

June 16, 1953

D. D. RAZE

2,641,869

TOY STEERING MECHANISM

Filed Aug. 3, 1949

Fig. 1

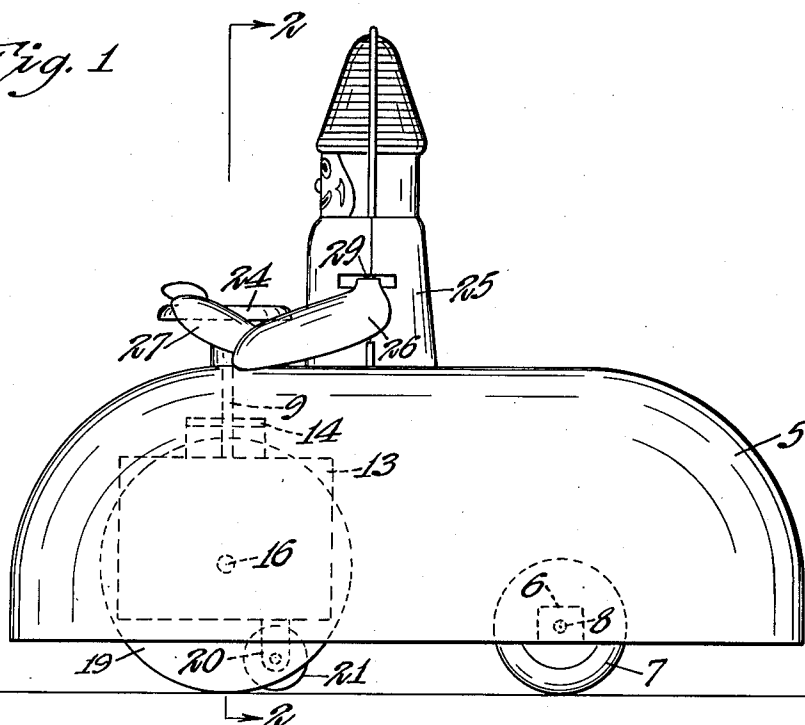


Fig. 2

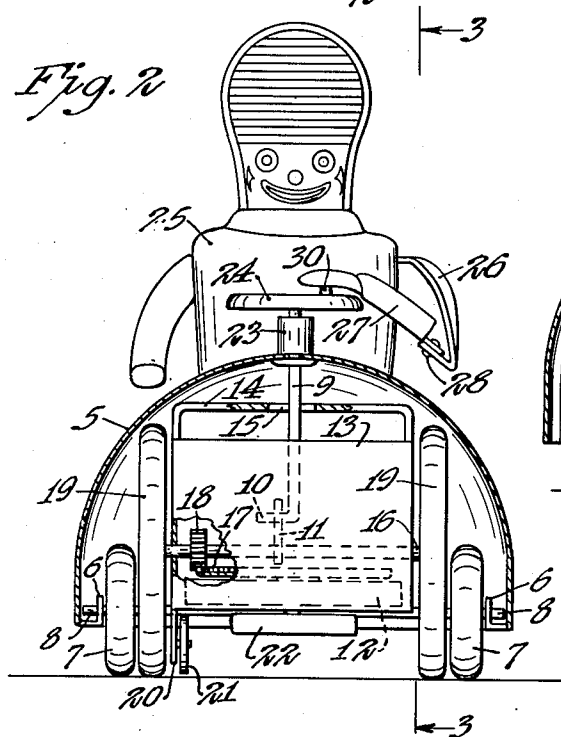
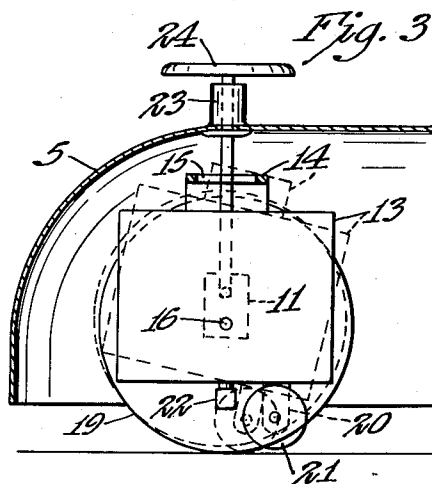


Fig. 3



Inventor

Douglas D. Raze
By Williamson & Williamson
Attorneys

UNITED STATES PATENT OFFICE

2,641,869

TOY STEERING MECHANISM

Douglas D. Raze, Minneapolis, Minn.

Application August 3, 1949, Serial No. 108,333

3 Claims. (Cl. 46-211)

1

This invention relates to toy devices and more particularly to combined power and steering mechanism therefor.

It is a general object of the invention to provide a power and steering unit for a toy device which will enable a powered toy to readily and promptly steer away from any obstacle which it might meet in its travel across the floor or other supporting surface.

The present invention is an improvement upon that disclosed and claimed in my prior Patent Number 2,171,294, issued August 29, 1939. In that patent there was disclosed means whereby the toy would automatically steer away from an obstruction, but it was necessary for the steering mechanism to turn or pivot through a predetermined number of degrees before the toy would resume its forward progress. The present invention has as its general object the provision of automatic steering means which will cause the toy to resume its travel across a supporting surface as soon as the obstruction has been cleared and without having to turn through any predetermined arc of pivotal movement.

The above and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same parts throughout the views, and, in which:

Figure 1 is a side elevational view of an embodiment of the invention;

Figure 2 is a sectional view taken approximately on the line 2-2 of Figure 1; and

Figure 3 is a fragmentary sectional view taken approximately on the line 3-3 of Figure 2.

The device has a frame 5 in the form of a shell-like body whose side edges are turned inwardly and upwardly as at 6. The rear portion of the frame is supported by wheels 7 on an axle 8 which is shown in Figure 2 to extend between the upturned lower edge portions of the body or shell frame 5.

Extending downwardly from the upper forward portion of the body shell 5 is a vertical rod 9 having a bent lower end 10 which loosely fits an apertured ear 11 extending upwardly from a spring motor housing 12. The rod 9 is rotatably mounted and constrained against longitudinal displacement in a sleeve 23 mounted in the body shell 5. The spring motor housing 12 is mounted in a casing 13 and extending above the casing 13 is a U-shaped member 14 having a relatively large opening 15 therethrough and through which the rod 9 extends. This connection of the

2

motor housing 12, casing 13 and U-shaped member 14 with the rod 9 permits that assembly to tilt relative to said rod 9.

Extending through the casing 13 is a front axle 16 which is connected to the spring motor unit 12 by means of a ring gear 17 and pinion 18. Relatively large front wheels 19 are mounted on the axis 16.

A small bracket 20 extends downwardly from the casing 13 at one side thereof and rearwardly of the front axle 16. Mounted on the bracket 20 is a small wheel 21 which constitutes an automatic steering member. It should be noted in Figure 1 and in the full line position of Figure 3 that the small wheel 21 is located a slight distance above the ground line upon which wheels 7 and 19 rest.

The spring motor 12 is provided with a winding key 22. When it is wound and the device is placed on a supporting surface the toy will move forwardly until the motor runs down or until the toy meets an obstruction. When this happens, the body or frame member 5 will, of course, be stopped but the front wheels 19 will continue to rotate for a fraction of a revolution, thereby causing the entire wheel and axle assembly, the casing 13 and U-shaped member 14 to tilt rearwardly to the dotted line position of Figure 3. This will bring the small steering wheel or member 21 into contact with the ground surface and will elevate the left-hand wheel 19 as viewed in Figure 2, or the rear wheel, as viewed in Figure 3, leaving the other front wheel 19 in contact with the ground surface. The action of the spring motor will thereupon cause continued rotation of the right-hand wheel as viewed in Fig. 2, swinging the front wheel assembly around until it is disposed in a direction which will clear the body or frame member 5 from the obstruction. When this happens, the tilted wheel and axle assembly and its motor and casing will return to its normal position as shown in solid lines in Fig. 3. Thereupon the small steering member or wheel 21 will be raised from the ground surface and its adjacent track wheel 19 will again contact the ground surface and the toy will move off in its new direction.

The vertical rod 9 extends upwardly through a sleeve 23 on the upper side of the body shell 5 and the extreme upper end of the rod is provided with a steering wheel 24. A simulated figure 25 is mounted on the top of the body behind the steering wheel. This figure is provided with an upper arm piece 26 and a lower arm piece 27, the two being connected by a pivot pin 28. The

3

upper arm piece 26 is connected to a pivot pin 29 carried by the body portion of the figure 25, as shown in Figure 1. The lower arm piece 27 is connected by a pivot pin 30 to the rim of the steering wheel 24, and when the rod 9 rotates during steering action of the wheel and axle assembly the steering wheel 24 will turn and the arm members 26 and 27 will move to simulate steering of the toy by the figure 25.

From the foregoing it will be seen that I have provided a toy device with a powered steering unit which is automatic and will steer the toy away from any obstacle which it might encounter. The degree of turning or steering action is dependent wholly upon the type of obstruction which has been encountered. If the toy strikes an object at a right angle the steering device will move approximately through ninety degrees before the toy is released and travel over the floor or ground is resumed. If the toy should run into a U-shaped pocket whose width is less than sufficient to permit the toy to turn around, the steering device will rotate through 180 degrees and cause the toy to back out of the pocket. As soon as the sides of the pocket are cleared by the toy, the elevated wheel will drop to the ground and the toy will move off in a new direction.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What I claim is:

1. In a toy device, a frame unit, a rotary powered wheel and axle unit connected to and supporting at least a portion of said frame and tiltable about a horizontal axis relative to said

4

frame, and a steering member carried by one of said units and shiftable with said wheel and axle unit during such tilting movement to elevate one side of said wheel and axle unit while leaving the other side of said wheel and axle unit to track in a curve.

2. In a toy device, a frame unit, a powered rotary wheel and axle unit connected to and supporting at least a portion of said frame and having relatively wide tread limits, said wheel and axle unit being tiltable relative to said frame and about its axle, and a steering member supported by one of said units and connected to and movable by said wheel and axle unit in the tilting movement thereof, said steering member being operative to elevate one side of said wheel and axle unit whereby the wheel and axle unit will track in a curve and change the direction of travel of said unit.

3. In a toy device, a frame, a rotary wheel and axle unit connected to and supporting at least a portion of said frame and having a power drive connection, said wheel and axle unit being tiltable about its axle, a steering member carried by said unit at one side thereof and tiltable therewith to elevate one side of said wheel and axle unit from the ground, and a connection between said wheel and axle unit and said frame limiting the tilting movement of said wheel and axle unit relative to said frame.

DOUGLAS D. RAZE.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,117,597	Berger	May 17, 1938
2,171,294	Raze	Aug. 29, 1939