June 28, 1932. W. W. McCALL 1,864,843

SPINNING TOP

Filed Aug. 20, 1930

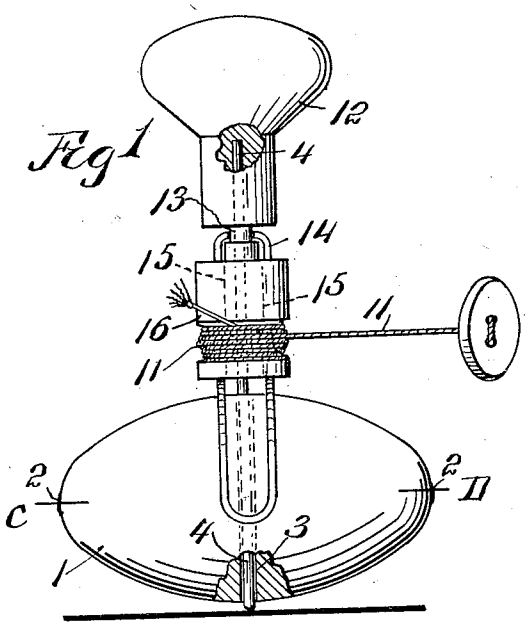


Fig 1

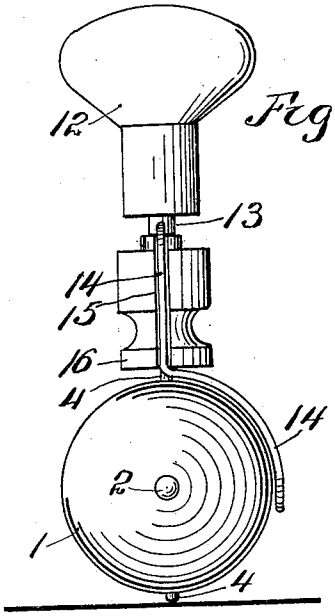


Fig 2

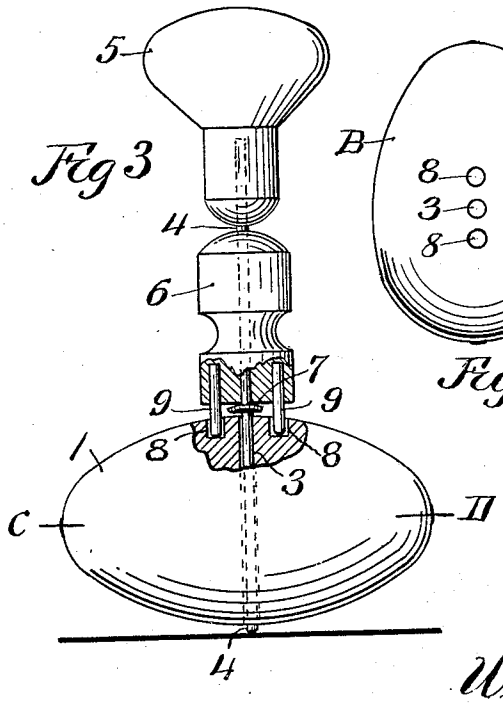


Fig 3

Fig 5

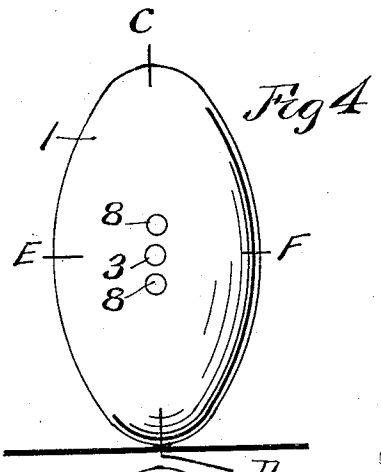


Fig 4

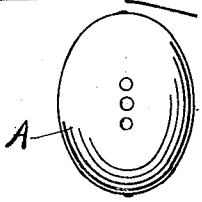


Fig 6

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Patented June 28, 1932

1,864,843

UNITED STATES PATENT OFFICE

WILLIAM W. McCALL, OF KANSAS CITY, MISSOURI

SPINNING TOP

Application filed August 20, 1930. Serial No. 476,513.

My invention relates to improvements in spinning tops.

One of the objects of my invention is to provide a novel spinning top, which when spun and released will automatically change its position to one at right angles to the initial spinning position, and will remain spinning in the changed position until the spinning force has exhausted itself.

My invention provides further a top which is longer than wide, has rounded ends and is convex between its ends, and which when rotated with sufficient speed around its minor axis will automatically assume, while spinning, a position in which its major axis is vertical.

My invention provides further novel means for spinning my improved top around its minor axis, and then releasing it.

My invention provides further an ellipsoidal top, such as one having a prolate spheroid body, or an ovate one.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawing, which illustrates the preferred forms of my invention,

Fig. 1 is a side elevation, partly broken away, of one form of my improved top and a spinning device of one form engaged therewith.

Fig. 2 is an end elevation of the same.

Fig. 3 is a side elevation of another form of my improved top and spinning mechanism engaged therewith.

Fig. 4 is an elevation of my improved top shown in the position in which its major axis has changed, while the top is spinning from a horizontal to a vertical position.

Fig. 5 is a side elevation of an ovate form of top embodying my invention.

Fig. 6 is a reduced side elevation of another ellipsoidal form of my improved top.

Similar characters of reference designate similar parts in the different views.

1 designates the top comprising a body, solid or hollow, which is longer than it is wide and has rounded spinning ends, the body between the rounded ends being convex, Figs. 1 to 4.

The top 1 is of ellipsoidal shape, which term as herein used is not intended to be limited to the prolate spheroids 1 shown in Figs. 1 to 4, but includes variations therefrom, such as the prolate spheroid A, Fig. 6, the ovate body B, Fig. 5, and other forms having greater length than width with rounded spinning ends and convex between the rounded ends.

C—D designates the major axis and E—F the minor axis of the three forms shown in Figs. 1 to 4, Fig. 5 and Fig. 6.

A top of the forms described, when rapidly revolved around its minor axis E—F and released, will change its position from that shown in Figs. 1 to 3, in which the major axis C—D is horizontal to a position at right angles thereto in which the major axis C—D will be vertical, as shown in Figs. 4, 5 and 6. It will then continue to spin in this position for a relatively long period of time, the limit of which depends upon the initial impetus given to it.

Two metal tacks 2 having rounded heads may be mounted in the body at the ends thereof and alined with the major axis C—D to serve as a support for the spinning top, when the body is of wood or similar material. If the body is of metal, the tacks or other substitute therefor may be eliminated.

Either of the tops shown in Figs. 4, 5 and 6 may be spun by twirling the same rapidly around its minor axis E—F with the fingers alone, which, with a little practice, can impart sufficient initial impetus to the top to cause it to rise to the vertical, as soon as released.

In order that the top may be spun by mechanical spinning means it is provided in alinement with its minor axis with a hole 3 which, preferably, extends entirely through the body, and which is adapted to receive a spindle comprising a straight rod 4 having fastened to its upper end, as shown in Fig. 3, a knob 5 which serves as a handhold, said knob and spindle 4 furnishing a support for the top from which it is released after the initial spinning around the spindle 4 is imparted to it. The spindle 4 is of such a length as to have its lower end extend a short distance outside the top. This enables the

spindle being held firmly against the floor, or other smooth surface upon which it is desired to spin the top, without pressure being applied to the top.

For revolving the top on the spindle 4, a spool 6 is rotatably mounted on the spindle 4 just below the knob 5, Fig. 3.

A stop washer is fastened rigidly on the spindle 4 just below the spool 6, said washer being designated by 7, Fig. 3.

The body 1 of the top is provided at one side, at opposite sides respectively of the hole 3 with means for engagement with the spool 6, such means in the form shown in Figs. 3 to 6 comprising two recesses 8, which are adapted to respectively receive the lower ends of two projecting pins 9, the upper ends of which are respectively mounted in two vertical holes in the lower end of the spool 6 at opposite sides respectively of the axis thereof.

To operate the spinning mechanism shown in Fig. 3, an ordinary top string 11, such as is shown in Fig. 1, is wound in the usual manner around the spool 6. The top 1 being mounted on the spindle 4, with the end of the latter supported on the floor, or other level or concave surface, the string is pulled so as to unwind from and twirl rapidly the spool 6, the knob 5 being firmly held with the other hand. The pins 9 in revolving with the spool 6 will rapidly revolve the top on the spindle 4, following which the spindle and pins are released from the top by lifting the knob 5.

By providing the spindle 4, and by having the top, shown in Figs. 1, 2, 3 and 4, of like weight at opposite sides of the minor axis, when the top is spun on the spindle and then released, the top will first revolve around its minor axis in a space of small diameter, due to its being balanced and to the spindle holding it from flying laterally in case that one of the pins 9 releases before the other one. Without such balance and the restraining influence of the spindle, the top, when released from the pins 9, would be liable to fly off tangentially to a considerable distance, to the detriment of its spinning qualities, and probably off from a table or like surface.

After the top has revolved for a time with its major axis C—D horizontal it will assume a position, shown in Fig. 4, with its major axis vertical, following which change in position it will revolve on one of its rounded ends for an extended period.

In Figs. 1 and 2 is shown another form of spinning mechanism comprising a spindle 4, corresponding to the one already described, having rigidly fastened to its upper end a knob 12 having at its lower end an annular peripheral groove 13 into which extend the inwardly turned ends of a U shaped wire member 14, the latter being resilient and having its arms releasably mounted respectively in two diametrically opposite longitudinal grooves 15 in the sides of a spool 16, which is rotatably mounted on the spindle 4.

The inwardly turned ends of the wire member 14 revolve in the groove 13 and hold the spool 16 in its operative position with respect to the knob 12. The lower portion of the wire member 14, below the spool 16, is arcuate and concentric with the middle portion of the top body 1. It extends a short distance below the middle of the top.

A top string 11 is wound on the spool 16 and the latter is twirled thereby in the manner described with reference to the form shown in Fig. 3.

The spool in revolving revolves the member 14, the arcuate portion of which has one of its arms engage the top body 1, thus imparting to the latter the required initial impetus. After this has been done, the knob 12 is lifted, thus releasing the top from the spindle 4 and the member 14.

The top will first spin with its major axis horizontal after which it will assume the position shown in Fig. 4, with said axis vertical.

The forms of top shown in Figs. 5 and 6 are each provided with the hole 3 for receiving a spindle 4, and with the two recesses 8 at opposite sides respectively of the hole 3 for receiving impelling pins 9, such as are shown in Fig. 3.

These forms, shown in Figs. 5 and 6 are spun mechanically with a spinning mechanism, such as is shown in Fig. 3, or with a spinning mechanism, such as is shown in Figs. 1 and 2, the mode of operation being the same as has been described, with reference to spinning the tops shown in Figs. 1 and 3. In an application filed by me October 2, 1930, having Serial Number 485,920 is shown and described a top of general type of the one herein disclosed. It will be noted that, in each form of my invention, the top is revoluble on the spindle without longitudinal movement in a plane transverse to the spindle for the full range of movement of the top lengthwise of the spindle.

I do not limit my invention to the structures shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention, such as variations in the specific form of the top, or modifications of the means shown for engaging the spool with the top. For example, the form shown in Fig. 3 may be modified by eliminating one of the pins 9 and one of the recesses 8, and other means than shown in Fig. 1 may be employed to engage the spool with the periphery of the top.

What I claim is:—

1. A top having a hole extending entirely therethrough, a support having a spindle removably insertible through said hole and adapted to have its lower end projecting below the bottom of said top, said top being

revoluble without longitudinal movement on said spindle in a plane transverse to said spindle for the full range of movement of said top lengthwise of said spindle, a member rotatable on said spindle, means for rotating said member, and means independent of said member rotating means for releasably connecting said member with said top so as to rotate the latter when said member is rotated.

2. An ellipsoidal top having a hole alined with its minor axis and extending entirely through said top, a support having a spindle removably insertible through said hole and adapted to have its lower end projecting below the bottom of said top, said top being revoluble without longitudinal movement on said spindle in a plane transverse to said spindle for the full range of movement of said top lengthwise of said spindle, a member rotatable on said spindle, means for rotating said member, and means independent of said member rotating means for releasably connecting said member with said top so as to rotate the latter when said member is rotated.

In testimony whereof I have signed my name to this specification.

WILLIAM W. McCALL.