



(19) **United States**
(12) **Patent Application Publication**
Brooks et al.

(10) **Pub. No.: US 2015/0314209 A1**
(43) **Pub. Date: Nov. 5, 2015**

(54) **TRANSFORMATION TOY CONSTRUCTION SYSTEM**

Publication Classification

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(51) **Int. Cl.**
A63H 33/08 (2006.01)
(52) **U.S. Cl.**
CPC *A63H 33/08* (2013.01)

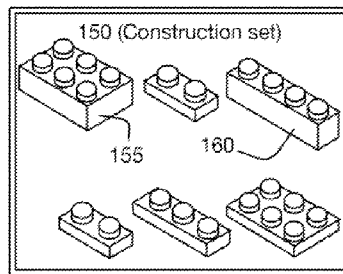
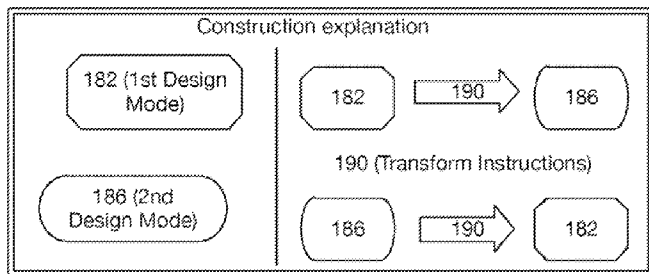
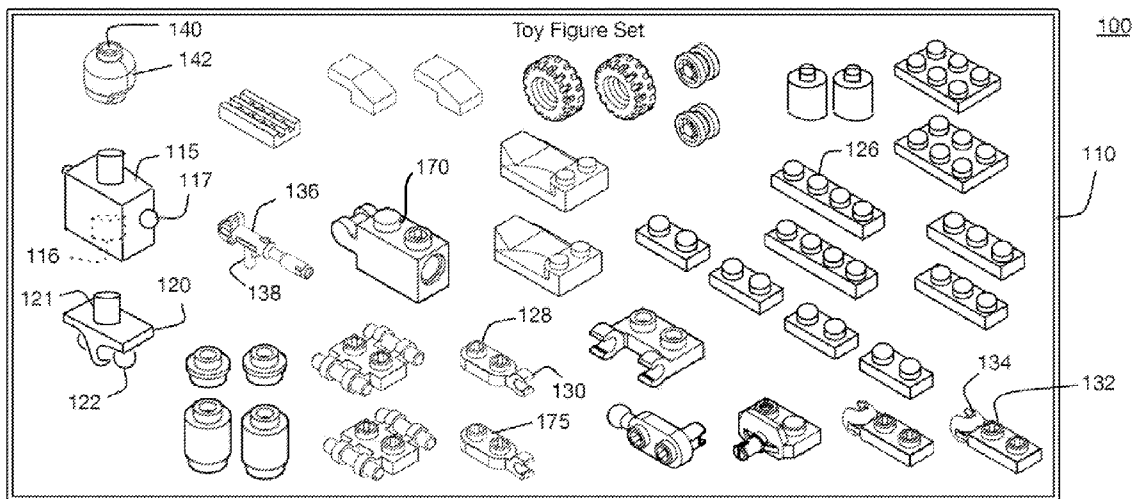
(57) **ABSTRACT**

(21) Appl. No.: **14/698,020**
(22) Filed: **Apr. 28, 2015**

Related U.S. Application Data

(63) Continuation-in-part of application No. 14/622,586, filed on Feb. 13, 2015.
(60) Provisional application No. 62/116,204, filed on Feb. 13, 2015, provisional application No. 62/116,119, filed on Feb. 13, 2015, provisional application No. 61/986,144, filed on Apr. 30, 2014, provisional application No. 61/986,161, filed on Apr. 30, 2014, provisional application No. 61/986,136, filed on Apr. 30, 2014.

A transformation construction system includes a toy figure set having a plurality of interconnectible building elements that are configured to connect to building elements of a construction set. The toy figure set includes a torso building element and a pelvis building element that interconnect with each other with an interference fit between a stud of the pelvis building element and a recess of the torso building element. A construction explanation identifies a first design mode that includes the toy figure set, a second design mode that includes the toy figure set and is distinct from the first design mode, and a set of instructions that show a transformation between the first design mode and the second design mode without disassembling the toy figure set and the plurality of building elements.



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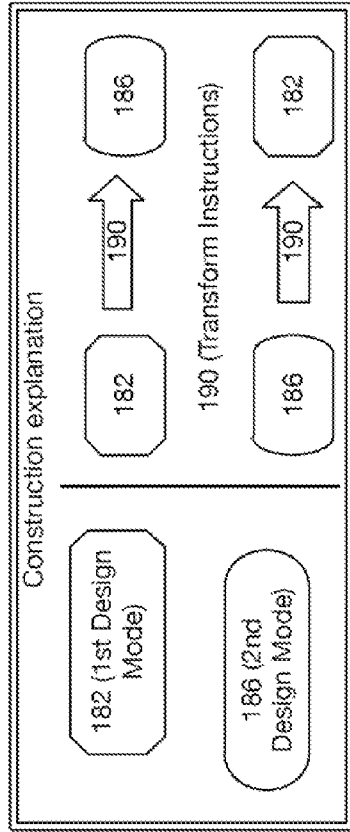
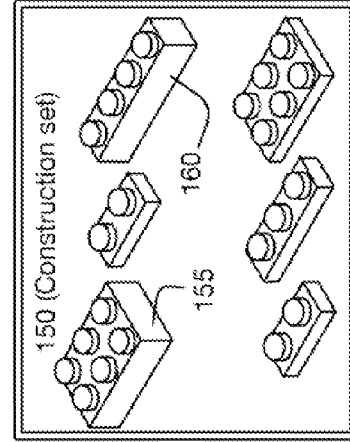
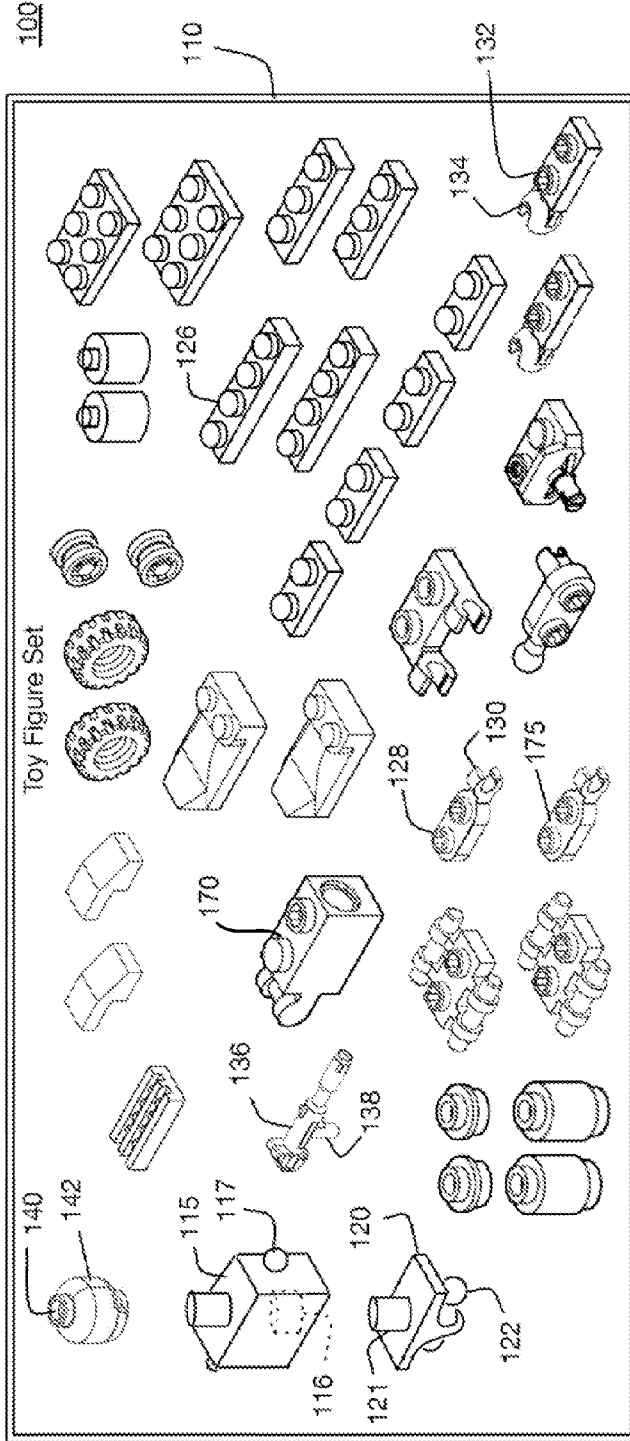


Fig. 1A

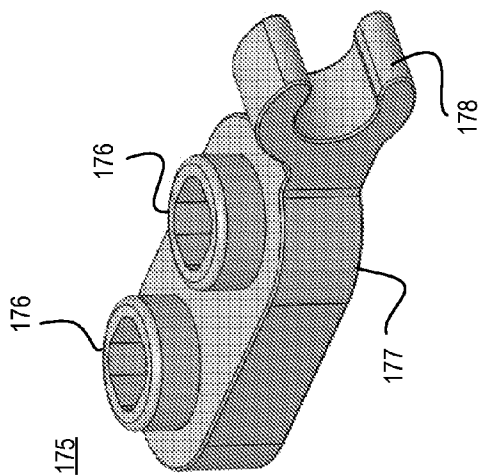


Fig. 1B

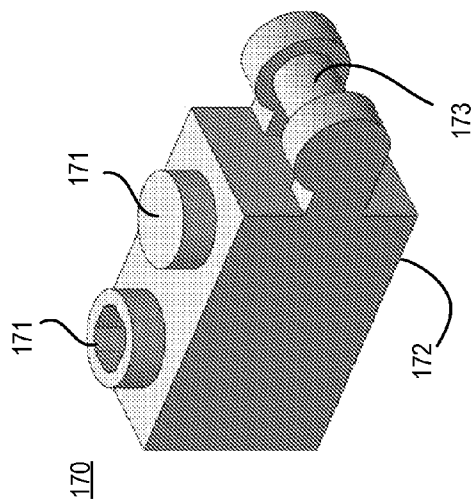


Fig. 1C

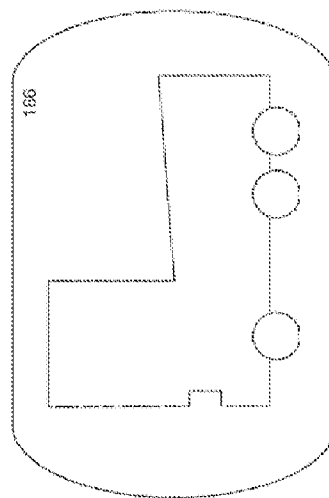


Fig. 1D

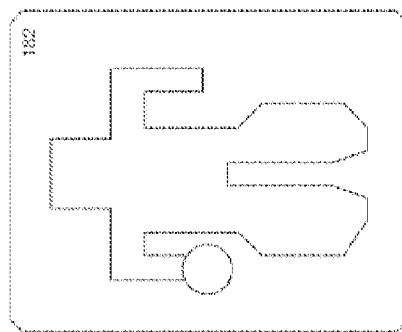


Fig. 1E

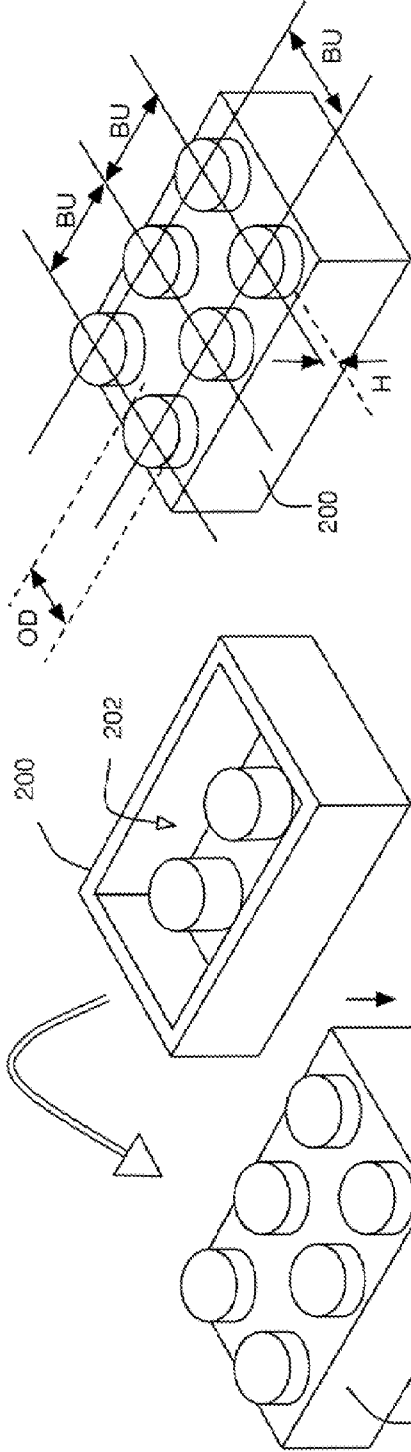


Fig. 2

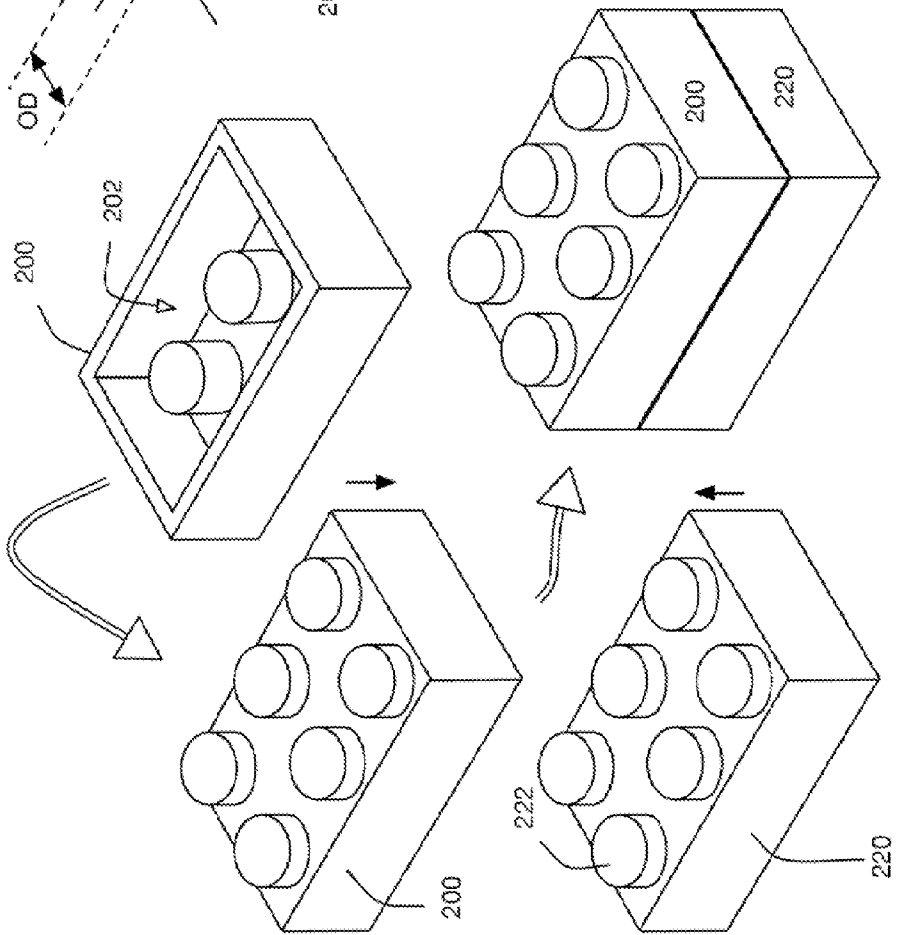
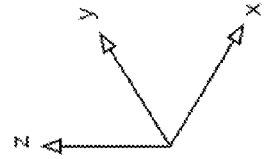
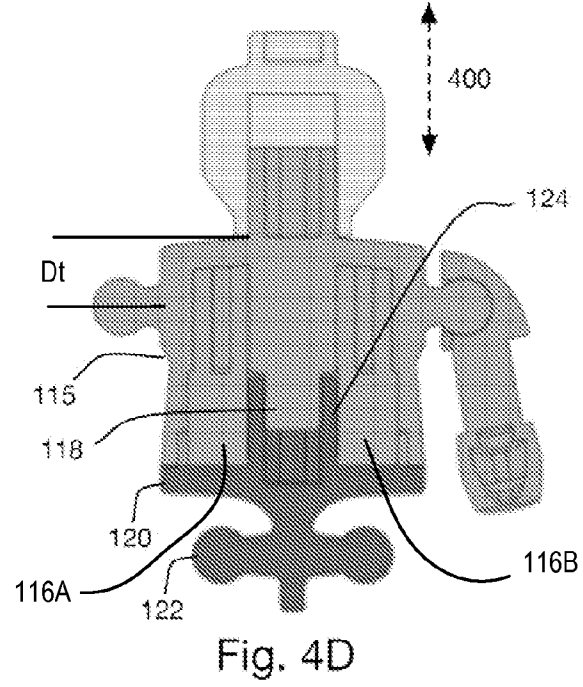
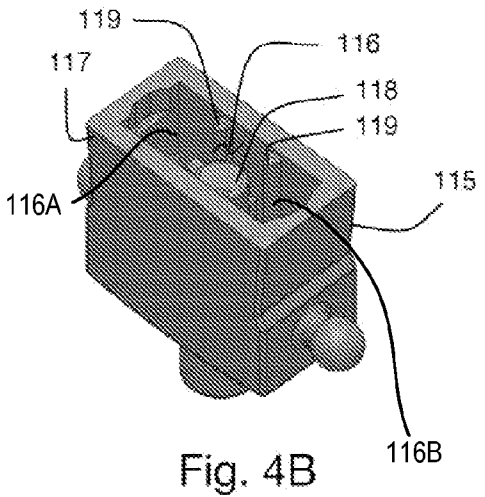
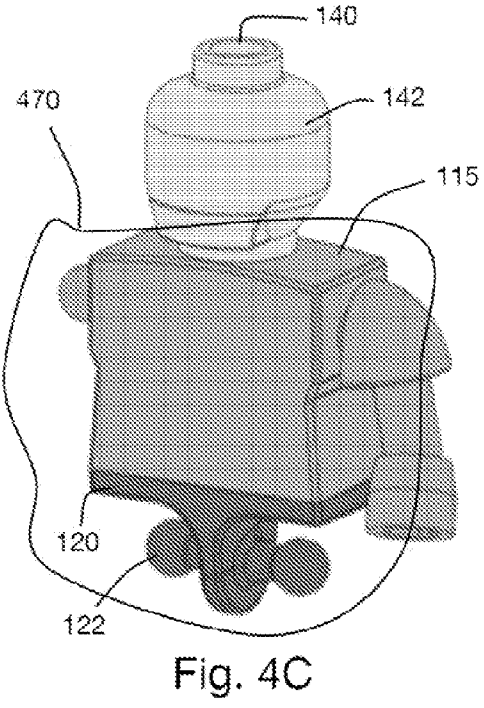
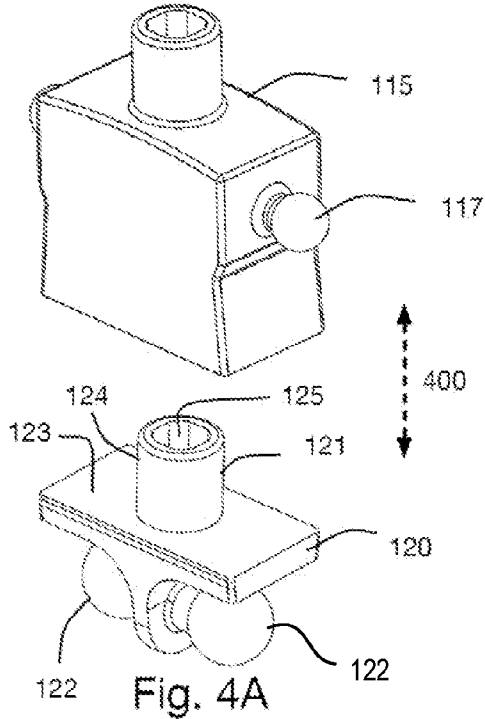


Fig. 3



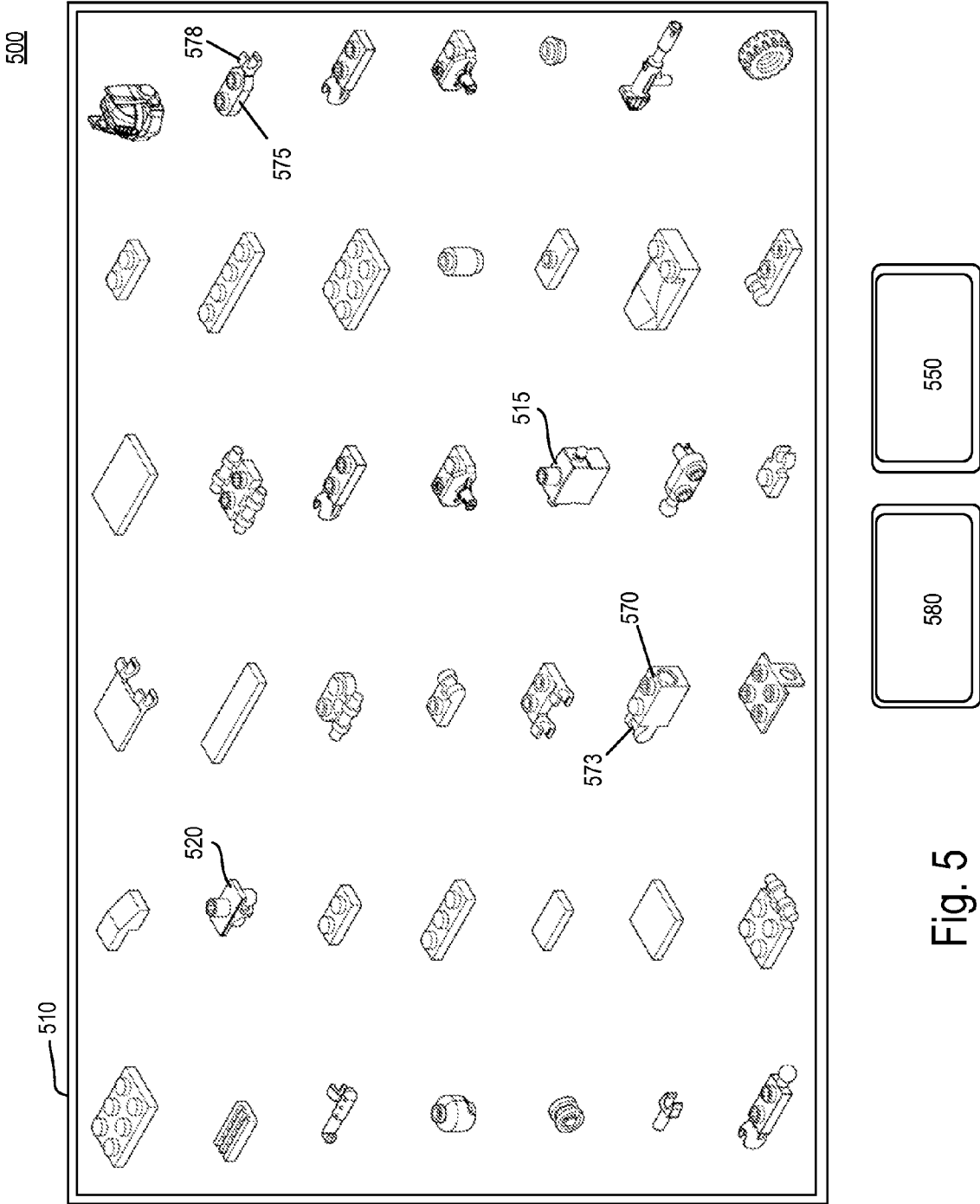


Fig. 5

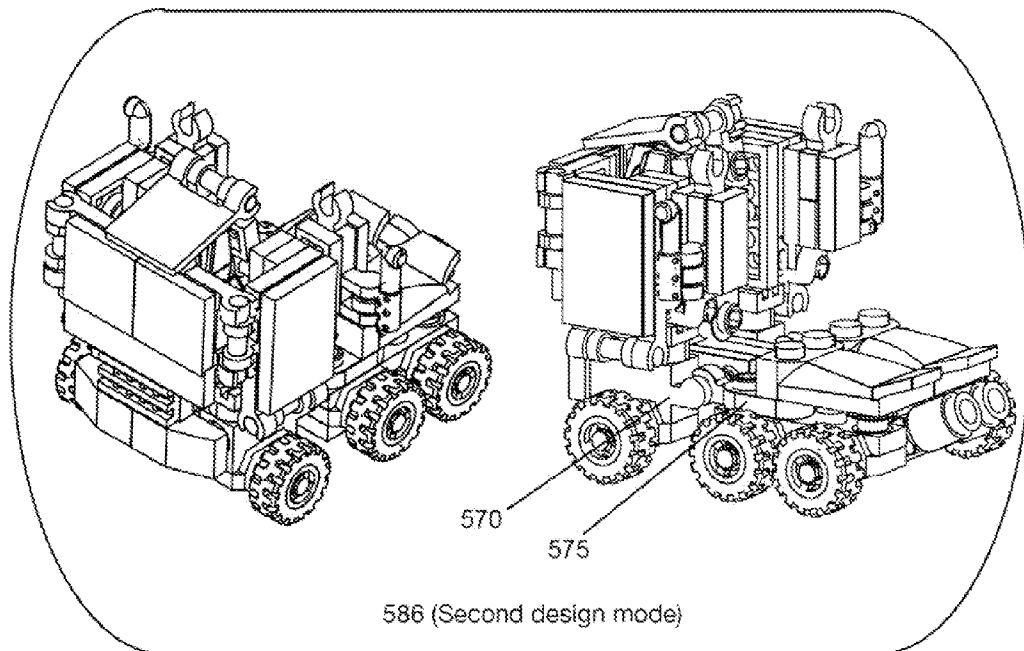
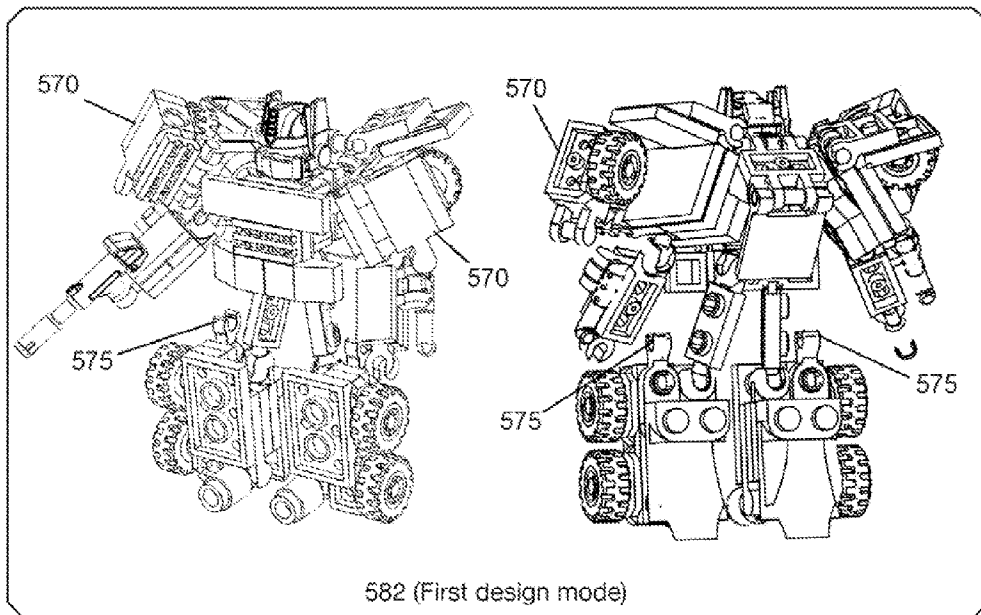


Fig. 6

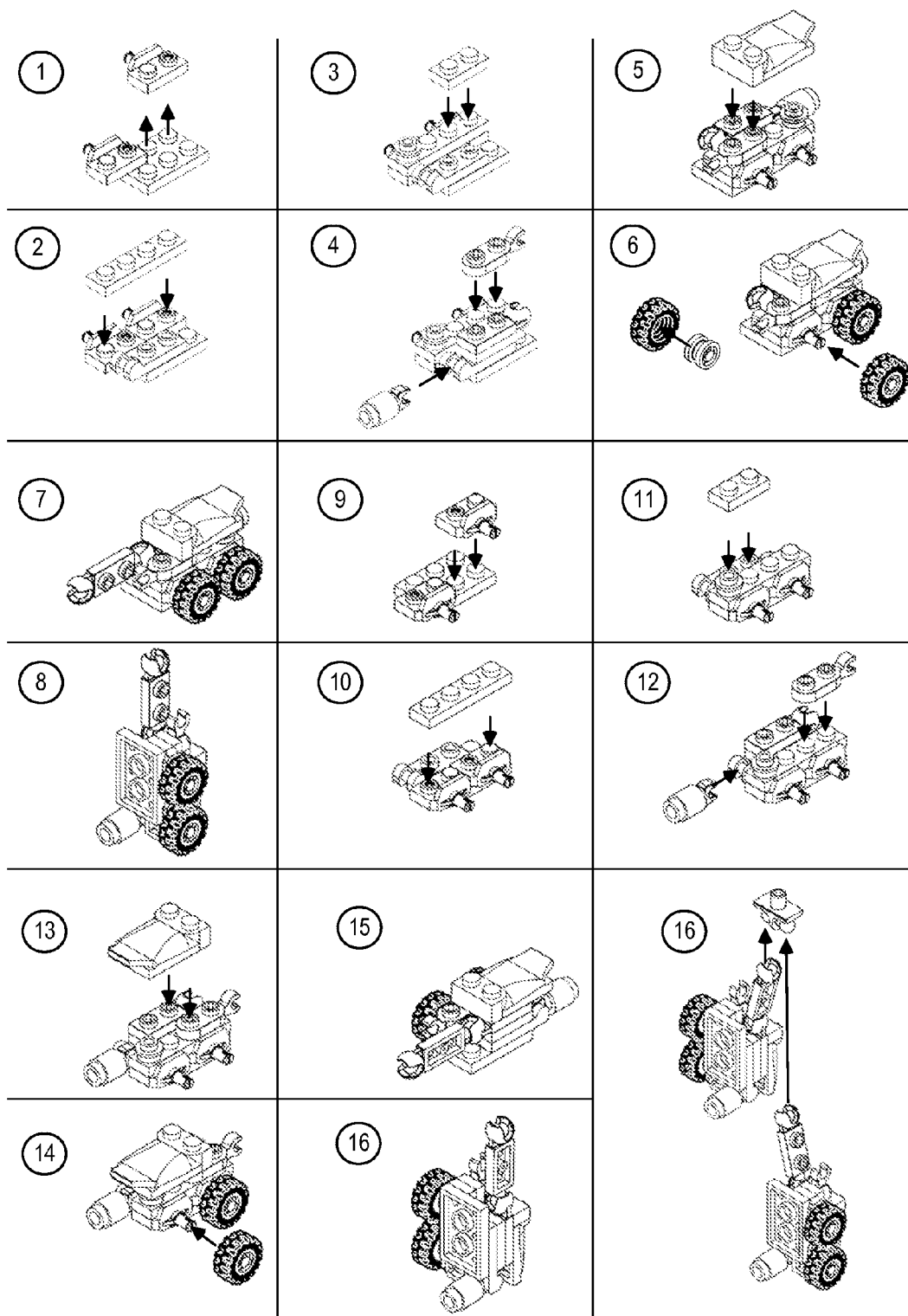


Fig. 7

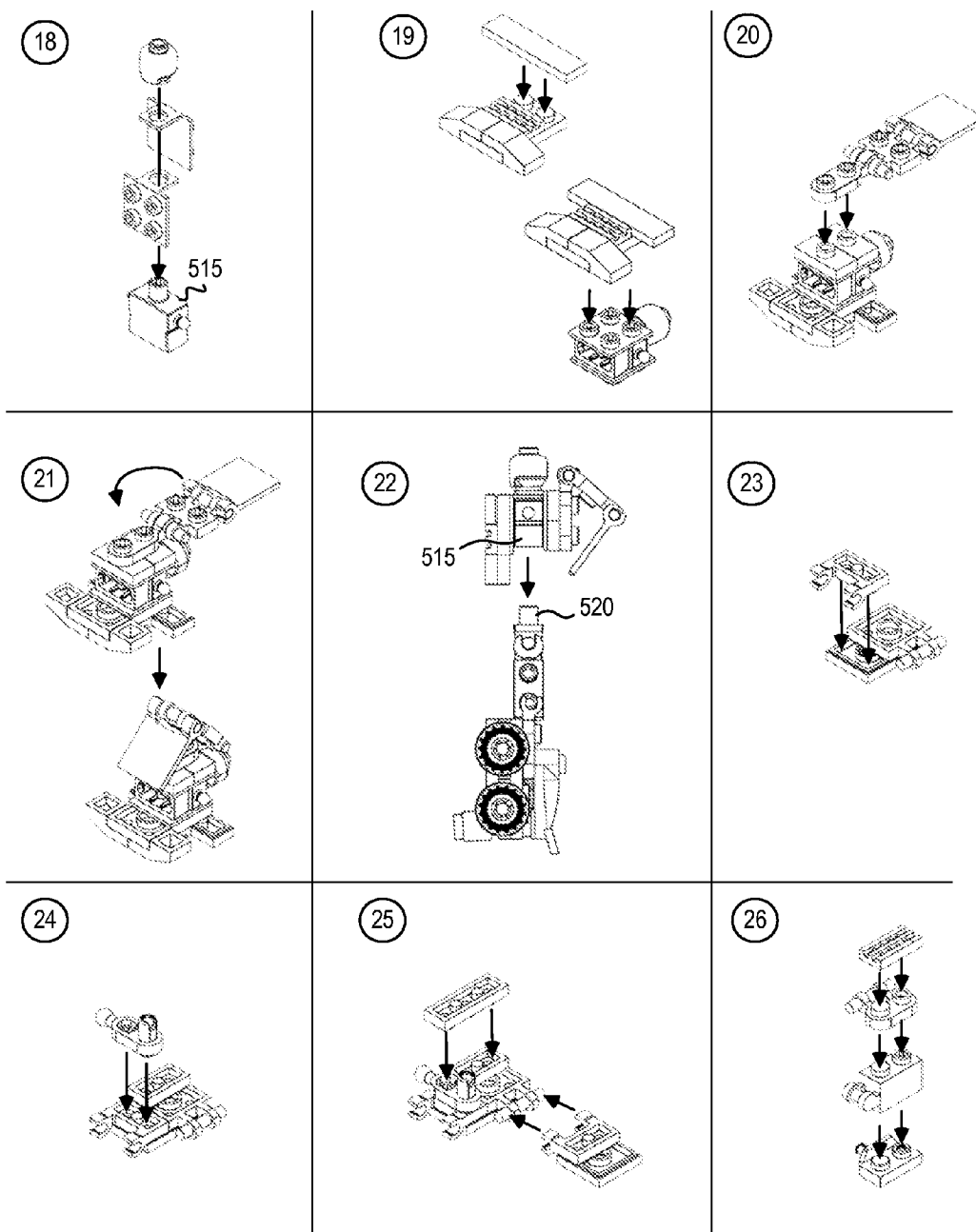


Fig. 8

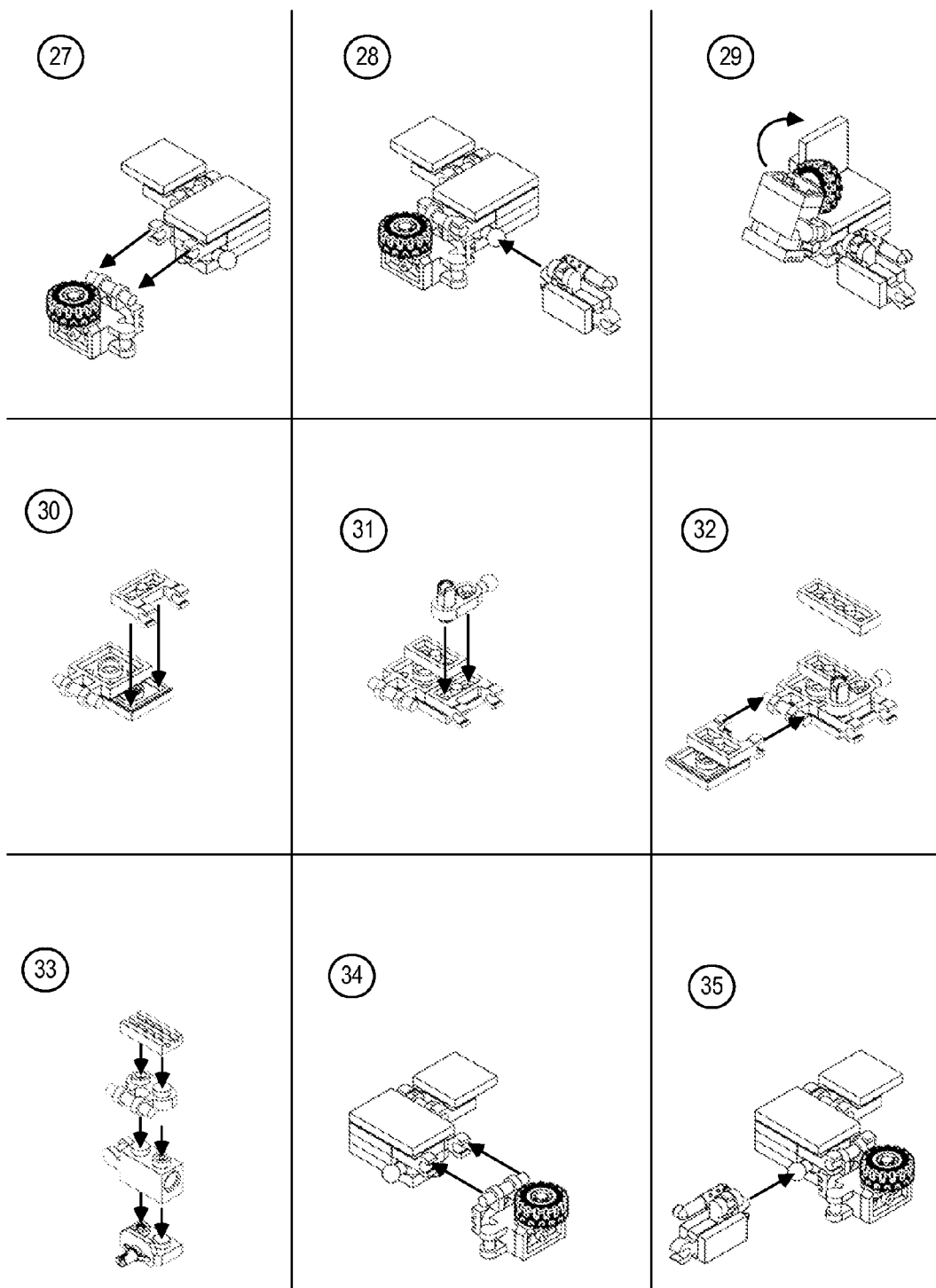


Fig. 9

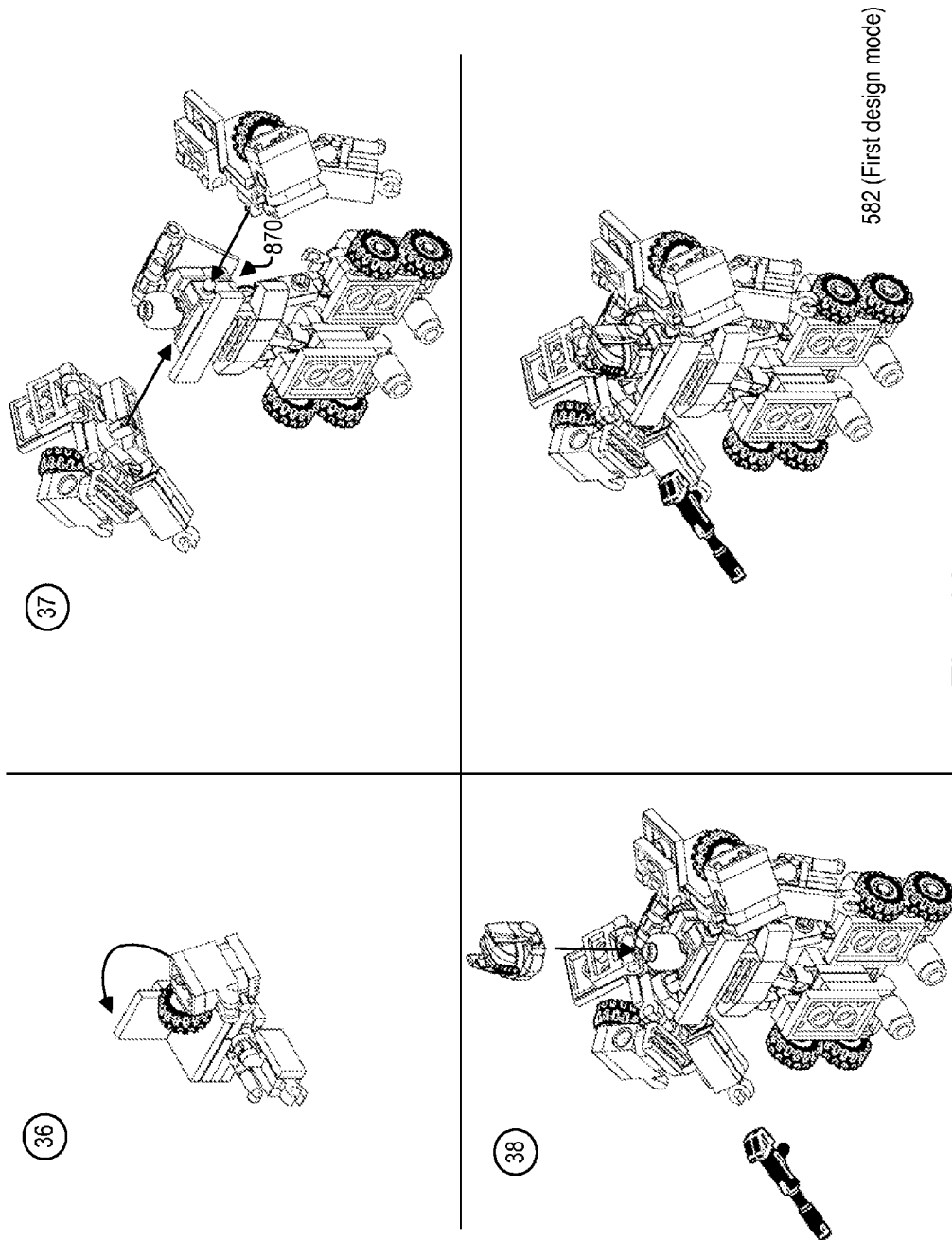
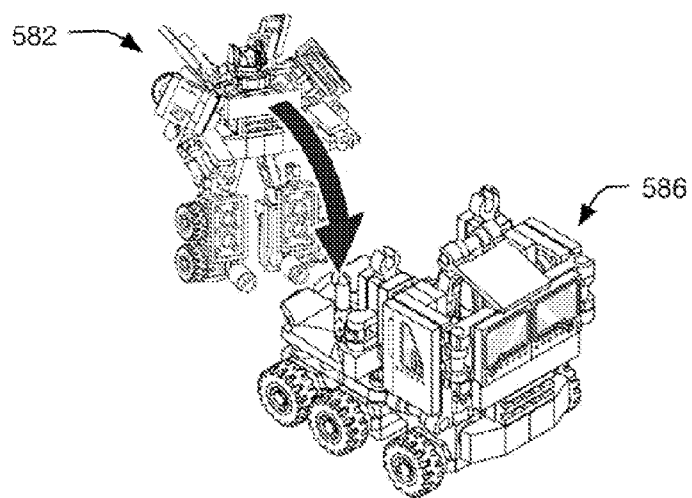


Fig. 10



590A (Transform Instructions)

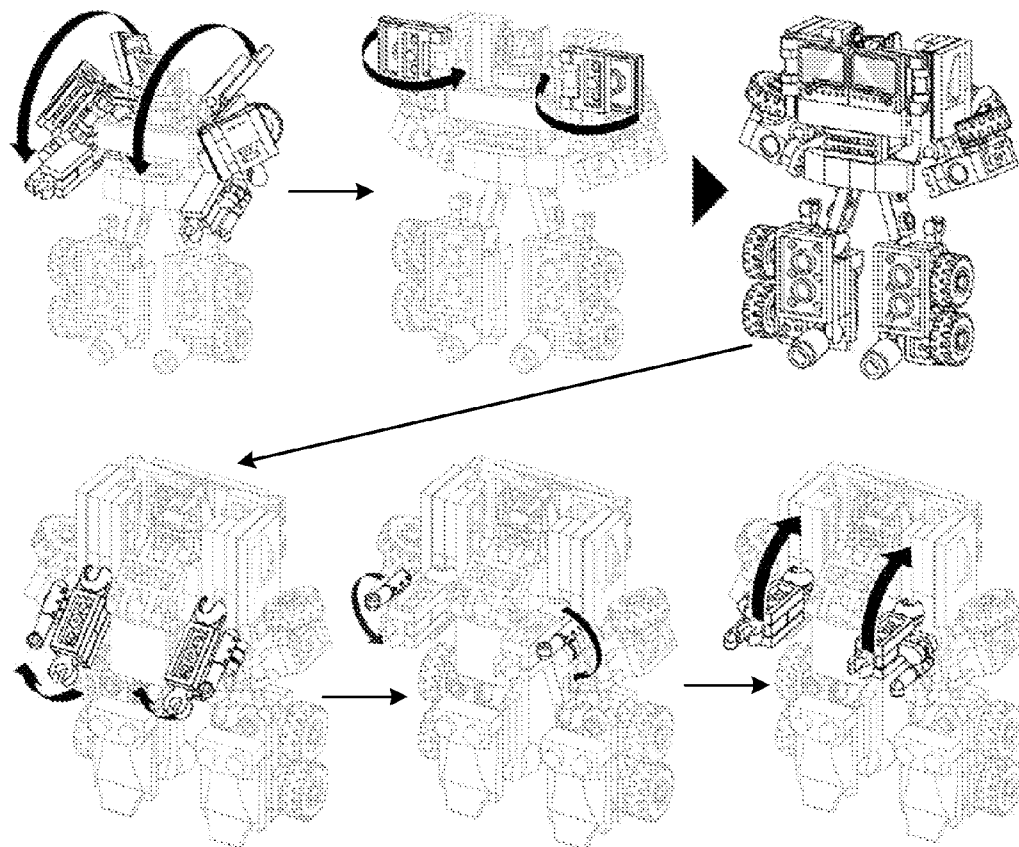


Fig. 11

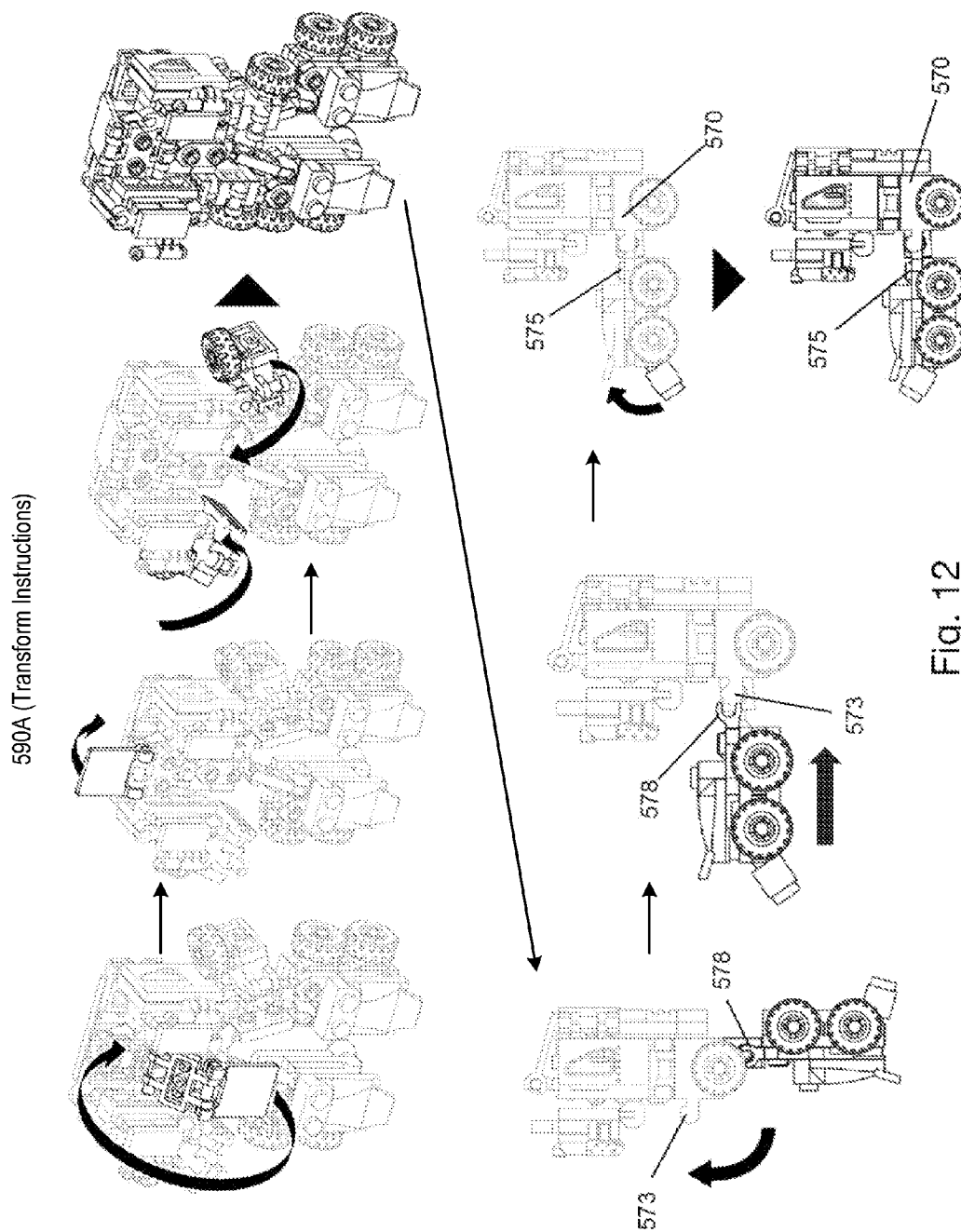
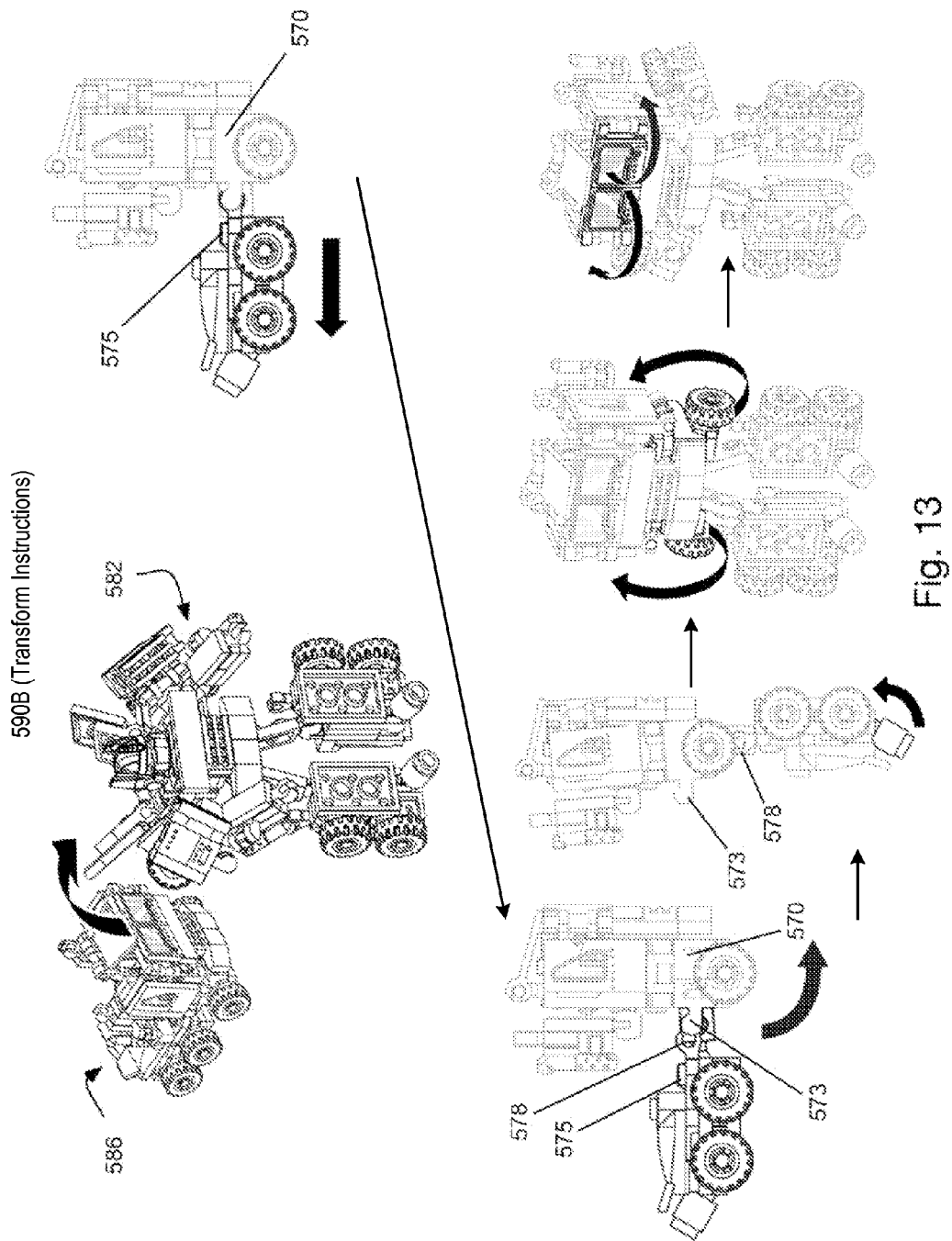
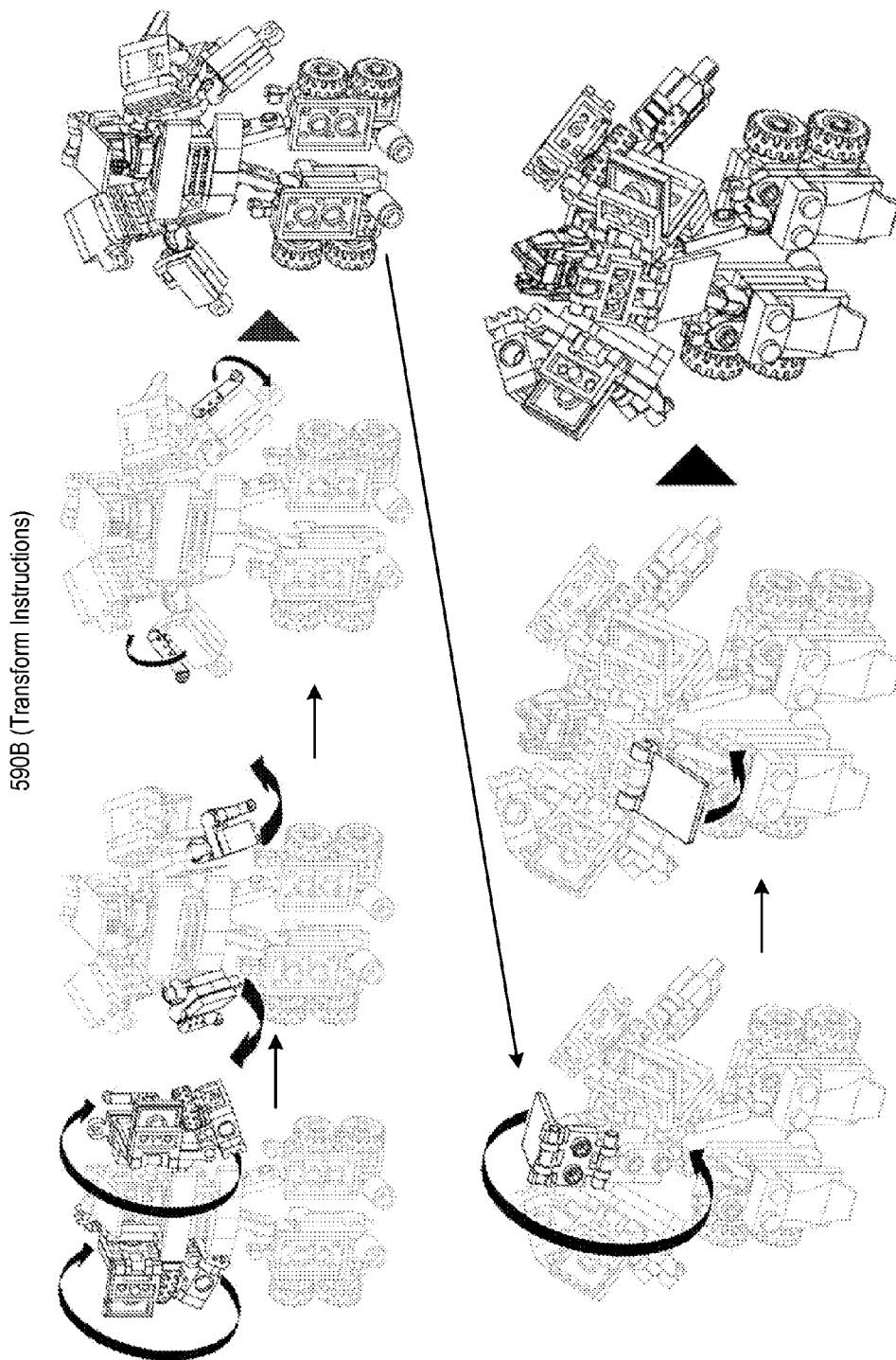


Fig. 12





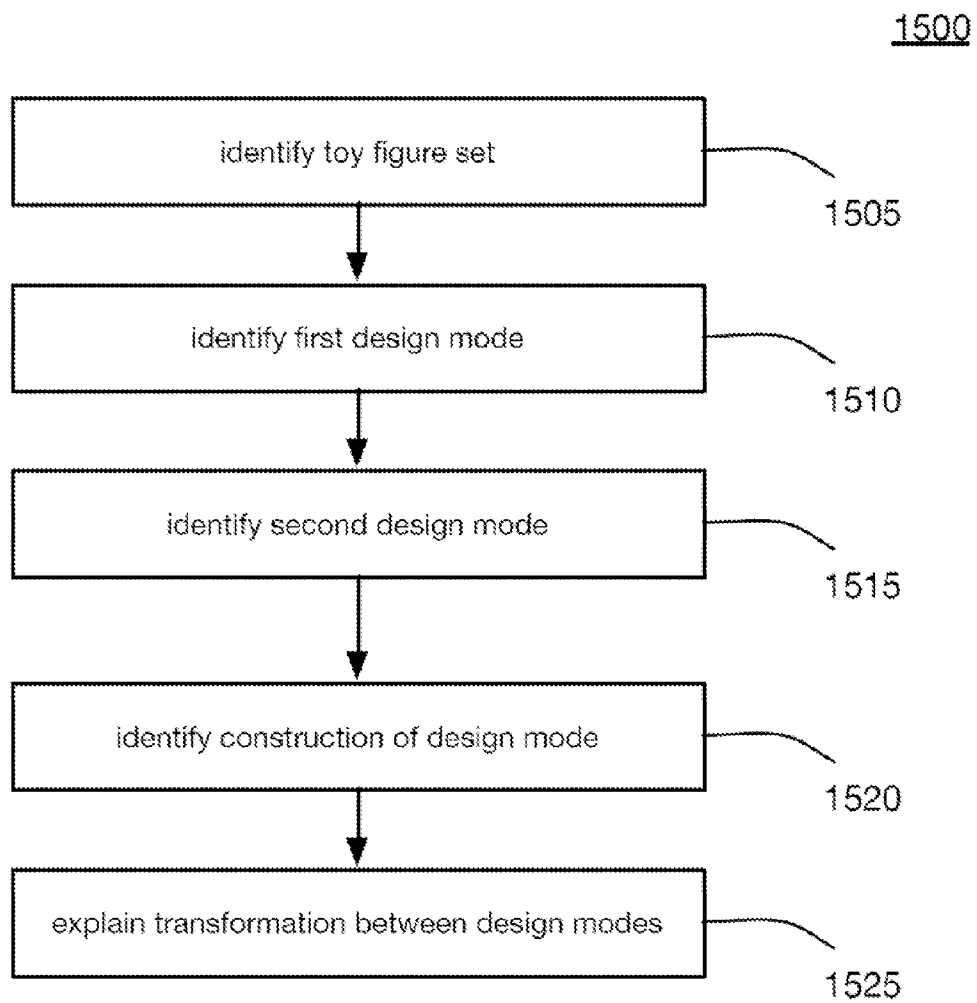


Fig. 15

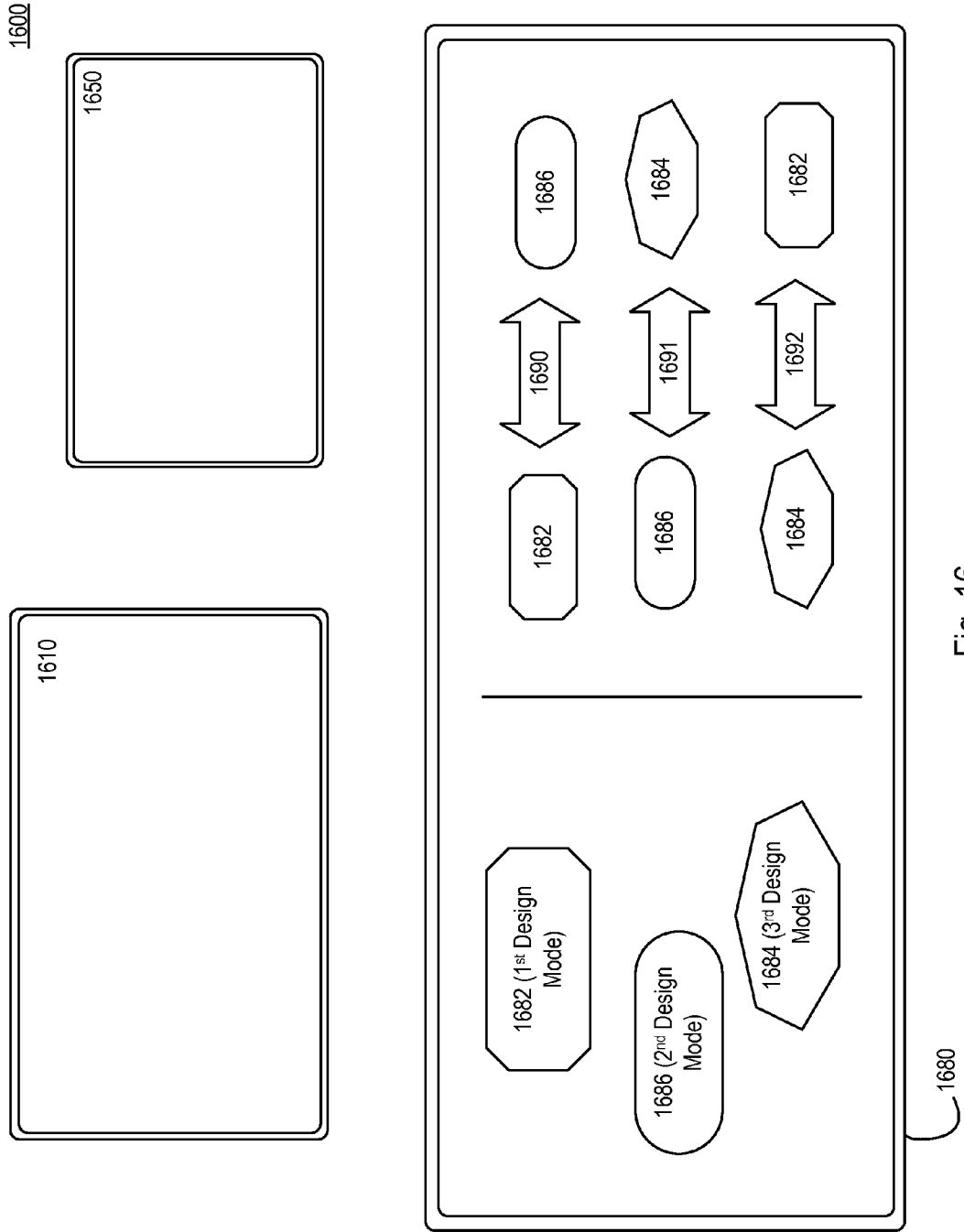


Fig. 16

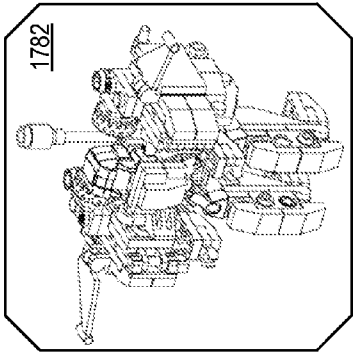


Fig. 17A

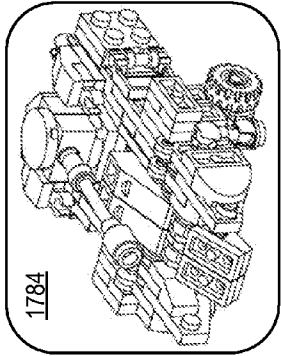


Fig. 17B

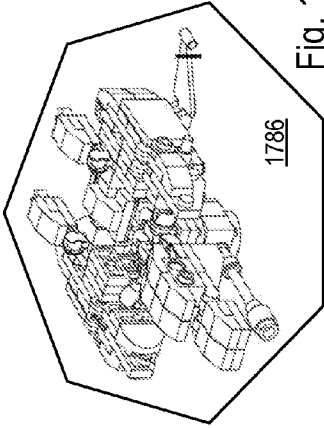


Fig. 17C

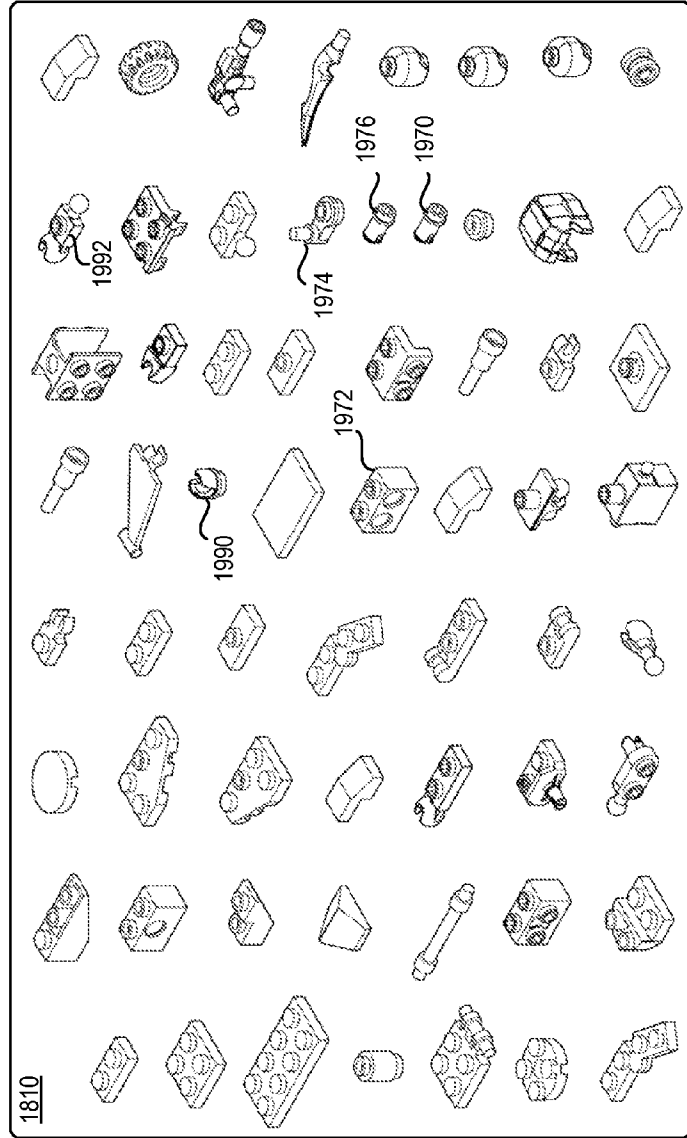
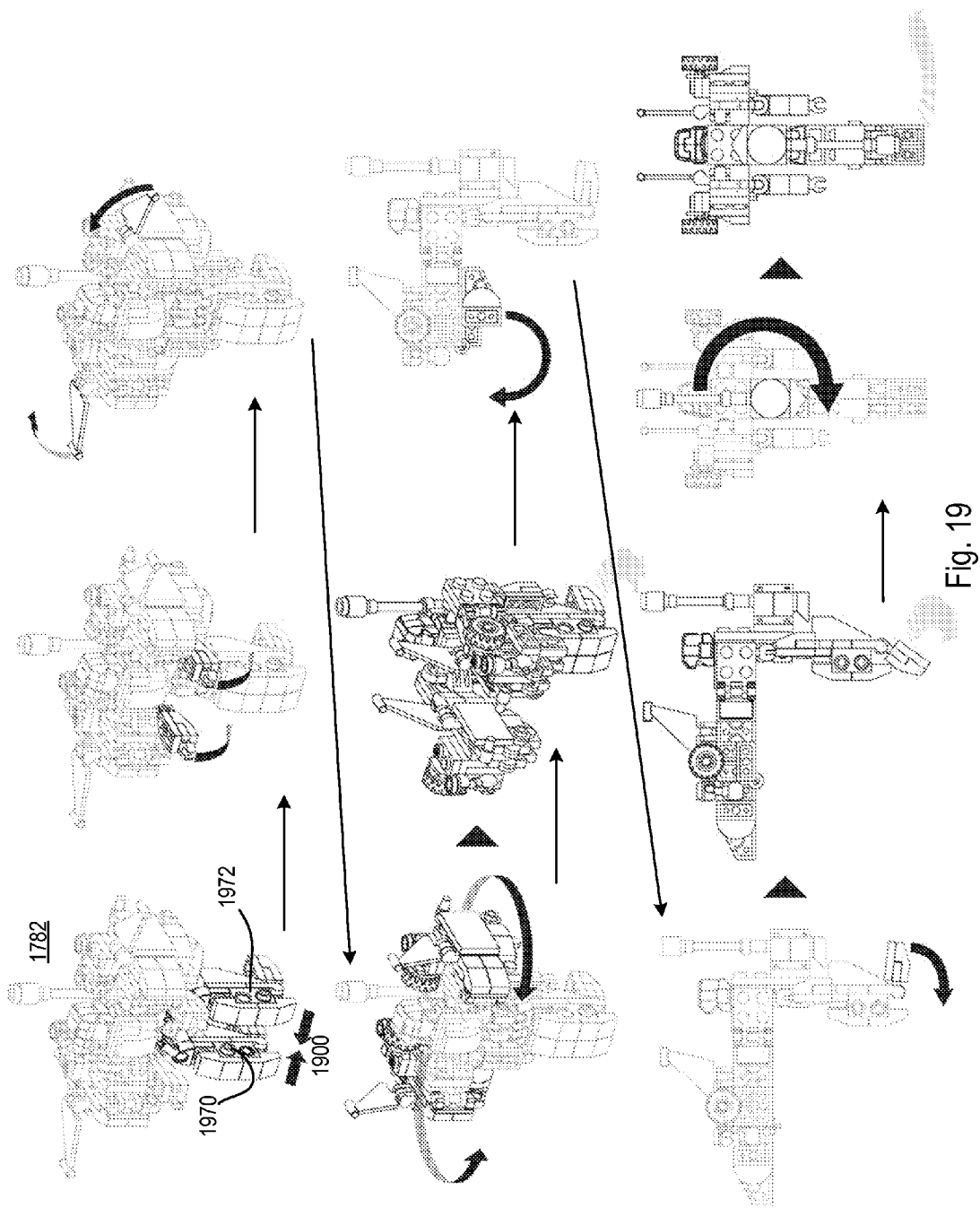


Fig. 18



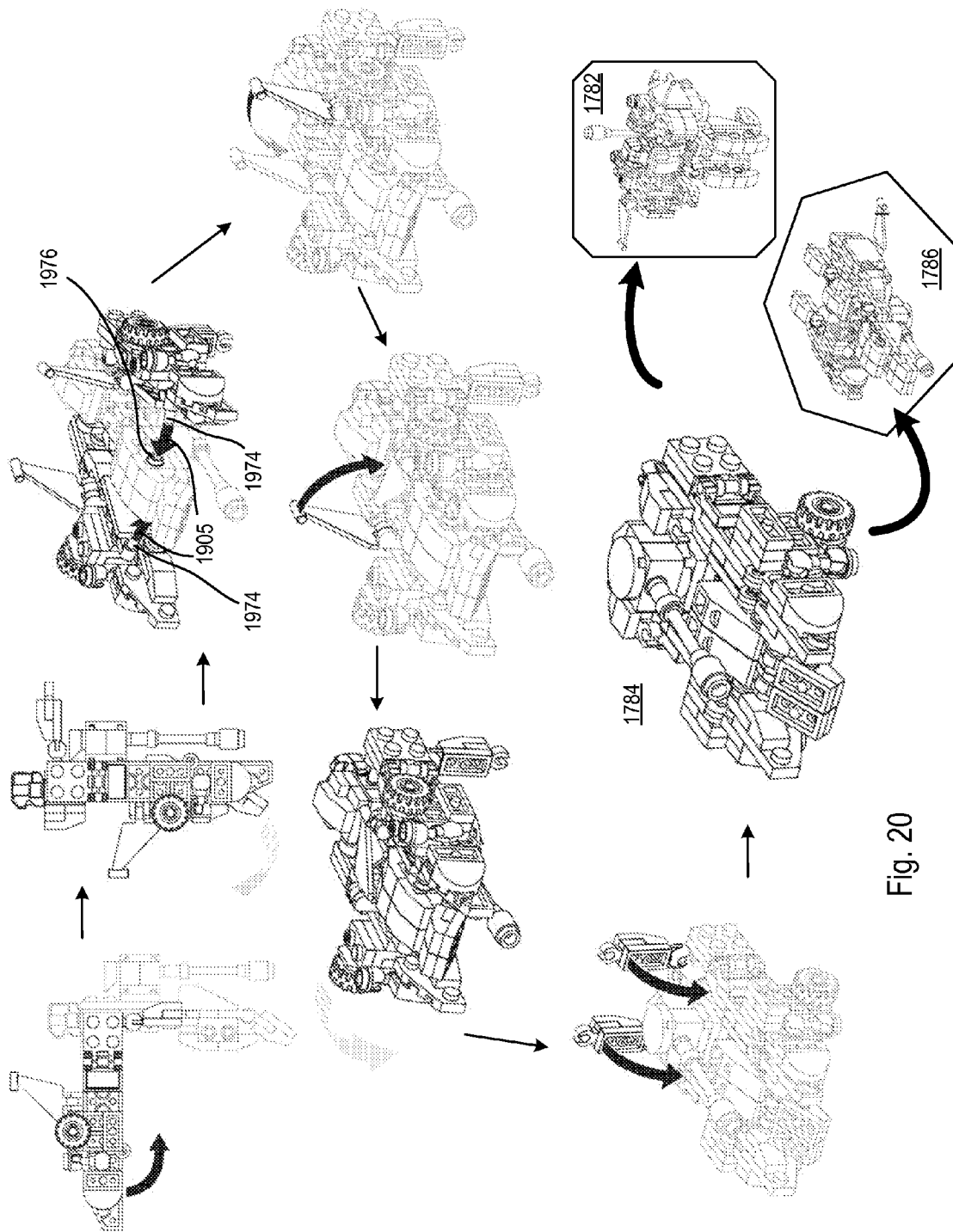


Fig. 20

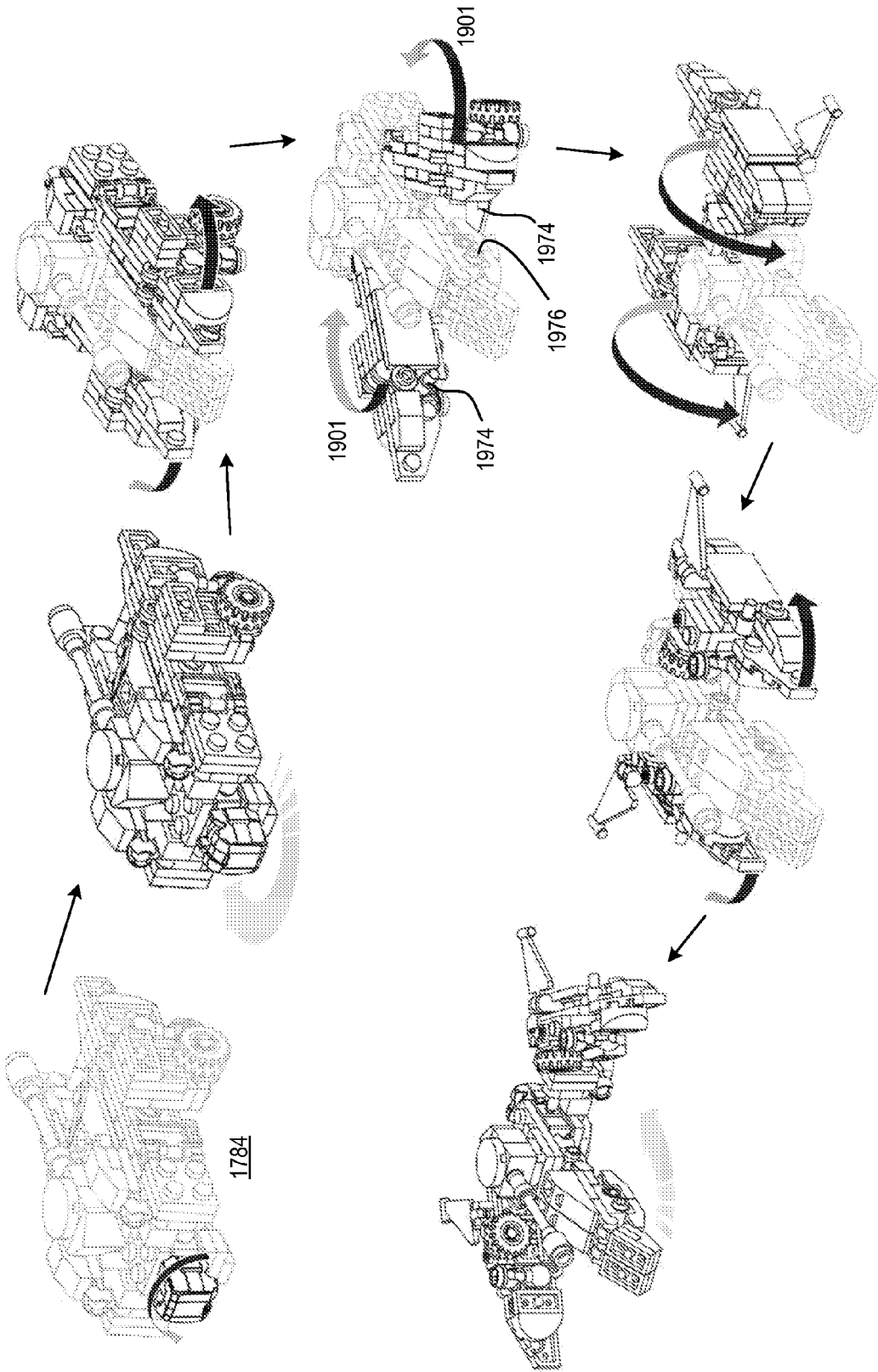


Fig. 21

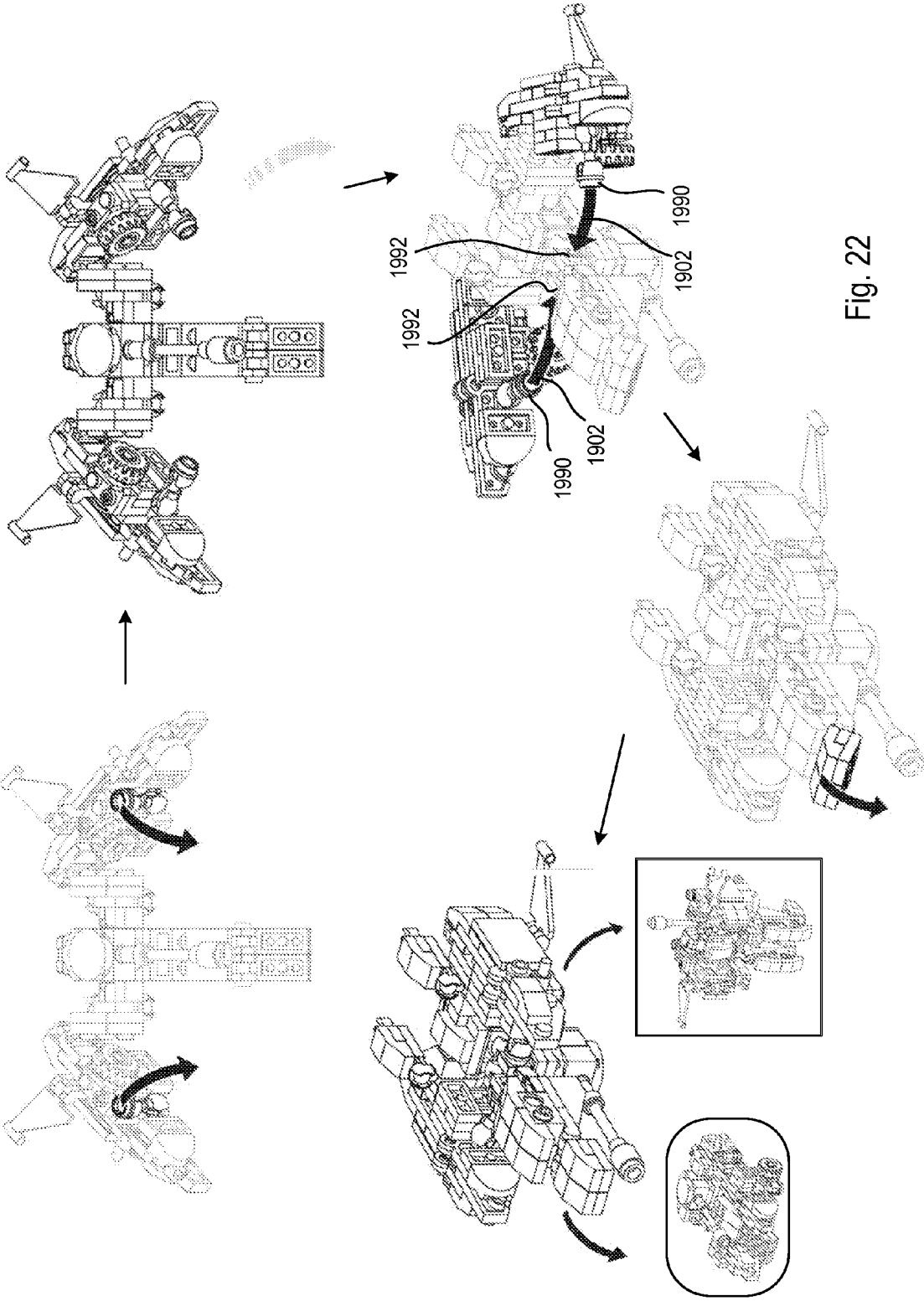


Fig. 22

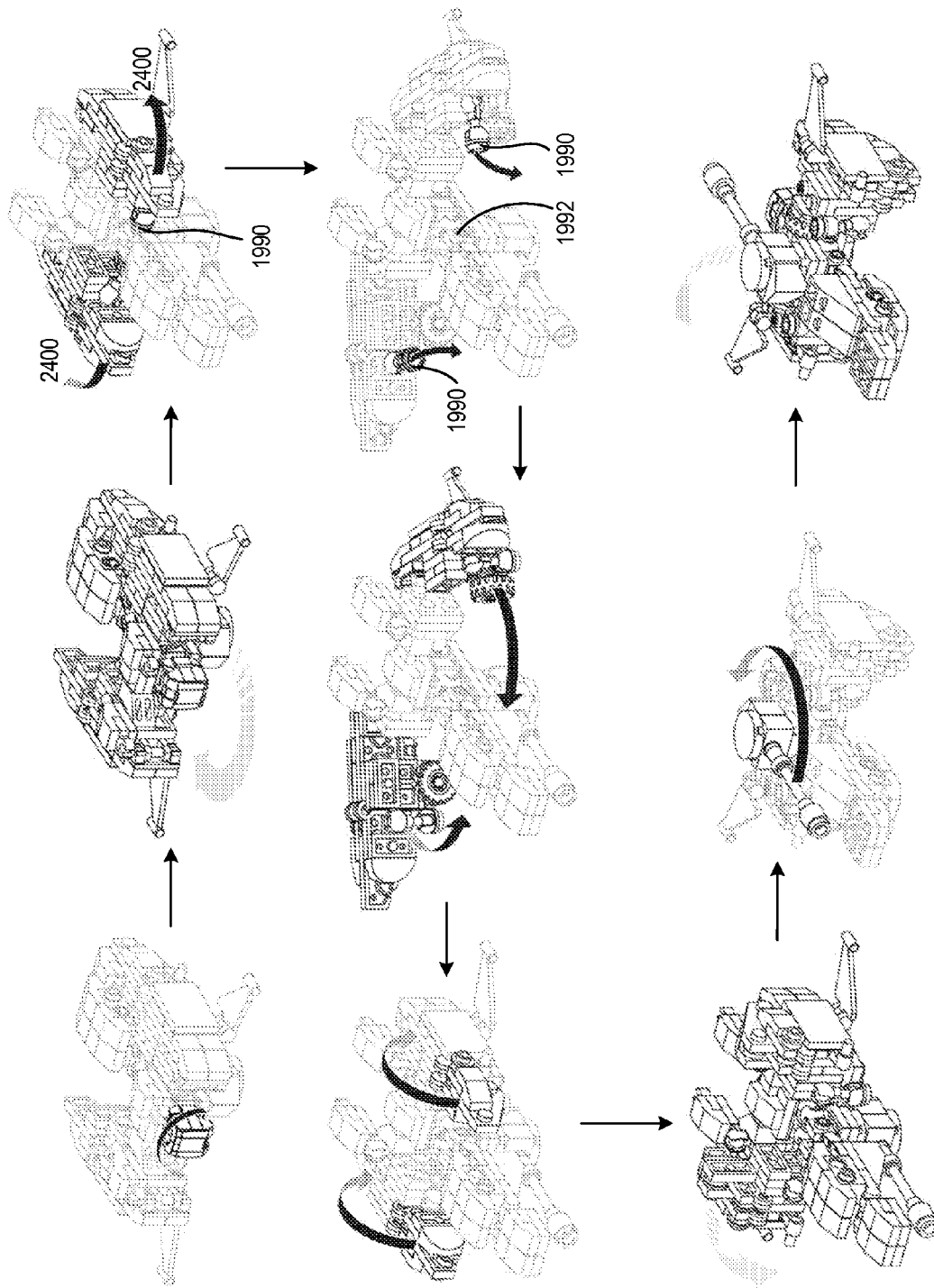


Fig. 23

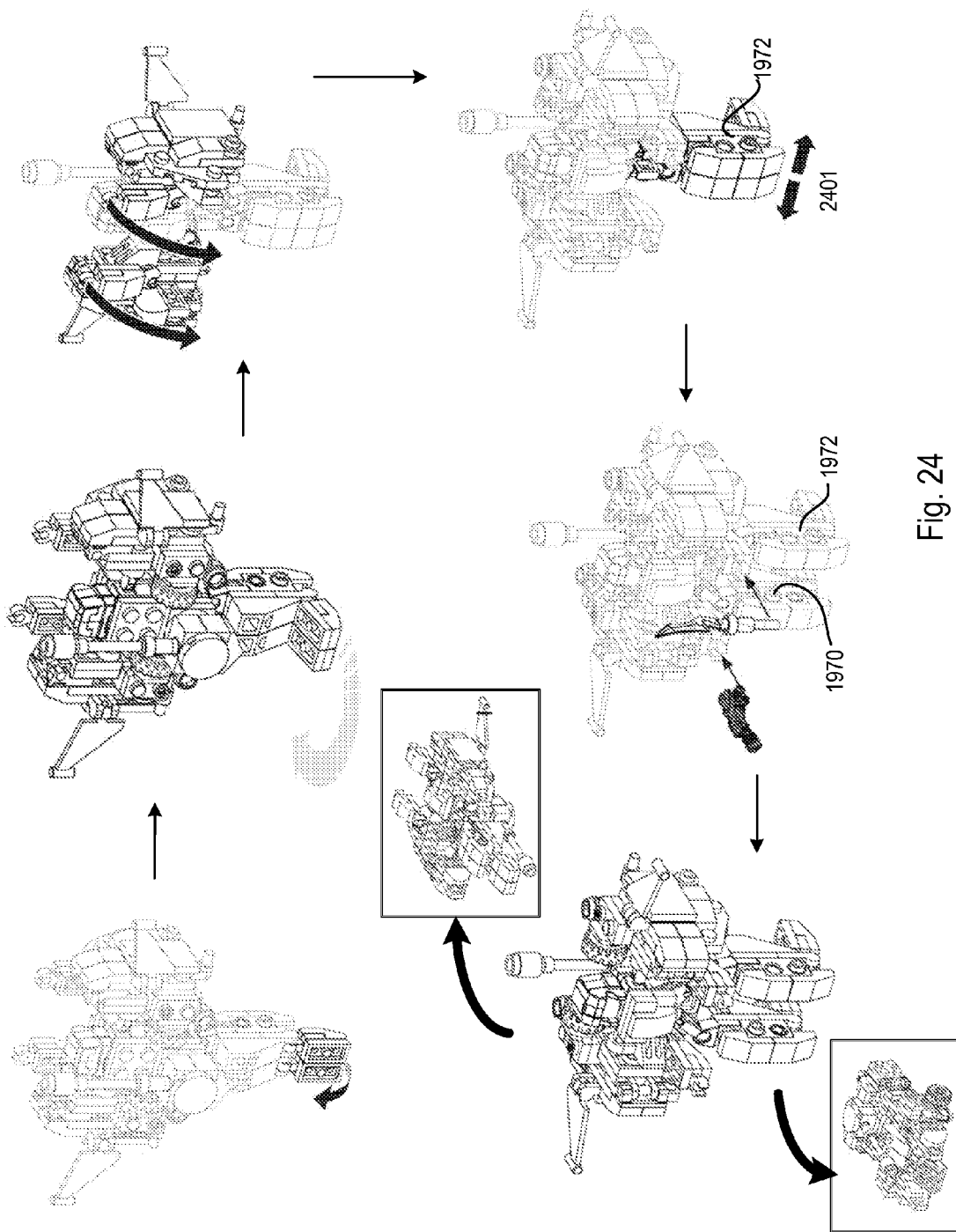


Fig. 24

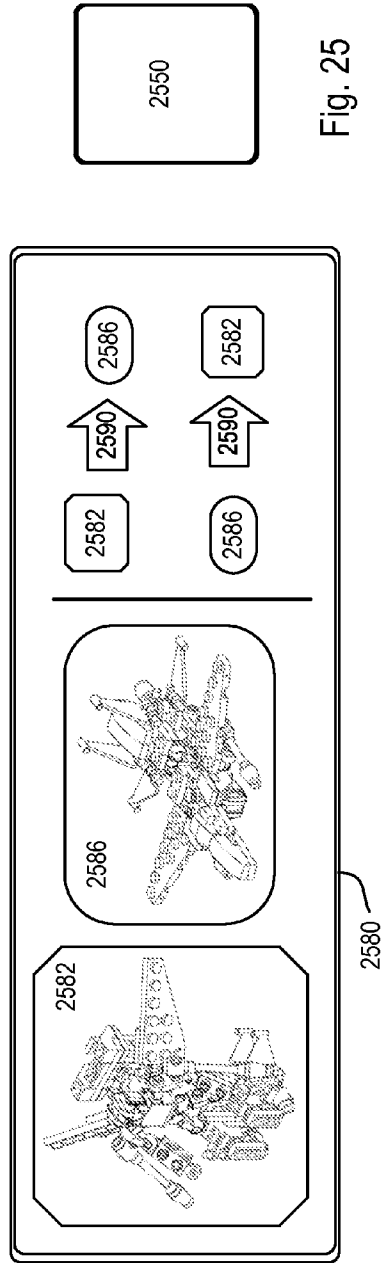
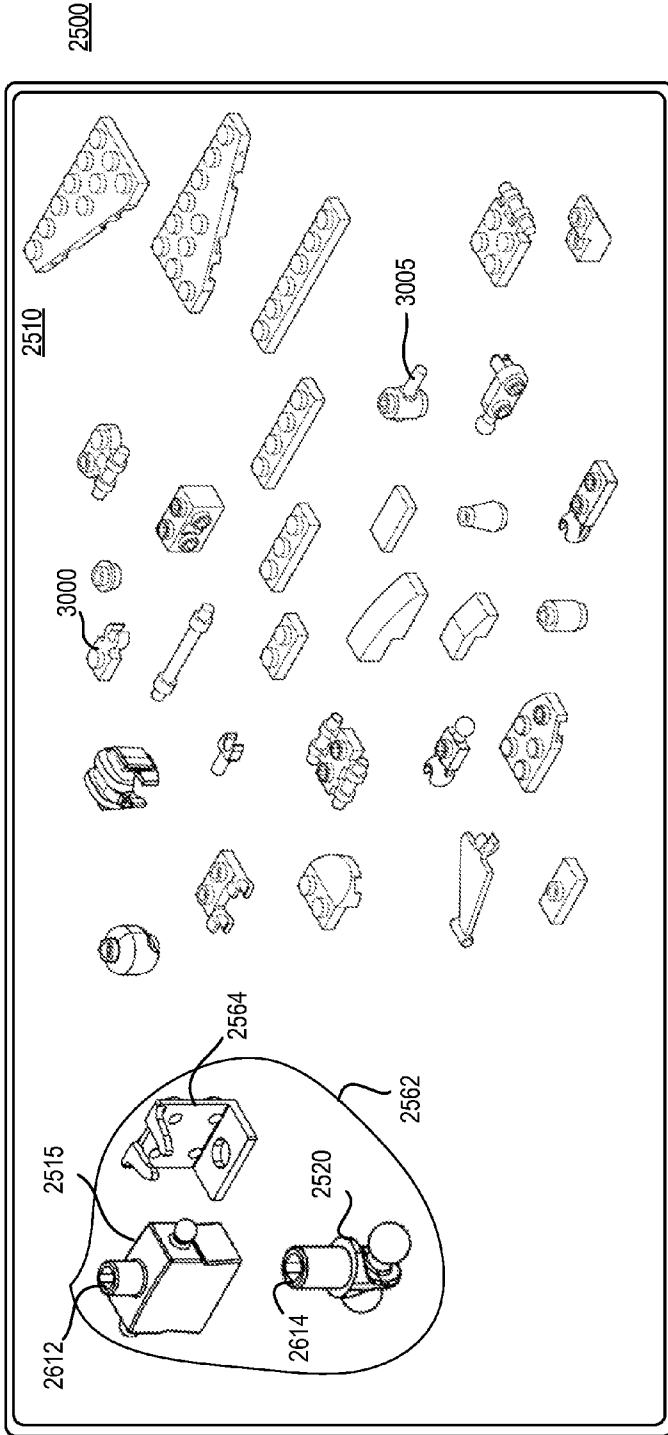


Fig. 25

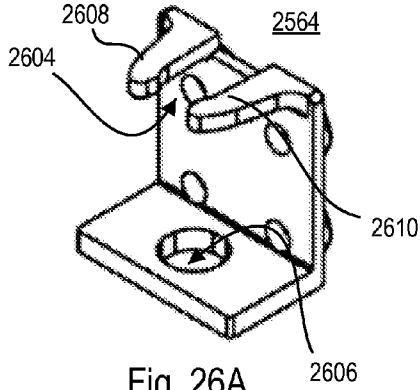


Fig. 26A

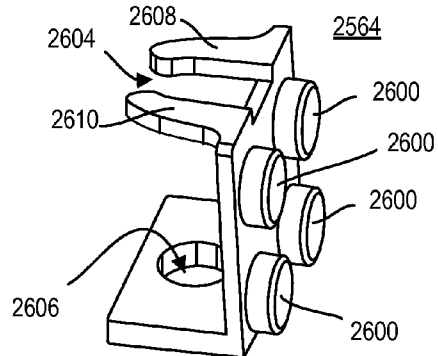


Fig. 26B

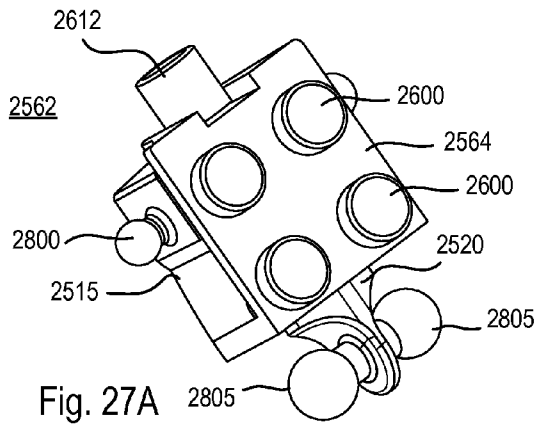


Fig. 27A

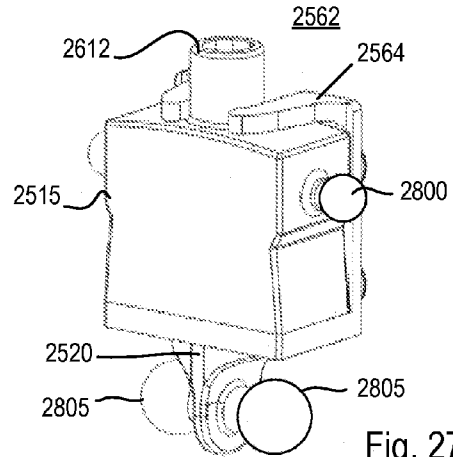


Fig. 27B

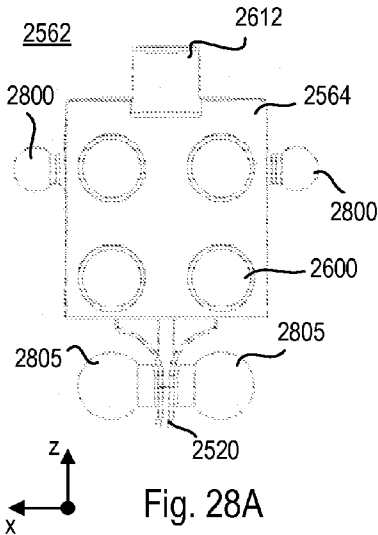


Fig. 28A

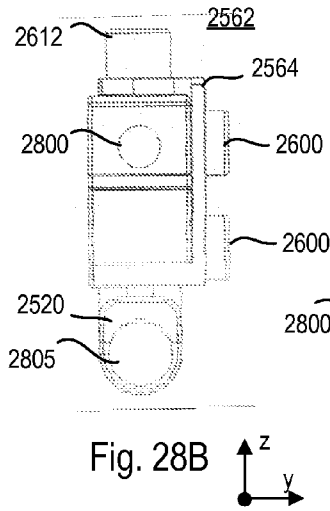


Fig. 28B

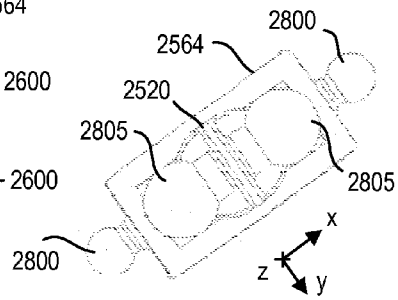


Fig. 28C

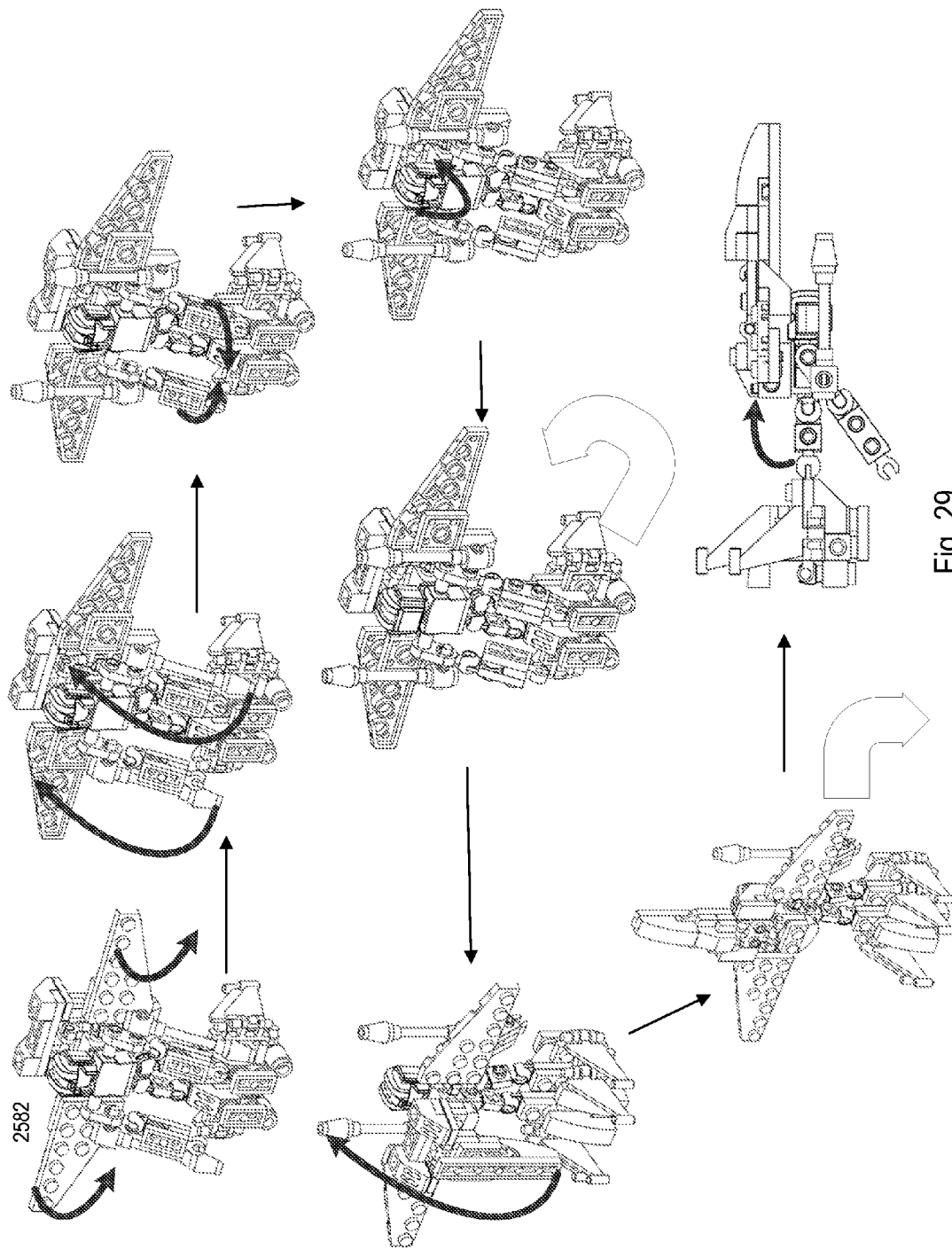


Fig. 29

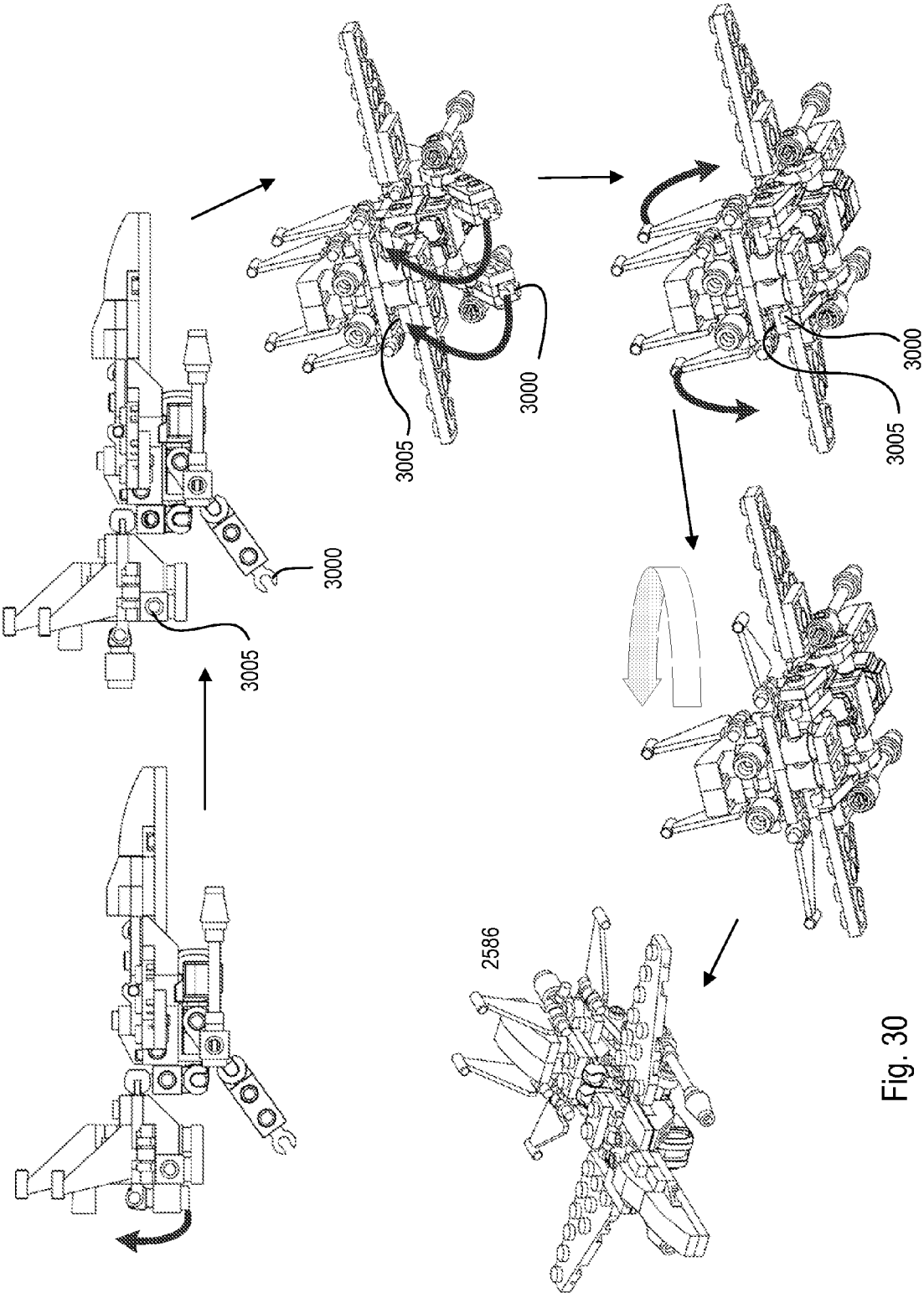


Fig. 30

TRANSFORMATION TOY CONSTRUCTION SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Application No. 61/986,144, filed Apr. 30, 2014 and titled TRANSFORMATION TOY CONSTRUCTION SYSTEM, which is incorporated herein by reference in its entirety. This application claims the benefit of U.S. Application No. 62/116,119, filed Feb. 13, 2015 and titled TRANSFORMATION TOY CONSTRUCTION SYSTEM, which is incorporated herein by reference in its entirety. This application claims the benefit of U.S. Application No. 62/116,204, filed Feb. 13, 2015 and titled TOY CONSTRUCTION SET, which is incorporated herein by reference in its entirety. This application is a continuation-in-part of U.S. application Ser. No. 14/622,586, filed Feb. 13, 2015 and titled TOY CONSTRUCTION SET, which claims the benefit of U.S. Application No. 61/986,161, filed on Apr. 30, 2014 and titled TOY CONSTRUCTION SET, both of which are incorporated herein by reference in their entirety. This application claims the benefit of U.S. Application No. 61/986,136, filed Apr. 30, 2014 and titled TOY CONSTRUCTION SET, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This disclosure relates to a toy construction system that includes at least one building element.

BACKGROUND

[0003] Persons of all ages enjoy playing and interacting with toys and building elements. Toy construction sets are made up of a plurality of building elements, which include coupling mechanisms such as studs or recesses of specific heights and placement to enable interconnection with other building elements.

SUMMARY

[0004] In one general aspect, a transformation construction system includes a toy figure set having a plurality of interconnectible building elements that are configured to connect to building elements of a construction set, the toy figure set including a torso building element and a pelvis building element that interconnect with each other with an interference fit between a stud of the pelvis building element and a recess of the torso building element that enable the pelvis building element and the torso building element to rotate relative to each other; a construction explanation identifying: a first design mode that includes the toy figure set, a second design mode that includes the toy figure set and is distinct from the first design mode, and a set of instructions that show a transformation between the first design mode and the second design mode without disassembling the toy figure set and the plurality of building elements.

[0005] Implementations can include one or more of the following features. For example, the transformation construction system can include a construction set of interconnectible building elements.

[0006] The construction explanation can identify all of the plurality of interconnectible building elements of the toy figure set connected in the first design mode. The construction

explanation can identify all of the plurality of interconnectible building elements of the toy figure set connected in the second design mode.

[0007] The first design mode can be a toy figure and the second design mode can be a vehicle design. The design modes can be a shape or design other than a box shaped design.

[0008] During the transformation between the first design mode and the second design mode, the interconnection between the torso building element and the pelvis building element can be maintained.

[0009] The set of instructions that shows the transformation between the first design mode and the second design mode can include instructions that show the transformation from the first design mode to the second design mode. The set of instructions that shows the transformation between the first design mode and the second design mode can include instructions that show the transformation from the second design mode to the first design mode. The set of instructions that shows the transformation between the first design mode and the second design mode can include instructions that show both the transformation from the second design mode to the first design mode and the transformation from the first design mode to the second design mode.

[0010] The first design mode can include the torso building element and the pelvis building element interconnected to each other. The second design mode can include the torso building element and the pelvis building element interconnected to each other.

[0011] The torso building element can include at least three separate and distinctly located coupling elements that interconnect with coupling elements of the building elements of the construction set.

[0012] The stud on the pelvis building element can be configured to form an interference fit with one or more coupling elements of the building elements of the construction set.

[0013] The recess or receptacle of the torso building element can be configured to form an interference fit with one or more coupling elements of the building elements of the construction set.

[0014] The construction explanation can identify a third design mode that includes the toy figure set and is distinct from the first and second design modes. In this implementation, the set of instructions shows at transformation between one of the first and second design modes and the third design mode without disassembling the toy figure set and the plurality of building elements.

[0015] In other general aspects, a transformation construction system includes a toy figure set including a plurality of interconnectible building elements that are configured to connect to other building elements of a construction set, each building element of the construction set including one or more of male coupling elements and female coupling elements, in which coupling elements of a building element align with locations of a two-dimensional array defined in an x, y plane in which the distances between centers of the coupling elements taken along the x or y direction are an integer multiple of a base unit and a construction explanation. The toy figure set includes building elements having coupling elements that align with the locations of the two-dimensional array. The construction explanation identifies: a first design mode that includes the toy figure set, a second design mode that includes the toy figure set and is distinct from the first design mode, and a set of instructions that show a transfor-

mation between the first design mode and the second design mode without disassembling the toy figure set and the plurality of building elements.

[0016] Implementations can include one or more of the following features. For example, the transformation construction system can include the construction set of interconnectible building elements.

[0017] In other general aspects, a transformation construction system includes a toy figure set comprising a plurality of interconnectible building elements that are configured to connect to building elements of the construction set, the building elements of the construction set being interconnectible, each building element including one or more of male coupling elements and female coupling elements, in which coupling elements of a building element align with locations of a two-dimensional array defined in an x, y plane in which the distances between centers of the coupling elements taken along the x or y direction are an integer multiple of a base unit, and an identification. The toy figure set includes building elements having coupling elements that align with the locations of the two-dimensional array. The toy figure set includes a pelvis building element comprising a stud that extends from a surface, the stud comprising a cavity and an outer wall; and a torso building element comprising a recess, the recess configured to releasably connect with the stud of the pelvis building element, wherein, when the first building element and the second building element are connected, the stud is frictionally engaged at the cavity and at the outer wall. The identification of a first design mode that includes the toy figure set, and a second design mode that includes the toy figure set and is distinct from the first design mode.

[0018] Implementations can include one or more of the following features. For example, the transformation construction system can include an identification of a transformation between the first design mode and the second design mode without disassembling the toy figure set and the plurality of building elements. The identification of the first design mode and the second design mode can include the pelvis building element and the torso building element being interconnected and the identification of the transformation can maintain at all times the interconnectedness between the pelvis building element and the torso building element.

[0019] In another general aspect, a method of transformation includes identifying a toy figure set comprising a plurality of interconnectible building elements that are configured to connect to building elements of a construction set, the toy figure set including a torso building element and a pelvis building element that interconnect with each other with an interference fit between a stud of the pelvis building element and a recess of the torso building element that enable the pelvis building element and the torso building element to rotate relative to each other; identifying a first design mode that includes the toy figure set; identifying a second design mode that includes the toy figure set and is distinct from the first design mode; identifying a construction of at least one of the first and second design modes, the construction identification describing how to connect the interconnectible building elements of the toy figure set into the at least one of the first and second design modes; and providing an explanation of a transformation between the first design mode and the second design mode, the transformation occurring without disassembling the toy figure set and the plurality of building elements.

[0020] In other general aspects, a transformation construction system includes a toy figure set and a construction explanation. The toy figure set includes a plurality of interconnectible building elements that are configured to connect to building elements of a construction set. The interconnectible building elements include a torso building element and a pelvis building element that interconnect with each other by way of an interference fit; and at least a pair of transform building elements. Each transform building element in the pair includes: a non-transform coupling element that is configured to repeatably connect to one or more coupling elements of other building elements of the toy figure set, and a transform coupling element that is configured to repeatably connect to the other transform coupling element of the pair. The construction explanation identifies a first design mode that includes the toy figure set assembled from the plurality of interconnectible building elements, a second design mode that includes the toy figure set assembled from the plurality of interconnectible building elements, the second design mode being distinct from the first design mode, and instructions that present a transformation between the first design mode and the second design mode without disconnecting the plurality of building elements of the toy figure set. The transformation shows: one or more of: unlocking the transform coupling elements of the transform building elements of a pair from each other, and locking the transform coupling elements of the transform building elements of a pair to each other; and articulating one or more building elements of the toy figure set relative to other building elements of the toy figure set without disconnecting the coupling elements of the building elements of the toy figure set.

[0021] Implementations can include one or more of the following features. For example, the instructions that present the transformation that shows one or more of unlocking the transform coupling elements of the transform building elements of a pair from each other can show the connection between the non-transform coupling elements of the transform building elements being maintained with the coupling elements of the other building elements of the toy figure set.

[0022] Implementations of any of the techniques described above can include a transformable toy construction set having a toy figure that also includes parts that are building elements of a construction set, a process, or a device. The details of one or more implementations are set forth in the accompanying drawings and the description below. Other features will be apparent from the description and drawings, and from the claims.

[0023] In other general aspects, a toy figure set is configured to connect to building elements of a construction set. A plurality of building elements of the construction set include one or more of coupling studs and coupling recesses, the center of any of the coupling studs being separated from the center of a nearest coupling stud by a center-to-center spacing and the center of any of the coupling recesses being separated from the center of a nearest coupling recess by the center-to-center spacing. The toy figure set includes a plurality of interconnectible building elements configured to repeatably connect to and disconnect from each other to form a toy figure and to repeatably connect to the building elements of the construction set, at least some of the interconnectible building elements of the plurality including one or more of coupling studs and coupling recesses. The toy figure set also includes a foundational building assembly that includes a set of foundation building elements including at least two core toy figure

building elements and a connection building element that is configured to connect to two or more of the at least two core toy figure building elements. Each of the core toy figure building elements has at least a first set of coupling elements separated from each other by a distance that is an integer multiple of the center-to-center spacing. The toy figure set is buildable from the foundational building assembly and a set of interconnectible building elements into a first design mode and a second design mode. The set of interconnectible building elements includes at least some of the plurality of interconnectible building elements. The toy figure set is transformable between the first design mode and the second design mode without disassembling the toy figure set.

[0024] Implementations can include one or more of the following features. For example, each of the core toy figure building elements can include at least one coupling element configured to allow a connected building element to articulate in more than one plane.

[0025] The core toy figure building elements can include a pelvis building element and a torso building element, and the connection building element can include a three-sided building element that includes at least one side that fits between the torso building element and the pelvis building element when the torso building element, the pelvis building element, and the three-sided building element are connected. The first set of coupling elements of the torso building element can include two side recesses, the center of each side recess being separated by the center-to-center spacing, and the first set of coupling elements of the pelvis building element can include two balls, the centers of the balls being separated from each other by the center-to-center spacing. The toy figure set can also include at least two leg building elements, each of the leg building elements having a socket that connects to one of the balls of the pelvis building element via a snap fit.

[0026] The pelvis building element can include a coupling stud that extends from a surface, the stud having a cavity and an outer wall. And the torso building element can include a center recess between the two side recesses, the center recess configured to releasably connect with the stud of the pelvis building element. When the pelvis building element and the torso building element are connected, the stud is frictionally engaged at the cavity and at the outer wall.

[0027] The pelvis building element and the torso building element can remain interconnected during the transformation between the first design mode and the second design mode.

[0028] The three-sided building element can remain connected to both of the at least torso building element and the pelvis building element during the transformation between the first design mode and the second design mode.

[0029] When the foundational building assembly is assembled, at least one coupling element on each of the foundation building elements can be separated from at least one coupling element on each of the other foundation building elements by an integer multiple of the center-to-center spacing.

[0030] The at least two core toy figure building elements and the connection building element can connect together via one or more non-snap frictional engagements.

DESCRIPTION OF DRAWINGS

[0031] FIG. 1A is a block diagram of an exemplary transformation construction system having a toy figure set and a construction explanation;

[0032] FIG. 1B is a perspective view of a set of transform building elements of the toy figure set of FIG. 1A;

[0033] FIG. 1C is a block diagram of an exemplary first design mode formed from the toy figure set of the transformation construction system;

[0034] FIG. 1D is a block diagram of an exemplary second design mode formed from the toy figure set of the transformation construction system;

[0035] FIG. 2 is a perspective view of an exemplary building element that can be used in the transformation construction system or a construction set;

[0036] FIG. 3 is a perspective view showing the interconnection between two building elements of the transformation construction system and the construction set;

[0037] FIG. 4A is a perspective view of an exemplary torso building element and an exemplary pelvis building element of the toy figure set of the transformation construction system in a disconnected state;

[0038] FIG. 4B is a bottom perspective view of the exemplary torso building element;

[0039] FIG. 4C is a perspective view of the exemplary torso building element and the exemplary pelvis building element of FIG. 4A in a connected state;

[0040] FIG. 4D is a side cross sectional view of the exemplary torso building element and the exemplary pelvis building element of FIG. 4A in a connected state;

[0041] FIG. 5 is a block diagram of an exemplary transformation construction system showing an exemplary toy figure set;

[0042] FIG. 6 is a perspective view of exemplary first design mode formed from the toy figure set of the transformation construction system and an exemplary second design mode formed from the toy figure set of the transformation construction system of FIG. 5;

[0043] FIGS. 7-10 show an exemplary construction explanation for forming the first design mode of FIG. 6;

[0044] FIGS. 11 and 12 show an exemplary construction explanation including transform instructions for transforming from the first design mode to the second design mode of FIG. 6;

[0045] FIGS. 13 and 14 show an exemplary construction explanation including transform instructions for transforming from the second design mode to the first design mode of FIG. 6;

[0046] FIG. 15 is a flow chart of a procedure for transformation of the transformation construction system;

[0047] FIG. 16 is a block diagram of another exemplary transformation construction system having a toy figure set and a construction explanation;

[0048] FIGS. 17A-17C show perspective views of exemplary first, second, and third design modes, respectively, that can be built from the toy figure set of FIG. 16 or that can be formed by transforming from one of the other design modes;

[0049] FIG. 18 is a perspective view of the building elements of the toy figure set of FIG. 16;

[0050] FIGS. 19 and 20 show a construction explanation that includes instructions for transforming between the first design mode (FIG. 17A) and the second design mode (FIG. 17B);

[0051] FIGS. 21 and 22 show a construction explanation that includes instructions for transforming between the second design mode (FIG. 17B) and the third design mode (FIG. 17C);

[0052] FIGS. 23 and 24 show a construction explanation that includes instructions for transforming between the third design mode (FIG. 17C) and the first design mode (FIG. 17A);

[0053] FIG. 25 is a block diagram of another exemplary transformation construction system having a toy figure set and a construction explanation, the toy figure set including a foundational building assembly;

[0054] FIGS. 26A and 26B are perspective views of an exemplary connection building element that is a part of the foundational building assembly of FIG. 25;

[0055] FIGS. 27A and 27B are perspective view of an exemplary foundational building assembly of FIG. 25;

[0056] FIG. 28A is a back plan view of the exemplary foundational building assembly of FIGS. 27A and 27B;

[0057] FIG. 28B is a side plan view of the exemplary foundational building assembly of FIGS. 27A and 27B; and

[0058] FIG. 28C is a lower plan view of the exemplary foundational building assembly of FIGS. 27A and 27B in which the connection building element is hidden from view; and

[0059] FIGS. 29 and 30 are perspective views showing a transformation from a first design mode to a second design mode of the toy figure set of FIG. 25.

DESCRIPTION

[0060] Referring to FIG. 1A, a transformation construction system 100 includes a toy figure set 110 that has a plurality of interconnectible building elements that are configured to connect with building elements of a construction set 150, and a construction explanation 180. The toy figure set 110 can be used to build one of a set of two or more distinct design modes from the plurality of interconnectible building elements. Once a design mode is built, it can be transformed into one of the other design modes without having to disconnect the building elements from each other.

[0061] The toy figure set 110 includes a torso building element 115 and a pelvis building element 120 that interconnect with each other by way of an interference fit between respective interconnecting coupling elements 116, 121 of the torso building element 115 and the pelvis building element 120. For example, a stud 121 on the pelvis building element 120 can fit into a recess 116 of the torso building element 115. An interference fit is a friction fit or frictional engagement in which the mechanical coupling or fastening between the coupling elements is achieved by friction after the coupling elements are pushed together, mated, seated, or otherwise mutually engaged. The interference fit can involve a purposeful interference or deformation of one or more of the coupling elements during the act of coupling, fastening, pushing together, or otherwise being mutually engaged. Thus, the interference fit can be achieved by shaping the two coupling elements so that one or the other, or both, slightly deviate in size or form from their nominal dimension or size and one or more of the coupling elements slightly interferes with the space that the other would normally take up (without being coupled).

[0062] In one example, the degree or strength of an interference fit is sometimes referred to as “clutch.” The amount of clutch provides an indication of the forces used to combine and/or separate the coupling elements to or from each other. The degree or amount of contact between the coupling elements when coupled directly can correlate to the amount of clutch provided. In addition, the number of points of contact

between the coupling elements can determine the amount of clutch. For example, there may be three, four, five, or more points of contact between a male stud and a female recess, where more points of contact provide more clutch. With regard to female coupling elements, the point of contact can be referred to as a “point of clutch” or a “frictional engagement point.”

[0063] Additionally, the toy figure set 110 includes other building elements that are able to connect with the building elements of the construction set 150. For example, the toy figure set 110 can include basic building elements that have a basic geometric design such as a 1×4 plate 126 that has a 1×4 array of coupling studs on one surface and a 1×4 array of coupling recesses on a second surface (not shown).

[0064] The toy figure set 110 can include more complex building elements that have other design features that impart the design to the toy figure set 110 once it is assembled. These other complex building elements can also have other types of coupling elements. For example, a 1×2 plate with side c-clip 128 includes not only a 1×2 array of coupling studs on one surface and a 1×2 array of coupling recesses on a second surface (not shown) but also a side c-clip 130 that connects in a different manner (and perhaps a different standard size) to other building elements of the toy figure set 110 or the construction set 150. As another example, a 1×2 plate with side socket 132 includes not only a 1×2 array of coupling studs on one surface and a 1×2 array of coupling recesses on a second surface (not shown) but also a side socket 134 that connects in a different manner to other building elements of the toy figure set 110 or the construction set 150. For example, the side socket 134 of the 1×2 plate with side socket 132 can connect to a ball 122 on the pelvis building element 120 or to a ball 117 on the torso building element 115.

[0065] As another example, an accessory building element 136 may lack coupling studs or coupling recesses that are found on the basic building elements but it includes one or more posts 138 that can fit into recesses on other building elements such as a recess 140 of a head building element 142 or the c-clip 130 of the 1×2 plate with side c-clip 128.

[0066] The toy figure set 110 can also include a pair of transform building elements 170, 175 that are used to facilitate the transformation between the design modes. Referring also to FIG. 1B, each of the transform building elements 170, 175 in the pair includes one or more non-transform coupling elements (such as elements 171 and 172 on building element 170 and elements 176 and 177 on building element 175) that are configured to repeatably connect to one or more coupling elements of other building elements in the toy figure set 110. Coupling elements 172, 177 are recesses on the respective undersides of transform building elements 170, 175 that mate with the elements 171, 176, which can be studs. These non-transform coupling elements can also connect to the coupling elements of building elements of the construction set 150. These non-transform coupling elements remain in their connection state during an entire transformation. Thus, if these non-transform coupling elements are connected to other coupling elements of the toy figure set 110 then they remain connected even during the transformation between design modes.

[0067] Each of the transform building elements 170, 175 in the pair includes one or more transform coupling elements 173, 178, respectively. These transform coupling elements 173, 178 are configured to connect with each other in a standard interference fit, which can be a snap fit such as the

c-clip to bar connection that forms between transform coupling elements **173, 178**. These transform coupling elements **173, 178** are connected to each other or disconnected from each other at some point during a transformation between two design modes. Thus, if these transform coupling elements **173, 178** are connected to each other in a first design mode, then they will be disconnected at some point during the transformation from the first design mode to the second design mode. Because these transform coupling elements **173, 178** act to lock at least one of the design modes in place so that it becomes a stable construction set, such connection between the transform coupling elements **173, 178** can be referred to as locking and disconnection can be referred to as unlocking.

[0068] The construction explanation **180** identifies a first design mode **182** that includes the building elements of the toy figure set **110** and a second design mode **186** that includes the building elements of the toy figure set **110**. The second design mode **186** is distinct from or different in impression and overall geometric arrangement from the first design mode **182**. In this way, a user can assemble the building elements of the toy figure set **110** in a first manner to form the first design mode **182**, or can assemble the building elements of the toy figure set **110** in a second manner to form the second design mode **186**. Thus, in this manner, each design mode **182, 186** can be formed by starting with a set of disconnected building elements of the toy figure set **110** and then connecting them together using frictional fits such as interference fits or snap engagements.

[0069] The construction explanation **180** also identifies transform instructions **190** that show a transformation between the first design mode **182** and the second design mode **186** without disassembling the toy figure set **110**. Specifically, the first design mode **182** is made by connecting various coupling elements of the various building elements of the set **110** in a certain manner, and during the transformation to the second design mode **186** these connections are maintained while the building elements are articulated (for example, rotated, translated, aligned, or generally moved) relative to each other. Moreover, connections between the non-transform coupling elements (such as elements **171** and **172** on building element **170** and elements **176** and **177** on building element **175**) of the transform building element pairs are maintained during the transformation. On the other hand, if the transform coupling elements (such as the elements transform coupling elements **173, 178**) are un-locked (disconnected from each other) while in the first design mode, then these are locked (connected) at some point during the transformation to the second design mode.

[0070] Thus, in this manner, the first design mode **182** can be formed by starting with the assembled building elements of the toy figure set **110** in the second design mode **186**, and then moving the assembled building elements by translation or rotation without disassembling or disconnecting the building elements from each other during the translation or rotation to transform into the first design mode **182**. Similarly, the second design mode **186** can be formed by starting with the assembled building elements of the toy figure set **110** in the first design mode **182**, and then moving the assembled building elements by translation or rotation without disassembling or disconnecting the building elements from each other during the translation or rotation to transform into the second design mode **186**.

[0071] Referring to FIGS. **1C** and **1D**, the first design mode **182** can be in the shape of a toy figure and the second design

mode **186** can be in the shape of a vehicle. Neither of the design modes **182, 186** is a cuboid shape like a cube or a 2×3 brick. The design modes **182, 186** are therefore shapes that are more complex than basic geometric shapes such as cuboids.

[0072] Any two or more building elements within the toy figure set **110** can be interconnected with each other; any two or more building elements within the construction set **150** can be interconnected with each other; and building elements from the toy figure set **110** can be interconnected with building elements of the construction set **150**. For example, the 1×4 plate **126** of the toy figure set **110** can be interconnected with a 2×3 brick **155** of the construction set **150**. As another example, the torso building element **115** of the toy figure set **110** can be interconnected with a 1×4 brick **160** of the construction set **150**.

[0073] Referring to FIGS. **2** and **3**, the toy figure set **110** and the construction set **150** include building elements that are configured to be repeatedly and releasably connected to each other, and this repeatable and releasable interconnection is described next. Exemplary 2×3 brick building elements **200, 220** are shown to discuss how the building elements interconnect with each other. The building elements **200, 220** therefore can have other design geometries than that shown.

[0074] The building elements **200, 220** connect together with a frictional engagement between male coupling elements such as studs **222** on the building element **220** and female coupling elements such as recesses **202** on the building element **200**. The frictional engagement is such that the building elements **200, 220** can be connected, disconnected, and reconnected repeatedly and without harming or destroying the building elements **200, 220**. In this example, the building elements **200, 220** are brought together along a z direction. Once connected, the building elements **200, 220** can be held together with an interference fit.

[0075] As shown in FIG. **2**, the coupling elements, for example, the male stud of a standard building element of the toy construction system, can be arranged in a uniform two-dimensional array structure (that is in an x-y plane) on the surface of a building element which allows for easy coupling (and de-coupling) with the similarly arranged female recesses of another building element along the z direction. The female coupling elements are also arranged in such an array to align with the male coupling elements. Typically, the building elements are referred to by the array formed on the surface of the building element. Thus, a 3×4 building element has 12 coupling elements, for example, studs, arranged in four columns by three rows and a 2×3 building element has six coupling elements, for example, recesses, arranged in three columns by two rows. The distances between centers of the coupling elements taken along a direction that is parallel with either the x or the y direction in the x-y plane are a standard unit, which is an integer multiple of a base unit, BU. In the implementations described, the base unit or BU of such a toy construction system is 8 mm. In other words, the center of any of the coupling elements (for example, studs or recesses) are separated from the center of a nearest coupling element (for example, a stud or a recess) by a center-to-center spacing that is a BU if the coupling elements are adjacent to each other on the array.

[0076] For building elements that include other types of coupling elements (such as balls, posts, c-clips, or sockets), the centers of those coupling elements can align with the coupling elements (the studs and recesses) of the grid asso-

ciated with the other building elements of the construction set. Thus, for example, the distances between centers of the coupling elements in the grid taken along a direction that is parallel with either the x or the y axis in the x-y plane are a standard unit, which is an integer multiple of the base unit, BU. The coupling elements (such as the studs, balls, c-clips, or sockets) are in system if their centers are separated from each other by an integer multiple of the base unit BU.

[0077] The distances are within a standard tolerance. Thus, the distances are considered to be in system if they are within the tolerance needed to obtain the needed interference fit.

[0078] For example, any of the building elements discussed above can include one or more coupling elements. Coupling elements of standard building elements can include male coupling elements, for example, in the form of a coupling stud, and female coupling elements, for example, in the form of a coupling recess that is sized to receive the coupling stud. The male and female coupling elements can have a first coupling size. For example, the first coupling size of a standard coupling stud (that is on a surface of a building element, such as a plate or brick) is defined by an outside diameter OD (FIG. 2) of 4.88 mm and a height H (FIG. 2) of 1.80 mm, and the coupling recesses are sized to have an interference fit with the coupling studs of the same size. There can be different types and configurations of female recesses that mate with the first coupling size. For example, in some configurations, the recesses may be circular, partially circular with flats on multiple sides, square, or pronged to name a few. The recesses may have varying depths; however, a minimum depth may be provided to ensure proper coupling with the male stud via an interference fit. Additional configurations for recesses that provide different alignment possibilities between building elements are described below in greater detail.

[0079] A building element is “in system” with other building elements when the building element is built into the grid or an assembly that is formed from at least some of the other building elements of the toy construction set. For example, making the height and/or width of the building element the same as at least some of the other building elements in the toy construction set allows the building element to be interchanged with other building elements of the set, thus allowing the building element to be connected or placed “in system.”

[0080] One of the challenges in making a transformation construction system that is based on a construction system that includes a torso building element 115 and a pelvis building element 120 is that the transformation between the first design mode 182 and the second design mode 186 needs to occur without having to disassemble or disconnect any of the parts or building elements of the toy figure set 110 in order to obtain the desired design mode 182, 186. Additionally, one or more of the design modes can include additional locking features (such as coupling elements) that can be used to maintain the design mode.

[0081] Referring to FIGS. 4A-D, the torso building element 115 and the pelvis building element 120 are designed in an exemplary manner that maintains their frictional engagement during the transformation as a core 470 of both of the design modes, and also maintains their connection to other building elements of the toy figure set 110 during the transformation. The transformation between the first design mode 182 and the second design mode 186 occurs while always maintaining the interference connection between the pelvis building element 120 and the torso building element 115 (and thus maintaining the core 470).

[0082] The pelvis building element 120 includes the stud 121, which protrudes from a surface 123. The stud 121 includes an outer wall 124 that defines an inside cavity 125. The two balls 122 of the pelvis building element 120 can be spaced from each other such that their centers are separated by a distance that is an integer multiple of the base unit. In this way, the pelvis building element 120 is capable of an in system connection.

[0083] The torso building element 115 includes the recess 116 formed within an outer wall 117 and a protrusion 118 that extends into the recess 116. The torso building element 115 can also include ribs 119 that extend along the interior of the wall 117 and jut into the recess 116. The torso building element 115 also includes two recesses 116A, 116B on either side of the protrusion 118. The centers of the recesses 116A, 116B are spaced apart from each other by a distance that is an integer multiple of the base unit. In this way, the torso building element 115 can be connected to a building element of the toy figure set 110 or the construction set 150 in system (by aligning the recesses 116A, 116B with coupling studs on a building element of the toy figure set 110 or the construction set 150). Additionally, the balls 117 on the torso building element 115 can have centers that are positioned a distance Dt from a tangent of the shoulder (adjacent to the stud at the top of the torso building element 115), such distance being an integer multiple of the base unit. In this manner, the torso building element 115 can be connected in system with other building elements of the toy figure set 110 or the construction set 150.

[0084] To connect the torso building element 115 and the pelvis building element 120, the protrusion 118 is inserted into the cavity 125, and the outer wall 124 of the stud 121 is physically connected to at least a portion of the wall 117. The insertion and physical connection creates a frictional engagement between the inner wall of the cavity 125 and the protrusion 118 and between at least a portion of the outer wall 124 of the stud 121 and a portion of the wall 117 of the torso building element 115. Thus, the torso building element 115 and the pelvis building element 120 are held together and connected at a plurality of frictional engagement points. Portions of the outer wall 124 can have a frictional engagement with the wall 117 by having a frictional engagement with one or more of the ribs 119. Additionally, the ribs 119 can be used to connect and hold the torso building element 115 to a separate building element. The plurality of frictional engagement points between the torso building element 115 and the pelvis building element 120 can occur without a snap fit engagement. A snap fit connection engagement includes both a purposeful deformation along a first direction but also a subsequent relaxing back along a second direction that is different from (for example, anti-parallel with) the first direction. Thus, torso building element 115 and the pelvis building element 120 can be connected using only a deformation along only a first direction (without a subsequent relaxing back along a second direction).

[0085] Having a plurality of distinct frictional engagement points when the torso building element 115 and the pelvis building element 120 are connected can result in the connected toy figure set 110 being held more securely, and the torso building element 115 and the pelvis building element 120 being clutched more strongly, as compared to an implementation in which a single frictional engagement is formed between two surfaces.

[0086] The torso building element 115 and the pelvis building element 120 can be rotated relative to each other while connected. The rotation can occur about a connection axis 400, which is parallel to a longitudinal axis of the torso building element 115, and can be in a plane that is perpendicular to the connection axis 400. The rotation can be smooth, without the torso building element 115 and the pelvis building element 120 disconnecting from each other or moving apart from each other along the connection axis 400. The torso building element 115 and the pelvis building element 120 can remain connected to each other while being rotated because of the strong and secure connection provided by the plurality of frictional engagements. In this way, the subsequent transformation performed on the toy figure set 110 is also more secure.

[0087] The ribs 119 can help keep the torso building element 115 and the pelvis building element 120 connected when they are rotated relative to each other. The ribs 119 can also help the torso building element 115 and the pelvis building element 120 rotate smoothly without separating or moving away from each other along the connection axis 400. In the example shown, there are four ribs 119 spaced about the protrusion 118. The ribs 119 provide additional clutching surfaces (surfaces for frictional engagement) for a connection on a building element that connects to the torso building element 115. Furthermore, the ribs 119 can aid in aligning the outer wall 124 or the outer portion of any other type of connection on a separate building element that connects to the torso building element 115 at the protrusion 118. In the example shown, the four ribs 119 provide four additional points of contact and four lines of alignment. Other implementations can include more or fewer ribs.

[0088] Referring to FIG. 5, an exemplary toy figure set 510 is shown for a transformation construction system 500. As shown, the toy figure set 510 includes a torso building element 515 and a pelvis building element 520 plus other building elements of various geometric designs, and coupling elements. Shown in this toy figure set 510 are coupling elements such as interconnectible studs and recesses, balls and sockets, and c-clips and posts. The toy figure set 510 also includes at least one pair of transform building elements 570, 575. The transform building element 570 includes a transform coupling element 573 in the form of a bar, and the transform building element 575 includes a transform coupling element 578 in the form of a c-clip. The c-clip 578 is sized to snap fit over the bar 573 so as to lock the transform building elements 570, 575 together.

[0089] Referring to FIG. 6, the building elements of the toy figure set 510 can be connected to form a first design mode 582 or a second design mode 586. The first design mode 582 appears as a toy figure such as a robot design. The second design mode 586 appears as a vehicle such as a truck. The construction explanation 580 identifies the first design mode 582 and the second design mode 586.

[0090] Referring to FIGS. 7-10, the construction explanation 580 can identify the first design mode 582 and also identify how to assemble the first design mode 582 using the disconnected building elements of the toy figure set 510. In this example, the construction explanation 580 identifies 38 steps a user takes to form or assemble the first design mode 582 using the building elements of the toy figure set 510. Steps 1-17 are shown in FIG. 7; steps 18-26 are shown in FIG. 8; steps 27-35 are shown in FIG. 9; steps 36-38 and the first design mode 582 are shown in FIG. 10.

[0091] Specific reference is made to FIG. 8, which shows the assembly of the core 470 of the toy figure set 510 as the connection between the torso building element 515 and the pelvis building element 520 in step 22. The core 470 is integrated with all of the other building elements of the toy figure set 510, as shown in steps 37 and 38 to form the first design mode 582.

[0092] Also, the construction explanation 580 identifies a set of instructions 590 that show a transformation between the first design mode 582 and the second design mode 586. Referring to FIGS. 11 and 12, in some implementations, the construction explanation 580 identifies a set of instructions 590A that show a transformation from the first design mode 582 to the second design mode 586. This transformation shows that the transform coupling elements of the transform building elements 570, 575 are locked together (FIG. 12) so as to maintain the second design model 586.

[0093] Referring to FIGS. 13 and 14, in some implementations, the construction explanation 580 identifies a set of instructions 590B that show a transformation from the second design mode 586 to the first design mode 582. This transformation shows that the transform coupling elements of the transform building elements 570, 575 are unlocked from each other (FIG. 13). Notably, although the transform coupling elements of the transform building elements 570, 575 are unlocked, the connection between the non-transform coupling elements of the transform building elements 570, 575 and the coupling elements of the other building elements in the toy figure set 510 is maintained.

[0094] One or both of the instructions 590A, B can be provided in the construction explanation 580.

[0095] During the transformation steps shown in FIGS. 11-12 and 13-14, the core 470 remains attached. Moreover, the other building elements also remain attached or interconnected to each other.

[0096] Referring to FIG. 15, a procedure 1500 is shown that describes a method of transformation. The procedure 1500 includes identifying (1505) a toy figure set 110 comprising a plurality of interconnectible building elements that are configured to connect to building elements of a construction set. The identification (1505) includes the identification of a torso building element 115 and a pelvis building element 120 that interconnect with each other with an interference fit between a stud of the pelvis building element and a recess of the torso building element that enable the pelvis building element and the torso building element to rotate relative to each other. The procedure 1500 includes identifying a first design mode 182 that includes the toy figure set 110 (1510). The procedure 1500 includes identifying a second design mode 186 that includes the toy figure set 110 (1515). The second design mode 186 is distinct from the first design mode 182. The procedure 1500 includes identifying a construction of at least one of the first and second design modes (1520). The construction identification (1520) describes how to connect the interconnectible building elements of the toy figure set 110 into the at least one of the first and second design modes 182, 186. The procedure 1500 includes providing an explanation of a transformation between the first design mode and the second design mode (1525). The transformation that is explained (1525) occurs without disassembling the plurality of interconnectible building elements of the toy figure set 110.

[0097] Referring to FIG. 16, in some implementations, a transformation construction system 1600 includes a toy fig-

ure set **1610** that has a plurality of interconnectible building elements that are configured to connect with building elements of a construction set **150**, and a construction explanation **1680**. The toy figure set **1610** can be built from the plurality of interconnectible building elements into one of three distinct design modes **1682**, **1684**, **1686**. Additionally, the toy figure set **1610** can be transformed between any of the design modes (for example, from design mode **1682** to design mode **1684**, from design mode **1684** to design mode **1686**, or from design mode **1686** to design mode **1682**). The transformation between the design modes can happen without having to disconnect the building elements from each other.

[0098] Referring to FIGS. 17A-17C, exemplary design modes **1782**, **1784**, **1786** are shown. For example, design mode **1782** is in the shape of a humanoid or robot; design mode **1784** is in the shape of a vehicle such as a tank; and design mode **1786** is in the shape of a flying vehicle such as a jet. FIG. 18 shows all of the building elements of the toy figure set **1810** that is used to form each of the design modes **1782**, **1784**, **1786**. FIGS. 19 and 20 show the transformation from the design mode **1782** to the design mode **1784**. Specifically shown are the transform building elements **1970**, **1972** that are locked **1900** together and the transform building elements **1974**, **1976** that are also locked **1905** together during the transformation from the design mode **1782** to the design mode **1784**. FIGS. 21 and 22 show the transformation from the design mode **1784** to the design mode **1786**. Specifically shown in this transformation is the step of unlocking **1901** the transform building elements **1974**, **1976** from each other (FIG. 21). Additionally, as shown in FIG. 22, transform building elements **1990**, **1992** are locked **1902** together during this transformation. FIGS. 23 and 24 show the transformation from the design mode **1786** back to the design mode **1782**. As shown in FIG. 23, the transform building elements **1990**, **1992** are unlocked **2400** from each other, and as shown in FIG. 24, the transform building elements **1970**, **1972** are unlocked **2401** from each other.

[0099] Referring to FIG. 25, an exemplary transformation construction system **2500** is shown having a toy figure set **2510** that includes a plurality of interconnectible building elements, examples of which are shown, and a foundational building assembly **2562** that is made up of a set of foundation building elements. The foundation building elements are able to connect with the other building elements of the toy figure set **2510** or with the building elements of a construction set **2550**. The foundation building elements of the foundational building assembly **2562** include at least two core toy figure building elements **2515** and **2520**, and a connection building element **2564** that can be connected to both of the core toy figure building elements **2515**, **2520**, as discussed next. Each of the core toy figure building elements **2515**, **2520** includes at least a first set of coupling elements separated from each other by a distance that is an integer multiple of the center-to-center spacing (or base unit). In this example, the core toy figure building element **2515** is a torso building element **2515** and the core toy figure building element **2520** is a pelvis building element **2520**.

[0100] Referring to FIGS. 26A and 26B, the connection building element **2564** includes three sides, one side including a set of coupling studs **2600** arranged in an array such that studs **2600** are separated from each other by an integer multiple of the base unit. The thickness of each side, and the locations of the studs **2600** are such that the studs **2600** are in system with coupling elements on the core toy figure building

elements **2515**, **2520** when they are connected to form the foundational building assembly **2562**.

[0101] The connection building element **2564** includes coupling elements **2604**, **2606** that enable the connection building element **2564** to repeatedly connect to and disconnect from the core toy figure building elements **2515**, **2520**. The coupling elements **2604**, **2606** are openings through which a coupling element of a core building element can pass. The coupling element **2604** is defined by a side that includes two arms **2608**, **2610** that extend from the side and form the coupling element **2604**. The coupling element **2604** can hold the coupling element of a core toy figure building element with a frictional engagement. The coupling element **2604** can receive a coupling element of another building element along the axis of the opening between the arms **2608**, **2610**. Thus, for example, the torso building element **2515** can connect to the connection building element **2564** by connecting to the coupling element **2604** to a stud **2612** of the torso building element **2515**. In this way, the arms **2608**, **2610** deform when the stud **2612** is inserted into them, and the arms **2608**, **2610** snap back in place after the stud **2612** is in the opening formed by the arms **2608**, **2610**.

[0102] The coupling element **2606** is defined within another side of the connection building element **2564**. In this example, the coupling element **2606** holds a coupling element (such as the stud **2614**) of the pelvis building element **2520** in frictional engagement. When the stud **2614** is inserted into the coupling element **2606**, a frictional engagement is created.

[0103] Referring also to FIGS. 27A-27D, the foundational building assembly **2562** is shown. The foundational building assembly **2562** is an assembly that is in system when assembled and is used as a foundation for the various design modes that can be formed from the transformation construction system **2500**. Because the foundational building assembly **2562** is connected in a very secure and frictionally engaging manner, it is possible to build large design modes from the assembly **2562** by layering building elements onto the foundational building assembly **2562**.

[0104] The foundational building assembly **2562** is formed by connecting the connection building element **2564** to the torso building element **2515** and the pelvis building element **2520**. Initially, the connection building element **2564** slides onto the body of the torso building element **2515** such that the side of the connection building element **2564** that holds the studs **2600** is parallel to a back of the torso building element **2515**. As the connection building element **2564** slides onto the body of the torso building element **2515**, the lower side (that defines the coupling element **2606**) slides across the lower side of the torso building element **2515**. Additionally, the arms **2608**, **2610** that define the coupling element **2604** snap fit onto the stud **2612** (as discussed above, the arms **2608**, **2610** first deform when the stud **2612** is inserted into them, and the arms **2608**, **2610** snap back in place after the stud **2612** is in the opening formed by the arms **2608**, **2610**).

[0105] Attaching the connection building element **2564** to the torso building element **2515** in this manner results in the coupling element **2606** aligning with the recess **116** (FIG. 4B) of the torso building element **2515** and the coupling element **2604** receiving the stud **2612** of the torso building element **2515**. The alignment of the coupling element **2606** of the connection building element **2564** and the recess **116** of the torso building element **2515** provides a space into which the stud **2614** of the pelvis building element **2520** can be inserted

to connect the pelvis building element **2520** to the torso building element **2515** and the connection building element **2564**.

[0106] After the connection building element **2564** and the torso building element **2515** are connected, the stud **2614** of the pelvis building element **2520** is connected to the recess **116** (FIG. **4B**) of the torso building element **2515** and the coupling element **2606** of the connection building element **2564** to form the foundational building assembly **2562**, perspective views of which are shown in FIGS. **27A** and **27B**. The building element components of the foundational building assembly **2562** (the torso building element **2515**, the pelvis building element **2520**, and the connection building element **2564**) are “in system” with each other once connected and can be used to construct a variety of different toy assemblies.

[0107] FIGS. **28A-28C** show the “in system” nature of the foundational building assembly **2562**. In FIG. **28C**, the connection building element **2564** is hidden so that alignment of the coupling elements is easily visualized. In particular, in the z direction, the center of the ball **2800** on the torso building element **2515** and the center of the ball **2805** on the pelvis building element **2520** are spaced by an integer multiple (**2** in this example) of the center-to-center spacing (or the base unit) of the studs **2600**. Additionally, the centers of two of the studs **2600** coincide with the centers of the balls **2800** in the y direction. The studs **2600** and the two balls **2805** on the pelvis building element **2520** form a 2x3 grid or array that is in system. Further, the longitudinal center line of the stud **2612** of the torso building element **2515** is positioned between two of the studs **2600**. The balls **2805** on the pelvis building element **2520** align with the respective recesses **116A**, **116B** in the torso building element **2515** along the x direction.

[0108] Referring again to FIG. **25**, the foundational building assembly **2562** is the foundation of the two or more design modes **2582**, **2586** that can be formed by connecting the other building elements of the toy figure set **2510** either directly or indirectly to the foundation building elements of the foundational building assembly **2562**. Additionally, once the design mode (such as design mode **2582**) is constructed, the user can then transform the set into the other design mode (such as design mode **2586**) without having to disassemble the toy figure set **2510**. Moreover, because the foundational building assembly **2562** is constructed with more clutch holding the foundation building elements together than previous building elements the steps during the transformation between design modes is more stable and the building elements are less likely to disconnect during transformation.

[0109] An exemplary transformation from the design mode **2582** to the design mode **2586** is shown in FIGS. **29** and **30**. As shown, the toy figure set **2510** includes at least two transform building elements **3000**, **3005** that are locked together during the transformation from the design mode **2582** to the design mode **2586**. These same transform building elements **3000**, **3005** are unlocked from each other during the transformation from the design mode **2586** to the design mode **2582**.

[0110] Other implementations are within the scope of the following claims.

What is claimed is:

1. A transformation construction system comprising:
 - a toy figure set comprising a plurality of interconnectible building elements that are configured to connect to building elements of a construction set, the toy figure set including a torso building element and a pelvis building

element that interconnect with each other with an interference fit between a stud of the pelvis building element and a recess of the torso building element that enable the pelvis building element and the torso building element to rotate relative to each other;

a construction explanation identifying:

- a first design mode that includes the toy figure set,
- a second design mode that includes the toy figure set and is distinct from the first design mode, and
- a set of instructions that show a transformation between the first design mode and the second design mode without disassembling the toy figure set and the plurality of building elements.

2. The transformation construction system of claim **1**, wherein the construction explanation identifies all of the plurality of interconnectible building elements of the toy figure set connected in the first design mode.

3. The transformation construction system of claim **1**, wherein the first design mode is a toy figure and the second design mode is a vehicle design.

4. The transformation construction system of claim **1**, wherein neither of the design modes is a box shaped design.

5. The transformation construction system of claim **1**, wherein, during the transformation between the first design mode and the second design mode, the interconnection between the torso building element and the pelvis building element is maintained.

6. The transformation construction system of claim **1**, wherein the set of instructions that shows the transformation between the first design mode and the second design mode comprises instructions that show the transformation from the first design mode to the second design mode.

7. The transformation construction system of claim **1**, wherein the set of instructions that shows the transformation between the first design mode and the second design mode comprises instructions that show both the transformation from the second design mode to the first design mode and the transformation from the first design mode to the second design mode.

8. The transformation construction system of claim **1**, wherein the first design mode and the second design mode both include the torso building element and the pelvis building element interconnected to each other.

9. The transformation construction system of claim **1**, wherein the torso building element includes at least three separate and distinctly located coupling elements that interconnect with coupling elements of the building elements of the construction set.

10. The transformation construction system of claim **1**, wherein the stud on the pelvis building element is configured to form an interference fit with one or more coupling elements of the building elements of the construction set.

11. The transformation construction system of claim **1**, wherein the recess of the torso building element is configured to form an interference fit with one or more coupling elements of the building elements of the construction set.

12. The transformation construction system of claim **1**, wherein:

- the construction explanation identifies a third design mode that includes the toy figure set and is distinct from the first and second design modes; and
- the set of instructions shows a transformation between one of the first and second design modes and the third design

mode without disassembling the toy figure set and the plurality of building elements.

13. A toy figure set configured to connect to building elements of a construction set, a plurality of building elements of the construction set including one or more of coupling studs and coupling recesses, the center of any of the coupling studs being separated from the center of a nearest coupling stud by a center-to-center spacing and the center of any of the coupling recesses being separated from the center of a nearest coupling recess by the center-to-center spacing, the toy figure set comprising:

- a plurality of interconnectible building elements configured to repeatably connect to and disconnect from each other to form a toy figure and to repeatably connect to the building elements of the construction set, at least some of the interconnectible building elements of the plurality including one or more of coupling studs and coupling recesses;

- a foundational building assembly that comprises a set of foundation building elements including:

- at least two core toy figure building elements, each of the core toy figure building elements comprising at least a first set of coupling elements separated from each other by a distance that is an integer multiple of the center-to-center spacing, and

- a connection building element that is configured to connect to two or more of the at least two core toy figure building elements, wherein

- the toy figure set is buildable from the foundational building assembly and a set of interconnectible building elements, the set of interconnectible building elements comprising at least some of the plurality of interconnectible building elements, into a first design mode and a second design mode; and

- the toy figure set is transformable between the first design mode and the second design mode without disassembling the toy figure set.

14. The toy figure set of claim **13**, wherein each of the core toy figure building elements comprises at least one coupling element configured to allow a connected building element to articulate in more than one plane.

15. The toy figure set of claim **13**, wherein the core toy figure building elements comprise a pelvis building element and a torso building element, and the connection building element comprises a three-sided building element that includes at least one side that fits between the torso building element and the pelvis building element when the torso building element, the pelvis building element, and the three-sided building element are connected.

16. The toy figure set of claim **15**, wherein the first set of coupling elements of the torso building element comprise two side recesses, the center of each side recess being separated by the center-to-center spacing, and the first set of coupling elements of the pelvis building element comprise two balls, the centers of the balls being separated from each other by the center-to-center spacing.

17. The toy figure set of claim **16**, further comprising at least two leg building elements, each of the leg building elements comprising a socket that connects to one of the balls of the pelvis building element via a snap fit.

18. The toy figure set of claim **15**, wherein the pelvis building element comprises a coupling stud that extends from a surface, the stud comprising a cavity and an outer wall; and the torso building element comprises a center recess between

the two side recesses, the center recess configured to releasably connect with the stud of the pelvis building element, wherein, when the pelvis building element and the torso building element are connected, the stud is frictionally engaged at the cavity and at the outer wall.

19. The toy figure set of claim **15**, wherein the pelvis building element and the torso building element remain interconnected during the transformation between the first design mode and the second design mode.

20. The toy figure set of claim **15**, wherein the three-sided building element remains connected to both of the at least torso building element and the pelvis building element during the transformation between the first design mode and the second design mode.

21. The toy figure set of claim **13**, wherein, when the foundational building assembly is assembled, at least one coupling element on each of the foundation building elements is separated from at least one coupling element on each of the other foundation building elements by an integer multiple of the center-to-center spacing.

22. The toy figure set of claim **13**, wherein the at least two core toy figure building elements and the connection building element connect together via one or more non-snap frictional engagements.

23. A method of transformation, the method comprising:

- identifying a toy figure set comprising a plurality of interconnectible building elements that are configured to connect to building elements of a construction set, the toy figure set including a torso building element and a pelvis building element that interconnect with each other with an interference fit between a stud of the pelvis building element and a recess of the torso building element that enable the pelvis building element and the torso building element to rotate relative to each other;
- identifying a first design mode that includes the toy figure set;

- identifying a second design mode that includes the toy figure set and is distinct from the first design mode;

- identifying a construction of at least one of the first and second design modes, the construction identification describing how to connect the interconnectible building elements of the toy figure set into the at least one of the first and second design modes; and

- providing an explanation of a transformation between the first design mode and the second design mode, the transformation occurring without disassembling the toy figure set and the plurality of building elements.

24. A transformation construction system comprising:

- a toy figure set comprising a plurality of interconnectible building elements that are configured to connect to building elements of a construction set, the interconnectible building elements comprising:

- a torso building element and a pelvis building element that interconnect with each other by way of an interference fit; and

- at least a pair of transform building elements, each transform building element in the pair including:

- a non-transform coupling element that is configured to repeatably connect to one or more coupling elements of other building elements of the toy figure set, and

- a transform coupling element that is configured to repeatably connect to the other transform coupling element of the pair; and

a construction explanation identifying:

- a first design mode that includes the toy figure set assembled from the plurality of interconnectible building elements,
- a second design mode that includes the toy figure set assembled from the plurality of interconnectible building elements, the second design mode being distinct from the first design mode, and

instructions that present a transformation between the first design mode and the second design mode without disconnecting the plurality of building elements of the toy figure set, wherein the transformation shows:

- one or more of: unlocking the transform coupling elements of the transform building elements of a pair from each other, and locking the transform coupling elements of the transform building elements of a pair to each other; and
- articulating one or more building elements of the toy figure set relative to other building elements of the toy figure set without disconnecting the coupling elements of the building elements of the toy figure set.

25. The transformation construction system of claim **24**, wherein the instructions that presents the transformation that shows one or more of unlocking the transform coupling elements of the transform building elements of a pair from each other show the connection between the non-transform coupling elements of the transform building elements being maintained with the coupling elements of the other building elements of the toy figure set.

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