(No Model.)

W. S. HAMBLY.

BICYCLE.

No. 290,576. Patented Dec. 18, 1883.

Fig. 1.

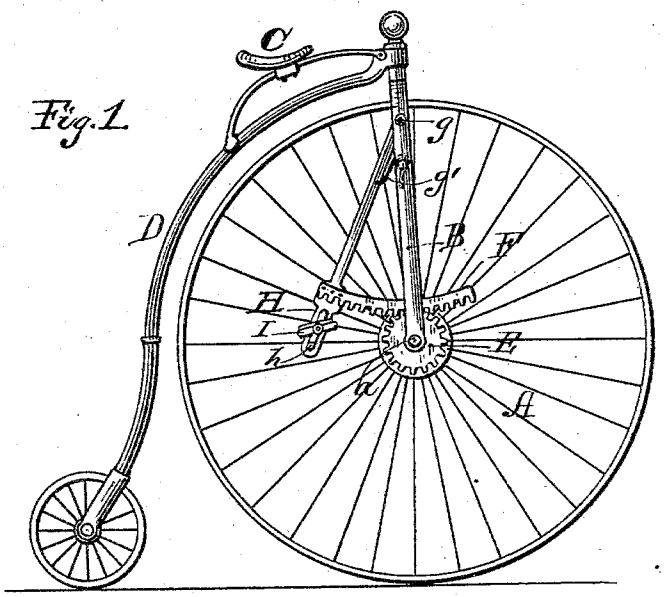


Fig. 2.

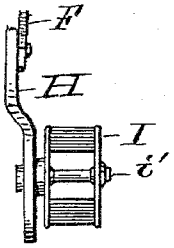


Fig. 3.

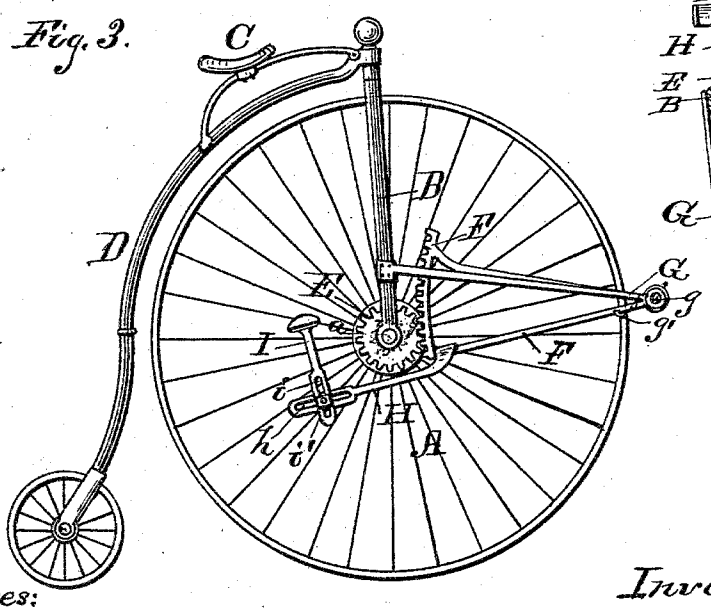
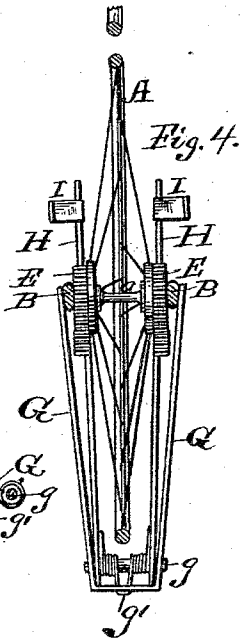


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM S. HAMBLY, OF BRADFORD, PENNSYLVANIA.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 290,576, dated December 18, 1883.

Application filed October 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. HAMBLY, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Bicycles, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation of a bicycle constructed in accordance with my invention; Fig. 2, a detail of the treadle; Fig. 3, a side elevation of a modified arrangement of my invention, and Fig. 4 is a plan, partly in section, of the same.

Like letters refer to like parts in all the figures.

A represents the driving-wheel, and B the fork, C the saddle, and D the backbone, of a bicycle, these parts being of the usual well-known construction.

E represents a pinion, mounted upon each side of the wheel, and loosely upon the shaft thereof, and provided upon its inner face with a pawl adapted to engage with a ratchet securely mounted upon said shaft as usual in this class of mechanism for driving, which involves a conversion of reciprocating into rotary movement.

The object of my invention is to provide means for the operation of the mechanism thus far described, which means shall be simple, serviceable, adapted to be used by persons short in stature, and to enable such persons to drive larger wheels than heretofore, and to permit of the largest possible leverage upon the driving-wheel, whereby the bicycle is made of more universal use in larger sizes and more easily adapted to the elevations and roughness of the common roadway.

The principal elements involved in my invention are the geared sector, the manner of its attachment with a bicycle, and of the connection therewith of the treadles, and other features hereinafter described, and specifically set forth in the claims.

F represents a geared sector, adapted to mesh with the pinion E, and is supported centrally and pivotally to a part of the bicycle which permits it to be oscillated in the same vertical plane occupied by the pinion. With this requirement in view, I may suspend the sector to and upon the inside of the main fork B, or a supplementary fork, G. A pinion and sector are arranged upon each side of the wheel, as shown in Fig. 4, and as both are alike a full description of one is sufficient. A pin, bolt, or rod, *g*, serves as the pivotal bearing for the sector, and a coiled or other spring, *g'*, the free end of which bears against a radial arm of the sector, serves to give it movement in one direction, preferably its return movement, the said spring being secured to a leg of the fork, so that its free end shall operate between the pivot and the geared portion of the sector. The sector is provided with an extension or lever, H, which is adapted, in this instance, by a slot, *h*, to receive a treadle, I. The treadle-standard is slotted at *i*, and a bolt, *i'*, serves to secure the treadle at different positions vertically, and in the construction shown in Fig. 3 at different distances from the center *g* of the sector, whereby the treadle mechanism is adapted to be adjusted to the length of the leg of the rider and to vary the leverage upon the wheel. It is apparent that the greater the distance between the treadle and the geared portion of the sector the more power will be exerted upon the pinion E, and upon the wheel by a given pressure upon the treadle I.

I am well aware that the geared sector has heretofore been employed in connection with the bicycle, and I do not therefore claim it, broadly, in that sense; nor do I restrict myself to the exact construction, proportion, and arrangement of the parts herein shown; but I may modify the same in any manner within the skill of mechanics conversant with the construction of bicycles.

The operation of my invention is apparent. Pressure applied to the treadle causes the sector, when over or in front of the pinion E, to rotate said pinion, whose pawl takes into the ratchet secured to the shaft of the wheel, causing it to rotate and the bicycle to advance. The spring *g'* then brings the sector and treadle, while the wheel is still advancing, to the starting position for another application of power. This operation may take place on both sides of the wheel either simultaneously or intermittently, as desired.

Having described my invention and its operation, what I claim is—

1. The combination, with the main or up-

right fork B, of a sector pivoted inside of the fork above the axle, and having a slotted extension, H, the treadle I, adjustably secured in said slotted extension, the pinion E, spring *g'*, and wheel A, substantially as shown and described.

2. The combination of the wheel A, a fork embracing the wheel, and a geared sector pivoted to the inside of said fork, and provided with a slotted extension, with an adjustable treadle, and a ratchet-pinion mounted upon the shaft of the wheel, substantially as shown and described.

3. The combination of the wheel A, the forks B and G, the sector F, spring *g'*, lever H, slotted at *h*, treadle I, slotted at *i*, and the bolt *i'*, substantially as shown and described.

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

WILLIAM S. HAMBLY.

Witnesses:
EDWIN WALLACE,
CHARLES JAY CLARK.