

(No Model.)

2 Sheets—Sheet 1.

A. V. SMITH.
TRICYCLE.

No. 503,009.

Patented Aug. 8, 1893.

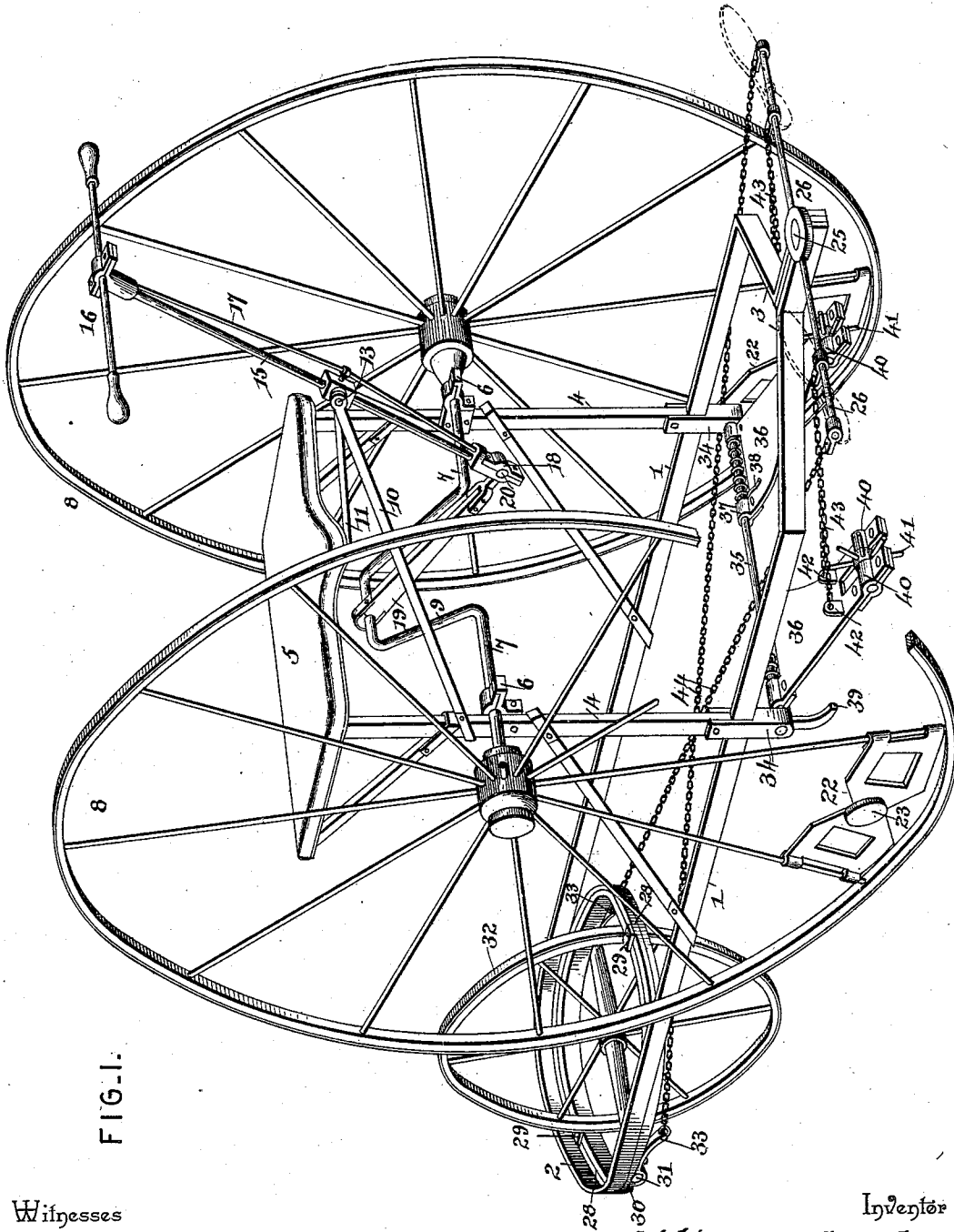


FIG. 1.

Witnesses

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2 Sheets—Sheet 2.

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FIG. 2.

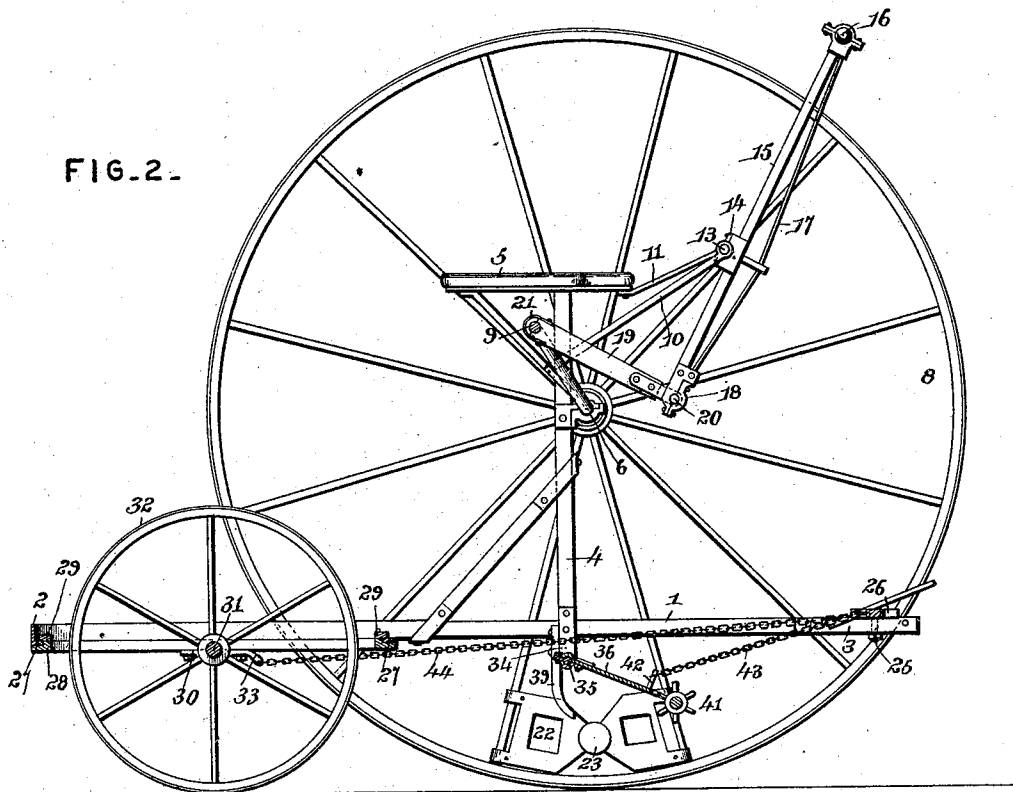


FIG. 3.

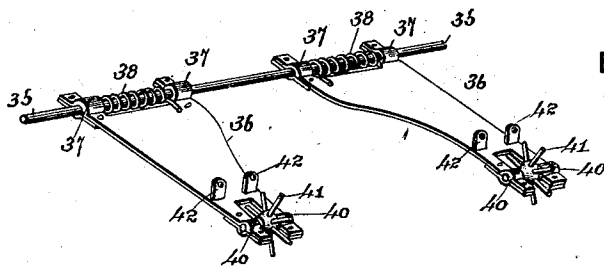
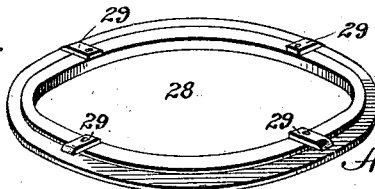


FIG. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ADDISON V. SMITH, OF CORTLAND, NEW YORK.

TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 503,009, dated August 8, 1893.

Application filed March 17, 1893. Serial No. 466,496. (No model.)

To all whom it may concern:

Be it known that I, ADDISON V. SMITH, a citizen of the United States, residing at Cortland, in the county of Cortland and State of New York, have invented a new and useful Tricycle, of which the following is a specification.

My invention relates to improvements in tricycles of that class in which the drive-wheels are operated or propelled by hand-levers.

The objects in view are to provide a tricycle adapted to be used by ladies and gentlemen as well as children, and which shall be of cheap and simple construction, light, and consisting of few parts; to avoid dead centers, and to provide for a ready means of guidance or steering whereby the machine is adapted to be turned in narrow spaces and hence well adapted for narrow roads, pavements, &c., where the ordinary machine would not be.

With these and other objects in view the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a perspective view of a tricycle constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a detail in perspective of the foot-rest supporting shaft, the foot-rests thereon and the pivot-wheels in the rests. Fig. 4 is a detail in perspective of the swiveled turntable for carrying the rudder or steering-wheel.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I employ a light steel-frame, the same consisting of the opposite side-portions 1, the rear semicircular-portion 2, and the front converging ends 3. The frame is preferably formed of a single piece of light tubing whose terminals are joined at the front of the machine or if desired the frame may be otherwise formed. From the opposite sides 1 of the frame rises a pair of standards 4, the said standards supporting at their upper ends a convenient seat 5, which in the present instance has its front edge at opposite sides of its center hollowed out to receive or accommodate the legs of the rider.

The standards are of course suitably braced to render them rigid, and between their ends are provided with transversely aligning journal-boxes 6. These journal-boxes, like those hereinafter described or mentioned, may be of any suitable construction and provided with ball, cone, or any other of the common forms of bearings ordinarily employed in the make up of machines of this character.

In the journal-boxes 6 there is mounted for rotation the drive-shaft 7 of the machine, the ends of the shaft projecting beyond the standards and terminating in suitable bearings or journals for the reception of ground-wheels 8. These ground-wheels 8 are preferably formed of wood, though as will be obvious the ordinary tubular or other shaped wheel usually employed in this class of machines may be substituted. In the present instance, however, they are formed of wood. In this instance between the journal-boxes 6, the shaft 7 is provided with a cranked portion 9 at the center of which a bearing is formed. It will be understood that in some instances, as for the use of ladies and children, the cranked-portion 9 will be formed at the sides of the standards 4, so that the propelling-levers then employed will be located at each side of the person. In the present instance, however, as will hereinafter appear, a single propelling-lever being employed the machine is adapted merely for use by males.

A pair of bracket-arms 10, are secured to the standards 4, incline and converge to a point slightly above the plane of the seat 5 and a short distance in advance of the same, said bracket-arms being braced by central inclined-braces 11, which are secured to the seat and lead to the point of convergence of the said arm 10. These bracket-arms 10 are provided with bearing-openings as are also the braces 11, and through the medium of a transverse pivot-pin 13 passing through the perforations 12 there is pivoted upon the arms a journal-box 14, which box is made fast to the intermediate point of an oscillating or vibrating hand-lever 15 whose upper end is provided with a cross-head or handle 16 externally shaped to form proper grips for the hands of the operator. The front side or face of the lever 15 is preferably provided with a suitable truss-brace 17, it being de-

5 sirable to render the lever 15 as rigid as is necessary and yet at the same time to preserve lightness. A bearing-box 18, is located at the lower end of the lever 15 and a connecting-bar 19, is by means of a pin 20, pivotally connected with the bearing-box 18, and therefore with the lower end of the lever 15. A clip bearing 21, serves to connect the rear or free end of the bar 19 with the central-
10 bearing formed in the crank-portion 9 of the axle, so that as will be obvious, oscillations upon the part of the lever 15 will be communicated to the axle and ground-wheels.

As before stated, one of the objects of my
15 invention is to avoid dead-centers and to counterbalance, I might say, the weight of the depending cranked-portion of the axle together with the accessories of the machine that are connected therewith. To accomplish
20 this object therefore I provide a pair of brackets 22, one for each wheel, the said brackets consisting simply of a spider-frame whose terminals are clamped or otherwise secured to two adjacent spokes of the wheels
25 and at points nearly diametrically opposite the crank of the axle. These brackets have secured thereto weights 23 which are slightly greater than the weight of the axle and its accessories, so that the machine being left
30 free would stop with the weights down and the crank up or slightly beyond the vertical-line whereby as will be obvious, it is then in the best position for applying the power for the purpose of starting the machine. Of
35 course these weights may be omitted if desired and I do not limit the invention to the use of the same.

Upon the front end of the framework there is pivoted by a bolt 25 an oscillating tiller-bar 26, which, in a manner hereinafter described, controls and regulates the rudder or steering-wheel.

Secured to the frame 1 at the rear end thereof and conforming to its curvature is a
45 stationary guide-ring 27, and located under the same and swiveled thereon is a movable or oscillating ring or frame 28. The ring or frame 28 is L-shaped in cross-section and has a central annular-portion which fits within
50 the stationary-ring 27 and is provided at intervals upon its upper side with keepers 29 which overlap the upper side of the ring 27, and hence prevent disengagement of the rings and retain the ring 28 in operative position within and under the ring 27. At diametrically opposite sides the under side of
55 the ring 28 is provided with boxes 30, and journaled in the boxes is a transverse shaft 31, at the center of which is mounted the rudder or steering-wheel 32, which as will be obvious will move with the swiveled-ring. The journal boxes 30 have their front ends extended as shown at 33.

Depending from the under side of the frame
65 in line with the standards 4, or in fact they may be an extension of the standards, is a pair of journal-boxes 34, and in said bearings

a transverse shaft 35 is mounted. This shaft has loosely suspended thereon a pair of convenient levers 36, the same having eyes 37
70 formed at their upper ends through which the shaft loosely passes.

Coiled-springs 38, are mounted on the shaft 35, in rear of each of the levers and serve to depress said levers in an inclined position.
75 In rear of the levers stop-arms or lugs 39, depend from the boxes 34 and hence limit the downward movements of the same. The levers are provided at their front ends with slots and at each side thereof with bearing-
80 eyes 40. In each slot there is located a small guide-wheel 41, the shaft of the guide-wheel taking into the eyes 40. Perforated lugs 42 are located at each side of the slot of each lever, and from these lugs chains 43 extend
85 forward and are connected with the tiller 26 at each side of the pivot 25 of the latter. Tiller-chains 44 are connected to the extremities of the tiller 26, cross under the seat 5 of the machine, and are connected to the perforated lugs or extensions of the boxes 30 located upon the under side of the swiveled wheel-carrying ring 28.

This completes the construction of the machine, and the operation thereof, though perhaps apparent from the description, may be briefly stated as follows: The rider being seated upon the machine rests his feet upon the foot-rests on the tiller-bar. By operating the lever by hand it will be seen that motion
95 will be communicated through the connecting-bar to the crank of the axle and from thence to the wheels, and so the machine driven. When it is desired to guide the machine to the right or left it is simply necessary to push that foot-rest of the tiller-bar located at the side in which it is desired the machine should move, said foot-rest being swung to a more or less extent in accordance with the sharpness of the turn. Now if it be
100 desired to reverse the machine in a short space, the tiller-bar at the side of the machine in which it is desired to turn is pushed to its fullest extent, which permits the corresponding lever to descend until it arrives in contact with the depending stop-arm. Before
105 contacting with the stop-arm the small pivot-wheel of said lever comes in contact with the ground and the machine being in motion causes said lever to elevate the ground-wheel at that side of the machine from contact with the ground, whereupon the small wheel of the lever then becomes the pivot-wheel and the machine swings around in a space agreeing with its width, whereas in the ordinary machine where one ground-wheel serves as a pivot-wheel and the other describes the circle, a space twice the width of the machine is required in which the machine can turn. It will be seen that the levers are prevented by
110 the stops from swinging to the rear beyond a vertical line, or in fact, quite to a vertical line, and thus may be readily returned.

As before indicated many of the details of

construction may be varied without departing from the spirit of my invention, and I therefore do not limit said invention to such details as have been shown and described, but
5 hold that I may vary the same to any extent and degree within the knowledge of the skilled mechanic.

Having described my invention, what I claim is—

10 1. In a cycle, the combination with the frame, a crank-axle, ground-wheels having spokes, and means for propelling the same, of a pair of spider-frames clamped to two adjacent spokes of the wheels, and weights secured to
15 the centers of the spider-frames, substantially as specified.

2. In a cycle, the combination with a frame, and a steering-wheel, of an axle, ground-wheels, means for propelling the ground-wheels, a pair of levers suspended from the
20 frame, stops arranged in rear of the levers, connecting devices between the levers and the steering-wheel, and pivot-wheels located upon the levers at the free ends thereof and adapted
25 to contact with the ground when depressed and thus elevate the ground-wheels, substantially as specified.

3. In a cycle, the combination with a frame, an axle, ground-wheels and means for driving
30 the axle, of a steering-wheel, a tiller-bar pivoted to the framework, tiller-chains between the tiller-bar and the steering-wheel, levers pivoted between the ground-wheels, connecting-chains between the tiller-bar and wheels,
35 stops arranged in rear of the levers, pivot-

wheels journaled in the lower ends of the levers, and connecting-chains between said levers and the tiller-bar, substantially as specified.

4. In a cycle, the combination with the frame 40 having the rear rounded end, the stationary ring secured and conforming to said rounded end, the swivel ring L-shaped in cross-section located within and under said stationary ring and provided with keepers overlapping the
45 latter, bearings in the opposite sides of the swiveled ring, a shaft mounted in the bearings, a steering-wheel mounted on the shaft, lugs extending from the bearings, and a tiller-bar pivoted to the opposite or front end of the
50 frame, of an axle, ground-wheels, means for operating the same, a transverse shaft supported by the frame between the ground-wheels, levers loosely suspended from the
55 shaft, springs for normally depressing the levers, stops arranged in rear of the levers, pivot-wheels having their journals mounted in bearings at the free ends of the levers, tiller-chains crossing each other and connecting
60 the lugs of the swiveled ring with the extremities of the tiller-bar, and connecting-chains between said tiller-bar and the free ends of the levers, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
65 the presence of two witnesses.

ADDISON V. SMITH.

Witnesses:

F. D. SMITH,

H. T. BUSHNELL.