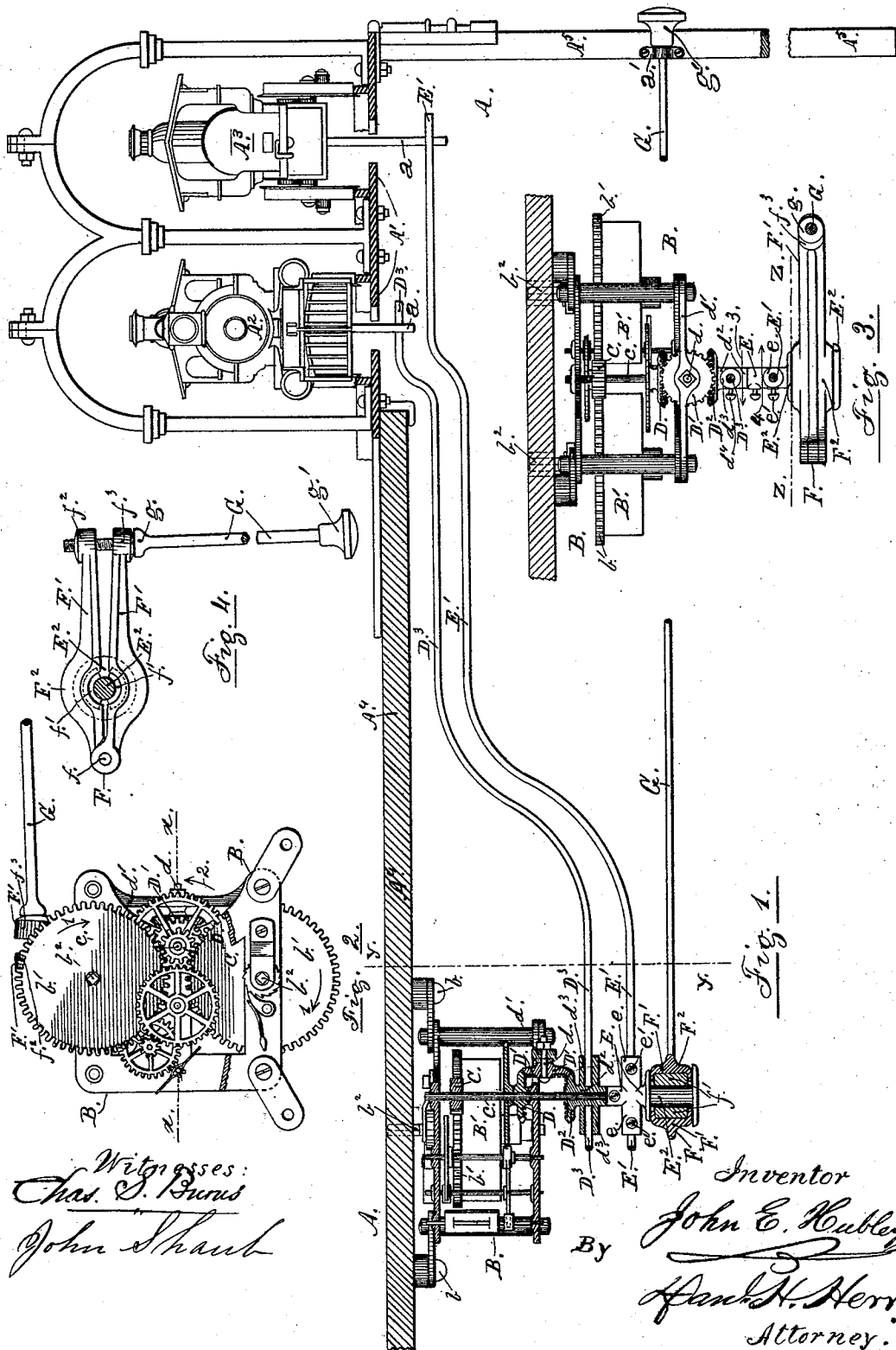


(No Model.)

J. E. HUBLEY.
MECHANICAL TOY.

No. 495,183.

Patented Apr. 11, 1893.



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UNITED STATES PATENT OFFICE.

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MECHANICAL TOY.

SPECIFICATION forming part of Letters Patent No. 495,183, dated April 11, 1893.

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To all whom it may concern:

Be it known that I, JOHN E. HUBLEY, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in a Device Giving Direct and Reverse Motions to a Mechanical Toy; 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 invention relates to improvements in that class of mechanical toys in which a train or trains of cars or other vehicles are run in the same direction on a circular track, or two or more such trains or vehicles are run in different directions on a number of such circular, but concentric tracks, at the same time and by the same motor.

In this application the objects of my invention are: first, to adapt a clock-work motor, centrally located and attached to the under side of the center covering of circular railways, to move cars or other vehicles on different circular tracks, above, either with or against the sun, or in both directions, at the same time; and second, to provide means to sensitively control said motor, by which the speed of such moving cars or vehicles may be regulated at pleasure.

I attain the purposes of my invention by the devices illustrated in the accompanying drawings, similar letters and figures referring to similar parts throughout the several views in which—

Figure 1 is a diametrical vertical section of a portion of an elevated double track concentric circular railway for a mechanical toy, with a vertical section through the line xx of a clock-work motor embodying the elements of my invention; Fig. 2, a top view of the clock-work motor detached from the central covering with a portion of the top plate of the frame, mechanism thereon, and forward end of the controlling rod removed; Fig. 3, a vertical section through the line yy in Fig. 1, showing a completed front elevation of the clock-work motor embodying the elements of my invention; and, Fig. 4, a top view of the portion below the line zz in Fig. 3—a portion of the controlling rod cut away.

A, designates a double track circular railway as described in my application for Letters Patent filed March 20, 1890, No. 344,658; A', the tracks; A², a locomotive headed with 55 and A³, one headed against the sun, and d , driving pins projecting downward from the bodies of said locomotives through the annular opening between the rails of each track a sufficient distance to engage the driving 50 arms to be hereinafter described; A⁴, the central covering; and A⁵, the supporting standard or leg to a side of which is attached a bearing a' to support the forward end of the controlling rod yet to be described. 65

B, represents a two spring clock-work motor, which is attached to the under side of the central covering A⁴ by screws b . The springs are mounted in the usual manner in the drums B' attached to the under side of the cogwheels 70 b' ; whose pivot pins b^2 , headed at the upper ends, extend upward through orifices in the central covering where said springs are wound tight and adapted to turn the cog wheels b' in the direction indicated by arrows 1 and 1. 75 The teeth of the cog wheels b' intermesh with those of the pinion C attached to the pivot pin c which extends a sufficient distance below the frame of the clock work and is the driving shaft of the elements of my invention which will now be described. 80

Resting on the lower rail of the frame work and rigidly attached to the shaft c is a miter gear wheel D, its teeth intermeshing with those of a similar miter gear wheel D' turning freely on a pivot pin or bolt d fixed to a bar d' upheld by two corner posts of the clockwork frame. The teeth of the wheel D' intermesh with those of a similar miter gear wheel D² rigidly attached to the upper end 85 of a long hub d^2 which is sleeved upon, and turns freely on, the shaft c ; and, below the wheel, said hub is provided with cross arms d^3 having axial bores into which are fitted driving arms D³, held in place by set screws 95 d^4 ; the forward end of one of said arms is shown in engagement with the rear side of the lower end of the driving pin a of the locomotive A² and adapted to drive said locomotive with the sun. 100

Rigidly but removably attached to the lower end of the shaft c and supporting the hub d^2

of the miter wheel D^2 is a cylindrical tube E provided with cross arms e having axial bores into which are fitted driving arms E' held in place by set screws e' . The forward end of one of said arms is shown in engagement with the front side of the lower end of the driving pin a of the locomotive A^3 and adapted to drive said locomotive against the sun. Below these cross arms e are two circular flanges forming a spool E^2 at the lower end of said tube E. On the spool E^2 as shown is a brake F which consists of two arms F' shaped as shown in Figs. 1, 3 and 4 and are hinge jointed at one end by a pivot pin f , so as to open and close like a pair of tongs. At a short distance from the pivot, the arms widen and thicken forming a bearing F^2 adapted to engage the spool E^2 ; the bearing F^2 is provided with semi-circular recesses in which are placed pieces f' of leather or other suitable packing which may be removed when worn and replaced by new ones. The forward portions of said arms being longer than the pivot ends, have bosses on the outer faces of their extremities and one of them f^2 is provided transversely with a screw threaded hole, while the other f^3 has an orifice longitudinally oblong.

The brake F is operated by a controlling rod G passing through the oblong orifice in the end f^3 of one of the arms F' , and is provided with a shoulder g adapted to press against the back of the end f^3 , which has freedom of motion longitudinally on said rod; this end of the rod G is threaded and screwed into the end f^2 of the other arm F' . From the shoulder g , the rod G extends outward beyond one of the standards or legs A^5 , where it turns freely in the bearing a' before mentioned. This end of the rod G is provided with a finger grip or turn-button g' to conveniently turn the rod G and operate the brake F. It will here be observed that turning the rod G to the right by means of the button g' , tightens the screw, compresses the ends f^2 and f^3 of the arms F' of the brake F, and will increase the pressure of its bearing F^2 on the spool E^2 , holding the rolling stock or toy on the track or tracks in check; and, turning the rod G to the left, a decreased pressure on the spool E^2 follows, and the speed of said rolling stock or toy will increase. It will thus be seen that the speed of said rolling stock may be sensitively controlled. It will also be observed, that the cog wheels b' , turning in the direction indicated by the arrows 1 and 1 and their teeth intermeshing with those of the pinion C attached to the shaft c , are adapted to turn said pinion and shaft together with the miter wheel D and the tube E, both attached to said shaft c , in the direction indicated by the arrow 2; the tube E, being provided with the cross arms e carrying the driving arms E' ; said arms E' will move in the same direction. Again, the miter wheel D, turning in the direction indicated by the arrow 2, and its teeth intermeshing with those of the miter wheel D'

whose teeth intermesh with those of the miter wheel D^2 attached to the hub d^2 having the cross arms d^3 carrying the driving arms D^3 , is adapted to move said arms D^3 in the direction opposite to that indicated by the arrow 2. It will thus be seen that my clock work motor moving the arms E' and D^3 , respectively in the direction indicated by the arrows 3 and 4 (Fig. 3), is adapted to give direct and reverse motions, at the same time, to the locomotives A^2 and A^3 on their respective tracks, and that the speed of said locomotives may be sensitively controlled by the brake F. It will also be observed that the bar d' supporting the miter wheel D' , may be removed from the posts of the frame and that the hub d^2 may be attached to the shaft c ; when this is done, it will be seen, that the arms D^3 will also move in the direction indicated by the arrow 2, and the locomotives A^2 and A^3 on the different tracks will move in the same direction with their speed controlled by the brake F as before.

Having now described my invention, what I do consider new, and desire to secure by Letters Patent, is—

1. The combination in a motor for a mechanical toy with the spring actuated cog wheels driving a pinion turning a shaft having at its lower end the cylindrical tube having the cross-arms carrying the driving-rods moving a toy in one direction, of a bevel gear wheel rigidly attached to the shaft and driving a second bevel gear wheel pivoted at right angles and driving a third bevel gear wheel having a long hub sleeved upon the same shaft, the hub having cross-arms each having an axial bore and affixed in said bore an extremity of a driving-rod the other extremity in contact with a downwardly projecting pin from a toy on a circular track above, whereby said toy is set in motion in an opposite direction, all the elements substantially as herein described and for the purpose set forth.

2. The combination in a motor for a mechanical toy with cog wheels actuated by a spring and rotating a shaft having attached thereto a bevel gear wheel driving a second bevel gear wheel turning at right angles and driving a third bevel gear wheel having a long hub sleeved on the shaft and having cross-arms affixed thereto the inner ends of driving-rods having their outer ends in contact with pins projecting downward from toys to move said toys in one direction on a circular track above, the hub resting on a cylindrical tube rigidly attached to the lower end of said shaft and the tube having cross-arms having affixed thereto the inner ends of driving rods having their outer ends in contact with pins projecting downward from toys to move said toys in the opposite direction on a circular track above, of a spool rigid with the lower end of the tube, and a brake applied to the spool, and a rod to operate the brake, whereby the motor may be sensitively

controlled and the speed of the toys regulated at pleasure all substantially as described and for the purpose set forth.

3. The combination in a motor for a mechanical toy, with the spring actuated gear wheels driving a pinion, the pinion rotating a shaft and mechanism whereby toys are moved in opposite directions at the same time on circular tracks above, and a spool rigidly attached to the lower end of the cylindrical tube affixed to the lower end of the shaft, of a brake applied to the spool, its flanges supporting the brake, the brake having the following elements: two arms hinge-jointed at one end and having a bearing near the joint, the bearing recessed, the recesses packed to bear on the shank of the spool, the outer ends of the arms having orifices transversely through them, one of the orifices slightly elongated and the other screw threaded, and

a controlling rod having one end through the orifices, the shoulder on the rod bearing against the back of the brake-arm having the elongated orifice, the threaded extremity of the rod screwed into the threaded orifice of the other brake-arm, and the outer end of the rod in a bearing attached to a track standard, and having at its extremity a thumb-nut or turn-button whereby to turn the rod, to open or close the brake, to control the motor and to regulate the speed of the toys, all substantially as herein described and for the purpose set forth.

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

JOHN E. HUBLEY.

Witnesses:

DANL. H. HERR,
JOHN BAKER.