



(51) International Patent Classification:

A63H 11/00 (2006.01) A63H 33/26 (2006.01)
A63H 33/00 (2006.01)

(21) International Application Number:

PCT/US2012/047931

(22) International Filing Date:

24 July 2012 (24.07.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/511,127 25 July 2011 (25.07.2011) US
61/532,429 8 September 2011 (08.09.2011) US

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
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SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report (Rule 48.2(g))

(54) Title: DYNAMIC ENTERTAINMENT SYSTEM

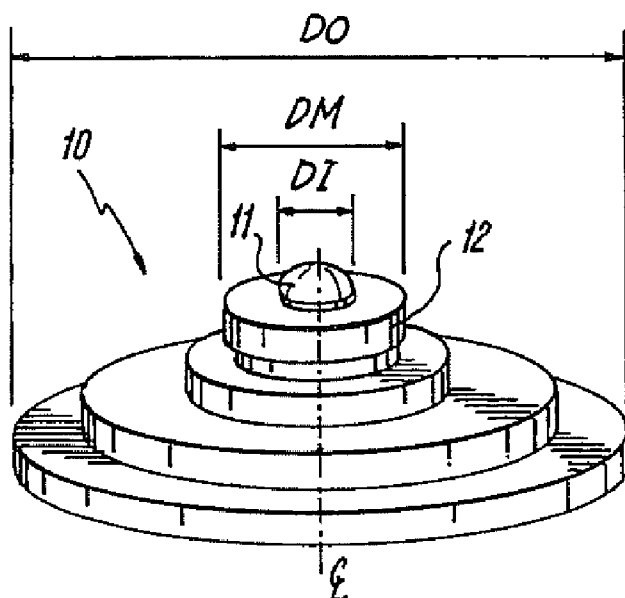


Fig. 1

(57) Abstract: The present invention relates to a dynamic entertainment system involving an interchangeable top component and interchangeable non-reciprocal rail arrangements enhancing velocity in transit while enabling speedy non-rail transfers between different components. It is understood that the top component and engaging rail arrangements need not be magnetic to function effectively through contact of any kind. Indeed, the present invention calls for a friction-type engagement between the interchangeable top component and the rail surface without the requirement for a magnetic interaction. An optional expanding spiral station receives a spinning top member traveling on a support surface along a rail face. A launcher system ensures release parallel to the rail face, and enables rapid release of multiple top components along a single rail enabling a competitive multi-user mode. Multiple top engagement elements are interchangeably arranged to receive and release the top during use.

DYNAMIC ENTERTAINMENT SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[001] This application relates to and claims priority from US Prov. Ser. No. 61/511,127 filed July 25, 2011, and US Prov. Ser. No. 61/532,429 filed September 8, 2011, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[002] The present invention relates to a dynamic entertainment system involving a spinning top and an operative engaging rail. More particularly, the present invention provides a dynamic entertainment system involving an interchangeable spinning top component and interchangeable rail and non-rail arrangements maximizing vector velocity in transit, including non-rail transfers.

Description of the Related Art

[003] Magnetic spinning top games are known from US 4,200,283 (Andres et al.), the contents of which are incorporated herein by reference, wherein a spinner is mounted in a dished top base surface that supports the spinner above an induction coil linked with an electric circuit. An inductance arrangement operates an electronic switch intermittently. The dished top base includes a fully closed or bounded spinning field and one or more hazards to enhance game play. The track provides a non-escape continuous loop for the spinner, and there is a hand-spin-start arrangement that provides very low rotational velocity and transit velocity along the dished top base surface.

[004] A spinning top track with a gravity accelerator (sloped track) arrangement is provided by US 4,408,413 (Hyland), the contents of which are incorporated by reference. A continuous fully closed or non-escape continuous spinning track with parallel non-metallic side walls has a central ferrous metal round rod that attracts a magnetized spinning top at a point contact. Necessarily, the round rod is inducted to varying degrees by the magnetized spinning top (which is fully magnetized). As a result, the top is never stable in transit but is continually being pulled-off from a spinning axis relative to the gravity plane (e.g., off vertical). Multiple interchangeable track elements allow track extension while maintaining the bounded track and wall arrangement. The manual launching system minimizes spin and prohibits non-track spinning.

[005] Various other types of magnetized toy tops are known from US 960,715, 1,005,853, 4,031,660, 3,466,796, 3,330,067, and 1,198,578 which do not integrate a track accelerator track guidance system. These references are also incorporated by reference. It is also known to provide a hand-held spring wound top launch system without a track.

[006] Accordingly, there is a need for an improved entertainment system involving a spinning top and a reliable high speed launch system. Further, there is also a need to provide an interchangeable rail system allowing speedy top guidance and effective non-magnetic engagement between system elements.

ASPECTS AND SUMMARY OF THE INVENTION

[007] In response to at least one of these needs, the present invention relates to a dynamic entertainment system involving a spinning top and a rail element. More

particularly, the present invention provides a dynamic entertainment system involving an interchangeable top component and interchangeable rail arrangement maximizing vector velocity in transit, including non-rail transfers. In a non-limiting exemplary alternative embodiment an expanding spiral launching station receives, optionally, a magnetic spinning top ring or an optional non-magnetic spinning top ring traveling on a support surface and parallel along optionally a non-magnetic rail surface or an optional a metallic (ferrous) rail surface. A launcher system ensures release parallel to the support surface. There is no requirement for magnetic interaction between the top element and the rail or component elements. However, the top element and the rail or component element interaction will include optionally one of a friction engagement, a traction engagement, a toothed-type engagement, or in other manners recognized by those of skill in the art having studied the current enclosure.

[008] One embodiment of the present invention provides a dynamic entertainment system, comprising: a non-magnetic top having a maximum outer diameter and a pivot contact, an interchangeably fixable traction ring secured about the top proximate the pivot contact and having a ring diameter, the traction ring may be magnetic, non-magnetic, have a friction-coating (such as carborundum particles or a rough surface), have a friction-geometry (such as molded teeth) etc., and will including a ring side wall generally arranged perpendicular to a top axis, the ring side wall at the ring diameter is less than the maximum outer diameter and greater than a pivot diameter of the pivot contact, a rail path having a support and a rail side wall, the rail side wall extending perpendicular to the ring side wall in a rolling line contact therewith during a use, the ring side wall being magnetic, non-magnetic, have a friction-coating (as above), or have a friction-geometry (as above), a launching station including launch floor support and a spiral launch rail path arrangement wherein the launch

rail path includes the magnetic rail side wall substantially bounding a designated launch position, a launcher system operably positionable relative to the designated launch position on the launching station, and the launcher system operable to releasably retain the top during a pre-use condition and to release the top in a use-condition with a rapid angular rotation about the top axis onto the designated launch position generally perpendicular to the rail side wall.

[009] Another alternative embodiment of the present invention provides a spinning toy assembly, having top bearing an interchangeable or an optional fixed ring having a side wall engagable with a rail wall system, the improvement comprising: a launching system, further comprising: a spinning mount operative for releasable engagement with the top in a position placing the side wall parallel with the rail wall system, a trigger on the spinning mount, extensions spacing from opposing sides of the spinning mount, and means for supporting the extensions relative to a support surface for the spinning toy assembly, thereby ensuring the spinning mount releases the top for contacting the magnetic side wall with the ferrous rail wall in close alignment.

[0010] Another alternative embodiment of the present invention, provides a directional channel on a launching support surface region for initially receiving a pivot contact tip of the top upon an initial launch, and for directing a ring side wall into a contact engagement with a rail wall system surface.

[0011] The above and other aspects, features and advantages of the present invention will become apparent from the following description read in conjunction with the accompanying drawings, in which like reference numerals designate the same elements.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a perspective elevation view of a top system and interchangeable ring shown inverted from a use position.

[0013] FIG. 2 is a perspective elevation view of a top system in Fig. 1 in a use position engaging a rail system member.

[0014] FIG. 3 is a perspective view of an inverted top system (inverted from a use position to show the bottom) and rail system member for exemplary discussion.

[0015] FIG. 4 is a side end view of a rail system member having a rail top cap guard member.

[0016] FIG. 5 is a side end view of a rail system member and top cap guard engaging a top member in a contact arrangement during a use.

[0017] FIG. 6 is a partial track arrangement, here on a 90 degree turn noting the spinning relation of the top member and rail travel during a use thereof.

[0018] FIG. 7 is a perspective view of an integrated launcher system and launch station in combination with the partial track of Fig. 6. It is noted that a second segment like the partial track of Fig. 6 could be positioned distant from the end thereof to further receive a transiting top member.

[0019] FIG. 8 is a close perspective view of the launch station and launcher system of Fig. 7.

[0020] FIG. 9 is a front elevation view of the launcher system.

[0021] FIG. 10 is a top plan view of the launcher system.

[0022] FIG. 11 is a bottom perspective view of the launcher system.

[0023] FIG. 12 is a perspective elevation view of the launcher system including a top member and noting a top member position relative to support legs and extension members.

[0024] FIG. 13 is a perspective view of an alternative launch station and launcher system involving fixed supports relative to a support surface and rail.

[0025] FIG. 14 is the perspective view of Fig. 13, positioning extensions on relative fixed supports on a launch station.

[0026] FIG. 15 is a perspective view of another alternative launch station and launcher system involving fixed supports.

[0027] FIG. 16 is a view of another free-type alternative launch station and launcher system, including a directional channel to receive a top's tip and direct the same toward a rail wall.

[0028] FIG. 17 is a top plan view of an alternative dynamic entertaining top system arrangement involving an alternative launch station, a rail travel portion, a non-rail travel portion, corner elements, and a battle station circle for rapid receipt of multiple (one or more) spinning tops during a play-use where subsequently

received tops contact previously spinning tops and 'battle' upon contact for further entertainment use.

[0029] FIG. 18 is a top plan view of another dynamic entertainment top system involving a launch station, several 90 degree, and 180 degree, and 360 degree rail sections, a jump, a ramp arrangement, a stunt spiral member to launch a top member upwardly and an alternative receiving distant rail member to retrieve and redirect a mis-sent or mis-directed top member back into game play along the directions shown.

[0030] FIG. 19 is a perspective close view of the distant rail member in Fig. 18 noting the decreasing-radius rail curvature and support backing.

[0031] FIG. 20 is a top perspective view of an elastomeric redirection member (e.g., 'power box') for receiving on an inlet side and dynamically redirecting out on an outlet side spinning tops during game play. For a further alternative example, such non-magnetic members may be arranged in a vertical stack to receive spinning tops from a jump arrangement.

[0032] FIGs. 21 and 22 are front and top perspective views of a stepped non-ferrous member (e.g., stepper battle station) for receiving in rapid-series succession a plurality of spinning top members in a bounded region where the tops will encounter each other and 'battle' knocking one or more top members from a particular step or level noted by the arrow.

[0033] FIG. 23 is a top perspective view of a non-ferrous frusto-conical member (e.g., 'tornado escape') with outwardly sloped bounding walls and a bottom entry

opening and top exit opening and a top guard to prevent a spinning top member an exit other than through the top exit opening as a form of entertainment.

[0034] FIG. 24 is a perspective view of a powered launching rail system with a spinning drive wheel secured relative to a rail member for receiving and accelerating via further spinning by spinning drive wheel a top member.

[0035] FIG. 25 is a top plan view of an arrayed power launch rail system in Fig. 24 noting the drive wheel-rail arrangement, a power system supply and rail support foundation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0036] Reference will now be made in detail to embodiments of the invention. Wherever possible, same or similar reference numerals are used in the drawings and the descriptions refers to the same or like parts or steps. The drawings are in photographic form and are for exemplary use only. For convenience and clarity only, directional (up stream/down stream, etc.) or motional (forward/back, etc.) terms are used with respect to the drawings. These and similar directional terms should not be construed to limit the scope of the invention in any manner.

[0037] In considering the proposed systems herein discussed, it will be recognized that in physics, the angular velocity is a vector quantity that specifies the angular speed of an object and the axis about which the object is rotating. In the present system, the unit of angular velocity is best measured as revolutions per time (e.g., RPT). Angular velocity is sometimes also called the rotational velocity and its magnitude the rotational speed. Greatly simplifying, the direction of the angular velocity vector is perpendicular to the plane of rotation. As a result,

increasing angular velocity is achieved by reducing the mass of a spinning object (but not the volume), or increasing the diameter of the spinning object (e.g., the rail-contact diameter) for a set mass. The present invention involves a top systems 10 (discussed below in detail) with a large, but very light weight (approximately 6-20 grams) shape, and with a fixed outer diameter (approximately 4cm-10cm), but with interchangeable rail-contact diameters from small to large (e.g., rings 12). As a result, those of skill in the art of angular mechanics will understand that the momentum (P), both linear and angular, of the top (M) is a factor of the velocity (V), e.g., $P=MV$. Thus, as the present system both reduces the mass, while increasing the velocity this greatly magnifies the momentum, and thus the overall spinning time during play and the distance or rate-of-top-movement relative to a starting position (whether guided by a rail system or not).

[0038] Referring now to Figs. 1-5 an exemplary entertainment systems 100, 100A (see Figs. 17, 18) includes a spinning top system 10 including an interchangeable component 12 in the form of a ring releasably mountable about a central pivot contact 11. The ring 12 may also be permanently fixed in place to the top system 10. Spinning top system is formed from molded plastic and is of a very light weight, preferably below 30 grams, and most preferably below 10 grams.

[0039] Ring 12 has a side wall that is at least 2 mm in height, and a diameter that is at least 1 cm, such that the minimum ratio (height : diameter) for Ring is 5. In this manner, the side wall of Ring 12 makes an uprightly-linear (non-point) contact with rail face 23 and therefore maintains and corrects the vertical position of the centerline CL of top system 10 during use.

[0040] Ring 12 has a ring diameter DM (for example, between 8-20mm, and

preferably 10-16mm, and more preferably 14mm), top system 100 has an outer diameter DO, and pivot contact 11 has a tip diameter DI. Preferably, pivot contact 11 has a rounded radius as shown in Fig. 1. All components of spinning top system 10 are symmetrically arranged around a common centerline CL, as shown. It will also be appreciated, that the minimum ratio (outer diameter DO : Ring diameter DM) is 3, and preferably 4 or more, such that the outermost diameter of spinning top system 10 greatly overhangs ring 12, and overall has a lowered profile.

[0041] As will be understood, pivot contact tip 11 is not metallic or non-ferrous and therefore is not influenced by inductance in any manner by either support 22 or main rail 21. It will be further understood that ring 12 may be non-metallic or non-ferrous and is therefore not restricted by material selection.

[0042] As will be understood by those of skill in the art, by increasing the diameter of ring 12 the rotational speed of top system 10 will be increased and thus the transit speed along rail system 20 during an engagement there with.

[0043] While not visually depicted herein, those of skill in the art will recognize that member 12, preferably shaped as a low-ratio ring can be press-fit onto pivot contact 11 and similarly press-removed, and may be otherwise fixed or removable using adhesive or any mechanical or magnetic fixing system effective therefore.

[0044] Referring directly to Figs. 2-5, a rail system 20 is provided with a ferrous or non-metallic track member or main rail 21 having a flat face 23 perpendicularly fixed to an optional non-metallic or metallic support surface 22 of any suitable material. Rail 21 is provided in many configurations in rail system 20, as will be discussed, and where there is an end of each rail 21, that rail is

designated either as a magnetic or non-magnetic rail entry or rail exit, 24N, 24N,. While rail exits and entries 24N are provided they may be of any suitable material. Where rail entry/exit 24N is used, they are presented formed with a common face aligned with rail face 23, and provided slight off-line from mail rail 21 to avoid interference therewith.

[0045] As is directly noted in Figs. 4 and 5, a rail top cap or rail guard 25 is provided extending perpendicular to rail face 23, and inwardly thereof by between 1-5mm. In this manner rail guard 25 can engage with an upper surface of ring 12 and act as a guide to aid in control and speed management of top system 10 during use of rail system 20. In a non-limiting example, and as can be seen in Fig. 5, there is a slight gap of between 1-3mm between ring 12 and the next-greater profile on top system 10, such that rail guard 25 is slidably received in this slight gap in a loose-fit manner so as to aid in correction of any wobble of top system 10, and to resist any force driving top system 10 up from support 22 and away from rail face 23. It will be understood, that rail guard 25 is optionally used depending upon the design and configuration of rail 21.

[0046] As will be further recognized in considering Fig. 3, where an end member 24N is required, and is preferably formed of a smooth plastic extending directly from each rail end 24, to counter the influence of either friction resistance or optionally magnetic inductance between rail end 24 and ring 12 at the end of rail 21. In this manner, end members 24N allow top system 10 to smoothly enter and exit mail rail 21 without directional perturbation via friction influence or magnetic influence from end members 24. It will be understood, that end members 24N are optionally used depending upon the design and configuration of rail 21 and may be formed of any suitable material.

[0047] Referring now to Fig. 6, top system 10 and rail system 20 are presented in an engaged manner along a 90 degree rail section 26. As will be noted, top system 10 is rotating in a direction R (see arrow) which results in a driving direction D along rail 21 as guided by the rolling (and parallel) interaction of rail face 23 with the face of Ring member 12. In this embodiment, rail guard 25 is not employed as unnecessary as top 10 transits along the flat surface of support 22 with divergence and at high speed. For example, where top system 10 rotates at a rate of 10-80 rotations-per-second depending upon the diameter DM or ring 12, the translational speeds along track 21 can be quite high, exceeding 15kph overall.

[0048] As will be noted at the top surface of top system 10, an engagement hole (shown but not numbered) is noted for engagement with a launcher system 40 (noted in Fig. 7, as will be discussed).

[0049] Referring now to Fig. 7, a launcher system 40 for launching top system 10 from a launch station 30 along rail system 20 is provided. In this embodiment, launcher station 30 contains a launch support 32 of flat material and a launch rail arrangement 31A noted as a spiral, and preferably as an expanding diameter spiral until reaching a desired curve radius for launching onto an adjacent member of rail system 20, here shown as a 90 degree rail member 26. As noted, launch rail arrangement 31A initiates with a flat section at an end 24 proximate launcher system 40 and terminates at an end 24N.

[0050] Launcher system 40 contains a trigger release 41 operably lined to an internal spin initiator (not shown, but preferably a spring based ratcheted system or battery-powered electric system). Proximate trigger release 41 is a handle 43 containing extending fiber tabs 43A, 43B for easy gripping. Extending perpendicular therefrom are extensions 44, 44, as shown which are fixably

secured in respective leg members 45, 45.

[0051] Additionally referring now to Figs. 8-12, in view of the arrangement provided by the particular launcher system 40 depicted herein the construction guarantees a level launch of top member 10 in a manner that places the pivot axis of top member parallel to rail face 23 and perpendicular to flat launch floor 32. When trigger 41 is pressed, following engagement of the top with wind-up mount 42, top system 10 drops directly vertically, and begins to translate outwardly from the drop point due to centrifugal force, so that there is a parallel engagement between the outer spinning wall of ring 12 and rail face 23. This engagement immediately whips top system 10 in the direction noted (arrows) while maintaining all spinning velocity. If desired rail guard 25 may be added.

[0052] As is visible in Fig. 11, legs 45, 45 provide a flat bottom surface to meet with launch station 30 and provide a vertical launch position for top system 100. Thereby, during use, a user presses trigger release 41 and sets top system 10 spinning rapidly down rail system 21 and thereafter lifts launcher system 40 to install a second, third, or further top system 10 while the originally launched top remains spinning.

[0053] Referring now to Figs. 13 and 14, an alternative launch station 30A having a different launch rail arrangement 31B is presented having a continuously expanding spiral. Additionally, an alternative launcher system 40A is provided with a similar hand launching arrangement but now with extensions 44, 44 ending without fixed legs. Instead, respective support members 46, 46 are provided respectively to engage supports 44, 44 to station the central pivot axis of launcher system 40A perpendicular to launch floor support 32 so as to drop top system 10 (not shown) directly within the expanding spiral of launch rail arrangement 31B.

The convenience of this system, allows easy winding of multiple top system 10 relative to handles 43 in a pre-launch condition so as to rapidly place-then-launch multiple top systems 10 along rail 21, for example, for competitive users.

[0054] Referring now to Fig. 15, launcher system 40A is shown with respective extensions 44, 44 relative to a launching station 30B wherein, opposing supports 47, 47 are arranged in broad blocks of robust construction with alignment slots 48, 48, on each support 47. In this manner, a tight spiral in launch rail arrangement 31B may be used for almost immediate engagement and launch down track 21 along launch floor support 32.

[0055] Referring now to Fig. 16, an alternative launch station 30C is provided with launch floor support 32 but without any edge supports, and expanding spiral rail arrangement 31B. A guiding channel 32A is provided on floor support 32 as a slight depression or shaped recess to receive tip 11 and guide the same in direction of the rail. The 'exit-region' of channel 32A is broader than the entry curve and allows the top to exit without perturbation. Here, an alternative launcher system 40B without extensions or supports. Here, the lever launcher is presented in a 'free' concept along the starter section of track by hand only. Therefore, a user with skill can still physically judge and then launch top system 10 in a parallel position to floor support 32 very rapidly and without interference. Launcher system 40B will also allow easy use without rail system 20 in an open surface environment. Launcher system 40B also allows a user to tilt at a user-selected angle to direct the top into rail-contact or in a top direction. Further after launching it is recognized that a user may 'flick' the top with a finger into rail-contact for sufficient friction.

[0056] Referring now to Fig. 17, an alternative system 100A is presented from an

adaptive and interchangeable assembly of components without departing from the scope and spirit of the present invention. As shown, launch station 30B is joined to two separate 90 degree rail sections 26, 26 spaced by a non-rail portion. Distant from an end of rail section 26, is a free circular station 70 (e.g., 'battle station'), formed as a "C" with an opening region and a raised wall thereabouts of a sufficient height to engage ring portion 12 of respective top systems 10, 10, 10. In use, it will be appreciated that multiple quick launches may provide multiple tops within station 70 in an interfering arrangement to so drive out one or more top systems 10 in a competitive manner to allow a "winning" top. It will also be appreciated that the use of a rail exit 24N allows tops 10 to continue aligned with rail face 23 across a long distance without guidance from rails 21. As a result, the proposed invention allows easy adaptation to diverse settings and user-arrangements without departing from the scope and spirit of the present invention.

[0057] Referring now to Fig. 18, an alternative system 100 is presented from an adaptive and interchangeable assembly of components without departing from the scope and spirit of the present invention. As shown, launch station 30B is linked with a series of 90 degree rail sections 26, a 180 degree rail section 27A, and a series of 360 rail sections 27, 27 to align a top system (not shown), with a jump component 50.

[0058] In use, a top system 10 (not shown) leaving jump component 50 will fly over rail track 26 to optionally run up a ramp member 51 or bypass ramp member 51, as shown by dotted pathway markers. Engaging ramp member 51 approaches a spiral ramp member 60 (shown from a top view) constructed from a rising spiral (e.g., 'stunt spiral') main rail member 21 having a top end point launching top system in direction L1 (as shown). Alternatively bypassing ramp member 51 a top member 10 (not shown) travels along a floor and encounters a distant guard

rail (e.g., 'hot rail') member 110. Guard rail member 110 is formed in a decreasing radius curve at a height to engage ring 12 and direct top system 10 (not shown) in direction L2 (as shown). In this manner, it is noted that the rail system 20, which includes the various noted components may be adaptively interchanged and arranged for entertainment purposes. Additionally, it is understood that multiple guard rail member 110 may be positioned relative to other track elements to 'catch' off-track tops 10 and return them to a play area.

[0059] Referring now to Fig. 19, guard rail member 110 is noted as constructed from a mail rail member 21 having an entry point 24 and an exit point 24, secured to a non-magnetic support 22 to secure rail face 23 perpendicularly to a contact with the side wall of ring member 12 during an encounter. In this way, rail face 23 can immediately receive and guide top system without friction or loss of momentum along the length of rail face 23 to exit at exit end 24.

[0060] Referring now to Fig. 20, another free-standing interchangeable element with rail system 20 is a non-magnetic interaction box 90 (e.g., 'power box') for receiving a moving top member 10 (not shown) from an entry opening 94 to an exit opening 94 and thereby re-directing top member 10, via a friction interaction at an angle from an incident path. Interaction box 90 includes a floor 91 and a series of wall side members 92, 92, 92, spacing a top 96. Internal to box 90 is a secured elastic member 93 (rubber band) supported freely between two posts (shown but not numbered), at a height sufficient to encounter ring 12, or optionally (for greater acceleration), the outer diameter DO of top member 10 (not shown). In this way, the position of elastic member 93 relative to floor 91 can be adjusted, as can the position of box 90 relative to an incident path, as well as the degree of elastic response (by band selection) to provide an enhanced enjoyment during play.

[0061] Referring now to Figs. 21 and 22, another free-standing interchangeable element with rail system 20 is provided in the form of a stepped receiver station 80 (e.g., 'stepped battle circle'). As shown, there is an entry floor portion 81 without side walls, and a first step 82 and second step 83 having bounding side walls 84, as shown. During use, for example, with system 100A (as in Fig. 17, replacing circle station 70), multiple top systems 10 are directed to stepped station 80 and hit one another and the riser of first step 82 causing interference and jumping (due to the spinning force thereof) possibly to step 82 or step 83 as bounded by side walls 84. In this manner, multiple or singular users can receive enhanced entertainment using multiple top systems 10.

[0062] Referring now to Fig. 23, another free-standing interchangeable element with rail system 21 is presented in the form of a frusto-conical container 120 (e.g., 'tornado escape'), having outwardly tapered walls 122 and a top guard member 123 opposite a bottom bounding floor. An entry opening 121 is positioned along an entry path (shown but not numbered) of a moving top system 10 (not shown). In use, as top system 10 enters entry opening 121 (optionally with the aid of a small ramp 50, not shown), the external rim engages with the outwardly tapered walls and begins to climb upwardly, via outward acceleration, in a rotating fashioned until reaching the height of exit opening 124 and exiting as shown. Top guard 123 is an open ring and prevents unintended exit of a top 10 from the top opening. During a use, container 120 is positioned relative to rail system 20 in a user-arrangement and one or more top systems 10 are directed to entry opening 121 at speed and begin to climb. In competition, multiple top systems 10 may compete for exit opening 124 for enhanced entertainment.

[0063] Referring now to Figs. 24 and 25, an optional integratable power rail

system 130 is provided adjacent a portion of main rail 21. As shown, power rail system 130 is pre-arranged with a separate main rail portion 21 as a kit unit, but any other adaptation may be presented without departing from the scope of the invention. For example, other 90, 180, 360 rails (elements 26, 27, and 27A) or other interchangeable elements may also be linked in kit units and sold packaged as such. As shown, a drive wheel 131 is positioned with an outer face parallel to rail face 23 at an operable distance to engage the outer diameter DO of top system members 10.

[0064] A drive motor 132 engages drive wheel 131 driven by power supplied by a power supply 134 and controlled by a switch member 133 operatively linked thereto via a series of wires 135. Particularly in Fig. 25, a platform 137 is shown as part of the kit unit with rail 21 and an extended support 136. In use, a top member spins and approaches main rail 21 and thus drive wheel 131. Switch 133 ensures the speed of drive wheel 131 is sufficient to accelerate (via friction-type-contact) top member 10 relative to a pre-entry speed while maintain alignment between rail face 23 and the rotating face of ring 12. In manner, it is possible to assemble the components in systems 100, 100A and otherwise in a physically separate system that, receives motive force from motor 132 near an end and therefore supports a continued use for enhanced enjoyment.

[0065] It will be further understood from those of skill in the technical arts that the proposed systems and elements may be jointly combined and interchanged to provide an overall dynamic entertainment system that operates according to the proposed invention. For example, or more multiple launcher stations and launcher systems may launch multiple top members 10 down multiple rails to multiple components in a rapid sequence or simultaneous manner for enhanced entertainment. Further, multiple jumps, circles, stations, power rails or other

magnetic or non-magnetic elements can be interchangeably adapted in discontinuous pathways allowing multiple spinning top systems to enhance entertainment.

[0066] While not depicted herein, those of skill in the art will further understand that one or more computer process units/control units (CPU's) involving drive control for power rail system 100, or launcher stations 30 or launcher systems 40, or optionally for a signal control (e.g., sound, light, motion signal). In an exemplary embodiment, a CPU (not shown) may control a sensor at an entrance to a 360 degree rail 27 and cause a rail section 21 on a support 22 to switch (as a train rail switches) to direct a spinning top member 10 alternatively to different elements in the proposed rail system.

[0067] It will be understood that the phrase expanding spiral launch station refers to the increasing diameter rail spiral as seen from above relative to a top launch position. As a result, it will be understood that the spiral launch station may also spiral upwardly or downwardly relative to an initial launch position within the scope of the present invention.

[0068] It will be understood that the engagement between the top, particular ring side wall, and the rail wall is one of a friction engagement during contact, although such friction may be nearly zero based upon the engagement force there between. As such, it will be understood that both rail wall and ring may be formed of any material and may be coated with any materials effective to operate as a dynamic entertainment system and guide the top along the rail during a use.

[0069] It will be further understood by those of skill in the art that any of the components and systems noted above maybe packaged individually or optionally

in groups of two or more in the form of kits packaged for individual transport. For example, one or more top systems, containing a plurality of nonmagnetic top bodies and a plurality of differently sized Rings could be in a kit. Similarly, a launching station and a launching system could be packaged in a kit. Further examples would be recognized by one of skill in the product packaging and entertainment fields following study of the proposed disclosure.

[0070] Having described at least one of the preferred embodiments of the present invention with reference to the accompanying drawings, it will be apparent to those skills that the invention is not limited to those precise embodiments, and that various modifications and variations can be made in the presently disclosed system without departing from the scope or spirit of the invention. Thus, it is intended that the present disclosure cover modifications and variations of this disclosure provided they come within the scope of the appended claims and their equivalents.

WHAT IS CLAIMED IS:

1. A dynamic entertainment system, comprising:
 - a top having a maximum outer diameter and a pivot contact;
 - an interchangeably fixable ring secured about said top proximate said pivot contact and having a ring diameter;
 - said ring including a ring side wall perpendicular to a top axis;
 - said ring side wall at said ring diameter is less than said maximum outer diameter and greater than a pivot diameter of said pivot contact;
 - a rail path having a support rail side wall;
 - said rail side wall extending perpendicular to said ring side wall in a rolling line contact therewith during a use;
 - a launching station including launch floor support and a spiral launch rail path arrangement wherein said launch rail path includes said rail side wall substantially bounding a designated launch position;
 - a launcher system operably positionable relative to said designated launch position on said launching station; and
 - said launcher system operable to releasably retain said top during a pre-use condition and to release said top in a use-condition with a rapid angular rotation about said top axis onto said designated launch position generally perpendicular to said rail side wall.
2. A dynamic entertainment system, according to claim 1, further comprising:
 - extension members on said launcher system extending therefrom parallel to said launch floor support during said use-condition.
3. A dynamic entertainment system, according to claim 2, further comprising:
 - support members supporting said extension members relative to said launch floor support during said use-condition.

4. A dynamic entertainment system, according to claim 3, wherein:
said support members are fixably secured to respective said extension members.
5. A dynamic entertainment system, according to claim 3, wherein:
said support members are fixably secured to said launching station.
6. A dynamic entertainment system, according to claim 1, wherein:
said rail path is discontinuous and includes respective rail path ends; and
said rail path ends being one of non-magnetic and magnetic ends.
7. A dynamic entertainment system, according to claim 1, wherein:
said spiral launch rail path arrangement in said launching station is an expanding radius spiral rail path.
8. A dynamic entertainment system, according to claim 1, wherein:
said spiral launch rail path arrangement in said launching station is a continuous radius spiral rail path.
9. A dynamic entertainment system, according to claim 1, further comprising:
a rail top guard on a portion of said rail path.
10. A dynamic entertainment system, according to claim 1, wherein:
said launcher system further comprises:
one of a tension-rotation release system and an electrical-rotation release system; and
said one being operative to release said top with said rapid angular rotation upon a release of a trigger.
11. A dynamic entertainment system, according to claim 1, further comprising:
a rail path member discontinuously associated with said launching station;
said rail path member including a member non-magnetic support and a member ferrous rail side wall;

said member ferrous rail side wall extending perpendicular to said ring side wall in a rolling line contact therewith during a use; and

said rail path member being one of a linear rail member and a non-linear rail member.

12. A dynamic entertainment system, according to claim 11, wherein:

said rail path member is said non-linear rail member; and

said non-linear rail member is one of a group consisting of: a 90 degree rail member, a 180 degree rail member, a 360 degree rail member, a spiral rail member, a multiple-radius guard rail member, and a rising spiral rail member.

13. A dynamic entertainment system, according to claim 1, further comprising:

a non-magnetic jump member.

14. A dynamic entertainment system, according to claim 1, further comprising:

a ramp member.

15. A dynamic entertainment system, according to claim 1, further comprising:

a rising spiral rail member discontinuously associated with said launching station;

said rising spiral rail member including a non-magnetic spiral support and a spiral ferrous rail side wall perpendicular thereto; and

an open entry and an open top of said spiral ferrous rail, whereby said open top is spaced from said open entry above a support surface for said rising spiral rail member.

16. A dynamic entertainment system, according to claim 1, further comprising:

a partially bounded receiving station discontinuously associated with said launching station;

said partially bounded receiving station including a front opening and one of magnetic side walls and non-magnetic side walls;

17. A dynamic entertainment system, according to claim 16, wherein:

said partially bounded receiving station is formed as an arc having an inner radius opposite said front opening and having a sufficient inner bounded area, whereby during said use a plurality of top members are receivable within said bounded area for mutual contact there between.

18. A dynamic entertainment system, according to claim 16, wherein:

said partially bounded receiving station is formed as a plurality of steps arrayed perpendicular to a direction of travel of a plurality of tops;

side walls on ones of said step thereby preventing unintended loss of ones of said top members receivable on said plurality of steps for mutual contact there between.

19. A dynamic entertainment system, according to claim 1, further comprising:

a non-ferrous frusto-conical volume with an outwardly sloping wall arrayed relative to a direction of travel of at least one top;

an entry opening in said wall and an exit opening in said wall for operative receipt and exit of said top; and

said exit opening being spaced above said entry opening, whereby during said use at least one said top is received in said entry opening and an inner wall surface frictionally engages said maximum outer diameter causing said top to run along said inner wall surface toward said exit opening.

20. A dynamic entertainment system, according to claim 1, further comprising:

a powered rail assembly discontinuously associated with said rail path;

said powered rail assembly including a member support and a member rail side wall and an operative drive wheel having a spinning axis;

said member ferrous rail side wall extending perpendicular to said non-magnetic support and said spinning axis:

a drive surface on an outer perimeter of said drive wheel; and

said drive surface spaced from said member ferrous rail side wall to engage said maximum outer diameter of said top during said use and transmit operative rotation to said top thereby accelerating said top along said rail side wall.

21. A spinning toy assembly, having non-magnetic top bearing an interchangeable ring having a side wall engagable with a ferrous rail wall system, the improvement comprising:

a launching system, further comprising:

a spinning mount operative for releasable engagement with said top in a position placing said side wall parallel with said ferrous rail wall system;

a trigger on said spinning mount;

extensions spacing from opposing sides of said spinning mount;

and

means for supporting said extensions relative to a support surface for said spinning toy assembly, thereby ensuring said spinning mount releases said top for contacting said side wall with said rail wall in close alignment.

22. A dynamic entertainment kit, interoperably comprising:

a top having a maximum outer diameter and a pivot contact;

one of an interchangeably fixable plurality of rings secured about said top proximate said pivot contact;

said ring including a ring side wall perpendicular to a top axis;

a rail path member having a support and a rail side wall;

said rail side wall extending perpendicular to said ring side wall in a rolling line contact therewith during a use;

a launching station; and

a launcher system operably positionable relative to said launching station.

23. A dynamic entertainment kit, according to claim 22, further comprising:

one of a discontinuous top engagement member selected from a group consisting of:

a linear rail system, a non-linear rail system, a jump member, a ramp member, a spiral ramp member, a guard rail member, a frusto-conical member, a multi-top station member, a stepped multi-stop station member, and a power rail system.

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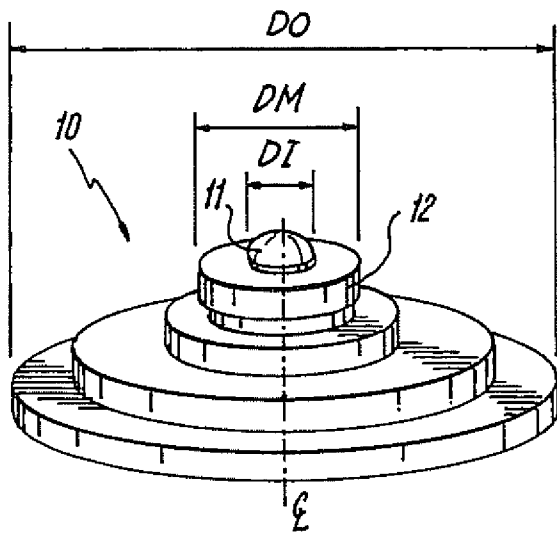


Fig. 1

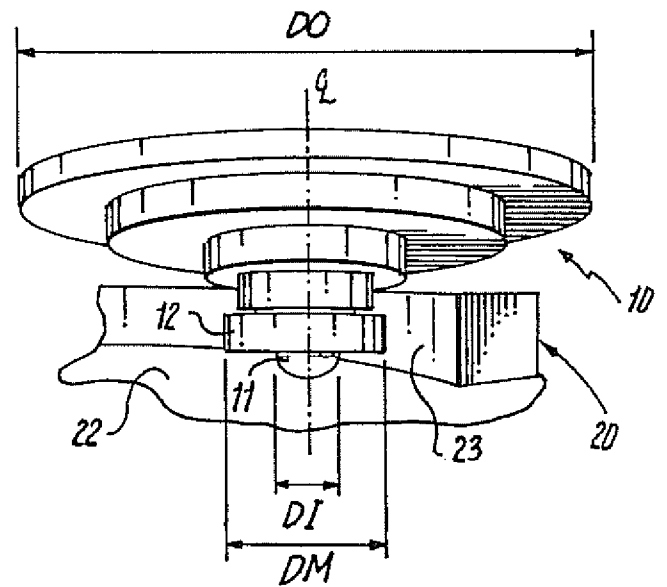


Fig. 2

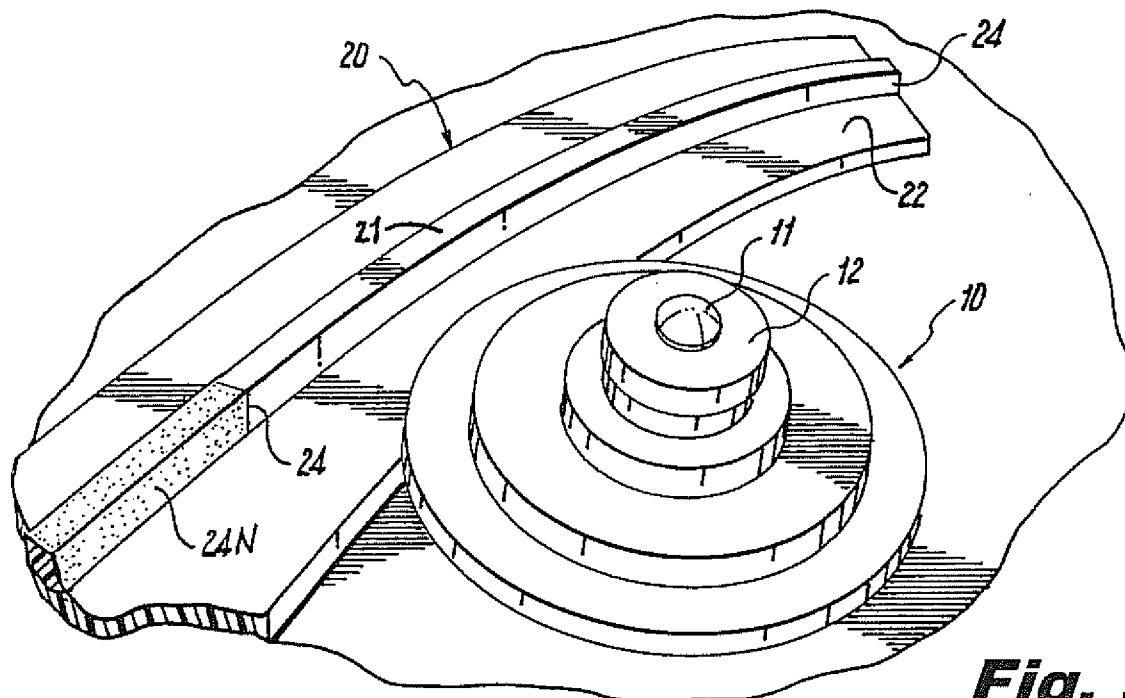


Fig. 3

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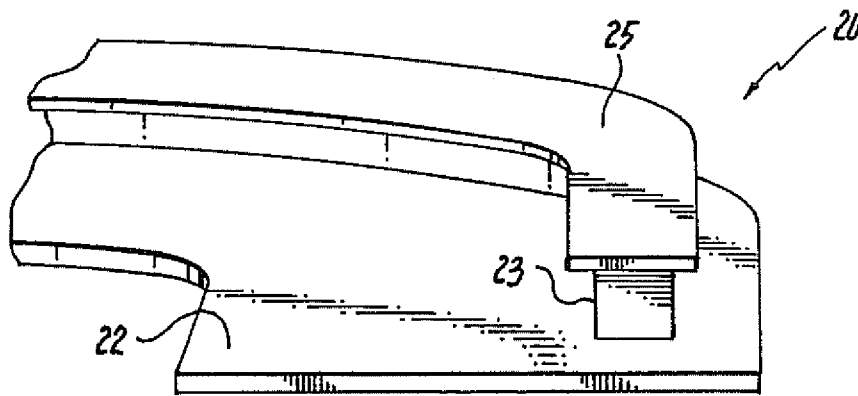


Fig. 4

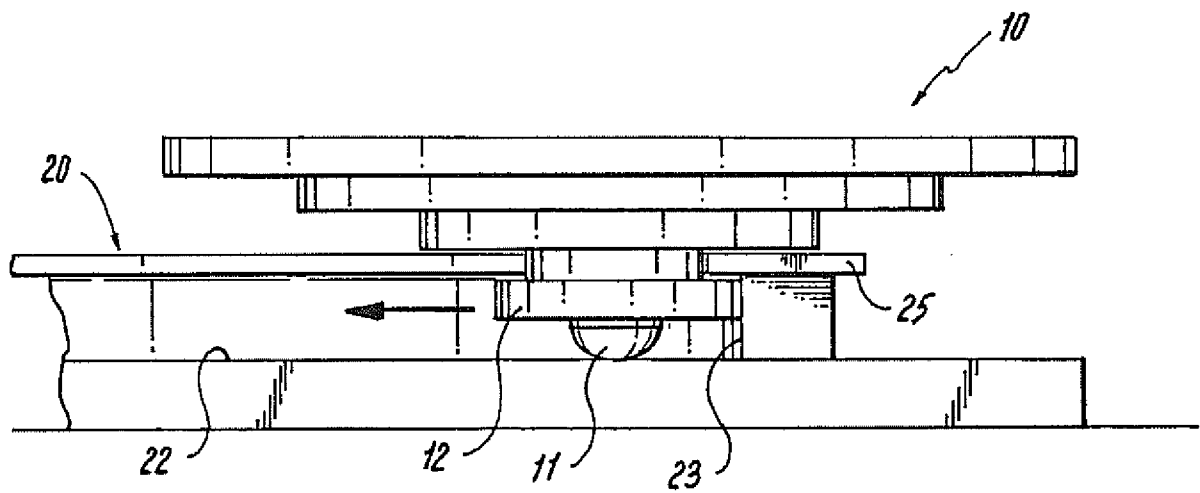


Fig. 5

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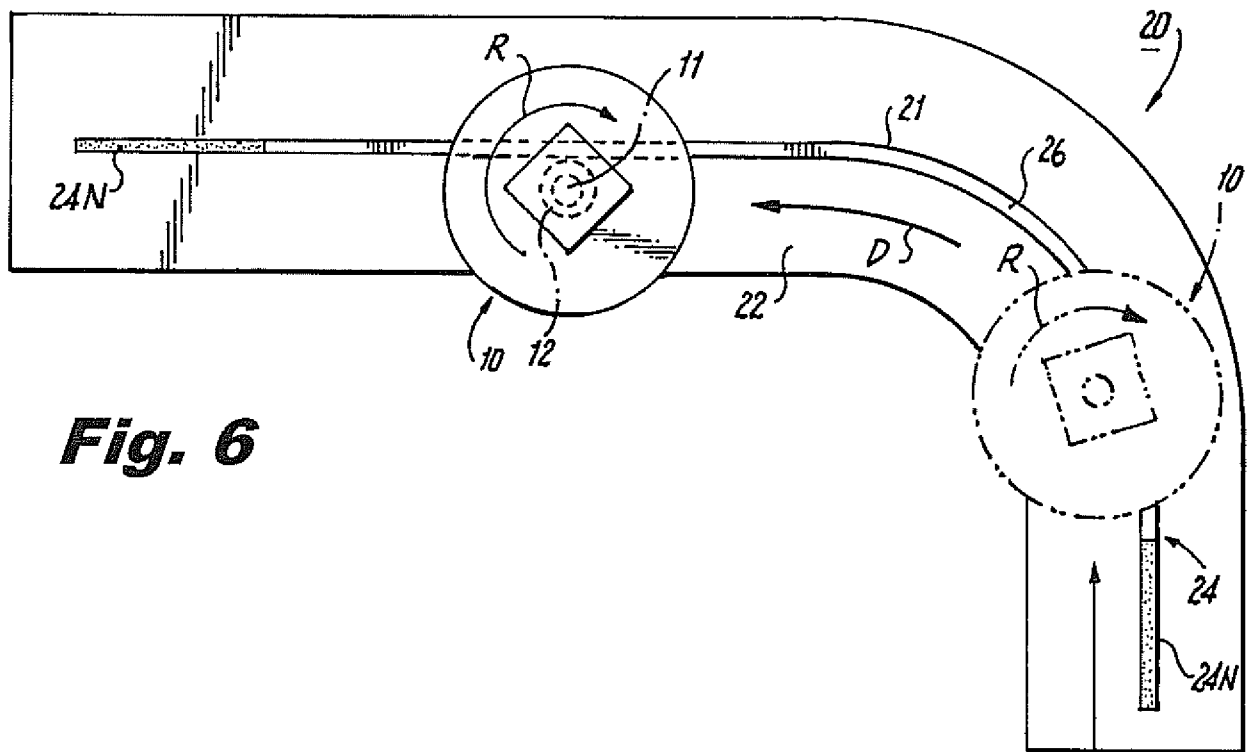
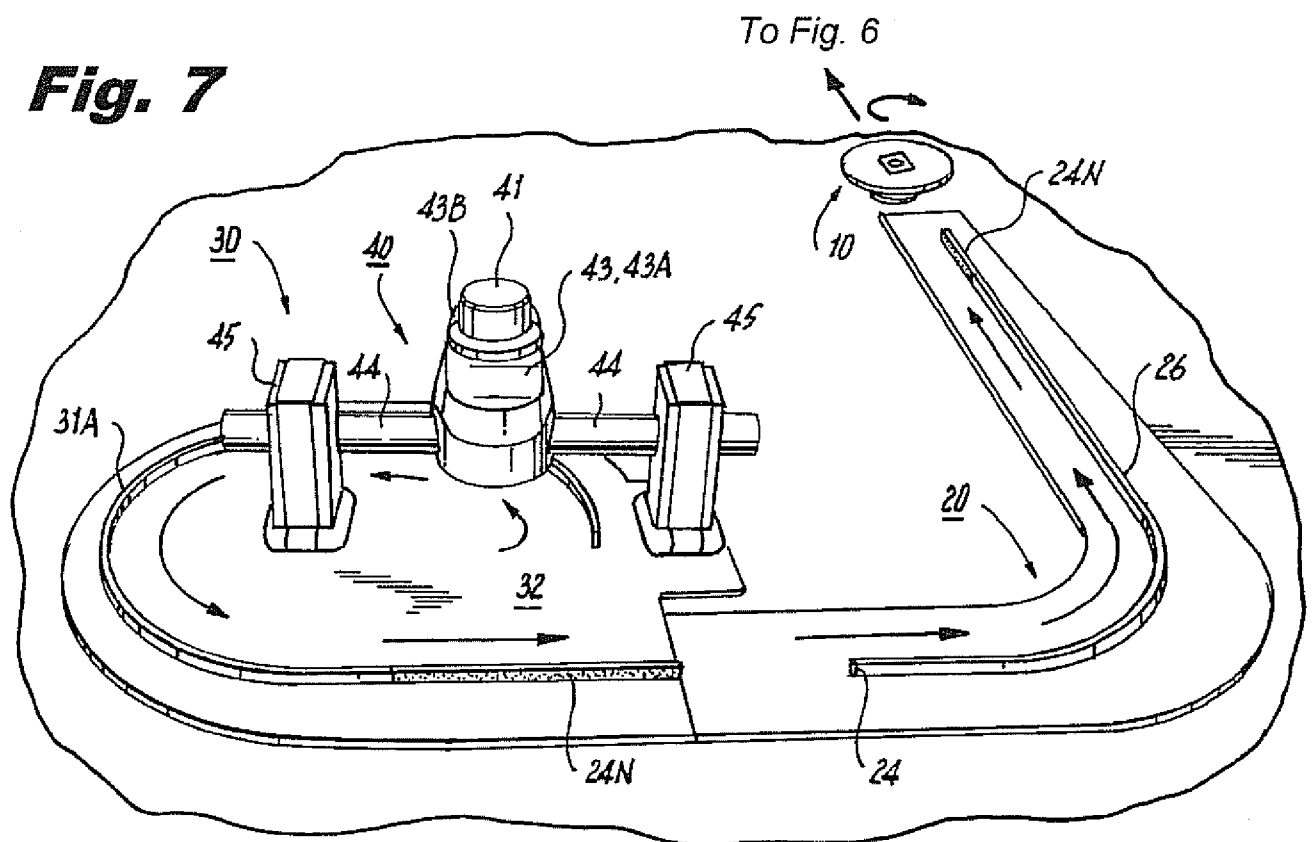


Fig. 6

From Fig. 7

Fig. 7



To Fig. 6

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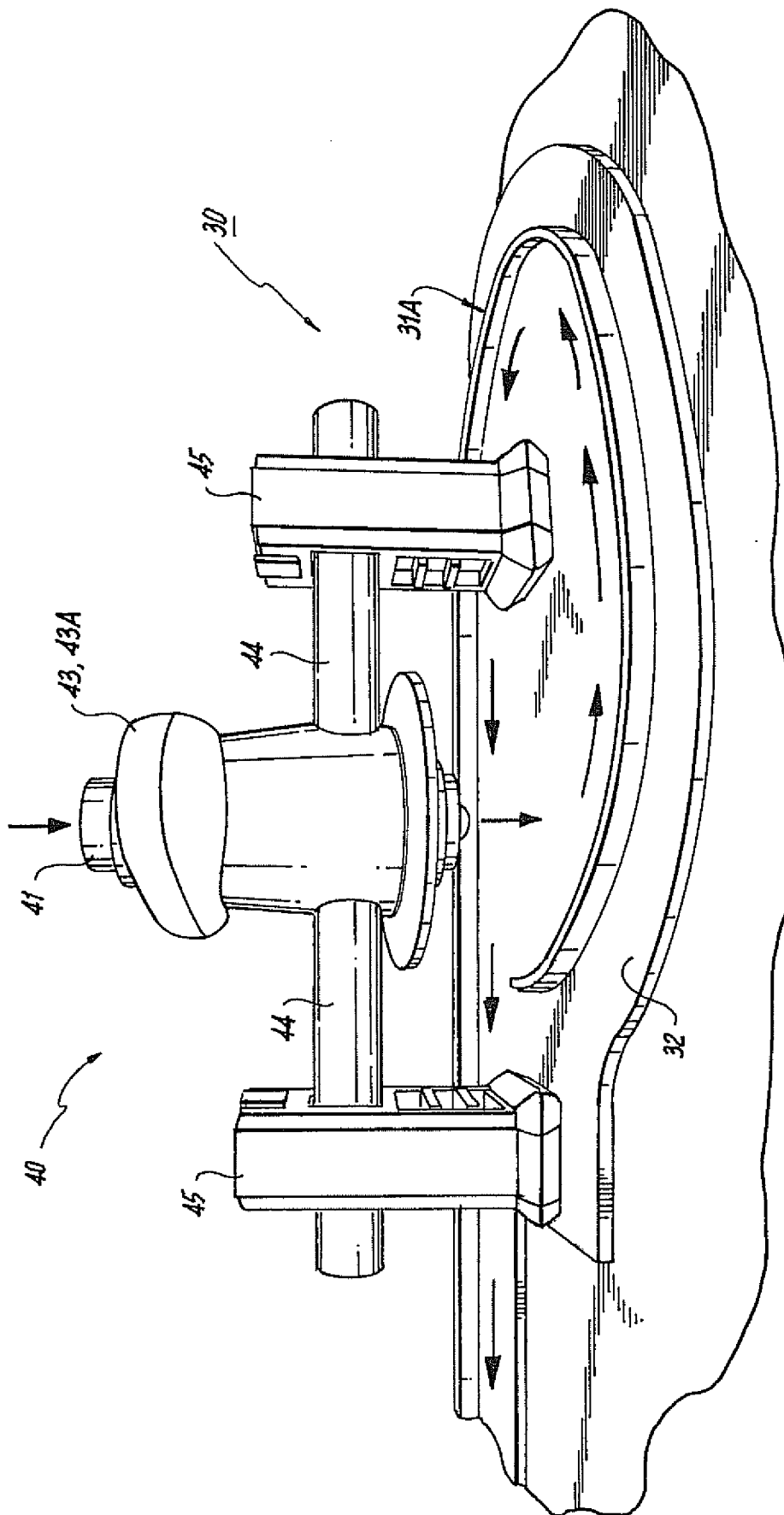
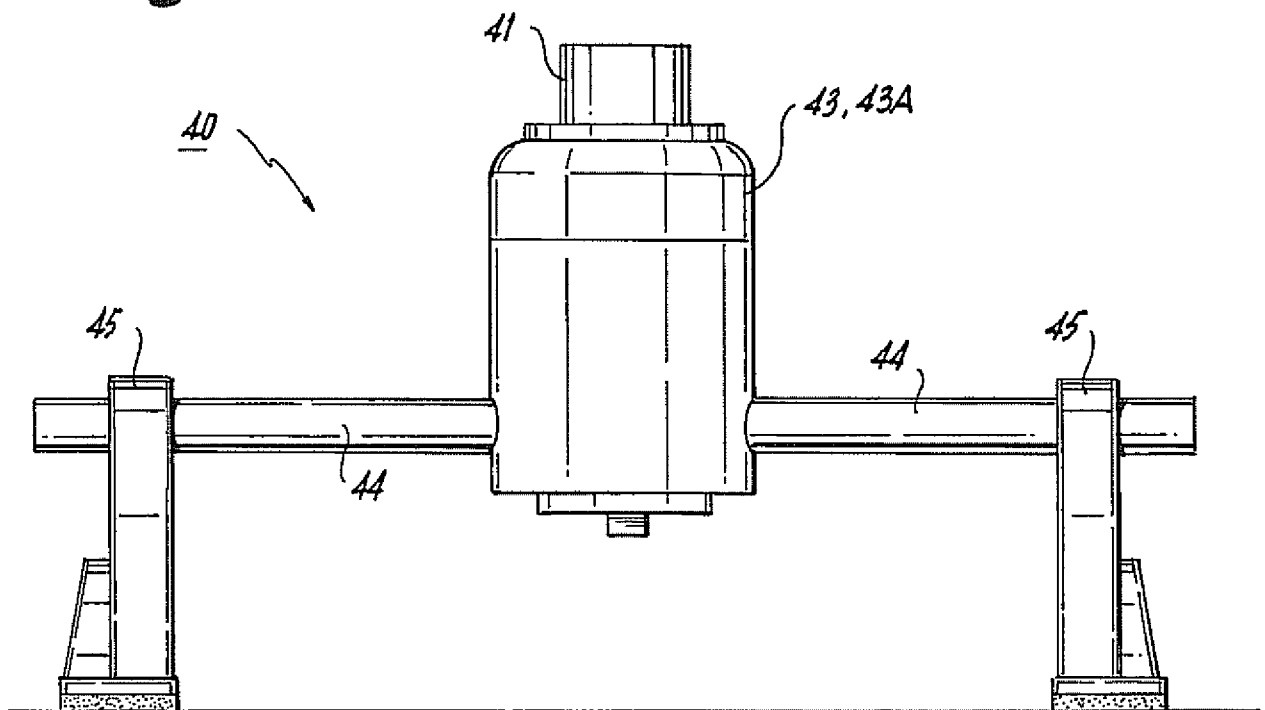
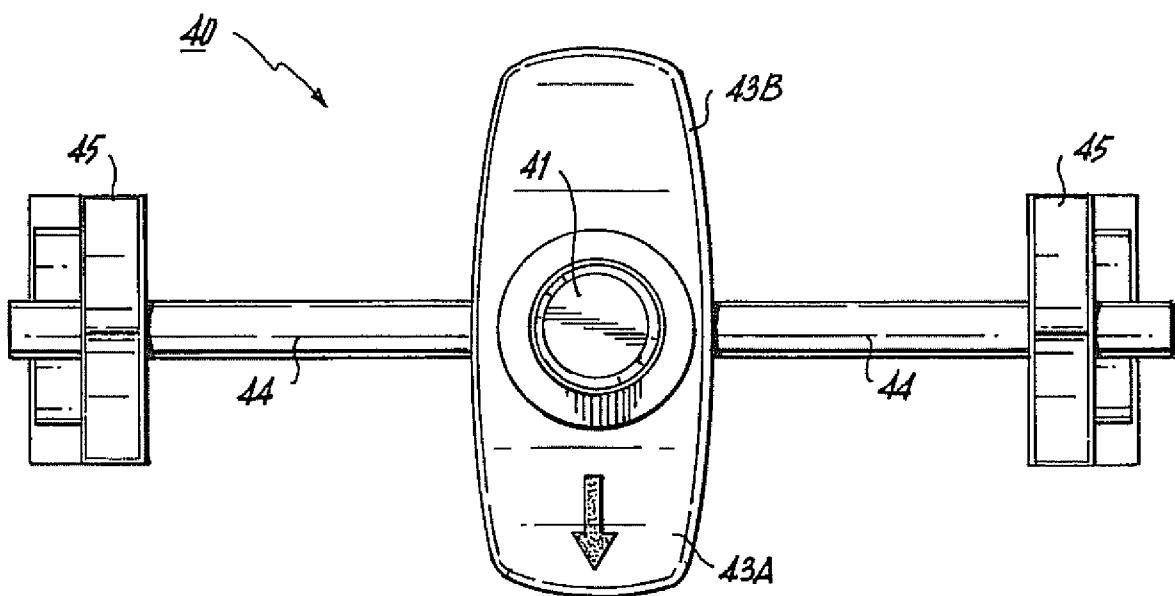
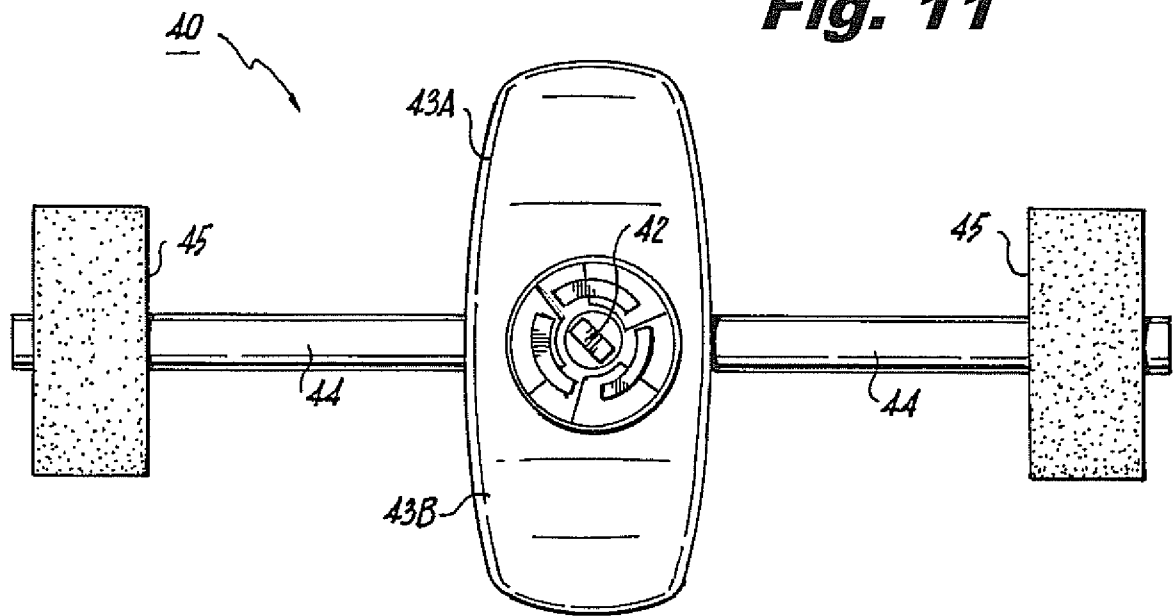
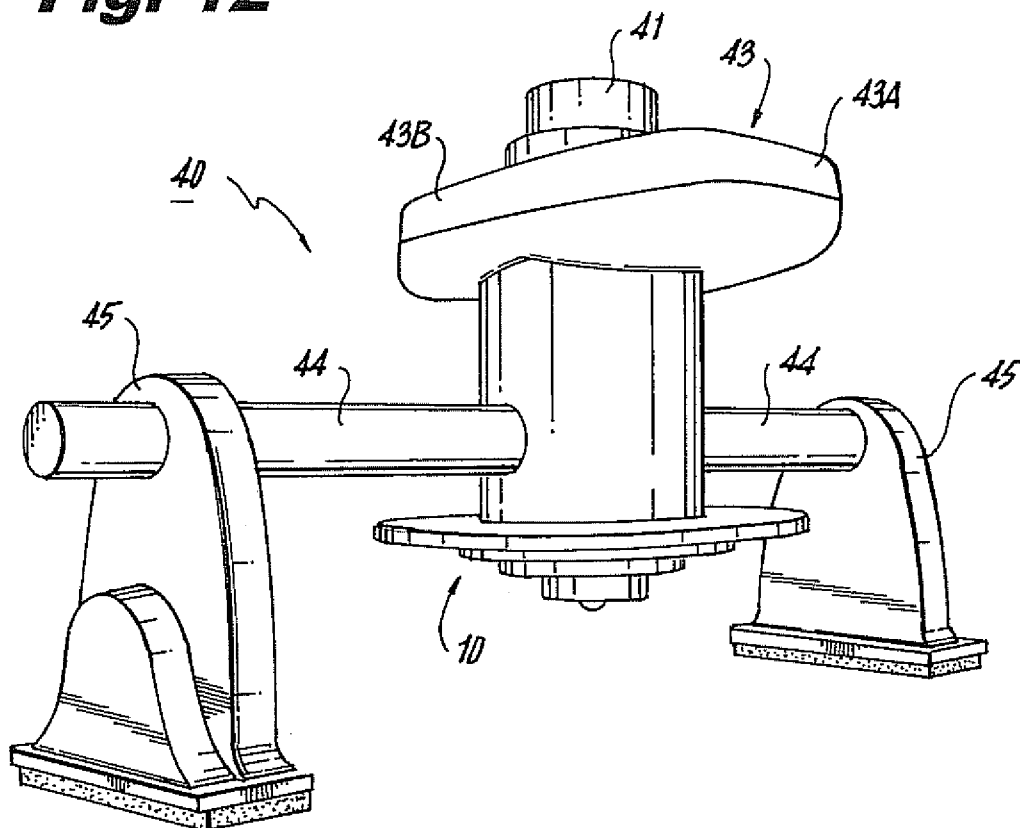


Fig. 8

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Fig. 9**Fig. 10**

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Fig. 11**Fig. 12**

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Fig. 13

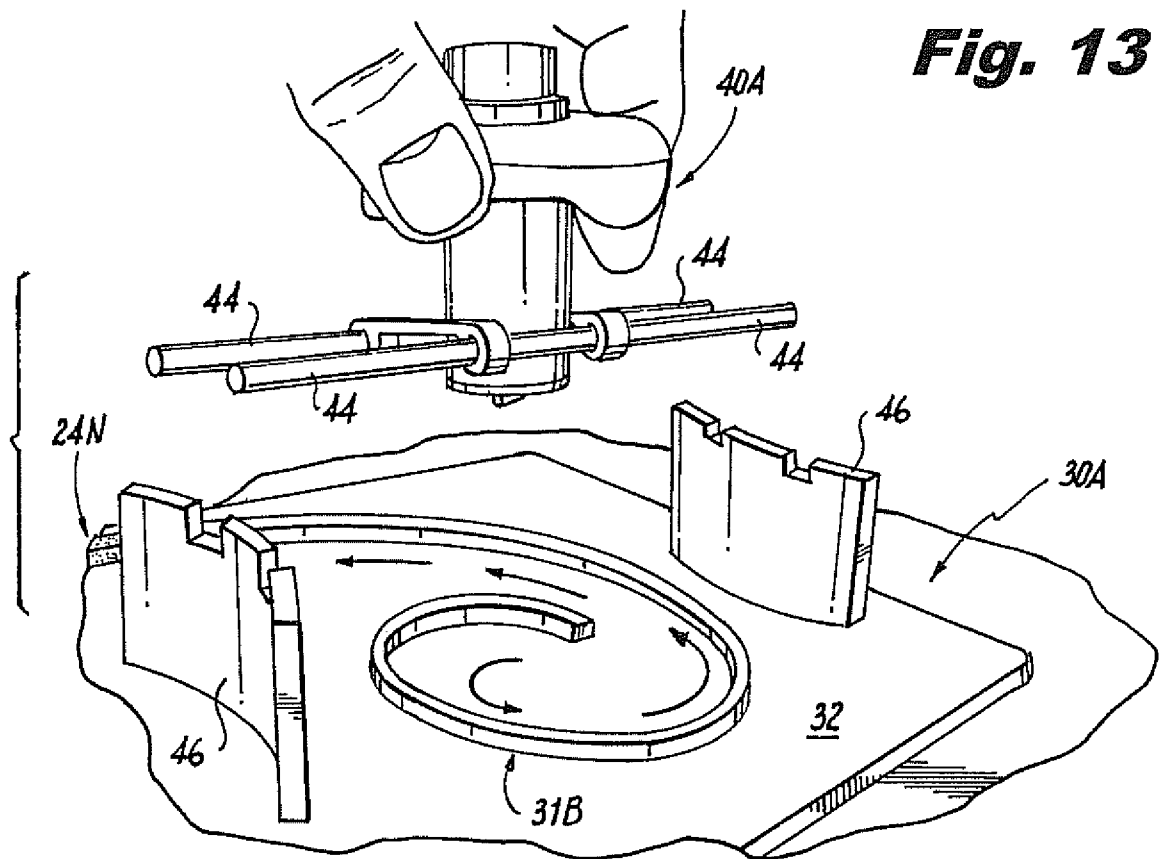
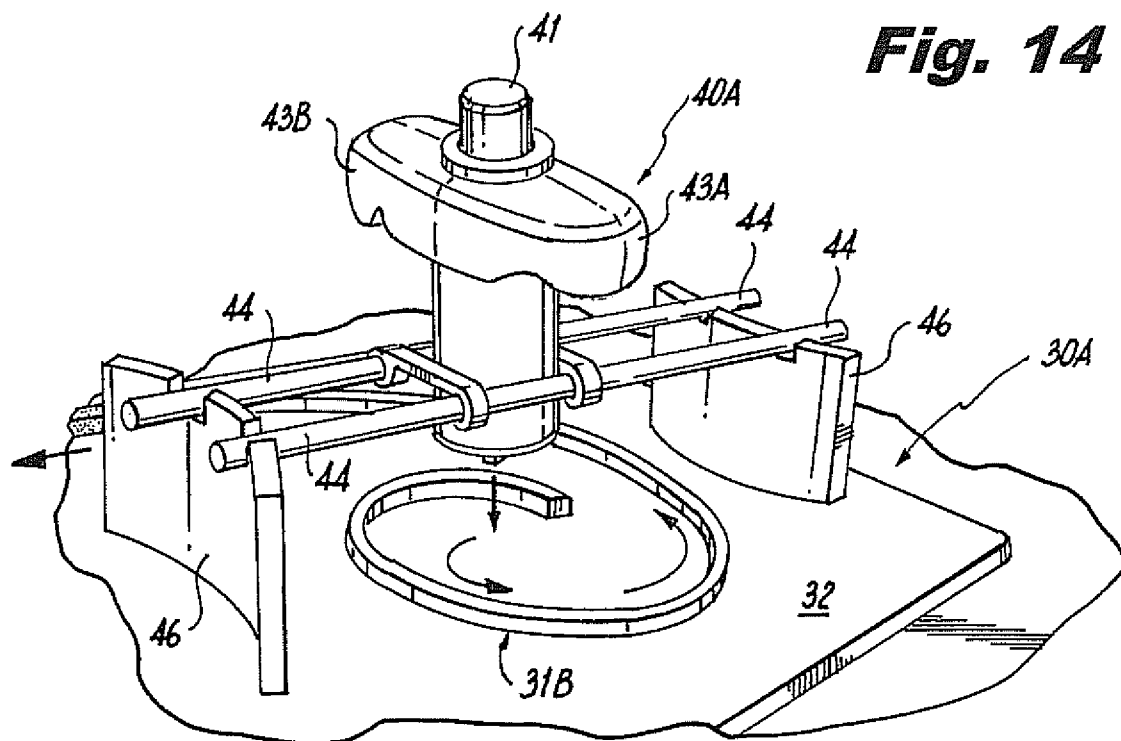


Fig. 14



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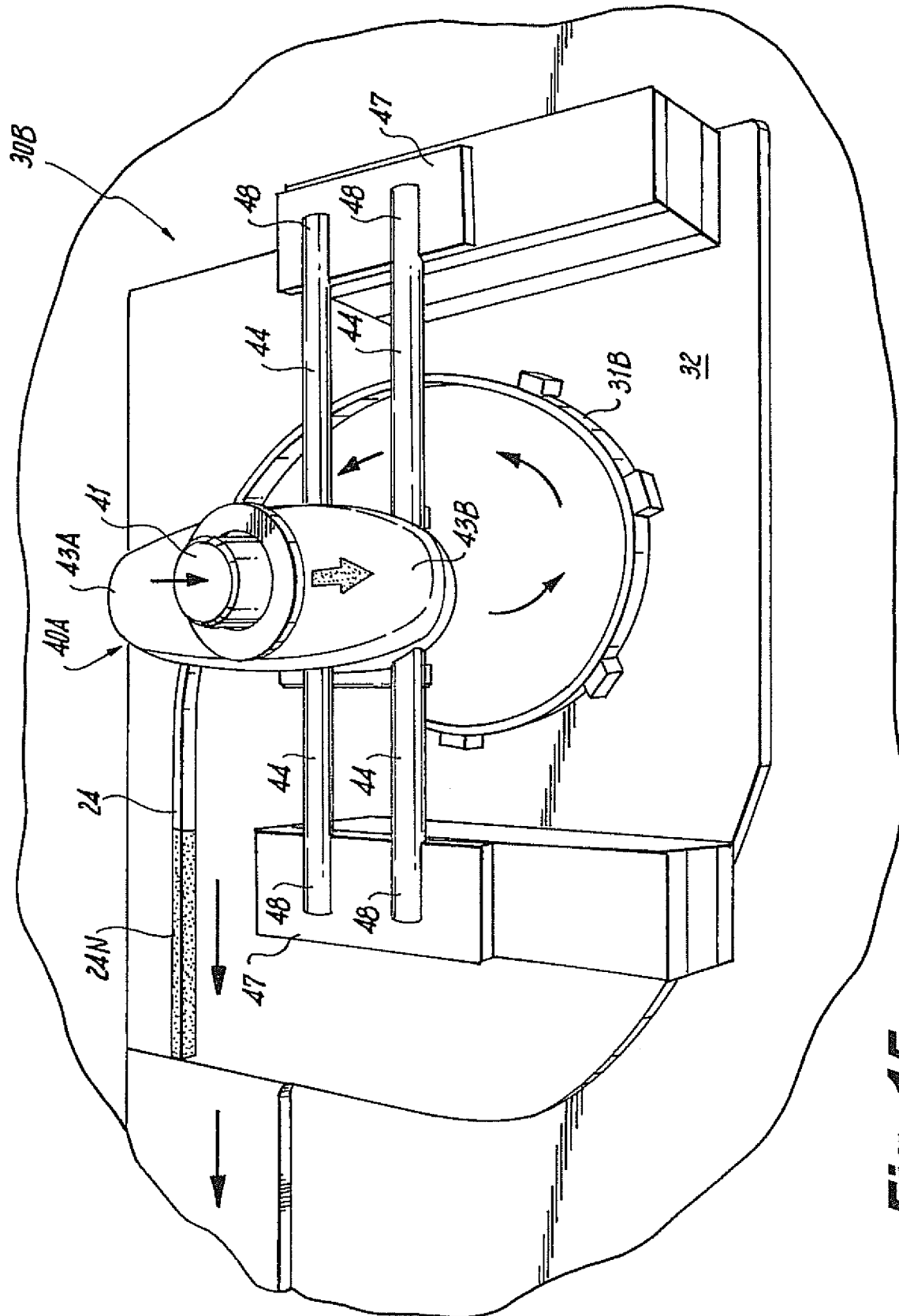


Fig. 15

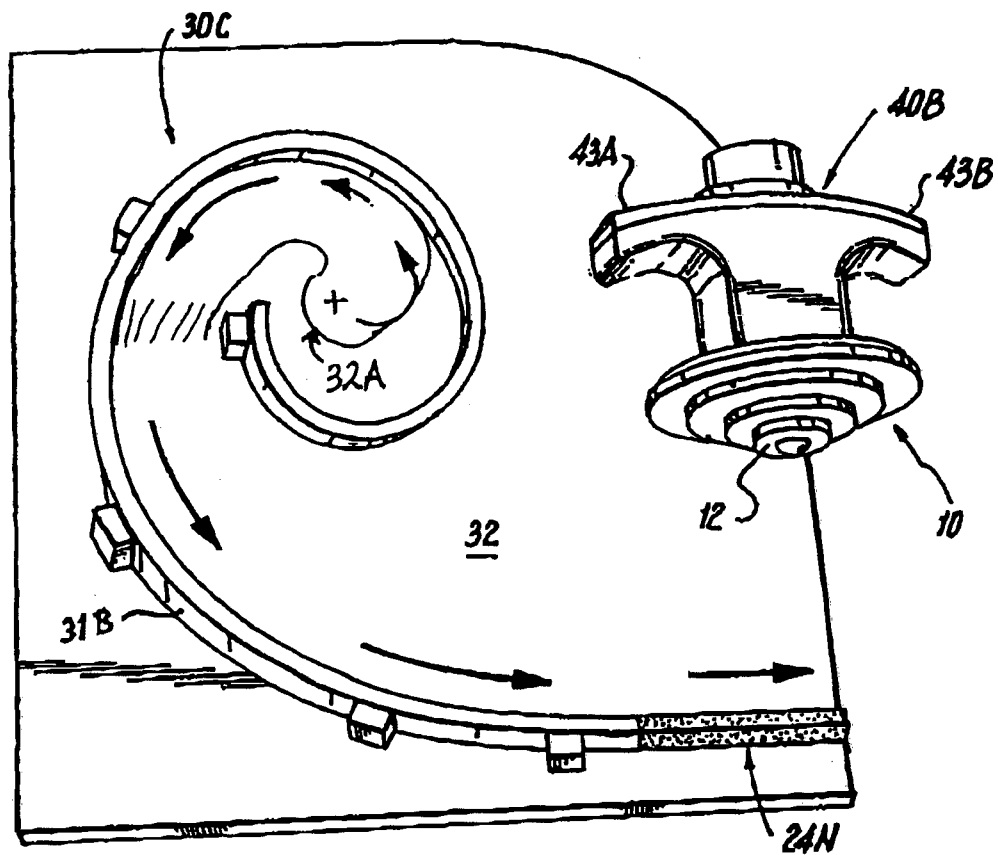


Fig. 16

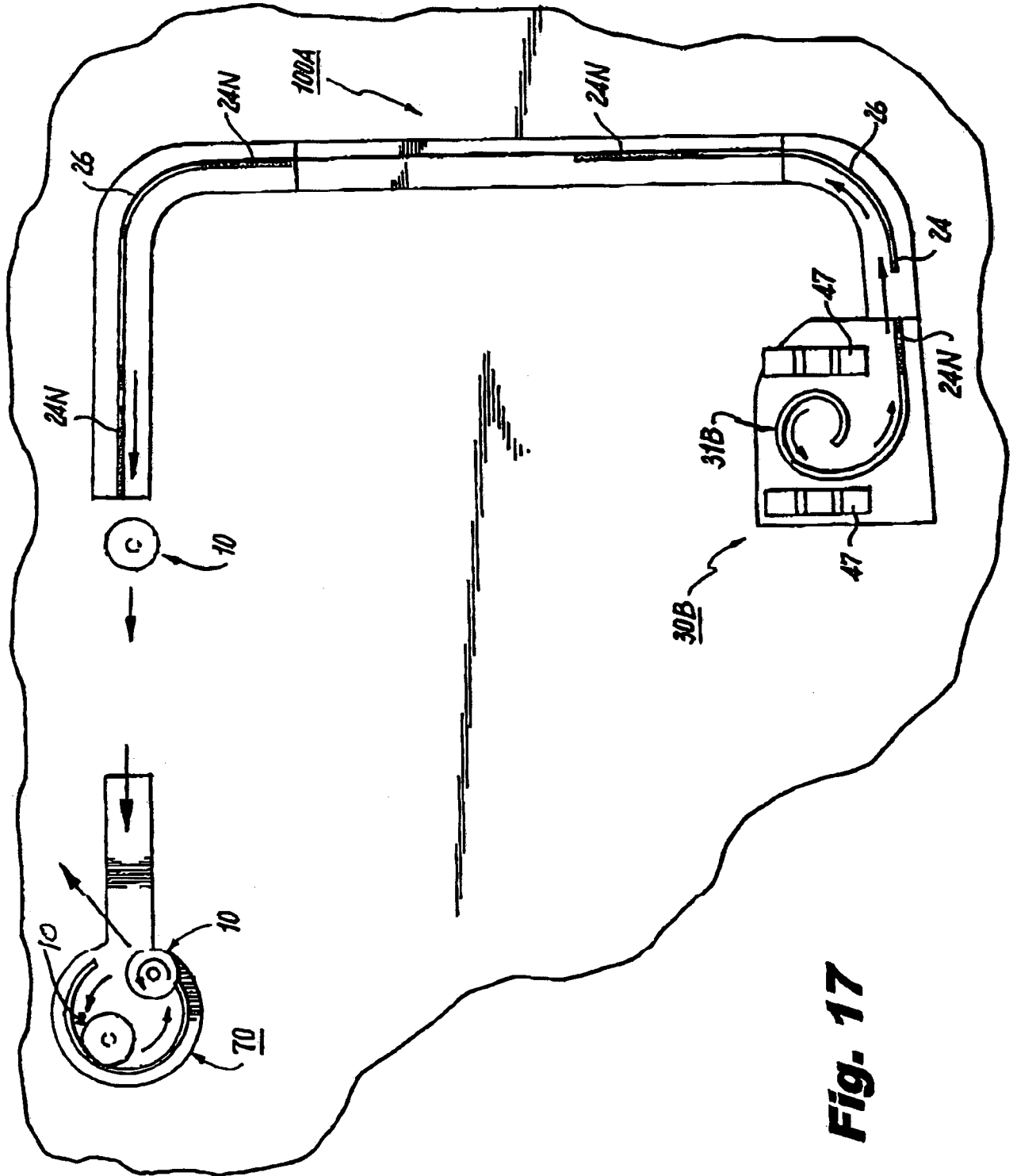


Fig. 17

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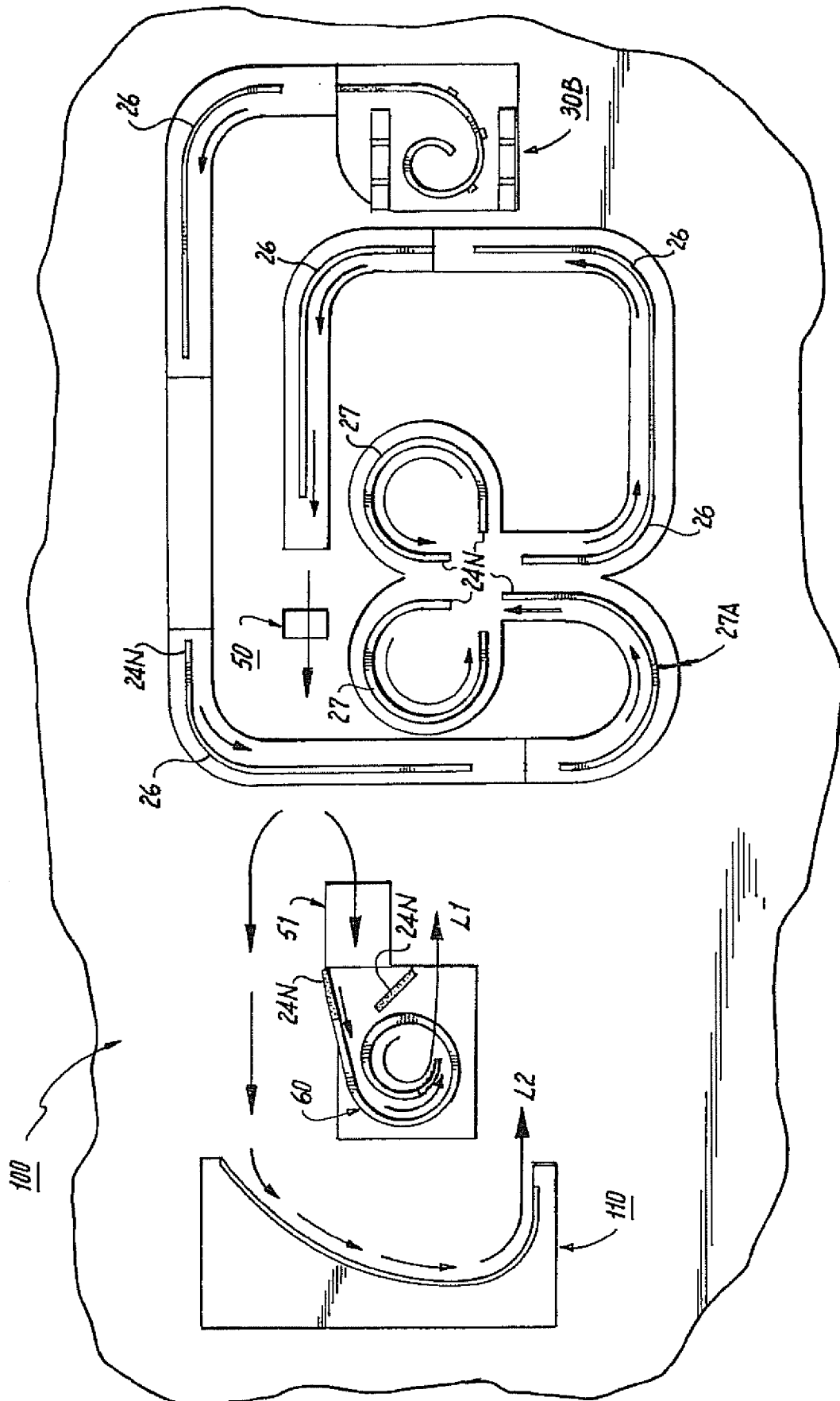
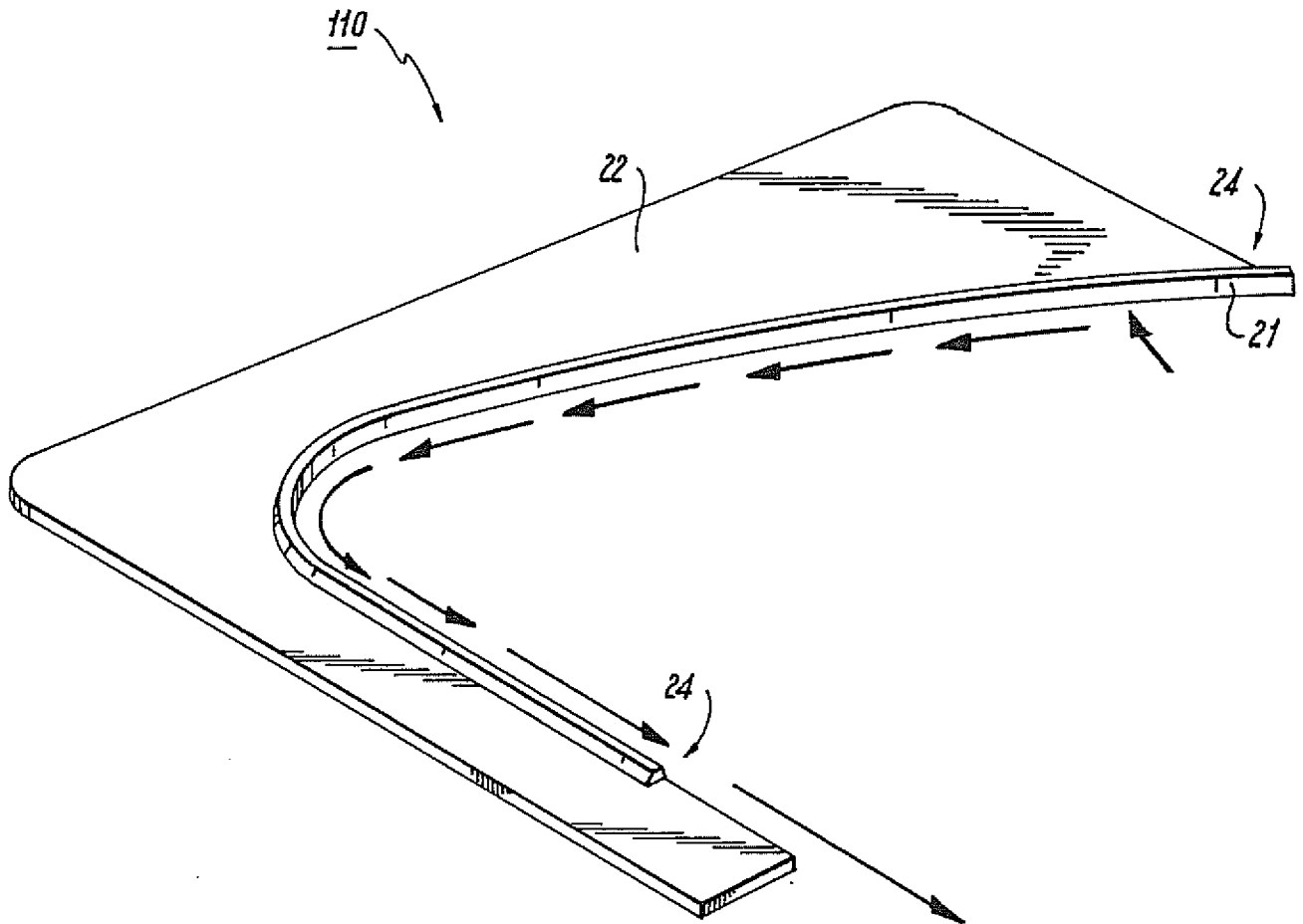
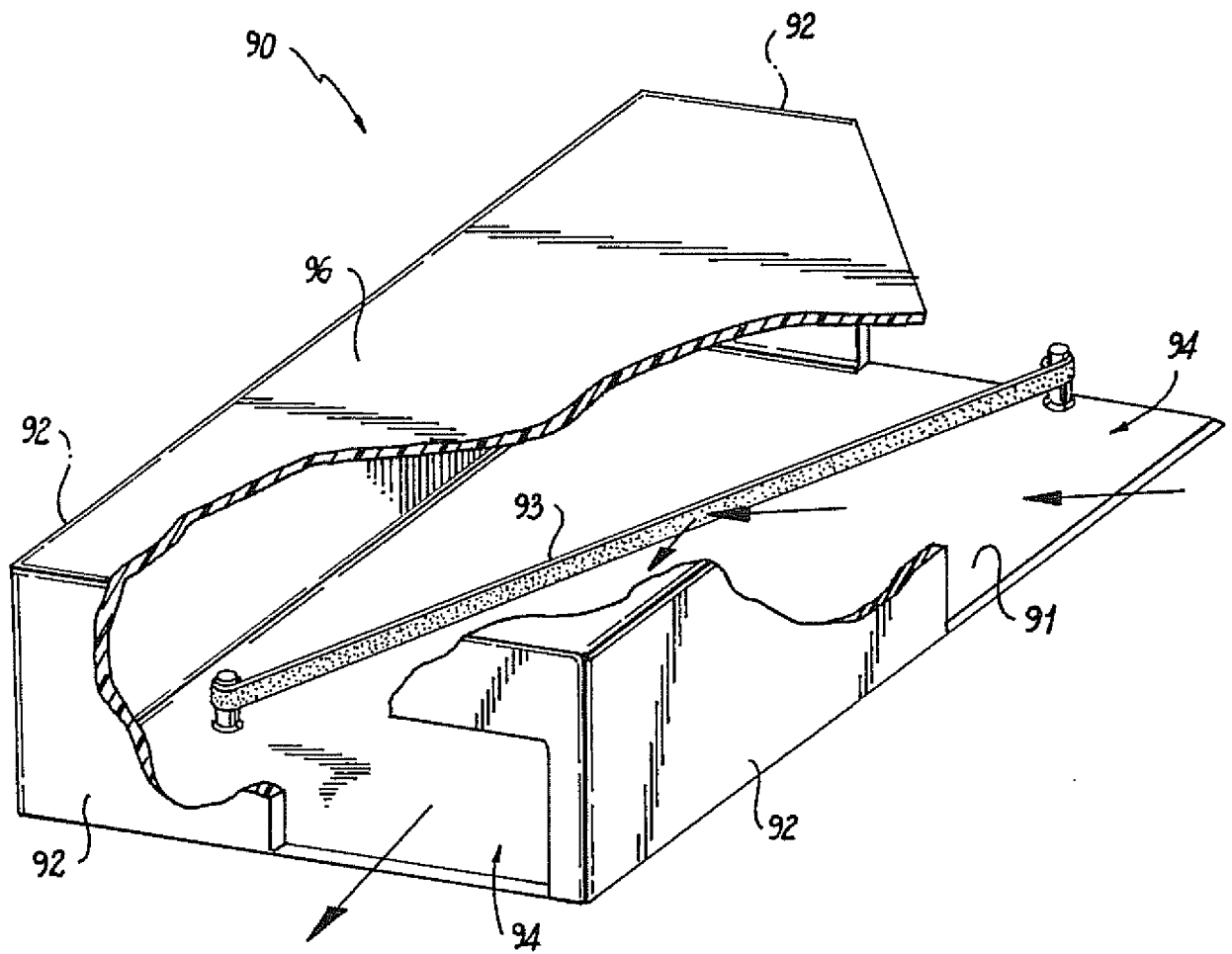


Fig. 18

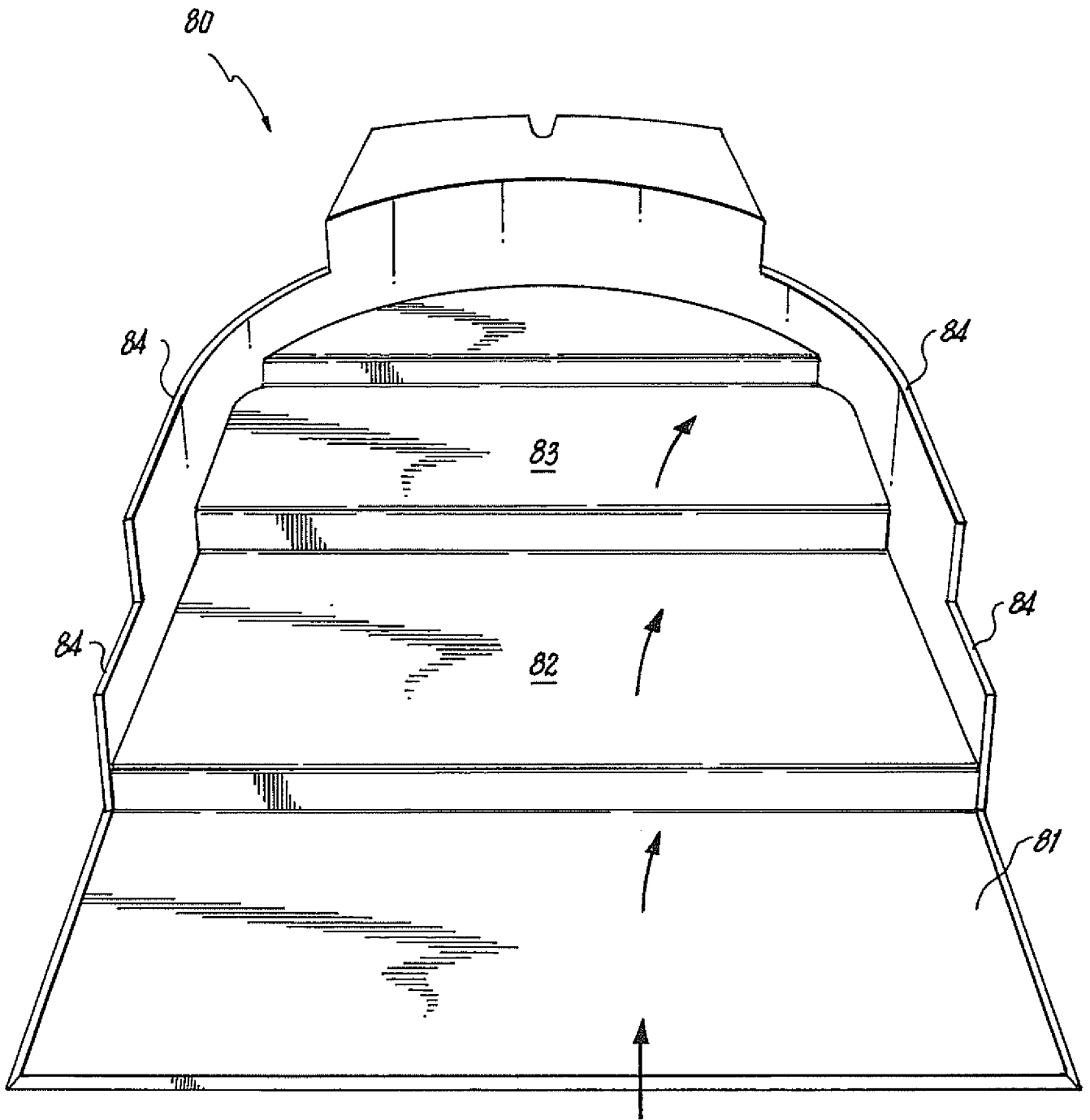
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**Fig. 19**

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Fig. 20

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**Fig. 21**

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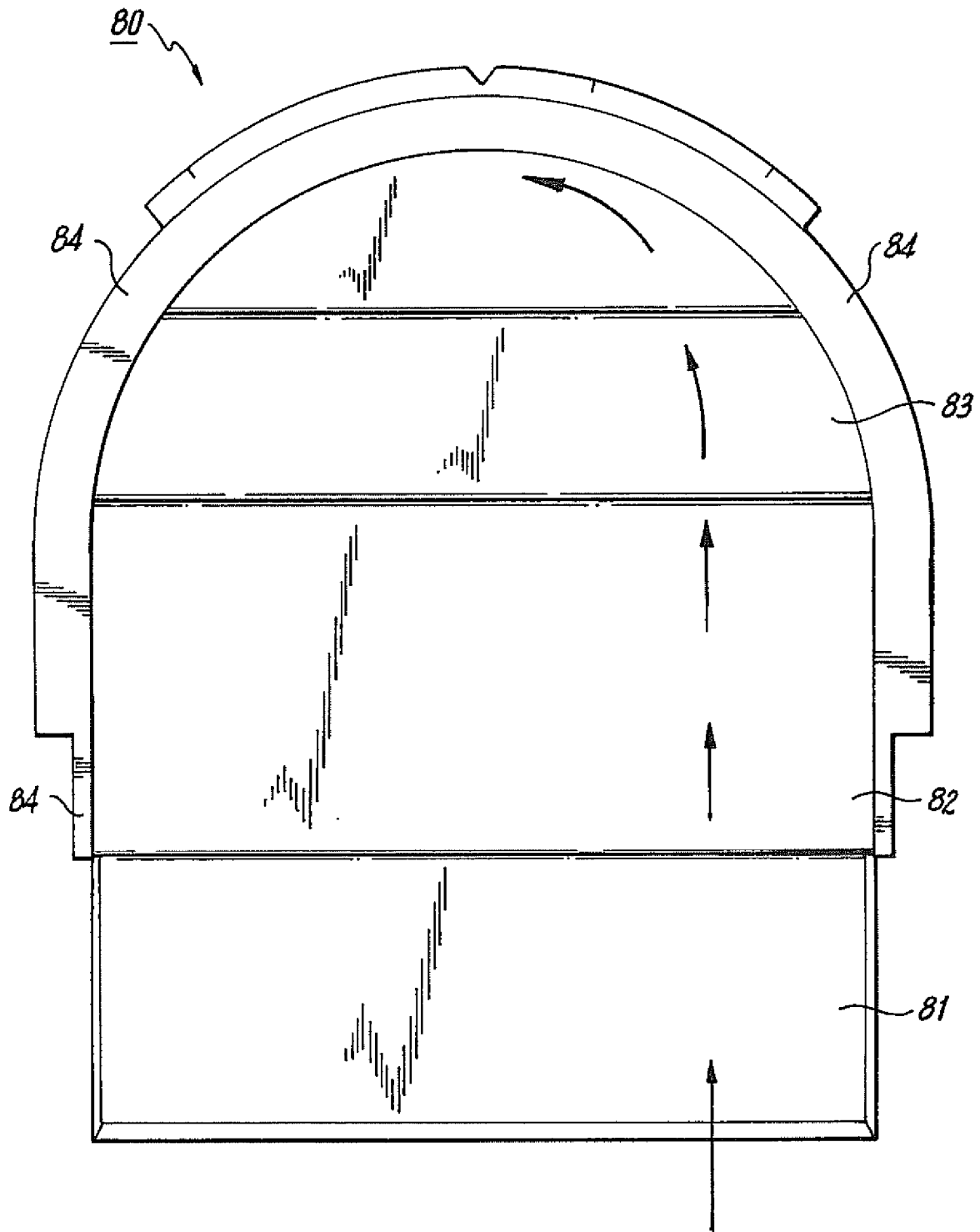


Fig. 22

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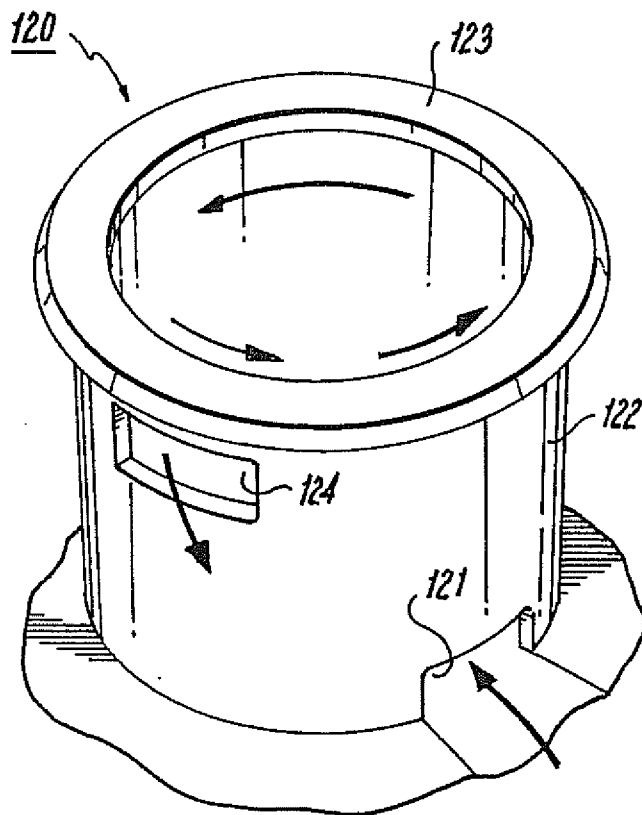


Fig. 23

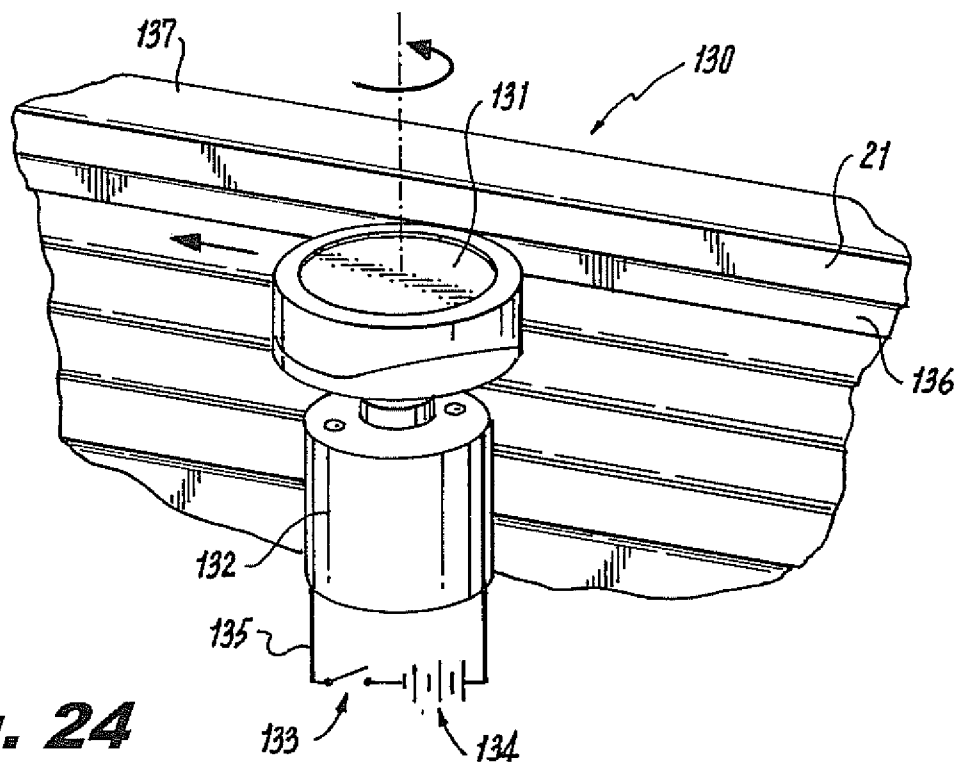


Fig. 24

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Fig. 25

