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Patented Dec. 21, 1909.
2 SHEETS—SHEET 1.

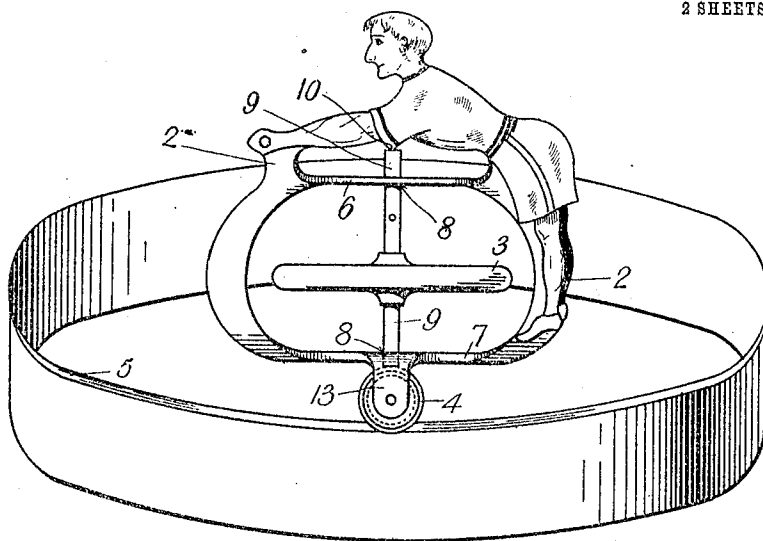


Fig. 1.

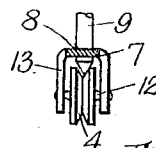


Fig. 1a.

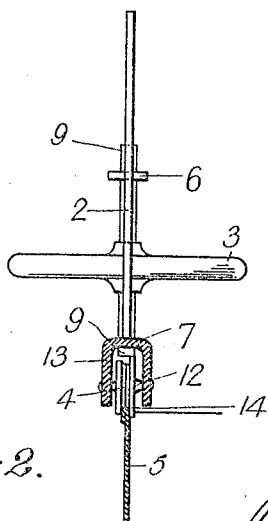


Fig. 2.

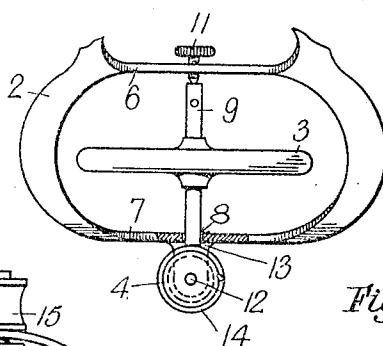


Fig. 3.

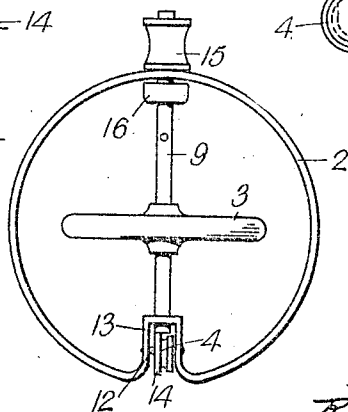


Fig. 4.

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TOY.

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2 SHEETS—SHEET 2.

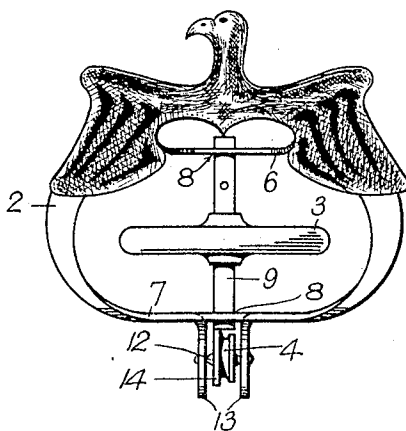


Fig: 5.

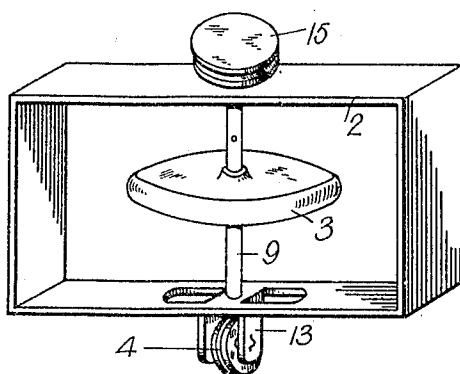


Fig: 6.

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UNITED STATES PATENT OFFICE.

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944,096.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed June 18, 1909. Serial No. 502,905.

To all whom it may concern:

Be it known that I, REGINALD KIRKBY, a subject of the King of Great Britain, citizen of Leicester, England, residing at Leicester, in the county of Leicester, England, have invented new and useful Improvements Relating to Toys, of which the following is a specification.

This invention relates to toys and has particular reference to spinning tops and apparatus employed therewith.

The invention is concerned with tops of the gyroscopic type usually comprising in their construction a ring or frame provided with screw centers between which a rotatable wheel mounted on a spindle is carried.

The dynamics of a gyroscope or top of the kind above described are well known, and the object of the present invention is to construct a gyroscopic top in an improved manner so that, in addition to the properties already possessed by such a top, it may, when placed in certain positions, be adapted to travel or move along.

The invention is carried into effect by the provision of means which, under the actuation of the rotating wheel of the gyroscope or top will cause the latter to travel or move along bodily when it is rested or stood on said means. These means may consist of a small pulley, wheel, roller or similar rotating member suitably carried in the ring or frame of the top and in contact or gear with which is arranged one end of the spindle of the wheel so that rotation may be imparted from said spindle to the rotating member. A convenient construction and arrangement may consist of a ring or frame furnished at one side with a center screw to support one end of the spindle of the gyroscopic wheel. The opposite side of the ring or frame is furnished with a grooved wheel or pulley mounted on a short spindle carried between centers or in suitable bearings in the ring or frame. The spindle of the grooved wheel is arranged transversely to that of the gyroscopic wheel, and the spindle of the latter passes through a hole or bearing in the ring and its end rests upon the grooved wheel. The ring or frame of the top may be of a shape other than that of the usual annular ring such for example as that of the figure of a man, bird, box kite, globe, carriage or car, or adapted to carry such a figure or figures.

In the accompanying drawings, Figure 1 is a side view of the preferred form of the invention mounted on a track. Fig. 1^a is a detail hereinafter referred to. Fig. 2 is an end view of the same. Fig. 3 is a detail view showing the upper end of the main spindle steadied by an adjustable center screw. Figs. 4, 5 and 6, illustrate slightly modified constructions.

Throughout the drawings like parts are designated by similar reference characters.

Referring to the drawings, 2 represents the ring or frame of the top, 3 the rotatable wheel and 4 a small pulley or roller whereby the top as a whole is enabled to travel along a track or string 5 as hereinafter described. As already stated, the said ring or frame 2 may be made of any suitable shape or configuration and in the example shown is formed in combination with or has attached to it, the figure of a man. Such a frame may be conveniently stamped out of a sheet metal blank with upper and lower transverse members 6, 7 each of which is drilled with a hole 8 at or about the center, the two holes being in vertical alinement with each other so that when the said members are bent into a plane at right angles to that of the main frame the holes 8 therein constitute guides or bearings for the spindle 9 of the rotatable wheel 3. Instead of the upper end of said spindle passing through the member 6 and being steadied by the corner 10 of the sleeve on the figure, as shown, the said member 6 may carry an adjustable center screw 11 to engage the upper end of the spindle, see Fig. 3. The rotatable wheel 3 which gives the gyroscopic action when revolving, may be made of lead and cast onto the spindle 9 or the wheel and spindle may be cast integral. The position of the wheel on the spindle may be varied to suit special cases arising out of the particular shape and arrangement of the frame. In some cases it may be found desirable to completely incase the wheel. Any suitable means may be employed for rotating the wheel, such as by a string in the well known manner or by a spring winder, electric or clockwork motor. To enable the top to travel, which is the essence of the present invention, the lower end of the gyroscopic wheel spindle 9 is arranged to make driving contact with the small wheel or roller 4. Said wheel 4 is mounted to rotate in a plane at right angles

to that of the gyroscopic wheel on conical trunnions 12 between lugs 13 which may conveniently be stamped out in one piece with the frame and subsequently bent down at right angles thereto as shown. In order to give stability to the top, the traveling wheel 4 is preferably arranged vertically beneath the gyroscopic wheel spindle 9 with its axis in the plane of the frame. The said wheel 4 may be grooved, as shown in Fig. 1^a, and the lower extremity of the gyroscopic wheel spindle may be correspondingly beveled, tapered or coned to suit the groove or, as shown in the remaining figures, the spindle end may be made flat in which case one edge 14 of the wheel 4 is preferably of slightly larger diameter than the other edge so that the spindle makes contact with one edge of the wheel only. Where the end of the spindle is beveled or tapered, as shown in Fig. 1^a, it would of course bear against or rest on one side only of the groove in the wheel and, if desirable, this side and the beveled spindle end may be serrated, cogged, or otherwise roughened to impart a better drive. The grooved wheel 4 takes the end thrust of the main spindle at one end and a center screw, or as shown, the corner 10, of the sleeve takes it at the opposite end, the grooved wheel forming a roller bearing for the lower end of the main spindle.

It will now be understood that when the main spindle is rotated the frictional engagement or contact of its lower end with the wheel 4 will rotate the latter and cause the top to travel when placed on a table or similar surface or when by means of its groove the wheel 4 is mounted on a stretched cord or wire or on a track or rim 5. The said track may consist of an upstanding rim of metal or other suitable material with or without a base or foundation attached to or formed thereon, said track being of straight, curved, circular, spiral or other desired formation so that the top will travel along or climb and follow the path of said track. The stand or foundation of said track may also be furnished with a pillar, post or suitable erection on the upper end of which there may be a cup or hollowed cap so that the screw center or other part of the top may be rested therein to support the top on said stand.

It will be understood that instead of the grooved wheel hereinbefore mentioned for imparting the traveling movement to the top a differently shaped wheel or pulley may be employed if found desirable. Further, intermediate wheels may be introduced between the driving end of the spindle and the traveling wheel.

The lugs or ears 13 carrying the wheel 4 may if desired be extended below the latter to protect same in case of a fall.

Where the frame is formed in the shape of or adapted to carry a carriage or car additional wheels or runners may be fitted.

A plain ring may be substituted for the fancy shaped frame if desired as shown in Fig. 4, such ring or hoop forming a convenient frame or foundation for a globe or other circular or spherical body in which the top may be incased, or on the other hand other fancy shaped frames may be employed such as that of a bird, Fig. 5, or a box kite or aeroplane, as shown in Fig. 6, and in any or all of the different forms the top may take, the spindle of the gyroscopic wheel may be furnished with an outside drum or pulley 15 for winding purposes. In constructions such as those shown in Figs. 4 and 6 collars 16 may be furnished on the spindle 9 to prevent its lateral displacement from the frame.

What I claim then is:—

1. The combination in a top, of a rotating member with a propelling member actuated by said rotating member for causing the top to travel or move along bodily.

2. In a gyroscopic top, the combination with the rotating member thereof, of a second rotary member actuated by the other rotating member to cause the top to travel or move along bodily.

3. In a gyroscopic top, the combination with the rotating gyroscope wheel, of a wheel rotatably carried in the frame and driven by the spindle of the gyroscope wheel to cause the top to travel or move along bodily.

4. In a gyroscopic top, the combination with the rotating gyroscope wheel, of a wheel rotatably carried in the frame and arranged so that the lower end of the gyroscopic wheel spindle rests on and makes frictional contact with the periphery of said wheel to rotate the latter and cause the top to travel or move along bodily.

5. In a gyroscopic top, a rotatable wheel actuated by the rotating gyroscopic member of the top to cause the latter to travel bodily, and a frame or ring of fancy or other shape or configuration to carry said rotatable wheel and the driven member of the top, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

REGINALD KIRKBY.

Witnesses:

ERNEST GEORGE MATTHEWSON,
CHARLES ARTHUR BURKETT.