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H. T. KINGSBURY.
INERTIA WHEEL TOY.
APPLICATION FILED MAY 16, 1904.

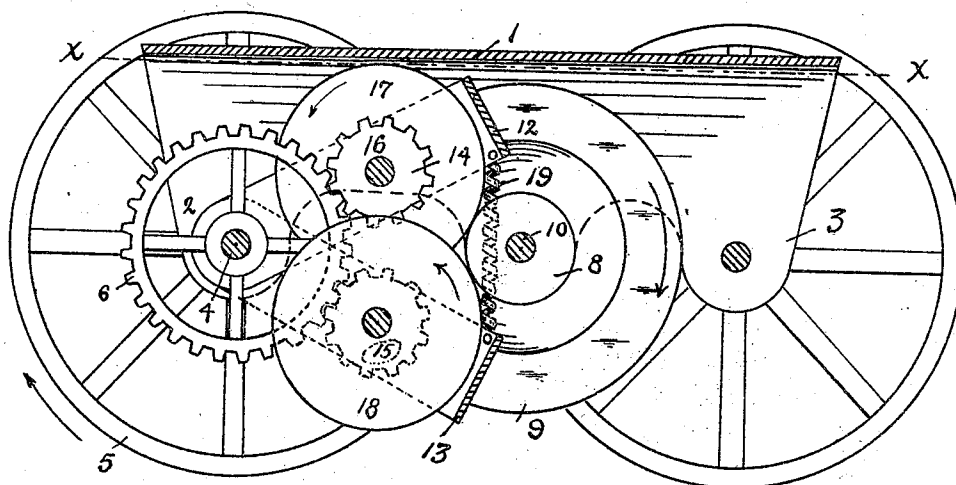


Fig. 1.

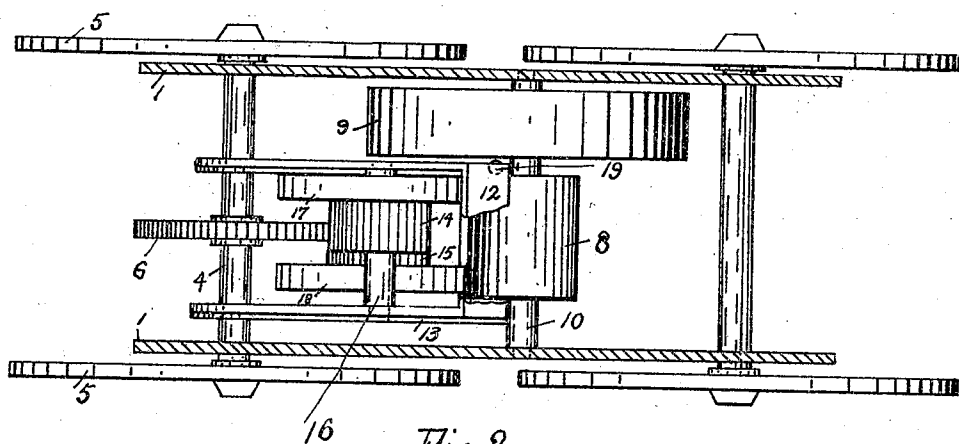


Fig. 2.

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HARRY T. KINGSBURY, OF KEENE, NEW HAMPSHIRE.

INERTIA-WHEEL TOY.

No. 806,977.

Specification of Letters Patent.

Patented Dec. 12, 1905.

Application filed May 16, 1904. Serial No. 208,201.

To all whom it may concern:

Be it known that I, HARRY T. KINGSBURY, a citizen of the United States, residing at Keene, in the county of Cheshire, State of New Hampshire, have invented certain new and useful Improvements in Inertia-Wheel Toys, of which the following is a description, reference being had to the accompanying drawings and to the figures of reference marked thereon.

My invention relates to improvements in self-driven wheeled toys, and more especially to that class of wheeled toys which are driven by an inertia-wheel.

The object of my invention is to improve the driving connection between the inertia-wheel and the running-wheels; and it consists in certain novel features of construction and combination of parts, which will be hereinafter fully set forth in the description, and pointed out in the claims.

Figure 1 is a vertical section of a wheeled toy embodying my invention. Fig. 2 is a plan view thereof on the line *x x* of Fig. 1.

Only as much of the toy vehicle has been illustrated in the drawings as is necessary to understand my invention.

In the preferred form of my invention I provide a frame 1 with downwardly-extending lugs 2 3, which serve as supports or bearings for the running-wheels. I have shown these lugs as perforated to receive the axle or shaft of the running-wheels. A more elaborate bearing may be used, if desired. Rigidly mounted on the axle or shaft 4 and near each end thereof are the running-wheels 5. Intermediate the ends of said axle or shaft is a gear-wheel 6, fastened thereto so as to turn or rotate with the axle. Mounted in lugs projecting downwardly from the frame 1 is an inertia-wheel 9. Said inertia-wheel is rigidly fastened to an axle or shaft 10, which is also provided with a drum 8. Pivottally mounted on the axle or shaft 4 are two independently-movable frames or carriers 12 and 13. Each frame carries a gear-wheel 14 and 15, which mesh with the gear-wheel 6, rigidly connected to the axle of the running-wheels, so that all movement of the running-wheels is imparted to the gears 14 and 15, and vice versa. Fast on the axle 16, which supports the gear 14, is a friction-wheel 17; which normally rests in contact with the drum 8, the loca-

tion of the axle 16 relative to the pivotal support of the frame or carrier 12 being such that the friction-wheel will engage the drum at a point between the vertical and horizontal radii of the drum. By this arrangement of parts any downward movement of the carrier 12 will cause the friction-wheel to firmly grip the drum and transmit more efficiently the rotary motion of the running-wheels to the inertia-wheel. The carrier 13 is provided with a friction-wheel 18, similarly located below the drum 8, and said wheel 18 serves to impart the rotary movement of the inertia-wheel to the running-wheels. A suitable spring 19 connects the carriers 12 and 13 and normally holds the friction-wheels in contact with the drum 8.

The operation of my improved mechanism will be apparent from the above description. By turning the running-wheels either by the hand or by placing said wheels in contact with a surface and rapidly moving the vehicle along the same the rotary movement of the wheel is transmitted through the gear-wheel 6 to the friction-wheel 17 and through the wheel 17 and drum to the inertia-wheel. It will be noted that the rotation of the gear-wheel 6 tends to carry the frame 12 around with it, and thereby greatly increase the pressure of the friction-wheel on the drum. This increased pressure increases the efficiency of transmission from the friction-wheel to the drum and makes it possible to quickly give a high velocity to the inertia-wheel. In transmitting the power stored in the inertia-wheel to the running-wheels to propel the vehicle the effect is directly opposite. The gear-wheel 15 has a tendency to climb on the gear-wheel 6, and thus raises the frame or carrier 13 and increases the pressure of the friction-wheel 18 on the drum. It will be noted that when the inertia-wheel becomes the driving means the rotation of the friction-drum 8 tends to lift the friction-wheel, turning the frame counter-clockwise against the action of the spring. Likewise when the driving-wheels are storing up power in the inertia-wheel the tendency is to turn the frame 13 about the shaft 4 in a clockwise direction and to move the friction-wheel 18 out of contact with the friction-drum. Thus the friction-wheel 17 becomes substantially the only medium through which power

is stored in the inertia-wheel; and the friction-wheel 18 becomes substantially the only medium of transmitting power from the inertia-wheel to the driving-wheels.

5 The advantage of this structure and mode of operation will be apparent. Very little or no pressure on the vehicle is necessary in starting the inertia-wheel into motion, and, again, the inertia-wheel may be set in motion by turning the running-wheels by hand or any other
10 suitable means.

It may be noted that I preferably make the friction-wheel 17 and 18 and the drum 8 of wood, as it is light and inexpensive. I do not,
15 however, desire to be limited to any particular material.

While I have described the preferred form of my invention, I do not desire to be limited to the exact details of construction shown, as
20 changes in form and proportion will suggest themselves to those skilled in this particular art. The scope of my invention is, however, defined in the claims hereinafter presented.

Having thus described my invention, I claim
25 as new and desire to secure by Letters Patent of the United States—

1. A wheeled toy comprising in combination, running-wheels, an inertia-wheel and the supporting-frame for said wheels, means for
30 transmitting motion from the running-wheels to the inertia-wheel and from the inertia-wheel to the running-wheels, including two sets of frictional contact devices, and including means operated by the rotation of the running-wheels to increase the frictional contact-pressure of
35 one set, as the speed of the running-wheels increases, and including means operated by the rotation of the inertia-wheel to maintain the frictional contact-pressure of the other set while the inertia-wheel is rotating; substantially as described.

2. A wheeled toy comprising in combination, a supporting-frame, running-wheels carried thereby, an inertia-wheel mounted in said
45 frame, friction-wheels for transmitting motion to and from said inertia-wheels, gear-wheels for positively connecting the friction-wheels with the running-wheels, and independently-movable carriers for supporting said friction-wheels respectively; substantially as described.

3. A wheeled toy, comprising in combination, a supporting-frame, running-wheels carried thereby, an inertia-wheel mounted in said
55 frame, friction-wheels for transmitting motion to and from said inertia-wheels, gear-wheels for positively connecting the friction-wheels with the running-wheels, and independently-movable carriers for supporting said friction-wheels respectively, and yielding means for connecting said carriers; substantially as described.

4. In a wheeled toy, the running-wheels, the

inertia-wheel, the shafts upon which the same are respectively mounted, a plurality of friction-wheels, and means for yieldingly pressing them together to normally engage the inertia-wheel, and a plurality of gear-wheels between the friction-wheels and the running-wheel shaft; substantially as described. 70

5. A wheeled toy, comprising in combination, a supporting-frame, running-wheels carried thereby, a shaft connecting said wheels, a gear-wheel carried by said shaft, an inertia-wheel, a friction-drum connected thereto, friction-wheels engaging said drum, and gear-wheels connected to said friction-wheels and engaging the first-named gear-wheel; substantially as described. 75

6. A wheeled toy comprising in combination, a supporting-frame, running-wheels carried thereby, a shaft connecting said wheels, a gear-wheel carried by said shaft, an inertia-wheel, a friction-drum connected thereto, friction-wheels engaging said drum, gear-wheels
85 connected to said friction-wheels and engaging the first-named gear-wheel, and movable carriers for supporting said friction-wheels; substantially as described.

7. A wheeled toy comprising in combination, a supporting-frame, running-wheels carried thereby, a shaft connecting said wheels, a gear-wheel carried by said shaft, an inertia-wheel, a friction-drum connected thereto, friction-wheels engaging said drum, gear-wheels
95 connected to said friction-wheels and engaging the first-named gear-wheel, and carriers pivoted on the shaft and supporting said friction-wheels; substantially as described.

8. A wheeled toy comprising in combination, a supporting-frame, running-wheels carried thereby, a shaft connecting said wheels, a gear-wheel carried by said shaft, an inertia-wheel, a friction-drum connected thereto, friction-wheels engaging said drum, gear-wheels
105 connected to said friction-wheels and engaging the first-named gear-wheel, carriers pivoted on the shaft and supporting said friction-wheels, and yielding means connected to said carriers and holding the friction-wheels in contact with the drum; substantially as described. 110

9. A wheeled toy comprising in combination, a supporting-frame, running-wheels carried thereby, a shaft connecting said wheels, a gear-wheel carried by said shaft, an inertia-wheel, a friction-drum connected thereto, friction-wheels engaging said drum, gear-wheels
115 connected to said friction-wheels and engaging the first-named gear-wheel, carriers pivoted on the shaft and supporting said friction-wheels, and a spring connecting the free ends of said carriers and holding the friction-wheels in contact with said drum; substantially as described. 120

10. In a wheeled toy, running-wheels, an inertia-wheel, shafts respectively supporting 125

the same, a gear-wheel on the running-wheel shaft, frames pivoted on said shaft, one extending above and one extending below the same, a shaft on each of said frames, a gear-wheel on each of said shafts meshing with the gear-wheel on the running-wheel shaft, a friction-wheel on each of said shafts in frictional engagement with the inertia-wheel, and a

spring connecting the frames; substantially as described.

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

HARRY T. KINGSBURY.

Witnesses:

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