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(54) ASSEMBLY TOY AND DECORATIVE CONNECTOR FOR AN ASSEMBLY TOY

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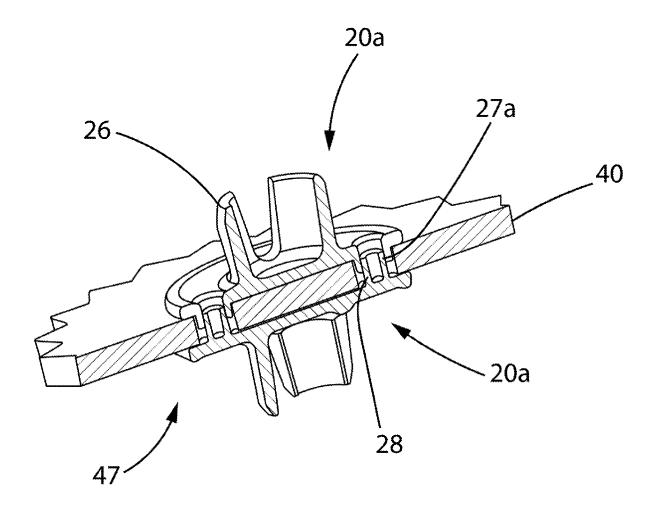
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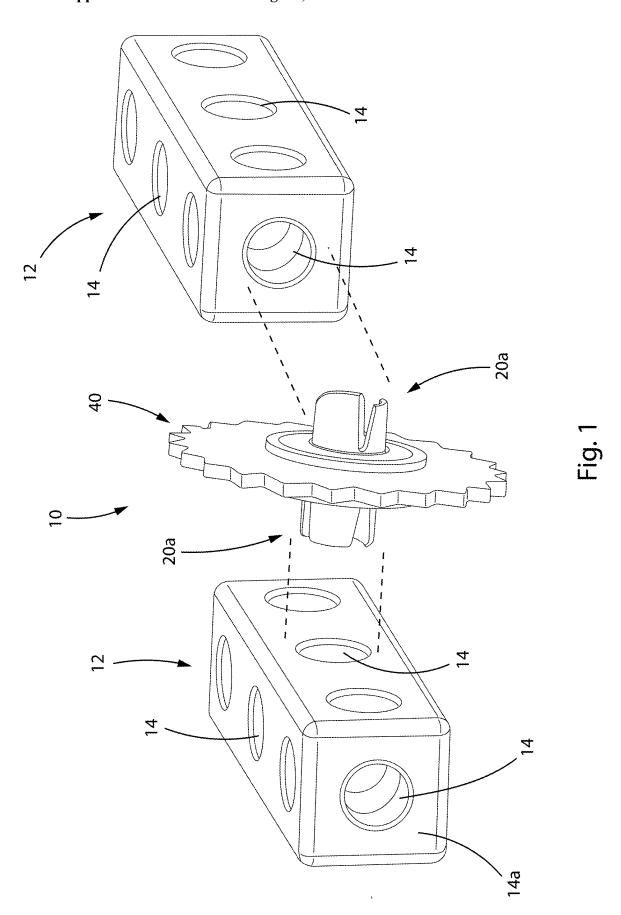
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(57)ABSTRACT

A coupling element for releasably connecting two building elements. The coupling element includes two couplers. The first coupler has a mid-flange having a first side and a second side. The first side of the mid-flange includes a coupling portion extending therefrom. The second side of the midflange includes at least one protrusion and at least one opening. The second coupler is similar to the first coupler except that it may have a different coupling portion. The protrusions and openings are shaped so that when the two couplers are pressed together, the openings and protrusions form an interference fit to form the coupling element. The coupling element may include a decorative element that is captured between the two couplers when the couplers are pressed together to form the coupling element.





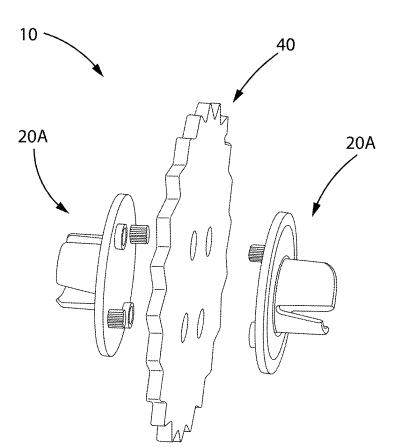


Fig. 2A



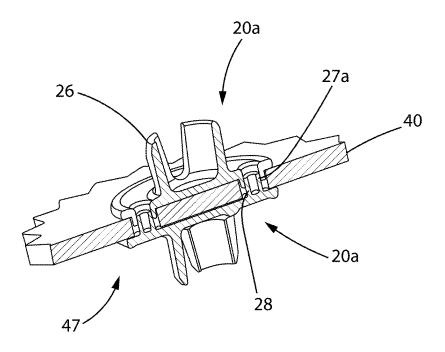


Fig. 2B

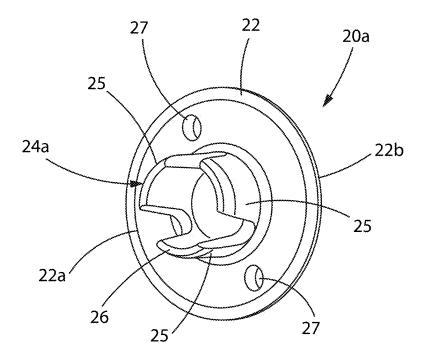


Fig. 3A

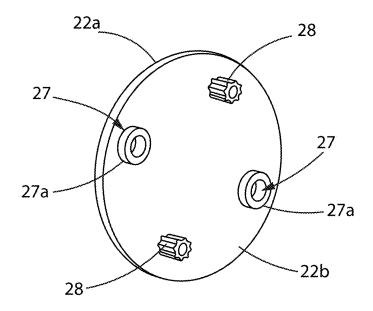
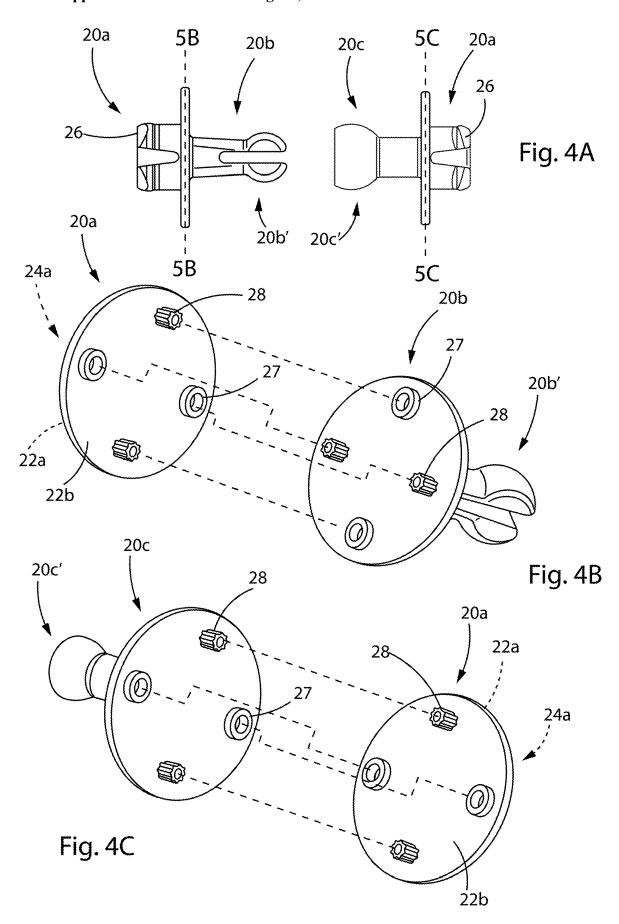


Fig. 3B



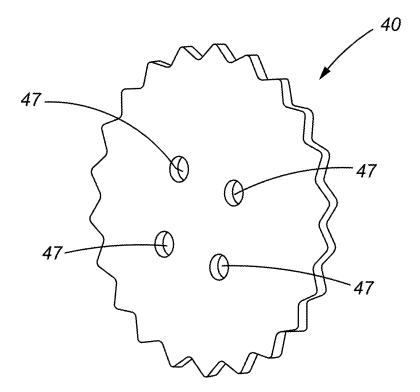


Fig. 5

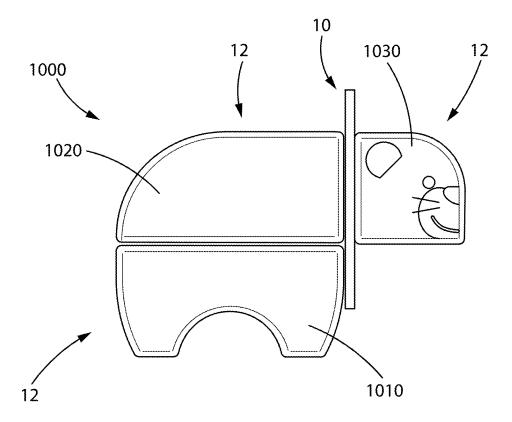


Fig. 6



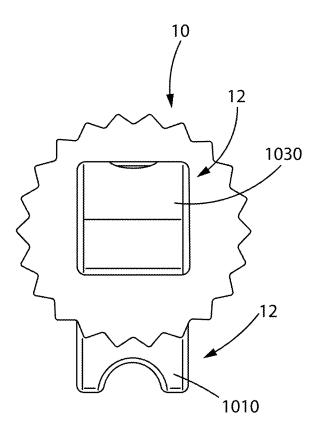


Fig. 7

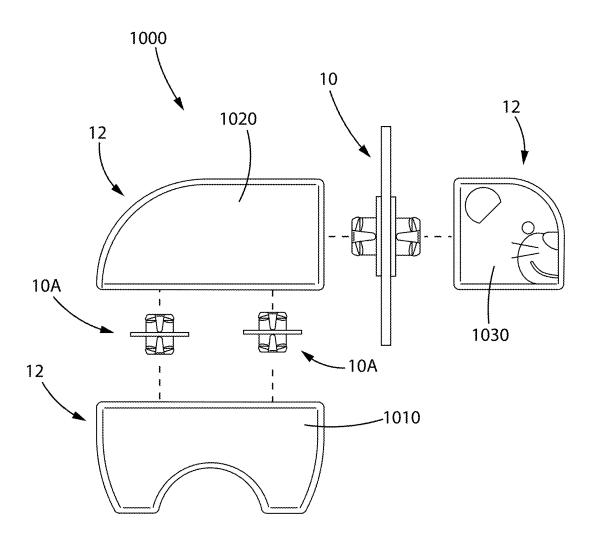


Fig. 8

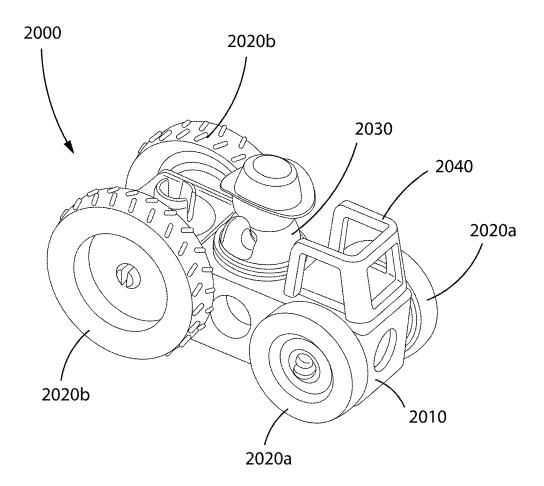


Fig. 9

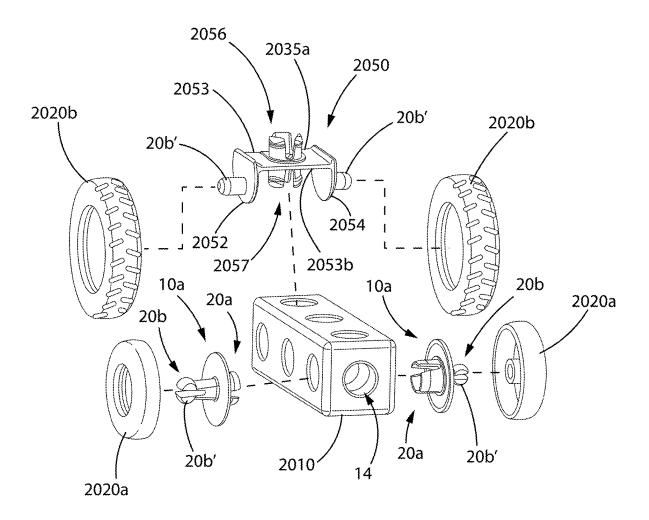


Fig. 10

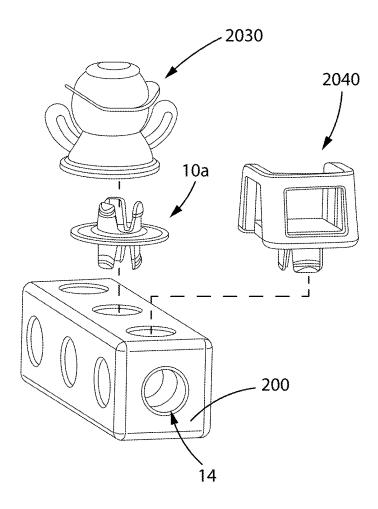


Fig. 11

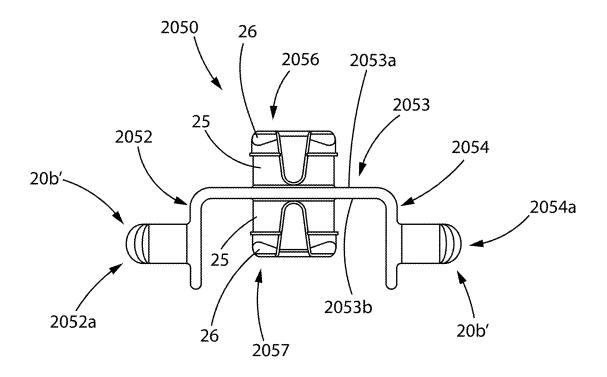


Fig. 12

ASSEMBLY TOY AND DECORATIVE CONNECTOR FOR AN ASSEMBLY TOY

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present disclosure generally relates to building elements for assembly toys. More particularly, the present disclosure relates to improved connectors for coupling various building elements, such as blocks, to form a figurine, a vehicle, or other plaything. Assembly toys are assembled by combining various building elements of a set of compatible toy building elements.

Description of Related Art

[0002] Building block toys have been a staple in the toy boxes of children for generations. These toys not only provide hours of entertainment, but they also play a crucial role in a child's development. Building block toys help children develop a wide range of skills, including fine motor skills, spatial awareness, creativity, and problem-solving abilities.

[0003] When children play with building blocks, they use their hands and fingers to grasp, stack, and manipulate the blocks, which helps to develop their fine motor skills. Additionally, building blocks offer children the opportunity to explore concepts such as balance, symmetry and proportion, leading to the development of spatial awareness and mathematical thinking. Moreover, building block toys encourage creativity and imagination as children construct their own unique creations, and they also foster problemsolving abilities as children figure out how to build structures that will not collapse.

[0004] Incorporating felt and other soft fabrics in building blocks for child development can have a positive impact on a child's cognitive and sensory development. Felt is a soft and tactile material that provides a unique sensory experience for young children. By integrating felt into building blocks and other similar toys, children can engage in sensory exploration and tactile play, which can enhance their fine motor skills and hand-eye coordination.

[0005] Additionally, felt can be a versatile material for building blocks, allowing children to practice creative thinking and problem-solving as they construct and manipulate the blocks. The soft nature of felt also makes it safe for young children to handle and play with, reducing the risk of injury compared to traditional hard building materials.

[0006] Toys that are assembled from various components may include connector pieces that removably couple the components together to form recognizable objects, such as animal figurines and vehicles. Known connector pieces may include portions adapted to engage with portions of the building components. It would be an improvement over known connector pieces to include decorative and/or tactile elements as part of the connector pieces.

SUMMARY OF THE INVENTION

[0007] The present disclosure provides embodiments of coupling elements. In an exemplary embodiment, the coupling element includes two couplers. Each coupler has a mid-flange having a first side and a second side. The first side of the mid-flange includes a coupling portion extending therefrom. In one embodiment, the coupling portion

includes at least two flexible extensions having an engagement member on the end of the corresponding extension. In another embodiment, coupling portion may be a functional element such as a rotatable connectable portion. The second side of the mid-flange has at least one protrusion and at least one opening therethrough. According to one embodiment, the opening includes a sleeve that extends from the second side of the mid-flange such that the corresponding opening is lengthened. According to one embodiment, the protrusion and openings are shaped so that when the two couplers are pressed together, the openings and protrusions form an interference fit to form the coupling element.

[0008] According to another embodiment, the coupling element includes a decorative element. The decorative element includes at least one through hole. The hole is sized and positioned to accommodate the protrusion and/or the sleeve to extend through the decorative element and join with the corresponding openings and protrusions of the opposite coupler such that the decorative element is captured between the two couplers.

[0009] The present disclosure provides embodiments of assembly toys. In an exemplary embodiment, the assembly toy includes at least one building element and at least one coupling element that releasably couples the building element to each other to form a figurine. Each building element includes at least one aperture that engages the coupling element such that the building elements are releasably coupled together. In an exemplary embodiment, the assembly toy has three building elements: first block, second block, and third block.

[0010] The first block is releasably attached to the second block via two coupling elements. In an exemplary embodiment, the coupling elements used to join the first block to the second block are composed of two couplers joined together without a decorative element. In another embodiment, the coupling elements used to join the first block to the second block are included at least one decorative element. The second block is releasably coupled to the third block via a single coupling element having a decorative element.

[0011] The present disclosure provides embodiments of assembly toys. In an exemplary embodiment, the assembly toy includes at least one building element and at least one coupling clement that releasably couples the building element to each other to form a vehicle. Each building element includes at least one aperture that engages the coupling element such that the building elements are releasably coupled together. In one exemplary embodiment, the assembly toy has seven building elements: main block, two front wheels, two rear wheels, a figurine, and a windshield. The two front wheels of this embodiment are releasably coupled to the main block via a coupling element made up of two different couplers that form an axle. The two rear wheels are releasably coupled to the main block via a rear axle element. The rear axle element includes a first and second side flange and a body that connects the first and second side flange. The first and second side flanges include coupling portions that extend away from the first and second side flanges. The body of the rear axle element has a top surface and a bottom surface. The top surface includes a coupling portion extending therefrom. Similarly, the bottom surface includes a coupling portion therefrom.

BRIEF DESCRIPTION OF DRAWINGS

[0012] A more complete appreciation of the present disclosure and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

[0013] FIG. 1 is a front perspective view illustrating a coupling element attaching two building elements together according to an embodiment of the disclosure;

[0014] FIG. 2A is an exploded view of the coupling element of FIG. 1 according to an embodiment of the disclosure:

[0015] FIG. 2B is a cross-sectional view of the coupling element of FIG. 1:

[0016] FIG. 3A is a front perspective view of a first coupler forming a component of the coupling element of FIG. 1;

[0017] FIG. 3B is a rear perspective view of the first coupler of FIG. 3A;

[0018] FIG. 4A illustrates other exemplary embodiments of coupler elements according to embodiments of the disclosure:

[0019] FIG. 4B illustrates the assembly of one of the coupler elements of FIG. 4A being formed by two coupler elements according to an embodiment of the disclosure;

[0020] FIG. 4C illustrates the assembly of another one of the coupler elements of FIG. 4A being formed by two coupler elements according to an embodiment of the disclosure;

[0021] FIG. 5 is a front perspective view of the decorative element shown in FIG. 2;

[0022] FIG. 6 is a side elevation view of a toy assembly according to an embodiment of the present disclosure;

[0023] FIG. 7 is a front elevation view of the toy assembly of FIG. 6

[0024] FIG. 8 is an exploded view of the toy assembly of FIG. 6;

[0025] FIG. 9 is a perspective view of another toy assembly according to an embodiment of the present disclosure; [0026] FIG. 10 is a partial exploded view of the toy assembly of FIG. 9;

[0027] FIG. 11 is a partial exploded view of the toy assembly of FIG. 9; and

[0028] FIG. 12 is a front elevation view of a rear axle element of the toy assembly of FIG. 9 according to an embodiment of the present disclosure.

DETAILED DESCRIPTION

[0029] Exemplary embodiments of the disclosure will now be described below by reference to the attached Figures. The described exemplary embodiments are intended to assist the understanding of the invention and are not intended to limit the scope of the invention in any way. Like reference numerals refer to similar elements throughout.

[0030] Referring to FIGS. 1-5, an exemplary embodiment of a coupling element 10 according to the present disclosure is shown. In one embodiment, coupling element 10 includes decorative element 40 disposed between the two couplers 20a, as shown in FIG. 2A. The decorative element 40 may be composed of plastic, wood, ceramic, cloth material, or any combination thereof. According to a preferred embodiment, decorative element 40 is formed from a soft fabric,

such as felt. In another embodiment, coupling element 10a may include the two couplers 20a with no decorative element 40 therebetween, as shown in FIG. 8.

[0031] As shown in FIG. 1, coupling element 10 may be used to releasably connect two building elements 12. Alternatively, coupling element 10 may join building element 12 with other structures, as will be discussed below. According to one embodiment building elements 12 are cube-shaped. The shape of building element 12 is not limited to a cube and includes, but is not limited to rectangular, triangular, pyramidal, spherical, or any other shape polyhedron, non-polyhedron, or a combination of polygonal and curved surfaces. Building element 12 has one or more surfaces 14a. According to one embodiment, aperture 14 is centrally located on at least one surface 14a. The building elements 12 can be decorated by silk screen printing, heat transfer printing, painting, and the like.

[0032] Referring now to FIGS. 3A and 3B, coupler 20a includes a mid-flange 22 having a first side 22a and a second side 22b. The first side 22a of the mid-flange 22 includes a coupling portion 24a extending therefrom. The coupling portion 24a includes at least two flexible extensions 25 extending from the first side 22a of the mid-flange 22. In the exemplary embodiment shown, the coupling portion 24a includes three flexible extensions 25 extending from the first side 22a of the mid-flange 22. However, it is contemplated that more or fewer flexible extensions may be used. The flexible extensions 25 include an engagement member 26 that engages the building element 12 when inserted into the aperture 14 such that the first coupler 20a is releasably secured to the building element 12. More specifically, when the flexible extensions 25 are inserted into aperture 14 of the building element 12, engagement members 26 contact inside surfaces of apertures 14 causing flexible extensions 25 to flex inward and exert a force on the sides of the aperture 14 such that the engagement members 26 removably connects first coupler 20a with building element 12.

[0033] Continuing to refer to FIGS. 3A and 3B, second side 22b of mid-flange 22 includes at least one protrusion 28 and at least one opening 27 therethrough. In the exemplary embodiment shown in FIG. 3B, the second side 22b of the mid-flange 22 includes two protrusions 28 and two openings 27 therethrough. According to one embodiment, opening 27 includes a sleeve 27a that extends from the second side 22b of the mid-flange 22 such that the corresponding opening 27 is lengthened. Sleeve 27a may be monolithically formed with the mid-flange 22 or may be welded or otherwise fixed to the second side 22b of the mid-flange 22. The protrusions 28 are sized and dimensioned to be inserted at least partially through the opening 27 and/or sleeve 27a of the opposing coupler 20a as will be described in greater detail below.

[0034] According to one embodiment, coupling element 10 may be composed of two couplers 20a on either side of a decorative element 40, as shown in FIGS. 2A and 2B. The decorative element 40 includes at least one through hole 47 therethrough. In the exemplary embodiment shown in FIG. 5, the decorative element includes four through holes 47. Holes 47 are sized and positioned to accommodate the protrusions 28 and/or the sleeves 27a to extend through the decorative element 40 and join with corresponding openings 27 and protrusions 28 of the opposite coupler 20a such that the decorative element is captured between two couplers, as shown in the cross section of FIG. 2B.

[0035] According to other embodiments, coupling element 10 may be composed of coupler 20a connected with a selected second coupler. According to one embodiment, second coupler 20b includes a functional element such as rotatable connectable portions 20b', 20c'. According to one embodiment discussed below with respect to FIGS. 9-12, rotatable connection portion 20b' forms an axle that is connected with a wheel to form part of a wheeled vehicle toy. According to another embodiment, elements 20b' and 20c' form components of a trailer hitch for a wheeled vehicle toy. For example, as shown in FIGS. 4A-4C, couplers 20b and 20c form male end 20b' and female end 20c' of a ball and socket style joint.

[0036] As shown in FIG. 4B, couplers 20b, 20c have one or more protrusions 28 and openings 27 on a side opposite from functional elements 20b', 20c'. According to one embodiment, these openings and protrusions are positioned and sized to engage with corresponding protrusions and openings on coupler 20a, as discussed in the previous embodiment.

[0037] According to one embodiment, protrusions 28 and openings 27 are shaped so that when couplers 20a, 20b, 20c are mechanically pressed together the openings and protrusions form an interference fit to form coupling element 10. The interference fit may also include a snap-fit feature to removably or permanently connect the couplers. According to a further embodiment, couplers 20a, 20b, 20c joined by such an interference or snap fit are then permanently connected with one another, for example, by ultrasonic welding, by an adhesive, or by other methods for joining known to those of ordinary skill in the field of the disclosure. The ability to assemble the couplings 10 using a variety of couplers may benefit manufacturability, for example, by facilitating production of a wide variety of coupling elements 10 with fewer different tooling setups. This may allow greater flexibility and efficiency in the production process, leading to potential cost savings and increased productivity. As previously mentioned, the various couplers 20a, 20b, and 20c may be mixed and matched when assembling the coupling element 10.

[0038] As shown in FIG. 1, coupling element 10 includes a decorative element 40. For case of description, the following will refer to the assembly of a coupling element 10 composed of two couplers 20a with a decorative element 40 therebetween, however, it will be appreciated that any combination of couplers 20a, 20b, and 20c may be used. To assemble the coupling element 10, the protrusions 28 and sleeves 27a of a first coupler 20a are inserted through the corresponding holes 47 of the decorative element 40. Then the second side 22b of a second coupler 20a is pressed against the second side 22b of the first coupler 20a such that the protrusions 28 of the second coupler 20a engage the sleeves 27a of the first coupler 20a and the protrusions 28 of the first coupler 20a engage the sleeves 27a of the second coupler 20a. Typically, an interference fit, press fit, and/or friction fit may be provided between the protrusions 28 and sleeves 27a when the protrusion 28 is inserted into the opening 27. In one embodiment, the couplers 20a are secured together via friction force. In another embodiment, the couplers are secured together via a sonic weld or an adhesive.

[0039] The present disclosure provides embodiments of assembly toys. Assembly toys are assembled by coupling a variety of building elements, such as blocks, together using

a variety of coupling elements. The assembly toy may use more or fewer building elements, building elements of different sizes, dimensions, and colors, and different types of coupling elements to assemble the building elements to form a variety of different toys. For illustrative purposes, the assembly toy shown is one that resembles a lion. However, the assembly toy may be assembled into a wide variety of toy types, including but not limited to figurines or vehicles. Non-limiting examples of a figurine may include a monkey, a zebra, an alligator, an elephant, a giraffe, or a lion. Non-limiting examples of a vehicle may include a truck, a train, a tractor, a sailboat, an airplane, or a car.

[0040] Referring now to FIGS. 6-8, an exemplary embodiment of an assembly toy 1000 according to the present disclosure is shown. The assembly toy 1000 includes at least one building element 12 and at least one coupling element 10 that releasably couples the building elements 12 to each other to form a figurine, e.g., a lion. The building elements 12 may be wooden blocks having a variety of shapes. However, a person having ordinary skill in the art will appreciate there are a variety of materials the building elements 12 may be composed of. Each building element 12 includes at least one aperture 14 that engages with a coupling element 10 such that the building elements 12 may be releasably coupled together. In the exemplary embodiment shown in FIGS. 6-7, the assembly toy 1000 has three building elements: first block 1010, second block 1020, and third block 1030. The three building elements are coupled together by three coupling elements 10, 10a as will be described in more detail below.

[0041] Referring to FIG. 8, the first block 1010 is releasably attached to the second block 1020 via two coupling elements 10a. The coupling elements 10a used to connect the first block 1010 and second block 1020 are composed of two couplers 20a joined together without a decorative element. It will be appreciated that more or fewer coupling elements may be used to releasably attach first block 1010 to second block 1020 and that one or more decorative elements may be provided on coupling elements joining blocks 1010, 1020.

[0042] The second block 1020 is releasably attached to the third block 1030 via a single coupling element 10 having a decorative element 40. The coupling element 10 used to connect the second block 1020 to the third block 1030 is composed of two couplers 20a joined together with the decorative element 40 captured between the two couplers 20a. The decorative element 40 resembles a lion's mane.

[0043] Referring now to FIGS. 9-12, an exemplary embodiment of an assembly toy 2000 according to the present disclosure is shown. The assembly toy 2000 includes at least one building element 2010, 2020, 2030 and at least one coupling element 10 that releasably couples the building elements to each other to form a vehicle, e.g., a tractor. The building elements may include one or more wooden blocks **2010** having a variety of shapes. However, a person having ordinary skill in the art will appreciate there are a variety of materials the building elements may be composed of. Each building element includes at least one aperture 14 that engages with a coupling element such that the building elements may be releasably coupled together. In the exemplary embodiment shown in FIGS. 9-12, the assembly toy 2000 has seven building elements 12: main block 2010, two front wheels 2020a, two rear wheels 2020b, a figurine 2030, and a windshield 2040. The seven building elements are

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coupled together by a variety of coupling elements as will be described in more detail below.

Referring to FIG. 10, the main block 2010 is rectangular shaped and has a number of apertures 14. In the exemplary embodiment shown, the main block 2010 is made of wood or a wood derivative. In other embodiments, the main block 2010 may be made of wood, plastic, metal, or a combination thereof. In one embodiment, the apertures 14 are all the same size and dimension. In another embodiment, the apertures 14 may vary in size such that there are at least two different sized apertures 14.

[0045] Continuing to refer to FIG. 10, two front wheels 2020a are releasably coupled to the main block 2010 via a coupling elements 10a made up of coupler 20a and coupler 20b, as shown in FIG. 4A, such that functional elements 20b' form axles to allow the front wheels to rotate. The two rear wheels 2020b are releasably coupled to the main block 2010 via rear axle element 2050 that include axle functional elements 20b' positioned to hold rear wheels 2020b. As shown in FIG. 12, rear axle element 2050 includes a first and second side flange 2052, 2054 and a body 2053 that connects the first and second side flange 2052, 2054. In one embodiment, the side flanges 2052, 2054 may be monolithically formed from the body 2053. In another embodiment, the side flanges 2052, 2054 may be coupled to the body 2053 via adhesives or welds. The first and second side flanges 2052, 2054 each include a coupling portion 2052a, 2054a that extends away from the first and second side flanges 2052, 2054. According to one embodiment, coupling portions 2052a, 2054a are axle functional elements 20b'. The body 2053 includes a top surface 2053a and a bottom surface **2053**b. The top surface **2053**a includes a coupling portion 2056 extending therefrom. Similarly, the bottom surface 2053b includes a coupling portion 2057 extending therefrom. Coupling portions 2056, 2057 may include the same flexible extensions 25 and engagement members 26 as coupler 20a. According to further embodiments couplers **20***a* are provided to attached other structures such as a figurine $\hat{2030}$ and a windshield 2040 to main block 2010. [0046] As shown in FIG. 9, components within the scope

of the disclosure can be assembled to create a wheeled vehicle, such as a farm tractor 2000. According to further embodiments, additional couplers 20b, 20c discussed above can be added to apertures not occupied by other couplers. For example, one of coupler 20b, 20c could be added to tractor 2000 to create a trailer hitch connection to another wheeled vehicle toy.

As shown throughout the drawings, like reference numerals designate like or corresponding parts. While illustrative embodiments of the present disclosure have been described and illustrated above, it should be understood that these are exemplary of the disclosure and are not to be considered as limiting. Additions, deletions, substitutions, and other modifications can be made without departing from the spirit or scope of the present disclosure. Accordingly, the present disclosure is not to be considered as limited by the foregoing description.

What is claimed is:

- 1. An assembly toy comprising:
- a building element having an aperture; and
- at least one coupling element comprising:
 - a first coupler including a first mid-flange having a first side with a coupling portion extending therefrom and a second side with at least one protrusion extending away from the body;
 - a second coupler including a second mid-flange having at least one opening, the second mid-flange having a first side with a coupling portion extending therefrom and a second side; and

- a decorative element disposed between the second sides of the first and second couplers, the decorative element including at least one hole therethrough; wherein the at least one protrusion of the first coupler extends through the at least one hole of the decorative element and into the at least one opening of the second coupler such that the decorative element remains captured between the first coupler and the second coupler, wherein the coupling portion of the first or second coupler is adapted to engage the aperture to releasably connect the coupling element with the building element.
- 2. The assembly toy of claim 1, wherein the coupling portion on the first coupler is the same as the coupling portion on the second coupler.
- 3. The assembly toy of claim 1, wherein the building element comprises a first building element and a second building element, wherein the coupling portion on the first coupler is adapted to engage with and releasably connect with the first building element, wherein the coupling portion of the second coupler is adapted to engage with and releasably connect with the second building element, and wherein the first and second building elements are releasably connected with one another.
- 4. The assembly of claim 1, wherein the second coupler includes a sleeve aligned with the at least one opening, wherein the sleeve receives at least a portion of the protru-
- 5. The assembly toy of claim 1, further comprising a plurality of building elements, wherein the at least one coupling element joins two of the building elements, wherein the decorative element is positioned between the building elements and extends outward of the building elements.
- 6. The assembly toy of claim 5, further comprising one or more second coupling elements, the second coupling elements each comprising:
 - a third coupler including a third mid-flange having a first side with a coupling portion extending therefrom and a second side with at least one protrusion extending away from the body; and
 - a fourth coupler including a fourth mid-flange having at least one opening, the fourth mid-flange having a first side with a coupling portion extending therefrom and a second side,

wherein the plurality of building elements are joined together with the first and second coupling elements to form

- 7. The assembly toy of claim 6, wherein the toy forms an animal or a vehicle.
- 8. The assembly toy of claim 7, wherein the animal is a lion, wherein the decorative element forms a mane of the lion.
- 9. The assembly toy of claim 7, wherein the vehicle is a truck, a train, a tractor, a sailboat, an airplane, or a car.
 - 10. A coupling for a toy comprising:
 - a first coupler including a mid-flange having a first side with a coupling portion extending therefrom and a second side with at least one protrusion extending away from the body;
 - a second coupler including a mid-flange having at least one opening, the mid-flange having a first side with a coupling portion extending therefrom and a second side; and

- a decorative element disposed between the second sides of the first and second couplers, the decorative element including at least one hole therethrough; wherein the at least one protrusion of the first coupler extends through the at least one hole of the decorative element and into the at least one opening of the second coupler such that the decorative element remains captured therebetween the first coupler and the second coupler.
- 11. The coupling of claim 10, wherein the coupling portion on the first coupler is to the same as the coupling portion on the second coupler.
- 12. The coupling of claim 10, wherein the coupling portion on the first coupler is adapted to engage an aperture of a building element and the second coupler comprises an axle adapted to rotatably connect a wheel with the building element.
- 13. The coupling of claim 10, wherein the second coupler includes a sleeve aligned with the at least one opening, wherein the sleeve receives at least a portion of the protrusion.

- 14. A coupling for a toy comprising:
- a first coupler including a mid-flange having a first side with a coupling portion extending therefrom and a second side with at least one protrusion extending away from the mid-flange; and
- a second coupler including a mid-flange, the mid-flange having a first side with a coupling portion extending therefrom and a second side having at least one opening;
- wherein the at least one protrusion of the first coupler extends into the at least one opening of the second coupler such that the first and second coupler are coupled together.
- 15. The coupling of claim 14, further comprising a decorative element, including at least one hole therethrough, wherein the at least one protrusion of the first coupler extends through the at least one hole of the decorative element and into the at least one opening of the second coupler such that the decorative element is captured between the first coupler and second coupler.
- 16. The coupling of claim 14, wherein the coupling portion on the first coupler is the same as the coupling portion on the second coupler.

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