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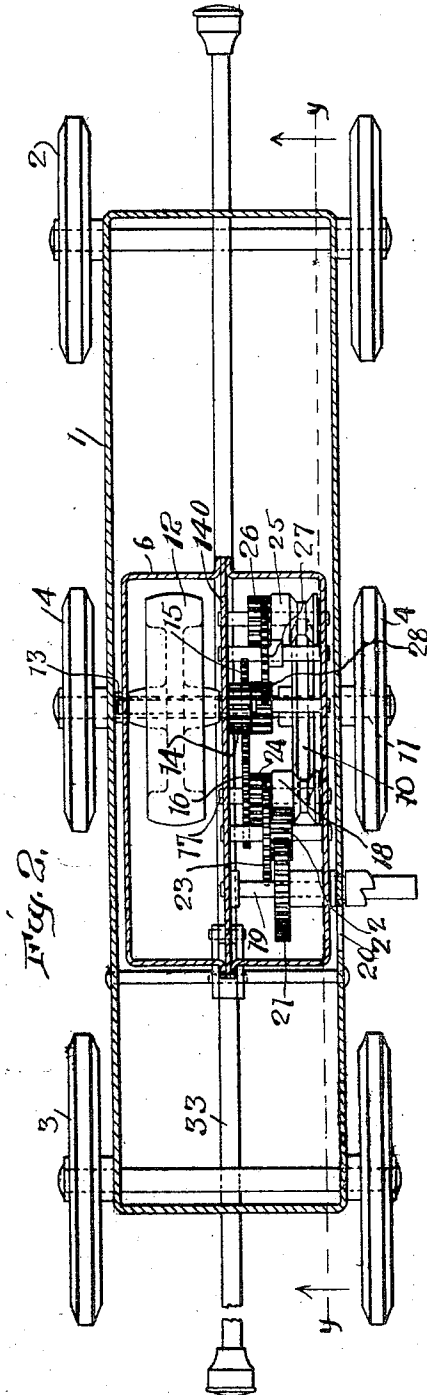
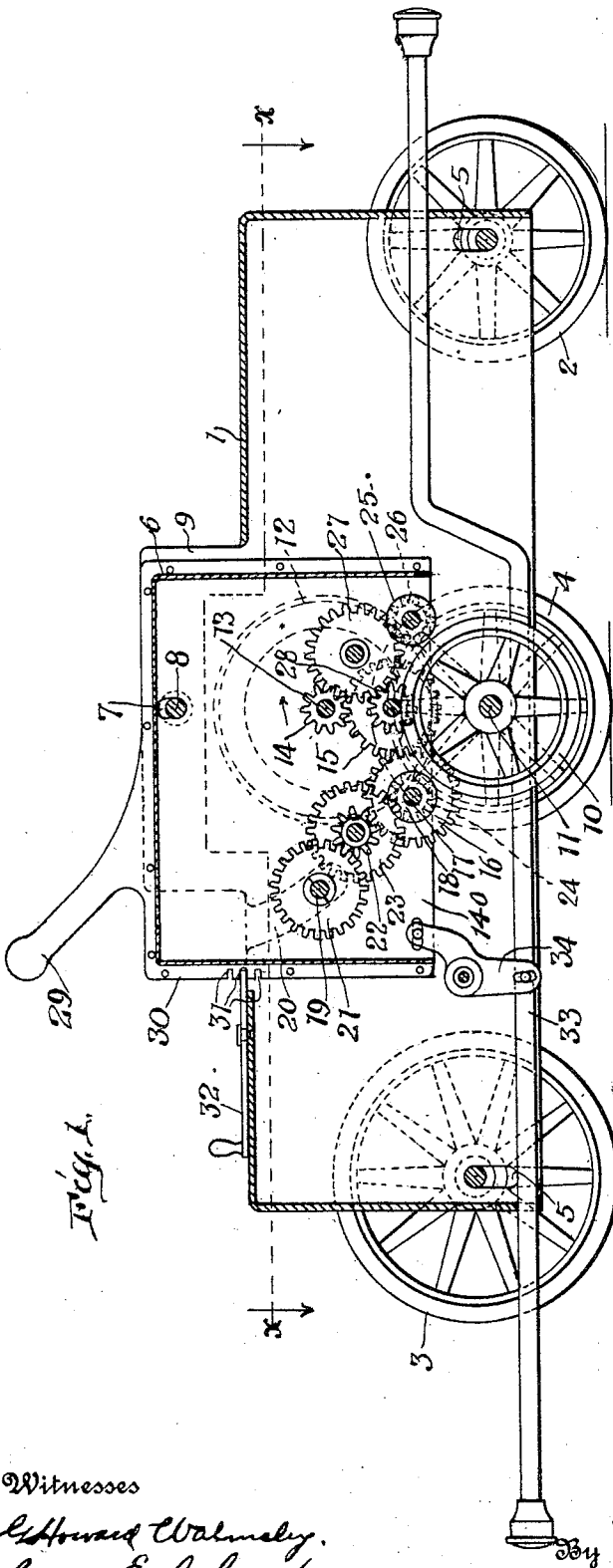
TOY.

APPLICATION FILED NOV. 30, 1912.

Patented June 23, 1914.

2 SHEETS-SHEET 1.

1,101,060.



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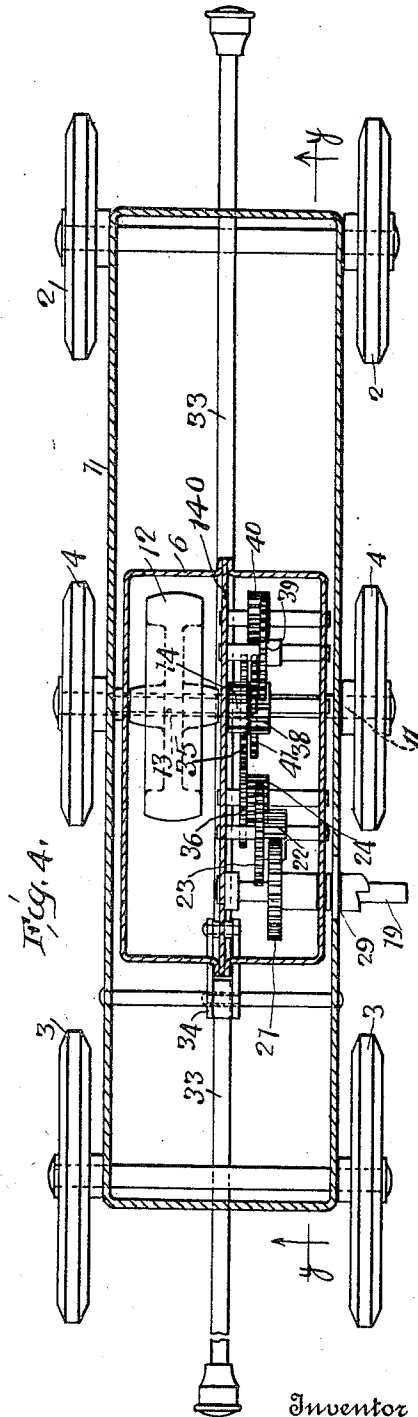
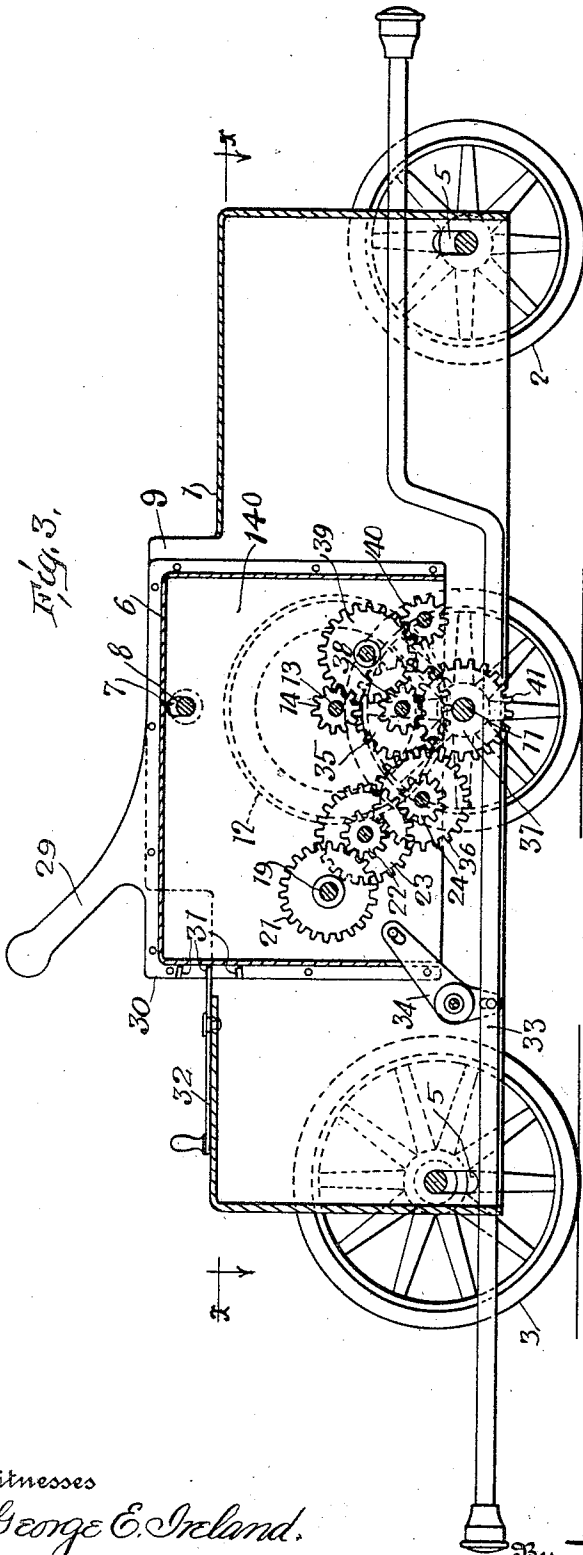
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# UNITED STATES PATENT OFFICE.

DAVID P. CLARK, OF DAYTON, OHIO.

TOY.

1,101,060.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, DAVID P. CLARK, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Toys, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to toys of the self propelling type and the object of the invention is, first, to provide a toy of this kind with means for automatically reversing the direction of its movement, and, second, to so mount the motor mechanism that its entire weight will be utilized to retain the driving members in driving contact.

15 In the accompanying drawings, Figure 1 is a longitudinal, sectional view, taken vertically on the line *y y* of Fig. 2, illustrating one embodiment of the invention and showing the same equipped with a friction drive; Fig. 2 is a longitudinal, sectional view taken horizontally on the line *x x* of Fig. 1; and 25 Figs. 3 and 4 are similar views showing the toy equipped with a toothed gear drive.

30 In these drawings I have illustrated one embodiment of my invention, the two forms differing only in such a manner as is necessary to change from a friction gear drive to a toothed gear drive. In both forms the essential features of construction are the same. As here illustrated the toy comprises 35 a body portion or main frame 1 which may be of any suitable character. In the present instance I have, for the purpose of illustration shown this body portion as a mere rectangular frame but in actual practice the toy would comprise an ornamental body 40 portion representing some object, such, for example, as the body of an automobile, this body portion either constituting the frame itself or being mounted upon the frame. This body portion or frame 1 is carried by 45 three sets of ground wheels, the front and rear, ground wheels being shown at 2 and 3, respectively, and the intermediate ground wheels which, in the present embodiment of the invention, constitute the traction wheels, 50 being shown at 4. In order that the intermediate ground wheels or traction wheels may always have a firm engagement with the floor or other supporting surface the axles for the front and rear wheels are preferably mounted in vertical slots 5 and, con-

sequently, will not at any time carry all the load.

The motor mechanism, which may be of any suitable character, is preferably mounted in a supplemental frame 6 which is capable of both a vertical movement and a swinging movement and, to this end, is provided with vertical slots 7 by means of which it is mounted on a transverse shaft 8, this shaft being carried by upwardly extending 60 portions 9 of the main frame 1. In the toy here illustrated the motor mechanism comprises an inertia wheel and in that form of the toy shown in Figs. 1 and 2 a friction drive is employed. The manner of 70 transmitting the power from the inertia wheel to the traction wheels 4 may, of course, be of any suitable character but instead of applying the power directly to the periphery of the traction wheels, as is more 75 or less common, I have, in the present instance, provided a driving member 10 which is rigidly secured to the axle 11, which carries the traction wheels 4, between the side members of the body portion or main frame 80 1. The use of this auxiliary driving member enables me to arrange the motor mechanism in a more convenient manner and to apply the power more directly to the driving mechanism. The inertia wheel which 85 constitutes the motor proper of the present toy is shown at 12 and is rigidly secured to a shaft 13 which is journaled in one of the side members of the supplemental or motor frame 6 and in an intermediate frame 90 member 140 extending longitudinally of said supplemental frame near the center thereof. Rigidly secured to the shaft 13 of the inertia wheel is a pinion 14 meshing with a gear 15 which, in turn, meshes with 95 a gear 16 carried by a shaft 17 on which is mounted a driving member, such as a friction pinion 18, adapted to frictionally engage the driving member 10 on the axle 11 of the traction wheels and transmit power 100 from said motor mechanism thereto. For the purpose of securing an increased frictional engagement the friction pinion 18 is here shown as having a tapered groove while the opposite edges of the rim of the 105 driving member 10 are beveled, thus producing a wedging action between the two driving members which materially increases the friction. Obviously, however, the use of this feature of construction is optional. 110

It will be noted that the shaft 17 which carries the friction member 18 is carried by the supplemental frame 6 and can, by moving that frame about its axis, be moved into and out of frictional engagement with the driving member 10.

Power may be stored in the inertia wheel in any suitable manner but, in the present form of the device I do this by hand-actuated mechanism and to that end have mounted in the supplemental frame a shaft 19 having one end projecting beyond the side of the main frame and adapted to receive a crank or other suitable device for rotating the same. It will be noted that the main frame is provided with a curved slot 20 to permit of the movement of the shaft with the supplemental frame when the latter is moved about its axis or vertically. Rigidly secured to the shaft 19 is a gear 21 meshing with a pinion 22 rigidly connected with a gear 23 which, in turn, meshes with a pinion 24 on the shaft 17 which carries the gear 16 forming a part of the train of gearing between the inertia wheel and the driving members. By shifting the motor frame 6 to move the driving member 18 into an inoperative position and rotating the shaft 19 by means of the crank the desired amount of power may be stored in the inertia wheel and then transmitted to the traction wheels by again shifting the motor frame to bring the driving members into operative relation.

It is desirable that means should be provided for propelling the toy in either direction and to accomplish this I have mounted in the motor frame a second frictional driving member 25 adapted to be moved into and out of operative relation with the driving member 10. This second driving member is so positioned with relation to the driving pinion 18 that when one driving pinion is in engagement with the driving member 10 the other must necessarily be out of engagement therewith, and further, the distance between the two driving pinions is such that the motor frame may have a neutral position, that is, a position in which both driving pinions will be out of engagement with the driving member 10. The driving member 25 has rigidly secured thereto a pinion 26 which meshes with a gear 27 which, in turn, meshes with a pinion 28 rigidly secured to the gear 15 which meshes with the pinion 14 on the motor or inertia wheel shaft 13.

Any suitable means may be provided for moving the motor frame from one position to another and I have here shown for that purpose a handle 29 rigidly secured to the motor frame and projecting into a position to be grasped by the operator. To retain the motor frame in its adjusted positions it is provided along one edge with a flange 30

having a series of notches 31 adapted to be engaged by a pivoted catch 32 mounted upon the main frame 1. By properly placing the axis about which the motor frame moves the center of gravity can be so arranged that when either of the driving pinions is in engagement with the driving member 10 the center of gravity will be on that side of the axis adjacent to that pinion and the weight of the device will tend to hold the same in operative relation to the driving member. Further, it will be noted that the vertical movement of the motor frame will cause the entire weight of this motor frame, as well as the inertia wheel and other parts carried thereby to be transmitted to the pinion which is in engagement with the driving member 10 and this weight is thus utilized to hold the members in driving contact.

I have also provided means for automatically shifting the position of the motor frame, thus enabling the direction of movement of the traction wheels to be automatically reversed. In that form of the device here shown, which embodies two driving members, the pinions 18 and 25, the reversal will be a positive one, but if a single driving pinion were utilized the reversal could still be secured by causing the toy to run up an incline and at the top of the incline shifting the motor frame to disengage the driving members, thus permitting the toy to move downward by gravity. At the bottom of the incline the frame could be shifted to again engage the driving members and move the toy forward so long as the inertia wheel retains sufficient power to drive the toy. Preferably, the means for automatically shifting the motor frame comprise a part connected with the motor frame and projecting beyond the main frame into a position in which it will engage an obstruction in the path thereof and will thus be actuated to shift the motor frame. In the present embodiment of the invention this part comprises a rod 33 of a length greater than the length of the toy and projecting beyond both ends thereof. Preferably, the rod extends through openings in the end members of the main frame and is slidably supported thereby, although it may be supported in any desired manner.

A bell crank lever 34 is pivotally supported on the main frame and has one arm connected with the motor frame and the other arm connected with the rod 33, both connections being sliding ones to permit of the relative movements of the parts. Obviously, longitudinal movement of the rod 33 will, through the bell crank lever 34, move the motor frame about its axis. It will be apparent, therefore, that if the toy is propelled in a direction to cause the end of the rod 33 to engage an obstruction, such as a wall, the force with which the rod comes in contact with the obstruction will

be sufficient to shift the motor frame, thus carrying the one driving pinion out of engagement with the driving member for the traction wheels and carrying the other driving pinion into engagement with that member and inasmuch as the driving pinions rotate in opposite directions the direction of movement of the toy will be reversed. If the toy is arranged between two obstructions, as between two walls, the motor frame will be alternately shifted in opposite directions and the direction of movement of the toy reversed and the toy caused to travel back and forth between the two walls until the power of the motor has been exhausted.

In that form of the toy shown in Figs. 3 and 4 the construction is substantially the same as that just described with the exception of the manner of transmitting the power from the motor shaft 13 to the traction wheels 4. The motor shaft has secured thereto the pinion 14, as in the form shown in Figs. 1 and 2; and this pinion meshes with a gear 35 which, in turn, meshes with a gear 36 adapted to be moved into and out of engagement with a pinion 37 on the axle 11 of the traction wheels. A pinion 38 is rigidly secured to the gear 35 and meshes with a gear 39 which, in turn, meshes with a pinion 40 adapted to be moved into and out of mesh with a gear 41 also rigidly secured to the axle 11 for the traction wheels. With the motor frame 6 in its neutral position, as shown in the drawings, both the gear 36 and the pinion 40 will be out of mesh with the driving members which are mounted on the axle, but by moving the frame in the proper direction either the pinion or the gear may be caused to mesh with the corresponding driving member on the axle. The inertia wheel is actuated to generate the power approximately in the same manner as in the form of the device first described, the arrangement of the gearing being substantially the same as in said first-mentioned form.

While I have shown and described one embodiment of my invention it will be understood that this has been chosen for the purpose of illustration only and that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a toy, a main frame, a rotary driving member journaled on said main frame, a supplemental frame mounted on said main frame, power mechanism mounted on said supplemental frame, two power transmitting devices mounted on said supplemental frame on opposite sides of a line extending centrally through said driving mem-

ber and having geared connections with said power mechanism for movement in opposite directions, means to manipulate said supplemental frame to cause either of said power transmitting devices to engage said driving member or to move both of said transmitting devices out of engagement with said driving member, and means connected with one of said geared connections for manually actuating said power mechanism when said transmission devices are both out of engagement with said driving member.

2. In a toy, a main frame, a rotary driving member journaled on said main frame, a supplemental frame mounted on said main frame, power mechanism mounted on said supplemental frame, two power transmitting devices mounted on said supplemental frame on opposite sides of a line extending centrally through said driving member and having geared connection with said power mechanism for movement in opposite directions, means to manipulate said supplemental frame to cause either of said power transmitting devices to engage said driving member or to move both of said transmitting devices out of engagement with said driving member, and means to lock said transmission devices in either one of said three positions.

3. In a toy, a main frame, a rotary driving member journaled on said main frame, a supplemental frame mounted for vertical bodily movement on said main frame, power mechanism mounted on said supplemental frame, a power transmission device also mounted on said supplemental frame and adapted to be moved into and out of engagement with said driving member, said transmission device being so arranged that when it is in engagement with said driving member substantially the entire weight of said supplemental frame and the parts carried thereby will rest upon said power transmission device to hold the same in operative engagement with said driving member.

4. In a toy, a body portion, a rotary friction driving member journaled on said body portion, a supplemental frame pivotally mounted on said body portion and capable of vertical movement relatively thereto, an inertia wheel carried by said supplemental frame, a friction pinion carried by said supplemental frame and operatively connected with said inertia wheel, said friction pinion being adapted to be moved into and out of engagement with said friction driving member by the pivotal movement thereof and to be held in operative engagement by the weight of said supplemental frame and the parts carried thereby, which weight is transmitted to the friction pinion by the vertical movement of said supplemental frame.

5. In a toy, a body portion, a rotary friction driving member journaled on said body

portion, a supplemental frame pivotally mounted on said body portion and capable of vertical movement relatively thereto, an inertia wheel carried by said supplemental frame, two friction pinions carried by said supplemental frame and adapted to be moved alternately into and out of engagement with said friction driving member by the movement of said supplemental frame in opposite directions about its axis and when in engagement with said frictional driving member to receive substantially the entire weight of said frame and the parts carried thereby.

6. In a toy, a body portion, a rotary friction driving member journaled on said body portion, a supplemental frame pivotally mounted on said body portion and capable of vertical movement relatively thereto, an inertia wheel carried by said supplemental

frame, two friction pinions carried by said supplemental frame and adapted to be moved alternately into and out of engagement with said friction driving member by the movement of said supplemental frame in opposite directions about its axis and when in engagement with said frictional driving member to receive substantially the entire weight of said frame and the parts carried thereby, and a shifting device for said supplemental frame projecting beyond said body portion and adapted to be engaged by an obstruction when said toy is moved in either direction.

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

DAVID P. CLARK.

Witnesses:

F. W. SCHAEFER,

HARRIET L. HAMMAKER.