No. 744,428. PATENTED NOV. 17, 1903.

C. STOLLEWERK.

DRIVING MECHANISM FOR CHAINLESS BICYCLES.

APPLICATION FILED APR. 20, 1903.

NO MODEL.

Fig. 1.

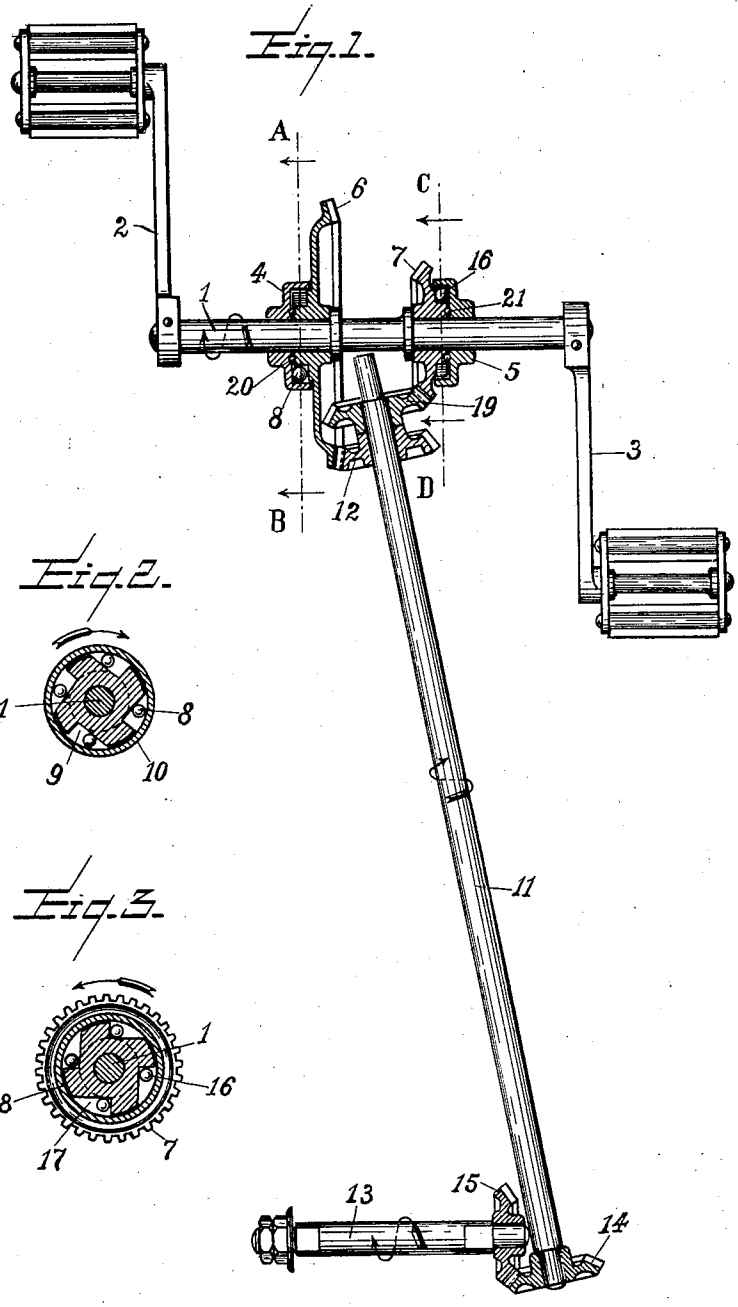


Fig. 2.

Fig. 3.

Witnesses
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No. 744,428. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

CHRISTIAN STOLLEWERK, OF AIX-LA-CHAPELLE, GERMANY.

DRIVING MECHANISM FOR CHAINLESS BICYCLES.

SPECIFICATION forming part of Letters Patent No. 744,428, dated November 17, 1903.

Application filed April 20, 1903. Serial No. 153,520. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN STOLLEWERK, music teacher, a subject of the King of Prussia, German Emperor, residing at 29 Augustastrasse, Aix-la-Chapelle, in the Kingdom of Prussia, Empire of Germany, have invented certain new and useful Improvements in Driving Mechanism for Chainless Bicycles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to driving mechanism, and particularly to a driving mechanism for chainless bicycles, in which the rotation of the driving-pedal shaft in opposite directions imparts to the driven hind-wheel shaft two different speeds; but the direction of said hind-wheel shaft remains the same while running at these different speeds.

The object of the present application formed originally a part of my United States patent application for a driving mechanism, filed July 16, 1901, Serial No. 68,528, but was eliminated from said application in observance of the record of the United States Patent Office of November 24, 1902, to form the object of an independent application.

In the accompanying drawings, Figure 1 is a plan view of the new driving mechanism for chainless bicycles. Fig. 2 is a cross-sectional view taken on line A B of Fig. 1, and Fig. 3 is a similar cross-sectional view taken on line C D of the same figure.

Upon the ends of the pedal-shaft 1 are, as usual, secured the pedals 2 and 3, whereas near the middle of said shaft are seated the ball-races 4 and 5 and also the larger bevel-wheel 6 and the smaller bevel-wheel 7. The hub of the wheel 6 as well as the hub of the wheel 7 are provided with triangular notches, as shown in Figs. 2 and 3; but these are so arranged that the notches of the one wheel are pointing in an opposite direction to the notches of the other wheel, as may be plainly seen in these figures. From Fig. 2 it may be further seen that when the pedal-shaft 1 and the ball-race 4 are rotated in the direction of the arrow the balls 8 will be caught between the bottom surface of the notches 9 of the hub of the wheel 6 and the annular flange 10, thus causing the wheel 6 to rotate the intermediate shaft 11 by means of the bevel-pinion 12 keyed thereon. The intermediate shaft 11 will in turn impart its motion to the hind-wheel shaft 13 by means of the bevel-wheels 14 and 15, whereby all the different parts are rotating in the directions indicated by the arrows. During this time the bicycle is running at its usual speed. If, however, a steep grade has to be taken, and consequently more power is required, the pedal-shaft 1 is rotated in the opposite direction, as indicated by the arrows, for which reason the balls 8 in the hub of the wheel 4 will drop back to the deepest part of the notches 9 of said hub; but the balls 16 in the triangular notches 17 of the hub of the wheel 7 will interlock with the ball-race 5 by getting caught between the bottom surface of the said notches 17 and the annular flange 18 of the said ball-race 5 and drive the intermediate shaft 11 by means of the bevel-pinion 19 in the direction of its arrow, but at a far lesser speed than formerly. To lessen the friction between the ball-race 4 and the hub of the wheel 6, friction-balls are interposed between them, and in a similar manner friction-balls 21 are placed between the ball-race 5 and the hub of the wheel 7. The difference in the speed of the hind-wheel shaft 13 can thus be obtained by simply changing the direction of rotation of the pedals, as the connection of the wheels 6 and 7, seated upon the pedal-shaft 1, with the bevel-pinions 12 and 19, seated upon the intermediate shaft 11, is made in such a manner that when the pedal-shaft 1 is rotated in one direction one of said wheels will cause the intermediate shaft to rotate while the other wheel is idling, and vice versa.

Changes could of course be made in the details of construction—as, for instance, using friction-wheels instead of toothed wheels or keying the wheel 6 to the pedal-shaft 1 and transferring the ball-race 4 to the intermediate shaft 11, thereby economizing in space on the pedal-shaft; but such changes would only amount to an interchange of given elements of construction, and therefore fall within the scope of my present invention.

I claim—

A driving mechanism for chainless bicycles comprising a pedal-shaft, a larger wheel

loosely seated upon said pedal-shaft, triangular notches in the hub of said wheel, lock-balls in said triangular notches, a flanged ball-race secured to said pedal-shaft and inclosing said lock-balls and said notched wheel-hub, friction-balls between said ball-race and said notched wheel-hub, an intermediate shaft, a bevel-pinion on said intermediate shaft meshing with said larger wheel to transmit the forward motion of said pedal-shaft to said intermediate shaft, a second smaller wheel loosely seated upon said pedal-shaft, triangular notches in the hub of said second wheel, lock-balls in said triangular notches, a second flanged ball-race secured to said pedal-shaft and inclosing the lock-balls and the notched hub of the second wheel, friction-balls between the second ball-race and the notched hub of said second wheel, a bevel-pinion upon the intermediate shaft meshing with said second wheel to transmit the backward motion of the pedal-shaft to said intermediate shaft, a bevel-wheel secured to said intermediate shaft, a hind-wheel shaft, and a bevel-wheel secured to said hind-wheel shaft to transmit the motion of the intermediate shaft to said hind-wheel shaft.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHRISTIAN STOLLEWERK.

Witnesses:

HEINRICH BUNGENBORG,

HENRY QUADFLIEG.