June 4, 1957 E. W. FRANGOS 2,794,294

GYROSCOPIC TOPS

Filed Feb. 24, 1954

Fig. 1

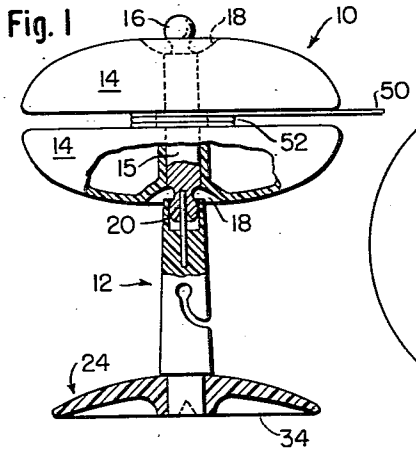


Fig. 2

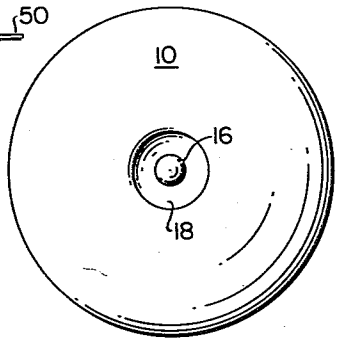


Fig. 3

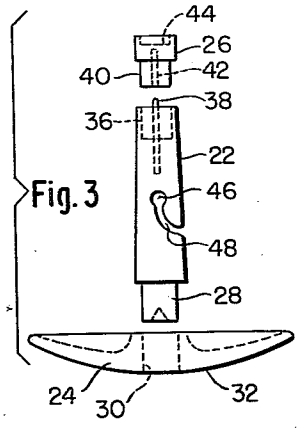


Fig. 4

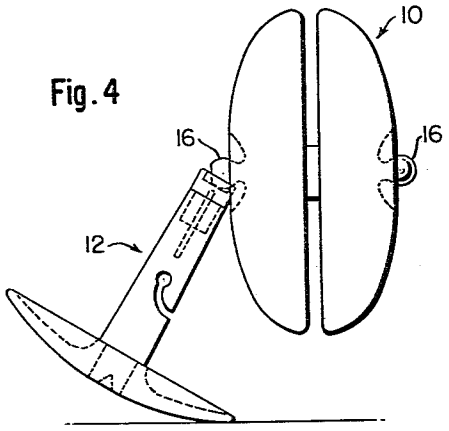


Fig. 5

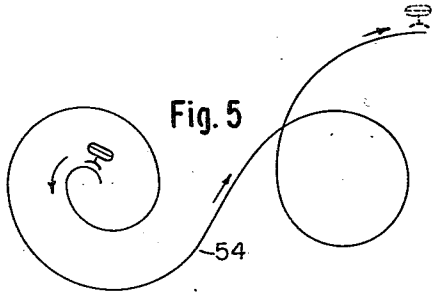
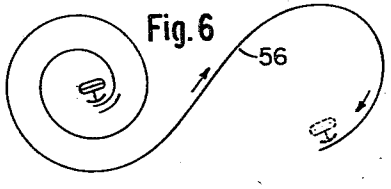


Fig. 6



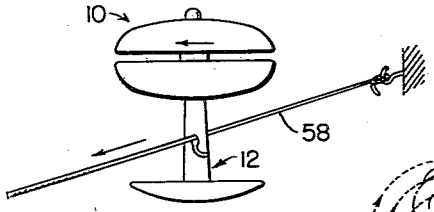


Fig. 9

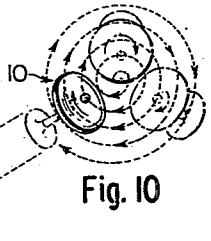


Fig. 10

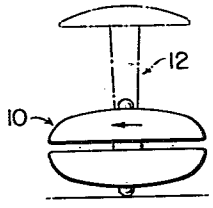


Fig. 7

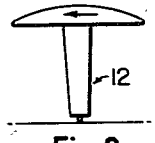


Fig. 8

INVENTOR.
EVERETT W. FRANGOS

BY
Konway, Jenney, Witter & Hildreth
ATTORNEYS

United States Patent Office 2,794,294 Patented June 4, 1957

2,794,294

GYROSCOPIC TOPS

Everett W. Frangos, Lynn, Mass.

Application February 24, 1954, Serial No. 412,287

3 Claims. (Cl. 46—65)

This invention relates to gyroscopic tops and more particularly to improvements in a top of the nature shown in my Patent 2,645,881. My patented top is of the bandalore type adapted to be rotated in opposite directions by opposed cords attached thereto. My present invention relates to other and relatively simple parts cooperating with the top for setting it in motion and for supporting the top in a variety of positions in which it is adapted to perform various gyrations. These parts particularly include a novel supporting post for the tops and embodying certain features for performing numerous plays with the top. The production of a novel mechanism of this nature and for the purpose hereinafter more specifically described comprises the primary object of the invention.

These and other features of the invention will best be understood and appreciated from the following description of preferred embodiments thereof selected for purposes of illustration and shown in the accompanying drawing in which—

Fig. 1 is a side elevation, partly in section, of a top combination embodying the invention,

Fig. 2 is a plan view thereof,

Fig. 3 is a disassembled view of a supporting post for the top,

Fig. 4 illustrates the top in operating position on the post,

Fig. 5 illustrates the spinning gyrations adapted to be performed by the assembly in Fig. 1,

Fig. 6 illustrates the spinning gyrations performed by the assembly when the top is supported on the pin **38** and the assembly rests on the paraboloidal base surface **32**.

Fig. 7 illustrates the spinning top independently of its supporting post,

Fig. 8 illustrates the spinning of the post independently of the top,

Fig. 9 illustrates the spinning of the top on and along a cord, and

Fig. 10 is a plan view on a reduced scale illustrating the spinning operation shown in Fig. 6.

The combination illustrated in Figs. 1 and 2 of the drawing comprises a gyroscopic top **10** and a supporting post **12**. The top comprises two half sections **14** supported on a centrally disposed shaft **15** and having a ball-like knob **16** at each end. The outer face of each half is centrally recessed at **18** and the knobs are disposed partially within and project outwardly of the recesses. One of the knobs is drilled to provide an axially disposed open hole **20** therein.

The post **12** is preferably constructed in sections as illustrated in Fig. 3 and comprises a post body **22**, a base **24** and a removable adaptor **26**. The base end of the post body is provided with a dowel **28** disposed to fit within a centrally disposed hole **30** in the base **24**. One face **32** of the base is paraboloidal and the other face includes a circular periphery **34** coaxial with the hole

30 and providing a plane surface engaging end adapted to support the post in vertical position on a horizontal surface, the base being reversible to support the post on either face.

The other end of the post includes the removable adaptor **26** for optionally providing two top mountings on the post. As illustrated in the drawings the top end of the post body has a socket **36** within which and seated into the post is a centrally disposed pin **38**, the pin extending outwardly beyond the socket. The adaptor has one end portion **40** of reduced diameter adapted to fit within the socket and drilled at **42** to receive the pin. The outer end of the adaptor is provided with a socket **44** for receiving a knob **16** of the top as illustrated in Fig. 4. The post body is also provided with a hole **46** diametrically therethrough intermediately of its ends and an open slot **48** extending from the hole outwardly of the post in a direction away from the knob receiving end of the post for a purpose illustrated in Fig. 9 and hereinafter described.

The top **10** illustrated in the drawing is substantially like that shown in my said patent, except for the recesses **18** which receive the inner portions of the knob **16**, and thus dispose the knobs closer to the center of the top. Such construction facilitates the spinning of the top on the post and lengthens the spinning period elapsing before displacement of the top from the post as will be apparent. It will also be understood that the top can be used in the combination and manner described in my said patent.

The object of my present invention is to provide further combinations and functionings for the top that expand its use and provide numerous additional plays and tricks that can be performed. Furthermore, the combinations provided in the present invention embody somewhat simpler functionings of the top and thereby adapt it to younger and inexperienced players who can thus become familiar with the top and develop to a point of proficiency in which they can perform the more difficult plays and tricks which it affords.

In Fig. 1 the base **24** is disposed to support the post in upright position on the plane peripheral surface **34** and the socket **36** and pin **38** are adapted to receive the knob **16** having the drilled hole **20**. The parts are constructed loosely and rotatably to fit the knob within the socket and the pin within the hole **20** as illustrated in Fig. 1. With the top thus supported, the player holds the post in one hand and spins the top by withdrawing the cord **50** with the other hand, it being understood that the cord is wrapped around the shaft **15** at **52**. The post and pin thus support the top in a very simple manner that adapts it for use by beginners and inexperienced players.

When the spinning top (Fig. 1) is placed with the peripheral surface **34** on a horizontal support and with the post disposed vertically, the top will continue to spin for a considerable time on the post. When the same is placed on the support at an angle, similar to that illustrated in Fig. 4, the top will continue to spin on the post and the entire combination will ride around on the periphery **34**. As the speed of the top diminishes the path **54** will change and follow various gyrations, it being understood that the pin **38** and socket **36**, together with the gyroscopic effect, continue to support the spinning top on the post even when the post rides at a considerable angle.

The spinning of the top on the paraboloidal surface **32** is even more spectacular since the spinning circuit of the post continuously progresses outwardly from the center and soon thereafter causes a sudden detonation. This novel phenomena is achieved by spinning the top

on the pin **38** and supporting the post on its paraboloidal surface **32**. The top and stand first spin about the post axis, then oscillate and revolve rapidly in a continuous spiral motion in a concentrated area until they reach the periphery of the base **24** and the unbalanced forces kick the stand **12** outwardly as illustrated in Fig. 10. The top will then ordinarily continue to spin on the floor as illustrated in Fig. 7 but, of course, without the stand.

Another unique feature of the spinning of the top on the paraboloidal surface is that it will produce a milder detonation before completing its circuitous path **56** of multiple gyrations. To produce this fascinating effect, the unit is first held in one hand while the cord is withdrawn with the other. The spinning unit is then immediately placed obliquely on a level surface. By setting the complete unit on a horizontal surface at various angles, it will perform intriguing movements and gyrations as it rotates from the center and moves on outwardly on its circuitous course.

The spinning of the top as shown in Fig. 4, is supported and rotated by opposed cords attached to the knobs **16**, as described in the patent and when the top is brought up to full speed it is then supported by one cord at one knob while the other knob is placed in the socket **44**. The top will now spin about an approximately horizontal axis at the same time revolving around the axis of the post pivoting on the knob **16**, in the socket. Due to the decreasing gyroscopic force the axis of the top will gradually assume a downwardly inclined position and will continue to thus spin until it loses sufficient momentum to cause it to fall from the stand.

When the top and post are spinning as illustrated in Fig. 7, the loose fitting of the pin **38** in the hole of the top causes the post through centrifugal force to jump off the top and continue spinning as shown in Fig. 8. The post can also be lifted off the top by a cord placed beneath the spinning base **24**.

The spinning post-top combination is also adapted to ride the cord **58** as illustrated in Fig. 9, the slot **48** being adapted to receive the cord into the hole **46** in the post. The gyrating effect of the spinning top will maintain the combination in upright position on the cord and by changing the angular pitch of the cord the combination can be made to ride in both directions along the cord.

Having thus disclosed my invention what I claim as new and desire to secure by Letters Patent is—

1. In combination, a gyroscopic top comprising a body of uniform circular outline about a centrally disposed axis, a ball-like knob projecting outwardly of and adjacent to one face of the body at said axis and having an axially disposed open hole therein, a post having at one end a flanged supporting base with a circular periphery and and a paraboloidal end supporting surface both coaxial with the post, and an axially disposed pin carried by and projecting outwardly from the other end of the post and adapted to extend into said open hole and rotatably support the top on the post.

2. In combination, a gyroscopic top comprising a body of uniform circular outline about a centrally disposed axis, a ball-like knob projecting outwardly of and adjacent to one face of the body at said axis, a post having at its bottom end a flanged supporting base with a circular periphery coaxial with the post and means at its top end for receiving the knob and rotatably supporting the top on the post, the post having a cord receiving hole diametrically therethrough intermediate of its ends and an open cord receiving slot extending from said hole dowwardly and outwardly of the post in a direction away from the knob receiving end of the post.

3. A post for rotatably supporting a gyroscopic top having an axially disposed ball-like knob provided with an axially disposed pin receiving hole; said post comprising a post body having a base at one end for supporting the post in upright position on a horizontal surface, an axially disposed pin at the other end of the post for entering said hole and rotatably supporting the top on the post, and a removable adaptor having a hole at one end for receiving the pin and a socket at its other end for receiving the knob and rotatably supporting the top on the post.

References Cited in the file of this patent

UNITED STATES PATENTS

188,095	Beesley	Mar. 6, 1877
1,425,945	Congdon	Aug. 15, 1922
1,686,890	Wood	Oct. 9, 1928
1,851,223	Watanabe	Mar. 29, 1932
2,039,819	Marx	May 5, 1936
2,107,672	Lang	Feb. 8, 1938
2,337,334	Lohr	Dec. 21, 1943
2,632,977	Valasek	Mar. 31, 1953
2,645,881	Frangos	July 21, 1953