

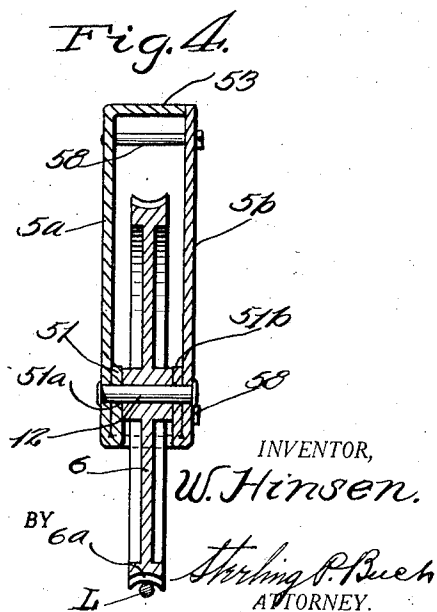
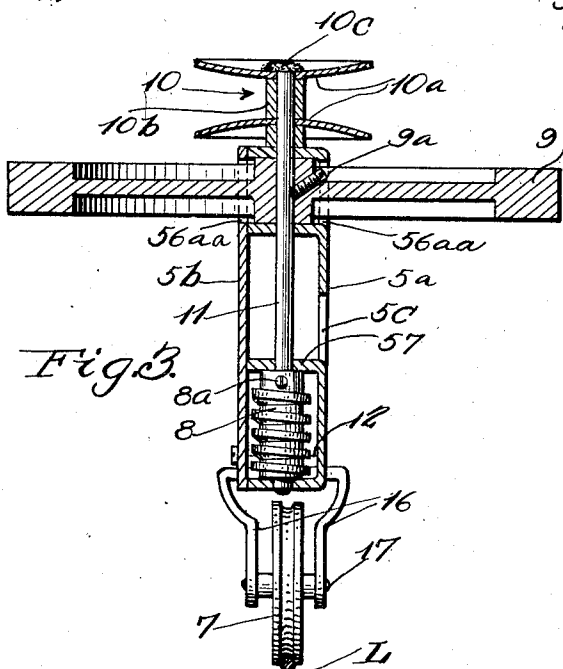
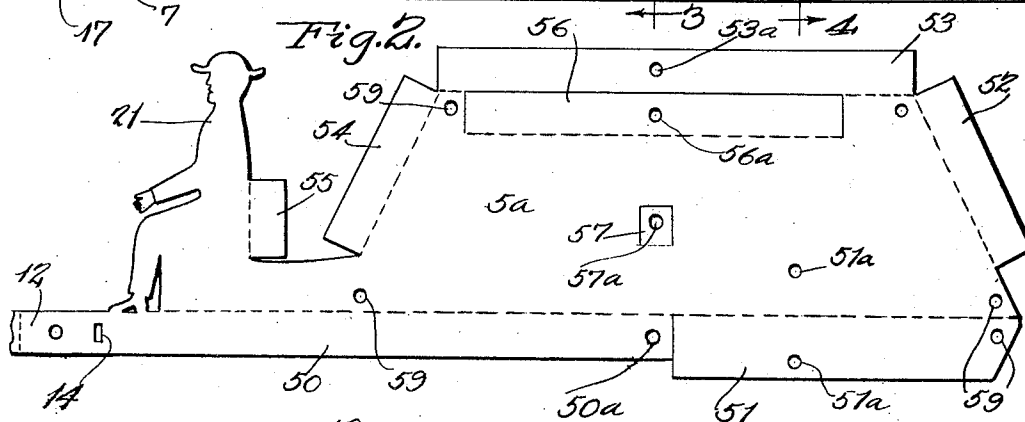
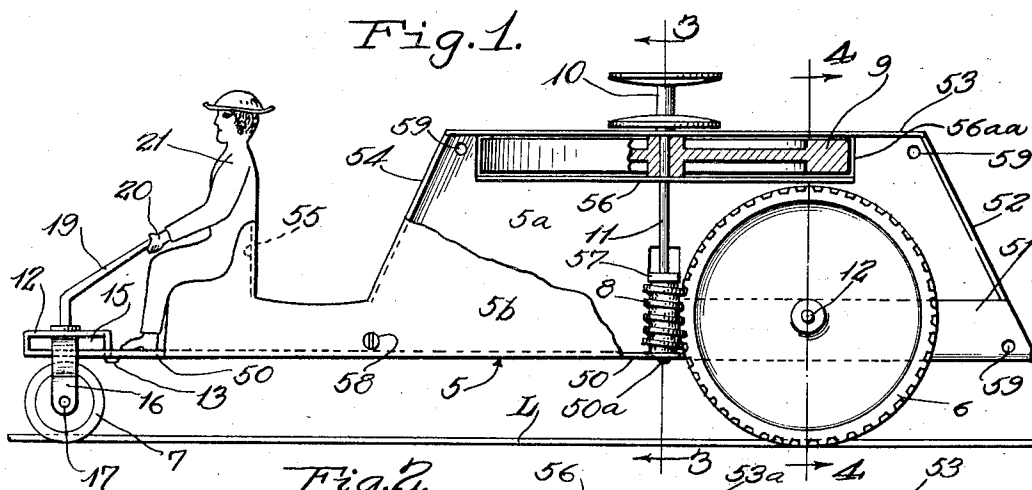
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W. HINSEN

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TRAVELING WHEELED GYROSCOPIC TOY

Filed July 22, 1927



UNITED STATES PATENT OFFICE

WILLIAM HINSEN, OF CAT SPRING, TEXAS

TRAVELING WHEELED GYROSCOPIC TOY

Application filed July 22, 1927. Serial No. 207,806.

This invention relates to toys, and especially to an improved form of traveling wheeled gyroscopic toy.

One object of this invention is to provide a toy of this character which is exceedingly simple in its construction and operation, which is capable of being manufactured at a relatively low cost, which is simply and easily operated without any danger of inflicting an injury on the operator, which can be caused to travel in a straight line or in a curved line, and which is practical, interesting, amusing and instructive.

Other objects and important features are pointed out or implied in the following details of description, in connection with the accompanying drawings in which:

Figure 1 is a left-side elevation of a gyroscopic toy constructed according to this invention.

Figure 2 is a side view of a sheet metal blank from which the main body portion of the toy is formed.

Figure 3 is an enlarged vertical sectional view along the line 3—3 of Figure 1.

Figure 4 is an enlarged vertical sectional view along the line 4—4 of Figure 1.

Referring to these drawings in detail, in which similar reference characters correspond to similar parts in the several views, and in which the letter L indicates a line of wire or string which is assumed to be stretched and supported for supporting the toy to travel thereon; the invention will now be described in detail as follows:

In a broad aspect of the invention, it includes a body 5 supported by wheels 6 and 7, a driving gear-wheel 8 for rotating the traction wheel 6, a balance-wheel or a gyroscope 9 associated with the wheel 8 so as to rotate therewith and employ its momentum for causing the driving wheel to continue rotating through a considerable period of time, and a prime mover 10 for imparting rotary movement to the gyroscope 9.

In a more detailed aspect, the body 5 preferably consists of two main body members 5a and 5b, the body 5a being shown in its unfinished state or as a sheet metal blank in Figure 2, and includes marginal flanges or flange por-

tions 50, 51, 52, 53, 54 and 55, and intermediate flanges 56 and 57. In its finished state, as shown in Figure 1, all of these flanges are turned in the same direction, and their edges terminate substantially in the same vertical plane, so the substantially plane left-side plate 5b fits snugly on the edges of these flanges, thereby forming a housing which is the body 5. Any appropriate means may be employed for securing the plate 5b in its place, for instance, screws 58 which extend through openings 59 in the plates or body members 5a and 5b. If desired, the screws 58 may be provided with nuts (not shown), or such screws may be threaded directly into engagement with the walls of the openings 59, or rivets or other fastening means may be substituted for the screws.

The flanges 50, 53, 56 and 57 are provided with openings 50a, 53a, 56a and 57a, respectively, which are in vertical alinement, also in axial alinement and combined to form bearing means in which a vertical shaft 11 is journaled, this shaft being rigidly united with the members 8, 9 and 10, thereby forming a unitary rotor which also constitutes an actuating means for rotating the traction wheel 6. As shown in these drawings, this traction wheel has an axle 12 on which it is mounted to rotate, this axle extending through alined openings 51a through the members 5a and 5b. In this connection, referring particularly to Figure 4, it will be seen that the flange 51 (of the member 5a) and a corresponding flange 51b (of the member 5b) are turned upward or folded against the respective main body portions 5a and 5b, thereby reinforcing these parts for stiffening them and providing secure anchorages for the ends of the axle 12. It is obvious that the axle 12 may be either a screw or rivet and may either rotate with the wheel 6, or the latter may rotate around the axle 12. The wheel 6 is preferably a worm-gear, so it not only meshes with the wheel or worm 8, but also has longitudinally curved gear teeth, as shown at 6a, in Figure 4, so it is adapted to retain its traveling position on a line L or the like, while these teeth 6a also serve as

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traction lugs to enable the machine to climb or to pull another wheeled toy or weight which may be attached to the bolt or screw 58 which extends through the rear-most hole 59.

The flange 56 is preferably formed by being struck out from the intermediate portion of the blank 5a, and the opening 56aa provides a passage through which the gyroscope 9 rotates, the plate 5b being provided with a similar opening 56aa, as shown in Figure 3, so the gyroscope 9 extends laterally through both of these members 5a and 5b. The flange or bearing member 57 is also preferably struck out from the intermediate part of the member 5a, and the opening 5c permits the insertion of an oil-can-spout for applying lubrication to the threads and ends of the worm 8 and the contiguous bearings of the shaft 11. The parts 8 and 9 may be secured to the shaft 11 by any appropriate means, but as here shown, set screws 8a and 9a are employed.

The prime mover 10, as here shown, is preferably in the form of a spool or reel on which an actuating string may be wound, and by pulling this string (in a manner well known) while holding the body 5, the rotor 8-9-10-11 is caused to rotate with greater or less velocity in accordance with the power exerted on the string. The rotary movement of this member imparts a rotary movement to the traction wheel 6, thereby causing the machine to travel while it is held in its upright position by means of the gyroscopic action of the rotor, especially the gyroscope 9. The part which is formed by the flange 54 and the adjacent edge of the plate 5b constitutes a convenient and effective hand-hold, so this part may be held firmly with one hand, while the actuating string (not shown) is pulled for turning the rotor.

The front end of the main body member 5a is preferably formed with a forward extension 12 which is turned upward and rearward, and then downward, and terminates in a tongue 13 which extends through a slot or aperture 14 and is clinched or turned up against the lower side of the flange 50, thereby forming a horizontal and longitudinal opening 15 through which extends the bight portion of a substantially U-shaped member 16 which includes depending apertured arms through which extends an axle 17 on which the wheel 7 is mounted to rotate. This wheel has a peripheral groove around it, for retaining it in place on a line L while traveling thereon. However, when it is desired that the device shall travel in a curve, the member 16 can be turned to a greater or less extent about its pivot which is the lower end of a rod 19 which simulates the steering bar of the vehicle, but which is stationary and preferably secured to the hand 20 of a simulation of a driver 21, such simulation being

formed in any appropriate way, for instance, by stamping it integrally with the blank, as shown in Figure 2, or by forming it separately of any appropriate material and attaching it in any appropriate way. Obviously, when the part 21 is formed integrally with the blank 5a, the simulation of features, hair, clothing, etc., may be provided by painting the same on the blank, or by any other appropriate means.

Referring again to the extension 12 which forms the loop or opening 15, it should be understood that the upper and lower elements of the loop 15 are somewhat springy, and clamp the member 16 between them, so it will be frictionally held in its different adjusted positions, for traveling in a straight line, a left curve, or a right curve, as may be desired by the user.

Referring again to the spool or reel 10, and especially to Figure 3, it will be seen that it may be composed of separate disks 10a and a hub 10b, these parts being secured together and to the shaft 11 by any appropriate means, for instance, solder as shown at 10c, it being understood that the solder, when melted, flows into the joints between these parts 10a, 10b and 11.

Although I have described this form of my invention specifically, I do not intend to limit my patent protection to these specific details of construction and arrangement, but claim the right to make and protect all forms which fairly come within the scope of the inventive ideas as implied and claimed.

What I claim as my invention is:

1. In a gyroscopic machine, the combination of a hollow body, two supporting wheels journaled thereto, one of these wheels being in front of the other, one of these wheels constituting a worm gear wheel, a worm meshing with the worm gear wheel within the said hollow body which latter forms a shield around these intermeshing gear members, a gyroscope journaled in said hollow body, means outside of the body to impart rotary motion to the gyroscope, and a shaft directly connecting the gyroscope to said worm.

2. A toy machine including the simulation of a vehicle body and the simulation of a human being or driver at the front of said body, a simulation of a steering bar, a steering wheel, means pivotally connected to said simulation of the steering bar and to said steering wheel so the latter can be turned for directing the course of the machine, a traction wheel, and means including a gyroscope for imparting rotary traveling motion to said traction wheel.

3. In a mechanical toy, the combination of a body, a shaft journaled therein, a worm on the shaft, means to drive the shaft, and a combined worm gear and traction wheel meshed with said worm, the teeth of said worm gear being concaved and sharp ended,

substantially as shown, and means combined with said worm gear and traction wheel for guiding the mechanical toy while it is driven by said combined worm gear and traction wheel.

5 4. In a gyroscopic machine, the combination of a hollow body, two supporting wheels journaled thereto, one of these wheels being in front of the other, one of these wheels
10 constituting a worm gear wheel, a worm meshing with the worm gear wheel within said hollow body, a gyroscope journaled in said hollow body, means outside of the hollow body to impart rotary motion to the gyro-
15 scope, and a shaft directly connecting the gyroscope to said worm.

5. In a mechanical toy, the combination of a body, a shaft journaled therein, a worm on the shaft, means to drive the shaft, and
20 a combined worm gear and traction wheel having its tread formed with teeth that mesh with said worm, substantially as shown, and means combined with said worm gear and traction wheel for guiding the mechanical toy
25 while it is driven by said combined gear and traction wheel.

In testimony whereof I affix my signature.

WILLIAM HINSEN.

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