J. E. SHEARER.

MECHANICAL MOVEMENT.

APPLICATION FILED FEB. 4, 1918.

1,326,468. Patented Dec. 30, 1919.

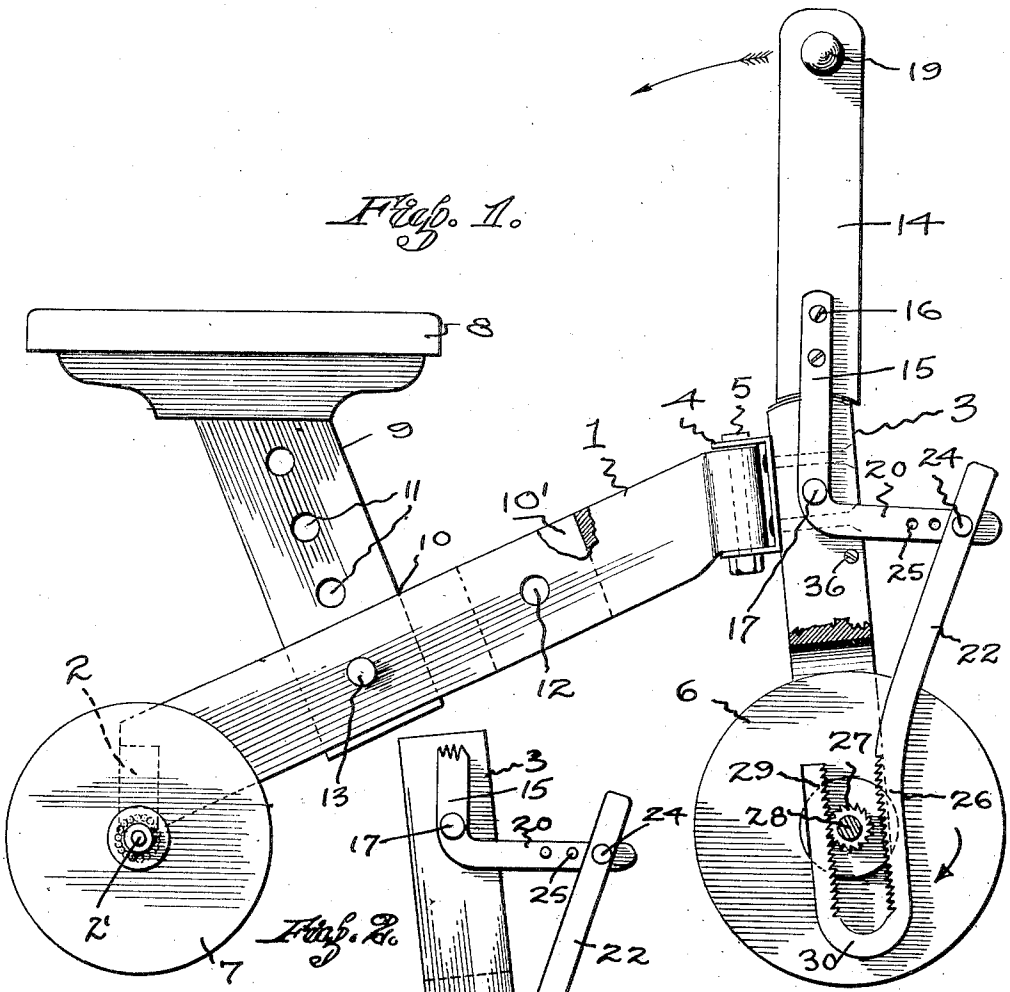


Fig. 1.

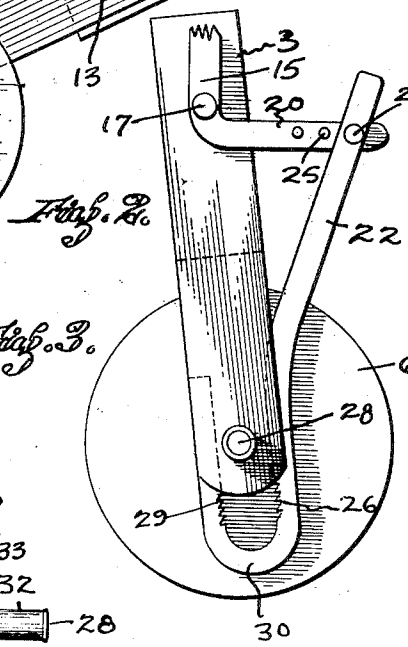


Fig. 2.

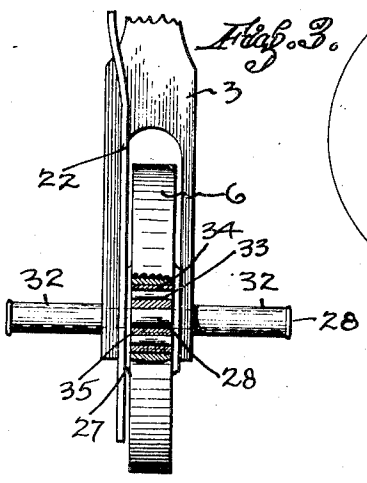


Fig. 3.

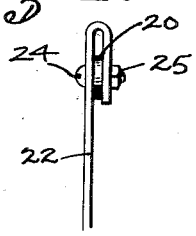


Fig. 4.

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MECHANICAL MOVEMENT.

1,326,468. Specification of Letters Patent. Patented Dec. 30, 1919.

Application filed February 4, 1918. Serial No. 215,350.

To all whom it may concern:

Be it known that I, JOE E. SHEARER, a citizen of the United States, and a resident of the city and county of San Francisco, State of California, have made a new and useful invention—to wit, Mechanical Movements; and I do hereby declare the following to be a full, clear, concise, and exact description of the same.

The invention relates particularly to means for transforming reciprocating movement into rotary movement in one direction, which is the principal object of this invention.

In this specification and the annexed drawings, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms, and it is also to be understood that in and by the claims following this description it is desired to cover the invention in whatever form it may be embodied.

In the accompanying one sheet of drawings:

Figure 1 is a side elevation of a toy velocipede, partly in section, having this invention applied thereto, as a propelling means.

Fig. 2 is a fragmentary detail in side elevation, of the traction element.

Fig. 3 is a front elevation of the same partly in cross section.

Fig. 4 is a detail of the frictional joint between the extension and connecting rod.

In detail the embodiment of this invention illustrated in the drawing includes the main frame 1, having the transverse axle tree 2, indicated in dotted lines, at the rear and the jointed steering post 3 swiveled to the frame 1. The post 3 is the base for the operative parts. The main frame 1 is pivotally held in the U bracket 4 by the king bolt 5 extending therethrough. The bracket 4 is rigidly secured to the steering post 3 by rivets or by any other suitable means. The front wheel 6 is journaled in the steering post 3 and the rear wheels 7 are suitably journaled on the axle 2′, secured to the axle tree 2, forming a three-wheeled vehicle or velocipede.

The seat 8 for the rider is fixed to the upper end of the supporting post 9 which is adapted to enter the holes 10 formed through the backbone 1. The supporting post 9 is provided with a plurality of spaced holes 11 which are adapted to aline with companion holes 12 formed on the sides of the holes 10 in the backbone 1. The pin 13 is provided to extend through the alined holes 11 and 12 and hold the post 9 in place. It is obvious that any adjustment of height of the seat 8 can be obtained through the series of spaced holes 11. The hole 10′ permits the seat 8 being moved closer to the steering post 3 in the event that the seat 8, as positioned in the opening 10, does not adjust itself to the rider.

Above the backbone 1 the steering post 3 is divided to form the handle lever 14. The lever 14 is connected to the steering post 3 by the plates 15 on opposite sides, and rigidly fixed to the member 14 by screws 16, and pivotally held in the steering post 3 by the pivot pin 17. The propelling handle 14 is thereby permitted to swing in an arc with the pivot 17 as the center of operation. The propelling handle 14 is provided at its upper end with suitable grips 19 to be grasped by the operator seated upon the seat 8.

The plates 15, on the handle 14, are provided with an extension 20 preferably an integral part thereof. The connecting rod 22 is frictionally pivoted to the extension 20 by the pivot 24. The holes 25—25 are provided in the extension 20 for adjustment of the leverage ratio of the connecting rod 22. The lower end of the connecting rod 22 terminates in the rack 26 engaging the ratchet or pinion 27 fixed on the front wheel 6, which rotates on the axle 28 fixed in the steering post 3. The supplementary rack 29 having the teeth thereof oppositely disposed to the teeth of the rack 26, is formed on an extension 30 of the connecting rod 22 in juxtaposition to the rack 26 on the opposite side of the ratchet 27. The extended axle 28 forms foot rests 32—32 for the feet of the operator for his comfort, also providing auxiliary means for steering the front wheel 5 by means of the feet of the operator.

To reduce friction the roller bearing 33 is interposed between the wheel 6 and the axle 28. The ratchet 27 is preferably formed integrally with the sleeve 34 of the roller bearing which in turn is fixed in the wheel 6 to rotate therewith. The anti-fric-

tion rollers 33 are interposed directly between the sleeve 34 and the bushing 35 as shown in Fig. 3.

Attention is directed to the pivotal joint at 24 (see Fig. 4). The upper end of the flat connecting rod 22 is provided with a return bend engaging opposite sides of the extension 20, to which it is clamped by the pivot 24 having the nut 25 threaded thereon, whereby a frictional pivotal connection is provided between the extension 20 and the connecting rod 22, for reasons which will hereinafter appear.

This invention operates substantially as follows:

A forward push on the grips 19 by the operator swings the propelling lever 14 forward on its pivot 17. This horizontal movement of the lever 14 results in a vertical arcuate movement of the extension lever 20, the rise and fall of which raises and lowers the connecting rod 22. The depression of the connecting rod 22 and the rack 26 thereon causes the rack 26 to rotate the ratchet gear 27 in a clockwise direction (see Fig. 1). This rotation of the ratchet 27 continues during the forward movement of the handle 14 and the length of the rack 26 until the bottom of the extension 20 engages the stop screw 36 which arrests its downward movement. The rotation of the ratchet gear 27 has rotated the front wheel 6, which acting as a traction wheel drags the velocipede forward. The return or back movement of the handle 14 elevates the connecting rod 22 which under the influence of the side friction in the pivotal joint 24 swings forward breaking the engagement between the rack 26 and the ratchet gear 27, which throws the supplementary rack 29 into engagement with the rear periphery of the ratchet gear 27. The upward movement of the connecting rod 22 causing this supplementary rack 29 to continue to rotate the ratchet gear 27 in the forward or clockwise direction, whereby the reciprocating arcuate movement of the propelling lever 14 raises and lowers the connecting rod alternately throwing the racks 26 and 29 into engagement with the ratchet gear to rotate it in a continuous direction, thereby transmitting the reciprocating movement to a continuous rotary movement in a single direction.

While this invention has been described and illustrated in connection with its particular application to velocipedes, I do not wish to be understood as confining it thereto. Many variations within the purview of this invention to meet particular conditions will suggest themselves to those skilled in the practice of this art.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. Means for propelling vehicles comprising a revoluble wheel on the vehicle, a reciprocable part adapted to alternately engage said wheel at substantially diametrically opposite points, a lever pivoted to the vehicle and frictionally pivoted to said part.

2. Means for propelling vehicles comprising a traction wheel, a revoluble ratchet connected with said wheel; racks adapted to alternately engage opposite sides of said ratchet; and reciprocable means pivoted to said vehicle and frictionally connected to said racks whereby the latter are alternately shifted to engage said ratchet.

3. Means for propelling a vehicle comprising a revoluble traction wheel on said vehicle; a pinion fixed on said wheel; opposed racks on opposite sides of said pinion and held in fixed relation; a lever pivoted on said vehicle; and a rigid connection to said racks frictionally pivoted to said lever; whereby said racks swing laterally with each change of direction of their reciprocations.

4. Means for propelling vehicles including a revoluble traction wheel having a ratchet member thereon; a steering post for said traction wheel; a reciprocable part adapted to alternately engage said revoluble member on opposite sides; means pivoted to the steering post for actuating said reciprocal part, and a wheeled body swivelly connected to said supporting member.

5. In combination with a steering post having a traction wheel therein of a ratchet wheel secured to said traction wheel; racks on the opposite sides of said ratchet wheel adapted to alternately engage said ratchet; a handle pivoted to said steering post, pivotal means connecting said handle and racks whereby lateral movement of the handle alternately throws said racks into engagement with the ratchet whereby the reciprocating movement of the racks is transmitted to the ratchet in a continuous rotary movement in a single direction; and a wheeled supporting body swivelly connected to said steering post.

6. In combination with a steering post having a traction wheel rotatably mounted therein of a ratchet secured to said traction wheel; a pair of vertically positioned racks adapted to engage with said ratchet; a handle pivoted to said steering post and having a connection with said racks whereby lateral movement of the handle drives the traction wheel forward, and a wheeled supporting body swivelly connected to said steering post.

7. A device of the character described comprising a wheeled body, a ratchet connected with a traction wheel of said body, a lever pivoted on the body for oscillating movement, racks on opposite sides of said ratchet, a lateral extension projecting from said lever and connected with said racks for

raising and lowering the latter in unison, according to the direction of movement of said lever, said connection being a frictionally pivotal connection, whereby the racks are alternately shifted to engage said ratchet on each movement of the lever in opposite directions.

8. A device of the character described comprising a wheeled body, a ratchet wheel on the axis of one of the wheels of said body, an oscillating lever mounted over said wheel, a vertically substantially U-shaped member embracing said ratchet and having ratchet teeth on the faces thereof opposite the ratchet wheel, a lateral extension projecting from said lever and connected adjacent its extremity with an extension from said U-shaped member for raising and lowering the latter according to the direction of movement of said lever, said connection being a frictionally pivotal connection, whereby the racks are alternately shifted to engage said ratchet on each movement of the lever in opposite directions.

9. A device of the character described comprising a steering post having a traction wheel thereon, a ratchet associated with the said wheel to actuate the latter, racks arranged to alternately engage substantially diametrically opposite points of the ratchet, a movable handle mounted on the steering post and having an angular extension connected with said racks whereby the latter are reciprocated and shifted to rotate said ratchet, and a wheel body attached to said steering post.

In testimony whereof, I have hereunto set my hand at San Francisco, California, this 25th day of January 1918.

JOE E. SHEARER.

In presence of—
BALDWIN VALE,
LINCOLN V. JOHNSON.