

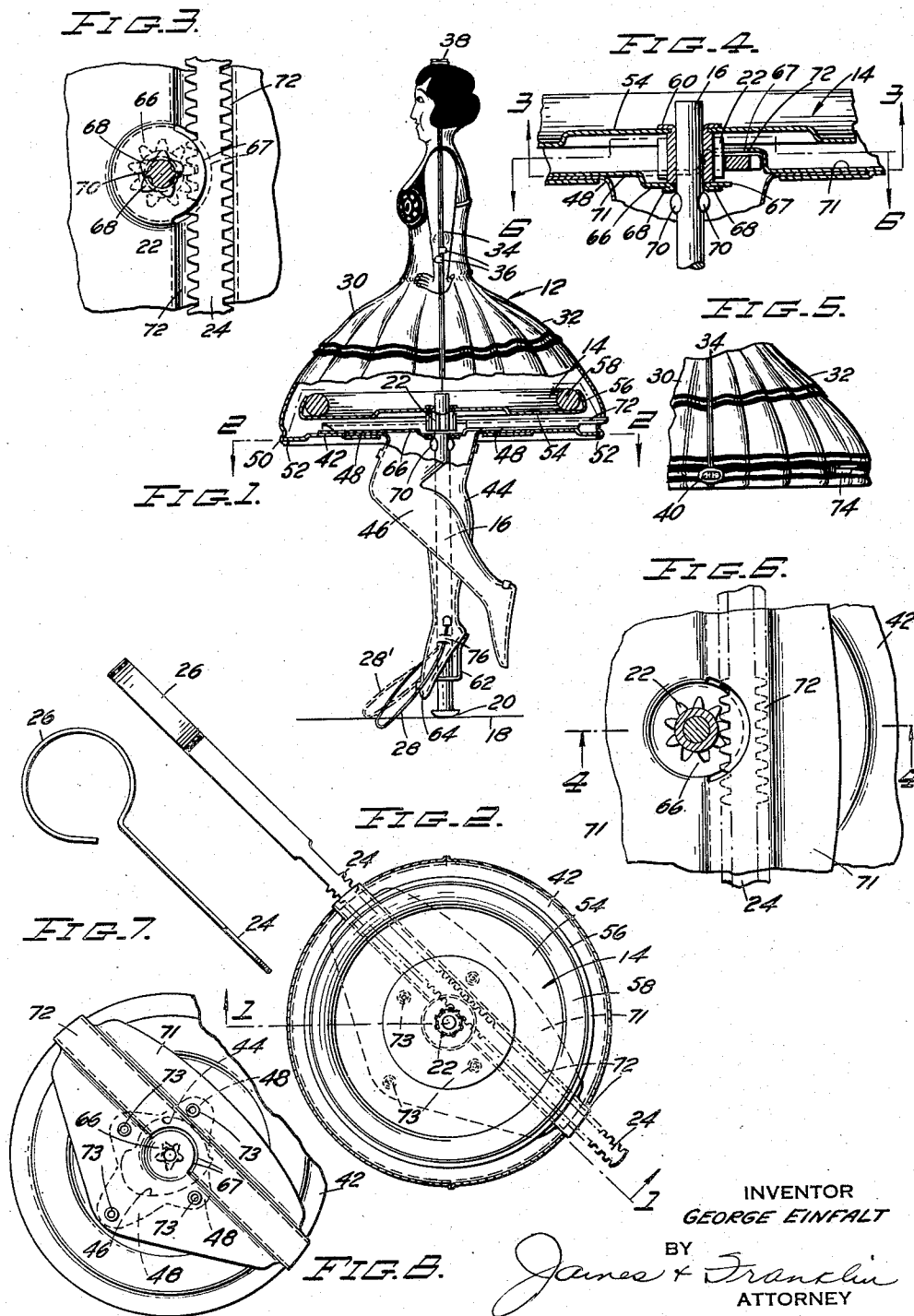
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TOY DANCING FIGURE

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TOY DANCING FIGURE

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This invention relates to toys, and more particularly to a toy dancing figure.

The primary object of my invention is to generally improve toys simulating a dancing figure. A more particular object is to provide a toy which will realistically simulate a ballet dancer. A further object is to provide means, preferably in the form of a gyroscopic flywheel for holding the figure erect while simulatedly dancing on one foot. Another object is to so arrange the figure that it will twirl or spin in simulation of a ballet dancer pivoting on one toe. With this object in view, the flywheel of the toy is mounted on a shaft which extends downwardly to the floor, the shaft preferably being concealed within one leg of the figure, but the lower end of the shaft being exposed and resting directly on the floor. Inasmuch as this shaft is spinning at high speed with the flywheel, it tends to cause the figure to spin at a rate more rapid than would otherwise be the case. In accordance with still another object of the invention, the rate of spin of the figure is controlled and is preferably reduced so that it will not approach the speed of the flywheel or become too fast for realism. In fulfillment of this object of the invention, I provide the figure with a brake in the form of a thin, inconspicuous loop of spring wire which bears against the floor and which holds the figure against too rapid a rotation. At the same time, this spring has some additional advantage in slightly multiplying any vertical vibration or hop which may be imparted to the figure by reason of irregularities in the floor or surface on which the toy is placed.

Other objects of the invention are to provide a simple and effective means for setting the flywheel into rapid spinning motion; to so design the figure of the dancer as to provide a housing for enclosing the flywheel without giving the figure an unnatural appearance; and to design the flywheel and the other parts of the toy for convenient, inexpensive manufacture so that the toy may be made under quantity production conditions and sold at a low price.

To the accomplishment of the foregoing and such other objects as will hereinafter appear, my invention consists in the toy elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by a drawing in which:

Fig. 1 is a partially sectioned side elevation of a figure toy embodying features of my inven-

tion, said section being in two different planes indicated by the line 1—1 of Fig. 2;

Fig. 2 is a section taken in plan in the plane of the line 2—2 of Fig. 1;

Fig. 3 is a bottom view to enlarged scale of a detail of the toy at the rack and pinion mechanism, this view being taken in the plane of the line 3—3 of Fig. 4;

Fig. 4 is a vertical section to enlarged scale taken through the pinion and rack mechanism in the plane of the line 4—4 of Fig. 6;

Fig. 5 is a fragmentary side elevation similar to the right-hand part of Fig. 1;

Fig. 6 is a plan view of the pinion and rack mechanism taken in the plane of the line 6—6 of Fig. 4;

Fig. 7 is an elevation showing the handle part of the rack for energizing the toy; and

Fig. 8 is a view generally similar to Fig. 2, but with the flywheel, pinion, and rack removed to show the relation of the sheet metal frame parts.

Referring to the drawing, the toy is here exemplified as a simulated ballet dancer 12 having a flywheel 14 freely rotatable therein. The flywheel is mounted on an upright shaft 16 which extends downwardly to the floor, table or other operating surface 18 on which the toy is placed. The lower end of the shaft projects from the figure and is thereby adapted to rest directly on the floor. The projecting end is preferably rounded, as indicated at 20, this causing travel of the toy on the floor as the shaft spins.

The flywheel is set into rapid rotation by any suitable propulsion means. In the present case the shaft 16 carries a pinion 22, and a toothed rack 24 is supplied with the toy, said rack being adapted to be inserted transversely through the figure adjacent the pinion in such position that it meshes with the pinion. After the rack has been inserted all the way into the toy, it is pulled out at high speed by means of the handle 26, thus setting the flywheel into high speed rotation.

It will be evident that when the toy is placed on the operating surface 18, the toy will be held in erect or nearly erect position because of the gyroscopic action of flywheel 14. It will also be evident that because of the direct contact between the lower end 20 of the shaft and surface 18, and because of the existence of at least some bearing friction between the flywheel shaft 16 and the body of the toy, the body 12 will tend to spin with the rotating shaft though, of course, at less speed. The toy thus simulates a spin or twirl by the dancer, and to heighten this effect,

one leg of the dancer is preferably pointed straight downwardly while the other is bent so that the figure simulatedly spins on the downwardly pointed toe.

As so far described, the speed of rotation of the figure may become too great for realism. I therefore provide additional braking means 28 to slow up the rotation of the figure. The brake 28 rests on the operating surface 18, as is indicated in the broken line position 28', and inasmuch as the brake is secured to the body of the toy, it has a restraining effect which prevents the figure from even remotely approaching the high speed rotation of the gyroscopic flywheel.

The construction of the toy is hereinafter described in greater detail. The body or figure of the toy generally designated 12 is made up of sheet metal parts. The head, torso and skirt are formed of two oppositely convexed pieces of sheet metal 30 and 32 which are joined in edge to edge relation at the line 34. These parts are held together by appropriate bent tongue connections indicated at 36, 38 and 40. The figure is enlarged to receive the flywheel 14, and it is convenient, therefore, to provide the dancer with a simulated skirt which flares outwardly during a spin or twirl, thus providing an enlarged circular chamber which is adequate in diameter to house and conceal the flywheel.

This chamber is closed at the bottom by a generally circular disc of sheet metal 42. The straight leg 44 and the bent leg 46 of the figure are formed of appropriately shaped pieces of sheet metal, and these have outwardly bent parts or flanges of substantial area at the top which are received within bottom plate 42, as is indicated at 48, thus securing the legs firmly to the figure.

In the present construction the operating parts of the toy are all mounted on and associated with the lower half of the figure. The upper part of the figure is secured to bottom plate 42 by means of a channel 50 formed near the lower edge of the skirt, the edge of the skirt being turned inwardly at 52 to form a flange which grips or clutches the peripheral edge of bottom plate 42. In the course of manufacture, the upper part of the toy is added to the lower part of the toy as a final step, and flange 52 is then clamped to closed condition, as by tongues 40.

The flywheel 14 may be manufactured inexpensively by building the same up of a sheet metal disc and a heavy circular ring. Specifically, I provide a sheet metal disc 54, the edge of which is turned upwardly to form a peripheral flange 56. A ring 58 of circular cross-section is placed within flange 56, and rests on disc 54. The edge of flange 56 is then turned inwardly as shown, thereby locking the ring 58 in position against disc 54. The flywheel is thus made up of two inexpensive parts and without necessitating die-casting or similar operations. It will be understood, however, that a flywheel of more conventional character may be employed where close manufacturing economy is not essential.

Flywheel disc 54 is mounted on shaft 16 through the aid of pinion 22. This is most clearly shown in Fig. 4, in which it will be seen that the upper end of pinion 22 is turned down to reduced diameter, following which flywheel disc 54 is pressed over the small end of the pinion, whereupon the material of the pinion is flanged outwardly and pressed down against the flywheel disc, as is indicated by the flange 60. The pinion

is itself secured to shaft 16 by means of a force or drive fit.

Shaft 16 passes downwardly through the straight leg 44 of the figure. The lower end of the shaft passes through a bearing hole formed in the bottom of the foot, and the parts are preferably so disposed that the toe 64 of the foot is close to the end 20 of the shaft. In order to provide a horizontal rather than an angular bearing for the lower end of the shaft, I preferably provide a small bent bearing plate 62 which acts as the bottom of the foot and which is inconspicuous, yet provides the desired horizontal bearing. The shaft is carried at its upper end in a special bearing 66 (Fig. 4) which is pressed downwardly from the main flat surface of a plate 71, which plate is best shown in Figs. 2, 4 and 8. As will later appear, this plate also functions as a guide for the rack, the plate being pressed upwardly to form a guide channel 72 for that purpose. The material is slit at 67 to permit the difference in elevation caused by the downward displacement of bearing 66 and the upward displacement of channel 72, this difference in elevation being best shown in Fig. 4. Bearing 66 is perforated at the center to receive the shaft, but the material of the plate is bent outwardly around the bearing hole, as is most clearly shown at 68 in Figs. 3 and 4. This provides a rounded bearing surface which does not cut or score the shaft. The shaft is swaged or excised outwardly at 70 below the bearing in order to limit upward movement of the shaft relative to the figure.

The operating rack 24 is formed of a strip of heavy gauge sheet metal. One end is bent to form a finger ring 26, while the shank or straight portion is cut to form a series of rack teeth. In the present case, these teeth are shown on both edges of the rack, but it will be understood that if desired, the teeth may be provided on only one edge of the rack. The only advantage in providing teeth on both edges is that the rack may be inserted into the figure with either edge toward the pinion. This is a detailed refinement however, and I have practiced the invention with equal success while using a rack having teeth on only one edge, for if the rack is inserted into the figure in the wrong position, it is stopped on reaching the pinion, thus notifying the operator that it should be removed and turned to present the other edge to the pinion.

The rack is guided across the top of the bottom plate 42 of the figure by means of the bent guide wall or track or channel 72 previously referred to. The channel is formed by upwardly bending a part of plate 71, said plate being secured to bottom ring 42 by means of a number of rivets or eyelets 73, as is best shown in Fig. 8. The walls 30 and 32 of the upper part of the figure are provided with openings near the edge of the skirt to receive the rack. These openings are inconspicuous in the finished toy, as will be seen on referring to the opening 74 in Fig. 5. Opening 74 and another similar opening which is nearly (although not exactly) diametrically opposed to opening 74, are so positioned as to align with the ends of the guide track 72 which receives and guides the operating rack 24. In fact, the ends of channel 72 are preferably dimensioned to project very slightly through the openings in the skirt wall, thus insuring the maintenance of proper registration between the upper and lower parts of the figure, or between the rack guide and the openings 74.

In respect to the plate 71, it may be mentioned that the outwardly turned flanges 48 from the sheet metal leg assembly are secured between bottom plate 42 of the doll body and the guide plate 71. Moreover, the rivets 73 previously referred to preferably pass through the outwardly turned parts 48 (see Fig. 8) and lock these parts securely between the plates on opposite sides thereof. The leg assembly is thus rigidly and immovably secured in proper relation to the other parts of the figure.

The brake 28 is in the present case formed of a piece of thin spring wire reversely bent to approximately circular or broad loop shape. The free ends of the spring wire are secured to the lower end of the figure, as by means of slits forming oppositely displaced straps, as is indicated at 76 (Fig. 1). One end of the spring loop is secured at one side of the foot, and the other at the other side. The normal position of the spring loop is shown in solid lines in Fig. 1, and it will be seen that the lower end of the loop projects downwardly well below the bottom end 20 of flywheel shaft 16. As a result of this construction, the spring loop 28 is bent upwardly somewhat as is indicated by the broken line position 28' when the figure is placed on a flat surface 18. The loop then bears against the surface with a slight frictional resistance and so produces the desired braking effect. However, because of the rounded and readily yieldable nature of the brake, it forms no appreciable obstruction to rotation of the figure even if the operating surface is not perfectly smooth. It may be mentioned that the spring wire is an exceedingly fine wire, and is therefore inconspicuous, its presence being practically unnoticeable during operation of the toy.

The brake 28 has a slight additional beneficial effect in that it helps increase or exaggerate any tendency toward vertical vibration or hopping of the dancing figure which may be caused as the lower end 20 of the shaft rotates and moves about on the operating surface 18.

It is believed that the construction and operation as well as the many advantages of my improved dancing figure toy, will be apparent from the foregoing detailed description thereof. It will also be apparent that while I have shown and described my invention in a preferred form, many changes and modifications may be made in the structure disclosed, without departing from the spirit of the invention defined in the following claims.

I claim:

1. A toy comprising a hollow body simulating a dancing figure, a flywheel rotatably mounted within said figure, an upright shaft extending from said flywheel downwardly to the floor, the lower end of said shaft being adapted to rest on the floor during operation of the toy, and a thin spring wire bent into loop formation, the ends of said spring wire being secured to the toy figure near the bottom thereof and the bent loop or free end of said spring being so positioned as to rest on the floor.

2. A toy comprising a hollow body simulating a dancing figure, a flywheel rotatably mounted within said figure, an upright shaft extending from said flywheel downwardly to the floor, means including a pinion on said shaft and a toothed rack insertible through said figure adjacent said shaft for setting the flywheel into rapid rotation, the lower end of said shaft being adapted to rest on the floor during operation of

the toy, and a thin spring wire bent into loop formation, the ends of said spring wire being secured to the toy figure near the bottom thereof and the bent loop or free end of said spring being so positioned as to rest on the floor in order to brake the figure against too rapid rotation.

3. A toy comprising a hollow sheet metal body simulating a ballet dancer having a short flared skirt the periphery of which is approximately circular, and having one leg depending straight downwardly from the center of the figure and the other leg bent, a gyroscope flywheel rotatably mounted on an upright shaft, said flywheel being disposed in the enlarged circular skirt of the figure and said shaft passing downwardly through the straight leg of the figure, the lower end of said shaft passing through the foot and resting directly on the floor, and a thin wire spring bent to loop shape and having its ends secured to the foot of the figure and the free end or bend of the loop resting on the floor during operation of the figure.

4. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said lower body portion including a closure shaped to close the bottom of the upper body portion, a leg simulation secured thereto, a shaft extending through the leg, spaced bearings in said lower body portion to support said shaft, and a flywheel mounted on the shaft above the aforesaid closure, said shaft terminating at said flywheel, said upper body portion being hollow to receive the flywheel.

5. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said lower body portion including a closure shaped to close the bottom of the upper body portion, a leg simulation secured thereto, a shaft extending through the leg, a pinion secured to said shaft above the closure, a flywheel mounted on said pinion, said flywheel comprising a disc of sheet metal with a solid heavy wire ring thereon, the edge of said disc being turned about said ring and the pinion being riveted to the center of the disc to hold the parts together.

6. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said lower body portion including a closure shaped to close the bottom of the upper body portion, a leg simulation secured thereto, a bearing and guide plate secured on top of said closure, the center portion being displaced downwardly and formed into an upper bearing, a shaft extending through the leg of the figure and received in said bearing, another bearing at the foot receiving the lower portion of said shaft, a pinion secured to said shaft above the upper bearing, and a flywheel mounted on the shaft above said pinion, the aforesaid bearing plate being channeled upwardly to form a rack guide alongside the pinion to receive a driving rack meshing with said pinion.

7. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said lower body portion including a closure shaped to close the bottom of the upper body portion, a leg simulation secured thereto, a bearing and guide plate secured on top of said closure, the center portion being displaced downwardly and formed into an upper bearing, a shaft extending through the leg of the figure and re-

ceived in said bearing, another bearing at the foot receiving the lower portion of said shaft, the lower end of the shaft projecting at the bottom to rest directly on the floor, brake means secured to said figure in such position as to bear against the floor, a pinion on said shaft above the upper bearing, and a flywheel mounted on the shaft above said pinion, the aforesaid bearing plate being channeled upwardly to form a rack guide alongside the pinion to receive a driving rack meshing with said pinion.

8. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said upper body portion including oppositely convexed pieces of sheet metal secured in edge to edge relation to form a simulated head and torso with outwardly flared skirt, said lower body portion including a disc of sheet metal shaped to close the bottom of the upper body portion, a leg simulation secured thereto, a shaft extending through the leg, the lower end of the shaft being enlarged and rounded, brake means in the form of a light spring wire secured to said figure in such position as to bear against a surface on which the toy is rested, and a flywheel mounted on the shaft above the aforesaid disc.

9. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said upper body portion including oppositely convexed pieces of sheet metal secured in edge to edge relation to form a simulated head and torso with outwardly flared skirt, said lower body portion including a disc of sheet metal shaped to close the bottom of the upper body portion, leg simulations secured thereto, one of said legs being straight and the other being bent, a bearing and guide plate secured on top of said disc, the center portion being displaced downwardly and formed into a bearing, a shaft extending through the leg of the figure and received in said bearing, another bearing at the foot receiving the lower portion of said shaft, the lower end of the shaft projecting to rest directly on the floor, brake means secured to said figure in such position as to bear against the floor, a pinion on said shaft above the upper bearing, and a flywheel mounted on the shaft above said

pinion, the aforesaid bearing plate being channeled upwardly to form a rack guide alongside the pinion to receive a driving rack meshing with said pinion.

10. A dancing figure toy comprising an upper body portion, a lower body portion, and gyroscopic flywheel means mounted on said lower body portion, said upper body portion including oppositely convexed pieces of sheet metal secured in edge to edge relation to form a simulated head and torso with outwardly flared skirt, said lower body portion including a disc of sheet metal shaped to close the bottom of the upper body portion, a leg simulation secured thereto, a bearing and guide plate secured on top of said disc, a shaft extending through the leg and received in said bearing plate, a pinion secured to said shaft at said bearing, and a flywheel mounted on the shaft above said pinion, the aforesaid bearing plate being channeled upwardly to form a rack guide alongside the pinion to receive a driving rack meshing with said pinion, the ends of said rack guide extending slightly beyond the aforesaid disc and projecting through mating slots in the upper portion of the figure and thereby insuring registration of the slots with the rack guide.

11. A dancing figure toy comprising a body portion having a leg, gyroscopic flywheel means mounted in said body portion, a shaft extending through the leg, the lower end of the shaft being enlarged and rounded to rest directly on the floor, and brake means in the form of a light spring wire secured to said leg in such position as to bear against the floor.

12. A toy comprising a hollow body simulating a dancing figure, a flywheel rotatably mounted within said figure, an upright shaft extending from said fly wheel downwardly to the floor, means including a pinion on said shaft and a toothed rack insertible through said figure adjacent said shaft for setting the flywheel into rapid rotation, the lower end of said shaft being adapted to rest on the floor during operation of the toy, and a light spring wire secured to said toy figure near the bottom thereof in such a position as to rest on the floor in order to brake the figure against too rapid rotation.

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