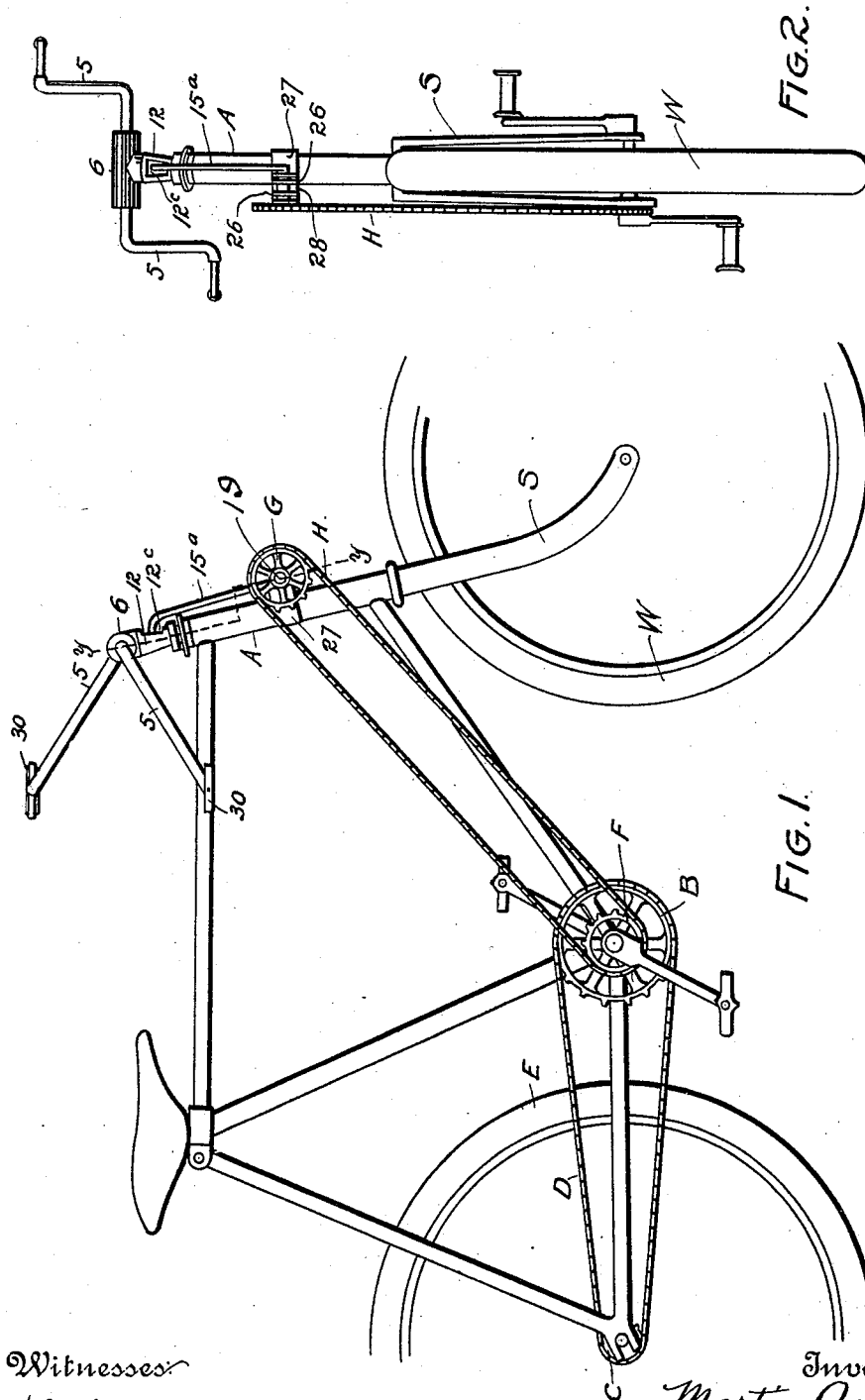


2 Sheets—Sheet 1.

No. 582,315.

Patented May 11, 1897.



Witnesses:
J. H. Jochem Jr.
Mark Marey.

Inventor
Martin Quinn,
By his Attorneys
Collamer & Co. and James H. Kilton.

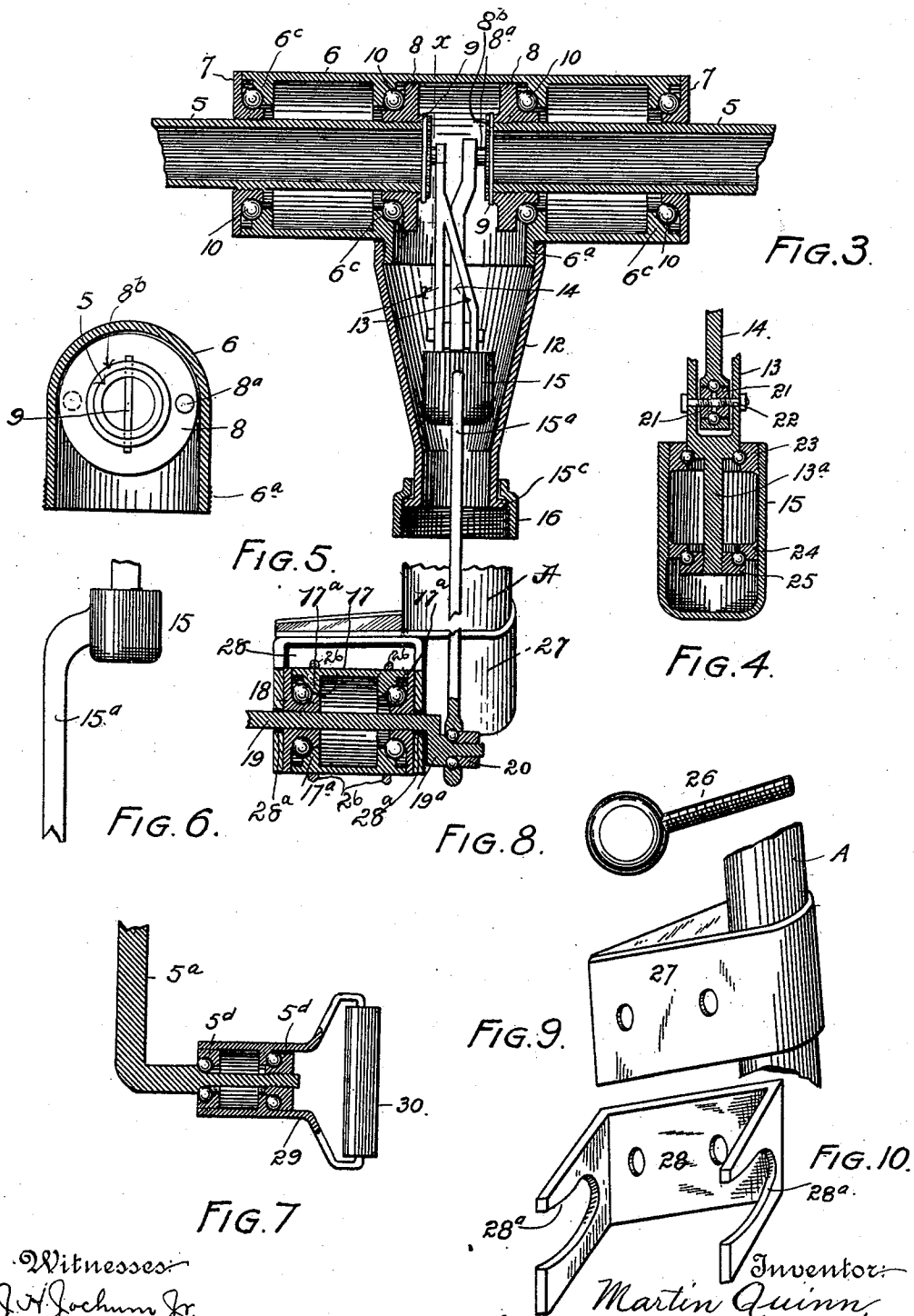
(No Model.)

2 Sheets—Sheet 2.

M. QUINN.
BICYCLE.

No. 582,315.

Patented May 11, 1897.



Witnesses:
J. A. Johnson Jr.
Mark Marcy.

Inventor:
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By his Attorneys
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UNITED STATES PATENT OFFICE.

MARTIN QUINN, OF DENVER, COLORADO.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 582,315, dated May 11, 1897.

Application filed November 19, 1896. Serial No. 612,727. (No model.)

To all whom it may concern:

Be it known that I, MARTIN QUINN, a citizen of the United States, and a resident of Denver, Arapahoe county, State of Colorado, have invented certain new and useful Improvements in Bicycles; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to velocipedes, and more especially to the propulsion of bicycles of the safety type; and the object of the same is to produce improvements in the crank-and-gear mechanism for driving such machines.

To this end the invention consists in an oscillating two-part handle-bar, a crank-shaft connected by belting with the pedal-shaft, and certain forms of connection between the parts of the handle-bar and the crank-shaft, all as hereinafter described and claimed, and as illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a safety-bicycle embodying my invention. Fig. 2 is a front elevation of the same. Fig. 3 is an enlarged section on the line *yy* of Fig. 1, showing the T-head at the junction of the handle-bar and steering-spindle and the bearing supported by the frame of the machine and also illustrating the supporting-block and yoke in position with the eyes of the eyebolt holding the bearing-cylinder. Fig. 4 is an enlarged section of the cup. Fig. 5 is a section on the line *xx* of Fig. 3. Fig. 6 is a side elevation of the cup. Fig. 7 is a section of one handle. Fig. 8 is a detail in perspective of the eyebolt. Fig. 9 is a perspective detail of the supporting-block. Fig. 10 is a similar perspective of the yoke.

Referring to the said drawings, the letter A designates the usual diamond frame of a safety-machine as now constructed, and which is driven by the pedal-shaft and sprocket B, connected by chain (or gearing) D with a sprocket C on the axle of the rear wheel E, while W is the front wheel, mounted in the steering-fork S, as usual, the shank of this fork being journaled in the head which forms a part of the frame A.

F is a sprocket-wheel on the shaft B, connected with another wheel G, (preferably of

the same size,) by a chain belt H, and this wheel G is adapted to be driven by oscillatory movement of the parts of the handle-bar in a manner to be hereinafter described.

The numeral 27 designates a supporting-block clamped by any suitable means to the head of the frame A, and 28, Fig. 10 of the drawings, is a yoke of substantially U shape and whose arms are provided with curved slots 28^a, of a size to loosely receive the crank-shaft 19, upon which is secured the sprocket-wheel G. Upon this shaft are screwed nuts 18 and 18^a, the latter of which is adapted to be adjusted so as to clamp the balls of Fig. 3 more or less tightly within the bearings 17^a of the cylinder 17, and the latter is supported within the eyes of the eyebolts 26, (shown in Fig. 8,) while the nuts 18 and 18^a rest against the inner faces of the yoke-arms. In order to remove this bearing, as for cleaning or repair, the nuts at the rear ends of the eyebolts 26 are taken off, when the shanks of the bolts may be withdrawn from the holes in the block 27 and the entire mechanism removed outward away from said block. Then the yoke can be slipped out of position by withdrawing its base off from the shanks of the bolts and at the same time removing its slotted arms from astride the shaft 19. The eyes of the bolts 26 are then moved longitudinally off the cylinder 17, and finally one or both the nuts are unscrewed and the balls, and interior surfaces will then be exposed, as will be clear.

The shaft 19 has a crank 19^a, surrounded by balls, held in place by a nut 20, so as to form a ball-bearing connection between this shaft and the lower end of the link 15^a, and hence when this link is reciprocated vertically the crank 19^a is turned, the shaft 19 is rotated, and with it the sprocket-wheel G, and the latter, through the chain H, assists in rotating the pedal-shaft B.

The numeral 6 designates the cross portion of a T-head, whose upright portion 12 is connected therewith, as at 6^a, by a screw-thread or otherwise, while the lower end 15^c of this upright portion is connected by a union-nut 16 with the upper end of the frame A, so that the handle-bar may revolve thereon, as usual in machines of this character, and yet turn the steering-fork as desired. Said cross por-

tion 6 is provided with rings 6^c, against which bear balls 10, and at the opposite side of these balls are the bearing-faces of nuts 7, which are screwed onto the parts of the handle-bars 5, the other and inner bearings for the second row of balls 10 being formed by the opposing nuts 8, screwed onto said parts 5 toward inner rings, as seen in Fig. 3. Each of said nuts 8 has an inner annular flange 8^b, surrounding the part 5 and keyed thereto by a pin 9, and from the two flanges 8^b project inwardly-extending cranks 8^a, as seen in Fig. 3.

The crank-pins of the two parts 5 5 are preferably disposed opposite each other, as seen in Fig. 5. To these crank-pins are journaled in any suitable manner, as by ball-bearings, (not shown,) the upper ends of pitmen 13 and 14, the former of which is split or divided, so as to form a fork, as seen in Fig. 4, below which its sides are united, as at 13^a, and receives a nut 25, clamping balls against a ring 24 within the cup 15 and other balls against an adjustable ring 23, also within this cup. Through the fork passes a bolt 22, upon which nuts 21 embrace a series of balls that encircle a ring-bearing at the lower end of the pitman 14, whereby the latter is pivotally connected with the fork of the pitman 13, in the manner best seen in Fig. 4.

The outer ends of the parts 5 5 of the handle-bar are cranked, as at 5^a in Fig. 7, and receive nuts 5^a, which clamp balls within a collar 29, that is forked at its outer end, and the arms of the fork bent inward toward each other to receive the handle-pieces 30, which therefore stand at right angles to the length of the handle-bar, like the well-known "T-handles," as seen in Fig. 7.

With the above-described construction the vertical reciprocation of the handles causes the corresponding movement of the crank-pins 8^a, and the latter, through the pitmen 13 and 14, cause the vertical reciprocation of the cup 15. This cup, being connected with the link 15^a, causes the rotation of the crank 19^a, and hence of the sprocket-wheel G, which in turn assists in the rotation of the driving-shaft B and in the propulsion of the machine. At the same time the wheel may be steered by moving the parts of the handle in the proper direction, as usual, and the upright portion 12 of the T-head will assist, since this portion is connected with the front fork S, as above described. Said upright portion 12 has an opening 12^c, through which projects the link 15^a, as best seen in Fig. 2.

All parts of this device are of the desired sizes, proportions, materials, and construction, and considerable change in the specific details of construction may be made without departing from the principle of my invention.

What is claimed as new is—

1. In a bicycle, the combination with the usual frame and pedal-shaft, a crank-shaft on the head, and connections between this shaft and the pedal-shaft; of a T-head on the steering-spindle, a cranked handle-bar journaled in said head, an upright cup within the head connected with said crank-shaft on the head of the machine, a pitman-rod journaled at one end on the crank of the handle-bar, and a ball-bearing between its other end and said cup, as and for the purpose set forth.

2. In a bicycle, the combination with the usual frame and driving-shaft, a crank-shaft on the head, and connections between this shaft and the driving-shaft; of a T-head on the steering-spindle, a two-part handle-bar journaled in said head and having cranks at the inner ends of its parts, a cup connected with the crank of said crank-shaft, and pitman-rods independently connecting said cranks with the cup, as and for the purpose set forth.

3. In a bicycle, the combination with the frame and driving-shaft, and a supplemental crank-shaft connected therewith and supported by the head of the frame; of a two-part handle-bar journaled on the steering-spindle, a nut screwed on the inner end of each part thereof and having an inwardly-projecting flange, a crank-pin in the inner face of said flange, a key-pin passing transversely through the flange and the part of the handle-bar, and a pitman connection between the crank-pin and the crank on the supplemental shaft, as and for the purpose set forth.

4. In a bicycle, the combination with a crank-shaft connected with the driving-wheel, an upright cup, and a link connecting the crank with said cup; of an upright rod journaled on a vertical axis in the cup, a second rod pivotally connected with the first rod, a two-part handle-bar having cranks, and connections substantially as described between the cranks and the rods, as and for the purpose set forth.

5. In a bicycle, the combination with a crank-shaft connected with the driving-wheel, a cup, and connections between the latter and the shaft; of a two-part handle-bar, cranks on the parts thereof, pitman-rods connected with said cranks, a swiveled connection between one rod and the cup, and a pivoted connection between the other rod and the first-mentioned rod, as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature on this the 4th day of November, A. D. 1896.

MARTIN QUINN.

Witnesses:

JOHN S. GIBONS,
JOSEPH LEIF.