No. 747,860. PATENTED DEC. 22, 1903.

D. M. DEARING.

MECHANICALLY PROPELLED VEHICLE.

APPLICATION FILED FEB. 19, 1903. RENEWED NOV. 19, 1903.

NO MODEL.

Fig. 1.

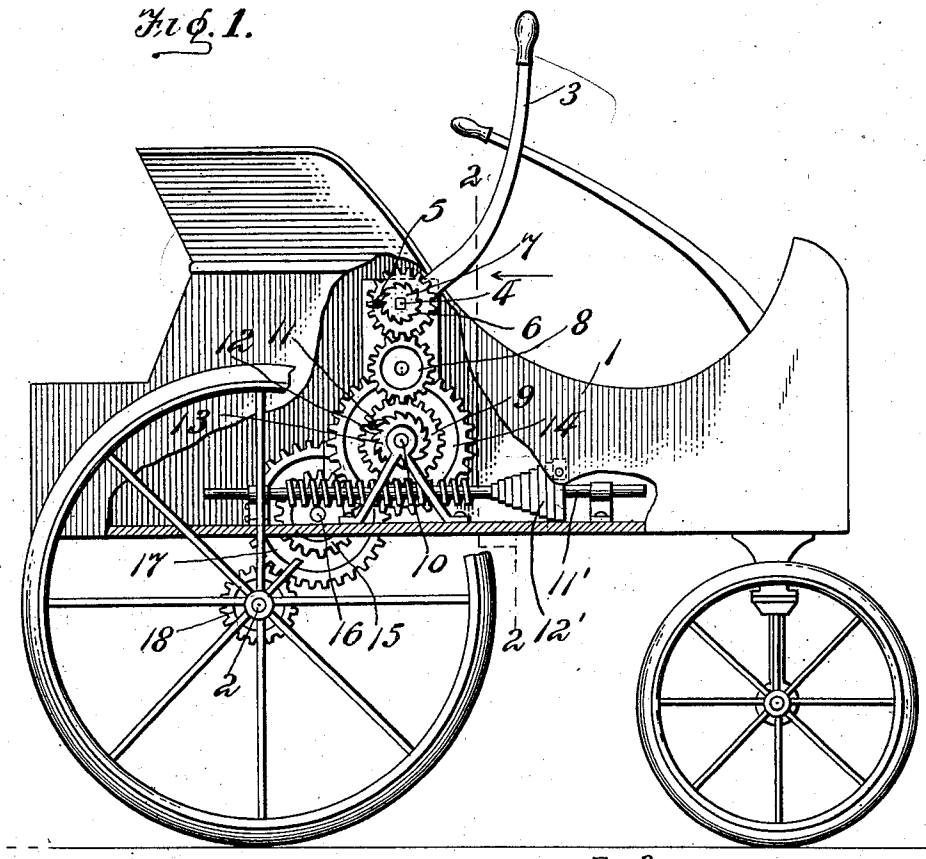
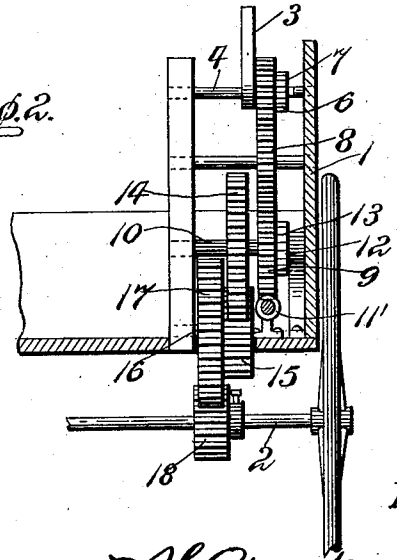


Fig. 2.



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No. 747,860. Patented December 22, 1903.

UNITED STATES PATENT OFFICE.

DAVID M. DEARING, OF JACKSON, MICHIGAN.

MECHANICALLY-PROPELLED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 747,860, dated December 22, 1903.

Application filed February 19, 1903. Renewed November 19, 1903. Serial No. 181,889. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. DEARING, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Mechanically-Propelled Vehicles; and I do 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.

This invention relates to mechanically-propelled vehicles, and particularly to manual motors for children's vehicles; and its object is to provide motor mechanism adapted to be operated by hand or foot power in such manner that a slight expenditure of force will store sufficient energy to propel the vehicle a considerable distance.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a partial vertical longitudinal section of a vehicle equipped with my invention, and Fig. 2 is a section on line 2 2 of Fig. 1.

Referring now more particularly to the drawings, the numeral 1 represents the body of the vehicle, and 2 its driving-axle. Supported upon the body 1 is the motor mechanism, which is constructed as follows: A prime motive element 3, preferably in form of a hand or foot lever, is fixedly mounted upon a rock-shaft or arbor 4 to swing or vibrate in a direction longitudinally of the body 1, and said shaft carries a fixed ratchet-wheel 6, adapted to be engaged by a pawl or dog 5 on a pinion 7, loose on the shaft. The teeth of the ratchet-wheel are so arranged that upon the forward movement of the lever 3 the dog 5 will slip or slide over said teeth and the pinion 7 will remain stationary, while upon the rearward movement of said lever the dog will engage the teeth and fix the pinion 7 to the shaft 4, thereby communicating motion to said pinion. The pinion 7 meshes with the idler 8, which is in gear with a clutch-wheel 9, loosely mounted upon a counter-shaft 10 and provided with a pawl or dog 11, adapted to engage the ratchet-teeth 12 of a ratchet-wheel 13, fixed to said shaft. The teeth of the said ratchet-wheel are so disposed that said wheel turns loosely on the shaft in a forward direction and is locked to said shaft when rotated in a rearward direction. The wheel 9 meshes with a longitudinally-sliding rack-bar 11′, which is connected at its forward end to the outer coils of a volute expansion-spring 12′, whose larger coil is suitably secured to the body 1. When the handle 3 is moved forwardly, it simply turns the shaft 4 and ratchet-wheel 6 clockwise without transferring motion to the gearing as the pawl slips loosely over the ratchet-teeth 6; but when said handle is moved rearwardly the shaft and ratchet-wheel 6 turn counter-clockwise, the pawl 5 interlocks with the teeth of the ratchet-wheel and transfers motion to the gear 7, which when turned rearwardly transfers motion to the idler 8, which in turn rotates the clutch-wheel 9 rearwardly, and said clutch-wheel is thus caused to turn loosely on the shaft 10 and to transmit forward motion to the rack-bar 11′, whereby the spring 12 is compressed. The energy thus stored up is designed to be used to propel the vehicle forwardly while the handle 3 is in a state of rest or is being moved in a forward direction, and to this end suitable gearing is provided for transmitting motion from the shaft 10 to the axle 2 by the rearward movement of the rack-bar under the expansion of the spring 12. In the present case this gearing consists of speed-multiplying gears, comprising a gear 14, fixed to the shaft 10 and meshing with a pinion 15 on a shaft 16, which shaft 16 also carries a fixed gear 17 of larger diameter than the gear 15 and meshing with a smaller gear or pinion 18, keyed or otherwise fixed to the axle 2. By this construction of gearing it will be seen that upon the rearward movement of the rack-bar 11 under the impulse of the expansive action of the spring 12 the clutch-gear 9 will be turned forwardly, and its pawl will engage with the teeth of the ratchet-wheel 13 and turn the shaft 10 and gear 14 forwardly, thus transmitting rearward motion to the gear 15, shaft 16, and gear 17, and forward motion to the gear 18, axle 2, and rear wheels of the vehicle.

The arrangement or relative proportion of the gears is such that the speed of the shaft 10 is multiplied to propel the vehicle for a considerable distance upon each compression of the spring 12.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

The combination with a driven shaft or axle carrying a pinion, of an actuating rock-shaft, a gear upon said shaft, an operating device having a clutch connection with said gear and adapted to impart motion thereto in one direction of its movement, a counter-shaft, a gear fixed to the counter-shaft, a train of gears connecting said fixed gear with the pinion on the driven shaft, a clutch-gear on the counter-shaft adapted to turn therewith in one direction and independently thereof in the reverse direction, an idler actuated by the pinion on the driving-shaft and adapted to turn the clutch-gear in the direction in which it turns independently, a rack-bar reciprocating longitudinally and in mesh with the clutch-gear and adapted to be moved in one direction by the same when said gear is turned loosely on its shaft, and a spring compressed by such movement of the rack-bar and adapted by expansion to move the rack-bar in the reverse direction, thereby causing the clutch-gear to transmit motion to and turn with its shaft and to rotate the fixed gear, and thereby transmit motion through the interconnecting gearing to the driven pinion and shaft, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID M. DEARING.

Witnesses:
M. L. PALMER,
KATE A. WILLIS.