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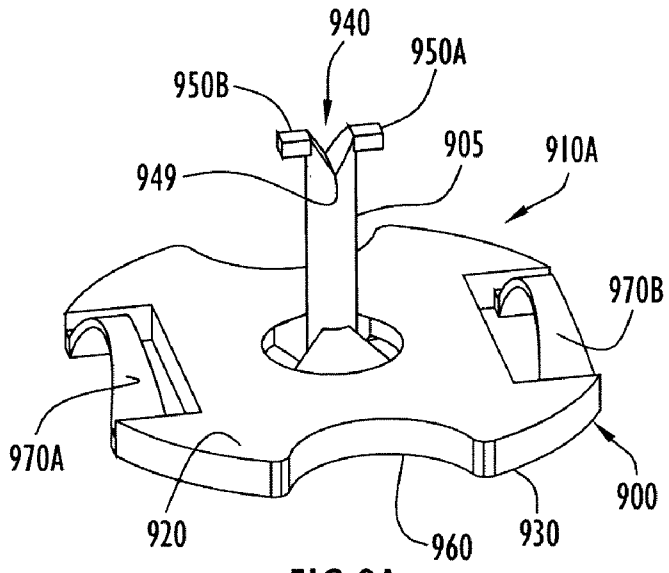


FIG.9A

(57) Abstract: A fastener system includes a toy product (130), a support platform (120), and a plug (110) that engages a keyhole formed into the product. The plug includes a base (200) and a pronged key extending from the base. The support platform includes a through-hole that permits the passage of the key into the packaging. One or more integrally-formed biasing members (270) are located on the base of the plug to draw the key toward the product and create a secure connection. The key may also be formed as two prongs, each of the prongs (950) including a first portion positioned transversely with respect to the shaft and a second, canted, portion extending between the first portion of the prong and the distal end of the shaft, the canted portions of the prongs intersecting at a line (949) proximate the distal end of the shaft.

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PRODUCT PACKAGING WITH RELEASABLE FASTENER

CROSS REFERENCE TO RELATED APPLICATIONS

[001] This application is a continuation-in-part of U.S. Non-provisional Application No. 12/249,235, entitled "Product Packaging with Releasable Fastener" and filed on 10 October 2008, the disclosure of which is hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

[002] The present invention is directed toward product packaging and, in particular, to toy product packing including a releasable, reusable product fastener.

BACKGROUND OF THE INVENTION

[003] Products such as toys are generally placed in packaging that provides protection to the toy, as well as and provides a means to easily display the toy. The toys are often held in the packaging by wire tie elements, which surround the toy and are twisted together to hold the toy in place in the packaging. This design works for small toys; however, large toys require a significant amount of wire and, because of the shape of the toys, it may not be practical to place the wire around the toy to retain it in its packaging. In addition, removal of such a large amount and number of wire tie elements is tedious and time-consuming. Thus, it is desirable to create a fastening system that secures a product within its packaging, but is easily manipulated by a user to remove the product therefrom.

SUMMARY OF THE INVENTION

[004] A fastener system for product packaging is disclosed. The system includes a product, a support platform, and a plug that engages a keyhole formed into the product. The plug includes a base and a key extending from the base. The support platform includes a through-hole that permits the passage of the key into the packaging. In operation, a product is oriented on one side of the support platform, and the plug is oriented on an opposite side of the support platform. The key is inserted though the

packaging (via the through-hole), and into the keyhole formed in the product. The key is then rotated to misalign its fingers with the openings in the keyhole, preventing the key's exit from the keyhole. Biasing members located on the base of the plug draw the key toward the product to create a secure connection. With this configuration, a product may be secured within packaging without the use of wire tie fasteners.

BRIEF DESCRIPTION OF THE DRAWINGS

[005] FIG. 1 illustrates an exploded view of a product fastening system in accordance with an embodiment of the present invention.

[006] FIGS. 2A and 2B illustrate a plug in accordance with embodiments of the present invention. Specifically, FIG. 2A illustrates an isolated, top perspective view of a plug component of the fastening system in accordance with an embodiment of the present invention. FIG. 2B illustrates a bottom perspective view of the plug of FIG. 2A.

[007] FIG. 3 illustrates a support platform in isolation, showing a close-up of the through-holes.

[008] FIGS. 4A and 4B illustrate a portion of a wall forming the product if FIG. 1. Specifically, FIG. 4A illustrates a side view of the product wall, while FIG. 4B illustrates an interior view of the product wall of FIG. 4A.

[009] FIGS. 5A illustrates an interior view of the product, showing the plug/key oriented in an unlocked position.

[0010] FIG. 5B illustrates an interior view of the product, showing the plug/key oriented in a locked position.

[0011] FIG. 6A illustrates a cross-sectional view of the product, showing the insertion of the key into the keyhole of the product.

[0012] FIG. 6B illustrates a rear perspective view of the support platform, showing orientation of the plug in locked/unlocked positions.

[0013] FIG. 7 illustrates a plug/key in accordance with another embodiment of the present invention.

[0014] FIG. 8 illustrates a side perspective view of a key/plug in accordance with the present invention, indicating the application of shear forces thereon.

[0015] FIGS. 9A and 9B illustrate additional plugs in accordance with a further embodiment of the present invention. Specifically, FIG. 9A illustrates an isolated, top perspective view of a plug component of the fastening system in accordance with an alternate embodiment of the present invention, while FIG. 9B illustrates a top perspective view of a plug component of the fastening system in accordance with yet another alternate embodiment of the present invention.

[0016] FIG. 10 illustrates a side perspective view of the key/plug of either FIG. 9A or 9B in accordance with the present invention, indicating the application of shear forces thereon.

[0017] Like reference numerals have been used to identify like elements throughout this disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0018] FIG. 1 illustrates and exploded view of a product fastening system in accordance with an embodiment of the invention. As illustrated, the system **100** includes a key or plug, a product support or platform **120**, and a product **130**. By way of example the system **100** may include one or more plugs **110A**, **110B**, **110C**, each having a stem of a predetermined length. The plugs **110A – 110C** are configured to selectively secure the

product **130** to the product support **120**. Referring to FIGS. 2A and 2B (showing top and bottom views, respectively), the plug **110A** includes a base **200** and a shaft or stem **210** extending distally from the base **200**. The base **200** may be in the form of a plate or disk having a first or top surface **220** and a second or bottom surface **230**. The shaft **210** may be disposed coaxially with the central axis of the base **200**. The distal end **240** of the shaft may further include a first finger **250A** and a second finger **250B** collectively defining a keyed end of the shaft **210**. The base **200** may further include one or more cut-out sections **260** configured to permit gripping of the base utilizing a users fingers. By way of example, the base **200** may include a pair of opposed, curved, cut-out sections **260** formed into the periphery of the base.

[0019] The plug **110A** may further include one or more biasing members. In the embodiment of FIGS. 2A and 2B, the plug **110A** may have a first spring **270A** and a second spring **270B** formed into the base **200**. The springs **270A**, **270B** may be positioned along the base periphery such that the first spring **270A** is oriented opposite the second spring **270B**. The biasing members **270A**, **270B** apply a force to the product support **120** and/or the product **130** to increase the tension between the plug **110A-C** and the product **130** (discussed in greater detail below). While a particular configuration spring is illustrated as the biasing member **270A**, **270B**, it should be understood other forms of the biasing member could be utilized such as a flat springs, coil springs, cantilevered springs, leaf springs, etc.

[0020] The product support or platform **120** provides a surface to which the product **130** may be secured. The product support **120** typically comprises a portion of product packaging, e.g., a wall or a display platform, to which the product **130** is secured. Referring to FIG. 3, the product platform **120** may be a generally planar element having a first or outer surface **310** and a second or inner surface **320**. The planar member may

include one or more key ports **330** configured to receive the keyed end of a respective plug **110A – 110C**. That is, the key port **330** possesses a shape and has dimensions suitable to permit the passage of the distal/keyed end **240** of the plug shaft **210**, while preventing the passage of the base **200** therehrough. As illustrated, the port **330** may possess a generally circular shape having a diameter slightly larger than the diameter of the fingers **250A**, **250B**, to permit the fingers to pass therethrough.

[0021] The product support **120** may further include one or more receptacles or guide tracks configured to receive and/or orient the biasing members **270A**, **270B** on the plug **110A-C**. By way of example, the product support **120** may include a first guide track **340A** and a second guide track **340B** oriented opposite the first guide track **340A**, across the port **330** (i.e., each biasing member **270A**, **270B** may include an associate track **340A**, **340B** with which it mates). The structure of the guide track **340A**, **340B** may be any suitable for its described purpose. In the illustrated embodiment, the guide tracks **340A**, **340B** are each defined by a generally rectangular opening that permits a biasing member **270A**, **270B** to extend through or into the platform **120**. Each guide track **340A**, **340B** is positioned and sized to receive a corresponding biasing member **270A**, **270B**, indicating the orientation of the plug **110A-C** in either a locked or unlocked position (discussed in greater detail below). The product support **120** may be formed from any conventional packaging materials including, but not limited to, plastic, cardboard, wood, etc.

[0022] The product **130**, e.g., a toy, is configured to selectively mate with the plugs **110A-C**. Referring to FIGS. 4A and 4B, showing exterior and interior views the product **130**, the product **130** includes a wall **400** having a first or exterior side **410** and a second or interior side **420**. The wall **400** includes one or more keyholes **430** possessing a shape complimentary to that of the distal end **240** of each of the plugs **110A-C**. In the embodiment illustrated in FIGS. 4A and 4B, the keyhole **430** is a generally elongated slot

that receives the fingers **250A**, **250B** of the plug **110A-C** when properly aligned with the slot. The keyhole **430** may be formed on a pedestal **440** extending distally from the interior surface **420** of the product wall **400**.

[0023] The pedestal **440** may form a corresponding recessed area **450** along the exterior surface **410** of the product wall **400**. The height of the pedestal **440** is not particularly limited, but is typically is sized to correspond with the length of the stem **210** extending form the base **200** of the plug (taking into account the thickness of the product wall **400** as well as the product support **130**). By way of example, the pedestal **440** may have a height corresponding to the stem of plug **110A**, or may have a height corresponding to the stem of plug **110B** (FIG. 1). Alternatively or addition, no pedestal **440** may be formed into the product wall **400** to permit the keyhole **430** to be generally flush with the product wall **400**. Note that for exemplary purposes, all three examples are shown in FIGS. 1, 4A, and 4B.

[0024] With this configuration, plug **110A-C** selectively engages the keyhole **430** to secure the product **130** to the support **120**. Referring to FIGS. 5A and 5B, the stem **210** of the plug **110A-C** may be axially inserted into the port **330** of product support **120** and through the keyhole **430** formed in product **130**. The plug **110A-C** may then be selectively rotated from a first (unlocked) position (FIG. 5A), in which the fingers **250A**, **250B** of the plug generally align with the keyhole **430**, to a second (locked) position (FIG. 5B), in which the fingers **250A**, **250B** of the plug **110A-C** are not aligned with the keyhole **430**. In the locked position of FIG. 5B, the plug **110A-C** is secured to the product **130**. To unlock the plug **110A-C** and remove it from the keyhole **430**, the plug **110A-C** is simply rotated in the reverse direction until the fingers **250A**, **250B** of the plug **110A-C** once again align with the slot of keyhole **430**. The stem **210** of the plug **110A-C** is then axially removed from the product **130**.

[0025] The operation of a fastening system in accordance with the present invention is explained with reference to FIGS. 6A and 6B. FIG. 6A illustrates a cross-sectional view of the system in accordance with an embodiment of the invention. The product **130** is positioned on the second side **320** of the support platform **120**, and the plug **110A-C** is positioned on the first side **310** of the support platform. The port **330** of the support platform **120** is generally aligned with a keyhole **430** of the product **130**, and the plug **110A-C** is axially inserted through the port **330** of the support platform **120**and into the keyhole **430** of the product **130**. The plug **110A-C** may then be rotated to move the plug **110A-C** (by gripping the cut-out sections **260**) from the unlocked position to the locked position as described above.

[0026] Referring to FIG. 6B, illustrating a rear perspective view of the system, the plug **110A-C** may be rotated utilizing finger cut-out sections **260** until the biasing members **270A**, **270B** align with the guide tracks **340A**, **340B** formed into the product support **120**. The biasing members **270A**, **270B** and guide tracks **340A**, **340B** may be oriented such that mating of the biasing members with the guide tracks indicates the fingers **250A**, **250B** of the plug **110** are oriented in their misaligned/locked position with respect to the keyhole **430** of the product **130**. The biasing members **270A**, **270B** apply a downward pressure (from the perspective of FIG. 6A) to the plug stem **210**, drawing the distal end **240** of the stem downward, toward the interior surface **420** of the product wall **400**. This, in turn, increases the frictional forces between the fingers of the plug **110A-C** and the product **130**, improving the connection of the product **130** to the product support **120**. The biasing members **270A**, **270B** further function as shock absorbers, adjusting to movement of the packaging during transport and stabilizing the product **130**.

[0027] To release the product **130** from the product support **120**, the plug **110** is rotated to displace the biasing members **270A**, **270B** from the guide tracks **340A**, **340B** until the

fingers **250A**, **250B** are once again axially aligned with the keyhole **430** of the product **130** as described above. The plug **110A-C** may then removed from the product **130**, which, in turn, may be removed from the support platform **120**.

[0028] FIGS. 7A and 7B illustrate a fastening system in accordance with another embodiment of the present invention. As illustrated, the pedestal **440** may include one or more stops to prevent over rotation of the plug **110A-C**, as well as to signal to the user that the plug **110A-C** is in its locked position. Referring to FIG. 7A, the pedestal **440** may include a first boss **710** and a second boss **720** opposed from the first boss across the keyhole **430**. In operation, as shown in FIG. 7B, the plug **110A-C** may be inserted into the keyhole **430** and rotated until the fingers **250A**, **250B** of the plug **110A-C** contact the bosses **710**, **720**. The bosses **710**, **720**, then, prevent over rotation of the plug **110A-C**.

[0029] The shaft **210** and fingers **250A**, **250B** of the plug **110A-C** may also configured to prevent the formation of small parts. A "small part" is any object that fits completely into a specially designed test cylinder (2.25 inches long by 1.25 inches wide) that approximates the size of the fully expanded throat of a child under three years old. This specialized definition applies to (1) a whole toy or article, (2) a separate part of a toy, game, or other article, or (3) a piece of a toy or article that breaks off during testing that simulates use or abuse by children. If a "small part" fits completely into the specially designed test cylinder, and the toy or product from which it came is intended for use by children under three years of age, the toy or product is banned because the small part presents a choking hazard.

[0030] Thus, toys and products intended for use by children less than three years of age must not release pieces that fit completely into the small parts cylinder after impact, flexure, torque, tension and compression testing. These tests simulate the forces that toys and products can/may experience during normal use and abuse by children less than three

years of age. If these forces cause parts to break off that fit in the small parts cylinder, those parts are deemed to present a risk of choking, aspiration, or ingestion to children less than three years of age.

[0031] For this reason, the fingers **250A**, **250B** of the plug **110A-C** are configured to plastically deform when a pressure of at least about 48-56 lbs. is applied to the plug **110A-C**. That is, referring to FIG. 8, the fingers **250A**, **250B** of the plug **110A-C** are resilient, thus they tend to flex whenever a downward force is applied to the plug **110A-C** (as indicated by arrows **F**). As a result, should the plug **110A-C** be oriented in its locked position when a user attempts to draw the plug out of the keyhole **430** with a force of at least about 48-56 lbs., the fingers **250A**, **250B** will plastically deform upward (in a direction **D** which is opposite to the force **F**) and remain intact (i.e., the fingers **250A**, **250B** plastically deform to permit removal of the plug **110A-C** from the keyhole **430**, but do not do not break off of the shaft **210**), preventing the potential for formation of small parts as explained above. Many different materials may be utilized to form the shaft **210** and the fingers **250A**, **250B** of the plug **110A-C**, such as different kinds of plastic and thermoplastics (such as ABS (acrylonitrile butadiene styrene), PPR (polypropylene resin), styrene, nylon, etc.). However in one preferred embodiment, the shaft **210** and the fingers **250A**, **250B** of the plug **110A-C** are formed from PPR and shaped such that when a user attempts to draw a locked plug **110A-C** out of the keyhole **430** with a force of at least about 48-56 lbs., the fingers **250A**, **250B** will plastically deform upward (in a direction **D** which is opposite to the force **F**) and remain intact.

[0032] Referring to FIGS. 9A and 9B, the plug **910A** includes a base **900** and a shaft or stem **905** extending distally from the base **900**. The base **900** may be in the form of a plate or disk having a first or top surface **920** and a second or bottom surface **930**. The shaft **905** may be disposed coaxially with the central axis of the base **900**. The distal end

940 of the shaft **905** may further include a first finger **950A** and a second finger **950B** collectively defining a keyed end of the shaft **905**. The distal end **940** of the shaft **905** may further include canted surfaces **945A** and **945B** (see FIG. 10) which meet at intersection line **949**. The base **900** may further include one or more cut-out sections **960** configured to permit gripping of the base **900** utilizing a users fingers. By way of example, the base **900** may include a pair of opposed, curved, cut-out sections **960** formed into the periphery of the base.

[0033] The plug **910A** may further include one or more biasing members. In the embodiment of FIGS. 9A and 9B, the plug **910A** may have a first spring **970A** and a second spring **970B** formed into the base **900**. The springs **970A**, **970B** may be positioned along the base periphery such that the first spring **970A** is oriented opposite the second spring **970B**. The biasing members **970A**, **970B** apply a force to the product support **120** and/or the product **130** to increase the tension between the plug **910A** and the product **130** (discussed in greater detail above). While a particular configuration spring is illustrated as the biasing member **970A**, **970B**, it should be understood other forms of the biasing member could be utilized such as a flat springs, coil springs, cantilevered springs, leaf springs, etc. Note that the plug **910B** of FIG. 9B is almost identical to the plug **910A** of FIG. 9A in every respect. However, the shaft **907** of the plug **910B** is shorter than the shaft **905** of plug **910A** to accommodate different products or packaging.

[0034] As referenced above, toys and products intended for use by children less than three years of age must not release parts/pieces that fit completely into the small parts cylinder after impact, flexure, torque, tension and compression testing. Such testing simulates the forces that toys and products can/may experience during normal use and abuse by children less than three years of age. If these forces cause parts/pieces to break

off that fit in the small parts cylinder, those parts/pieces are deemed to present a risk of choking, aspiration, or ingestion to children less than three years of age.

[0035] For this reason, the fingers **950A**, **950B** of the plug **910A-B** are configured to deform when a pressure of at least about 20 lbs. is applied to the plug **910A-B**. That is, referring to FIG. 10, the fingers **950A**, **950B** of the plug **910A-B** are resilient, thus they tend to flex inward towards each other along intersection line **949** whenever a downward force is applied to the plug **910A-B** (as indicated by arrows **F**). As a result, should the plug **910A-B** be oriented in its locked position when a user attempts to draw the plug out of the keyhole **430** with a force of at least about 20 lbs., the fingers **950A**, **950B** will deform upward and inward towards each other along intersection line **949** (in a direction **D** which is generally opposite to the force **F**) and remain intact (i.e., the fingers **950A**, **950B** deform to permit removal of the plug **910A-B** from the keyhole **430**, but do not do not break off of the shaft **905**, **907**), preventing the potential for formation of small parts as explained above. Thus, the geometry of the fingers **950A**, **950B** and intersection line **949** is such that if a force of 15 lbs. is applied in direction F, the fingers **950A**, **950B** will prevent the plug **910A-B** from being removed from the keyhole, but when the force is increased to at least about 20 lbs., the fingers **950A**, **950B** will deform upward and inward towards each other along intersection line **949** and remain intact (i.e., the fingers **950A**, **950B** deform to permit removal of the plug **910A-B** from the keyhole **430**, but do not do not break off of the shaft **905**, **907**), preventing the potential for formation of small parts.

[0036] While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope thereof. For example the base **200**, **900** may possess any shape and have any suitable dimensions. Though a generally circular, disc-shaped base **200**, **900** is illustrated, other shapes may be

utilized, including but not limited to polygons. The biasing members **270A**, **270B**, **970A**, **970B** may be any suitable for their described purpose. The support platform **120** may be formed of any suitable materials, possess any suitable dimensions, and have any suitable shape. Similarly, the port **330** and the guide tracks **340A**, **340B** may possess any shape of have any dimensions suitable for their described purposed. For example, while a guide track is shown in the figures to be an opening (a pass-through), a guide track may also be defined by a recessed area or notch formed into the support platform **120**. The pedestal **440** may possess any suitable shape and have any suitable dimensions. Specifically, the height of the pedestal **440** may be any suitable for its described purpose.

[0037] Thus, it is intended that the present invention cover the modifications and variations of this invention that come within the scope of the appended claims and their equivalents. It is to be understood that terms such as "left", "right" "top", "bottom", "front", "rear", "side", "height", "length", "width", "upper", "lower", "interior", "exterior", "inner", "outer" and the like as may be used herein, merely describe points of reference and do not limit the present invention to any particular orientation or configuration.

We Claim:

1. A toy product comprising:

a toy support platform including:

a first surface,

a second surface, and

a pass through extending from the first surface to the second surface;

a toy including a keyhole; and

a plug configured to be inserted into the keyhole, the plug comprising:

a base,

a shaft extending distally from the base, wherein the shaft includes:

a distal end,

a proximal end, and

at least one prong extending from the distal end of the shaft, the at least one prong including a first portion positioned transversely with respect to the shaft and a second, canted, portion extending between the first portion of the prong and the distal end of the shaft.

2. The toy product of claim 1, wherein the plug includes at least one integrally-formed biasing member operable to generate a biasing force with respect to the toy product.

3. The toy product of claim 2, wherein the at least one biasing member applies a force toward the proximal end of the shaft.

4. The toy product of claim 2, wherein the at least one biasing member comprises an integrally-formed spring.

5. The toy product of claim 4, wherein the spring comprises a generally arcuate spring.

6. The toy product of claim 1, wherein the base further comprises a gripping member to permit manipulation of the plug.

7. The toy product of claim 6, wherein the gripping member comprises a cut-out section formed into the base of the plug.

8. The toy product of claim 1, wherein the toy support platform further includes a guide track operable to receive the at least one biasing member and indicate to a user that the at least one prong is in a predetermined position within the toy.

9. The toy product of claim 1, wherein:

the toy product contacts the first surface of the support platform;

the plug is axially inserted into the pass-through and the keyhole; and

the at least one prong of the plug is oriented such that it is misaligned with the keyhole thereby locking the toy to the support platform.

10. The toy product of claim 9, wherein the biasing member engages the second surface of the support platform to apply a force sufficient to draw the at least one prong into mechanical contact with the toy, and to draw the toy toward the base of the plug.

11. The toy product of claim 9, wherein:

the toy includes a wall having a pedestal extending distally from the wall; and

the keyhole is disposed along a distal end of the pedestal.

12. The toy product of claim 1, wherein the toy further comprises:

an interior surface;

an exterior surface; and

a guide tab formed on the interior surface of the toy, wherein the tab is configured to engage the at least one prong and prevent the rotation of the plug beyond a predetermined rotational position.

13. The toy product of claim 1, wherein the at least one prong comprises two prongs, each of the prongs including a first portion positioned transversely with respect to the shaft and a second, canted, portion extending between the first portion of the prong and the distal end of the shaft, the canted portions of the prongs intersecting at a line proximate the distal end of the shaft, such that the prongs deform or move towards one another along the intersecting line but remain attached to the plug when and force of at least about 20 pounds is applied to the plug to pull the plug and prongs from a misaligned position with respect to the keyhole.

14. The package assembly of claim 13, wherein the at least one prong is formed from a plastic material.

15. A method of orienting a toy in packaging, the method comprising:

(a) providing a toy supporting platform including a first surface, a second surface, and

a through-hole extending from the first surface to the second surface;

(b) providing a plug including:

a base,

a shaft extending distally from the base, the shaft including a distal end and a proximal end, and

at least one prong extending from the distal end of the shaft, the at least one prong including a first portion positioned transversely with respect to the shaft and a second, canted, portion extending between the first portion of the prong and the distal end of the shaft;

(c) providing a toy including a keyhole configured to receive the shaft of the plug;

(d) orienting the toy on the supporting platform such that the through-hole aligns with the keyhole;

(e) axially inserting the distal end of shaft into the through-hole and the keyhole such that the at least one prong is positioned within the toy; and

(f) rotating the plug to orient the at least one prong from a first position, in which the at least one prong is permitted to exit the toy, to a second position, in which the at least one prong is retained within the toy.

16. The method of claim 15, wherein the base includes at least one biasing member operable to apply a biasing force and:

(d) comprises (d.1) orienting the toy on the first surface of the supporting platform and (d.2) orienting the plug on the second surface of the supporting platform; and

rotating the plug to orient the prong in the second position locking the toy to the supporting platform.

17. The method of claim 16, wherein:

the toy supporting platform further includes a guide track operable to receive the at least one biasing member and to indicate the at least one prong is in a predetermined position; and

(f) further comprises rotating the plug from the first position, in which the at least one biasing member is not seated in the guide track, to a second position, in which the at least one biasing member is seated in the guide track.

18. The method of claim 15, wherein:

the toy further comprises:

an interior surface;

an exterior surface; and

a guide tab formed on the interior surface of the toy, wherein the guide tab is configured to engage the at least one prong and prevent the rotation of the plug beyond a predetermined position; and

(f) further comprises rotating the plug until the at least one prong contacts the guide tab.

19. The method of claim 15, wherein:

the at least one prong comprises two prongs, each of the prongs including a first portion positioned transversely with respect to the shaft and a second, canted, portion extending between the first portion of the prong and the distal end of the shaft, the canted portions of the prongs intersecting at a line proximate the distal end of the shaft, such that the prongs deform or move towards one another along the intersecting line but remain attached to the plug when and force of at least about 20 pounds is applied to the plug to pull the plug from the second position.

20. The method of claim 19, wherein the at least one prong is formed from a plastic material.

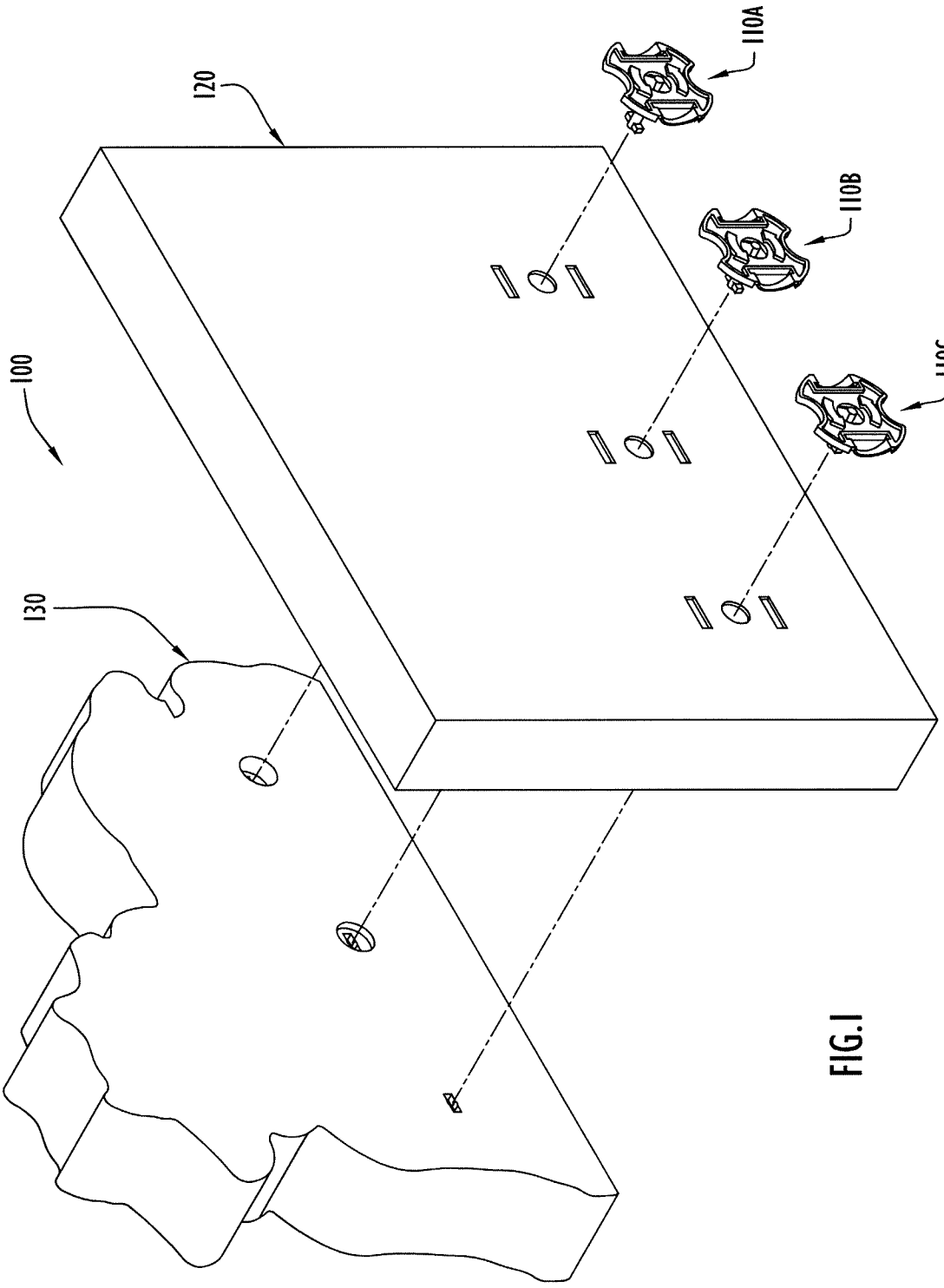


FIG.1

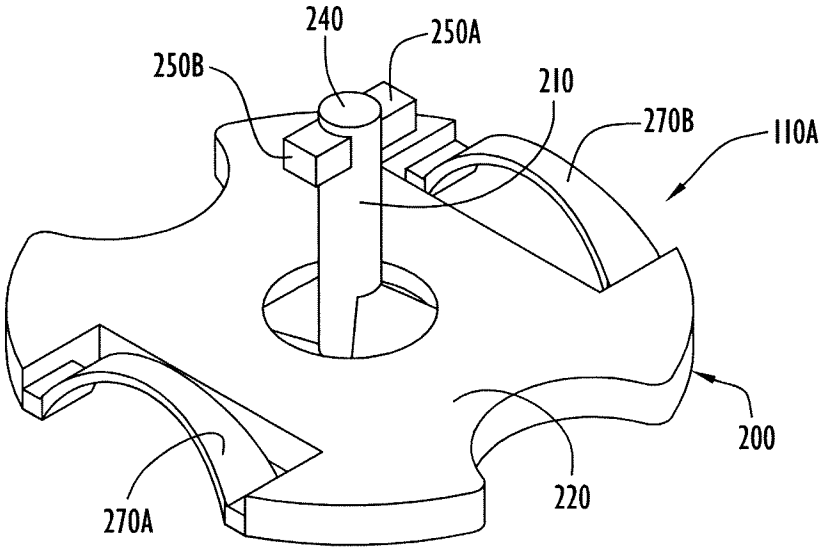


FIG.2A

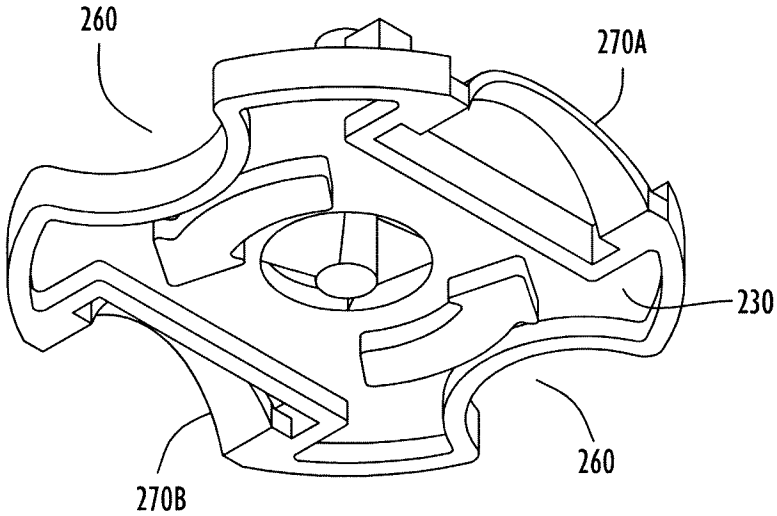


FIG.2B

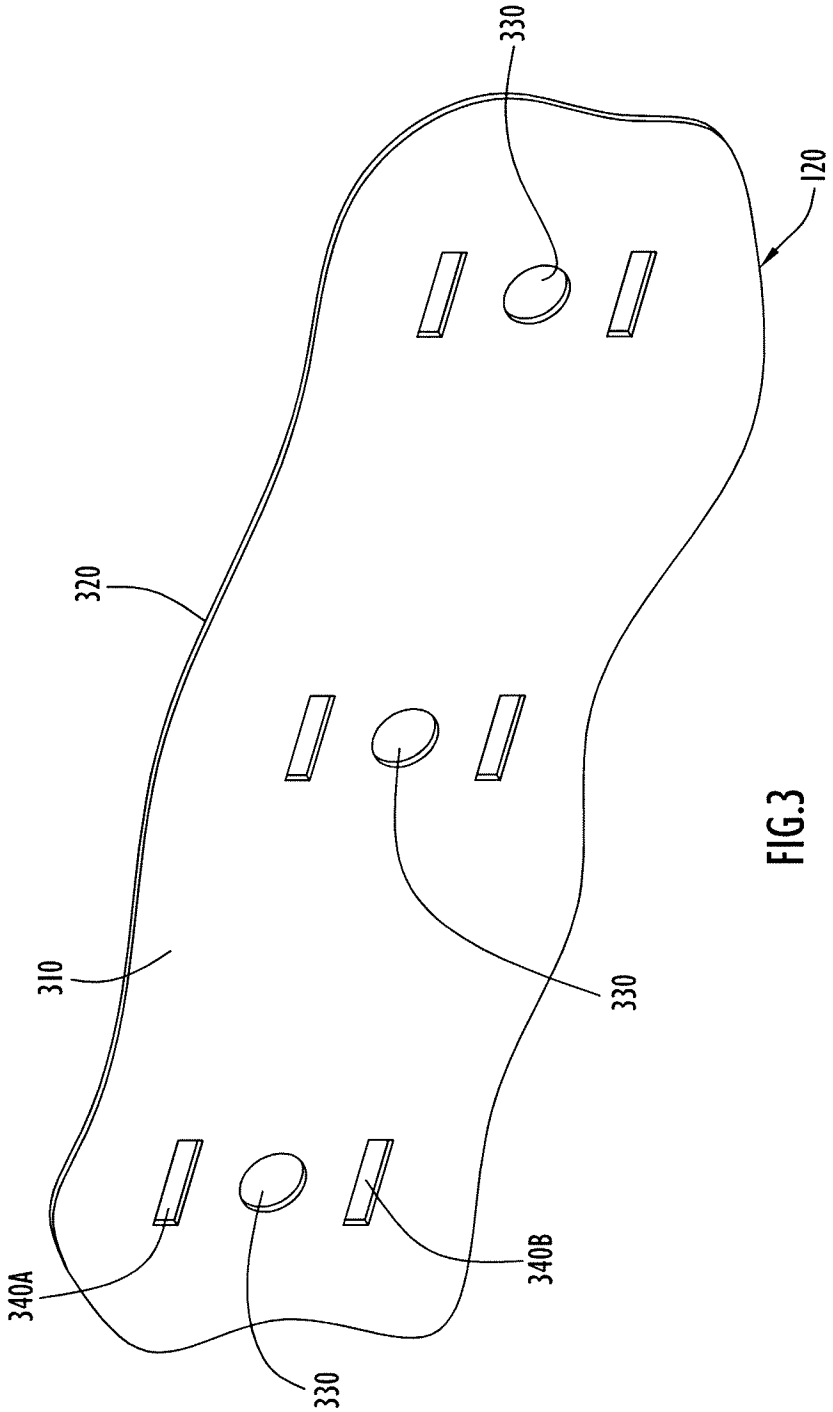


FIG.3

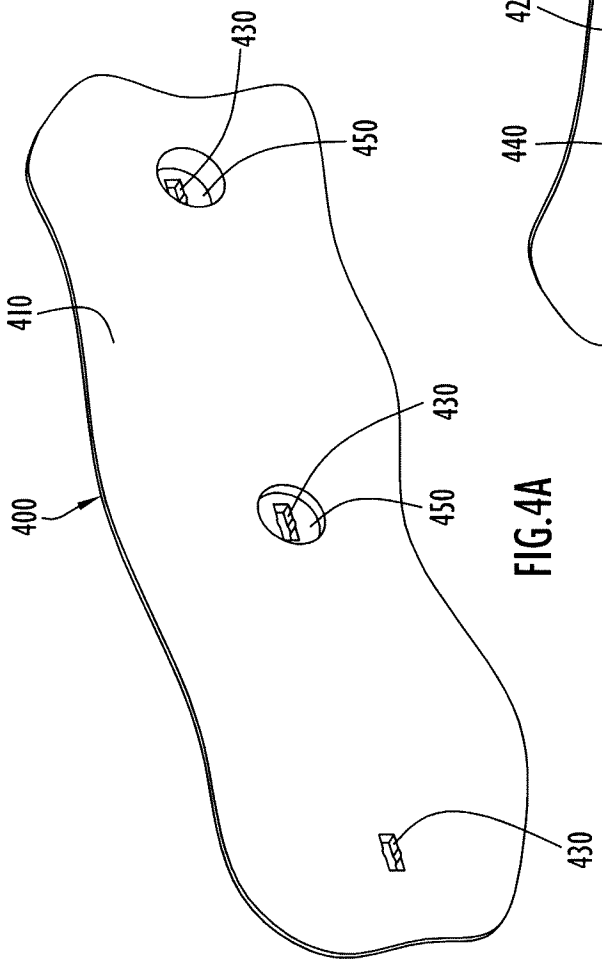


FIG.4A

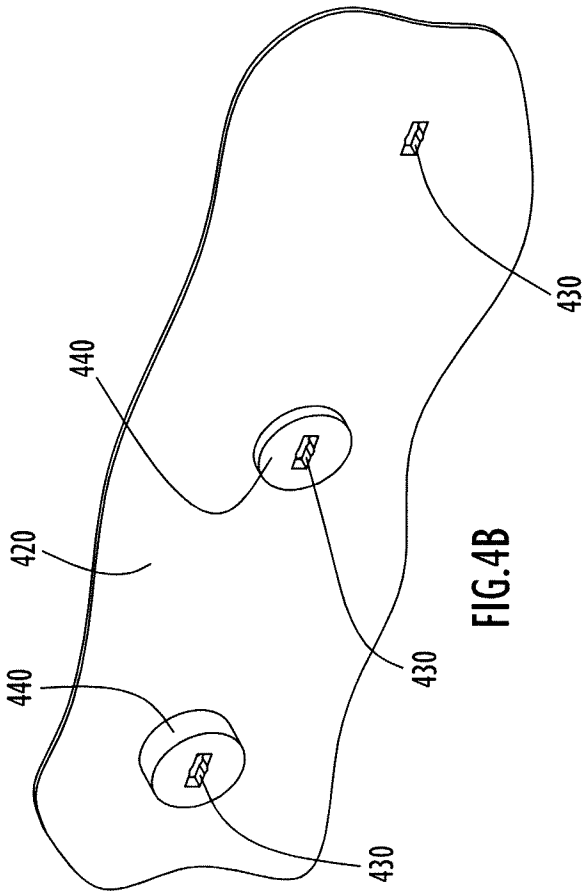


FIG.4B

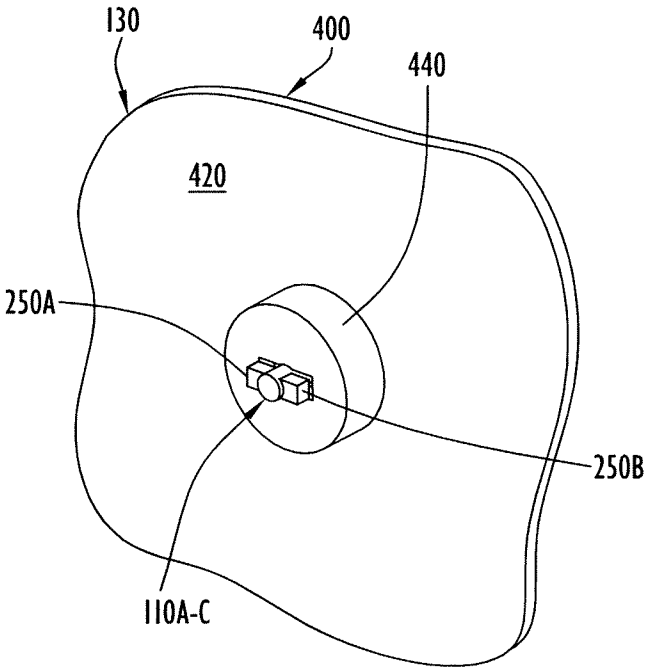


FIG.5A

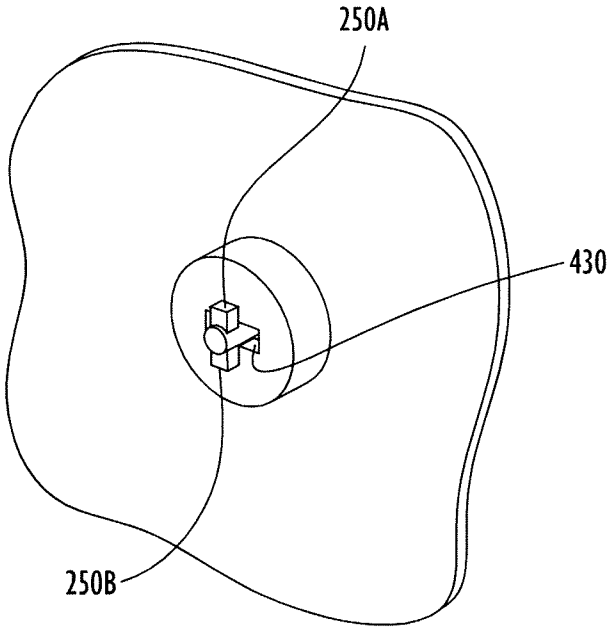


FIG.5B

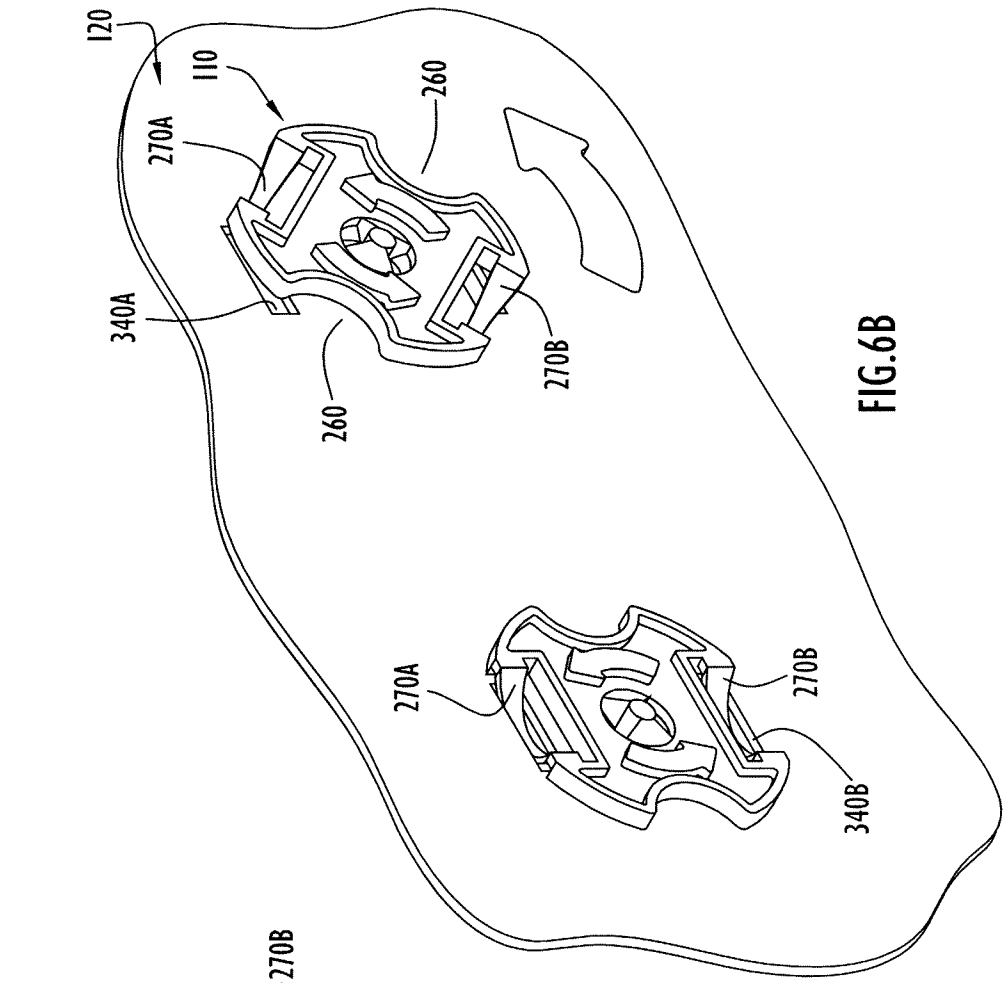

120
110
270A
260
340A
260
270B
270A
270B
340B

FIG.6B

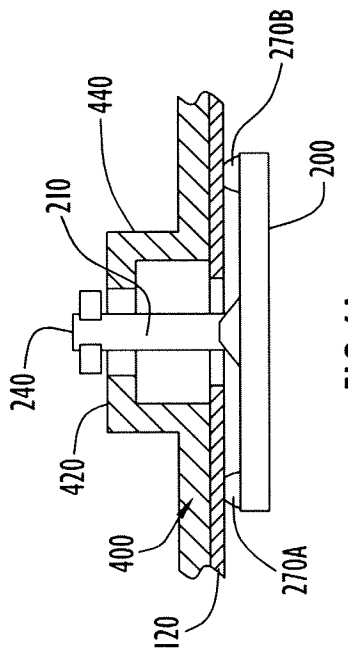

270B
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420
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270A
120

FIG.6A

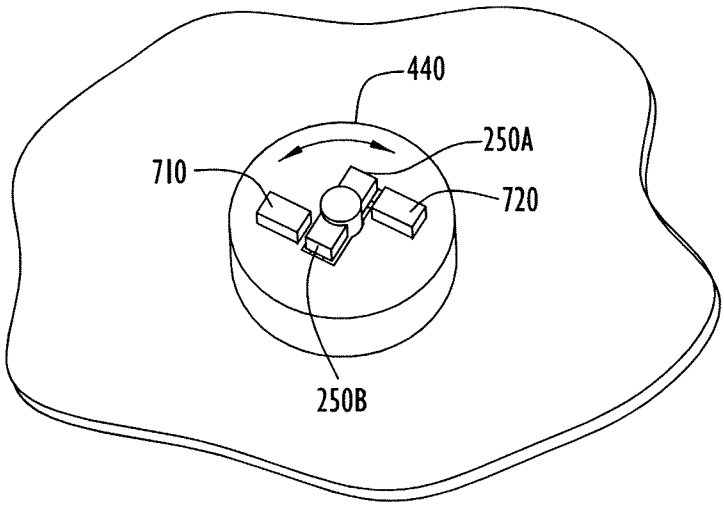


FIG.7A

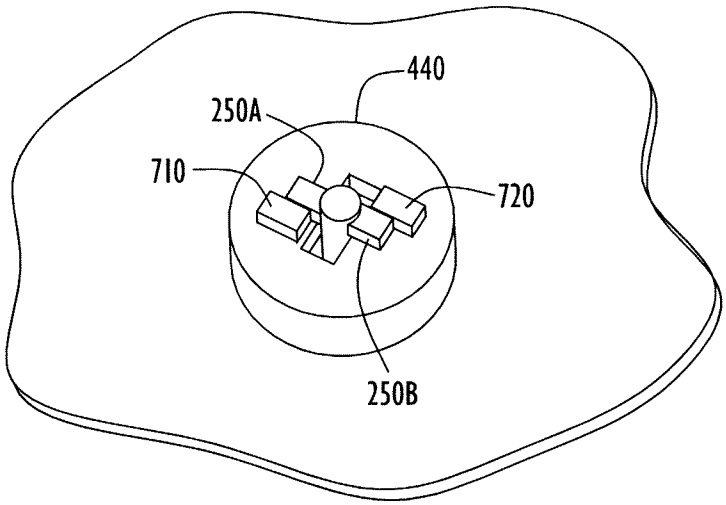


FIG.7B

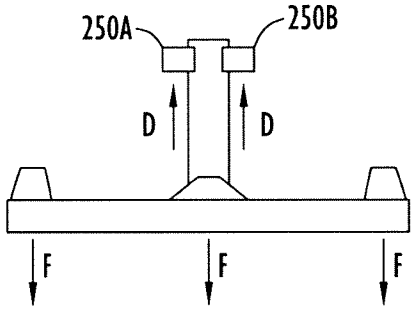


FIG.8

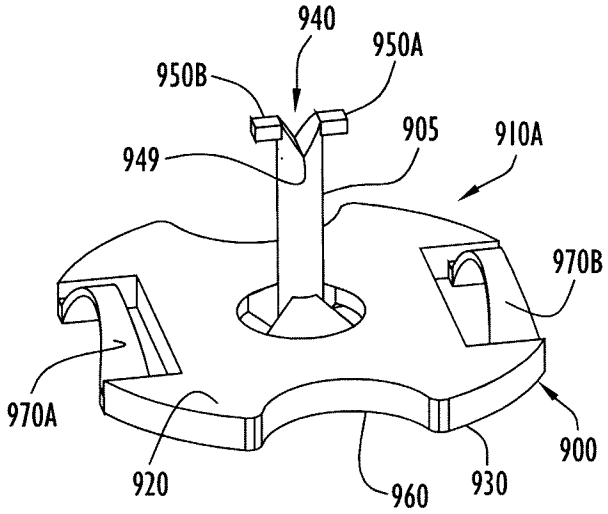


FIG.9A

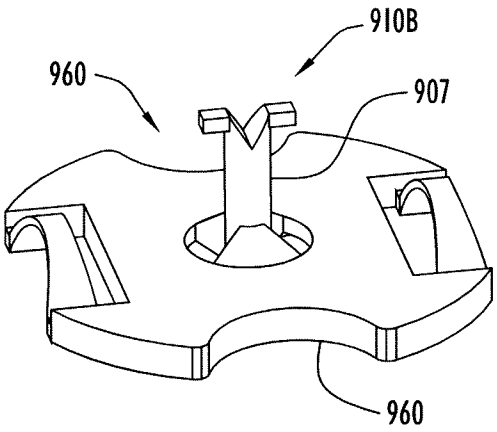


FIG.9B

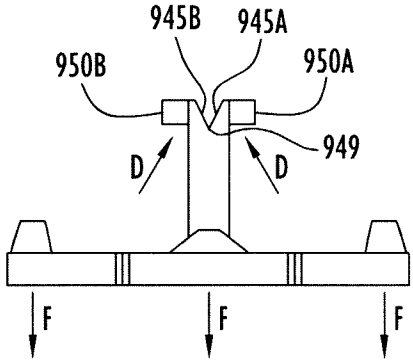


FIG.10

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/059925

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D73/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D F16B A63H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 963 123 A (BEAL) 15 June 1976 (1976-06-15)	1,9
A	column 2, line 37 - line 58; figures 1-3	15
A	US 3 674 138 A (GILMORE) 4 July 1972 (1972-07-04) column 2, line 52 - line 73; figures	1,15
A	FR 2 233 243 A (POLISTIL) 10 January 1975 (1975-01-10) page 2, line 23 - line 27 page 3, line 36 - page 4, line 6; figures	1,15
A	GB 1 137 395 A (MECCANO) 18 December 1968 (1968-12-18) page 1, line 48 - page 2, line 18; figures	1,15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 November 2009	25/11/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Newell, Philip

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2009/059925

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3963123 A	15-06-1976	NONE	
US 3674138 A	04-07-1972	NONE	
FR 2233243 A	10-01-1975	ES 202504 Y	01-03-1976
		IT 987202 B	20-02-1975
GB 1137395 A	18-12-1968	NONE	