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(54) **EDUCATIONAL SNAP-TOGETHER TOY VEHICLE SYSTEM**

ZUSAMMENSCHNAPPBARES LERN-SPIELFAHRZEUGSYSTEM

SYSTEME DE VEHICULE JOUET RECREATIF ASSEMBLABLE PAR PRESSION

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Description

Technical Field of the Invention

[0001] This invention is in the field of educational toys. 5

Background Art

[0002] There presently exist many toys that snap together to form either a predetermined model shape or a shape coming from the mind of a child using the toy. Exemplary devices of this type are disclosed in the following U.S. Pat. Nos. 4,744,780, 5,797,784, 5,486,127, 6,595,824, 5,022,885, 1,845,201 and 5,653,621. These all help educate the child in many ways, largely in development of small motor skills. However there is a continuing quest for educational toys that develop a child's higher mental skills while also meeting high standards of quality, durability, and ease of use. 10 15 20

Disclosure of the Invention

[0003] A toy vehicle system according to claim 1 is provided. 25

Brief Description of the Drawings

[0004]

FIG. 1 is a side view of an educational snap-together toy vehicle in accordance with the present invention. FIG. 2 is an exploded rear side view, in perspective, of the educational snap-together toy vehicle shown in FIG. 1, showing two instances of a coupling system for coupling components of a toy in accordance with the present invention, each such coupling system including a first socket element and a first illustrative embodiment of a first adapter element. FIG. 3 is an exploded front side view, in perspective, of the educational snap-together toy vehicle shown in FIG. 1, showing, from a different perspective, the separate elements of the two instances of the coupling system also shown in FIG. 2, and a second socket element. FIG. 4A is a partial perspective view a coupling system for coupling components of a toy in accordance with the invention, the view being partial in that only two complementary elements of the coupling system are shown, including a second socket element and a second illustrative embodiment of an adapter element, but for the sake of convenience, a first socket element is not shown. FIG. 4B is another partial perspective view of the coupling system shown in FIG. 4A, wherein the first socket element and the adapter element are shown attached together in accordance with the present invention. FIG. 5A is another partial perspective view of the 30 35 40 45 50 55

coupling system shown in FIG. 4A, including the adapter element shown in FIGS. 4A-B and the second illustrative example of a second socket element that was not shown in FIGS. 4A-B.

FIG. 5B is another partial perspective view of the coupling system shown in FIG. 5A, wherein the first socket element and the adapter element of the coupling system are shown attached together to form a subassembly in accordance with the present invention.

FIG. 6A is a side view of the coupling system shown in FIGS. 4A-5B, in which the second socket element of FIG. 4A is shown attached to a first toy component (shown in phantom), the subassembly of FIG. 5B is shown attached to a second toy component (also shown in phantom) via the second socket element of FIG. 4A, and the first socket element and the subassembly are shown separated and in general alignment prior to being attached.

FIG. 6B is a side assembly view of the coupling system shown in FIG. 6A, after the first and second toy components (shown in phantom) have been moved toward each other sufficiently so as to cause the first socket element and the subassembly to become attached, thereby coupling the first and second toy components in accordance with the present invention.

FIG. 6C is a side view of the coupling system shown in FIG. 6A-B, after the first and second toy components (shown in phantom) have been moved apart so as to cause the first socket element to become detached from the subassembly in accordance with the present invention.

FIG. 7A is a perspective view of a third illustrative embodiment of an adapter element of a coupling system for coupling components of a toy in accordance with the invention, wherein the adapter element includes two complementary subelements sized and shaped so as to be assembled together to form the adapter element.

FIG. 7B is a perspective view of the adapter element of a coupling system shown in FIG. 7A, wherein the complementary sub-elements have been combined to form the assembled adapter element.

FIG. 8 is an exploded rear side view, in perspective, of an educational snap-together toy vehicle in accordance with the present invention, showing two instances of a coupling system for coupling components of a toy in accordance with the present invention, wherein the coupling system is shown in FIG. 8 to include a first socket element and a fourth illustrative embodiment of an adapter element.

FIG. 9 is an exploded front side view, in perspective, of the educational snap-together toy vehicle shown in FIG. 8, showing, from a different perspective, the separate elements of the two instances of the coupling system also shown in FIG. 8, wherein the coupling system is shown in FIG. 9 to include the second

socket element also shown in FIG. 3.

Best Mode for Carrying Out the Invention

[0005] The educational snap-together toy vehicle described herein is similar to that described in U.S. Patent 6,595,824 to coinventors Patrick Calello and Danilo Medina, the specification and description of which is hereby incorporated for reference herein in its entirety. The similarities include at least the following aspects of the educational snap-together toy vehicle described in the Calello et al. '824 Patent.

[0006] As mentioned in the specification of the Calello et al. '824 Patent, the educational snap-together toy vehicle system described therein is aimed at taking advantage of the apparently innate interest on the part of young children in cars, trucks, and other vehicles so as to teach such children such skills as manipulation, organization, shape and color matching and recognition, creativity, and problem solving. Specifically with respect to the very important skill of problem solving, the snap-together toy vehicle system of the Calello et al. '824 U.S. Patent features toy vehicles that include multiple body components that are coupled together by the child to form a toy vehicle, and a coupling system configured to permit a child to assemble those body elements in any of a large number of different potential combinations to form a variety of differently-configured toys, and/or to disassemble or reassemble the body elements of the assembled vehicle toy at will. Embodiments of the invention disclosed in the Calello et al. '824 Patent require the child, having imagined a toy vehicle of a particular configuration, to first identify what combination of toy components is needed to form the vehicle imagined. Next, the child must select adapter elements of the coupling system having shapes that complement the shapes of the socket elements attached to the body components. Finally, the child must orient and manipulate the adapters and the body components to assemble the toy vehicle imagined the desired assembly. This toy vehicle system can therefore be a very effective tool for developing the child's ability to recognize similar colors, as well as complementary shapes and structures, while at the same time learning lessons in 'how things work,' e.g., how a larger assembly (e.g., a toy car or truck) may be built from smaller components.

[0007] Some of the embodiments of the toy vehicle system described in the Calello et al. '824 Patent may exhibit certain flaws, such as limited durability, for example, or such as problems related to ease of assembly and/or disassembly of the components of the toy by children. These and other problems are addressed by the present invention.

[0008] Referring to FIGS. 1-3, a first illustrative embodiment of a toy vehicle 101 in accordance with the present invention is depicted. The toy vehicle 101 includes multiple body components which may be coupled together so as to form the toy vehicle 101. For example, the toy vehicle 101 includes a front body component 103,

a central body component 105, and a rear body component 107. The front, central, and rear body components 103, 105, 107 may include one or more of a number of different materials, including wood, plastic, metal, or a combination of different materials.

[0009] In at least one embodiment, the basic material of the body components 103, 105, 107 is wood, for example, wood that has been sanded smooth. Such wood may remain unfinished, for example, or may be partially or completely finished with paint, wood stain, etc. Other finishes and/or materials may be used. As will be discussed later, although wood can be a good choice for toy materials generally, warping and swelling of wooden portions of an assembly (e.g. due to normal aging, excessive environmental humidity or aridity, cracking, etc.) can introduce large and/or unpredictable forces on adjacent parts of the assembly. These forces may act to deform, or even break, the adjacent parts. In the context of the toy vehicle system of the present invention, such problems may affect the general durability of the toy, but more importantly may introduce unwanted friction and/or unavoidable misalignment during assembly and/or disassembly of body components, such that there is a risk that the resulting difficulty experienced by the child will interrupt his or her train of thought, or discourage use of the toy entirely. The present invention addresses such problems.

[0010] As relates to the front body component 103, especially as shown in FIG. 3, the front body component 103 includes at least two headlamp cutouts 110 formed in one of at least two areas 112 of the surface of the front body component 103 that describe a complex curve (e.g., a surface that is curved according to two or more axes (e.g., the surface of a sphere qualifies as a complex curve, whereas the surface of cylinder does not). The headlamp cutouts 110 are formed in the complex curve of the areas 112 by drilling a hole with a drill bit through the complex curve in a direction that is off-center with respect to (e.g., not aligned with) the axes of curvature of the complex curve. The effect is pleasing to the eye, adding to the modern style of the toy, and is simple to create.

[0011] Referring to FIGS. 2 and 3, the central body component 105 of the toy vehicle 101 includes a first end 109 via which the central body component 105 may be coupled to the front body component 103, and a second end 111 via which the central body component 105 may be coupled to the rear body component 107. The front body component 103 includes an end 113 via which the front body component 103 may be coupled to the first end 109 of the central body component 105, and the rear body component 107 includes an end 115 via which the rear body component 107 may be coupled to the second end 111 of the central body component 105.

[0012] Where any two of the body components 103, 105, 107 of the toy vehicle 101 are coupled together, the toy vehicle 101 shown in FIGS. 1-3 includes a coupling system 117 in accordance with the present invention,

which coupling system 117 is used to effect such coupling. For example, the toy vehicle 101 includes two instances of a coupling system 117 in accordance with the present invention, i.e., one instance of the exemplary coupling system 117 located where the front body component 103 and the central body component 105 are coupled together, and another instance of the exemplary coupling system 117 located where the rear body component 107 and the central body component 105 are coupled together.

[0013] Each instance of the coupling system 117 includes multiple parts or elements designed to be connected and/or disconnected with ease by a child seeking to exploring the many different possible toy vehicle assembly combinations. (Alternative body components for the child to exchange with the body components 103, 105, 107 are not shown in FIGS. 1-3.) Specifically, and with reference to the coupling system 117 located between the end 113 of the front body component 103 and the end 109 of the central body component 105, the coupling system 117 includes a first socket element 119 attached to the front body component 103 at the end 113 of the front body component 103, a second socket element 121 attached to the central body component 105 at the first end 109 of the central body component 105, and an adapter element 123 for attaching to each of the first and second socket elements 119, 121 so as to effect a coupling between the front and central body components 103, 105 via their respective ends 113, 109. Similarly, and with reference to the second instance of the coupling system 117 located between the end 115 of the rear body component 107 and the second end 111 of the central body component 105, the first socket element 119 is attached to the central body component 105 at the second end 111 of the central body component 105, the second socket element 121 is attached to the rear body component 107 at the end 115 of the rear body component 107, and an adapter element 123 for attaching to each of the first and second socket elements 119, 121 so as to effect a coupling between the rear and central body components 107, 105 via their respective ends 115, 111. The adapter and socket elements of the coupling system 117 are formed from plastic, for strength and durability, among other favorable properties, such as plastic's ability to contain and maintain bright pigmentation, useful for color coding. However, it will be understood that the elements of coupling system 117 may include one or more types of suitable materials in addition to or instead of plastic, such as metal, wood, rubber, etc.

[0014] The elements 119, 121, 123 of the coupling system 117 may have mating ends at which the elements themselves may connect together. For example, with reference to the coupling system 117 located between the end 113 of the front body component 103 and the end 109 of the central body component 105, the adapter element 123 includes a first mating end 125 at which the adapter element 123 attaches to the first socket element 119, and a second mating end 127 at which the adapter

element 123 attaches to the second socket element 121. The first socket element 119 includes a mating end 129 at which the first socket element 119 attaches to the first mating end 125 of the adapter element 123, and the second socket element 121 includes a mating end 131 at which the second socket element 121 attaches to the second mating end 127 of the adapter element 123.

[0015] The mating ends of the elements of the coupling system 117 may include complementary shapes so as to permit corresponding interfaces to fit together and/or so that a protrusion of one mating end has a complementary shape of a corresponding cavity in the other mating end. For example, and again with reference to the coupling system 117 located between the end 113 of the front body component 103 and the first end 109 of the central body component 105, the mating end 129 of the first socket element 119 includes a socket or cavity 133, the first mating end 125 of the adapter element 123 includes a first protrusion 135, and the first protrusion 135 is sized, shaped, and/or positioned so as to extend into and fit within the cavity 133, e.g., to within a close dimensional tolerance for purposes of good fit and alignment. As such, a male-female connection exists between the first socket element 119 and the adapter element 123 wherein the first protrusion 135 of the first mating end 125 of the adapter element 123 forms the male portion, and the cavity 133 of the mating end 129 of the first socket element 119 forms the female portion. Similarly, the mating end 131 of the second socket element 121 includes a cavity 137, the second mating end 127 of the adapter element 123 includes a second protrusion 139, and the second protrusion 139 is sized, shaped and/or positioned so as to extend into and fit within the cavity 137, e.g., to within a close dimensional tolerance. As such, a male-female connection exists between the second socket element 121 and the adapter element 123 wherein the second protrusion 139 forms the male portion, and the cavity 137 forms the female portion.

[0016] One or more additional male-female connections may exist between the first socket element 119 and the adapter element 123 of the coupling system 117. For example, and once more with reference to the instance of the coupling system 117 located between the end 113 of the front body component 103 and the first end 109 of the central body component 105, the first mating end 125 of the adapter element 123 includes a cavity 141 formed within the first protrusion 135 thereof, the mating end 129 of the first socket element 119 includes a protrusion 143 extending outward from within the cavity 133 thereof, and the protrusion 143 is sized, shaped and/or positioned so as to extend into and fit within the cavity 141, e.g., to within a close dimensional tolerance. As such, an additional male-female connection may exist between the first socket element 119 and the adapter element 123 where the protrusion 143 forms the male portion, and the cavity 141 forms the female portion. As shown in FIGS. 2 and 3, multiple such additional male-female connections may exist between the first socket element 119 and the adapt-

er element 123.

[0017] In particular, it is the protrusion 143 of the first socket element 119, along with any other protrusions similarly situated (i.e., extending outward from within the cavity 141 of the first socket element 119) which prevents adapter elements other than the adapter element 123 from connecting with the socket element 119. Accordingly, it is the cavity 141 of the adapter element 123, along with any other cavities similarly situated (i.e., formed within the first protrusion 135 of the adapter element 123) and/or that are required, which permits the first protrusion 135 of the adapter element 123 to be received within the cavity 133 of the first socket element 119, thereby permitting the socket element 119 and the adapter element 123 to be attached or mated. That is, adapters without the proper number of such cavities, or without cavities of sufficient size or the proper shape, etc., formed in their respective first mating end protrusions are essentially useless with respect to the first socket element 119. As such, it is up to the child attempting the assembly to determine, either through trial and error, for example, or by visual comparison of shapes, that he or she must use the particular adapter element 123, or another adapter element having the same cavity configuration, in order to connect the front and central body components 103, 105.

[0018] In some embodiments of the present invention, where two coupling system elements are shape-compatible as described above, those two elements are of the same color, making the task of ensuring shape-compatibility that much easier for the child. In some other embodiments of the present invention suitable for more advanced children, however, the colors of shape-compatible coupling system elements are not necessarily the same, such that the child may not use matching color as a 'stand-in' for matching shapes. It follows that the child is forced to use other types of reasoning, such as the process of deduction, to establish the necessary shape match.

[0019] A coupling system for coupling components of a toy is illustrated in FIGS. 4A-4B, 5A-5B, and 6A-6B.

[0020] Referring to FIGS. 4A, two complementary elements of a subassembly of a coupling system 217 for coupling components of a toy in accordance with the current invention are shown. In particular, the coupling system 217 includes the adapter element 223 and the second socket element 221, shown separated from each other and in perspective view in FIG. 4A for explanatory purposes.

[0021] With respect to the adapter element and the second socket element 221, another male female connection is provided in addition to the male-female connection wherein the second protrusion 239 of the adapter element 223 forms the male portion, and the cavity 237 of the second coupling element 223 forms the female portion. Specifically, the second mating end 227 of the adapter element 223 includes a cavity 210 formed within the second protrusion 239 of the second mating end 227

of the adapter element 223, and the mating end 231 of the second socket element 221 includes a protrusion 212 extending outward from within the cavity 237 of the mating end 231 of the second socket element 221, and the protrusion 212 extends into and fits within the cavity 210, e.g., to within a close dimensional tolerance. As such, an additional male-female connection exists wherein the protrusion 212 forms the male portion, and the cavity 210 forms the female portion. As shown in FIG. 4A, the shapes of the protrusion 212 and the cavity 210 are complementary and elongated in a direction perpendicular to the direction of insertion of the protrusion 212 into the cavity 210. Moreover, both the protrusion 212 and the cavity 210 are centered within their respective mating ends in an arrangement which, along with the transverse elongation feature, facilitates good alignment between the second socket element 221 and the adapter element 223 during snap-fit assembly and disassembly. In addition, the existence of these elongated features in the second socket element 221 and the adapter element 223 increases the stiffness of each such element in general, contributing to the durability and useable life of the coupling system 217, especially when such elements are formed from plastic, and the corresponding toy components being coupled together are formed from wood, which may tend to warp, expand, contract and/or split over time, and create unexpected or excessive forces against which the added stiffness of the elongated features described above may be applied.

[0022] The second socket element 221 and the adapter element 223 further include complementary mating element features forming a detent or snap-fit feature of the coupling system 217 that may characterize the assembly and disassembly interaction between the second socket element 221 and the adapter element 223. For example, the second socket element 221 includes a raised ridge 214 extending laterally (i.e., perpendicular to the direction in which the adapter element 223 is inserted into the second socket element 221), and the adapter element 223 includes another raised ridge 216 extending in the same lateral direction. As such, after the second protrusion 239 of the adapter element 223 has been inserted far enough into the cavity 237 of the second socket element 221, the raised ridge 216 of the adapter element 223 will have moved past the raised ridge 214 of the second socket element 221. If thereafter permitted to rise to the level of the raised ridge 214 of the second socket element 221, the raised ridge 216 of the adapter element 223 will tend to settle against an inward-facing side of the raised ridge 214 of the second socket element 221. Such an arrangement offers considerable resistance to any attempt to pull the adapter element 223 out from within the second socket element 221 without first separating the pair of raised ridges 214, 216. FIG. 4B shows a subassembly 218 formed when the adapter element 223 is lodged within the second socket element 221 and the raised ridges 214, 216 are operating to resist separation thereof.

[0023] Referring again to FIGS. 4A-4B, the adapter element 223 further includes a displaceable tab 220, and the raised ridge 216 of the adapter element 223 may be disposed on the displaceable tab 220 such that a child may move the raised ridge 216 of the adapter element 223 out of the way of the raised ridge 214 of the second socket element 221, e.g., during disassembly of (or alternatively, during assembly of) the subassembly 218. The tab 220 provides this ability in that it is attached to and extends in cantilever away from its attachment to a part of the remainder of the adapter element 223 (such as the second protrusion 239 of the second mating end 227 of the adapter element 223) in the opposite direction from the direction in which the second protrusion 239 extends into the cavity 237 of the second socket element 221.

[0024] The tab 220 includes a finger interface region 222 formed at least in part by the existence of a depression 224 in the tab 220, sized and shaped so as to comfortably accommodate the tip of a child's finger. The finger interface region 222 further includes multiple frictional features within the depression 224 for resisting a sliding movement of a child's fingertip relative to the tab 220 when the child is operating the tab 220. As shown in FIG 4B, the frictional features include finger-catching edges 226 that are part of a terrace-like or stepped structure. Other types of frictional features may be used, in addition to or in place of the finger-catching edges 226, for example: bumps, posts or spikes, microdots of adhesive, etc. What is important is that the child utilizing the adapter element 223 does not find that he or she is unable to comfortably operate the tab 220 because his or her finger tends to slip against the tab 220, e.g., whether because of oils or other moisture on the finger, or because dust or some other contaminant is present on the tab 220.

[0025] As best shown in FIGS. 4A and 4B, the second socket element 221 includes additional elongated structures adjacent to external surfaces of the second socket element 221 to add stiffness, and as a result, dimensional and/or shape stability, to the second socket element 221. For example, the second socket element 221 includes a series of ribs 228 arrayed around the second socket element 221, arranged in parallel to each other, and extending longitudinally (i.e., along a direction of insertion and/or removal of the adapter element 223 relative to the second socket element 221). For another example, the second socket element 221 include a flange 230, which extends around the end 131 of the second socket element 221a, and is also useful for stiffening purposes. The flange 230 also includes a surface 232 (obscured) which permits the second socket element 221 to longitudinally locate with respect to a toy component to which the second socket element 221 is attached (see FIGS. 2 and 3, or upcoming FIGS. 6A-6C for examples of such an attachment). Also, the same surface 232 permits the second socket element 221 to assume the proper orientation with respect to the toy component, essential for good alignment of elements of the coupling system 217.

[0026] The flange 230 and the ribs 228 add stiffness and dimensional stability to the second socket element 221, and in particular the ribs 228 provide support in any arrangement in which the second coupling element 221 is inserted (e.g., with an interference fit) into a toy component (e.g., see the first component body 103 in FIG. 2). Furthermore, in embodiments of the toy vehicle in which the body components are primarily or exclusively formed from wood, the stiffness afforded the second socket element 221 by the ribs 228 and/or the flange 230 may be sufficient to withstand relatively large forces which may arise from warping or swelling of the wood,

[0027] Referring to FIGS. 5A-5B, the first socket element 219 of the coupling system 227 also includes ribs 228 in a similar number and arrangement, and a flange 230 in a similar arrangement, to the ribs 228 and the flange 230 of the second socket element. The functions of the ribs 228 and the flange 230 of the first socket element 219, and the advantages such structure provides in the context of the first socket element 219, are therefore similar to that described above with reference to the second socket element 221 of FIGS. 4A-4B.

[0028] The first socket element 219, in cooperation with the adapter element 223, includes complementary mating element functionality in the form of a detent or snap-fit feature of the coupling system 217 that characterizes the assembly and disassembly interaction between the first socket element 219 and the adapter element 223. For example, the adapter element 223 includes two instances of an outwardly facing cavity 232 (best seen with reference to both FIGS. 4A and 5A) occupying opposite lateral sides of the adapter element 223, and the first socket element 219 includes two instances of an inwardly-directed protrusion 234 (see FIG. 5A for an illustration of one such protrusion--the other, on an opposite lateral side of the first socket element, is obscured) for completing the detent. In the case of the detent associated with the first socket element 219 and the adapter element 223, once the first protrusion 235 of the first mating end 225 of the adapter element 223 has been inserted far enough into the cavity 233 at the mating end 229 of the first socket element 219 (see FIG. 6B, further described below), the inwardly-directed protrusion 234 or ridge on each lateral side of the first socket element 219 snaps into and tends to remain within the cavity 232 occupying the corresponding lateral side of the adapter element 223 (see, for example, FIG. 5B). This arrangement of cavities and protrusions serves to retain the adapter element 223 within the first socket element 219 (see FIG. 5B) until disassembly is desired.

[0029] Referring again to FIGS. 5A-5B, the first socket element 219 further includes two instances of a displaceable tab 236, and each instance of the inwardly-directed protrusion 234 of the first socket element 219 is disposed on a displaceable tab 236 for purposes of movement of the corresponding inwardly-directed protrusion 234 either inward or outward relative to the cavity 237 of the first socket element, as the situation requires. The dis-

placeable tabs 236 are attached to and extend in cantilever away from a part of the remainder of the first socket element 219 (e.g., from the flange 230 of the first socket element 219). In the case of the displaceable tabs 236 of the first socket element 219, once the inwardly-directed protrusion 234 has snapped into the corresponding cavity 232 of the adapter element 223, the child ordinarily has no way of independently moving either of the displaceable tabs 236, since the entire displaceable tab 236 is located underneath the flange 230 of the first socket element 219 and within the toy component to which the first socket element 219 is attached. However it is not necessary that the child have this degree of control over the displaceable tabs 236 of the first socket element 219, as will be explained below with reference to FIGS. 6A-6C.

[0030] The detent or snap-fit feature corresponding to the attachment between the second socket element 221 and the adapter element 223 is stronger than the corresponding feature characterizing the attachment between the first socket element 219 and the adapter element 223. As shown in FIG. 6A, the subassembly 218 consisting of the combination of the second socket element 221 and the adapter element 223 is created by the child inserting the adapter element 223 into the second socket element 221, which is already attached to a central body component 105 of a toy vehicle in accordance with this invention. The first socket element 219, which is attached to a front body component 103 of a toy vehicle in accordance with this invention, may be arranged in front of the subassembly 218, and aligned with the same in preparation for coupling of the body components 103, 105.

[0031] As shown in FIG. 6B, a child may apply force to (e.g., push) the body components 103, 105 together, represented in FIG. 6B by opposing forces 236, 238 applied to the body components 103, 105, so as to achieve the desired coupling between the adapter element 223 and the first socket element 219, as described below. At this point, the adapter element 223 may be mostly or completely enclosed within the body components 103, 105, as shown in FIG. 6B. When the child decides to disassemble the body components 103, 105, the child urges (e.g., pulls) the body components 103, 105 apart, as represented by forces 240, 242 applied to body components 103, 105 in FIG. 6C. The force required to dislodge the adapter element 223 from the first socket element 219 is less than the force required to dislodge the adapter element 223 from the second socket element 221. As such, the adapter element 223 remains within the second socket element 221 while the detent associated with the connection between the first socket element 219 and the adapter element 223 releases or is defeated by default, due to comparative weakness, as shown in FIG. 6C. Thus the child ordinarily need not be concerned with the adapter element 223 falling to the ground or becoming stuck inside the first socket element 219 (which would be hard to dislodge, since the adapter element is harder to grasp than a larger body element, and the detent governing its connection with the first socket element

219 is enclosed within the body element 103 and below the flange 230 of the first socket element). Also, such predictability is soothing to a child who, when playing with the associated toy vehicle, will undoubtedly be manipulating the coupling system 217 through the assembly/disassembly cycle shown in 6A-6C many times over the lifetime of the toy.

[0032] A third illustrative embodiment of an adapter element of a coupling system for coupling components of a toy in accordance with the present invention is illustrated in FIGS. 7A-7B. Elements illustrated in FIGS. 7A-7B which correspond to the elements described above with reference to FIGS. 4A-4B, 5A-5B, and 6A-6C have been designated by corresponding reference numerals increased by one hundred. In addition, elements illustrated in FIGS. 7A-7B which do not correspond to the elements described above with reference to FIGS. 4A-4B, 5A-5B and 6A-6C have been designated by even-numbered reference numerals starting with reference number 310. The embodiment of FIGS. 7A operates in the same manner as the embodiment of FIGS. 4A-4B, 5A-5B and 6A-6C unless it is stated otherwise.

[0033] Referring to FIGS. 7A-7B, a third illustrative embodiment of an adapter element 323 in accordance with the present invention having both similarities to and differences from the second adapter element 223 shown in FIGS. 4A-4B, 5A-5B, and 6A-6C. The coupling system 317 consists in part of the adapter element 323, which includes a main subelement 310 and an insert subelement 312. The main subelement is the portion of the adapter element 323 including the first mating end 335, along with the cavities 341 formed in the first protrusion 325, and including the displaceable tab 320 having the depression 324 of the finger interface region 322, along with the friction increasing elements embodied in the finger-catching edges 326, and including the ribs 328, flange 330 and the cavities 332 for receiving a raised ridge as part of detent. The insert subelement of the adapter element 323 includes the cavity 345 formed in the second protrusion 339 of the second mating end 327 of the adapter element 323. The main subelement 310 and the insert subelement 312 may be sized and shaped so as to facilitate mass production, e.g., via high-volume plastic molding techniques. The insert subelement 312 may be sized and shaped so as to be inserted into a gap 314 in the main subelement 310 of the adapter element 323, where it can be fastened therein via glue, for example, or by a plastic welding technique so as to ensure the position of the cavity 345 is correct for purposes of insertion of the protrusion 247 of the second coupling element 221 (see FIG. 4A).

[0034] An additional embodiment of a toy vehicle in accordance with the present invention is illustrated in FIGS. 8-9. Elements illustrated in FIGS. 8-9 which correspond to the elements described above with reference to FIGS. 1-3 have been designated by corresponding reference numerals increased by three hundred. The embodiment of FIGS. 8-9 operates in the same manner as

the embodiment of FIGS. 1-3 unless it is stated otherwise.

[0035] Referring to FIGS. 8-9, the toy vehicle 410 is part of a toy vehicle system including toy vehicle 101 shown in FIGS. 1-3. As such, where compatible shapes permit, parts of toy vehicle 401 may be exchanged for parts of toy vehicle 101, according to the imagination and desire of the child. The toy vehicle includes the front body component 403, the central body component 405, the rear body component 407, a coupling system 417 between the end 413 of the front body component 403 and the first end 409 of the central body component 405, and a coupling system 417 between the end 415 of the rear body component 407 and the second end 411 of the central body component.

[0036] The first socket element of the former coupling system 417 is attached to the front body component 403 at the end 413 of the front body component, and the second socket element of the former coupling system is attached to the central body component 405 at the first end 409 of the central body component 405. The first socket element 419 of the latter coupling system 417 is attached to the rear body component 407 at the end 415 of the rear body component 407, and the second socket element of the latter coupling system 417 is attached to the central body component 405 at the second end 411 of the central body component.

[0037] The first protrusion 435 of the first mating end 425 of the adapter element 423 of the former coupling system 417 inserts within the cavity 433 of the mating end 429 of the first socket element 419, and the second protrusion 439 of the second mating end 427 of the adapter element 423 of the former coupling system 417 inserts within the cavity 437 of the mating end 431 of the second socket element 421. The first protrusion 435 of the first mating end 425 of the adapter element 423 of the latter coupling system 417 inserts within the cavity 433 of the mating end 429 of the first socket element 419, and the second protrusion 439 of the second mating end 427 of the adapter element 423 of the latter coupling system 417 inserts within the cavity 437 of the mating end 431 of the second socket element 421.

[0038] Triangular-shaped protrusions 410 extending from within the cavity 433 of the mating end of the first socket element of both the former and the latter coupling systems 217 insert within corresponding triangular shaped cavities 412 formed in the first protrusion 435 of the adapter element 423 of both the former and the latter coupling systems 217. Where an adapter element 423 having triangular shaped cavities 412 is attached to a body component, a coupling may not be formed with a body component attached to a first socket element having circular-shaped protrusions extending from within its end cavity, such as the front socket element 119 of FIGS. 2-3. However if an adapter element 123 of FIGS. 2-3 is substituted for the adapter element 423, such a coupling may proceed.

[0039] It will be understood that the embodiments described herein are merely exemplary and that a person

skilled in the art may make many variations and modifications without departing from the scope of the invention. All such variations and modifications are intended to be included within the scope of the invention as defined in the appended claims.

Claims

1. A toy vehicle system, comprising:

- a) a first toy vehicle (**105,107;405,407**) including a first body component (**105,405**) having an end (**111,411**);
- b) a second body component (107,407) having an end (**115,415**); and
- c) a coupling system (**117,217,317,417**) having a first socket element (**119,219,419**) attached to said end (**111,411**) of said first body component **105,405**, a second socket element (**121,221,421**) attached to said end (**115,415**) of said second body component (**107,407**), and an adapter (**123,223,323,423**) having an one end (**125,335,425**) removeably attached to said first socket element (**119,219,419**) and an opposite end (**127,227,327,427**) removeably attached to said second socket element (**121,221,421**), characterized in that
- d) said adapter (**123,223,323,423**) of said first toy vehicle (**105,107;405,407**) has a first ridge (**216**) and said second socket element (**121,221,421**) has a second ridge (**214**) cooperating with said first ridge (**216**) so as to retain said adapter (**123,223,323,423**) within said second socket element (**121,221,421**);
- e) said adapter (**123,223,323,423**) has a displaceable tab (**220,320**) positioned adjacent to said first ridge (**216**), said tab (**220,320**) sized and shaped to allow said adapter (**123,223,323,423**) to be removed from said second socket element (**121,221,421**) when said tab (**220,320**) is depressed;
- f) said tab (**220,320**) includes a depression (**224,324**) sized and shaped to increase the frictional engagement of said tab (**220,320**);
- g) said first socket element (**119,219,419**) includes an outer surface with a plurality of ribs (**228**) sized and shaped so as to retain said first socket element (**119,219,419**) within said first body component (**105,405**); and
- h) said second socket element (**121,221,421**) includes an outer surface with a plurality of ribs (**228**) sized and shaped so as to retain said second socket element (**121,221,421**) within said second body component (**107,407**).

2. The toy vehicle system of Claim 1, characterized in that

- a) said opposite end (127,227,327,427) of said adapter (123,223,323,423) of said first toy vehicle (105,107;405,407) has a cavity (210,345) with a first shape; and
- b) said second socket element (121,221,421) has a protrusion (212) extending outwardly from said second socket element (121,221,421), said protrusion (212) having a second shape complementing said first shape of said cavity (210,345) so as to allow said protrusion (212) to be removeably received within said cavity (210,345).
3. The toy vehicle system of Claim 2, characterized in that
- a) said one end (125,335,425) of said adapter (123,223,323,423) of said first toy vehicle (105,107;405,407) has a third shape; and
- b) said first socket element (119,219,419) has a fourth shape complementing said third shape of said one end (125,335,425) of said adapter (123,223,323,423) so as to allow said adapter (123,223,323,423) to be removeably received within said first socket element (119,219,419).
4. The toy vehicle system of Claim 3, further comprising:
- a) a second toy vehicle (105,103;405,403) including a first body component (103,403) having an end (113,413);
- b) a second body component (105,405) having an end (109,409); and
- c) a coupling system (117,217,317,417) having a first socket element (119,219,419) attached to said end (113,413) of said first body component (103,403), a second socket element (121,221,421) attached to said end (109,409) of said second body component (105,405), an adapter (123,223,323,423) having an one end (125,335,425) removeably attached to said first socket element (119,219,419) and an opposite end (127,227,327,427) removeably attached to said second socket element (121,221,421).
5. The toy vehicle system of Claim 4, characterized in that
- a) said opposite end (127,227,327,427) of said adapter (123,223,323,423) of said second toy vehicle (105,103;405,403) has a cavity (210,314) with a fifth shape; and
- b) said second socket element (121,221,421) has a protrusion (212) extending outwardly from said second socket element (121,221,421), said protrusion (212) having a sixth shape complementing said fifth shape of said cavity (210,314)
- so as to allow said protrusion (212) to be removeably received within said cavity (210,314).
6. The toy vehicle system of Claim 5, characterized in that
- a) said one end (125,335,425) of said adapter (123,223,323,423) of said second toy vehicle (105,103;405,403) has a seventh shape; and
- b) said first socket element (119,219,419) has an eighth shape complementing said seventh shape of said one end (125,335,425) of said adapter (123,223,323,423) so as to allow said adapter (123,223,323,423) to be removeably received within said first socket element (119,219,419).
7. The toy vehicle system of Claim 6, characterized in that
- a) said first shape of said cavity (210,345) of said first toy vehicle (105,107;405,407) is different from said fifth shape of said cavity (210,314) of said second toy vehicle (105,103;405,403); and
- b) so as to prevent said adapter (123,223,323,423) of said first toy vehicle (105,107;405,407) from mating with said second body component (105,405) of said second toy vehicle (105,103;405,403) and so as to prevent said adapter (123,223,323,423) of said second toy vehicle (105,103;405,403) from mating with said second body component (107,407) of said first toy vehicle (105,107;405,407).
8. The toy vehicle system of Claim 7, characterized in that
- a) said fourth shape of said first socket element (119,219,419) of said first toy vehicle (105,107;405,407) is the same as the eighth shape of said first socket element (119,219,419) of said second toy vehicle (105,103;405,403); and
- b) so as to allow said adapter (123,223,323,423) of said first toy vehicle (105,107;405,407) to be removeably received within said first body component (103,403) of said second toy vehicle (105,103,405,403) and so as to allow said adapter (123,223,323,423) of said second toy vehicle (105,103;405,403) to be removeably received within said first body component (105,405) of said first toy vehicle (105,107;405,407).
9. The toy vehicle system of Claim 8, characterized in that

- a) said first toy vehicle (105,107;405,407) has a first color; and
 b) said second toy vehicle (105,103;405,403) has a second color different from said first color.

10. The toy vehicle system of Claim 9, characterized in that

- a) said first body component (105,405) and said second body component (107,407) of said first toy vehicle (105,107;405,407) are made of wood; and
 b) said coupling system (117,217,317,417) of said first toy vehicle (105,107;405,407) is made of plastic.

11. The toy vehicle system of Claim 10, characterized in that

- a) said one end (125,335,425) of said adapter (123,223,323,423) of said first toy vehicle (105,107;405,407) has a cavity (141,412) formed in said one end (125,335,425); and
 b) said first socket element (119,219,419) has a protrusion (143,410) extending outwardly from said first socket element (119,219,419), said protrusion (143,410) of said first socket element (119,219,419) removeably received within said cavity (141,412) of said adapter (123,223,323,423).

Patentansprüche

1. Ein Spielfahrzeugsystem, umfassend:

- a) ein erstes Spielfahrzeug (105,107;405,407) mit einem ersten Karosserieteil (105,405), das ein Ende hat (111,411);
 b) ein zweites Karosserieteil (107,407), das ein Ende hat (115,415); und
 c) ein Kopplungssystem (117,217,317,417), das ein erstes Buchsenelement (119,219,419) hat, das am genannten Ende (111,411) des genannten ersten Karosserieteils (105,405) befestigt ist, ein zweites Buchsenelement (121,221,421), das am genannten Ende (115,415) des genannten zweiten Karosserieteils (107,407) befestigt ist, und ein Adapter (123,223,323,423) mit einem Ende (125,335,425), das lösbar am genannten ersten Buchsenelement (119,219,419) befestigt ist, und einem gegenüberliegenden Ende (127,227,327,427), das lösbar am genannten zweiten Buchsenelement (121,221,421) befestigt ist, dadurch gekennzeichnet, dass
 d) der genannte Adapter (123,223,323,423) des genannten ersten Spielfahrzeugs (105,107;

405,407) eine erste Rippe (216) hat und das zweite Buchsenelement (121,221,421) eine zweite Rippe (214) hat, die mit genannter erster Rippe (216) zusammenwirkt, um genannten Adapter (123,223,323,423) innerhalb des genannten zweiten Buchsenelements (121,221,421) zu fixieren;

e) der genannte Adapter (123,223,323,423) benachbart zur ersten Rippe (216) eine verstellbare Zunge (220,320) hat, die genannte Zunge (220,320) so bemessen und geformt ist, dass wenn die genannte Zunge (220,320) niedergedrückt ist, genannter Adapter (123,223,323,423) vom genannten zweiten Buchsenelement (121,221,421) entfernbar ist;

f) die genannte verstellbare Zunge (220,320) eine Vertiefung (224,324) besitzt, die so bemessen und geformt ist, um den Reibwiderstand genannter verstellbarer Zunge (220,320) zu erhöhen;

g) das genannte erste Buchsenelement (119,219,419) eine Aussenfläche mit einer Mehrzahl von Rippen (228) besitzt, die so bemessen und geformt sind, um genanntes erstes Buchsenelement (119,219,419) innerhalb des genannten ersten Karosserieteils (105,405) zu fixieren; und

h) das genannte zweite Buchsenelement (121,221,421) eine Aussenfläche mit einer Mehrzahl von Rippen (228) besitzt, die so bemessen und geformt sind, um genanntes zweites Buchsenelement (121,221,421) innerhalb des genannten zweiten Karosserieteils (107,407) zu fixieren.

2. Spielfahrzeugsystem nach Anspruch 1, dadurch gekennzeichnet, dass

- a) das genannte gegenüberliegende Ende (127,227,327,427) des genannten Adapters (123,223,323,423) des genannten ersten Spielfahrzeugs (105,107;405,407) eine Aussparung (210,345) mit einer ersten Kontur hat; und
 b) das genannte zweite Buchsenelement (121,221,421) einen Fortsatz (212) hat, der sich nach aussen vom genannten zweiten Buchsenelement (121,221,421) erstreckt, der genannte Fortsatz (212) eine zur genannten ersten Kontur der Aussparung (210,345) komplementäre zweite Kontur hat, um genannten Fortsatz (212) innerhalb der genannten Aussparung (210,345) lösbar aufzunehmen.

3. Spielfahrzeugsystem nach Anspruch 2, dadurch gekennzeichnet, dass

- a) das genannte eine Ende (125,335,425) des genannten Adapters (123,223,323,423) des genannten ersten Spielfahrzeugs (105,107;

- 405,407)** eine dritte Kontur hat; und
b) das genannte erste Buchsenelement **(119,219,419)** eine zur genannten dritten Kontur des genannten einen Endes **(125,335,425)** des genannten Adapters **(123,223,323,423)** komplementäre vierte Kontur hat, um genannten Adapter **(123,223,323,423)** innerhalb des genannten ersten Buchsenelements **(119,219,419)** lösbar aufzunehmen.
4. Spielfahrzeugsystem nach Anspruch 3, umfasst ferner:
- a) ein zweites Spielfahrzeug **(105,103;405,403)** mit einem ersten Karosserieteil **(103,403)**, das ein Ende hat **(113,413)**;
b) ein zweites Karosserieteil **(105,405)**, das ein Ende hat **(109,409)**; und
c) ein Kopplungssystem **(117,217,317,417)**, das ein erstes Buchsenelement **(119,219,419)** hat, das am genannten Ende **(113,413)** des genannten ersten Karosserieteils **(103,403)** befestigt ist, ein zweites Buchsenelement **(121,221,421)**, das am genannten Ende **(109,409)** des genannten zweiten Karosserieteils **(105,405)** befestigt ist, ein Adapter **(123,223,323,423)** mit einem Ende **(125,335,425)**, das lösbar am genannten ersten Buchsenelement **(119,219,419)** befestigt ist, und ein gegenüberliegendes Ende **(127,227,327,427)**, das lösbar am genannten zweiten Buchsenelement **(121,221,421)** befestigt ist.
5. Spielfahrzeugsystem nach Anspruch 4, **dadurch gekennzeichnet, dass**
- a) das genannte gegenüberliegende Ende **(127,227,327,427)** des genannten Adapters **(123,223,323,423)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)** eine Aussparung **(210,314)** mit einer fünften Kontur hat; und
b) das genannte zweite Buchsenelement **(121,221,421)** einen Fortsatz **(212)** hat, der sich nach aussen vom genannten zweiten Buchsenelement **(121,221,421)** erstreckt, der genannte Fortsatz **(212)** eine zur genannten fünften Kontur der Aussparung **(210,314)** komplementäre sechste Kontur hat, um genannten Fortsatz **(212)** innerhalb der genannten Aussparung **(210,314)** lösbar aufzunehmen.
6. Spielfahrzeugsystem nach Anspruch 5, **dadurch gekennzeichnet, dass**
- a) das genannte eine Ende **(125,335,425)** des genannten Adapters **(123,223,323,423)** des genannten zweiten Spielfahrzeugs **(105,103;**
- 405,403)** eine siebente Kontur hat; und
b) das genannte erste Buchsenelement **(119,219,419)** eine zur genannten siebenten Kontur des genannten einen Endes **(125,335,425)** des genannten Adapters **(123,223,323,423)** komplementäre achte Kontur hat, um genannten Adapter **(123,223,323,423)** innerhalb des genannten ersten Buchsenelements **(119,219,419)** lösbar aufzunehmen.
7. Spielfahrzeugsystem nach Anspruch 6, **dadurch gekennzeichnet, dass**
- a) die erste Form der genannten Aussparung **(210,345)** des genannten ersten Spielfahrzeugs **(105,107;405,407)** zur genannten fünften Kontur der genannten Aussparung **(210,314)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)** verschieden ist; und
b) damit zu verhindern, dass genannter Adapter **(123,223,323,423)** des genannten ersten Spielfahrzeugs **(105,107;405,407)** mit dem genannten zweiten Karosserieteil **(105,405)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)** zusammengefügt wird, und um damit zu verhindern, dass genannter Adapter **(123,223,323,423)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)** mit genanntem zweiten Karosserieteil **(107,407)** des genannten ersten Spielfahrzeugs **(105,107;405,407)** zusammengefügt wird.
8. Spielfahrzeugsystem nach Anspruch 7, **dadurch gekennzeichnet, dass**
- a) die genannte vierte Kontur des genannten ersten Buchsenelements **(119,219,419)** des genannten ersten Spielfahrzeugs **(105,107;405,407)** gleich ist, wie die achte Kontur des genannten ersten Buchsenelements **(119,219,419)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)**; und
b) damit zu ermöglichen, dass genannter Adapter **(123,223,323,423)** des genannten ersten Spielfahrzeugs **(105,107;405,407)** innerhalb des genannten ersten Karosserieteils **(103,403)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)** lösbar aufgenommen wird, und um damit zu ermöglichen, dass genannter Adapter **(123,223,323,423)** des genannten zweiten Spielfahrzeugs **(105,103;405,403)** innerhalb des genannten ersten Karosserieteils **(105,405)** des genannten ersten Spielfahrzeugs **(105,107;405,407)** lösbar aufgenommen wird.
9. Spielfahrzeugsystem nach Anspruch 8, **dadurch gekennzeichnet, dass**

- a) das genannte erste Spielfahrzeug (105,107; 405,407) eine erste Farbe hat; und
 b) das genannte zweite Spielfahrzeug (105,103; 405,403) eine von der genannten ersten Farbe verschiedene zweite Farbe hat.

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10. Spielfahrzeugsystem nach Anspruch 9, **dadurch gekennzeichnet, dass**

- a) das genannte erste Karosserieteil (105,405) und das genannte zweite Karosserieteil (107,407) des genannten ersten Spielfahrzeugs (105,107;405,407) aus Holz hergestellt sind; und
 b) das genannte Kopplungssystem (117,217,317,417) des genannten ersten Spielfahrzeugs (105,107;405,407) aus Kunststoff hergestellt ist.

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11. Spielfahrzeugsystem nach Anspruch 10, **dadurch gekennzeichnet, dass**

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- a) das genannte eine Ende (125,335,425) des genannten Adapters (123,223,323,423) des genannten ersten Spielfahrzeugs (105,107; 405,407) eine Aussparung (141,412) hat, die im genannten einen Ende (125,335,425) ausgebildet ist; und
 b) das genannte erste Buchsenelement (119,219,419) einen Fortsatz (143,410) hat, der sich nach aussen vom genannten ersten Buchsenelement (119,219,419) erstreckt, der genannte Fortsatz (143,410) des genannten ersten Buchsenelements (119,219,419) innerhalb der genannten Aussparung (141,412) des genannten Adapters (123,223;323,423) lösbar aufgenommen wird.

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Revendications

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1. Système de véhicules jouets, comprenant:

- a) un premier véhicule jouet (105,107;405,407) comportant un premier composant de carrosserie (105,405) possédant une extrémité (111,411);
 b) un deuxième composant de carrosserie (107,407) possédant une extrémité (115,415); et
 c) un système d'accouplement (117,217,317, 417) possédant un premier élément d'emboîtement (119,219,419) attaché à ladite extrémité (111,411) dudit premier composant de carrosserie (105,405), un deuxième élément d'emboîtement (121,221,421) attaché à ladite extrémité (115,415) dudit deuxième composant de carrosserie (107,407), et un adaptateur (123,223,

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323,423) possédant une première extrémité (125,335,425) attachée de façon amovible audit premier élément d'emboîtement (119,219,419) et une extrémité opposée (127,227,327,427) attachée de façon amovible audit deuxième élément d'emboîtement (121,221,421), **caractérisé en ce que**

d) ledit adaptateur (123,223,323,423) dudit premier véhicule jouet (105,107;405,407) possède une première crête (216) et ledit deuxième élément d'emboîtement (121,221,421) possède une deuxième crête (214) s'associant à ladite première crête (216) de manière à retenir ledit adaptateur (123,223,323,423) à l'intérieur dudit deuxième élément d'emboîtement (121,221, 421);

e) ledit adaptateur (123,223,323,423) possède une languette déplaçable (220,320) en position adjacente à ladite première crête (216), ladite languette (220,320) étant dimensionnée et formée pour permettre de retirer ledit adaptateur (123,223,323,423) dudit deuxième élément d'emboîtement (121,221,421) lorsque ladite languette (220,320) est enfoncée;

f) ladite languette (220,320) comporte un creux (224,324) dimensionné et formé pour renforcer le contact frottant de ladite languette (220,320);

g) ledit élément d'emboîtement (119,219,419) comporte une surface extérieure pourvue d'une pluralité de nervures (228) dimensionnées et formées de manière à retenir ledit premier élément d'emboîtement (119,219,419) à l'intérieur dudit premier composant de carrosserie (105,405); et

h) ledit deuxième élément d'emboîtement (121,221,421) comporte une surface extérieure pourvue d'une pluralité de nervures (228) dimensionnées et formées de manière à retenir ledit deuxième élément d'emboîtement (121, 221,421) à l'intérieur dudit deuxième composant de carrosserie (107,407).

2. Système de véhicules jouets selon la revendication 1, **caractérisé en ce que**

a) ladite extrémité opposée (127,227,327,427) dudit adaptateur (123,223,323,423) dudit premier véhicule jouet (105,107;405,407) possède une cavité (210,345) présentant une première forme; et

b) ledit deuxième élément d'emboîtement (121,221,421) possède une protubérance (212) s'étendant vers l'extérieur dudit deuxième élément d'emboîtement (121,221,421), ladite protubérance (212) présentant une deuxième forme complémentaire de ladite première forme de ladite cavité (210,345) de manière à permettre de loger de façon amovible ladite protubérance

(212) à l'intérieur de ladite cavité (210,345).

3. Système de véhicules jouets selon la revendication 2, caractérisé en ce que

- a) ladite première extrémité (125,335,425) dudit adaptateur (123,223,323,423) dudit premier véhicule jouet (105,107;405,407) présente une troisième forme; et
- b) ledit premier élément d'emboîtement (119,219,419) présente une quatrième forme complémentaire de ladite troisième forme de ladite première extrémité (125,335,425) dudit adaptateur (123,223,323,423) de manière à permettre de loger de façon amovible ledit adaptateur (123,223,323,423) à l'intérieur dudit premier élément d'emboîtement (119,219,419).

4. Système de véhicules jouets selon la revendication 3, comprenant en outre:

- a) un deuxième véhicule jouet (105,103; 405,403) comportant un premier composant de carrosserie (103,403) possédant une extrémité (113,413);
- b) un deuxième composant de carrosserie (105,405) possédant une extrémité (109,409); et
- c) un système d'accouplement (117,217,317, 417) possédant un premier élément d'emboîtement (119,219,419) attaché à ladite extrémité (113,413) dudit premier composant de carrosserie (103,403), un deuxième élément d'emboîtement (121,221,421) attaché à ladite extrémité (109,409) dudit deuxième composant de carrosserie (105,405), un adaptateur (123,223,323, 423) possédant une première extrémité (125,335,425) attachée de façon amovible audit premier élément d'emboîtement (119,219,419) et une extrémité opposée (127,227,327,427) attachée de façon amovible audit deuxième élément d'emboîtement (121,221,421).

5. Système de véhicules jouets selon la revendication 4, caractérisé en ce que

- a) ladite extrémité opposée (127,227,327,427) dudit adaptateur (123,223,323,423) dudit deuxième véhicule jouet (105,103;405,403) possède une cavité (210,314) présentant une cinquième forme; et
- b) ledit deuxième élément d'emboîtement (121,221,421) possède une protubérance (212) s'étendant vers l'extérieur dudit deuxième élément d'emboîtement (121,221,421), ladite protubérance (212) présentant une sixième forme complémentaire de ladite cinquième forme de ladite cavité (210,314) de manière à permettre

de loger de façon amovible ladite protubérance (212) à l'intérieur de ladite cavité (210,314).

6. Système de véhicules jouets selon la revendication 5, caractérisé en ce que

- a) ladite première extrémité (125,335,425) dudit adaptateur (123,223,323,423) dudit deuxième véhicule jouet (105,103;405,403) 12.07.10 présente une septième forme; et
- b) ledit premier élément d'emboîtement (119,219,419) présente une huitième forme complémentaire de ladite septième forme de ladite première extrémité (125,335,425) dudit adaptateur (123,223,323,423) de manière à permettre de loger de façon amovible ledit adaptateur (123,223,323,423) à l'intérieur dudit premier élément d'emboîtement (119,219,419).

7. Système de véhicules jouets selon la revendication 6, caractérisé en ce que

- a) ladite première forme de ladite cavité (210, 345) dudit premier véhicule jouet (105,107; 405,407) est différente de ladite cinquième forme de ladite cavité (210,314) dudit deuxième véhicule jouet (105,103;405,403); et
- b) dans le but d'empêcher ledit adaptateur (123,223,323,423) dudit premier véhicule jouet (105,107;405,407) de s'accoupler audit deuxième composant de carrosserie (105,405) dudit deuxième véhicule jouet (105,103;405,403) et dans le but d'empêcher ledit adaptateur (123,223,323,423) dudit deuxième véhicule jouet (105,103;405,403) de s'accoupler audit deuxième composant de carrosserie (107,407) dudit premier véhicule jouet (105,107;405,407).

8. Système de véhicules jouets selon la revendication 7, caractérisé en ce que

- a) ladite quatrième forme dudit premier élément d'emboîtement (119,219,419) dudit premier véhicule jouet (105,107;405,407) est identique à la huitième forme dudit premier élément d'emboîtement (119,219,419) dudit deuxième véhicule jouet (105,103;405,403); et
- b) dans le but de permettre de loger de façon amovible ledit adaptateur (123,223,323,423) dudit premier véhicule jouet (105,107;405,407) à l'intérieur dudit premier composant de carrosserie (103,403) dudit deuxième véhicule jouet (105,103;405,403) et dans le but de permettre de loger de façon amovible ledit adaptateur (123,223,323,423) dudit deuxième véhicule jouet (105,103;405,403) à l'intérieur dudit premier composant de carrosserie (105,405) dudit premier véhicule jouet (105,107;405,407).

9. Système de véhicules jouets selon la revendication

8, caractérisé en ce que

- a) ledit premier véhicule jouet **(105,107; 405,407)** présente une première couleur; et 5
- b) ledit deuxième véhicule jouet **(105,103; 405,403)** présente une deuxième couleur différente de ladite première couleur.

10. Système de véhicules jouets selon la revendication 10

9, caractérisé en ce que

- a) ledit premier composant de carrosserie **(105,405)** et ledit deuxième composant de carrosserie **(107,407)** dudit premier véhicule jouet **(105,107;405,407)** sont constitués de bois; et 15
- b) ledit système d'accouplement **(117,217, 317,417)** dudit premier véhicule jouet **(105,107; 405,407)** est constitué de plastique.

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11. Système de véhicules jouets selon la revendication

10, caractérisé en ce que

- a) ladite première extrémité **(125,335,425)** dudit adaptateur **(123,223,323,423)** dudit premier véhicule jouet **(105,107;405,407)** possède une cavité **(141,412)** ménagée dans ladite première extrémité **(125,335,425)**; et 25
- b) ledit premier élément d'emboîtement **(119, 219,419)** possède une protubérance **(143,410)** s'étendant vers l'extérieur dudit premier élément d'emboîtement **(119,219,419)**, ladite protubérance **(143,410)** dudit premier élément d'emboîtement **(119,219,419)** se logeant de façon amovible à l'intérieur de ladite cavité **(141,412)** dudit adaptateur **(123,223,323,423)**. 30 35

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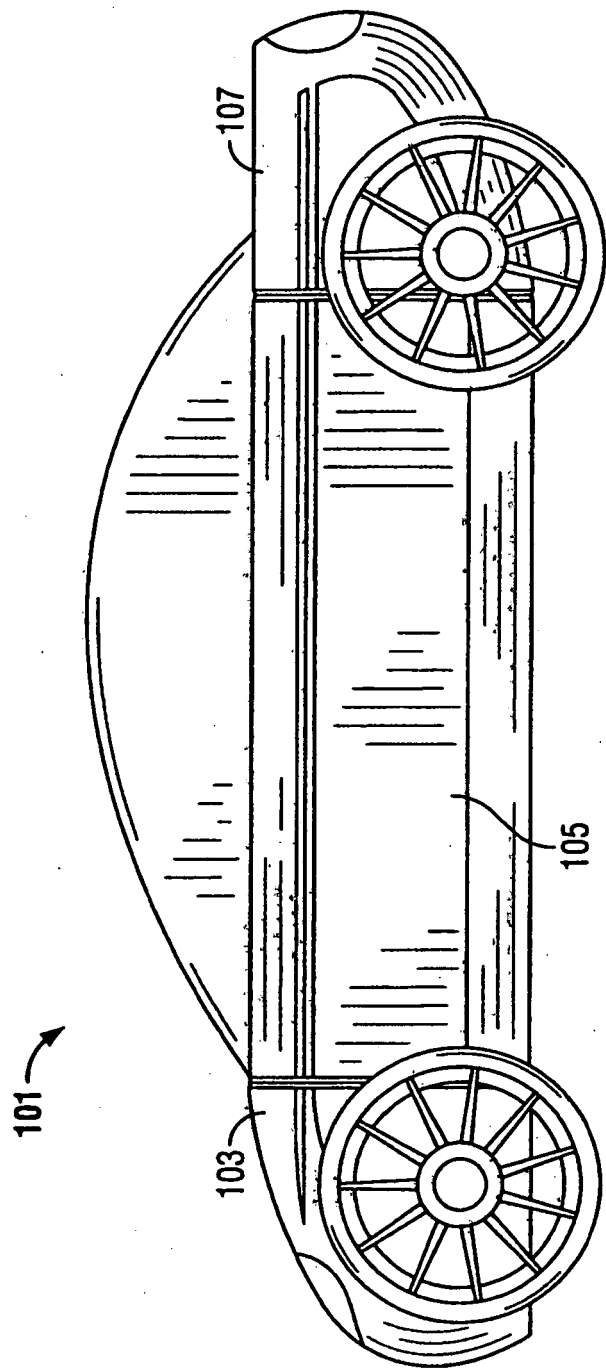


FIG. 1

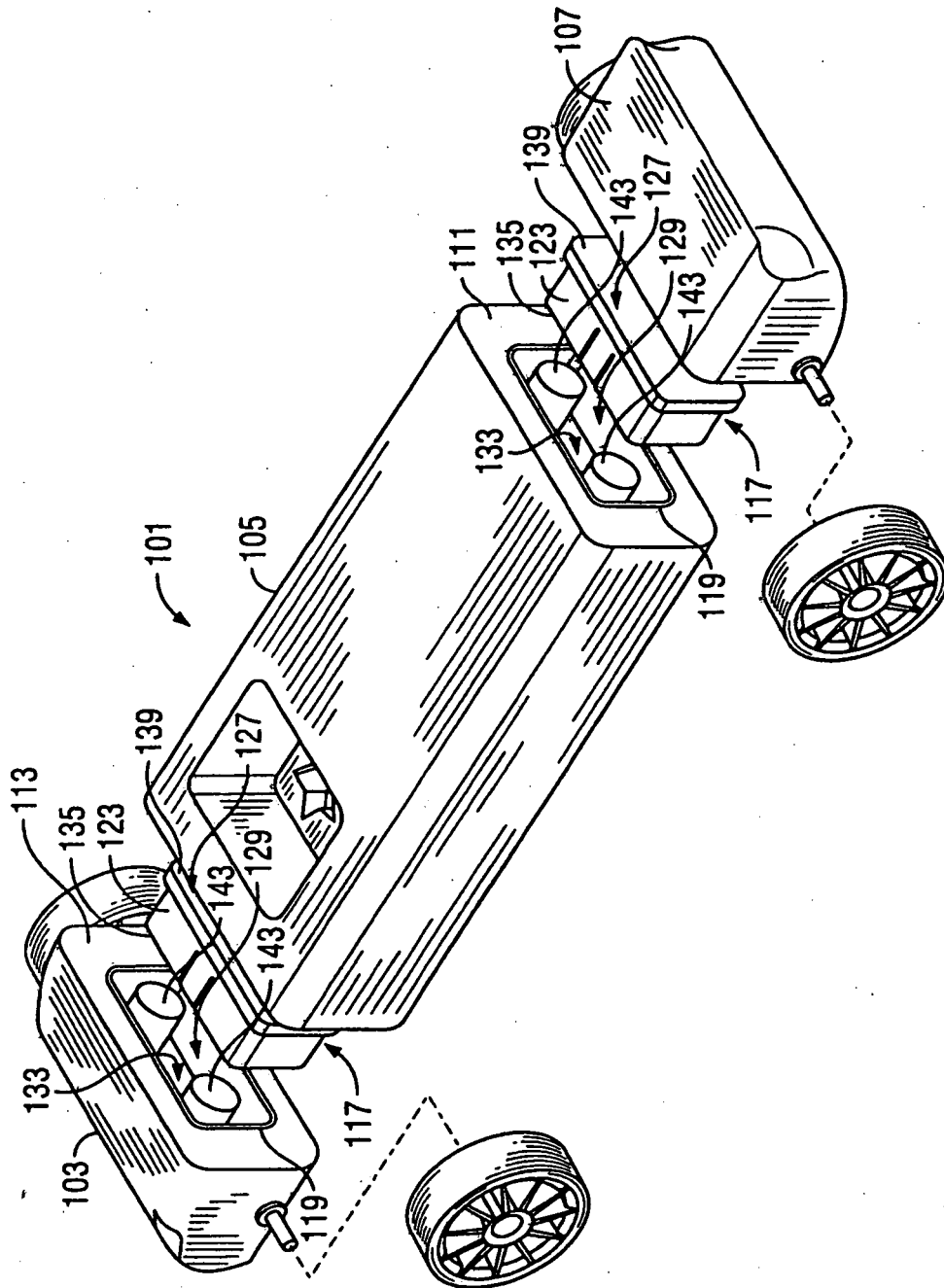


FIG. 2

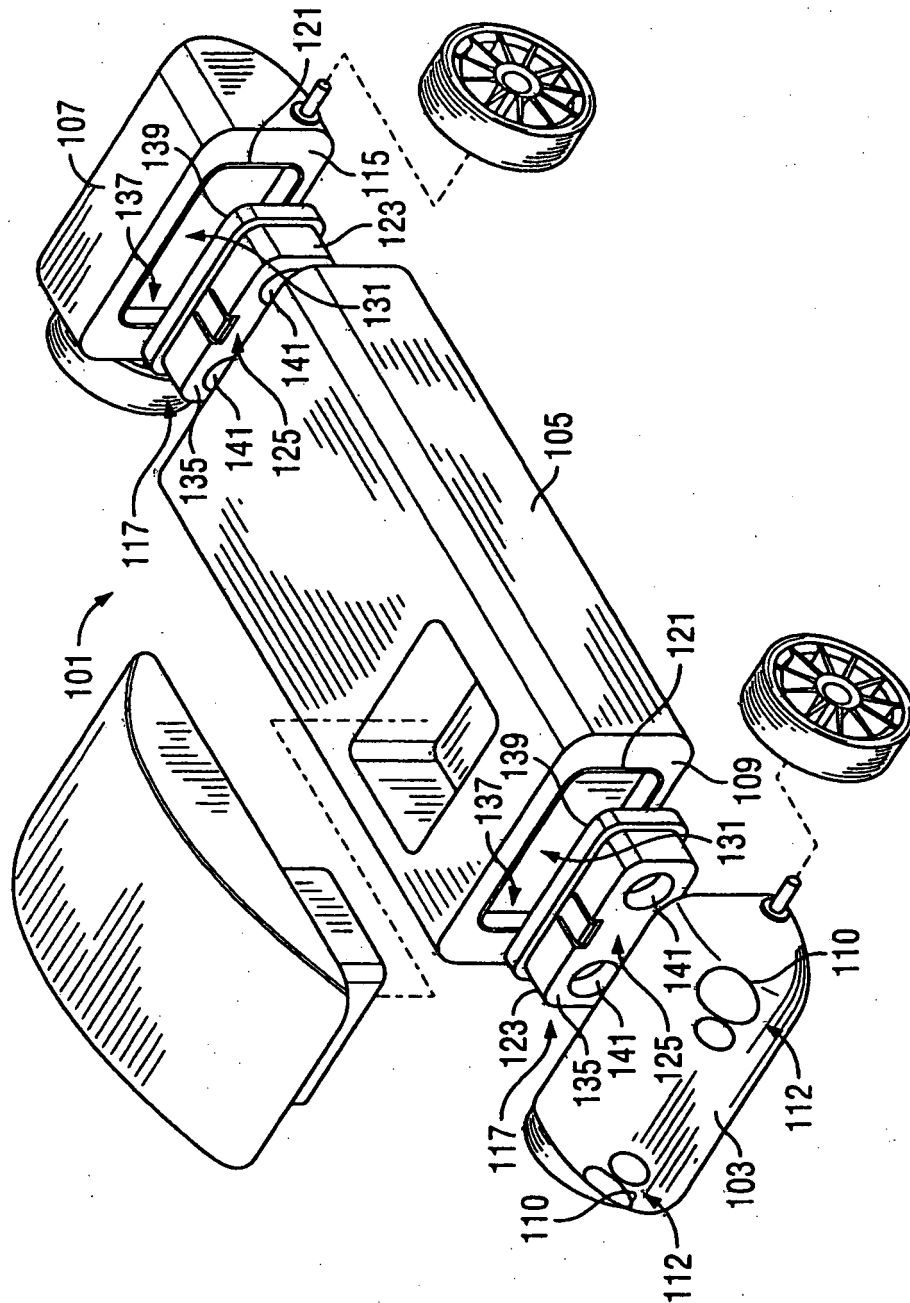


FIG. 3

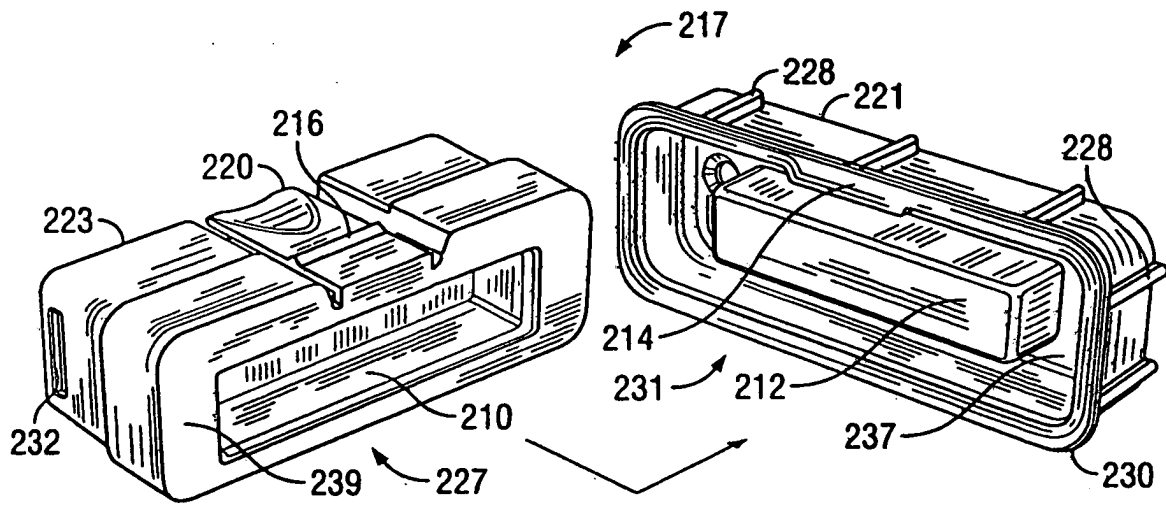


FIG. 4A

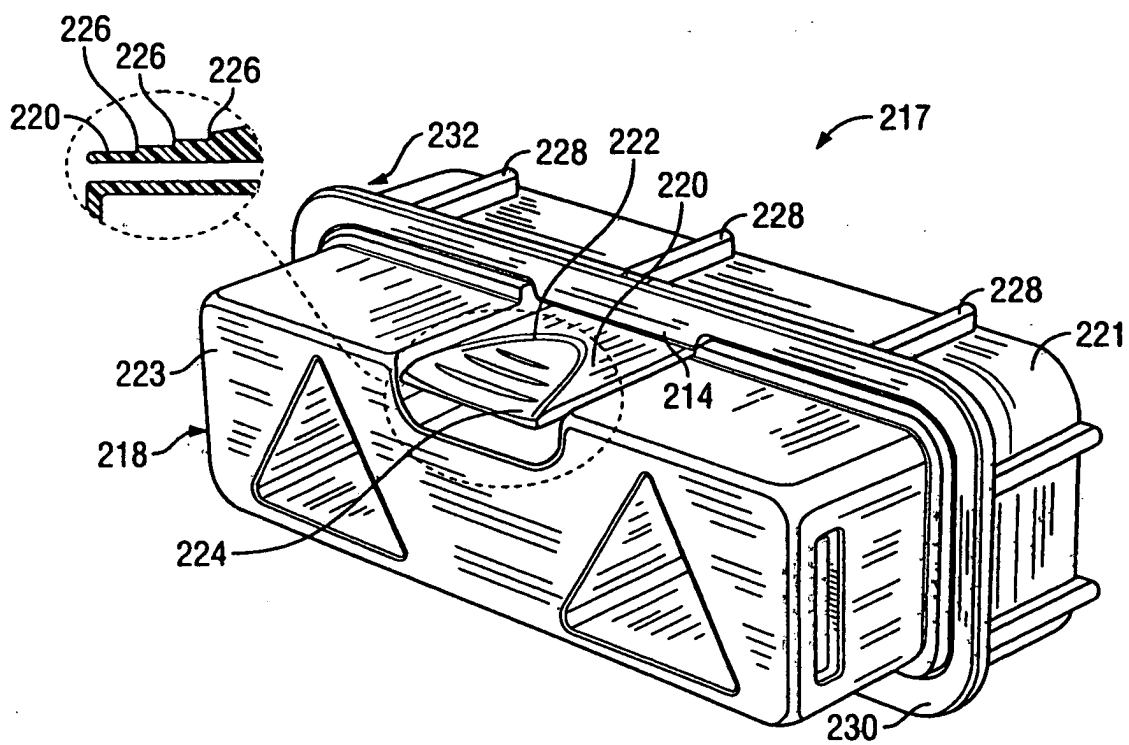


FIG. 4B

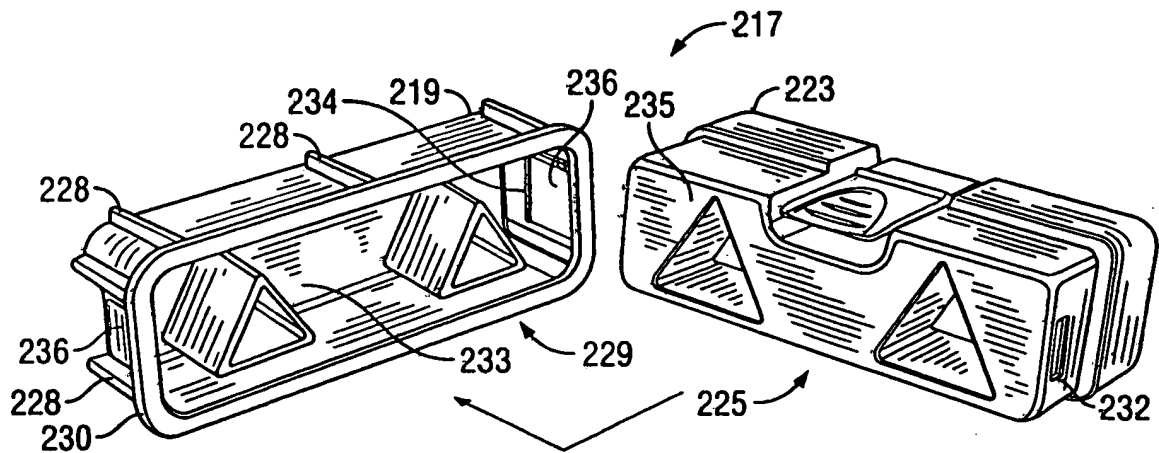


FIG. 5A

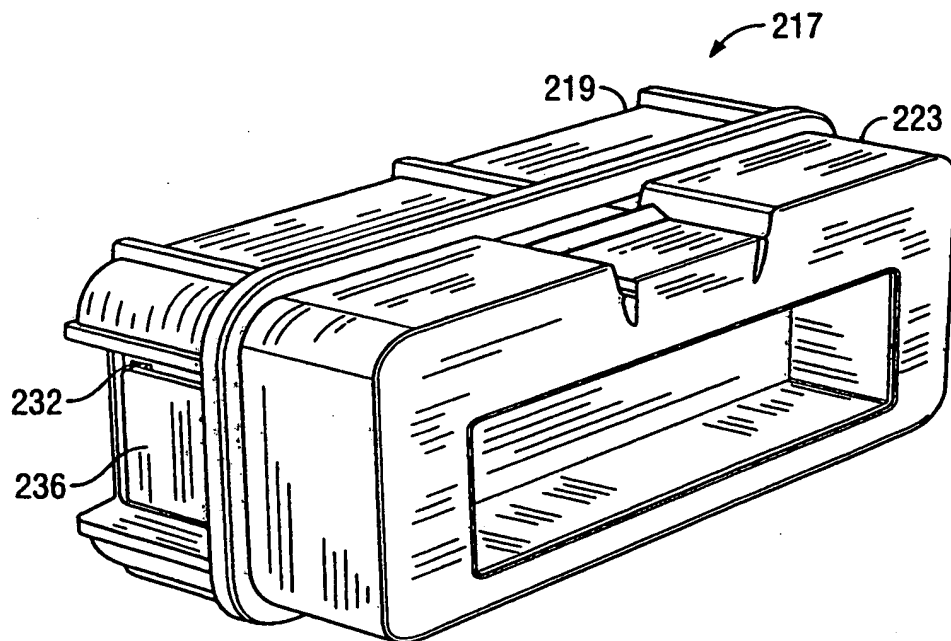


FIG. 5B

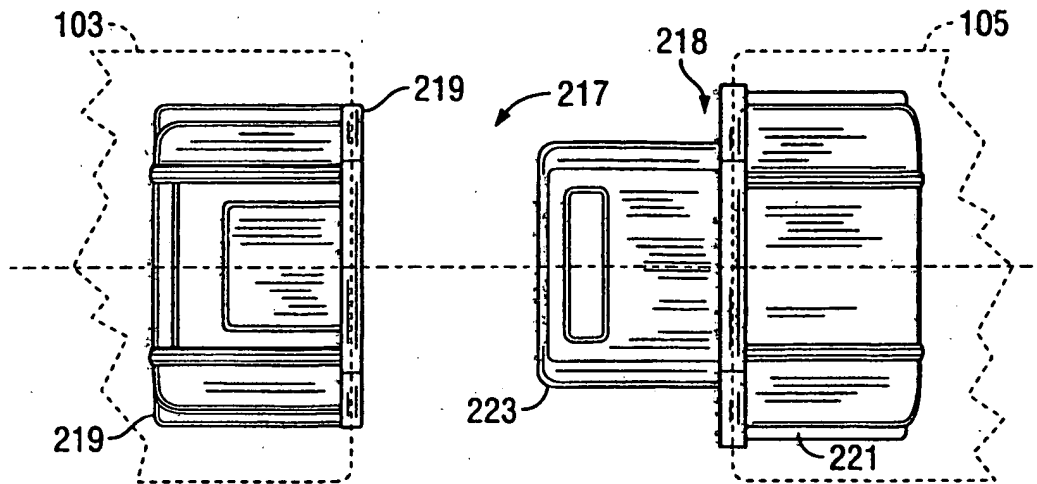


FIG. 6A

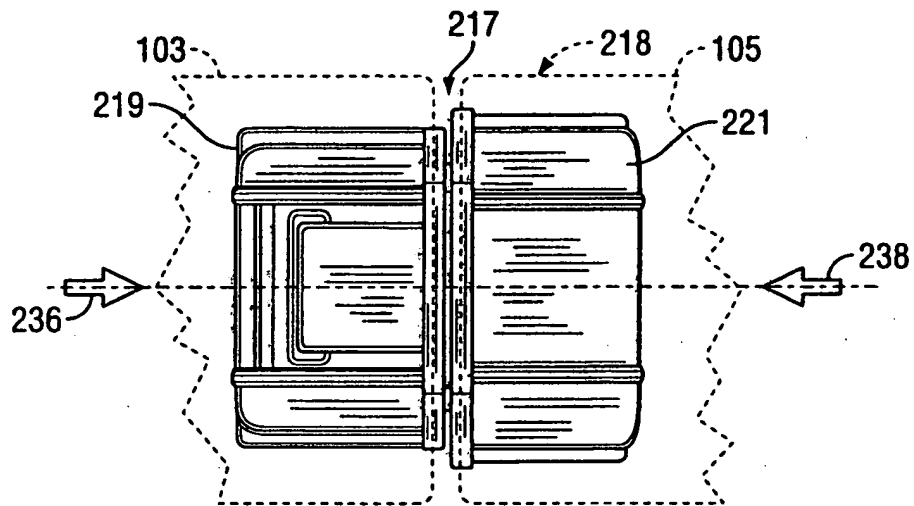


FIG. 6B

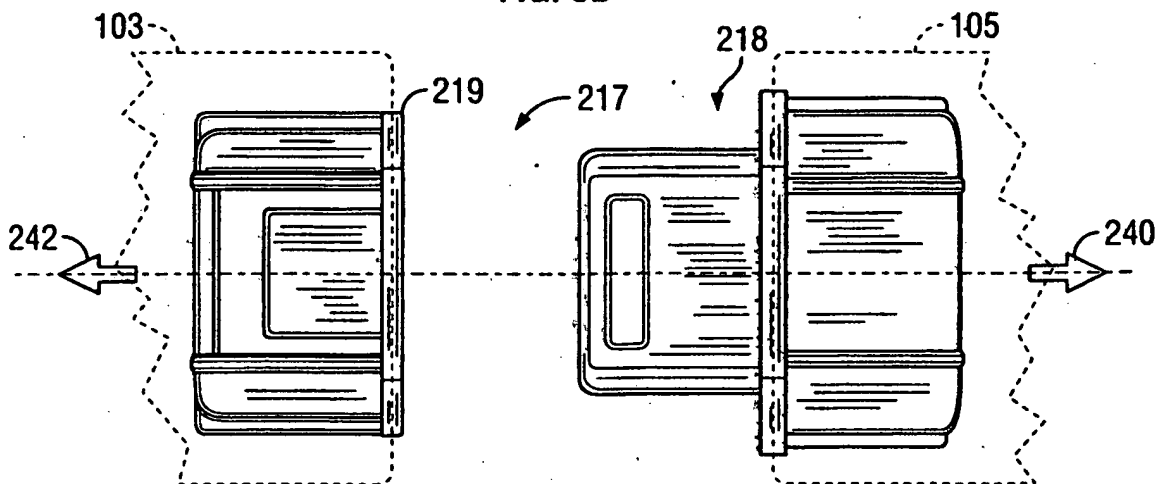


FIG. 6C

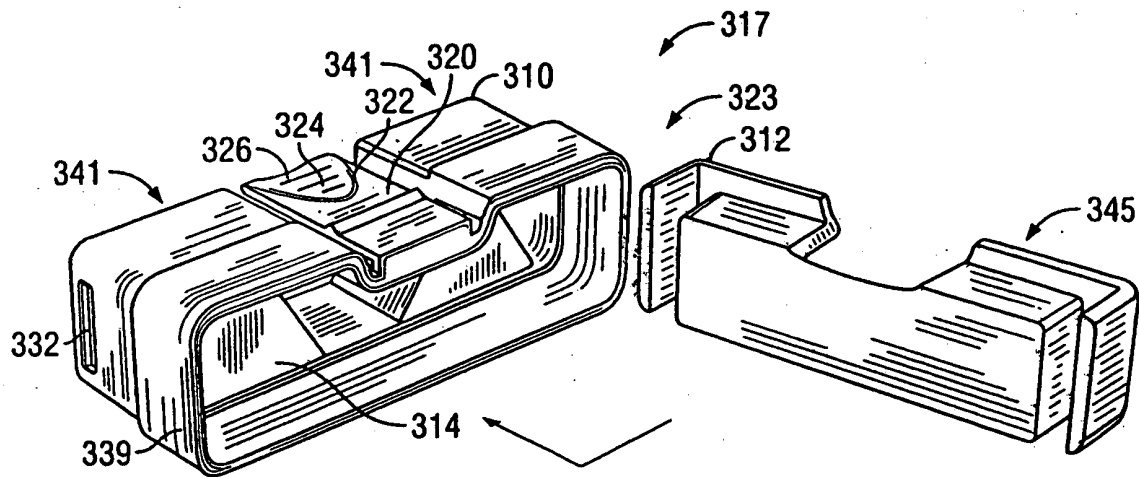


FIG. 7A

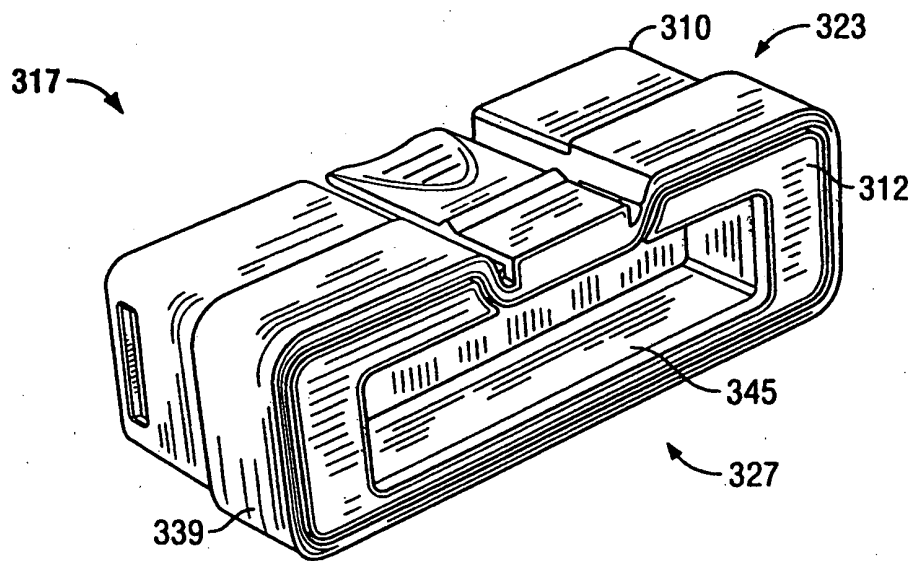


FIG. 7B

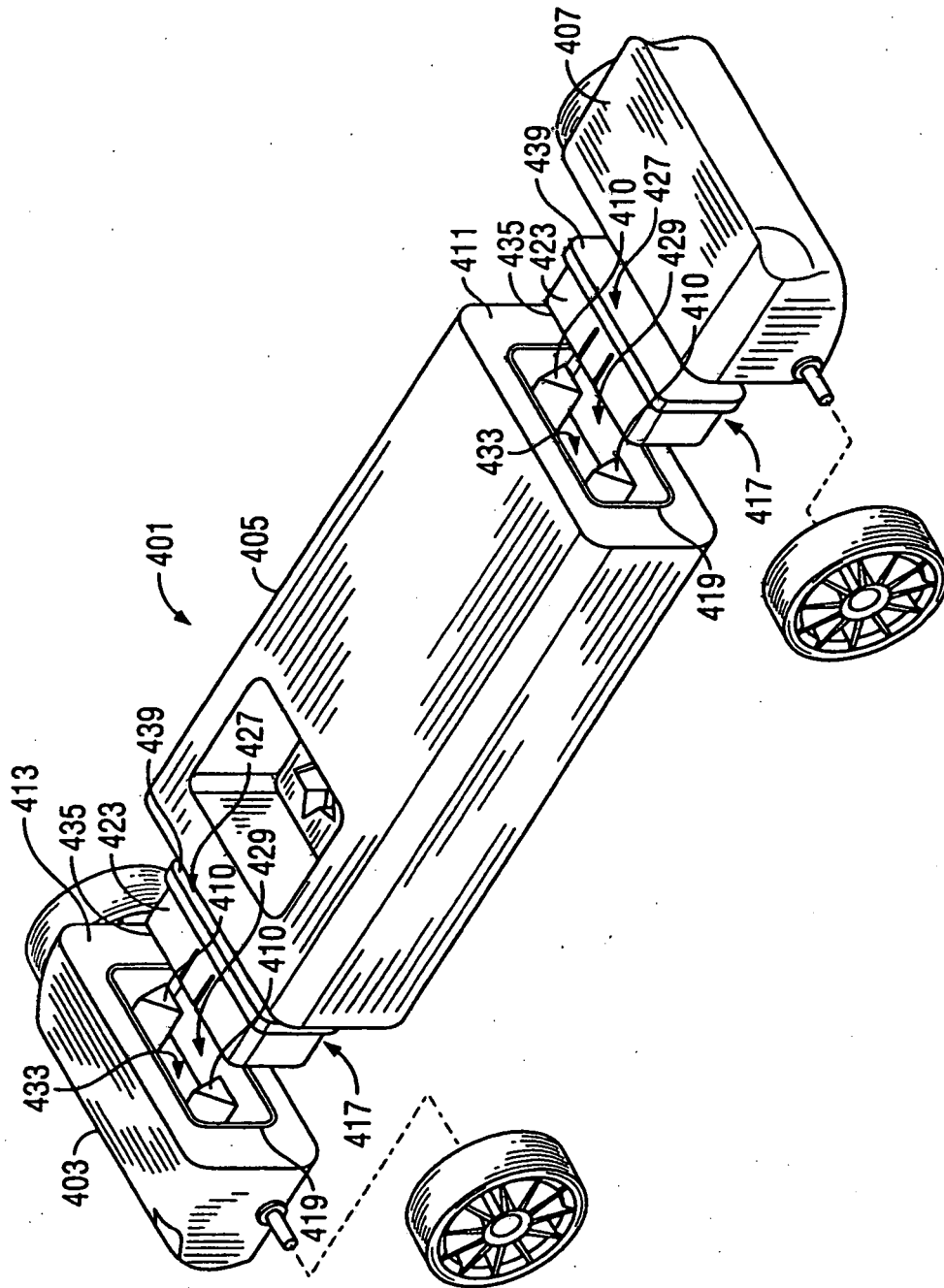


FIG. 8

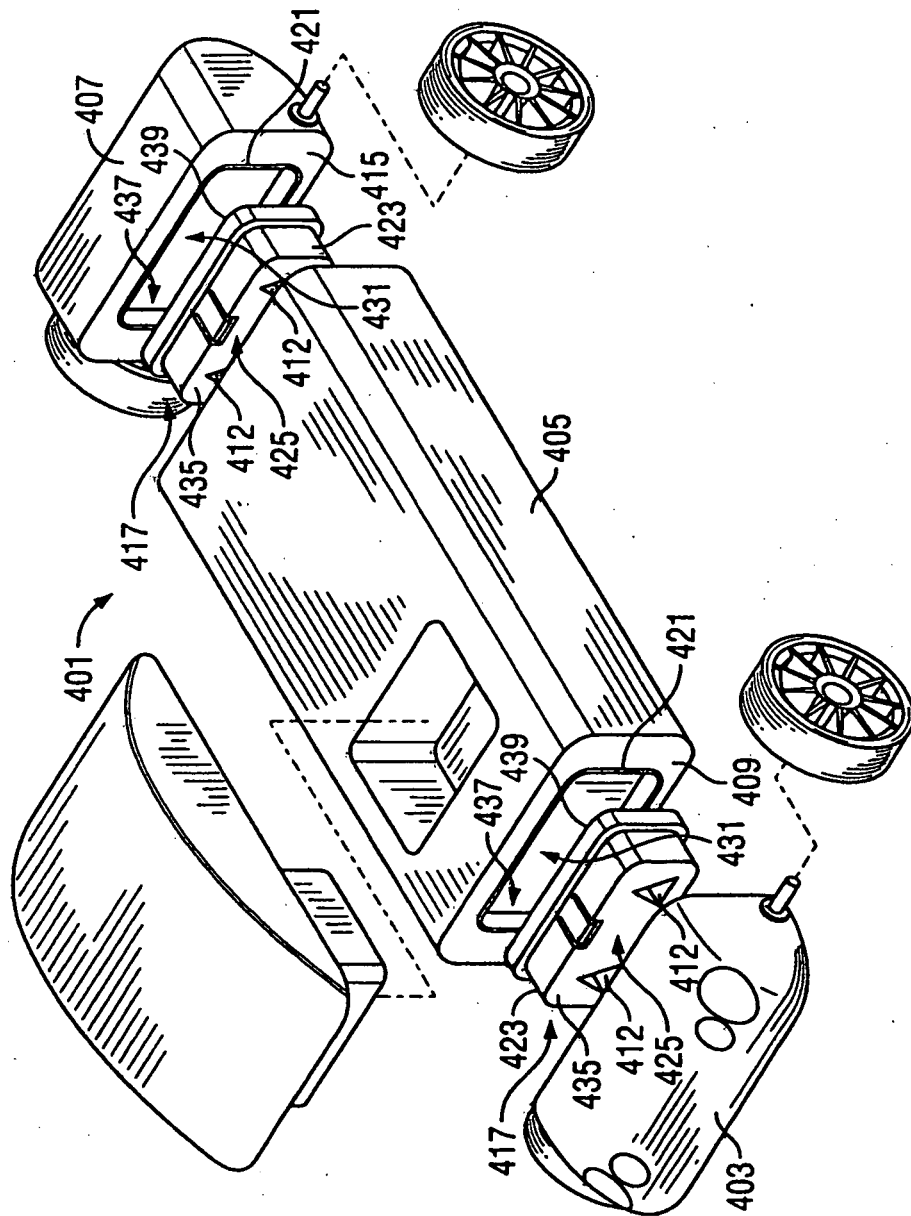


FIG. 9

REFERENCES CITED IN THE DESCRIPTION

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