No. 651,993. Patented June 19, 1900.

A. J. HARLAN.

BICYCLE.

(Application filed Aug. 9, 1899.)

(No Model.)

Fig. 1.

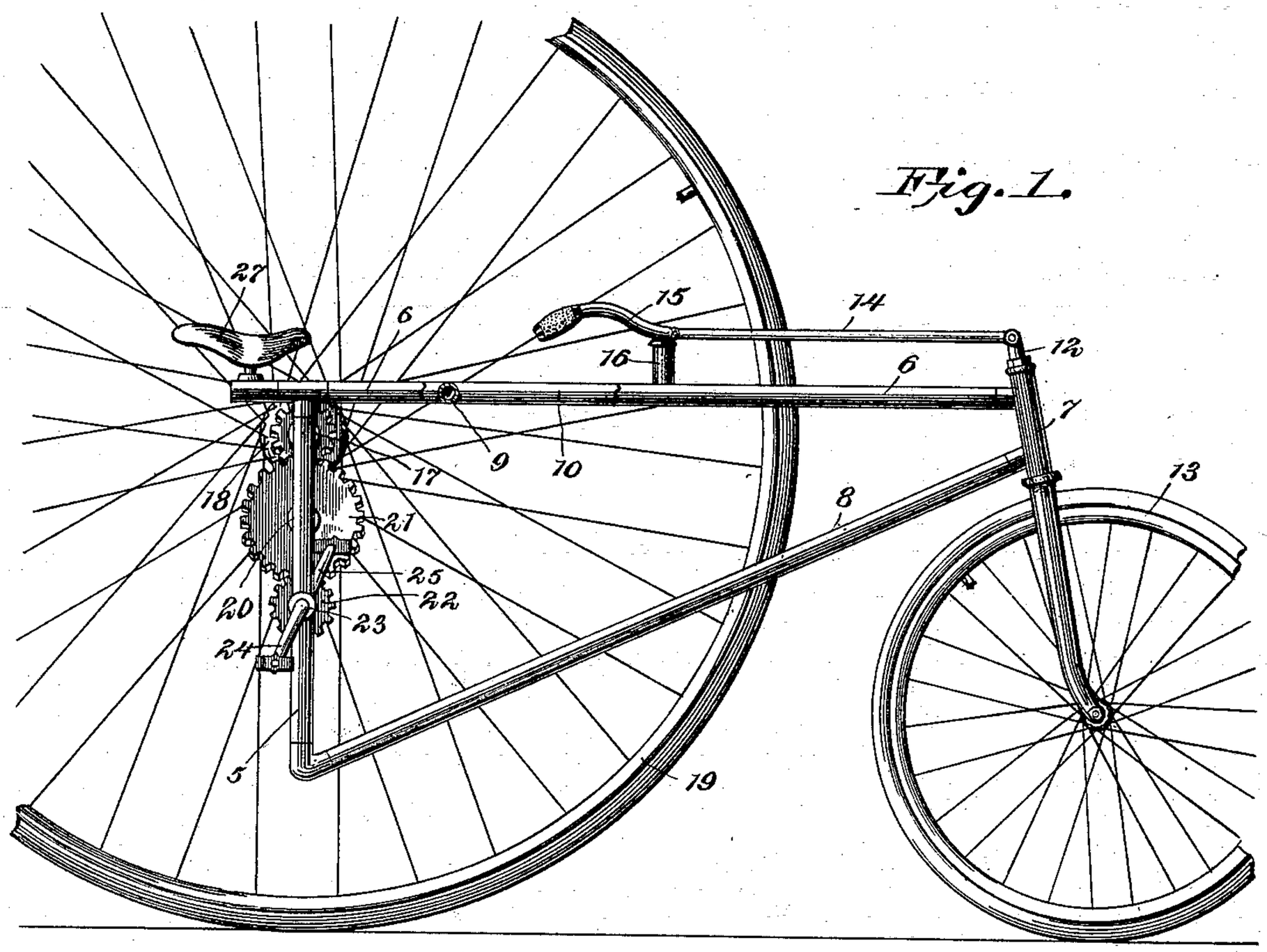
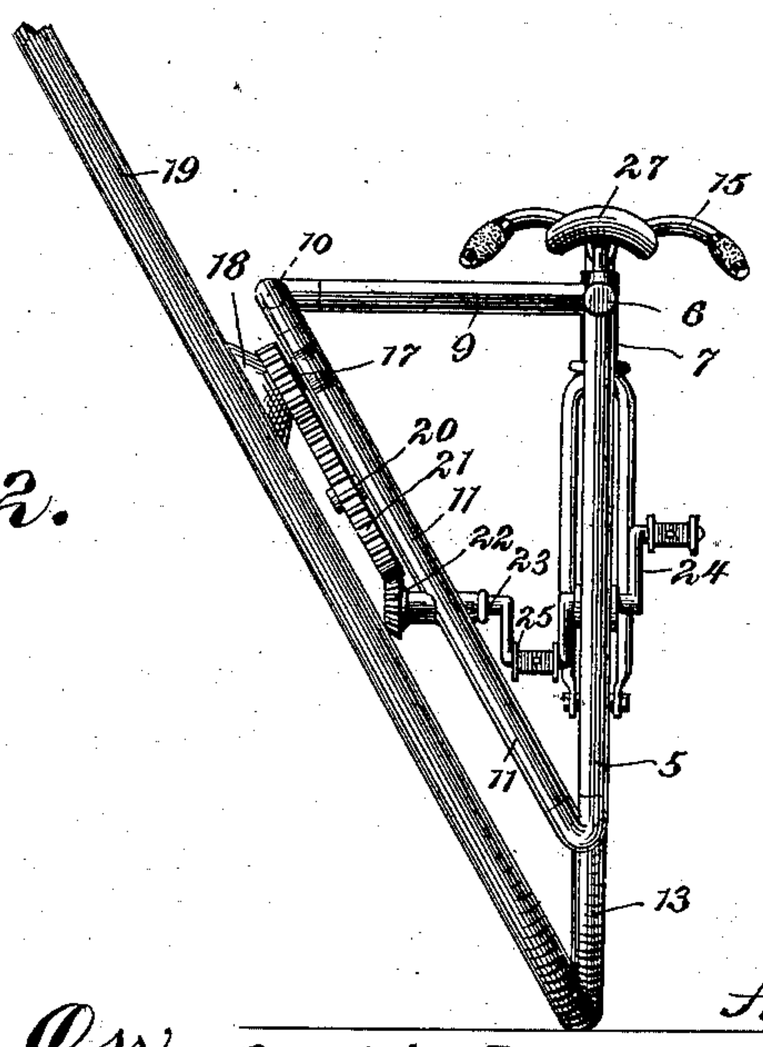


Fig. 2.



Witnesses
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By his Attorneys.
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UNITED STATES PATENT OFFICE.

ANDREW J. HARLAN, OF LONDON MILLS, ILLINOIS.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 651,993, dated June 19, 1900.

Application filed August 9, 1899. Serial No. 726,705. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. HARLAN, a citizen of the United States, residing at London Mills, in the county of Fulton and State of Illinois, have invented a new and useful Bicycle, of which the following is a specification.

This invention relates to bicycles; and it has for its object to provide a machine of this nature susceptible of a high rate of speed and in which may be employed a large drive-wheel without necessitating a high elevation of the operator.

The invention consists in the formation of a frame the elements of which outline substantial triangles and in which the drive-wheel is disposed on a slant to enable the location of the driving mechanism and the seat at a point directly above the tread of the driving-wheel and to bring the pilot-wheel in line therewith.

In the drawings forming a portion of this specification, and in which like numerals of reference designate corresponding parts in both views, Figure 1 is a side elevation of the machine, parts thereof being broken away. Fig. 2 is a rear elevation of the machine.

Referring now to the drawings, in building a bicycle in accordance with this invention a frame is formed comprising a vertical rear tube 5, corresponding to the seat-tube of the usual bicycle, from the upper end of which there leads forwardly a top bar 6, which extends to and is connected with a head 7, in which the stem of the pilot-wheel is journaled in the usual manner. Connected with the lower end of the tube 5 is a bottom bar 8, which is continued forwardly and upwardly and is connected with the head below the top bar.

Extending at right angles to the tube 5 and bar 6 is a supplemental brace 9, connected with the outer end of which and lying in a common plane therewith and with the top bar 6 is a supplemental top bar 10, which is connected with the head 7 adjacent to the bar 6. Connected with the rear end of bar 10 is a gear-supporting tube 11, the frame thus comprising four triangles, two sides of the frame outlined lying at right angles to each other, one in a vertical plane and the other in a horizontal plane, the rear end of the frame being vertical and the fourth side of the frame lying at an angle to the first-named sides. The result is the formation of a pyramidal frame, the major axis of the pyramid being inclined. Mounted in the head 7 is the stem 12 of the pilot-wheel 13, which stem has connections 14 with steering-handles 15, pivoted in a tubular extension 16 upon the top bar 6, through the medium of which the pilot-wheel may be moved to steer the machine.

Connected with the tube 11, adjacent the upper end thereof and extending downwardly at right angles thereto, is a stub-shaft 17, upon which is mounted a hub 18 of a drive-wheel 19, which is of a diameter much greater than the height of the frame and which in practice may have a diameter of as much as ten feet. Mounted upon the stub-shaft 20, extending parallel with the shaft 17, is a gear-wheel 21, meshing with a bevel-gear 22 upon a crank-axle 23, having bearings in the tubes 11 and 5 and provided with integral cranks 24 and 25, having pedals for the reception of the feet of the rider.

At the rear end of the top bar 6, which projects rearwardly of the tube 5, is secured a seat 27 in such a position that when the rider sits thereon he may operate the pedals with the feet and may grasp the steering-handles to steer the machine.

As shown in Fig. 2 of the drawings, the shape and proportions of the parts are such as to bring the tread of the wheel 19 into engagement with the ground directly beneath the tubes 5 and 8 and beneath the seat 27 and in alinement with the pilot-wheel when the latter is in a straightforward position.

With the above construction it will of course be understood that the inclination of the driving-wheel will tend to move the bicycle in a direction to describe a circle; but by manipulation of the front wheel through the medium of a steering-handle this tendency may be counteracted and the bicycle thus caused to travel in a straight direction or in a direction in opposition to the tendency of the driving-wheel.

It will be readily understood that in practice the proportions and lengths of the various tubes forming the frame of this machine may be varied as desired and also that in other

ways the specific construction and arrangement may be altered without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. In a bicycle, the combination with a frame and a pilot-wheel pivotally mounted therein, of a drive-wheel having its tread in line with the pivoted wheel and journaled upon the frame and disposed with its axis at a fixed angle to the plane of the pilot-wheel, and driving mechanism connected with the drive-wheel.

2. In a bicycle, the combination with a frame comprising tubes lying in a vertical plane, and an additional tube connected therewith and lying at an angle thereto, of a drive-wheel rotatably mounted upon the last-named tube and lying in a diagonal plane with its axis at a fixed acute angle to the vertical tubes of the frame, and driving mechanism connected with the drive-wheel.

3. In a bicycle, the combination with a frame comprising mutually-connected tubes lying in a vertical plane, and a diagonal tube connected therewith and lying at an angle thereto, of a crank-shaft journaled in the diagonal tube and an adjacent first-named tube, a drive-wheel rotatably mounted upon the diagonal tube and lying in a diagonal plane with its engaging portion of its tread in a line beneath the vertical tube carrying the crank-shaft, and connections between the crank-shaft and drive-wheel for operating the latter.

4. In a bicycle, the combination with a frame comprising tubes lying in a vertical plane, a pilot-wheel connected with said tubes and adapted to lie in the plane thereof, and an additional tube connected with the first-named tube and lying at an angle thereto, a drive-wheel rotatably mounted upon the last-named tube and lying in a diagonal plane with its tread adapted to engage the earth in the plane of the first-named tube, a crank-shaft journaled in the diagonal tube and an adjacent first-named tube, driving mechanism connected with the crank-shaft and with the drive-wheel, and a seat in the plane of the first-named tubes.

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

ANDREW J. HARLAN.

Witnesses:
H. D. KRAMM,
A. J. HARLAN, Jr.