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(54) Title: CREATIVE CONSTRUCTION SET ADDITIONAL ACCESSORIES

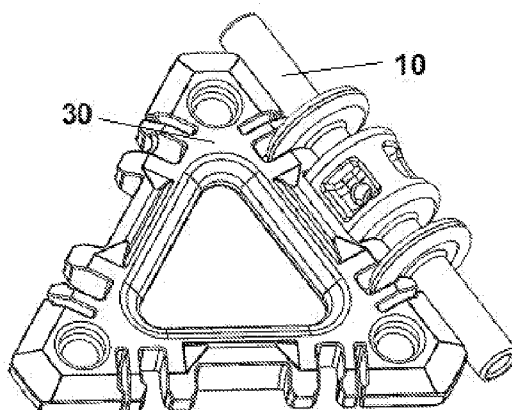


Figure 3

(57) Abstract: The invention is a cost effective, structural building set, suitable as a toy, using post connectors (10) comprised of a post (12) with attached disks (14), or similar devices that insert into cutouts (31) in geometric shaped component parts (30, 80). More than one component part can be connected to the same post connector, and such component parts can rotate relative to the post axis. The connector design allows construction of stable structures of many sizes, shapes, and types, and readily facilitates hinging between different sections of such assembled structures. Many variations of the invention are possible, including connection with other types of construction elements (530, 570, 580, 584, 602, 640), structural element figurines (900), spinors, (512), various shape post connectors (612, 618, 620, 611) and faceplates (632), blocks (550), faceplates (576), lenses (590), catapult/slingshot (680), periscope mirrors (660), tubes (672), wheels (925), spherical elements (915), figurines (900), animal parts (944, 947, 950), and plane parts (954, 955) and more.



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TITLE OF INVENTION

Patent Application of Creative Toys, LLC, Hollis, NH, USA

and in the USA of

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CREATIVE CONSTRUCTION SET ADDITIONAL ACCESSORIES**CROSS-REFERENCE TO RELATED APPLICATIONS**

20 (0001) n/a

**REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM
LISTING COMPACT DISC APPENDIX BACKGROUND OF THE INVENTION**

(0002) n/a

BACKGROUND OF THE INVENTION

25 Field of the Invention

(0003) This invention relates to creative accessories and modifications to a construction set known commercially as Swivel-Snaps, described in WO 2011/143019, PCT/SU2011/035107, US Patent 9,669,324, and other daughter/sister patents and patent applications in the USA and elsewhere, that provide additional advantages to users beyond that of the construction set

30 invention shown in the afore cited documents.

Description of Related Art

(0004) Prior art for the Swivel-Snaps invention is described in the afore cited patent(s)/application(s). None show accessories or modifications to that invention similar to those shown herein.

5 (0005) Fig. 1 shows a post connector **10** for the preferred embodiment of the Swivel-Snaps invention. Fig. 2 illustrates one type of component part, the triangle component **30**. Fig. 3 depicts a post connector **10** and a triangle component part **30** connected together. Fig. 4 shows two such triangle components **30** connected to a single post connector **10**.

10 (0006) The post connector **10** in the preferred Swivel-Snaps embodiment of Fig. 1 comprises a post **12** of essentially rod-like shape with one or more disks **14** attached to, or integral with, the post **12**, wherein the axes of the post **12** and the disk(s) **14** are essentially co-axial. In the preferred, and some other embodiments, the post connector may also comprise a cylindrical, or quasi-cylindrical, section, deemed herein, the connector guide **16**. The axis of connector guide **16** can be essentially co-axial with the axis of the post **12**. The term quasi-cylindrical, as used herein, refers to a shape, such as that shown for the connector guide **16** in
15 Fig. 1, which has a non-purely cylindrical surface on what would otherwise be a cylinder. For example, a quasi-cylindrical shape can be considered to be what was originally a cylinder but which has had its surface indented, protruded, curved, and/or perforated.

(0007) In Fig. 1, the connector guide **16** is quasi-cylindrical, having a concave, indented
20 surface, and said surface has perforations, including radially directed holes going completely through from one side to the other. Such holes can be filled with an overmould of rubber, plastic, metallic or other material, and said overmould can be solid or hollow. These perforations, and indentions, are not necessary for the functioning of the invention, but can add visual appeal, as well as desirable features.

25 (0008) The connector guide **16** is a means to guide the connection between the post connector and a component part. It can also be a means to stabilize, align, and/or strengthen the connection, though it is not necessary to the invention.

(0009) The disk(s) **14** and/or the connector guide **16** can be attached via any means to the post **12**, or alternatively, one or more of them can be an integral part, along with post **12**, of the

post connector **10**, such as could be accomplished by casting, injection molding, or other processes. Although the post **12** is shown extending outside of the disks **14**, it is not necessary to the invention for it to do so. In any embodiment, post **12** only needs to support one or more disks **14** (or a means to connect the post to a component part), and that is what the invention comprises.

(0010) Component parts, such as triangle component **30** of Fig. 2, have cutouts, typically but not necessarily along their edges, into which portions of the post connector **10** can be inserted. Such cutouts comprise disk cutout(s) **31** and connector guide cutout **34**. When portions of the post connector **10**, such as disk(s) **14** and/or connector guide **16** are inserted into respective cutouts **31** and/or **34**, the post connector **10** and the component part (triangle part **30** here) become connected. See Fig. 3. These cutouts can be large enough to permit rotation of a post connector **10** angularly about its long axis, relative to a component part (**30** here). In fact, this is often desired, as it permits a hinging motion between the two parts, and as well, between sections of any further greater assemblies comprised of more post connectors and component parts. Alternatively, the cutouts can be small enough, or deliberately shaped, relative to the size of disk(s) **14** and/or connector guide **16**, to effectively resist such angular motion and provide a non-hinge type of connection. Other kinds of restrictions, well known to those skilled in the art, can be used to provide a non-hinging connection, as well, and these are comprised by the invention.

(0011) Relief cutout(s) **32** can be used to enable easier snapping of a post connector **10** to a component part (**30** in Fig. 2), and removal of same, while also providing a hard stop to prevent over-traveling the beam and potentially crack the latch member. Such relief cutouts are employed in this embodiment, but are not a necessary element of the invention. The connector guide cutout **34** is shown in Fig. 2 as straight and parallel to the triangle edge direction, but any suitable cutout is comprised by the invention. For best hinging effect, one or more of the cutout surfaces **36**, **37**, **38**, **39**, and **40** may be arc-like, to match the typically circular edges of post **12**, disk(s) **14** and connector guide **16**. However, any suitable geometry of such surface(s) is comprised by the invention, and none of those surfaces have to contact any portion of post connector **10**.

(0012) Latch element **33**, a cantilever employed in this embodiment, forms a latch with disk

14. One way it can do this is via the “bump” or “lip” **41**, shown in Fig. 2, which snaps over the outer part of disk **14**. Latch element **33**, in this embodiment, is also arc-like along its inner facing side in Fig. 2 to match the profile of disk **14**. This provides for more fluid hinging, though it is not necessary for the functioning of the invention. Latch element **33**, although shown as a cantilever, can also be a raised dot, or bump, or in fact, anything that serves the same purpose as latch element **33** shown herein. Further, the latching element may be on the opposite side of disk cutout **31** (i.e., on the inner surface of cutout **38**, the side closer to connector guide cutout **34**). Still further, latching elements may be on both sides of the cutout.

(0013) Element **14** comprises a geometric form that includes non-disk, as well as disk shapes, and shall be deemed herein a “cutout insertable element”. Thus, the cutout insertable element shall be considered represented by the number **14** in all figures, although in the preferred embodiment of Figs. 1 to 3, it is disk-like. When the cutout insertable element is disk-like in shape, or an arc section of a full disk, we shall refer to it as a “disk”. When such disk extends over a full 360° , we may sometimes refer to it as a “complete disk”, or “ 360° disk”. The cutout insertable element may be considerably thicker than the disk **14** shown in the figures, and may even be longer in the axial direction than its own diameter (or width in direction perpendicular to the axial.)

(0014) Holes **35** in the corners of triangle component part **30** are not essential to the functioning of the invention, but may aid with embellishments in certain embodiments of the invention. Also, holes **35** can be the same diameter as post **12** to enable mounting of post connectors **10**, via their ends, into said holes.

(0015) Fig. 4 shows two triangle parts **30** connected to a single post connector **10**. For appropriate cutout to post connector portion tolerances, the two triangle parts can move angularly about the post connector, with respect to one another.

(0016) Fig. 5 depicts a square component part **80** connected to a post connector **10**. Square component **80** has cutouts like those shown for triangle component **30**, to facilitate connection with post connector(s) **10**.

(0017) Fig. 6 shows a faceplate **70** that can be inserted into a triangle component part **30** for the purpose of stiffening/strengthening the triangle component, for visual appeal, and/or for attaching post connector(s), other faceplate(s), pictures, decals, other component part(s), or any

device that enhances the invention. The faceplate **70** displayed in Fig. 7 has an optional hole **72**, which may, but does not necessarily have to, be in the center of the faceplate. In other configurations, there may be more than one hole, and any hole does not have to be circular, but can be any shape. The post portion of a post connector may be inserted into such hole, and such
5 insertion can be snug enough to permit the post connector to be a part of an assembly of post connector(s) and component part(s). Other items, such as, but not limited to, a wheel axle, flower (artificial or real), rod, lollipop, flag, LED, and toy figure may be inserted into the hole, as well, or in lieu of the post connector.

(0018) Faceplates can also have cutouts or raised areas for the letters of the alphabet,
10 numbers, words, etc., allowing children to study and/or snap together their ABC's, name, party invitation, age, etc. Any faceplate embellishments, such as those described herein or otherwise, can extend beyond the plane, and/or also beyond the edge(s), of any component part. Further, they can be quite thick and/or have hollow regions that may be filled with any number of items, such as, but not limited to, live fish, candy, glitter, lava lamp goo, etc. They can comprise, or
15 allow attachment of, 3D items of many kinds. That is, faceplates can extend upward in the vertical direction of Fig. 7 to any reasonable height, and can extend sideways (sideways as seen in Fig. 7) to any reasonable extent. (See Fig. 43.) They can have knobs, plugs, or other means, threaded or otherwise, to attach any number of different items to them.

(0019) Both of the words "faceplate" and "facemount" may refer herein to devices that are
20 either significantly extended in the vertical direction (away from a component face) or thin in the vertical direction (i.e., platelike.)

(0020) Fig. 7 depicts the faceplate **70** inserted into the triangle component **30**. Although the discussion of Figs 6 and 7 focus on holding the faceplate by its sides onto the component part, the component part can attach to some other region of the component part. For example, the
25 component part may be solid in the middle with a knob or other protrusion onto which a hole in the faceplate fits. Alternatively, the faceplate may have a knob or other protrusion which fits into a hole in the component part. Any means to hold a faceplate snugly in the triangle, or any other shape, component part, including simple snaps well known to those skilled in the art, is comprised by the invention.

(0021) Faceplates can be employed in square or any other shape component parts in the
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same fashion as described above for triangle component parts, and wherever the words triangle or triangular are used herein with respect to faceplates, the word “square” may be substituted and the result comprise the Swivel-Snaps invention.

5 (0022) The invention comprises decals, paintings, laser markings, pictures, flags, mirrors, tattoos, hand written sheets, and similar items attached to the faceplates, though these are not necessary. The invention comprises any of the items discussed anywhere herein as being attachable to a faceplate, as being also attachable to a component part and/or a post connector.

10 (0023) Fig. 8 shows a post connector **10** with a single sphere **20** attached to one end. Fig. 9 shows a post connector with two such spheres, one on either end. Such spheres **20** may be rubber, plastic, wood, metal, or any suitable material. They may attach to the post connector **10** via any means, many of which are well known to those skilled in the art. Alternatively, the spheres **20** could be manufactured as an integral part of the post connector **20** when the post connector is made, via casting, injection molding, or similar process.

15 (0024) Alternatively, any suitable object or device may be attached to, or inserted into, the end of a post connector **10**. These include, but are not limited to, hooks, screw eyes, suction cups, threaded rods, magnets, whistles, springs, hinges, toys, toy figures, lollipops, wheel axles, flowers (artificial or real), flashlights, LEDs, and bubble wands.

20 (0025) The Swivel-Snaps invention comprises square component **80** as well as all possible geometric shapes configured, as parts **30** and **80** are, to connect with a post connector **10**. These other possible component part shapes include, but are not limited to, rectangles, parallelograms, pentagons, hexagons, all other polygons, circles, ovals, all other effectively 2D (thin in one dimension) shapes, rectangular solids, tetrahedrons, spheres, ovoids, all other 3D solids, and portions/sections of any of the foregoing.

25 (0026) With these various types of component parts, a user of the invention can create innumerable different types and sizes of structures. One can connect components of different types together. For example, the triangle component part **30** can be connected along an edge to a square component part **80** via the same post connector **10**. Boxes, homelike structures, pyramids, geometric forms of many diverse kinds, animal and bird models, dinosaurs (such as pterodactyls), and more are possible. The nature of the connections made between the post
30 connectors **10** and component parts will provide significant stability and durability to these

structural creations.

(0027) Given the swinging (i.e., hinge) capability of the connection between post connector **10** and component part, any component part in any structure can be configured to swing open or closed. This can provide a door, which can be opened and closed, for house-like structures, hinged lids for boxes/chests, model window shutters, book binders, and much more.

(0028) Fig. 10 shows square component parts **80** connected via post connectors **10** to form a box (cube type of rectangular solid with one face hinged open in Fig. 10). This box has a swinging top (lid) that opens and closes because it swings freely about a post connector, while the other parts of the box remain stationary. Of course, any face of the box, not just the top, may be used for swinging open and closed while the others remain fixed, and more than one face may swing open, as well.

(0029) Faceplates such as, but not limited to, **70** and **84** do not need to snap firmly into place and be held tightly by their associated component part (**30** and **80** in the figures). Rather, they could be attached along their outer edge to the inner edge of a component part via a post connector **10** or any other form of removable connection. This would permit hinging or removal of the faceplates with respect to their associated component parts, and thereby provide for greater creative expression by children using the invention. Such faceplates could then become doors to house-like structures, lids for boxes, etc.

OBJECTS AND ADVANTAGES OF THE INVENTION

(0030) Accordingly, several objects and advantages of the present invention are to provide greater stability, strength, flexibility, and/or ease of assembly of 2D and 3D structures, typically in construction assemblies, over those of prior art. Other objects and advantages comprise greater flexibility in types of structures, including, but not limited to, integration of Swivel-Snaps with other construction assembly kits such as Lego, K'Nex, and others, as well as integration with other toys and devices such as spinners, piggy banks, massagers, magnifying lens, art supplies, rails, periscopes, and more. Still other objects and advantages comprise new type component parts, means for building different types of creations, and more, for Swivel-Snaps. Among other things, these objects and advantages, as well as others, provide greater utility, enjoyment, and

creative possibilities for users.

(0031) These and other aspects of the invention discussed below provide significant benefits and advantages over prior art. Further objects and advantages of the invention will become apparent from a consideration of the ensuing description of it.

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BRIEF SUMMARY OF THE INVENTION

(0032) The present invention provides significant advantages over prior art structural building systems by utilizing the following unique embodiments for use with Swivel-Snaps.

(0033) Piggy bank made from Swivel-Snaps, spinner attached, Lego studs and Lego holes in Swivel-Snaps parts/connectors/faceplates, integration options with Duplo/Bristle
10 Blocks/K'Nex/magnets/Lego/etc., half/partial component part faces (Lego on sides or edges), rails (for example, around elongated "post"; Mobius strip as one embodiment), interior/exterior blocks (for axles, for example), periscope, unique faceplates (smell, Velcro, hole for post ball, chalk board surface, paint surface, white board surface), lens magnifier, triangles in corners of constructions, post connector art supplies, double component part, Swivel-Snaps gears, fabric or
15 elastic faceplates (trampoline effect), and tubes through which marbles, balls, or other objects can pass connected to Swivel-Snaps elements. The invention also comprises wheel attachments, spherical object elements, construction figurines, and mock animal elements.

(0034) The invention, in its various embodiments, provides numerous advantages over prior art in a superior and wholly satisfactory manner.

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BRIEF DESCRIPTION OF THE DRAWINGS

(0035) Figure 1 depicts one embodiment of the post connector of the Swivel-Snaps invention.

(0036) Figure 2 illustrates a triangle shaped component part of the Swivel-Snaps invention.

(0037) Figure 3 shows an embodiment with post connector and a triangle component
25 attached together of the Swivel-Snaps invention.

(0038) Figure 4 depicts a post connector attached together with two triangle components of the Swivel-Snaps invention.

(0039) Figure 5 shows a square component part with a post connector attached of the Swivel-Snaps invention.

5 (0040) Figure 6 shows a faceplate for a triangular component part with an optional hole of the Swivel-Snaps invention.

(0041) Figure 7 shows a faceplate inserted into a triangular component part of the Swivel-Snaps invention.

10 (0042) Figure 8 illustrates a single sphere mounted on the end of a post connector of the Swivel-Snaps invention.

(0043) Figure 9 depicts a post connector with spheres on each end in the Swivel-Snaps invention.

(0044) Figure 10 shows a cubic rectangular solid made from square component parts and post connectors in the Swivel-Snaps invention.

15 (0045) Figure 11 displays a square component part with a faceplate having a slot in the center for coins to pass through.

(0046) Figure 12 illustrates the combination of a spinner with Swivel-Snaps.

(0047) Figure 13 shows Lego studs and holes in Swivel-Snaps faceplates, component parts, and post connectors.

20 (0048) Figure 14 depicts several different types of connecting mechanisms used in commercially sold toys incorporated into Swivel-Snaps elements.

(0049) Figure 15 shows different types of connecting mechanisms used in commercially sold toys incorporated into one, or a few, sides of Swivel-Snaps component parts.

(0050) Figure 16 depicts rails incorporated into a Swivel-Snaps connector.

(0051) Figure 17 shows a component part sliding on rails incorporated into a Swivel-Snaps connector.

(0052) Figure 18 illustrates a curved rail Swivel-Snaps connector.

(0053) Figure 19 shows a few different ways the rail Swivel-Snaps connector can be shaped.

5 (0054) Figure 20 depicts a railed Swivel-Snaps connector using posts and less material.

(0055) Figure 21 shows a block attached to a Swivel-Snaps component part that can add strength to constructions.

(0056) Figure 22 demonstrates some unique types of faceplates.

(0057) Figure 23 displays a faceplate with a magnifying lens.

10 (0058) Figure 24 shows art supplies incorporated into a Swivel-Snaps connector.

(0059) Figure 25 depicts a fabric or elastic material faceplate.

(0060) Figure 26 shows a double length component part.

(0061) Figure 27 illustrates a gear and how it can engage with a Swivel-Snaps construction to provide motion and/or drive.

15 (0062) Figure 28 displays a right isosceles triangle support.

(0063) Figure 29 depicts a periscope with mirror faceplate polyhedrons inside a tube made of Swivel-Snaps elements.

(0064) Figure 30 shows an assembly whereby marbles or other balls may slide inside tubes of Swivel-Snaps constructions.

20 (0065) Figures 31 to 34 display a wheel, wheel assembly, and attachment to component parts to permit building of a vehicle, or used horizontally as a spinner or carousel.

(0066) Figures 35 to 38 show a means for constructing a quasi-spherical object.

(0067) Figures 39 to 43 depict a construction figurine.

(0068) Figures 44 to 48 illustrate various mock animals that can be constructed from sub-elements.

DETAILED DESCRIPTION OF THE INVENTION

(0069) Figs. 1 to 10 show various elements, embodiments, and configurations of the Swivel-Snaps invention cited in the preamble. Figure 10 shows a rectangular solid made of square Swivel-Snaps component parts and post connectors. The present invention is a supplemental, i.e., “add-on” feature and/or a modification of the Swivel-Snaps invention.

(0070) The component part of Figure 11, with a slot **502** in the faceplate **84** in the middle of the component part **80** may be used for one of the component parts **80** in Figure 10. Thereby the resulting structure can be used, with the top component part **80** in Figure 10 connected via post connectors **10** such that the resulting structure is a closed rectangular solid (a cube in the embodiment of Figure 10), as a “piggy bank”, i.e., a means for saving coins and bills, a personal savings bank. The component parts **80** shown as squares can be any suitable shape, and the piggy bank could thus be any possible 3D solid shape, not necessarily a cube. Some possible such shapes include a pyramid, a ball, an animal such as a pig, horse, or duck, a wheel or more, Instead of faceplates **84**, the component parts can be solid or nearly solid, across the middle portion with a slot **502** in the middle portion. In essence, the user can create a custom piggy bank.

(0071) As storage needs increase, the user can simply add additional component parts, such as, but not limited to, **80** connected by post connectors and increase the size and volume for holding coins, trinkets, stones, shells, jewelry, candy, or other things. The savings device is expandable, portable, and easily opened and closed.

(0072) Figure 12 shows the addition of a spinner **512** to the Swivel-Snaps invention. The spinner, which can include bearings and/or weights, can be connected to a faceplate **84**, a post connector **10**, and/or a component part such as a square **80**, or any shape. The connection can be anywhere on any element in Swivel-Snaps. For example, in Figure 12, the spinner **512** is shown

attached to the end of a post connector **10**, and also to the mid-section, the connector guide in that particular figure. The spinner can be connected at any angle as well with respect to any Swivel-Snaps element. The spinners can be pre-connected in the production process to any such element, or they can be connectable to any such element by the end user via any suitable
5 connection mechanism. That is, the spinners can be attached to, integral with, or attachable to any Swivel-Snaps element, including, but not limited to, component parts of any shape and size, post connectors, and faceplates. They can be attachable anywhere on any of those elements, at any angle. The term “fidget spinner” as used herein in the broadest sense can refer to any type of spinning device that is attachable, via any means, method, and/or mechanism to any Swivel-
10 Snaps element.

(0073) Figure 13 shows studs **602** (male) and holes (or cups) **604** (female) of the Lego design incorporated into Swivel-Snaps elements. In the figure, these elements are faceplates **584**, **570**; component parts **580**, **530**; and post connectors **510**, **512**, **514**, **516**. This allows joint constructions to be made that comprise both Swivel-Snaps and Lego elements. The Lego studs
15 and holes (or cups) can be anywhere on any Swivel-Snaps element, in any number, and at any orientation, although a preferred alignment is to have such studs and holes (cups) in one or more rows, comprising at least two studs and two holes in a row. The term “Lego” when used herein with regard to connection mechanism, design, studs, and/or holes refers to studs, cups into which said studs are inserted, and/or holes into which said studs are inserted, wherein the studs may be
20 (in a preferred embodiment, but not necessarily are) cylindrical, or quasi-cylindrical, in shape and aligned in one or more rows, such as those shown in Figures 13, 14, and 15. The present invention comprises any means, method, device, and/or mechanism that permits connecting any Swivel-Snaps element to such Lego type construction element by incorporating connection mechanism(s) or device(s) of said Lego type construction element (such as studs, cups, or holes)
25 on, or into, a Swivel-Snaps element. The word “hole” used in such context can, alternatively, mean “cup” or “insertable section/piece/part/element” or “female section/piece/part/element”,

and in fact, any of those terms may be used interchangeably with any other and still comprise the present invention. The word “stud” used in such context can mean a pole, rod, knob, disk, bump or any other type of male element. The word “cup” can mean a cylindrical or other shape piece, at least partially hollow, into which a stud is inserted in order to make a connection. The term “Lego type” can refer to connection types other than those specifically and commercially known as Lego. Or it can refer to the specific, commercial Lego connection type, if so defined explicitly.

(0074) In Figure 14 several options for integrating Swivel-Snaps with commercially available toy construction systems are shown. These permit Swivel-Snaps users to build joint structures/objects with other toy systems. Examples shown include Duplo female **614** and male **612** connectors on Swivel-Snaps faceplates **684** ; Bristle Block connectors **702** on Swivel-Snaps faceplates **784**; K’Nex, male **802** and female **804** connectors on Swivel-Snaps faceplates **884**; Lego male **602** and female **604** connectors, and magnetic faceplate inserts **984**. K’Nex connections have a male portion comprising a rod with a lip (indentation, cutout, ledge) at the end allowing the rod to form a sturdy connection with the female portion. Bristle Block connections have an array of bristles (male portion) where the female portion is between the male bristles. Connections for Lincoln Logs are also comprised by the present invention. Although Figure 14 explicitly shows faceplates, the integrations with other toy construction systems that is described can also be built directly into a component part without a faceplate. The present invention comprises any means, method, device, and/or mechanism that connects any Swivel-Snaps element to another (additional) type of construction element by incorporating connection mechanism(s) of said other type of construction element on, or into, a Swivel-Snaps element (post connector, component part, faceplate, figurine, or other element). The additional (another) type of construction element, may be, but is not limited to, a block, figurine, geometric shape, letter, number, picture, or drawing, and is connectable to any other element, such as, but not limited to a post connector or a component part or a faceplate, with a connection mechanism

comprising male and female portions that may, or may not, be aligned in one or more rows.

(0075) Enabling users to play with Swivel-Snaps and their existing (and future) toys is important. Extending the Swivel-Snaps faceplate to accomplish connections with these other toys is the essence of this invention. There are countless combinations, and space prohibits recounting
5 all of them, but they all stem from the same basic inventive concept ... build Swivel-Snaps faceplates that incorporate one or more of the fastener elements from a given external toy system (e.g., Lego, K'Nex, Duplo, Velcro, Lincoln Logs, magnetic toys, etc.) These faceplates can be built to support male or female or both connection types. These faceplates may, or may not, compromise the original Swivel-Snaps traditional functionalities. Although square faceplates and
10 component parts are shown in Figure 14, the invention comprises all possible shapes of such elements. Compatibility with other construction sets is a big advantage of the present invention.

(0076) Figure 15 shows partial (half or otherwise) Swivel-Snaps component parts **584**, **586**, **886** that have connectability with other Swivel-Snaps components on one, or only some, edges, and otherwise may be connected to other construction set elements. Any of these component
15 parts may be partial (less than full), or half the typical Swivel-Snaps component part. It may sometimes be valuable to only expose the Swivel-Snaps connection elements on one, or a few, side(s) of a component part. Some such cases, when working with another toy set (Lego, K'Nex, etc), are shown in Figure 15 . This is applicable to all Swivel-Snaps elements, including, but not limited to, component parts, post connectors, and faceplates. Fasteners and component parts can
20 be inline, perpendicular, or set at any angle. Elements such as those shown in Figure 15 allow unique types of constructions not otherwise feasible.

(0077) Figures 16 to 20 depict embodiments of the Swivel-Snaps invention having a connector **610** with rails **614** upon which component parts such as a square **80** (but not limited to a square) can be attached such that the component parts either become fixed to the rails, or
25 alternatively, are able to slide along the rails (see arrow in Figure 17). While only a single rail **614** is comprised by the invention, any number is also comprised by the invention. The preferred

embodiment has two rails **614** as in Figure 16.

(0078) Figures 16 to 20 show connectors without connector guides **16** (see Figure 1) but embodiments with connector guides on connector **610**, as well as any other connector with rails such as, but not limited to, **612, 614, 618, 620**, are also comprised by the invention.

5 (0079) Figure 18 illustrates one non straight possibility **612** for the connector with rails. Looking down from the top, as the views are in Figure 19, any possible shape for the connector is comprised by the invention. Just some of these shapes for connectors **610, 612, 618, 620** are rails **614** are shown in Figure 19. Other possible shapes include, but are not limited to, circular, triangular, square, strip, alphabet letters, numbers, symbols, stepped, pentagon, hexagon,
10 octagon, any regular or irregular polygon, and more. Another is that of a Mobius strip. In general, the invention comprises any configuration with rails on a connector. The rails and connector can be formed into any desirable shape.

(0080) Figure 20 shows one configuration, of many possible configurations, of a railed connector **611** in which cylindrical (or other non circular cross section) posts are used to hold the
15 rails, rather than the continuous configurations of Figures 16, 17, 18, and 19. This embodiment would save material cost. Note that any configuration of connector at all that has rails upon with Swivel-Snaps component parts or faceplates may be connected and either fixed or slid comprises the invention. The rails do not have to be continuous around an entire connector, but can comprise one or more discrete sections that do not surround a connector.

20 (0081) All of the remarks made herein with regard to component parts being connected with rails also hold for faceplates being connected to rails. All rails may be attached to, attachable to, or integral with a post or the main part of a connector body, a faceplate, or another component part. That is, in addition to the embodiments shown with rails as part of connectors, the rails may also be part of a faceplate or another component part. Component parts in any embodiment any
25 shape and not just that of the square shown in Figures 16 and 17.

(0082) The inclusion of rails **614** in the Swivel-Snaps invention enables additional building opportunities such as, but not limited to, incorporation with trains and roller coasters.

(0083) Figure 21 displays an embodiment of the invention with a block **550** mounted inside a component part **80** wherein the block does not interfere with post connectors that would attach
5 to the component part. The block **550** may be shaped such that its end fits snugly inside the component part **80**. This configuration provides strength to assemblies due to the inherent strength of the block. It can carry significant loading. In one configuration, the block may have a wheel axle attachable to, attached to, or integral with it. This would allow for car/truck/train/other shells made of Swivel-Snaps to hang from a robust block chassis. The
10 component part into which the block **550** is mounted does not have to be a square **80**, but may be a triangle, other polygon, or any suitable shape.

(0084) Figure 22 shows several unique Swivel-Snaps faceplates. Faceplate **570** is made of Velcro or has Velcro attached, or attachable to, it. This will enable unique attachment scenarios. For example, a fabric flame trail that attaches via Velcro to the bottom of a Swivel-Snaps rocket
15 ship construction.

(0085) Faceplate **572** has a “scratch and sniff” surface. One scratches the surface, and the faceplate emits a smell. Faceplate **576** has a hole in it that receives a post connector’s ball end
20 **20**. (See figure 10.) This allows for ball joint assemblies that have a wide range of motion yet still ‘snap’ into place. Swivel-Snaps with the features of Figure 22 will appeal to sight, sound, touch, and smell. In addition to embodiments of unique faceplates shown in Figure 22, other configurations comprised by the invention are faceplates of, or containing, chalk board surface, paint surface, sticker surface, lenticular surface, mirror surface, and/or white board surface. Additionally, a component part may have any of the features described herein for a faceplate.

(0086) Although Figure 22, and other figures, show a particular shape of component part
25 (square **80** in Figure 22, for example), all embodiments herein described for one particular shape component part are applicable to component parts and faceplates of all possible shapes and sizes.

Further all embodiments comprise post connectors (and elongated connectors such as shown in Figure 16 to 20) with, or without, connector guides **16**. (See Figure 1.)

(0087) Figure 23 shows a Swivel-Snaps component part **80** with a faceplate having a built-in magnifying glass, i.e., a lens **590**. The lens can be attached to, attachable to, or an integral part of the faceplate, or it may be the faceplate itself is a lens. User can thereby inspect object under magnification inside or outside structures they build. Using such lens configurations as shown in Figure 23, or otherwise, users can build microscopes or telescopes out of Swivel-Snaps elements.

(0088) Figure 24 illustrates incorporation of art supplies such as a crayon, pen, pencil, felt tip marker, or paint brush **594** into a post connector **592**. The post connector **592** may be filled with crayon, pencil, pen, marker, paint, or the like material. The centers could be exposed by spinning the post connector, by mimicking the common spring loaded pen or mechanical pencil designs. Users can snap together a shape then extend the drawing tips so they can draw 1 to N lines at a time and the lines will remain perfectly parallel. Or the user could use the design to draw an arc **596** as the pen tip **594** rotates around a post connector. Or as shown in the right hand side of Figure 24, the disk of the post connector **592** could have marker material, ink, or similar that draws a line (an arc in the figure) as it is rotated.

(0089) Art supplies, such as those mentioned above and others, can also be incorporated into faceplates or component parts. Additionally, such art supplies can be attached to, attachable to, or integral with a post connector, faceplate, and/or component part.

(0090) In Figure 25 the faceplate **680** is made of fabric or elastic material that will enable trampoline, catapult, slingshot, and/or basketball shooting game functionality to Swivel-Snaps. The fabric can have a string or other material/object sewn to the center of it to form a pull strap **682** so the user can pull on the elastic fabric. This creates a mini trampoline/slingshot for users to attack castles or other structures (made of Swivel-Snaps or not); to bounce marbles, balls or other things off of; act as a trampoline for dolls or other figures; shoot baskets; be a “carnival type” game; and more. Leveraging the swiveling post connector, the user could alter the launch angle

until they hit their target. In larger component parts they may actually be trampolines for kids. Elastic material is attached to, or attachable to, a component part wherein when connected, an object such as a ball or marble may be propelled by pulling back and releasing the elastic material, or said object may be bounced off of the elastic material.

5 (0091) A double size component part **632** is shown in Figure 26. This has the same effective width as the edge of a square component part **80**, but a length that is effectively twice that of a square component part edge. It can accommodate two post connectors **10** on the long edge, and therefore connect two component parts, such as, but not limited to, the square **80** along that long edge. Such a double size component part has more strength than two single size component parts
10 **80** connected together via a post connector **10**. Of course, any shape component parts, not just the square shape, can be connected along the long edge of **632**.

(0092) Additionally, a double size component part may be formed using the shape(s) of any one or two single component parts, not just that of the square shape. For example, a solid double triangle, i.e., a parallelogram, may be formed that has two 60° angle corners, and two 120° angle
15 corners. As other examples, such a double component part could be formed based on two triangular shapes that are other than equilateral. As still other examples, double component parts could be formed from combinations of shapes such as hexagons, pentagons, squares, triangles, and other polygons. The component parts do not have to be of the same type. For example, a double component part could be formed from a triangle **30** and square **80**, or from any other two
20 different types of component parts. A double size component part essentially has one edge that can connect to two post connectors **10**.

(0093) Triple, quadruple, and larger size component parts can be made based on any number of single component part shapes. The defining characteristic of a multiple size component part is that it can connect with more than one post connector **10** on at least one edge.

25 (0094) Figure 27 illustrates a gear **640** which can be used with Swivel-Snaps constructions, such as that shown in the top of the figure. This can enable motion and/or provide drive. In the

image, End A can be connected to End B to form a 3D belt/loop/chain. One can then place the keys of a Swivel-Snaps compatible gear **640** into the square component part **80** center voids. This can enable users to design moving creations, mobile structures, vehicles. It could be powered by a hand crank attached to the gear or by attaching a motor to the gear. Other shape component parts, other than squares **80** may be used as well.

(0095) Triangles **650** are added to the corners of a Swivel-Snaps construction in Figure 28. These can provide additional strength and support to structures. The triangle **650** in Figure 28 is a right isosceles triangle, which should be the most commonly needed type for strengthening structures, but any suitable triangle shape that can be used for such support is comprised by the invention. This type of triangle increases the possible types of constructions that can be built.

(0096) Figure 29 shows a periscope built using Swivel-Snaps elements and a faceplate polyhedron **660** with a mirror on one side. With two such faceplates **660** one can align them inside a Swivel-Snaps created passageway, or tube, with right angles as shown in Figure 29. That is, the mirrored faceplates **660** can be placed such that incident light on the first of them is reflected to the second of them, and typically then into a viewer's eye(s). The mirror faceplate **660** can have an essentially triangular cross section in the plane of travel of the light beam as shown in Figure 29, although any suitable shape is comprised by the invention. The mirror face can be essentially square or rectangular, though again, any suitable shape is comprised by the invention. Flat mirrors can be used for best periscope type results. Curved (convex or concave) can be used to enlarge (as in a telescope) or reduce images. Distorted shape mirrors, such as but not limited to rippled mirrors, can be used for fun house type image viewing. The angles in the Swivel-Snaps passageway, or tube, do not have to be right angles, but can be of any degree.

(0097) Figure 30 illustrates the incorporation of a separate tube **672** into a Swivel-Snaps construction of component parts **80** (or any other shapes of component parts) and post connectors **10**. By doing this, users can put a ball, marble **670**, toy car, or other object in one end, typically the upper end, and the object (ball or marble **670** in Figure 30) can come out the other end. The

tube **672** could instead be a chute, ramp, rail, tethering line, zip line, or any other means to guide the object along, through, or beside a Swivel-Snaps construction. Typically, gravity will pull the object downward, but any other means to propel or pull the object is comprised by the invention, as well.

5 (0098) A clamp **674** or other fastener by which the tube or other means for guidance of the object can be fastened may be attached to, attachable to, or integral with a component part **80**, such as that shown in Figure 30. Such clamps or other fasteners can also be attached to, attachable to, or integral with any other Swivel-Snaps element, such as a post connector or a faceplate or any other shape component part. Typically, the tube or other means for guidance
10 would snap into the clamp **674** or other fastener.

(0099) Figure 31 shows parts **925, 930, 935** that can be assembled to permit attachment of a wheel **925** to any component part (such as, but not limited to a square **80** or triangle **30**) or any structure considered or implied herein. The wheel itself **925** can be of any style, design, and/or function and is not restricted to the particular design shown in Figure 31, although that is the
15 preferred embodiment. That embodiment has ribs or spokes **928** and a rim **927**. The center of the wheel comprises a means (such as **926** in this embodiment) to connect the wheel component to a shaft, axle, or assembly **930**, and that shaft/axle/assembly has a means to connect to a faceplate **935**. In the embodiment shown, the means to connect the wheel **925** to the shaft/axle/assembly comprises a hollow shaft **926** in the center of the wheel **925** into which the rod/shaft/axle **931** can
20 be inserted. A part of the shaft/axle/assembly **932** can help to hold the rod/shaft/axle **931** in the hollow shaft **926**. This may be of any suitable design. The invention comprises any means (structural or otherwise) to connect a wheel to a component part.

(00100) In the embodiment shown in Figure 31, the means to connect to a faceplate **935** is an insert **934** that inserts into an opening, hole, cutout **936**, or hollow section in the faceplate
25 **935**. The design may be such that a twisting motion around the axis of the rod/shaft/axle **931** tightens the shaft/axle/assembly **930** into the faceplate **935**, but this is not necessary for the

functioning of the invention. Any means to attach the shaft/axle/assembly **930** into the faceplate **935** is comprised by the invention. The faceplate **935** can be attached to a component part, such as the square **80** shown in Figure 32. Although a square faceplate **935** fitting into a square **80** is shown in the figures, any shape faceplate attached to any shape component part is comprised by the invention.

(00101) Views perpendicular to the rod/axle/shaft **931** from the side of the faceplate **935** and the side of the wheel **925** are shown in Figure 33. Although that and other figures show an “S” shape for the connection between the shaft/axle/assembly **930** and the faceplate shaft/axle/assembly **935**, any such shape and any suitable connecting means is comprised by the invention. Figure 34 shows a typical vehicle constructed out of triangle component parts **30** and square component parts **80** employing the present wheel assembly invention with wheels **925**.

(00102) The invention comprises a wheel that may be attachable to (or an integral part of) a shaft, axle, or assembly wherein that shaft, axle, or assembly may be attachable to (or an integral part of) a faceplate, and wherein that faceplate may be attachable to (or an integral part of) a component part. Note that although particular parts **925**, **930**, **935**, and **80** are shown as attachable to one another in the figures, Any two or more of such parts may be integral with one another rather than attachable to one another. In fact, the entire assembly shown in Figure 33, other than the post connectors **10**, may be integral, i.e., all of a single piece. However, embodiments in which the wheel may rotate relative to the component part (such as a square **80** or a triangle **30**) are more practical embodiments of the invention.

(00103) The invention comprises any means or method by which a wheel or wheel assembly may be attached to a component part such that vehicles with one or more wheels may be constructed from component parts, at least one wheel, and possibly other components. It also comprises the wheel as a spinner or carousel, in which it is not necessarily part of a vehicle.

(00104) Figure 35 shows a partial spherical section **915** which may be used to construct a spherical, nearly spherical, essentially spherical, quasi-spherical, or approximately spherical

shape. The term quasi-spherical is one way to describe shapes such as the one shown in Figure 38 for which some sections (sections where the post connectors **10** are in the figure) are not part of spherical surface, but most of the rest of the object is comprised of sections that are portions of a spherical surface. The surface **916** is essentially a portion of a spherical surface. The “S” figure **917** on the surface shown in the figure is not a requirement of the invention, but merely a design intended for a particular production run of the invention. In the preferred embodiment shown, insert **918** fits inside of a square component part **80** and holds, or helps to hold, the partial spherical section **915** in the square component part. See Figure 36. Edge **919** typically meets along the edge of the square component part, but that is not a requirement of the invention (although it is part of the preferred embodiment shown.)

(00105) Figure 37 shows one partial spherical section **915** attached to a cube made of square component parts **80** and post connectors **10**. Figure 38 depicts a near, effective, essential, quasi-, or approximate, sphere made from the cube of component parts **80** and post connectors **10** with six partial spherical sections **915** attached to the component parts.

(00106) A specific embodiment (the preferred embodiment) of the invention is shown in Figures 35 to 38, but the invention is not restricted to that particular embodiment. Any means or method whereby partial spherical sections may be attached to component parts and a sphere, or approximation to a sphere, may be constructed is comprised by the invention.

(00107) Figures 39 and 40 display a construction figurine **900** in the general form of a human, which may be attached to one or more post connectors **10**. The construction figurine has arms **902** and legs **904**. In the (preferred) embodiment shown, each arm has pivots **906** at the shoulder, pivoting elbows **903**, and hands **908**. Each leg has pivots at the hip **907**, pivoting knees **905**, and feet **910**. The figurine has a head **911** and a torso **901**.

(00108) Pivots at any of the shoulders, elbows, hips, knees (**906**, **903**, **907**, and **905**, respectively) may be comprised of pins inserted into arm or leg sections, around which each arm or leg section may rotate, as is well known to those in the art. However, any suitable means (not

constricted only to pins) for pivoting is comprised by the invention. For example, the pivoting could be achieved by mating sections of each arm or leg that, upon mating, allow swiveling without a pin. Such swivel mating of parts by various means is well known in the art. Pivoting elbows **903** and knees **905** are part of the preferred embodiment, but are not a required part of the invention. Pivoting of arms **902** and legs **904** are also part of the preferred embodiment, but are not a required part of the invention. The construction figurine **900** may simply be without pivot sections, yet have a form similar to a human or animal.

(00109) A hand **908** can be attached by a user to a post connector **10**, and a foot **910** can be as well. In the preferred embodiment shown, the hands and feet are similar and comprise cutouts at the ends of the arms or feet, or equivalently, two extensions on either side of each arm or leg. These cutouts (or extensions) fit over the disk **14** (or component part connecting element) snugly so the arm or leg, and thus the entire construction figurine **900** may be attached to post connector **10**. The means for connecting hands and feet to post connectors shown is part of the preferred embodiment, but any such means is comprised by the invention.

(00110) Figure 41 shows a construction figurine **900** with a post connector **10** attached to its hands **908** and about to connect the same post connector to a structure with component parts **80**. Figure 42 shows a construction figurine **900** attached to the disk (or component part connecting element) **14** of a post connector which is also connected to a component part of a structure made of component parts (and post connectors).

(00111) Figure 43 displays a construction figurine attached to a structure (below the construction figurine) of component parts **80** and a post connector **10** via its feet **910**, and simultaneously attached to a component part **30** (above and which could be part of a larger structure not shown) via its feet **908** and the disk **14** of a post connector **10**. Thus, the construction figurine **900** can be used not merely as a decorative item, but as a structural component in building assemblies. It has utility. Because it can connect to more than one post connector and thus more than one component part or substructure, it can itself be an element

used in the construction process and as part of final assembled constructions. The figurine has arms and feet attachable to the component part connecting element of the post connector, wherein such attachment provide structural strength and allows construction of additional types of construction assemblies. .

5 (00112) Although a human form is shown for the construction figurine **900**, the invention also comprises the form of any animal with two feet and two arms, four feet, or (hypothetically) four arms. It also comprises means for connection via the hands and feet to different substructures via faceplates or component parts, rather than just via post connectors.

(00113) Thus, the invention comprises a construction figurine, of human, animal, or other
10 form, whose hands and feet can connect with post connectors, component parts, faceplates, and/or different substructures to build structural assemblies, and thus act as a structural element in such assemblies. It is also comprised simply of feet **910** that may connect to post connectors, component parts, faceplates, and/or different substructures without hands **908** being able to do so. Likewise, it is also comprised simply of hands **908** that may connect to post connectors,
15 component parts, faceplates, and/or different substructures without feet **910** being able to do so. In such cases, one foot (hand) could connect to one part of a post connector, component part, faceplate, and/or different substructure and the other foot (hand) could connect to another such part. By so doing the construction figurine would have the utility of being a construction element in a construction assembly.

20 (00114) Figure 44 shows a building made of component parts (**30** and **80**), post connectors **10** and additional elements including a chimney **942**, windows **940**, and a door **941**. The additional elements can be attached to component parts, faceplates, or post connectors. This can be in similar fashion to the partial spherical sections **915** of Figures 35 to 38, the wheels of Figures 31 to 35, the figurines of Figures 39 to 43, or via any other means.

25 (00115) Figure 45 shows a chameleon made from component parts, post connectors, a head **944**, feet **946**, and a tail **945**, where the latter three are toy parts of the animal and may be

attached via any of the means discussed for Figure 44.

(00116) Figure 46 displays a caterpillar made from component parts, post connectors, antenna **947**, feet **949**, and arms **948**, where the latter three are toy parts of the animal and may be attached via any of the means discussed for Figure 44.

5 (00117) Figure 47 illustrates a chicken made from component parts, post connectors, a head **950**, wings **952**, and a tail **951**, where the latter three are toy parts of the animal and may be attached via any of the means discussed for Figure 44.

(00118) Figure 48 shows an airplane model constructed from component parts, post connectors, a pilot control section **954**, wings **955**, and a tail **956**, where the latter three may be
10 attached via any of the means discussed for Figure 44.

(00119) Although the figures show much detail, such details are not essential to the invention. The drawings merely show special cases, or embodiments, of the invention. The essential elements of the invention are recited in the claims.

(00120) Wherever herein the present invention is referred to as comprised in part of
15 “Swivel-Snaps”, that term is interpreted to mean the invention described in WO 2011/143019, PCT/SU2011/035107, US Patent 9,669,324, and other daughter/sister patents and patent applications in the USA and elsewhere. Language, definitions, and terms used in those patents and patent applications are applicable to, relevant to, and interpretable in the context of the description and claims herein.

20 (00121) In particular, the term Swivel-Snaps, in its preferred embodiment, is equivalent to a structural assembly device comprising. a) a component part having predetermined shape and a post connector connecting element, and b) a post connector comprised of a post and a component part connecting element wherein said component part connecting element is structurally connected to said post by any means, including being integral with said post, wherein at least
25 part of said component part connecting element is substantially displaced radially from a central

axis of the post, wherein said at least part of said component part connecting element is connectable directly with said post connector connecting element, such that when connected, said at least part of said component part connecting element contacts said post connector connecting element, wherein said post connector and a plurality of said component parts may be
5 mechanically connected in an angular direction around the post via said component part connecting element and a plurality of said post connector connecting elements to form a structure, such that, when connected, said component parts can swing independently relative to the post about said central axis of the post,

(00122) One use for the invention described in this patent application is as a “toy, but the
10 invention is not limited to toys, and is applicable to any and all structural, and/or other, uses.

(00123) This invention can thus be seen to have significant, novel advantages over the prior art delineated in the above "Description of Prior Art" section.

(00124) While the above description contains many specificities, the reader should not
15 construe these as limitations on the scope of the invention, but merely as exemplifications of preferred embodiments thereof. Those skilled in the art will envision many other possibilities that are within its scope.

(00125) Accordingly, the scope of the invention should be determined not by the embodiments described, but by the appended claims and their legal equivalents.

CLAIMS

We claim:

1. A structural assembly device comprising.

5 a) a component part having predetermined shape and a post connector connecting element, and

 b) a post connector comprised of a post and a component part connecting element wherein said component part connecting element is structurally connected to said post by any means, including being integral with said post,

10 wherein at least part of said component part connecting element is substantially displaced radially from a central axis of the post,

 wherein said at least part of said component part connecting element is connectable directly with said post connector connecting element, such that when connected, said at least part of said component part connecting element contacts said post connector connecting element,

15 wherein said post connector and a plurality of said component parts may be mechanically connected in an angular direction around the post via said component part connecting element and a plurality of said post connector connecting elements to form a structure, such that, when connected, said component parts can swing independently relative to the post about said central axis of the post, and

20 wherein an additional element, such as but not limited to a block, figurine, geometric shape, letter, number, picture, or drawing, is connectable to any other element, such as but not limited to the post connector or component part, with a connection mechanism comprising male and female portions.

2. The structural assembly device of Claim 1 further comprising a facemount of predetermined shape and size wherein said facemount is attached to, or attachable to, said component part, and the additional element may be connected by the connection mechanism to said facemount.
- 5 3. The structural assembly device of Claim 1 wherein the additional element may be connected by the connection mechanism to the component part.
4. The structural assembly device of Claim 1 wherein the additional element may be connected by the connection mechanism to the component part and the connection mechanism comprises the male and female portions aligned in one or more rows wherein the male
10 portions comprise cylinders, rods, or disks.
5. The structural assembly device of Claim 1 wherein the additional element may be connected by the connection mechanism to the post connector.
6. The structural assembly device of Claim 1 wherein the male and female portions are aligned in one or more rows.
- 15 7. The structural assembly device of Claim 1 wherein the male and female portions are aligned in one or more rows, and the male portions comprise cylinders, rods, bristles, or disks.
8. The structural assembly device of Claim 1 wherein the male and female portions are aligned in one or more rows, and the male portions comprise cylinders.
9. The structural assembly device of Claim 1 wherein the male portion comprises a cylinder, a
20 rod, or a disk with an indentation, cutout, ledge, or lip allowing said indentation, cutout, ledge, or lip to form a sturdy connection between the male portion and the female portion.
10. The structural assembly device of Claim 1 further comprising a facemount of predetermined shape and size wherein said facemount is attached to, or attachable to, said component part,

the additional element may be connected by the connection mechanism to said facemount, and the connection mechanism comprises the male and female portions aligned in one or more rows.

11. The structural assembly device of Claim 1 further comprising a facemount of predetermined shape and size wherein said facemount is attached to, or attachable to, said component part, the additional element may be connected by the connection mechanism to said facemount, and the connection mechanism comprises a single male portion and a single female portion wherein the male portion is effectively a cylinder..

12. The structural assembly device of Claim 1 further comprising a facemount of predetermined shape and size wherein said facemount is attached to, or attachable to, said component part, the additional element may be connected by the connection mechanism to said facemount, and the connection mechanism comprises the male and female portions aligned in one or more rows wherein the male portions are cylinders, rods, or disks.

13. The structural assembly device of Claim 1 wherein the component part connecting element has a non-circular cross section perpendicular to the central axis of the post.

14. The structural assembly device of Claim 1 further comprising elastic material attached to, or attachable to, a component part wherein when attached, an object such as a ball or marble may be propelled by pulling back and releasing the elastic material, or said object may be bounced off of the elastic material.

15. The structural assembly device of Claim 1 further comprising a lens attached to, or attachable to, a faceplate or component part.

16. The structural assembly device of Claim 1 wherein at least one component part has a rectangular shape permitting two post connectors to be attached to said component part.

17. The structural assembly device of Claim 1 further comprising a writing instrument, such as a pen, pencil, or crayon, man be attached to a post connector or component part.
18. The structural assembly device of Claim 1 further comprising a block mounted, or mountable, inside a component part.
- 5 19. The structural assembly device of Claim 1 further comprising Velcro attached, or attachable, to a faceplate.
20. The structural assembly device of Claim 1 wherein at least one faceplate has a scratch and sniff surface.
21. The structural assembly device of Claim 1 further comprising a gear about which a chain of
10 component parts can be connected.
22. The structural assembly device of Claim 1 further comprising mirrors attachable to post connectors or component parts to enable seeing around an object such as a wall.
23. The structural assembly device of Claim 1 further comprising a tube attachable to, or insertable within, the structure through which balls or other objects may pass.
- 15 24. The structural assembly device of Claim 1 further comprising a wheel assembly connected, or connectable, to a faceplate, wherein the wheel assembly comprises a hollow shaft in the center of the wheel and an axle, insertable, or inserted into, the hollow shaft on one end and inserted, or insertable, into an opening in the faceplate on the other end.
25. The structural assembly device of Claim 1 further comprising sections of a sphere wherein
20 such sections are attachable to faceplates, component parts, or post connectors.
26. The structural assembly device of Claim 1 wherein the additional element is a figurine and said figurine has arms and feet attachable to the component part connecting element of the post connector, and wherein such attachment provides structural strength thereby allowing

construction of additional types of construction assemblies.

27. The structural assembly device of Claim 1 wherein the additional element is a toy part of an animal.

28. The structural assembly device of Claim 1 wherein the additional element is a toy part of an airplane.

5

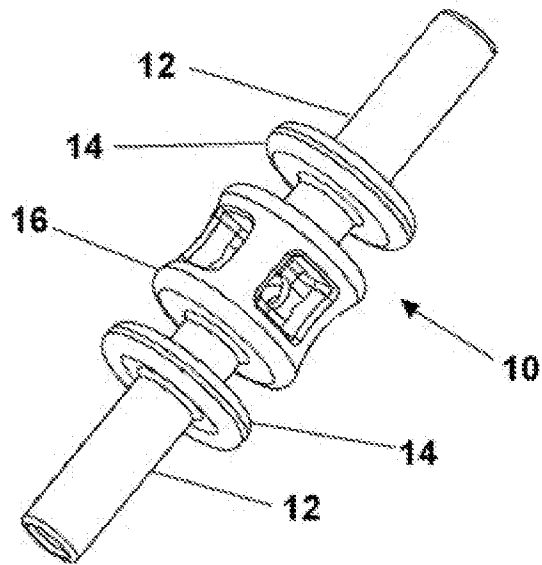


Figure 1

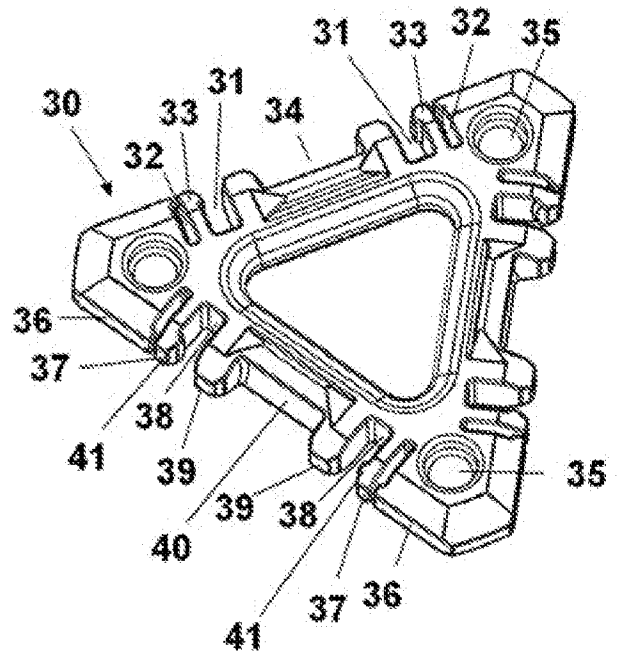


Figure 2

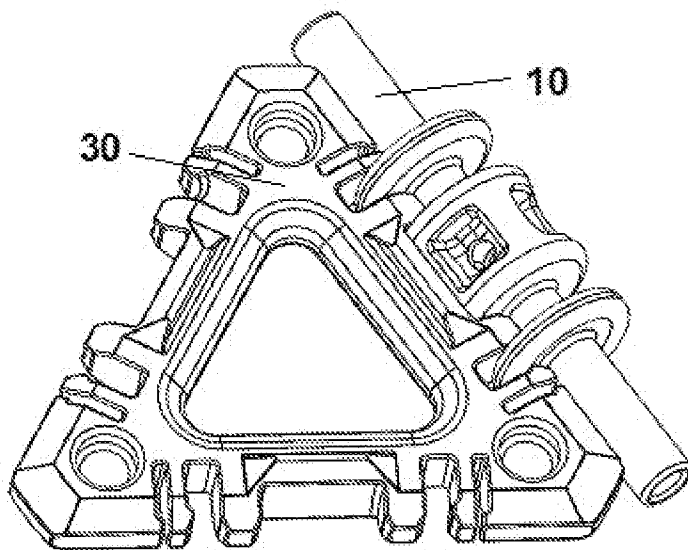


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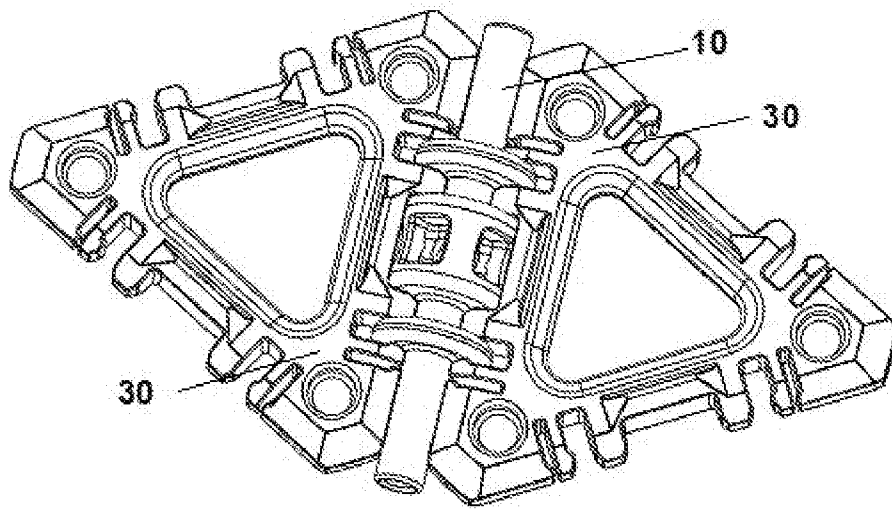


Figure 4

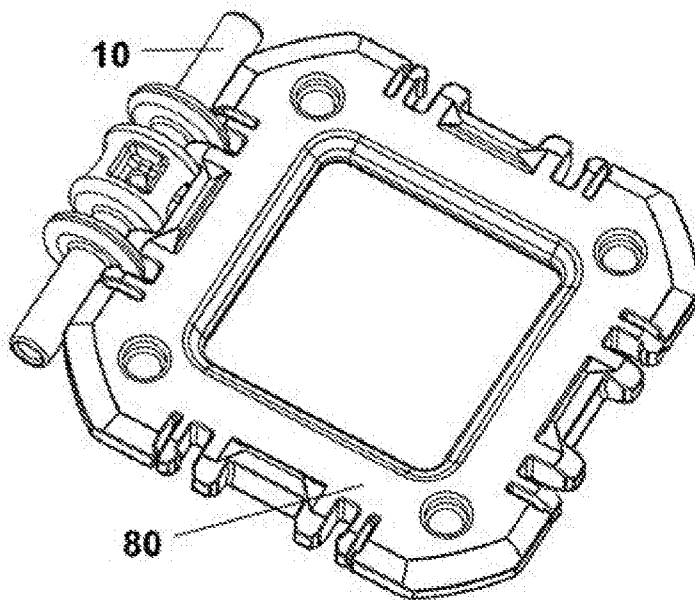


Figure 5

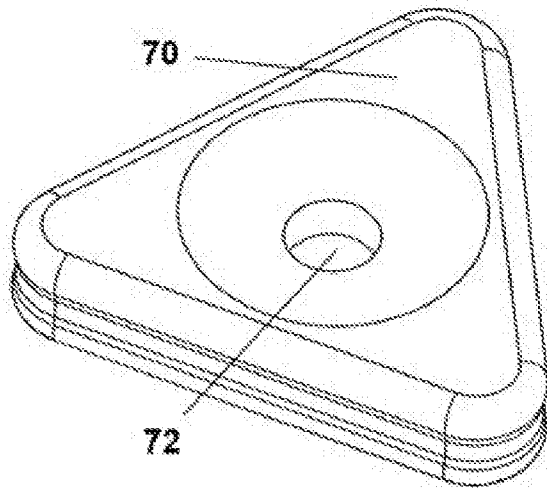


Figure 6

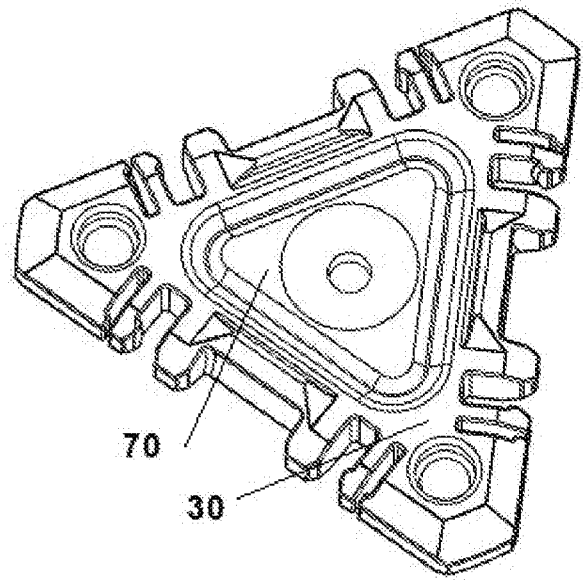


Figure 7

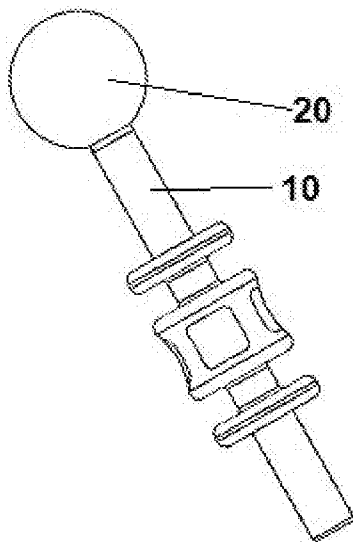


Figure 8

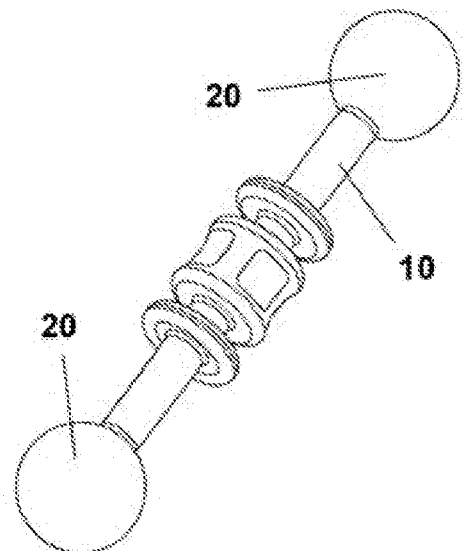


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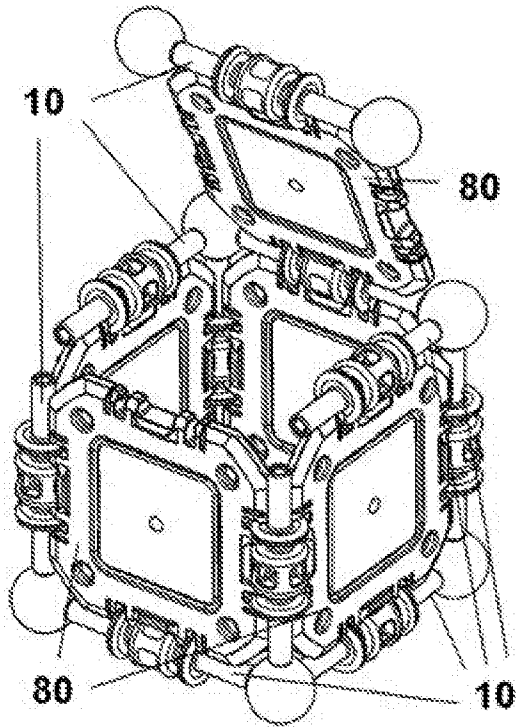


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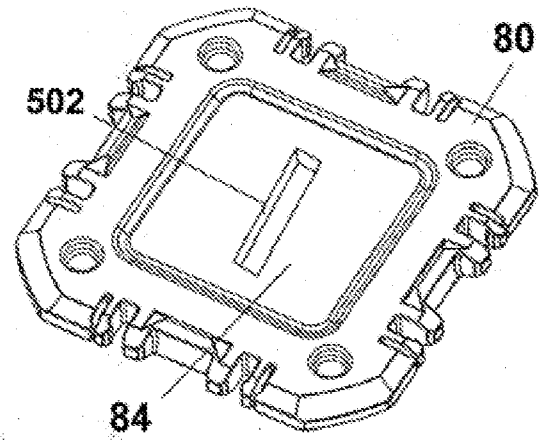


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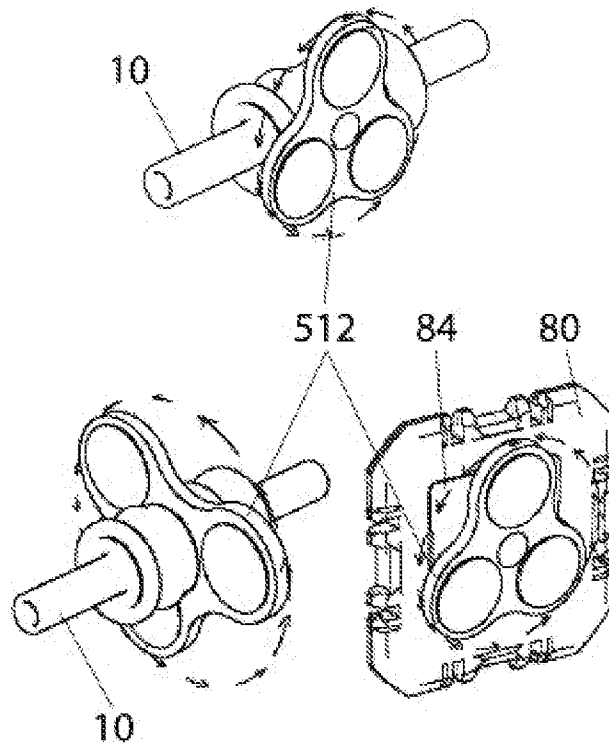


Figure 12

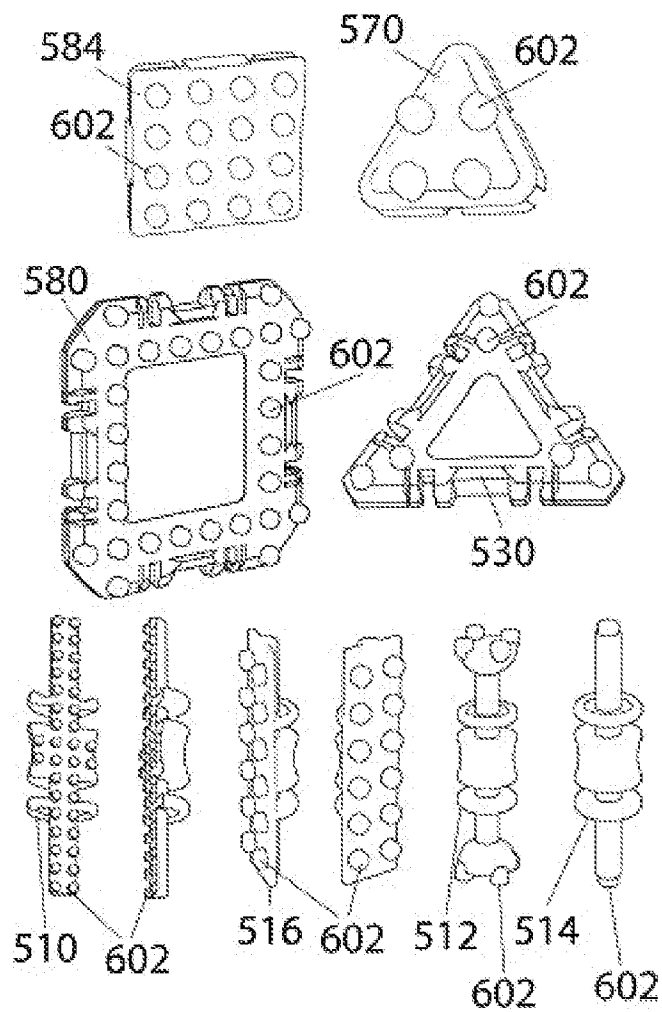


Figure 13

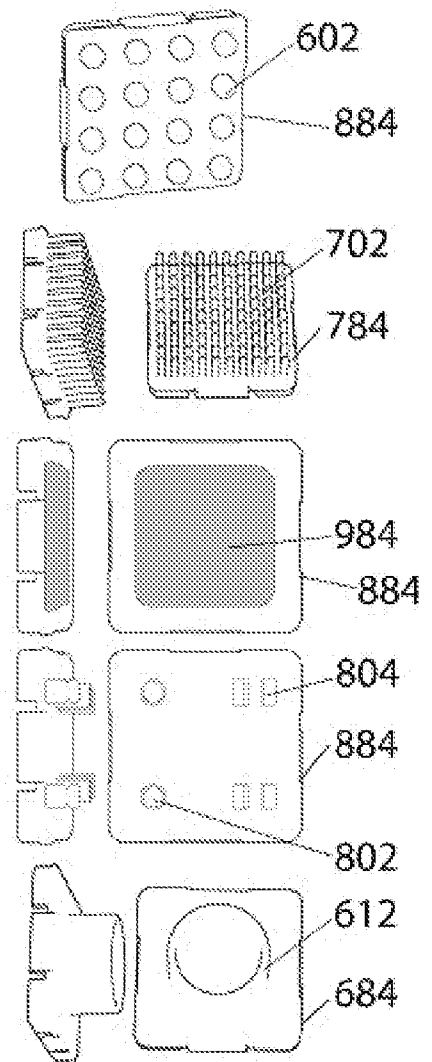


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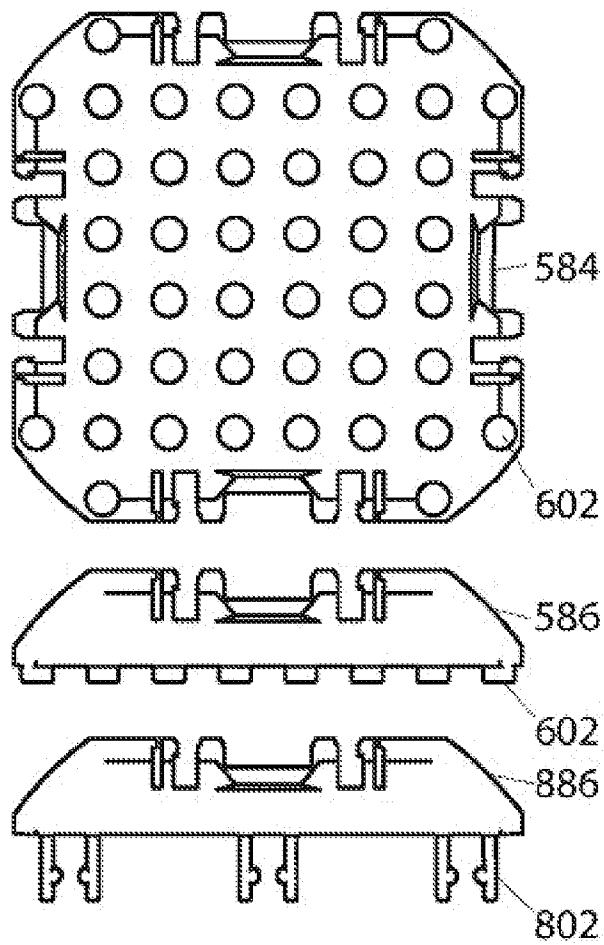


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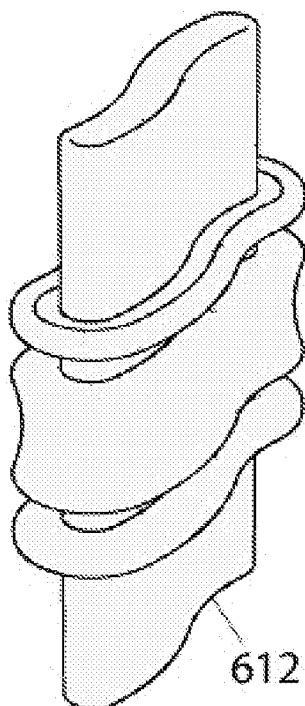


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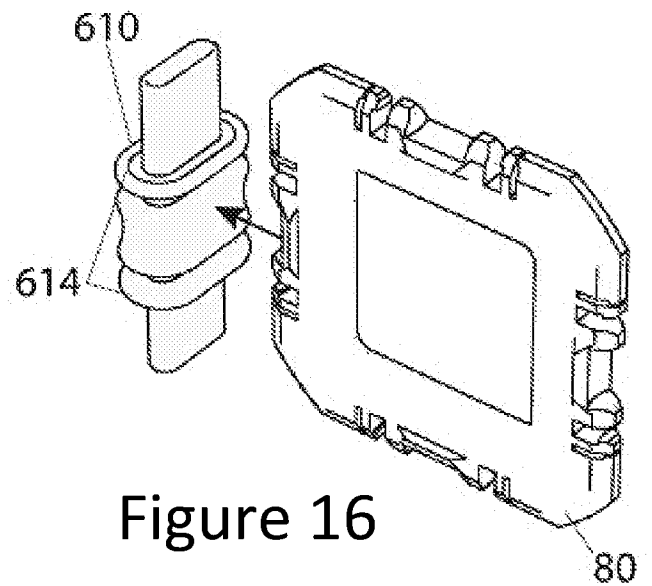


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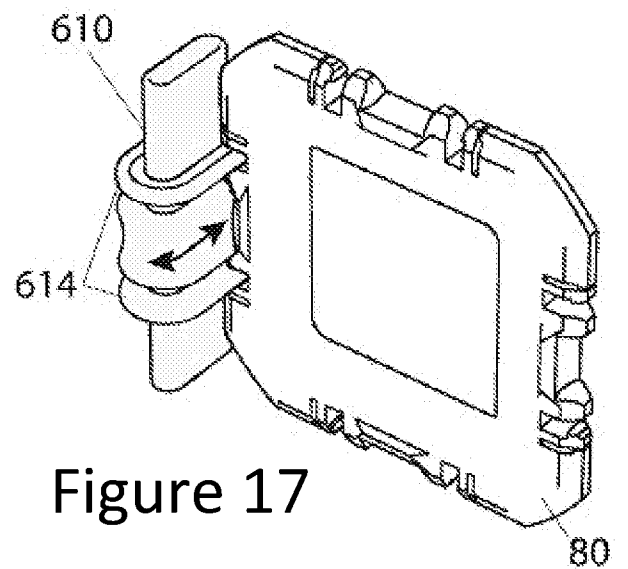


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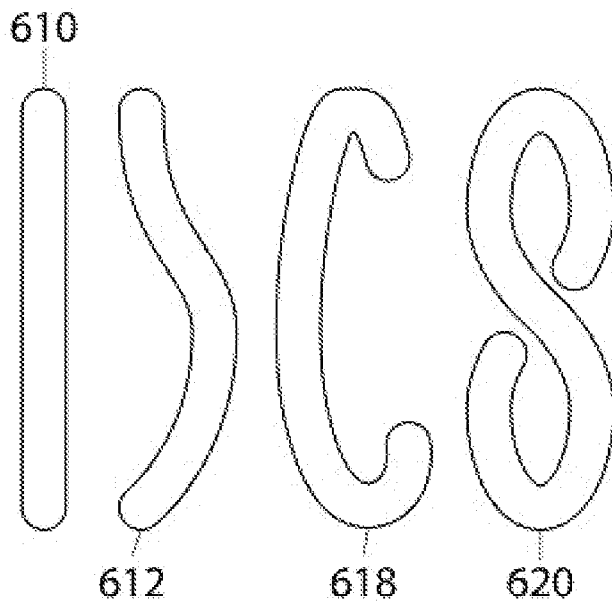


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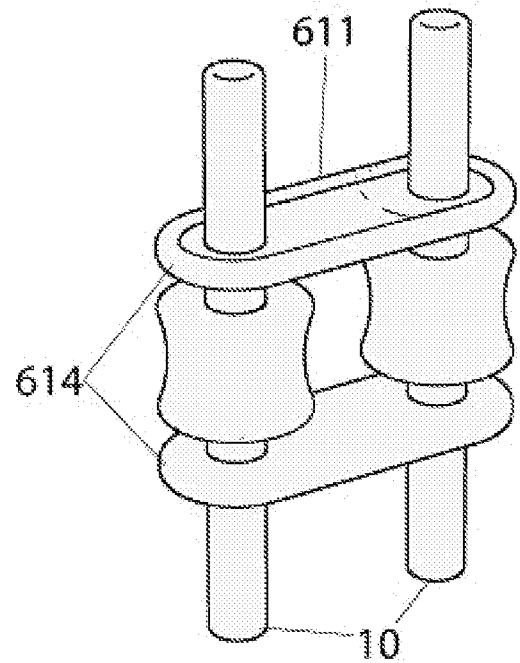


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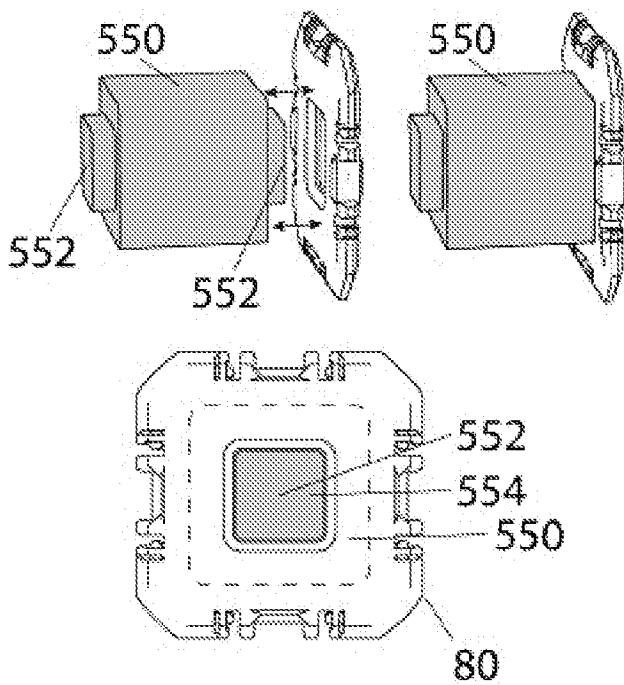


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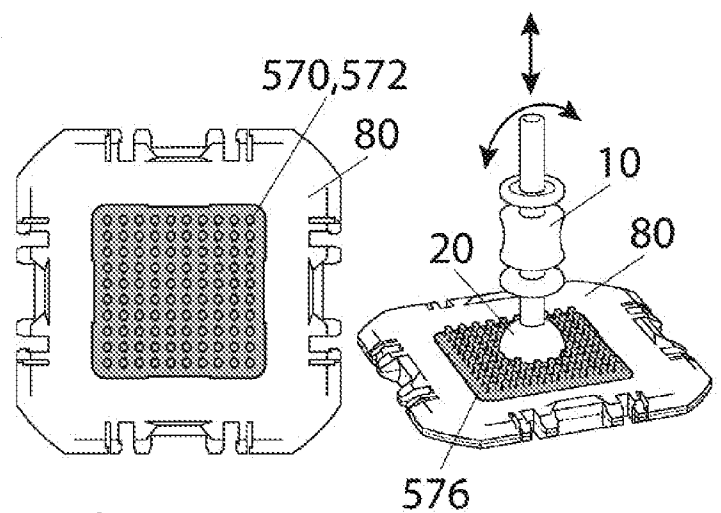


Figure 22

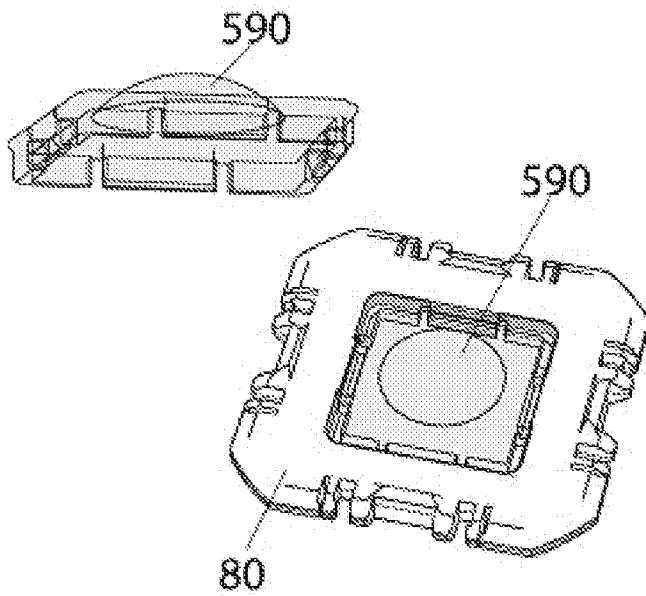


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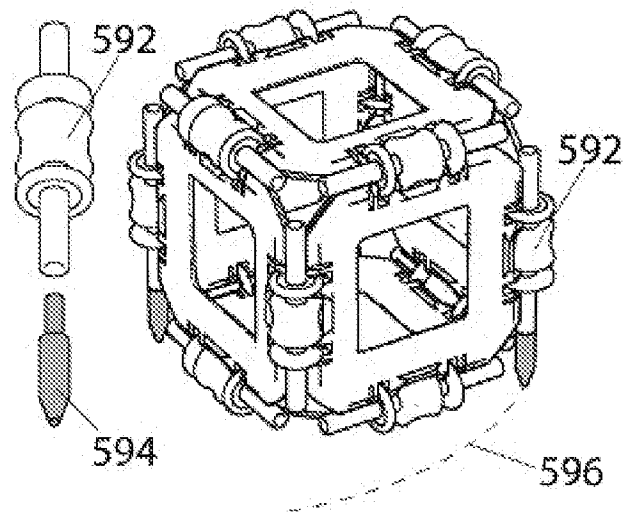


Figure 24

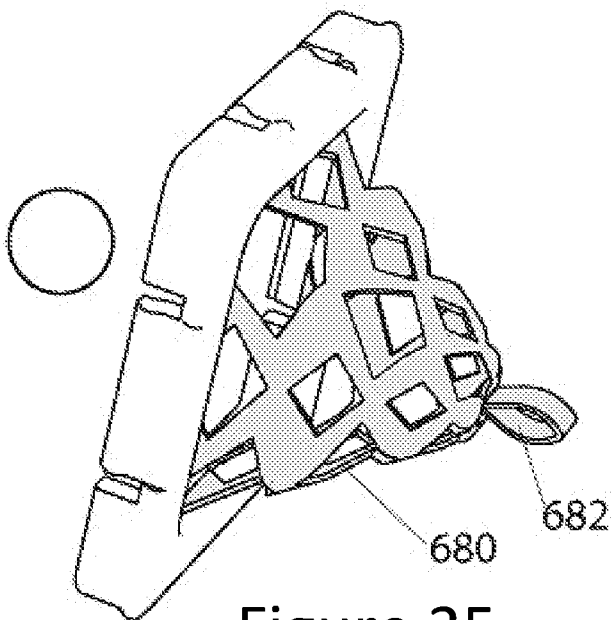


Figure 25

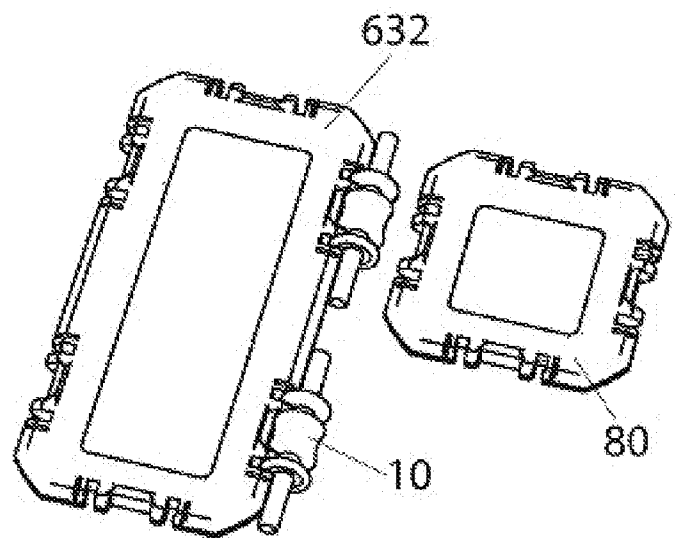


Figure 26

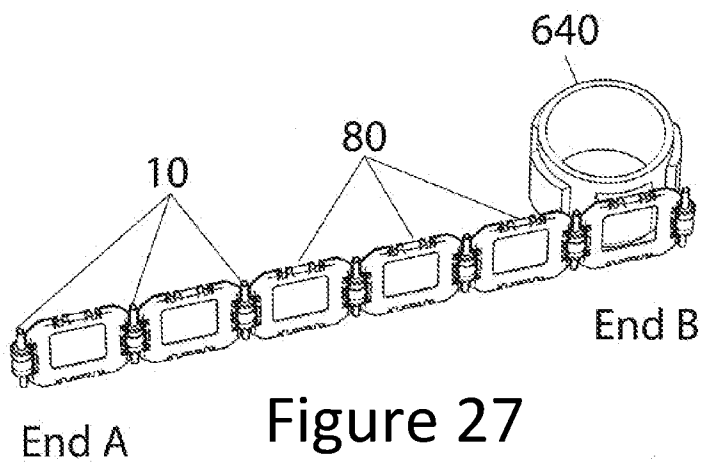


Figure 27

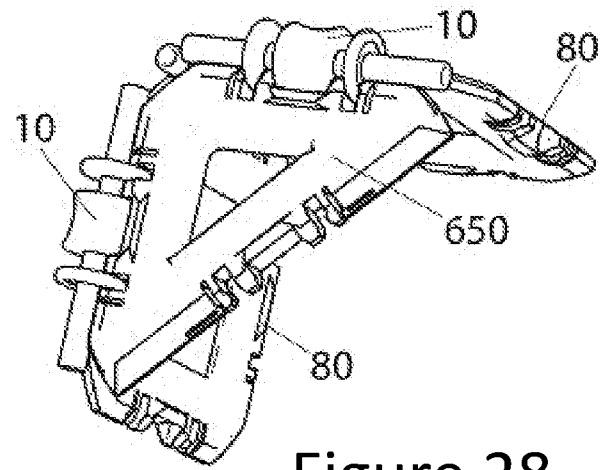


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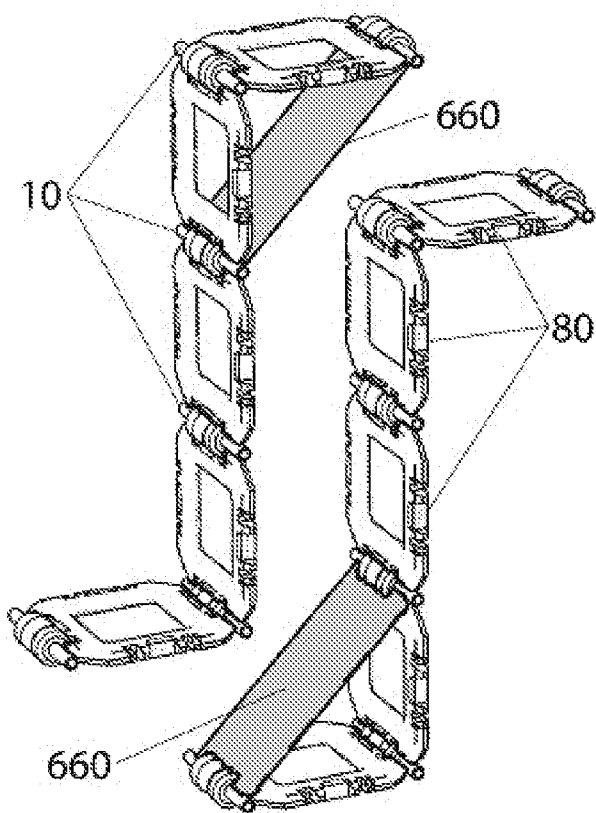


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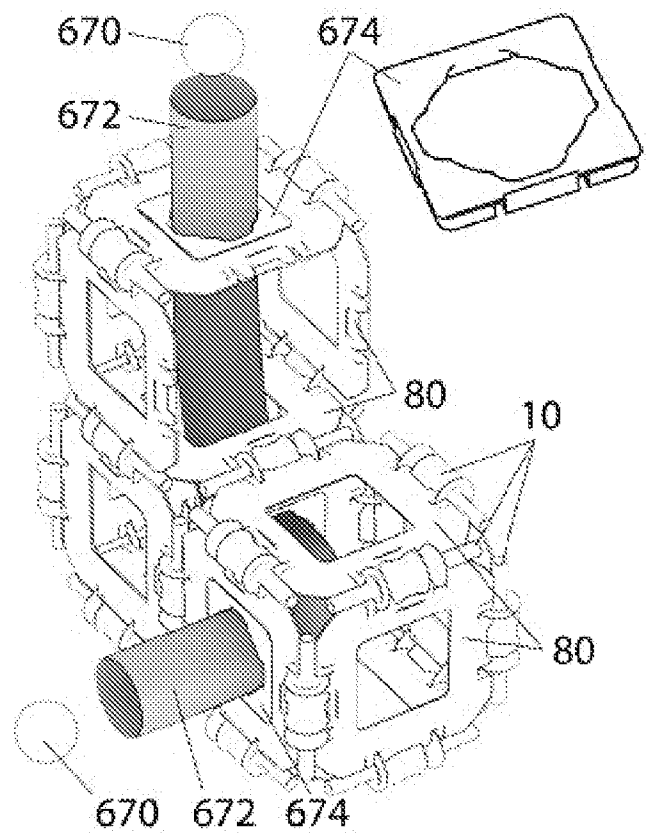


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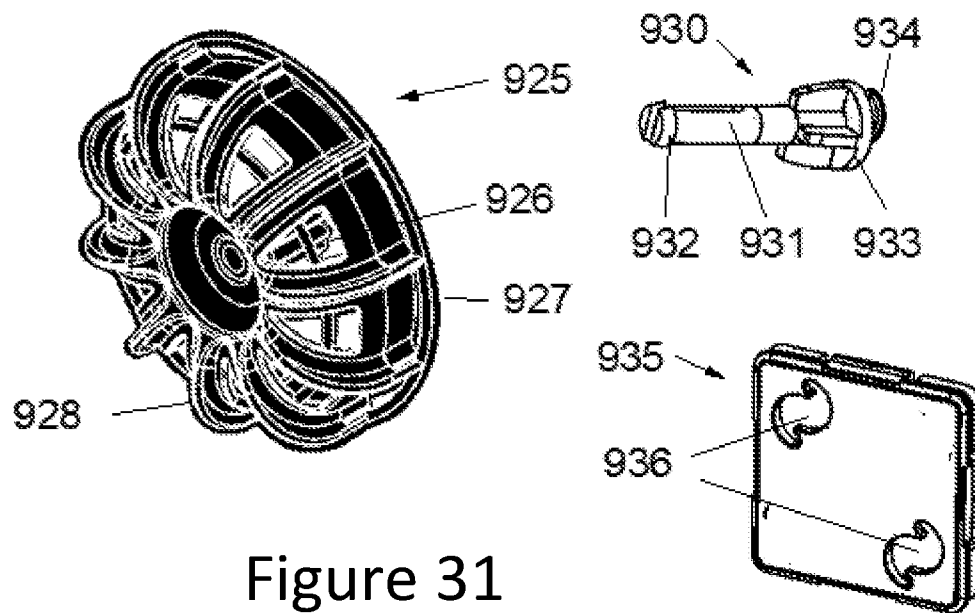


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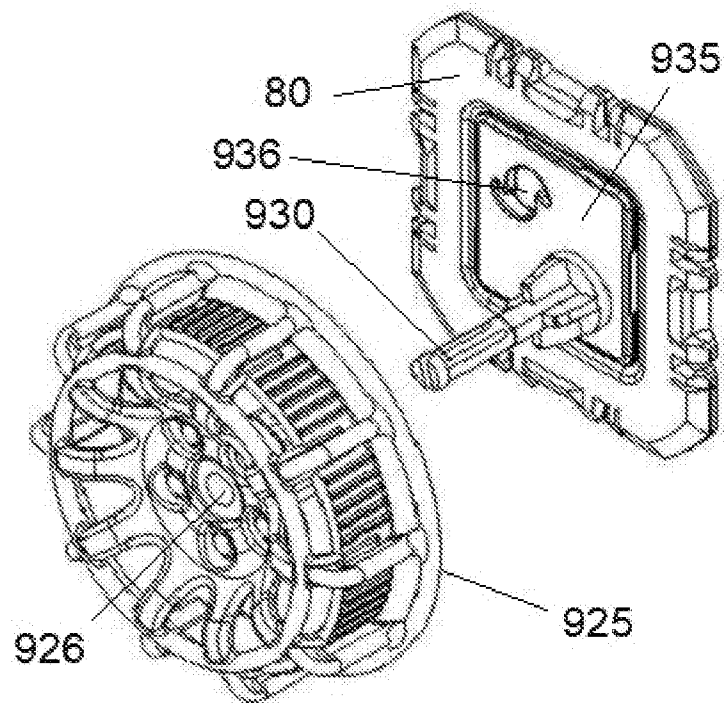


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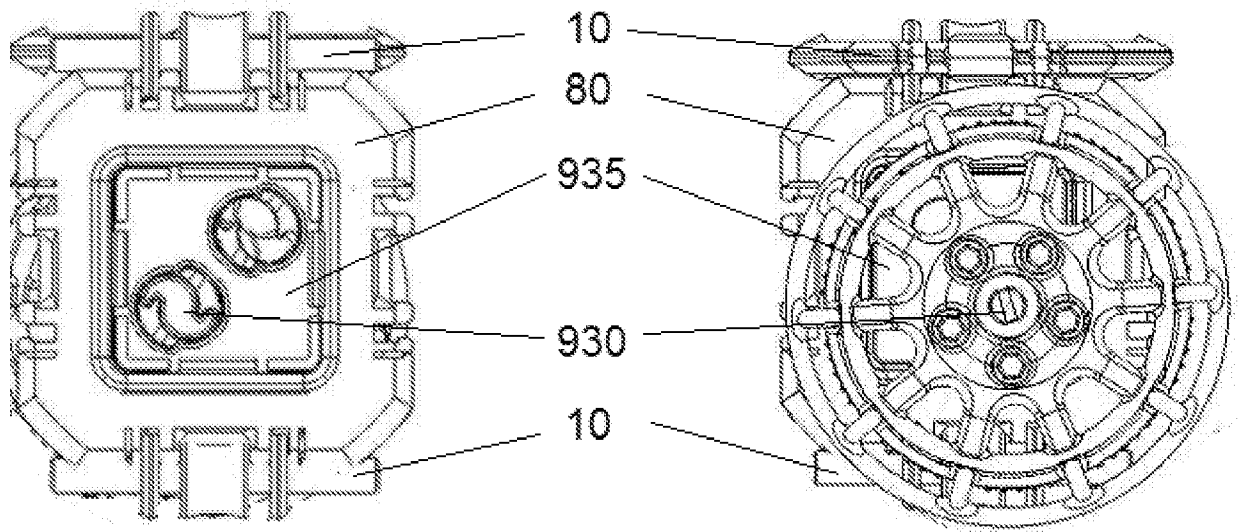


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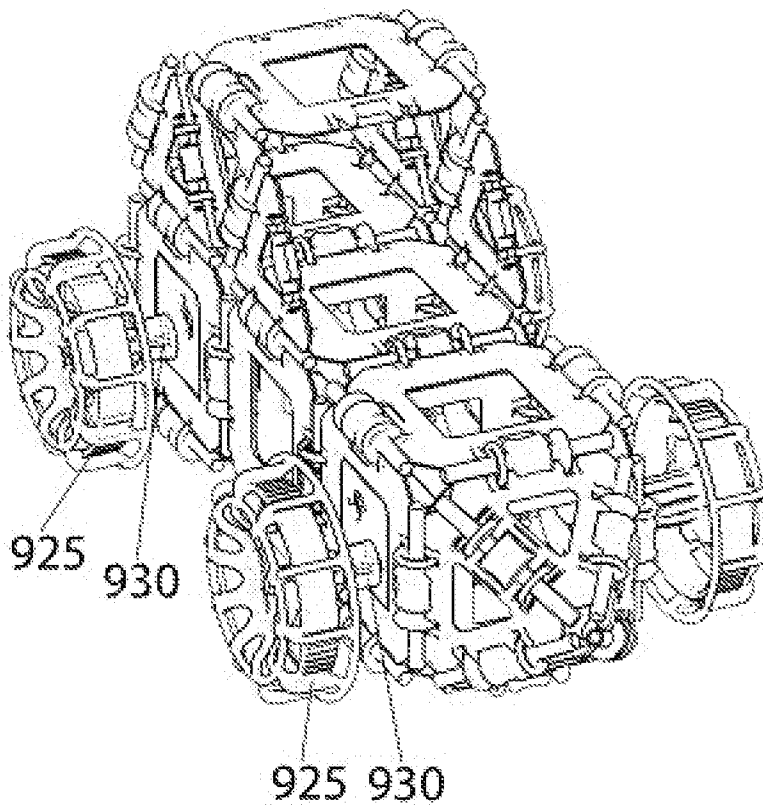


Figure 34

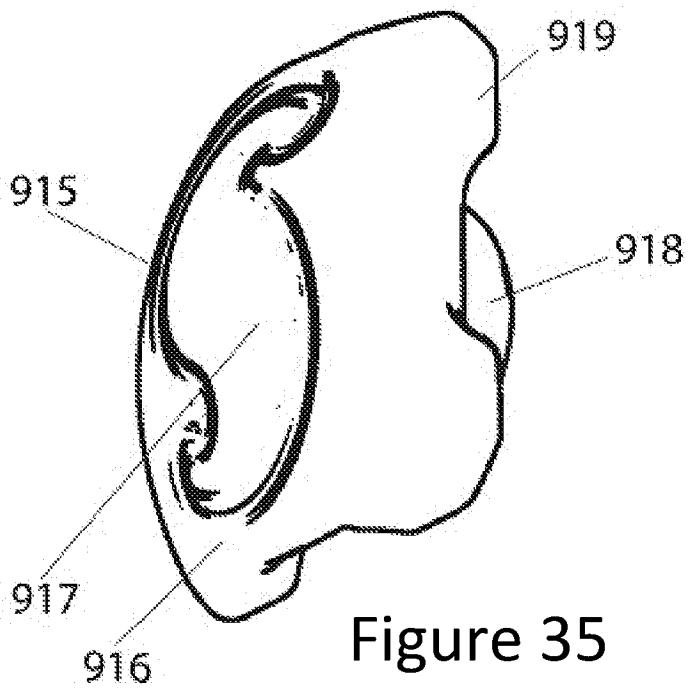


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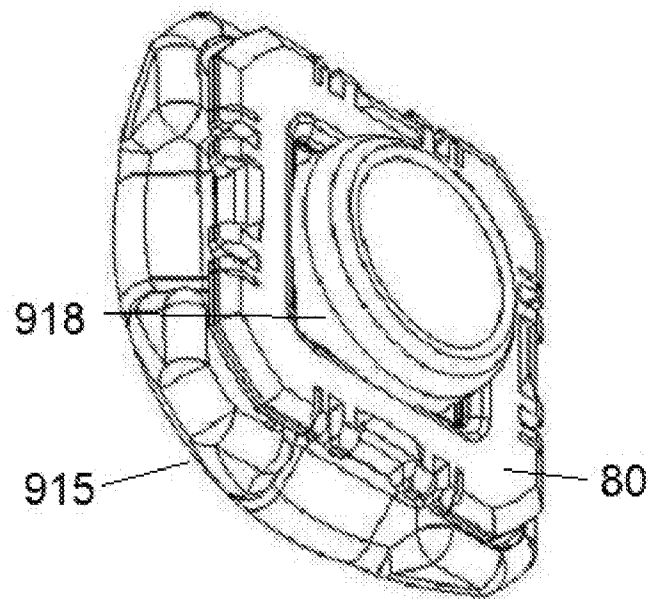


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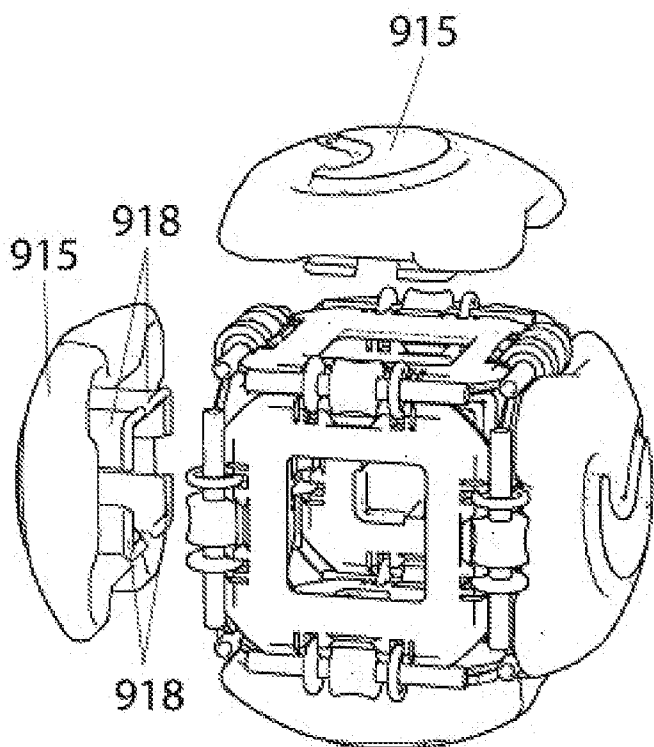


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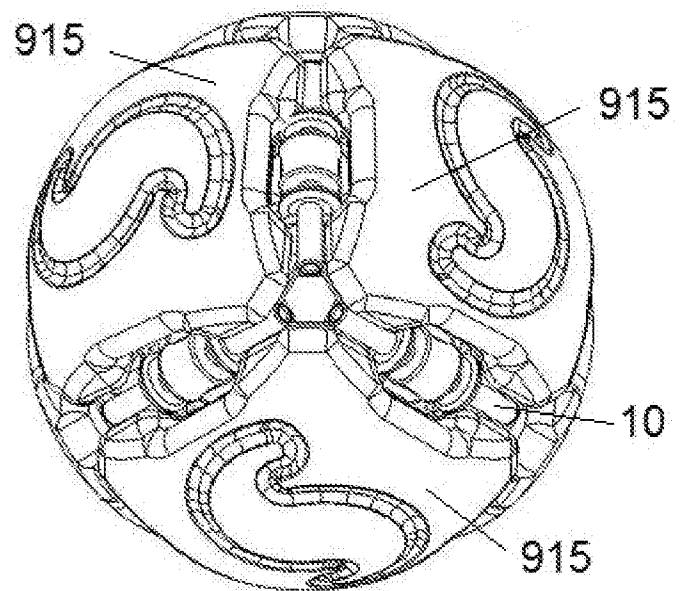


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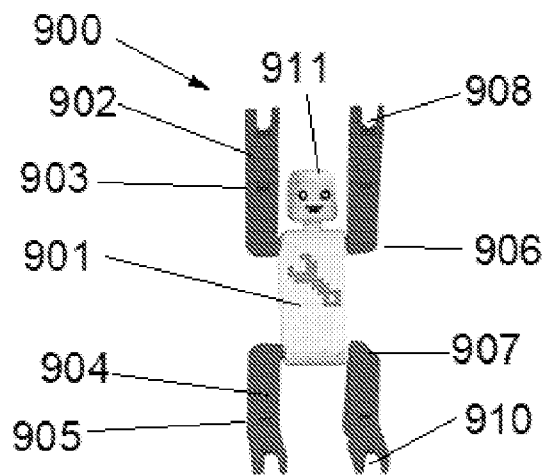


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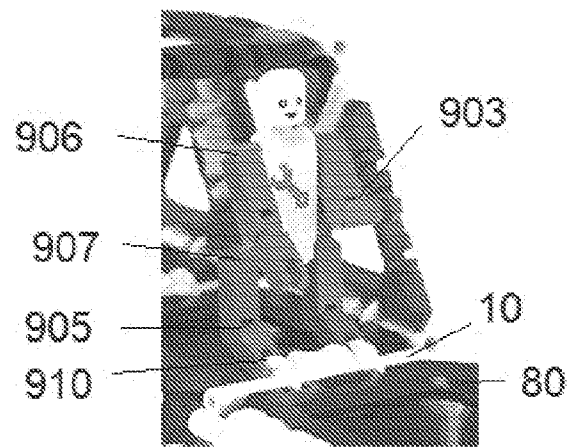


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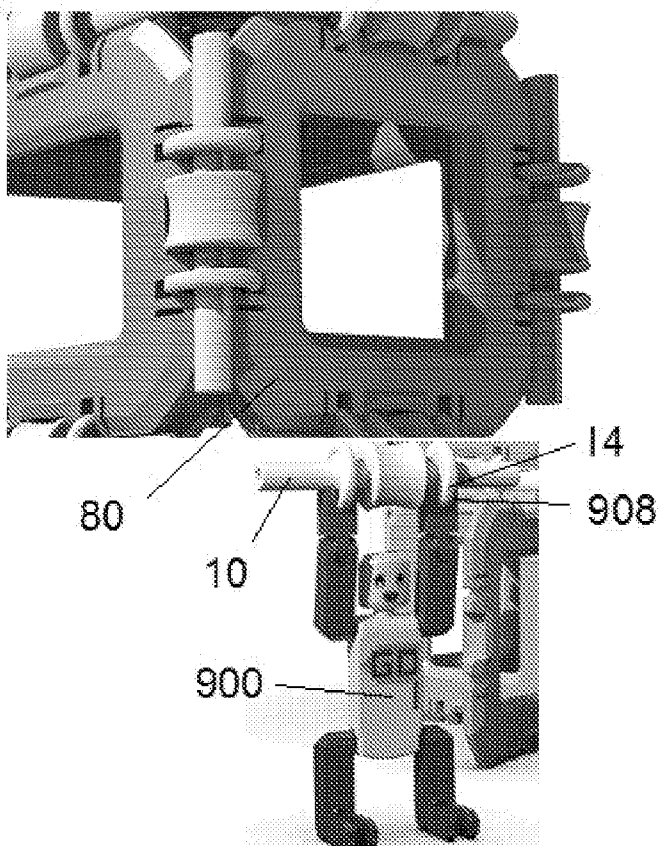


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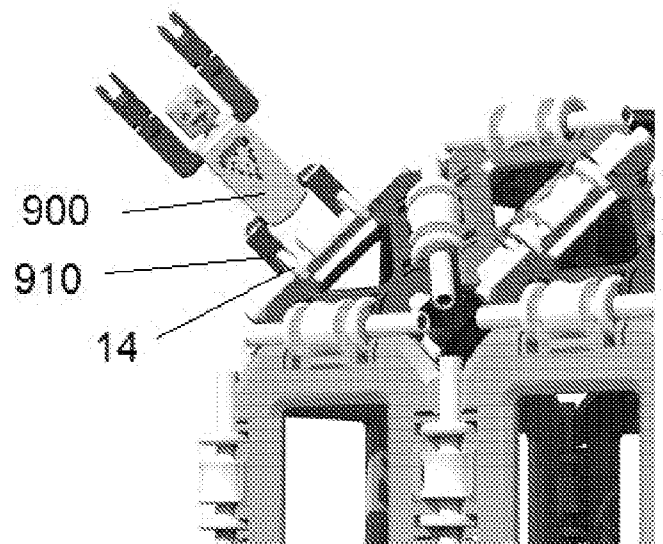


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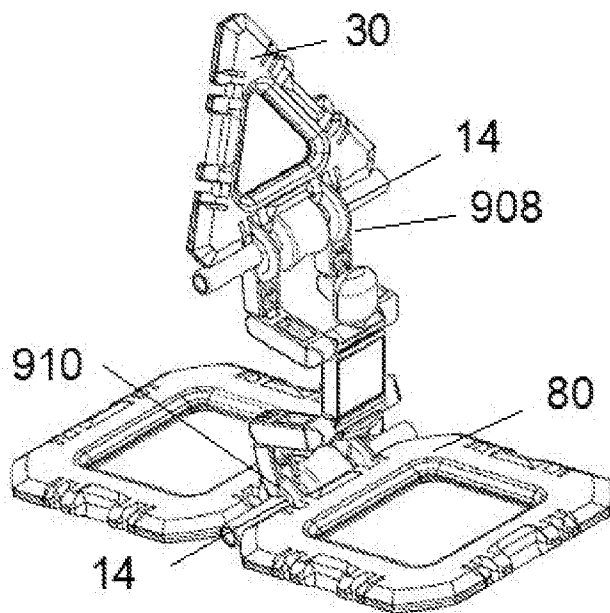


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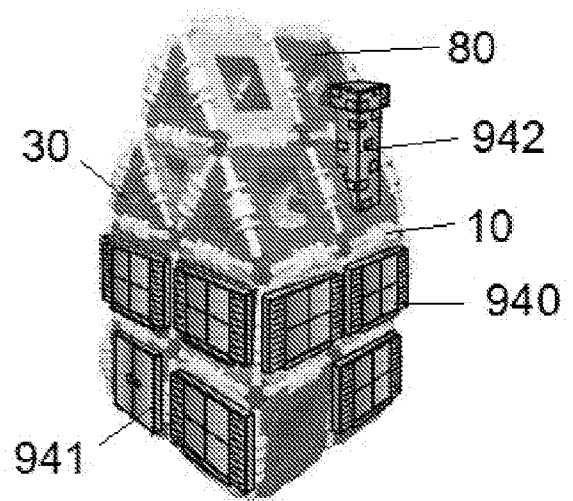


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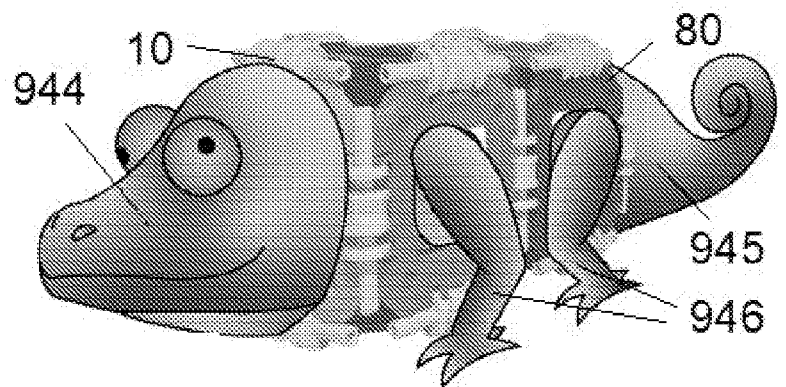


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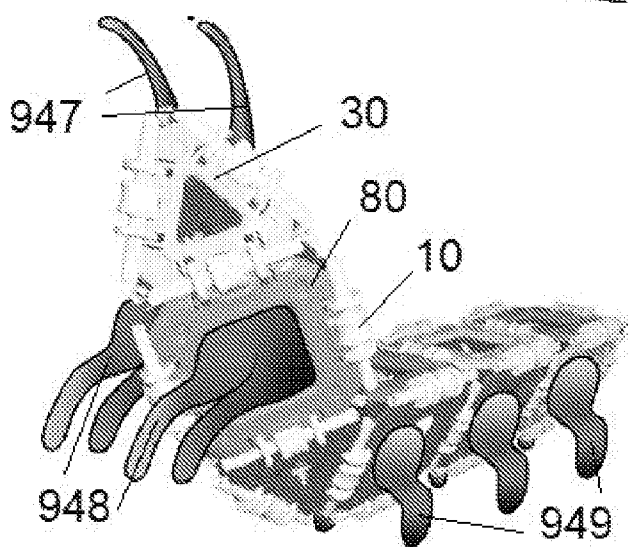


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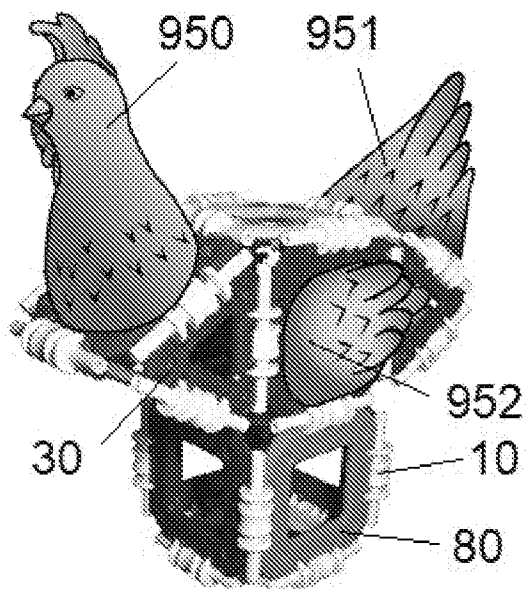


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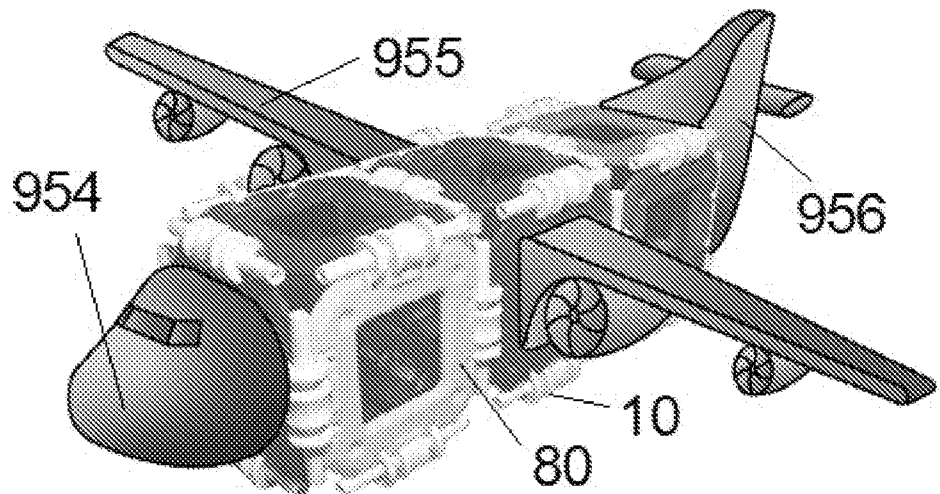


Figure 48

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US19/66506

A. CLASSIFICATION OF SUBJECT MATTER

IPC - A63H 33/04, 33/08, 33/10 (2020.01)

CPC - A63H 33/086, 33/101, 33/108

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)

See Search History document

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

See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013/0165012 A1 (KLAUBER, R et al.) 27 June 2013; figures 1-3, 5-9, 11, 13, 17, 20, 26 paragraphs [0067], [0071]-[0072], [0079]-[0080], [0084]-[0087], [0089], [0106], [0109]	1-3, 5, 11, 13, 15-16, 18, 22, 24, 26

Y		1, 4, 6-10, 12, 14, 17, 19-20, 23, 25-28

A		21
Y	US 2007/0281580 A1 (SAMBENEDETTO, M) 06 December 2007; figures 1, 4A-5C	1, 4, 6-10, 12
Y	US 2004/0214506 A1 (HUANG, T) 28 October 2004; figure 2, paragraph [0023]	14
Y	US 5,098,328 A (BEERENS, C) 24 March 1992; figure 1, column 3 lines 24-27	17
Y	WO 98/26849 A1 (LEIJA CORDERO, J) 25 June 1998; figures 13, 15, paragraphs [0049]-[0050]	19, 27
Y	US 2016/0199750 A1 (NEW TECH SHINSEI CO., LTD.) 14 July 2016; figure 1, paragraph [0096]	20
Y	US 6,273,778 B1 (KYSTER, S) 14 August 2001; figure 1, column 2 lines 50-53, column 3 lines 4-9	23
Y	WO 97/33670 A1 (HENRIQUES RABA, R) 18 September 1997; figures 14-15, 20	25
Y	WO 2009/127080 A1 (ZENG, W) 22 October 2009; figure 37, paragraph [0082]	28

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search

14 February 2020 (14.02.2020)

Date of mailing of the international search report

05 MAR 2020

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-8300

Authorized officer

Shane Thomas

Telephone No. PCT Helpdesk: 571-272-4300

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US19/66506

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2015/0321113 A1 (GRAUBE, A) 12 November 2015; figure 5	21
A	US 3,946,515 A (FISCHER, A) 30 March 1976; figure 3	21