June 17, 1969

P. BALLEIS

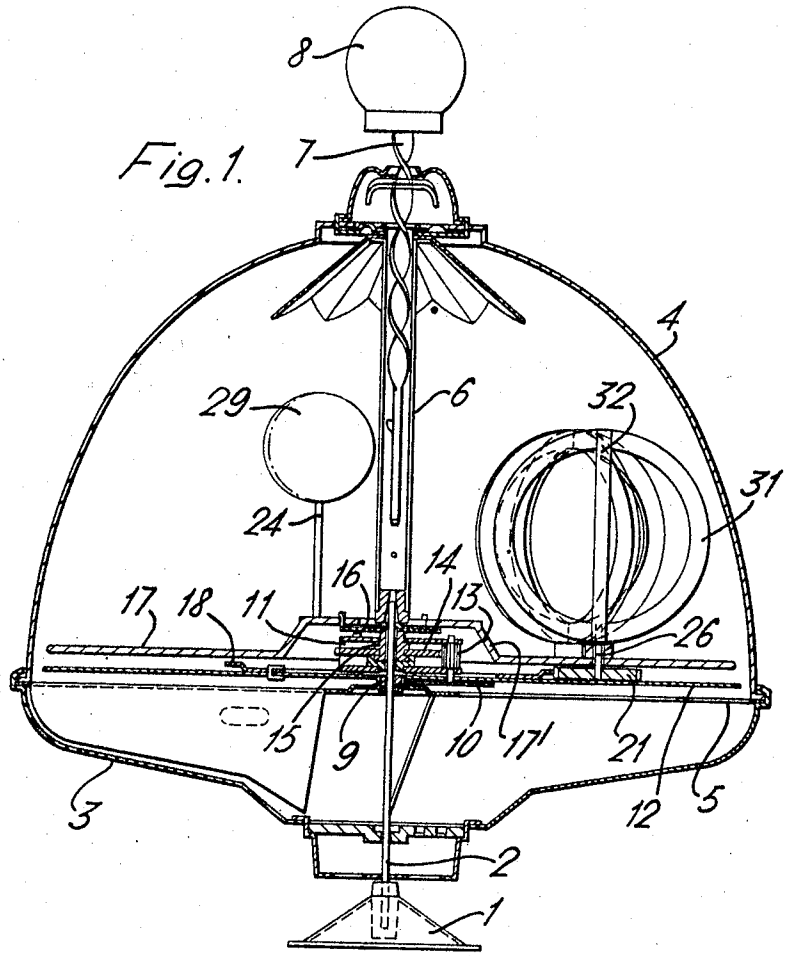
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TOY SPINNING TOP

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Fig. 1.



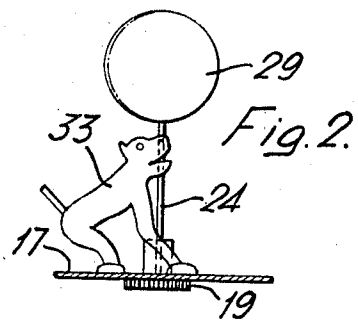
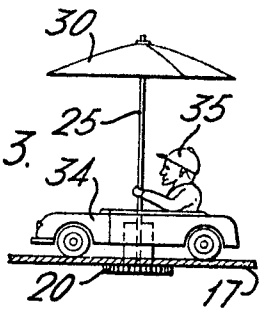


Fig. 2.

Fig. 3.



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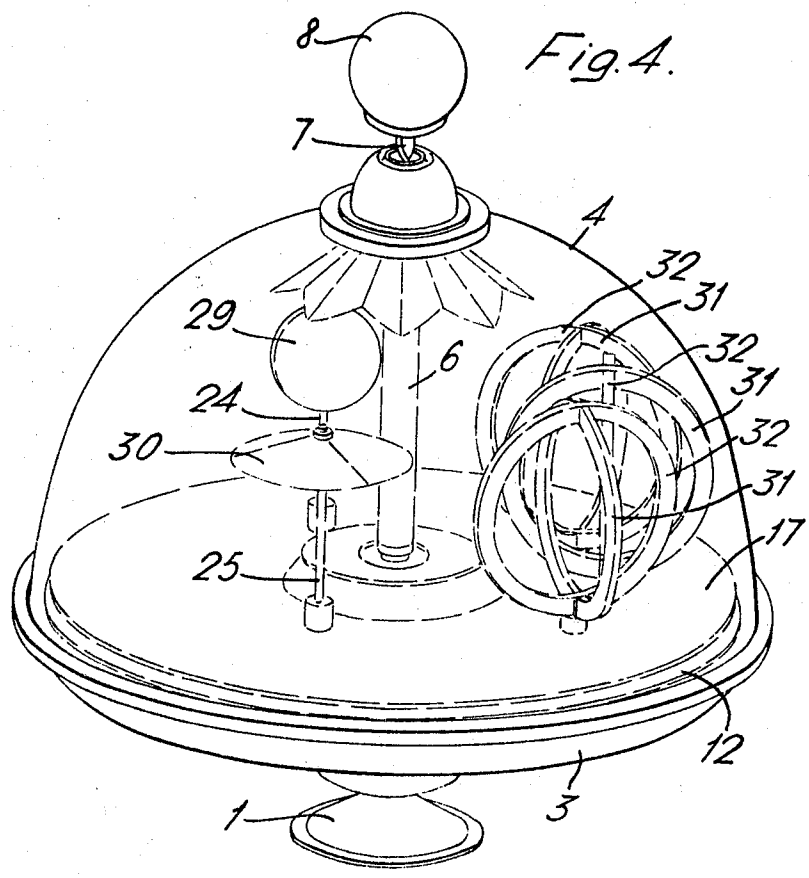
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Fig. 4.



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Fig. 5.

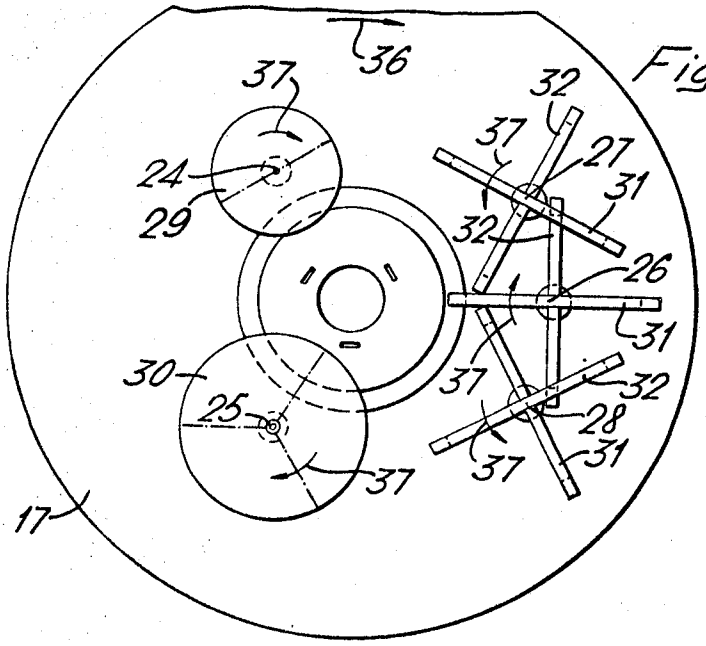
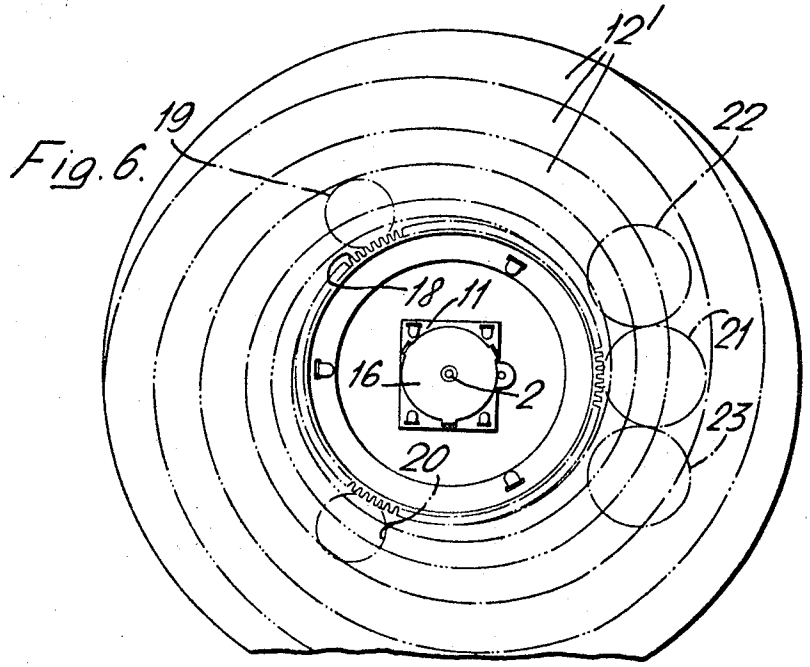


Fig. 6.



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Fig. 7.

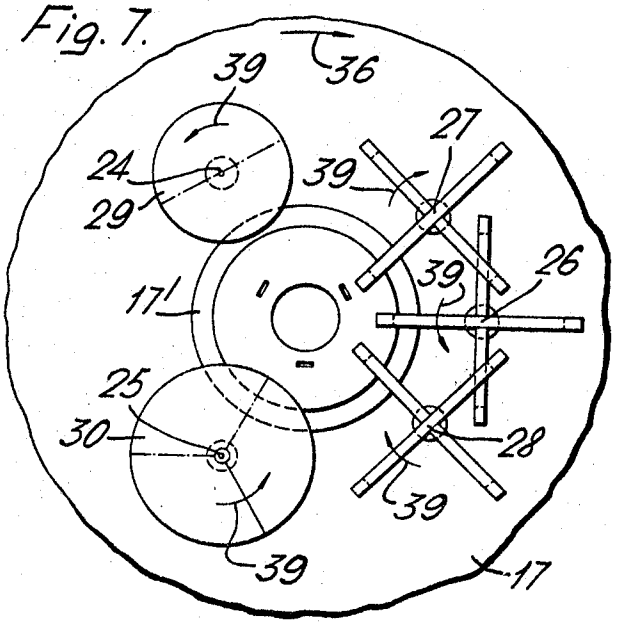
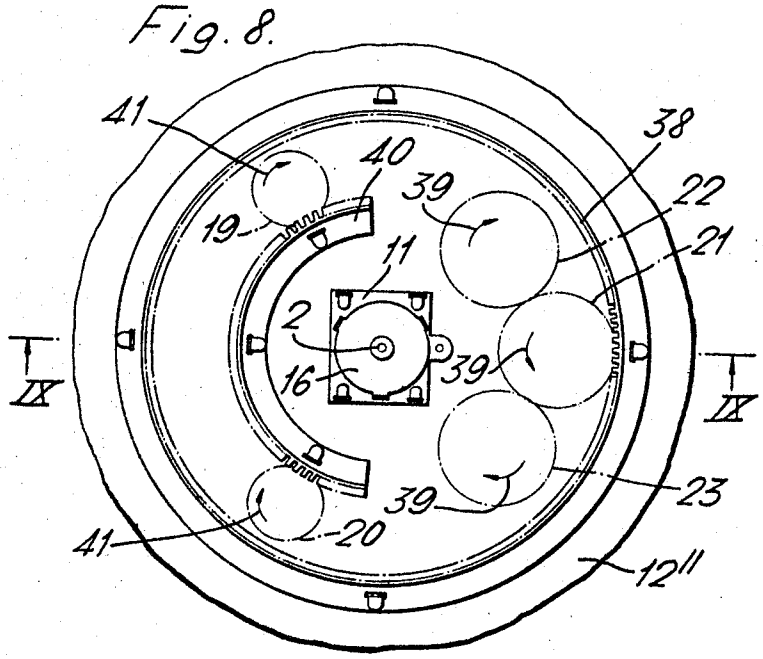


Fig. 8.



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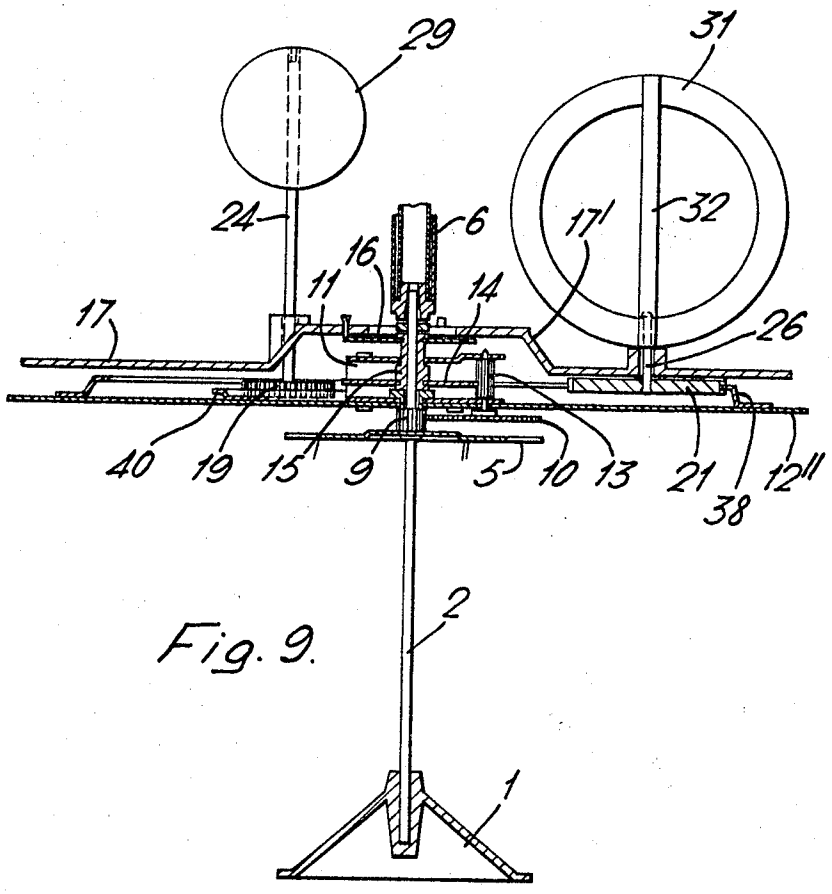


Fig. 9.

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TOY SPINNING TOP

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Int. Cl. A63h 1/00, 1/10, 1/26
U.S. Cl. 46—65
9 Claims

ABSTRACT OF THE DISCLOSURE

A toy spinning top having a hollow, at least partly transparent spinning body, a reduction gear within and driven by said body, and a plurality of figures within said body and connected to and driven individually by the reduction gear relative to each other and to said body.

The present invention relates to improvements in a toy spinning top which comprises a spinning body which has an upper transparent hood-shaped part and is rotatable about a fixed axle pin which is secured to and projects upwardly from a base, a reduction gear which is driven by the spinning body and is enclosed within a housing which is rigidly connected to the axle pin and to a stationary lower disk, and another disk supporting one or more toy figures which is located above the stationary disk and driven by the reduction gear so as to rotate concentrically to the axle pin. In my previous German Patent No. 1,180,291, I have disclosed a spinning top of the type as above described in which the rotary figure-supporting disk consists of a transparent plastic and the figures consist of small boats which are secured to the upper side of this disk. Since the stationary disk underneath the rotary transparent disk carries an imprint simulating a lake or the like, a child playing with the spinning top will get the impression that the boats float on the water and are moving thereon automatically.

It is an object of the present invention to improve the spinning top as above described in such a manner that the figures on the supporting disk will carry out movements relative to each other and to this disk so that a child playing with the spinning top will get a more fascinating impression and will play with the toy with greater interest and enjoyment.

For attaining this object the invention provides that a gear ring or the like is secured to the stationary lower disk concentrically to the axle pin on which the spinning body is rotatable, and that this gear ring is in mesh with gear wheels or the like which are rotatably mounted on the upper supporting disk and connected to the figures so as to move the same relative to this disk. In place of the gear ring and gear wheels, it is also possible to provide friction wheels.

When the body of the spinning top is rotated, the gear wheels or the like which are rotatably mounted on the supporting disk will roll along the stationary gear ring or the like on the stationary lower disk and will thus be rotated together with the associated figures. The gear ring may be provided either with internal or external teeth. In order to permit as many figures as possible to be moved

relative to each other it is possible to secure a second gear ring or the like to the stationary lower disk in a position so as likewise to extend concentrically to the axle pin. One of the gear rings may then be provided with external teeth and the other with internal teeth so that the individual figures will turn in different directions. It is also possible to design one or both gear rings so that their teeth will only extend along a sector of, for example, 180°. When the gear wheels which engage with these gear rings then reach the toothless area of the latter, they and their associated figures will stop until the rotatable supporting disk carrying the gear wheel is turned sufficiently so as to reengage the gear wheels with the respective stationary gear sector.

One of the figures may be provided, for example, in the form of a multicolored sun shade or umbrella which is secured to the axle of a gear wheel above a toy automobile on the rotatable supporting disk. The figure on the axle of another gear wheel may consist, for example, of a multicolored ball above the figure of an animal so as to give the impression that the animal juggles with the revolving ball. The axle of a further gear wheel may carry a figure consisting of two circular, preferably multicolored, rings of the same diameter which intersect at right angles to each other and the common diameter of which extends in the direction of the axle of the gear wheel. At both sides of this gear wheel another gear wheel of the same size may be rotatably mounted in the supporting disk, and each of these gear wheels may be likewise provided with a similar multicolored circular double ring and be in mesh with the central gear wheel. The central gear wheel which engages with the gear ring will then rotate the two other gear wheels and thus also the circular double rings which are secured thereto. The movements of these three double rings will fascinate the child which is playing with the spinning top because the individual rings of each double ring while turning will then alternately engage into the space between the two rings of each adjacent double ring without interfering with the movements of the latter.

These and other features of the present invention will become more clearly apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which—

FIGURE 1 shows an axial section of a spinning top according to the invention;

FIGURES 2 and 3 show side views of two of the figures of the spinning top according to FIGURE 1;

FIGURE 4 shows a perspective view of the spinning top according to FIGURE 1;

FIGURE 5 shows a top view of the figure-supporting disk of the spinning top according to FIGURE 1 from which the hood and its driving means have been removed;

FIGURE 6 shows a top view of the stationary lower disk of the spinning top according to FIGURE 1;

FIGURE 7 shows a top view of a figure-supporting disk similar to that as shown in FIGURE 5, but provided with internal teeth on the gear ring;

FIGURE 8 shows a top view of a stationary lower disk similar to that as shown in FIGURE 6, but in which one gear ring is provided with internal teeth, while the

other gear ring only forms a sector of approximately 180° with external teeth; while

FIGURE 9 shows a cross section which is taken along the line IX—IX of FIGURE 8.

As illustrated in the drawings, the spinning top according to the invention is provided with a base **1** which may consist of rubber or an elastic plastic and in which an axle pin **2** is secured on which the body of the spinning top is rotatable which consists of an opaque cup-shaped **1** lower part **3** and a transparent hood **4** of plastic. The lower part **3** and the hood **4** are separated by a cover plate **5** which is rigidly secured to these parts. Hood **4** carries a central tube **6** in which a drill spindle **7** is mounted which is provided with a knob **8** on its upper end. When this knob **8** together with the drill spindle **7** is moved up and down, the entire body **3, 4, 5** of the spinning top will be rotated in the usual manner in the clockwise direction, as seen from above in FIGURE 1.

Cover plate **5** carries a pinion **9** which is rigidly secured to its center and engages with a gear wheel **10** which is rotatably mounted in a housing **11** of a reduction gear. This housing **11** is rigidly secured to a circular lower disk **12** which, in turn, is rigidly connected to axle pin **2**. The shaft of gear wheel **10** carries a pinion **13** which engages with a gear wheel **14** which is rigidly secured to a tubular shaft **15**. As shown in FIGURE 1, this shaft **15** is provided on its upper end projecting from the housing **11** with a driving disk **16** which is rigidly secured to shaft **15** and rigidly connected to a circular figure supporting disk **17**.

As illustrated in FIGURE 1, the upper side of the lower disk **12** carries rigidly thereon a gear ring **18** which is stamped of sheet metal and the external teeth of which engage with gear wheels **19** to **23** which are located between the two disks **12** and **17** and secured to shafts **24** to **28** which are rotatably mounted in the supporting disk **17**. The upper end of shaft **24** carries a ball **29**, the two halves of which may be made of different colors, for example, red and yellow. The upper end of shaft **25** carries an umbrella which may be divided into three sectors of 120° of different colors, for example, red, blue, and white.

The shaft **26** of gear wheel **21** carries a double ring which is composed of two circular rings **31** and **32** which are disposed at right angles to each other and intersect at their upper and lower ends. Shafts **27** and **28** likewise carry similar double rings **31, 32**. The individual rings **31** and **32** may be made of different colors.

As shown in FIGURE 2, the supporting disk **17** has secured to its upper side underneath the ball **29** the figure **33** of an animal, for example, a dog, and underneath the umbrella **30** a small automobile **34** with a driver **35**.

When the spinning top as illustrated in FIGURES 1 to 5 is rotated by the drill spindle **7** by upward and downward movements of knob **8**, pinion **9** which is rigidly secured to cover plate **5** will turn the supporting disk **17** in the direction of the arrow **36** in FIGURE 5 by means of the gear wheels **10, 13,** and **14**, the tubular shaft **15** and the driving disk **16**. Gear wheels **19** to **23** are then taken along by the supporting disk **17** and thus roll along the gear ring **18**. Ball **29**, umbrella **30**, and the three double rings **31, 32** then rotate in the direction of the arrows **37**. These three double rings **31, 32** are disposed in relation to each other so as not to interfere with each other during their rotation in the direction of the arrows **37**.

If the supporting disk **17** is transparent, the lower disk **12** may be provided with an imprint, for example, of spirally-shaped stripes **12'** of different colors, as indicated in FIGURE 6. The area of the supporting disk **17** above the gear ring **18** and gear wheels **19** to **23** may in this case be made opaque so as to render these parts invisible. If, on the other hand, the entire supporting disk **17** is opaque, it may be provided with a suitable imprint. An inverted cup-shaped part **17'** which may be integral with the supporting disk **17** and is connected to the driving disk **16** covers the housing **11** of the reduction gear.

As illustrated in FIGURES 8 and 9, a gear ring **38** is secured to the lower stationary disk **12''** and provided with internal teeth which engage with the gear wheels **19** to **23** so that, when the spinning top is rotated in the direction of the arrow **36**, as shown in FIGURE 7, gear wheels **19** to **23** on their respective shafts **24** to **28** will rotate in the direction of the arrows **39**.

FIGURES 8 and 9 further illustrate that a gear-ring sector **40** forming approximately one-half of a ring is secured to the lower stationary disk **12''**. The external teeth of this gear sector engage with the gear wheels **19** and **20** so that, when the supporting disk **17** is turned in the clockwise direction, as seen in FIGURE 8, gear wheels **19** and **20** will be turned in the direction of the arrows **41** until they disengage from gear ring **40**. Gear wheels **19** and **20** together with the ball **29** and the umbrella **30** will then stop until the supporting disk **17** has turned far enough so as to reengage gear wheels **19** and **20** with the gear sector **40**.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. In a toy spinning top comprising a hollow body rotatable on a pin secured to and projecting upwardly from a fixed base and having an upper part forming a transparent hood, a reduction gear driven by the rotatable body and having a housing rigidly connected to said pin and to a stationary lower disk, and a figure-supporting disk above said stationary disk rotatable concentrically to said pin and driven by said reduction gear and carrying figures, wherein the improvement comprises at least one gear ring, secured to said stationary disk and being concentrical to said pin, and a plurality of gear wheels adapted to engage with said gear rings and rotatably mounted on said suporting disk and connected to said figures for moving the same relative to each other and to said supporting disk whereby on rotation of said hollow body said figures are moved.

2. A spinning top as defined in claim **1**, further comprising a second gear ring having a diameter different from that of said first gear rim and also secured to said stationary lower disk and being concentrical to said pin and adapted to engage with at least one of said gear wheels.

3. A spinning top as defined in claim **2**, wherein one of said gear rings has internal teeth and the other gear ring has external teeth.

4. A spinning top as defined in claim **3**, wherein at least one of said gear rings is provided with teeth only within a sector of a circle.

5. A spinning top as defined in claim **3**, wherein at least one of said gear rings only forms a gear sector of substantially 180°.

6. A spinning top as defined in claim **1**, wherein at least one of said figures comprises a toy automobile on said supporting disk and a colored umbrella-like cover above said automobile and secured to the shaft of one of said gear wheels.

7. A spinning top as defined in claim **1**, wherein at least one of said figures comprises an animal figure on said supporting disk and a colored ball above said animal figure and secured to the shaft of one of said gear wheels.

8. A spinning top as defined in claim **1**, wherein at

least one of said figures comprises a double ring composed of two colored rings of substantially the same diameter disposed at substantially right angles to each other and connected to and intersecting each other and secured to the shaft of one of said gear wheels in a position in which the common diametrical line of both rings extends coaxially to said shaft.

9. A spinning top as defined in claim **8**, wherein three of said gear wheels of the same size are disposed adjacent to each other, the two outer gear wheels engaging with the central gear wheel, and said central gear wheel engaging with said gear ring, and one of said double rings being secured to the shaft of each of said three gear wheels.

References Cited

UNITED STATES PATENTS

2,018,537	10/1935	Savage	46—68
2,997,808	8/1961	Balleis	46—68

FOREIGN PATENTS

1,047,915	10/1966	Great Britain.

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U.S. Cl. X.R.

46—66, 68