United States Patent

De Gelder et al.

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[45] **July 4, 1972**

[54] REVERSIBLE SURFACE TRAY ASSEMBLY FOR A TOY TOP

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[52] **U.S. Cl.** .....**273/115,** 273/128 R, 46/65, 46/67, 46/73, 46/50

[51] **Int. Cl.** **A63b 67/14**

[58] **Field of Search** 273/108, 109, 110, 112; 46/67

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[57] **ABSTRACT**

A peripherally walled two-sided tray with accessory holding portions and an extending handle, is adapted to hold replaceable accessory inserts with different surface configurations requiring different degrees and types of skill and for amusement with spinning toy tops. The inserts may include a maze, a ramp-jump configuration, a magic slate arrangement, a plurality of spinning discs and others.

9 Claims, 16 Drawing Figures

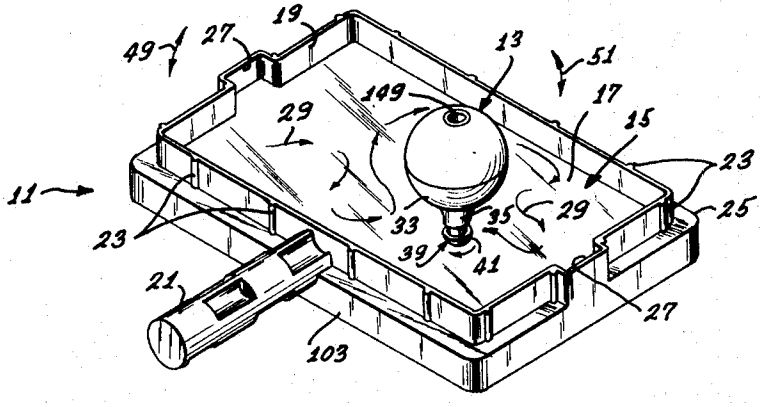


FIG. 1

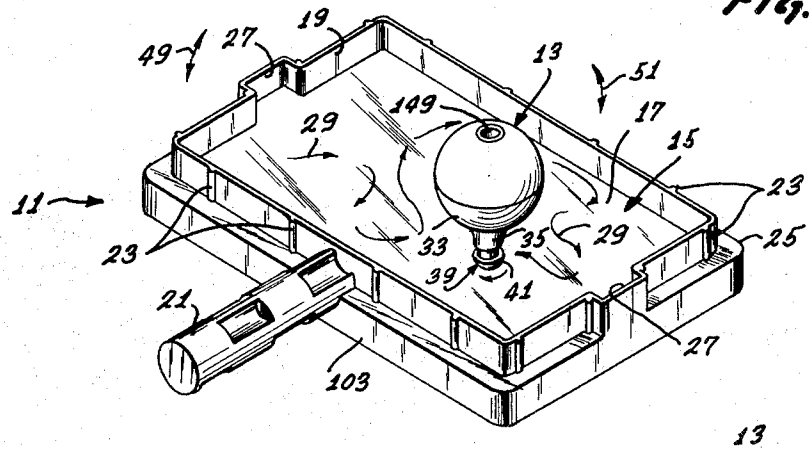


FIG. 1a

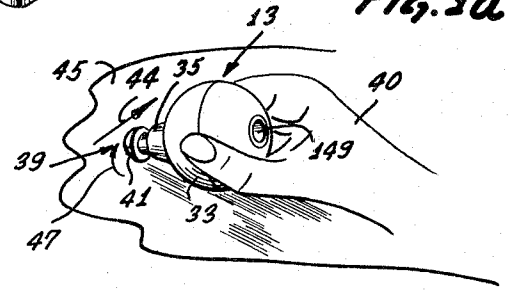


FIG. 2

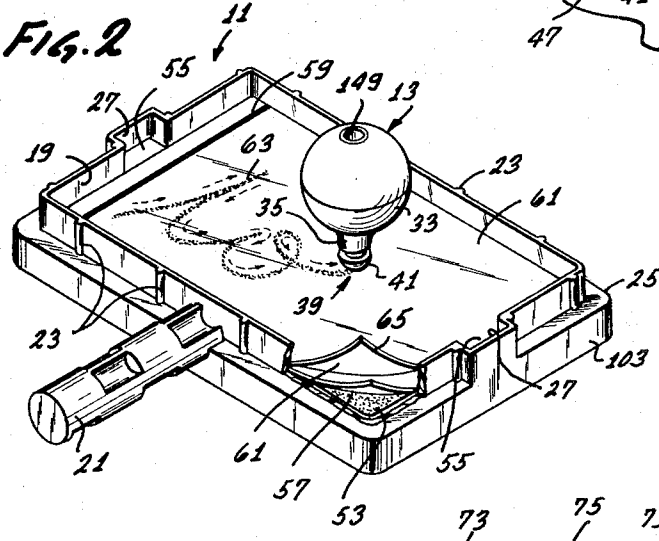
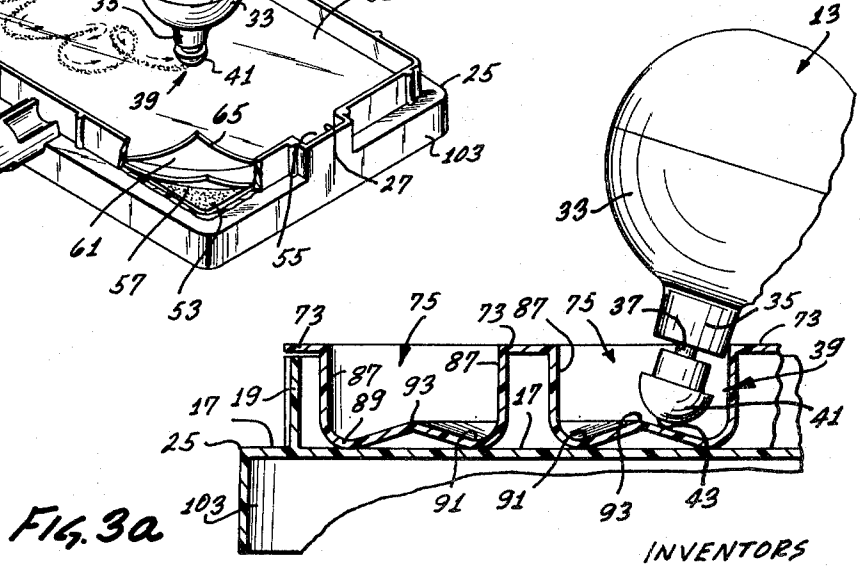


FIG. 3a



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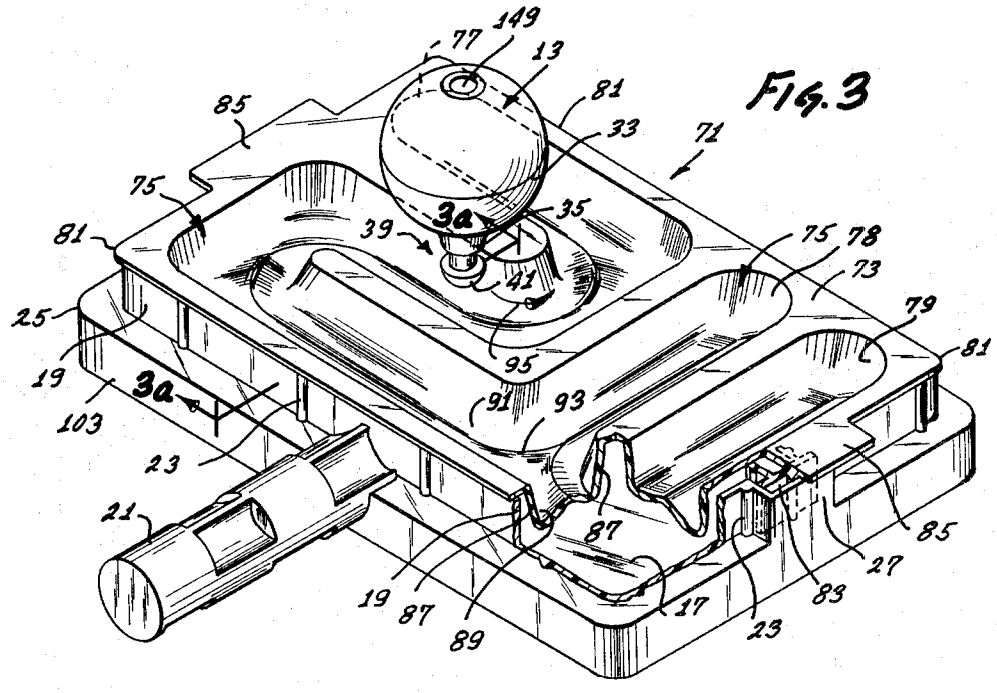


Fig. 3

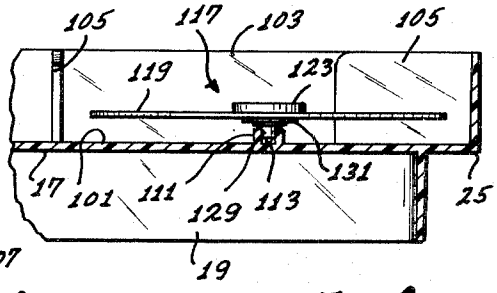


Fig. 4a

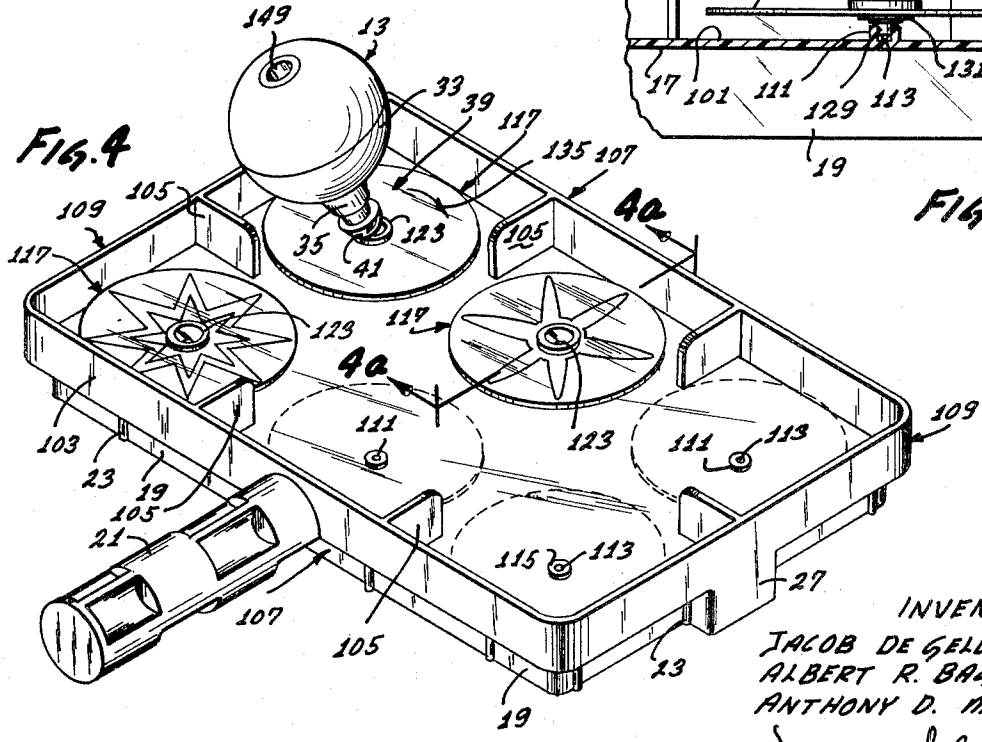


Fig. 4

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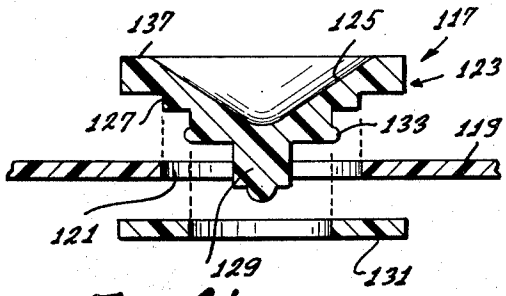


FIG. 4b

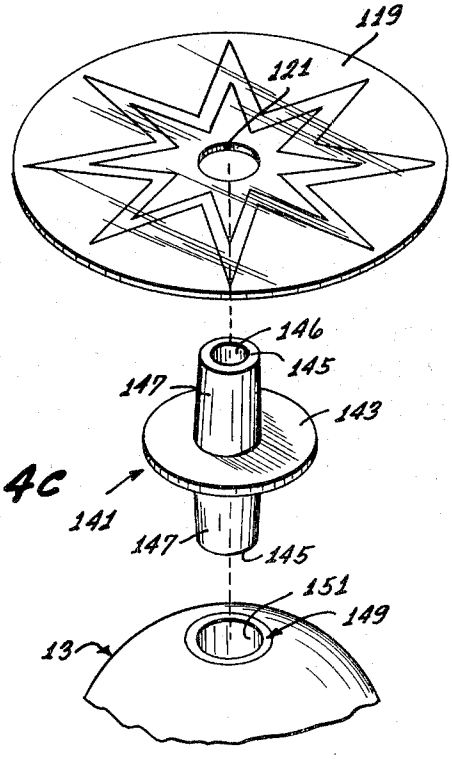


FIG. 4c

FIG. 5

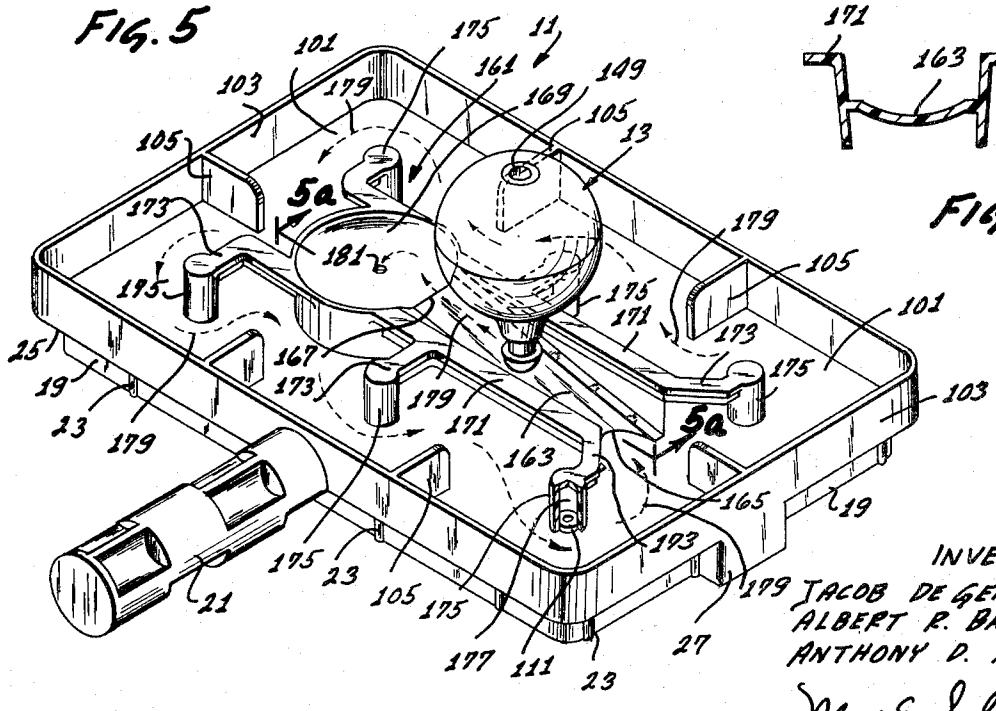
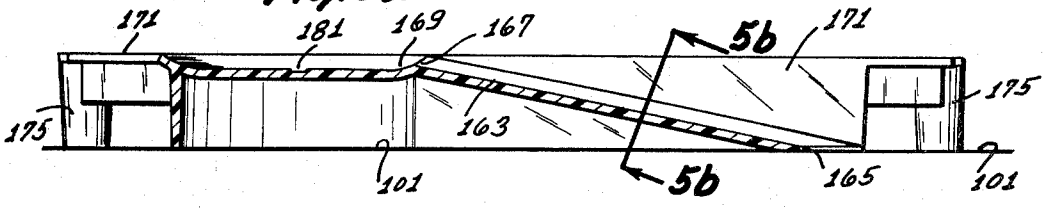


FIG. 5b

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FIG. 5a



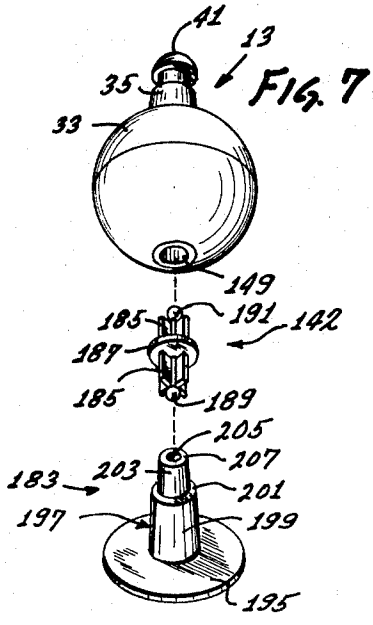


FIG. 7

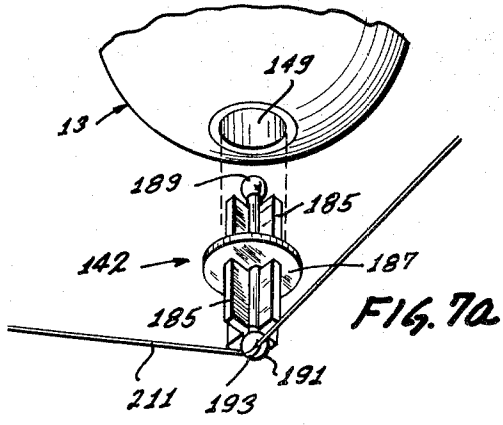


FIG. 7a

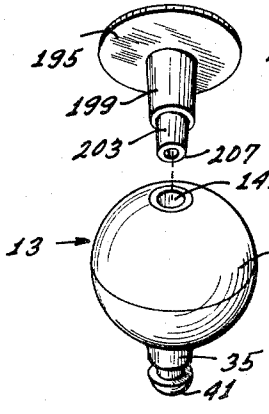


FIG. 8

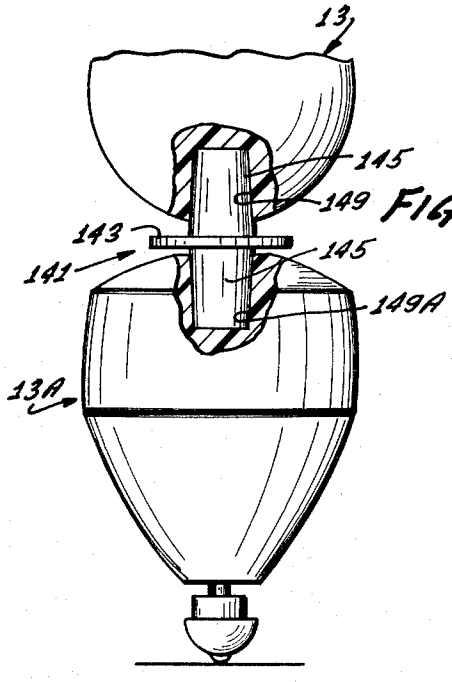


FIG. 6

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REVERSIBLE SURFACE TRAY ASSEMBLY FOR A TOY TOP

BACKGROUND OF THE INVENTION

The background of the invention will be set forth in two parts.

1. Field of the Invention

The present invention pertains generally to the field of toy tops and more particularly to accessories requiring skill and also for sheer amusement in use with spinning toy tops.

2. Description of the Prior Art

The use for scientific and amusement purposes of the gyroscopic effect of spinning bodies has long been known. Generally, in the amusement or toy field, these devices are known as tops or spinning tops. Such tops may take many different forms, some being very simple in construction comprising only a disc transversely mounted along a shaft which is rotated merely by twisting between a user's fingers. Others are more elaborate requiring that a cord be wound about a shaft and pulled briskly by its user to impart on the top the desired rotation. More recently, sophisticated top configurations have been developed which utilize some of the techniques used with complicated gyros used for navigation purposes as providing vanes on the rotating member whereby it is caused to rotate by an air stream.

The art has also tended to develop gyroscopic toys having less classical appearances. For example, toy tops are now provided with housing which conceal and protect the rotating annular rim of a hub supported member so that it will not accidentally come into contact with obstructions or the user's hand and cause it to lose momentum.

Still another development of the present invention is the use of top launchers and platforms which initially impart a rotation force to the toy and then allow the user to manipulate the top about the associated platform. Although at first this scheme may seem to be advantageous, it has been found that the launching mechanisms are cumbersome and prone to malfunction which obviates the usefulness, although possibly incorporating skill requiring contours, are permanent and do not allow for variations and thereby a change of "scenery." This generally leads to a stagnant situation; one in which its user may soon tire of and become bored.

SUMMARY OF THE INVENTION

In view of the foregoing factors and conditions characteristic of prior art spinning toy tops, it is a primary object of the present invention to provide a new toy top accessory not subject to the disadvantages enumerated above and having a peripheral wall surrounded tray which allows different accessory inserts to be held for utilization with spinning tops.

Another object of the present invention is to provide a simple to fabricate toy top accessory which allows the utilization of different accessory inserts each requiring a different degree and type of skill by its user.

Still another object of this invention is to provide an easily handled and manipulated spinning top accessory holding tray with different features on opposite sides of the tray.

According to the present invention, a toy top accessory is provided for use with spinning tops including a tray with accessory insert holding portions and including a plurality of removable accessory inserts disposable in the insert holding portions of the tray, each of the inserts having different surface configurations requiring different degrees and types of skill with spinning toy tops.

The tray may include a handle member and a peripheral wall, the handle member extending outwardly from and in the plane of the tray.

The inserts may be in the form of a maze with an endless top traveling path or in the form of a ramp terminating in a concave dish wherein a spinning top may be, with a considerable degree of skill, captured in an aperture in the dish surface.

The tray may have insert retaining portions on opposite sides thereof whereby different type of insert structures may be retained and utilized with a spinning toy top.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings in which like reference characters refer to like elements in the several views.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of one side of a toy top accessory according to an embodiment of the invention;

FIG. 1*a* illustrates how a toy top of a type preferred for use with the invention is activated;

FIG. 2 is a perspective view of the embodiment shown in FIG. 1 wherein a magic slate-type attachment is utilized with a spinning toy top;

FIG. 3 shows perspectively a maze type insert held in the accessory according to the invention;

FIG. 3*a* is a cross-sectional view of a portion of the maze insert shown in FIG. 3 taken along line 3*a*—3*a*;

FIG. 4 is a perspective view of an opposite side of the tray shown in FIG. 1, wherein differently patterned and colored discs are caused to spin by contact with a spinning top;

FIG. 4*a* is a cross-sectional view of a portion of the tray and patterned disc as shown in FIG. 4 taken along line 4*a*—4*a*;

FIG. 4*b* is a cross-sectional view of a portion of FIG. 4*a* illustrating a preferred method of providing the disc holding bosses;

FIG. 4*c* is an enlarged view of the use of a special tip and a spinning disk of the type shown in FIG. 4;

FIG. 5 is a perspective illustration of a jump-ramp insert positioned in the tray as seen in FIG. 4;

FIG. 5*a* is a cross-sectional view of the ramp-concave dish taken along line 5*a*—5*a* of FIG. 5;

FIG. 5*b* is a cross-sectional view of the ramp transversely to the spinning top path in FIG. 5*a* taken along line 5*b*—5*b*;

FIG. 6 is an elevational view of still another use of the special tip to support and connect two spinning tops;

FIG. 7 shows perspectively a novel means to support a spinning top in a stand;

FIG. 7*a* is a partial illustration of another use for a novel tip which allows the spinning top to balance on a cord; and

FIG. 8 illustrates a means of coupling a spinning top of the type shown to a pedestal or stand.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring again to the drawings and more particularly to FIG. 1, there is shown a toy top accessory **11** for use with a spinning top **13** which accessory includes a tray **15** generally comprising a first planar surface **17**, a peripheral wall **19** and a handle **21** extending from the tray **15** in the plane of the tray. The tray, wall and handle may be integrally constructed, by any conventional technique such as injection molding using any generally suitable material such as many commonly used plastics such as a high impact styrene, for example.

The handle **21** may have any gripping surface such as the partially grooved configuration shown, and the wall **19** may include a plurality of reinforcing or stiffening integral posts **23**. The wall **19** may also be set back from the outer edge **25** of the surface **17** so that a pair of oppositely disposed wall depressions **27** may be incorporated in the structure to register with and hold removable inserts to be described later.

The toy top **13**, shown having traveled along an irregular path **29** on the surface **17** as guided by an operator (not shown) holding the handle **21**, preferably includes a gyroscopic mechanism (not shown) rotatably held in a closed housing **31**. The housing **31** includes a two-sectioned spherical portion **33** and a stem portion **35** through which the gyroscopic mechanism's shaft **37** protrudes (see FIG. 3*a*). The housing **33** may be formed by any conventional plastic molding process and a relatively softer plastic or resilient material may be used to form a starting tip **39** having a hemispherical end surface **41**

and fixed adjacent a slightly extended shaft tip **43** of the shaft or spindle **37**.

FIG. **1a** illustrates how the top **13** is activated by an operator's hand **40** gripping the housing **13** and moving the top **13** in a generally lateral direction **44** with the surface **41** of the starting tip **39** in contact with any convenient relatively flat surface **45** to cause the starting tip **39** and the spindle **37** to rotate in a direction indicated by arrow **47** with respect to the housing **33**. Thus, the top **13** may be held with the starting tip **39** pressed against a floor surface and the tip rolled therealong as the top is swung in a generally half circle around the operator. This action may be repeated until the gyroscopic mechanism within the top **13** has reached a high rotation speed. Once so activated, the top **13** may be positioned with its now rotating metal shaft tip **43** supported on the first planar surface **17**, and the accessory **11** rotated slightly about the axis of the handle **21** as indicated by arrows **49** and/or tilted transversely thereto as shown by arrows **51**.

In a "writing top" embodiment of the invention as seen in FIG. **2**, a conventional "magic slate" configuration comprising a base plate **53** having a generally rectangular shape, and also having a soft carbon paper-like wax surface **57**. Attached at one end **59** of the plate **53** is a flexible translucent plastic sheet **61** upon which the shaft tip **43** of the top **13** may be supported to cause the appearance of whatever design **63** an operator may desire as he holds and manipulates the handle **21** of the accessory **11**. The design **63** may be erased by merely lifting either free corner **65** of the sheet **61** until it is completely separated from the wax surface **57** of the plate **53**.

Still another embodiment of the invention is illustrated in FIG. **3** where a maze insert **71** is positioned and held over the first planar surface **17** and has a generally planar upper surface **73** with a relatively deep trough-like depression **75** extending from a first end **77** to a second end **79** in a very irregular pattern. The maze insert **71** is adapted to be generally inserted within the wall **19** of the tray with its peripheral edge **81** adjacent thereto, and is held in place by its tabs **83** downwardly extending from the two surface extension portions **85** of the upper surface **73**. As seen in more detail in FIG. **3a**, the trough **75** includes integral side walls **87**, parallel spinning top paths **89** and **91** at the bottom of the trough, and a slightly raised divider wall portion **93** between the paths **89** and **91**. The divider-wall **93** extends along the entire length of the trough **75** except at the ends **77**, **78** and **79**. This provides an endless path for top travel in the trough. Thus with the development of a certain degree of skill in the manipulation of the tray **15**, an operator may be successful in causing a spinning top to traverse the length of the trough from end to end and back again, first in one general direction **95** on one of the paths and in the opposite direction on the other of the parallel paths upon reaching one of the trough ends **77** or **79**.

With reference to FIG. **4**, a still further embodiment of the invention is shown utilizing a second planar surface **101** opposite the first planar surface **17** of the accessory **11**. The surface **101** is surrounded by a peripheral wall **103** having inwardly extending projections **105**, each being perpendicular to the wall **103** and being six in number, two equally dividing each longer dimensioned portions **107** of the wall **103** and one centered in each of the end wall portions **109**. The projections **105** on opposite walls are positioned directly opposite each other to effectively divide the second planer surface **101** into six equal areas.

Disposed generally centrally in each of these six imaginary areas is a raised boss member **111** having a bearing aperture **113** in the top **115** thereof. The boss member **111** may be molded as an integral part of the accessory **11** as seen in FIG. **4a**. The latter figure also clearly illustrates the positioning of circular swirls **117** on top of desired ones of the members **111**. The swirls **117** comprise a circular disk **119** of plastic or stiff cardboard and a centrally disposed round aperture **121** in which may be fixed a relatively smaller plastic button **123** having an upper conical aperture **125**, a stepped lower outer surface **127** and a button tip portion **129** as best viewed in FIG. **4b**. The disk **119** is attached to the button **123** by forcing an annular collar **131** over a raised ring portion **133** on the lower portion of the button's outer surface **127**, as clearly shown by the dotted lines in the figure.

In operation, the swirls **117** are placed so that their button tip portions **129** are in the bearing apertures **113** of desired ones of the raised boss members **111**. The swirls are then caused to rotate, as indicated by arrow **135** in FIG. **4**, by pressing the end surface **41** of a spinning top's rotating starting tip **41** into conical aperture **125**. A swirl so treated will soon acquire the speed of the rotating top due to the frictional coupling, and the top may then be removed leaving the swirl to rotate freely. The operator may use swirls with designs already imprinted on the upper surfaces of the disks **119**, or original patterns and designs may be fashioned on unprinted disks or surfaces of disks by the use of colored pencils, crayon or paints, for example.

The swirls **117**, once rotating, may remain captured by the boss members **111** or by using a quick upward movement of the accessory **111** the spinning swirls will fall to a table or floor surface and continue spinning. Alternately, a swirl may be placed on any flat surface and a spinning top **13** placed with its tip in the conical aperture **125** and either allowed to remain there so that both spin together or the top removed to leave the swirl to spin alone.

FIG. **4c** illustrates an alternate use of a circular disk **119** using a special tip structure **141** (one of several types usable with the tops **13**) which has a disk portion **143** disposed between two similar arm members **145** with shallow tip apertures **146** and outer surfaces **147** having diameters decreasing with distance from the disk portion **143**. One of the members **145** may be inserted into an axially disposed aperture **149** at the opposite end of the top **13** from the top's stem portion **35**. Alternatively, either of the members **145** may be inserted into an axially disposed aperture **149** if the tip structure **141** is made symmetrical. Although not shown in detail, a slightly sloping walled, inwardly extending tip receptacle member **151** is molded into the upper portion of the housing **33** starting at the aperture **149** and conforming to the shape of and accommodating in a holding relationship one of the tube members **145** of the tip structure **141**. The disk **119** is positioned with its hole **121** adjacent the aperture **149** of the top **13** and a member **145** of the tip structure **141** inserted first through the hole **121** and then into the top aperture **149** to hold the disk against the housing **33**. In this way the top **13** is provided with a hat which will revolve with the housing **33**.

Illustrated in FIG. **5** is yet another embodiment of the invention wherein a jump ramp insert **161** is held to the second planar surface **101** of the accessory **11**. The jump ramp **161** includes an inclined ramp **163** having an entrance end **165** adjacent the surface **101** and an exit end **167** at the upper end of the ramp adjacent a concave dish or cup **169**. The jump ramp **161** and the cup **169** are integrally molded with and supported by a support structure **171** having six arm portions **173** with boss-gripping cap portions **175** disposed to register with the six raised boss members **111**. The cap portions **175** include cavities **177** (see broken away portion) with diameters essentially equal to the outside diameters of the boss members **111** to provide a tight fit to hold the insert **161** in place. To utilize this insert, an operator will place a spinning top **13** in the area adjacent the entrance end **165** of the inclined ramp **163** on the surface **101** and manipulate the accessory by the handle **21** to move the top along a path generally described by dashed line and arrows **179** around the projections **105**, up the inclined ramp **163**, and into the cup **169** where it may, with additional skill, be captured in a small hole **181** in the surface of the cup **169**. FIG. **5a** more clearly shows the relative surface relationships between the planar surface **101**, the ramp **163** and the cup **169**, and FIG. **5b** reveals the slight concave surface of the ramp **163**.

The special tip structure **141**, previously described may also be used to couple two rotating tops together in piggy-back fashion as seen in FIG. **6**. This figure is partially broken away

to more clearly show the novel coupling technique. Although the lower top **13A** has a slightly different outer housing configuration than the upper top **13**, it is functionally equivalent thereto. The special tip **141** is simply inserted in the upper aperture **149A** of the lower spinning top **13A** as shown and the upper spinning top **13** is inverted so that its aperture **149** encloses the upper portion of the tip. The tops are initially started with opposite directions of spindle rotation by pressing each starting tip to a planar surface and moving in opposite directions. It should here also be noted that instead of using the lower spinning top **13A**, a pencil or other pointed instrument may be inserted in the lower tip aperture **146** of the special tip structure **141** to support the inverted spinning top **13**. A short length of pencil (not shown) may, if desired, be inserted in an inverted spinning top with its point pointed downward to produce scribble designs over the surface on which the top and pencil are supported. An inverted spinning top may also be supported at its housing aperture by a marble or similar spherical object for even different entertaining effects.

Referring now to FIG. **7**, a second tip structure **142** is shown being used to support an inverted spinning top **13** on a special pedestal **183**. The tip structure **142** is somewhat similar to the first tip structure **141** but has two oppositely extending *x*-frame members **185** extending from a centrally disposed disk member **187**. The frame members **185** are adapted to fit into and be frictionally held in the apertures **149** of the tops **13**, and relatively small ball-like tips **189** and **191** are disposed at the ends and on the longitudinal axis of the frame members **187**, the tip **191** having a slot **193** in the end face thereof. The pedestal **183**, on the other hand, includes a circular base **195** and a support post **197** supported thereon perpendicularly to the plane of the base **195**. It will be noted that the post **197** has a gradual tapered surface first section **199**, a step **201** leading to an abruptly reduced diameter second section **203** with a similar taper and tip receiving socket **205** in an end **207**.

When it is desired to support the spinning top on the pedestal **183** by means of the second tip structure **142**, the slotted tip end of the *x*-frame member **185** is inserted into the aperture **149** and the round ball tip **189** set into the socket **205** of the pedestal. In this way the spinning top will be allowed to pivot about the pedestal socket at any angle in the vertical plane between the vertical and to, and even below, the horizontal. At the same time, the top **13** will rotate about the vertical axis of the pedestal's post **197**.

If, however, it is wished to support the spinning top **13** on a cord or wire **211** as illustrated in FIG. **7***a*, the opposite end of the second tip structure **142** is inserted into the top's aperture and the cord engaged by the slot **193** of the tip **191**. Once so positioned, the top **13** will balance on the cord **211** and may be caused to move along the cord by setting or moving the latter off the horizontal, the top moving in the direction of the downward slope so provided.

Alternately, many interesting gyroscopic conditions may be set up by inserting the socket end **207** of the pedestal **183** into the aperture **149** of the top so that the tapered and shape conforming second section **203** is frictionally held in the receptacle member **151** of top **13**. It will be found, for example, that in this configuration, the spinning top may be positioned to be supported with one edge of the base **195** on a surface and the longitudinal axis of the top at nearly any vertical angle sufficient to clear the top's housing **33**.

It is again to be pointed out that the materials used in fabricating the various parts and elements of the embodiments shown are not critical and any material generally recognized to be suitable for similar applications may be utilized. Likewise, the processes used in such fabrication may be any conventional one known in the art. Preferably, all of the inserts, the accessory **11** and the various tip structures may be molded from a high impact plastic.

It should further be clear from the foregoing that the invention is susceptible to numerous modifications and embodiments within the skill of the routine engineer and without the exercise of the inventive faculty.

What is claimed is

1. A toy top accessory for use with spinning tops, comprising:

a tray with a handle member and a peripheral wall, said handle member extending outwardly from said tray, said tray having a top side and a bottom side providing, respectively, first and second oppositely disposed portions each including playing surfaces and accessory insert holding portions; and

a plurality of removable accessory inserts disposable in said insert holding portions, each of said inserts having different surface configurations requiring different degrees and types of skill with spinning toy tops.

2. A toy top accessOry according to claim **1**, wherein said removable accessory insert is a maze positionable in said first portion of said tray and having a generally planar upper surface with irregular patterned trough therein, said trough including parallel spinning top surfaces and a relatively slightly raised wall portion extending therebetween except at the ends thereof, whereby a spinning top may propagate in said trough along one of said top surfaces to an end thereof and return along the other or said top surfaces to form an endless path.

3. A toy top accessory according to claim **2**, wherein said maze insert includes holding means for registering with and gripping said insert registering portions of said wall.

4. A toy top accessory according to claim **1**, wherein said playing surface of said second portion of said tray is a generally rectangular planar surface (bounded by said peripheral wall), said second portion (side) also including a plurality of oppositely disposed straight partial partitions each a part of and extending inwardly from positions along said peripheral wall in an orthogonal relationship with respect to said peripheral wall thereat.

5. A toy top accessory according to claim **4**, wherein said planar surface has a longer dimension and a shorter dimension, and wherein two of said partial partitions extend inwardly from each of the peripheral wall portions in said longer dimension in a manner to divide the respective wall portions into three equal lengths, and wherein one of said partial partitions extend inwardly from opposite wall portions in said shorter dimension to equally divide the respective wall portions into two equal lengths.

6. A toy top accessory according to claim **5**, wherein said partial partitions generally divide said planar surface into six rectangular areas, and wherein a boss member having a circularly cross-sectioned aperture in the top thereof is positioned generally centrally in each of said rectangular areas.

7. A toy top accessory according to claim **6**, wherein the boss members have insert holding portions.

8. A toy top accessory according to claim **7**, wherein said removable accessory insert is a ramp-jump insert positionable in said second side of said tray and having an inclined ramp and a circular concave dish area, said ramp terminating at one end at said planar surface and at the other end at the periphery of said circular concave dish area, said dish area having a relatively small diameter aperture in the surface thereof, thereby allowing a skillful operator to cause a spinning top to travel upwardly on said ramp and into said dish area and engage said aperture.

9. A toy top accessory according to claim **8**, wherein said ramp-jump insert includes holding means registering with and gripping said insert holding portions of said boss members.

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