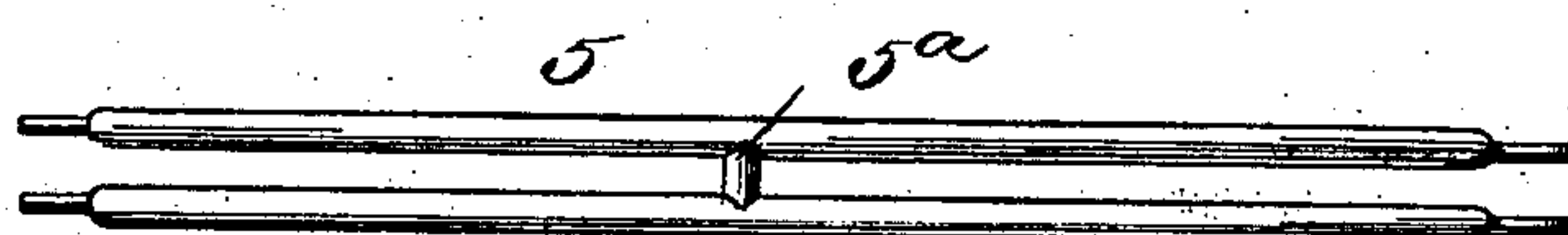


FIG. 4.



Witnesses

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By

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# UNITED STATES PATENT OFFICE.

ALBERT BYRON TITUS, OF BLOOMFIELD, INDIANA.

## BICYCLE.

SPECIFICATION forming part of Letters Patent No. 701,967, dated June 10, 1902.

Application filed April 3, 1901. Serial No. 54,187. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT BYRON TITUS, of Bloomfield, in the county of Greene and State of Indiana, have invented certain new and useful Improvements in Bicycles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to bicycles, having special reference to spring-frames.

The object of the invention is to provide a frame of simple construction which shall by reason of its own resiliency serve to lessen the jar when an obstacle is encountered, obviating the necessity of employing coil-springs or any auxiliary devices.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of a frame constructed in accordance with my invention. Fig. 2 is a cross-section on lines *a a* and *b b*, Fig. 1, showing the connections of the top bar to the head and seat-post tube. Fig. 3 is a cross-section on lines *c c* and *d d*, Fig. 1, showing the hubs to which the lower brace-bars of the frame are secured. Fig. 4 is a plan view of the brace-bar.

Referring to the drawings, 1 designates the frame of a bicycle, comprising the front head 2, "backbone" 3, seat-post tube 4, and brace-bars 5, connecting the head and saddle-post tube. The two members comprising the brace-bars 5 are united at their centers by a cross-pin 5<sup>a</sup>. The seat-post tube 4 and rear forks 4<sup>a</sup> and 4<sup>b</sup> comprise a rigid triangular frame, in the rear vertex of which is the bearing of the rear carrying-wheel and the rear sprocket or driving wheel.

The backbone is composed of a single straight metallic bar rectangular in cross-section. At its ends it is connected to the head 2 and seat-post tube 4, being projected into cylindrical lugs 6, rigidly secured to such head and seat-post tube and provided with holes through which and coincident holes in the bar bolts 7 are passed. The lugs are hemispherical at their ends 8 to form an equal brace across the spring-bar, contacting with the upper and lower surfaces thereof.

9 and 10 designate, respectively, the T-sleeves on the lower part of the head and crank-hanger, in which connecting-bars 5 are secured. The lateral of each T-sleeve has a transverse tubular portion 12, constituting hubs for the securing bolts or axles 13, on which are held the flattened extremities of bars 5. Within each hub are two ball-cups 14, rounded at their inner ends to fit against flanges 15.

16 designates two cones, between which and the cups 14 ball-bearings 17 are located. The bolt or axle 13 is passed longitudinally through the hub and bars 5, which latter are held in place by nuts 18.

The most valuable point of advantage in a bicycle constructed in accordance with my invention is that the front and rear sprocket or driving wheels always retain their relative positions however great the jar to which the machine is subjected in riding. In all of the spring-frames with which I am familiar there is a constant tendency to throw the sprockets out of relation. In those machines employing springs on the forks secured to the rear wheel the latter must necessarily rise and fall in passing over obstructions, throwing the sprockets out of their relative positions and causing the chain to travel in jerky and uneven movements. It is apparent to those skilled in the art that by my invention these difficulties are obviated, the spring or resiliency being entirely in advance of the saddle-post and forward of the hub of the front sprocket-wheel and pedal-shaft, and the forks 4<sup>a</sup> 4<sup>b</sup> forming the connection between the bearings of the rear sprocket-wheel and the seat-post tube being perfectly rigid. Upon an obstacle being encountered each wheel will as it passes thereover cause the backbone 2 to bend downwardly in the middle, while the pivotal connections of the brace-bar 5 aid this resilient movement without damage to the frame, and the jar communicated to the saddle will be reduced to a minimum.

Practice has demonstrated that my improved frame may be used on wheels having cushion-tires and that its resiliency will afford as much ease in riding as is derived from pneumatic tires.

I claim as my invention—

1. In a bicycle-frame, a rigid head and seat-



post tube, and rigid connections between the bearing of the rear driving-wheel and said seat-post tube, in combination with T-sleeves on said head and tube having slots in their  
5 laterals, and a rectangular spring-bar secured at its ends in said slots, substantially as set forth.

2. The combination with the head and saddle-post tube having tubular portions, of the  
10 brace-bar composed of two spaced-apart members pivotally secured to said tubular portions, substantially as set forth.

3. The combination with the head and the saddle-post tube, of the T-sleeves on said

head and tube having their laterals formed 15 with hemispherically-curved ends and slots in said laterals and ends, of the rectangular spring-bar fitted in said slots, and means for holding said bar, said ends of the laterals contacting with the upper and lower surfaces of 20 the bar, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALBERT BYRON TITUS.

Witnesses:

JOHN C. GILLILAND,  
O. W. THAYER.