

No. 677,830.

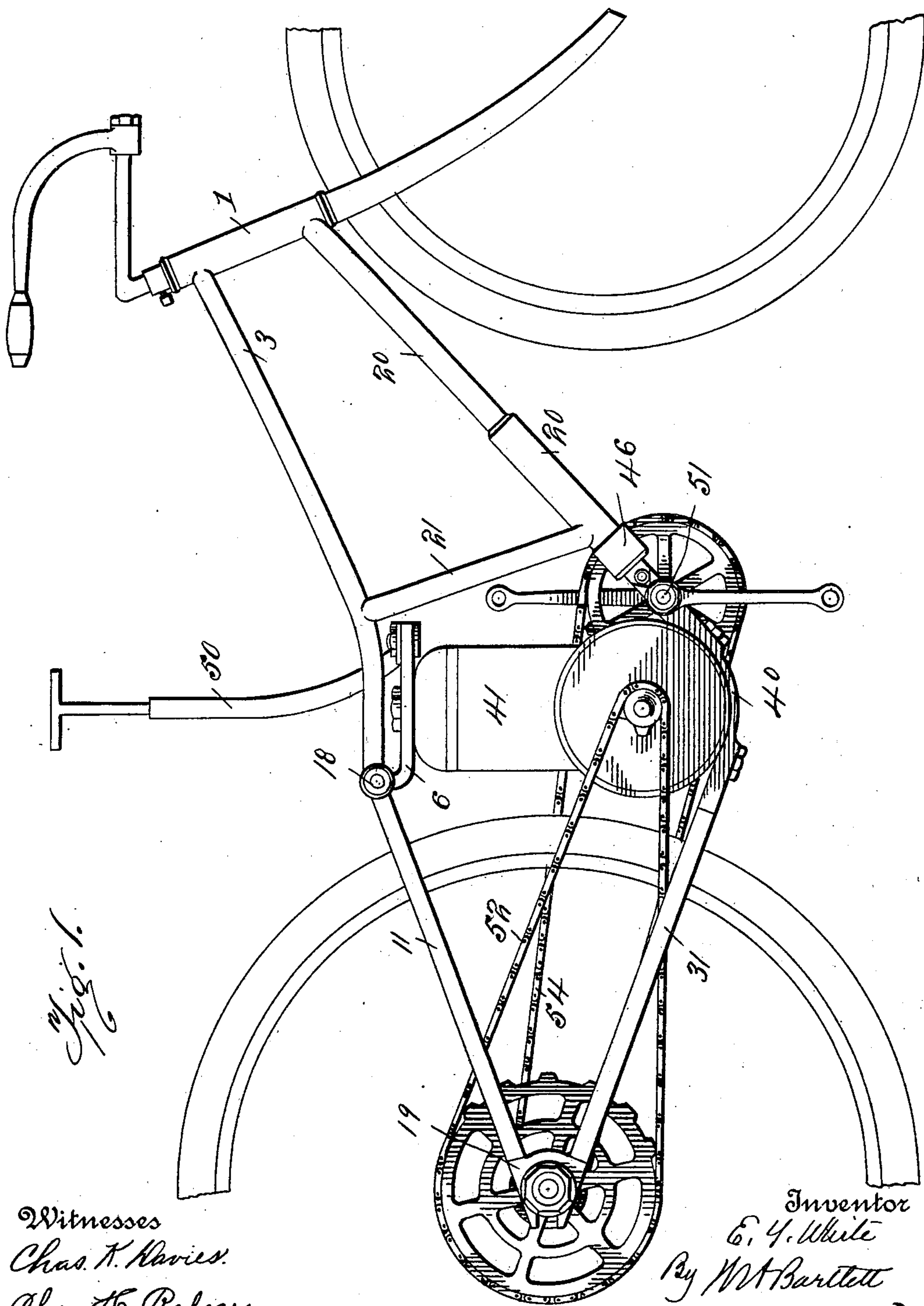
Patented July 2, 1901.

E. Y. WHITE.
BICYCLE FRAME.

(Application filed Nov. 15, 1900.)

(No Model:)

2 Sheets—Sheet 1.



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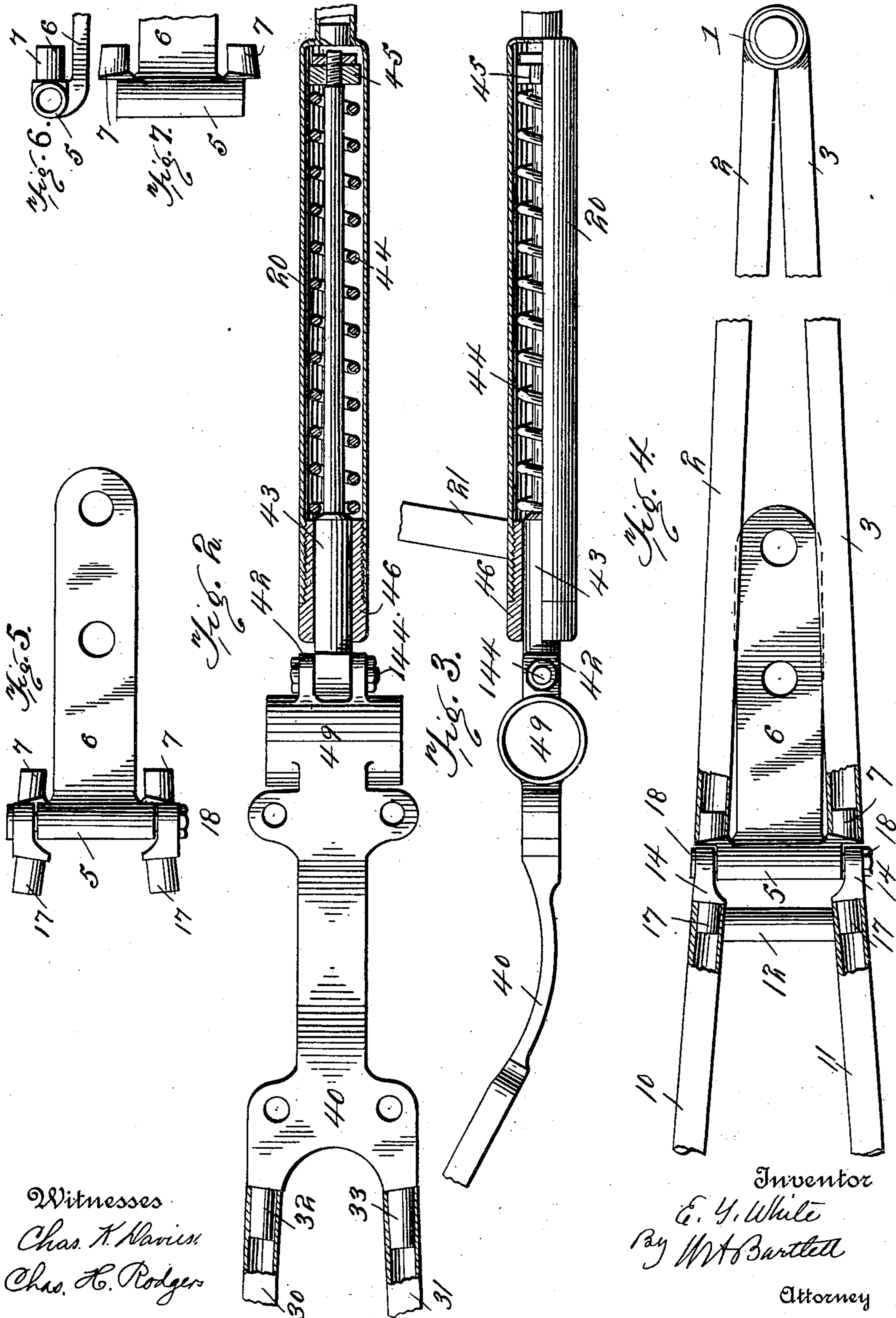
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UNITED STATES PATENT OFFICE.

EDWARD YOUNG WHITE, OF SAN ANTONIO, TEXAS.

BICYCLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 677,830, dated July 2, 1901.

Application filed November 15, 1900. Serial No. 36,641. (No model.)

To all whom it may concern:

Be it known that I, EDWARD YOUNG WHITE, residing at San Antonio, in the county of Bexar and State of Texas, have invented certain new and useful Improvements in Bicycle-Frames, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the frame construction of motor-bicycles.

The object of the invention is to produce a bicycle-frame which shall be yielding and support the motor mechanism in such manner that it shall be upheld by the part of the frame which yields to the greatest extent without adding appreciably to the rigidity of the frame.

Figure 1 is a side elevation of so much of a bicycle as will illustrate the invention. Fig. 2 is a broken plan, partly in section, of the front lower bar of the frame. Fig. 3 is a side view of said bar, partly in section or broken away. Fig. 4 is a broken top plan, partly in section, of the top bar of the frame. Fig. 5 is a plan detail of motor-supporting bracket and connections to frame. Fig. 6 is a broken side elevation, and Fig. 7 a broken plan, of the said bracket and its tube.

The frame is made in sections, front and rear, the front section being hinged to the rear section at the top and elastically connected at the bottom, so that the frame may yield in itself. The front frame-section and rear frame-section are rigid in themselves or by their connections, as will be explained.

The front post 1 of the frame may be of usual construction, having tubular bars 2 3 projecting rearward side by side from the front post and a little distance apart toward the rear end, so as to brace each other. The rear ends of tubes 2 3 receive pins 7 7, which are connected to cross-tube 5, with which bracket 6 is integral or rigidly connected. The cross-tube 5 has the pins 7 7 projecting forward, so as to enter the tubes 2 3, and as the frame-tubes 2 3 are brazed thereon the frame-tubes are thus rigidly connected to the bracket or hinge-piece 5 6. The cross-tube thus forms a brace between tubes 2 3, and the bracket 6 serves as a means for attaching the motor and seat-post, as will be explained. The rear frame bars or tubes 10 11 are con-

nected to the ends of cross-tube 5 by eyes 14 14, which are held to the ends of cross-tube 5 by a bolt or rivet 18, passing through both eyes and the tube 5. The pins 17 of the eyes 14 enter the tubes 10 11 and are there brazed or otherwise firmly secured. The frame-bars 10 11 are connected by brace 12. The front and rear sections of the frame are thus hinged together by pintle 18. The bars or tubes 10 11 connect to the rear axle-bearings, as usual, as by bearing-pieces 19, to which the lower rear bars are also connected. The lower front bar 20 is rigid with post 1 and is connected by brace 21 to one or both of the top frame-bars 2 3. Thus while the front part of the frame is hinged to the rear part by the hinge-pin or pintle 18 the front frame-section is rigid or firmly braced with reference to its own longitudinal and upright members. The lower rear bars 30 31 are connected to the hub-supports 19, as usual. At the front these tubes 30 31 receive the ends 32 33 of the double tie-piece 40 and are rigidly secured thereto. The double tie-piece 40 is preferably of steel, having a flat middle section which is somewhat flexible. This piece 40 serves as a support for the base of the motor 41, and the piece 40 is preferably bolted to the motor both at front and rear. The front end of piece 40 has ears 42, to which a piston-rod 43 is held by bolt 144. The piston-rod 43 extends into tube 20 and is surrounded within this tube by a spiral spring 44. This spring is confined between the piston-head 45 and a bearing or cylinder-head 46 at the end of the tube 20. The piston-head 45 is preferably screw-threaded, and the head or sleeve 46 screws into the end of tube 20. By the adjustment of either or both of these screws the normal tension of spring 44 may be regulated. The double tie piece or strap 40 is curved and slightly flexible. It has a bearing 49 for the shaft of the pedal-levers, and the bent portion of the piece 40 affords a seat or saddle for the motor 41. The upper end of the motor is firmly bolted to bracket 6 and the lower end to strap 40, so that the motor-engine is itself a brace or connection between the upper and lower bars of the frame.

The seat-post 50 is connected to the front end of bracket 6 and is therefore supported from the motor. The pedal-shaft 51, having

its bearing in the strap 40, is closely connected to the motor, so that the seat, motor, and pedals will have very nearly the same vertical movement.

5 The piston-rod 43, being connected to the rear part of the frame and being held forward by the spring 44, can be drawn back by the application of force or weight to the saddle and will yield to strains as the machine
10 is propelled. The spring 44 thus acts to hold the frame in the normal position, (shown in Fig. 1,) but by its yielding permits the frame to flex at the hinge 46, and thus the elastic support of the load is in fact produced by the
15 yielding of parts to change the form of the frame itself. It will be understood that such looseness of fit is allowed of the piston in the tube 20 and of other movable parts as will permit the slight flexure of the frame as is
20 necessary for the elastic action described.

The power from the motor to the drive-wheel may be conveyed by chain 52 or in other usual manner. The pedals are also suitably connected to the driving-hub, as by chain 54.

25 What I claim is—

1. In a bicycle-frame, the combination of a front and rear frame hinged together above, the lower rear bars connected to the hub-supports, a flexible tie-piece connecting said bars
30 and extending forward and serving as a support for the base of a motor, a piston-rod connected to said tie-piece and extending into the lower front bar of the frame, and a spring surrounding said piston-rod within said
35 frame-bar, all substantially as described.

2. In a bicycle-frame, the combination of the front post having two top bars and a single lower bar extending downward, a brace connecting said bars near the rear ends, a
40 hinge connecting the front section described to the top bars of the rear section, which bars are connected to the support of the rear wheel, lower side bars extending forward from said wheel-support and an elastic connection from
45 said lower section to the lower part of the front frame-section, substantially as described.

3. In a bicycle-frame, the combination of the front frame-section and the rear frame-section, hinged together at the top and elastically connected at the bottom, and a motor-engine forming a connecting brace member
50 between the bars of the rear section, substantially as described.

4. A bicycle-frame consisting essentially of
55 a front section and a rear section, one of said sections consisting essentially of top and bot-

tom bars and a substantially vertical bar forming a triangle, the other section consisting essentially of the top and bottom bars and a substantially vertical engine forming a triangle, the frame-sections being hinged together
60 at the top and elastically connected at their lower part, substantially as described.

5. In a bicycle-frame, the front section having two bars or tubes connected to the front
65 post, a cross-tube having pins extending into said bars or tubes, the rear top bars having loops at the sides of said cross-tube, and a bolt uniting said sections and serving as a pintle to the hinge, all combined substantially
70 as described.

6. In a bicycle-frame, the combination of the front and rear sections hinged together at top and elastically connected at the bottom, the motor-engine connected to the frame
75 and forming a brace between the top and bottom frame-sections, and the seat-post connected to the engine-support so as to move therewith, all combined substantially as described.
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7. In a bicycle-frame, the combination of the top and bottom bars of the rear frame-section and a strap forming a continuation of the bottom bars, the motor-engine secured to said strap and to the upper portion of the
85 frame, and the front frame-section elastically connected to the lower part of the rear frame-section and hinged to the upper part of the same, substantially as described.

8. In a bicycle-frame, the front and rear
90 sections hinged together at the top and elastically connected at the bottom, and the motor-engine and driving-pedals supported near the front of the lower rear frame-section, so as to yield with said frame-section, substantially
95 as described.

9. In a bicycle-frame, the combination with the lower bars of the rear frame-section, of the double tie-piece connected to said bars, a piston-rod connected to said piece and extending forward into the lower tube of the
100 front section, a spring acting on said piston-rod to hold it forward, and a flexible connection between the upper portion of the frame-sections, substantially as described.
105

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

EDWARD YOUNG WHITE.

Witnesses:

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W. A. HADDEN.