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(54) **MOTORCYCLE FUEL TANK PACKAGING SYSTEM**

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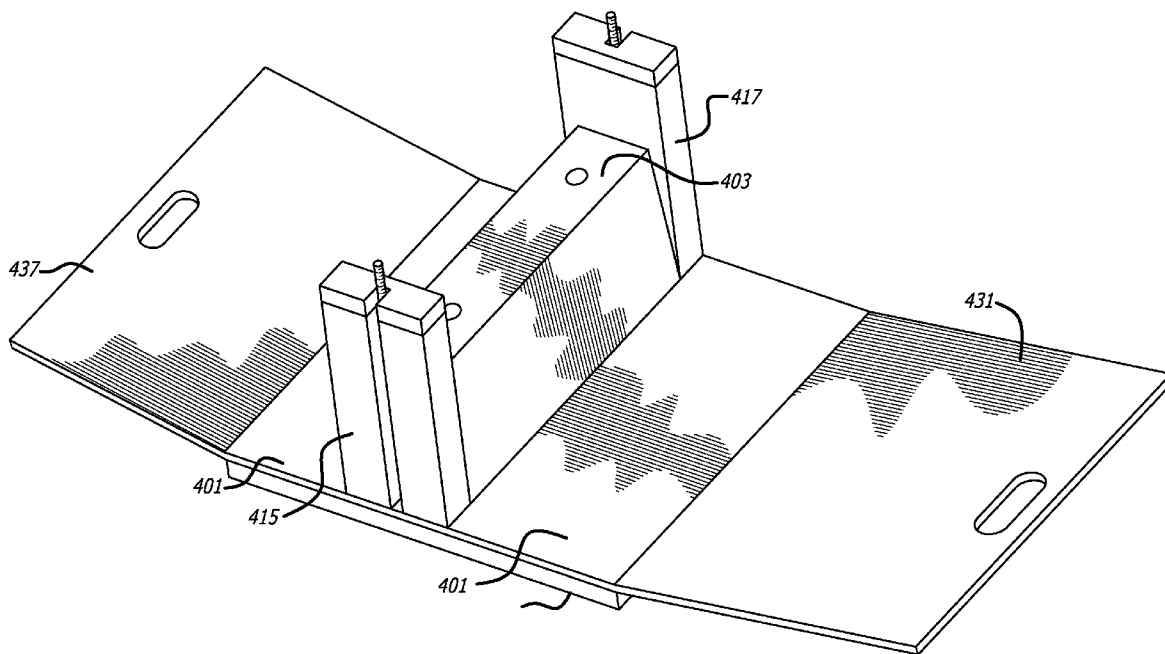
(57) **ABSTRACT**

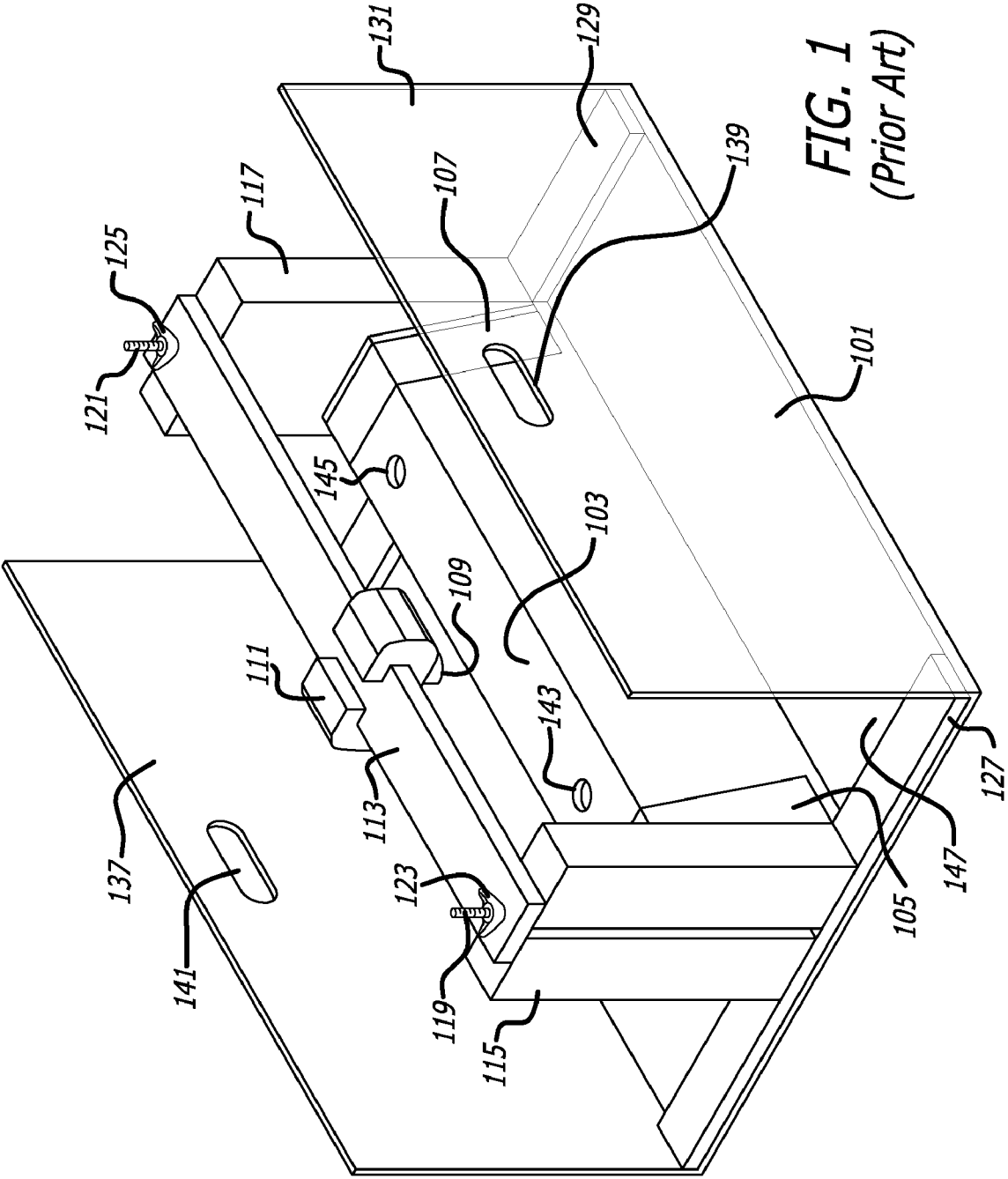
A motorcycle fuel tank packaging system may include a carton for housing the motorcycle fuel tank during shipment. The carton may have a plurality of walls. The motorcycle fuel tank packaging system may include a panel fixedly positioned within the carton in a position that is substantially parallel to one of the walls of the carton, a clamp within the carton that is configured to releasably secure the motorcycle fuel tank, and a clamp base attached to the clamp at a location on the clamp base that causes the motorcycle fuel tank when secured by the clamp to be substantially spaced from each of the walls of the carton. The clamp base may include one or more rigid cross-beams sandwiched snugly between the panel and the wall of the carton that is substantially parallel to the panel.

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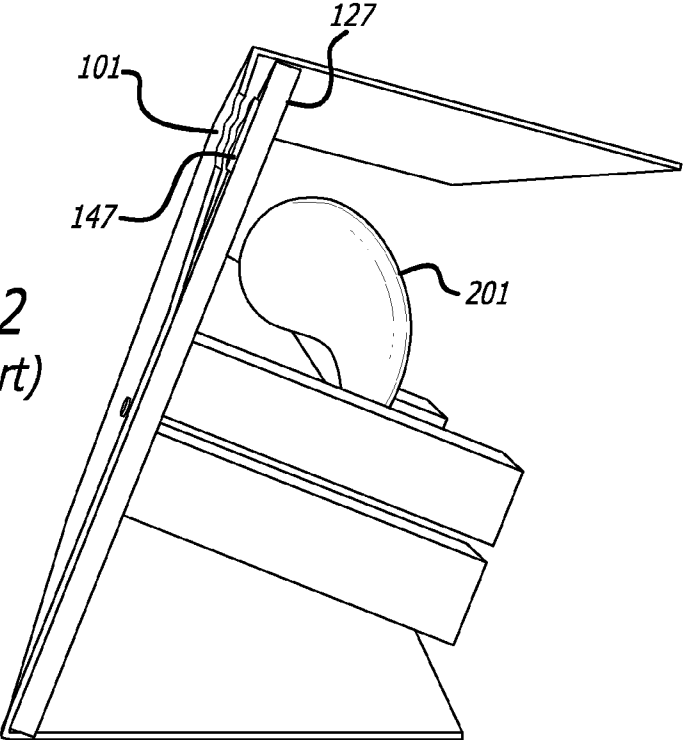
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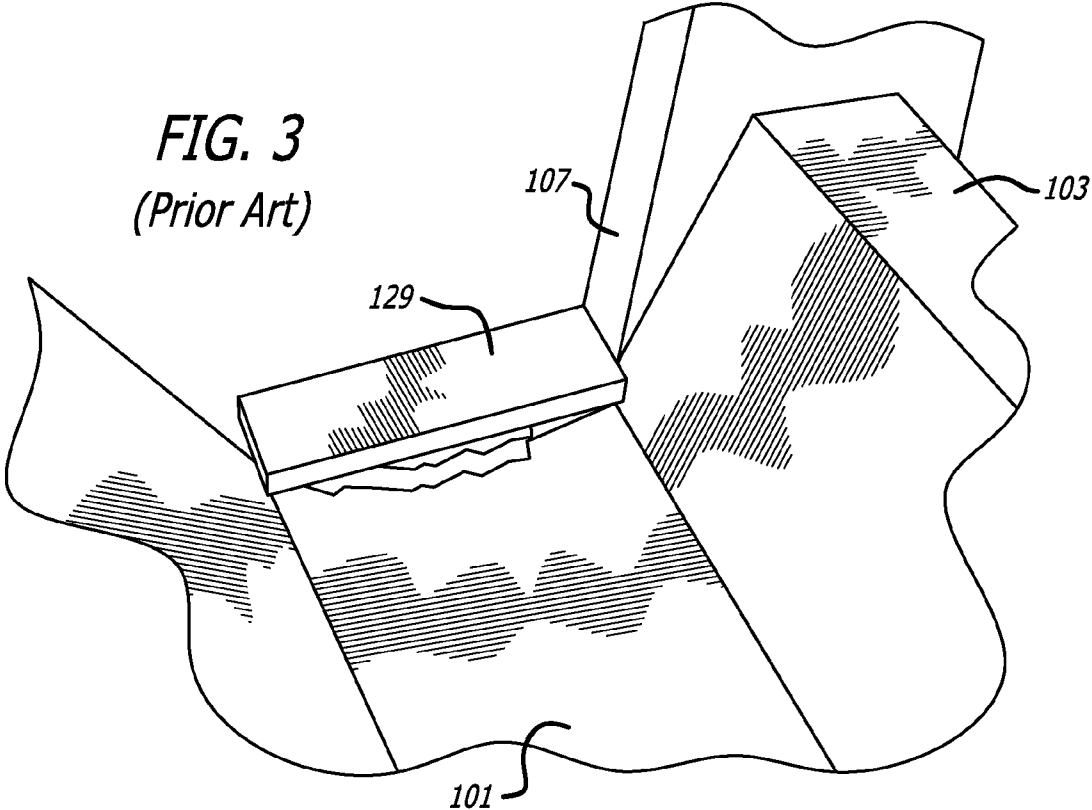


**FIG. 1**  
*(Prior Art)*

**FIG. 2**  
*(Prior Art)*



**FIG. 3**  
*(Prior Art)*



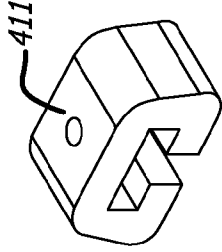


FIG. 5

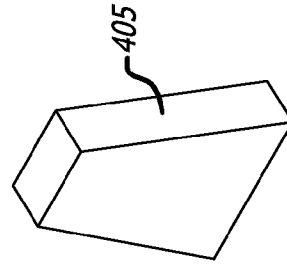


FIG. 6

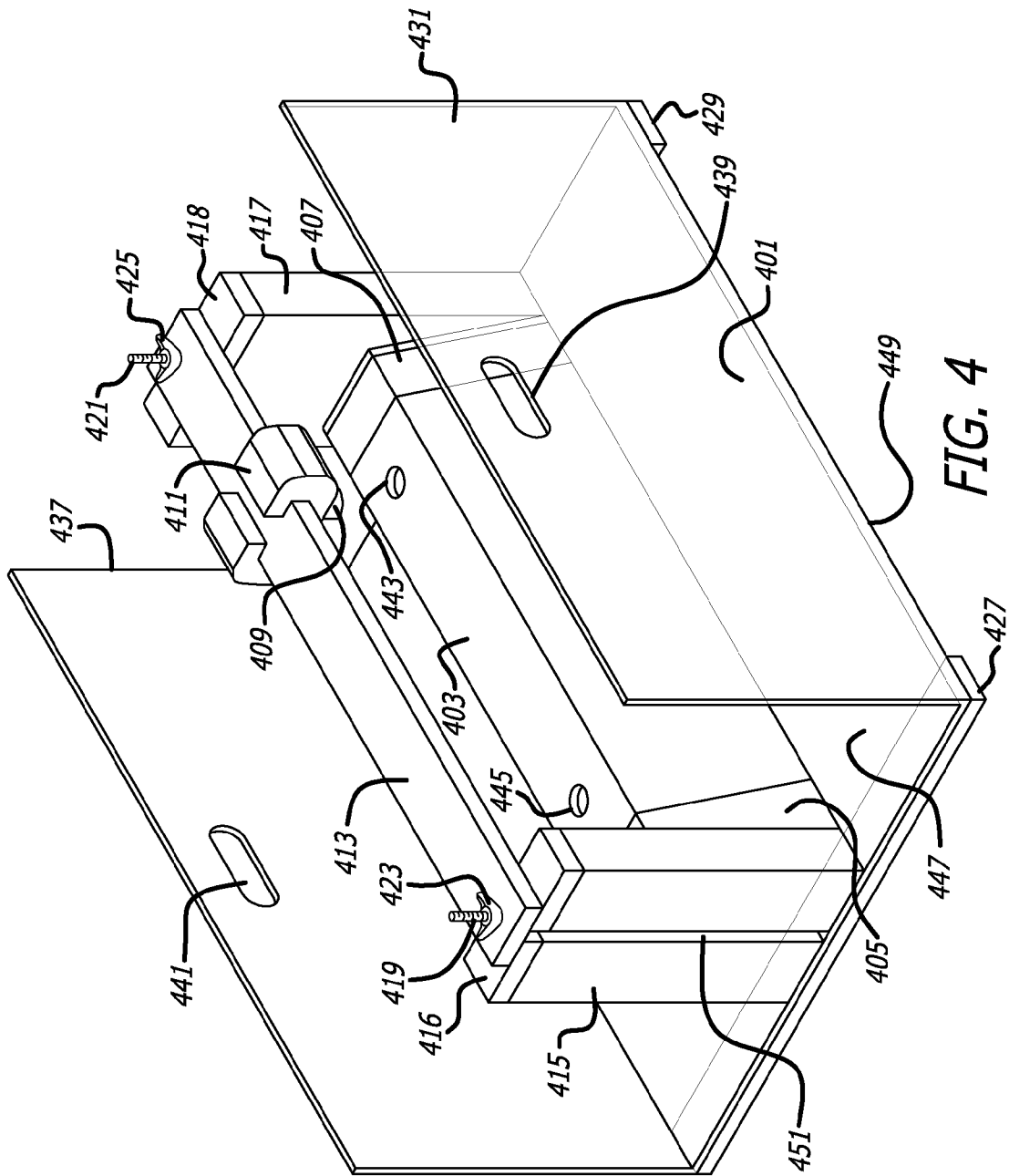


FIG. 4

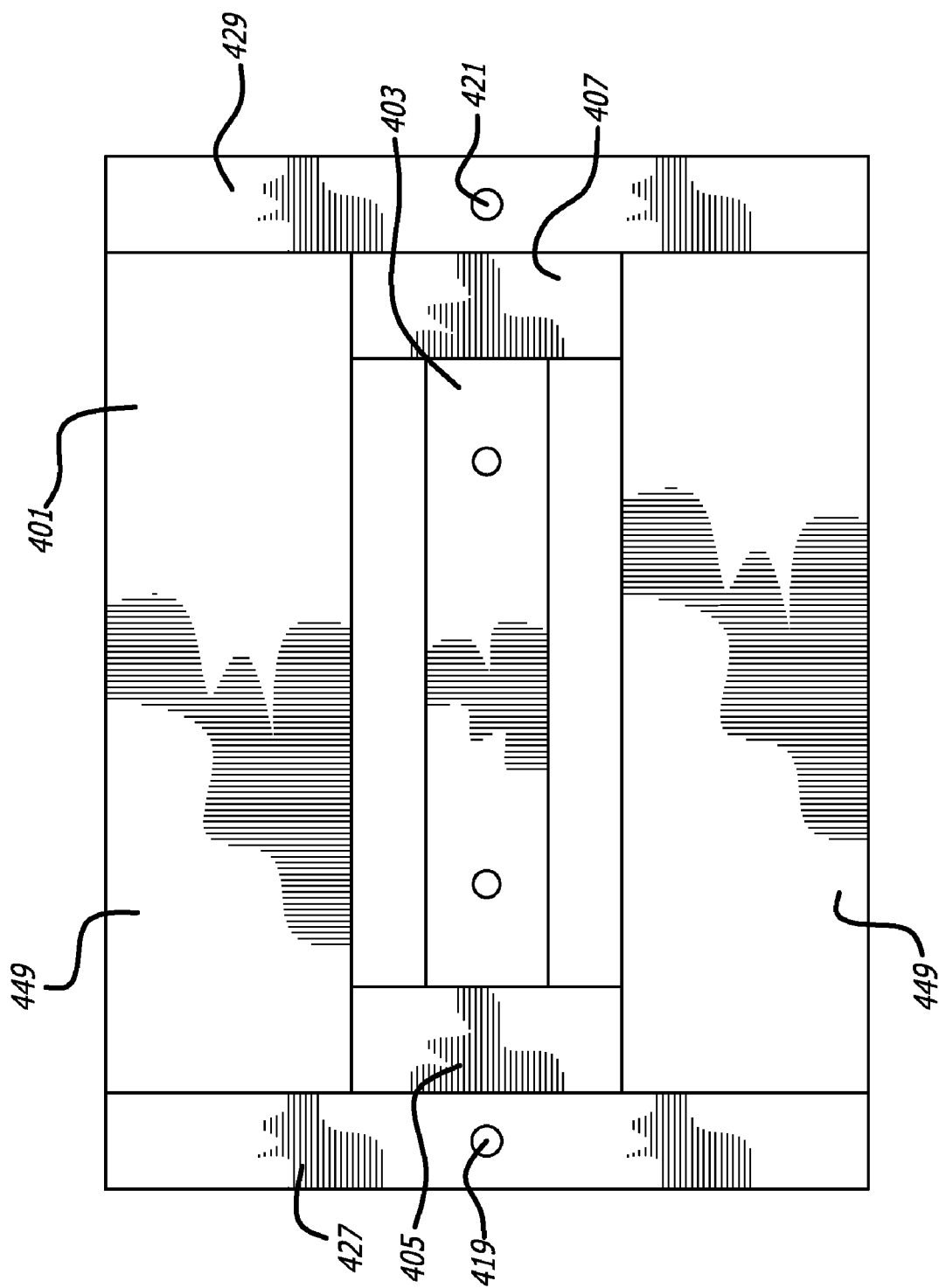


FIG. 7

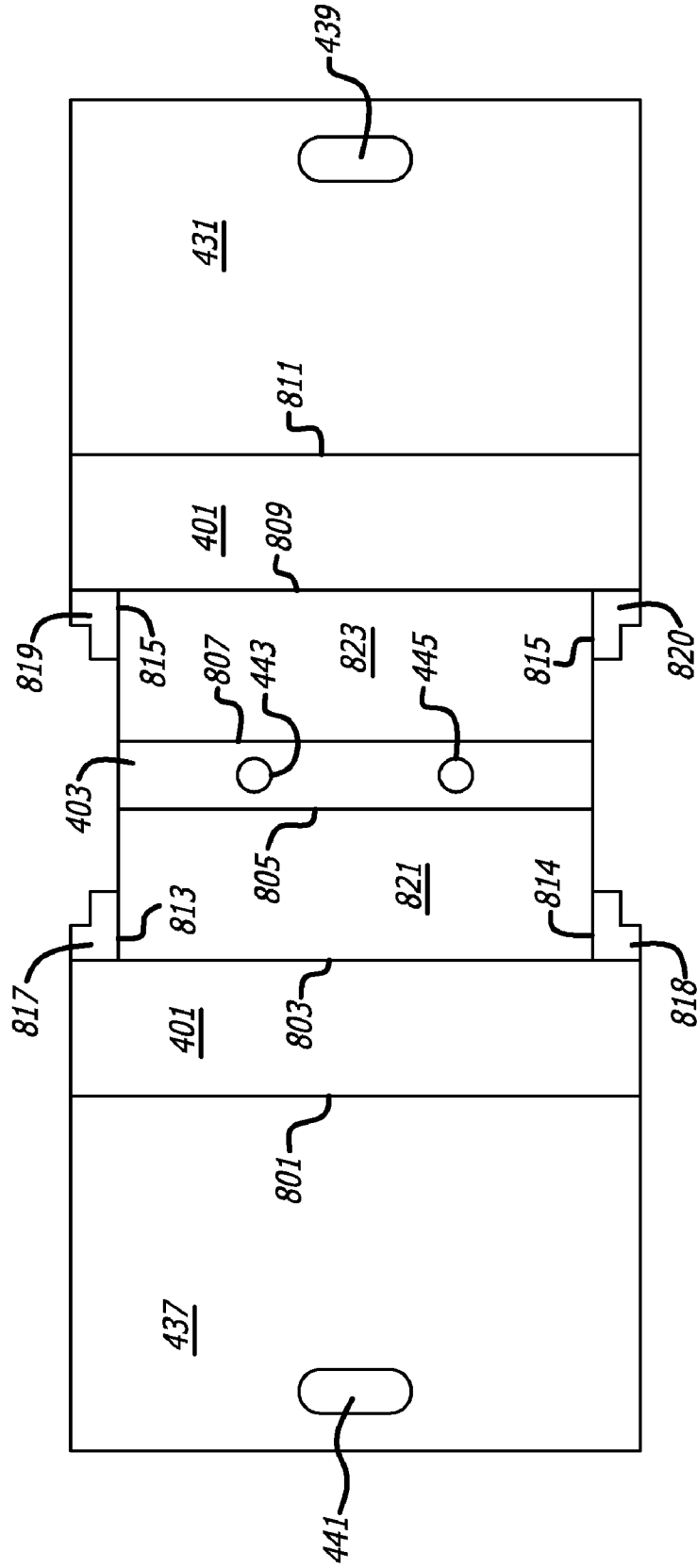


FIG. 8

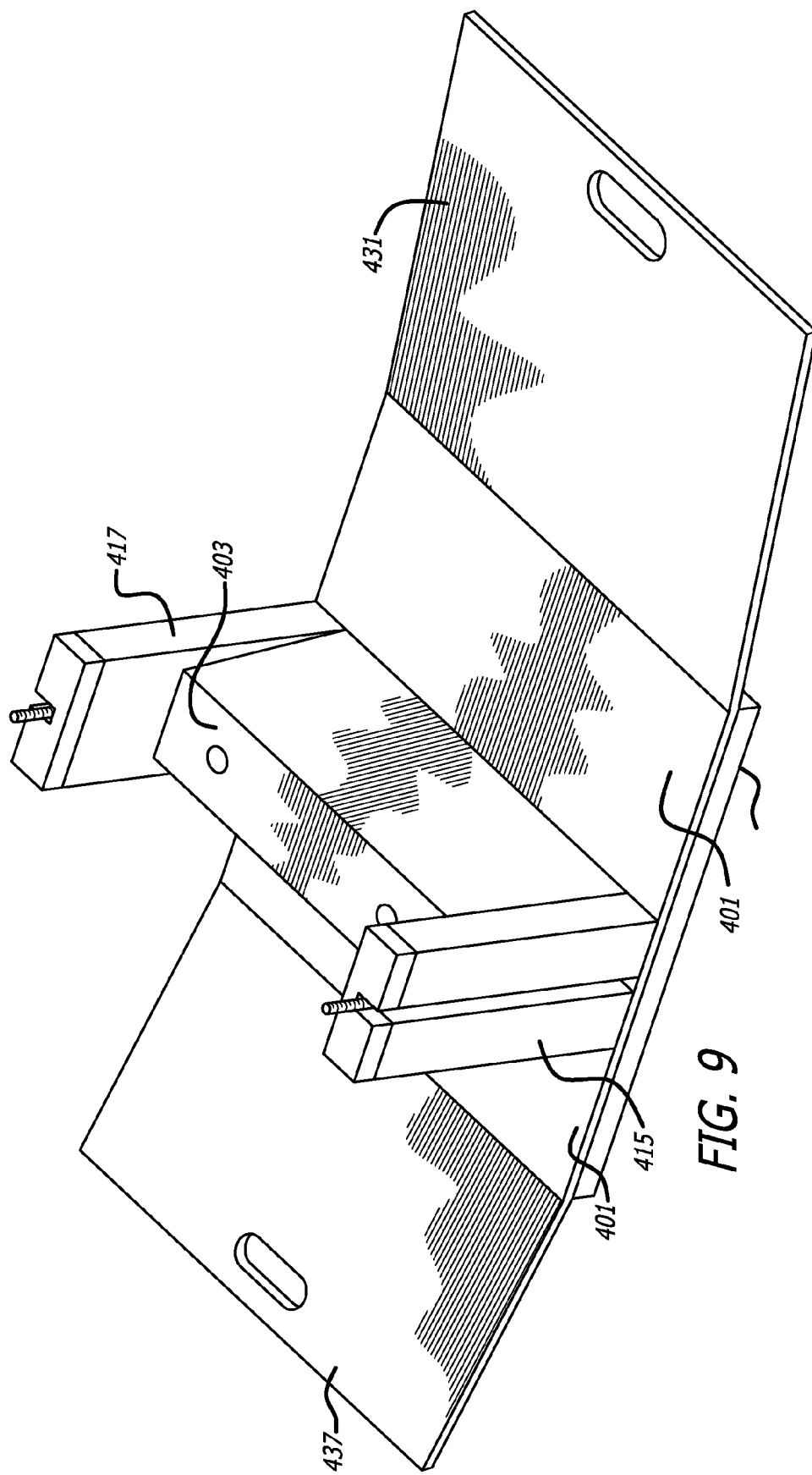
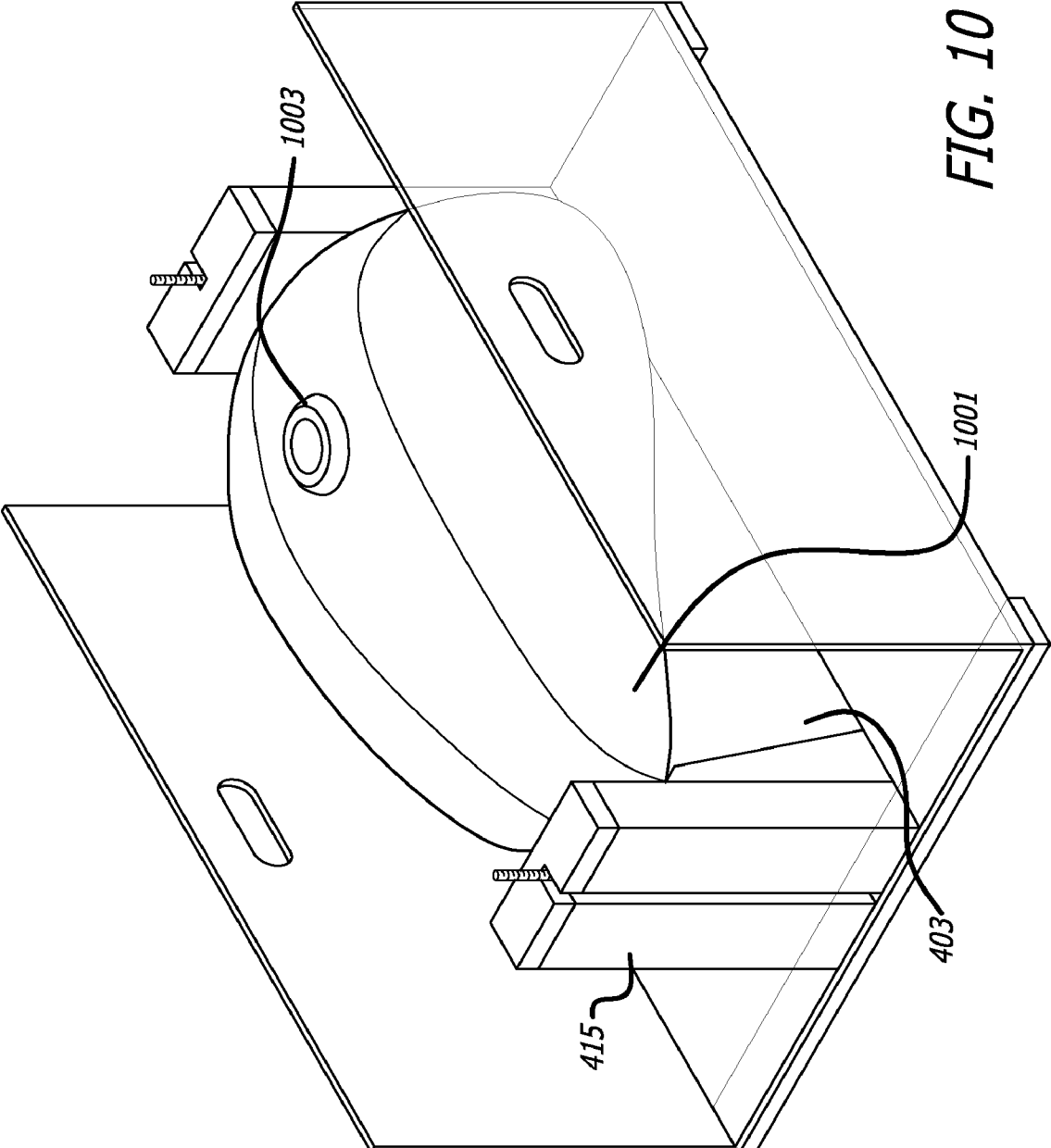


FIG. 9





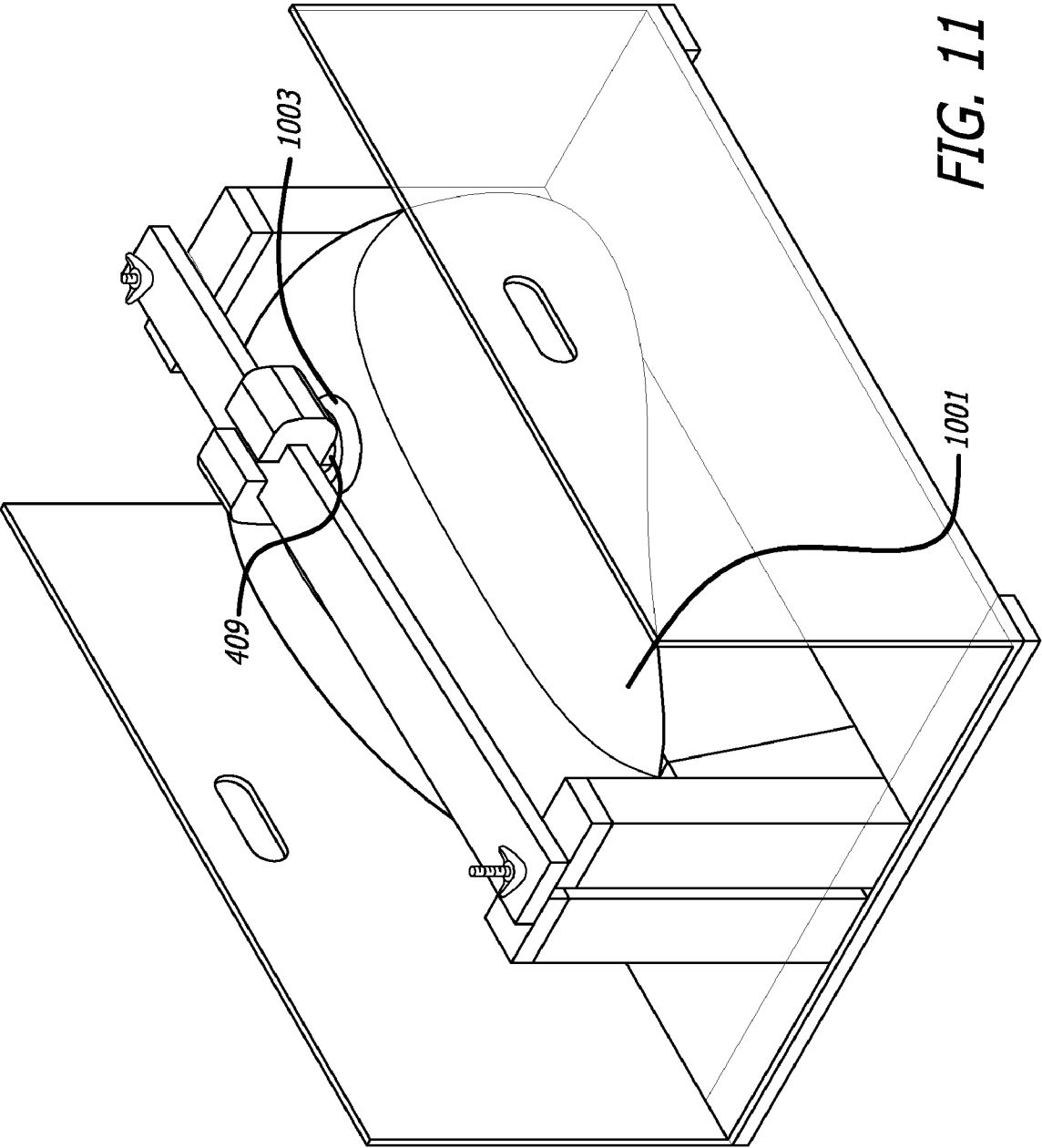


FIG. 11

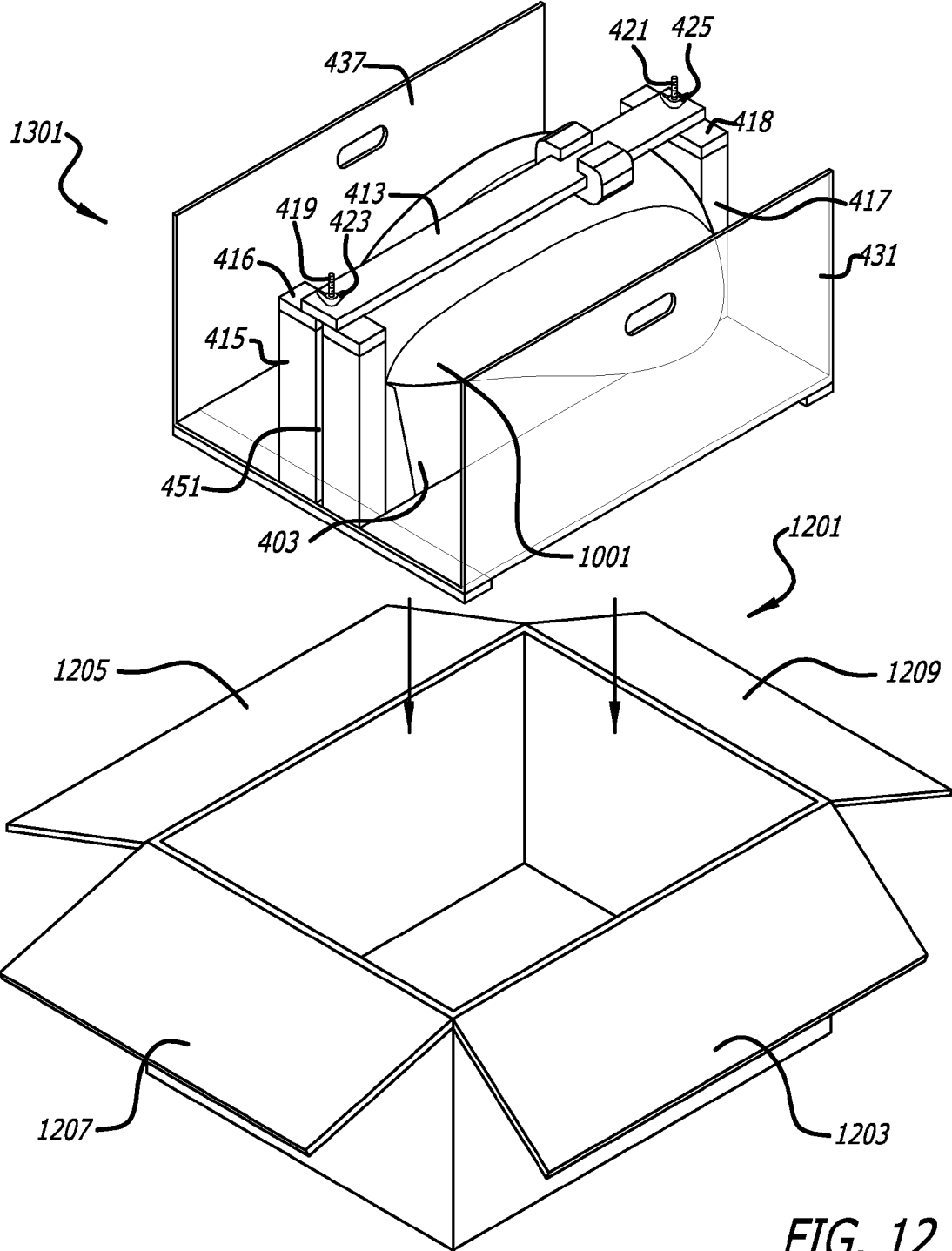


FIG. 12

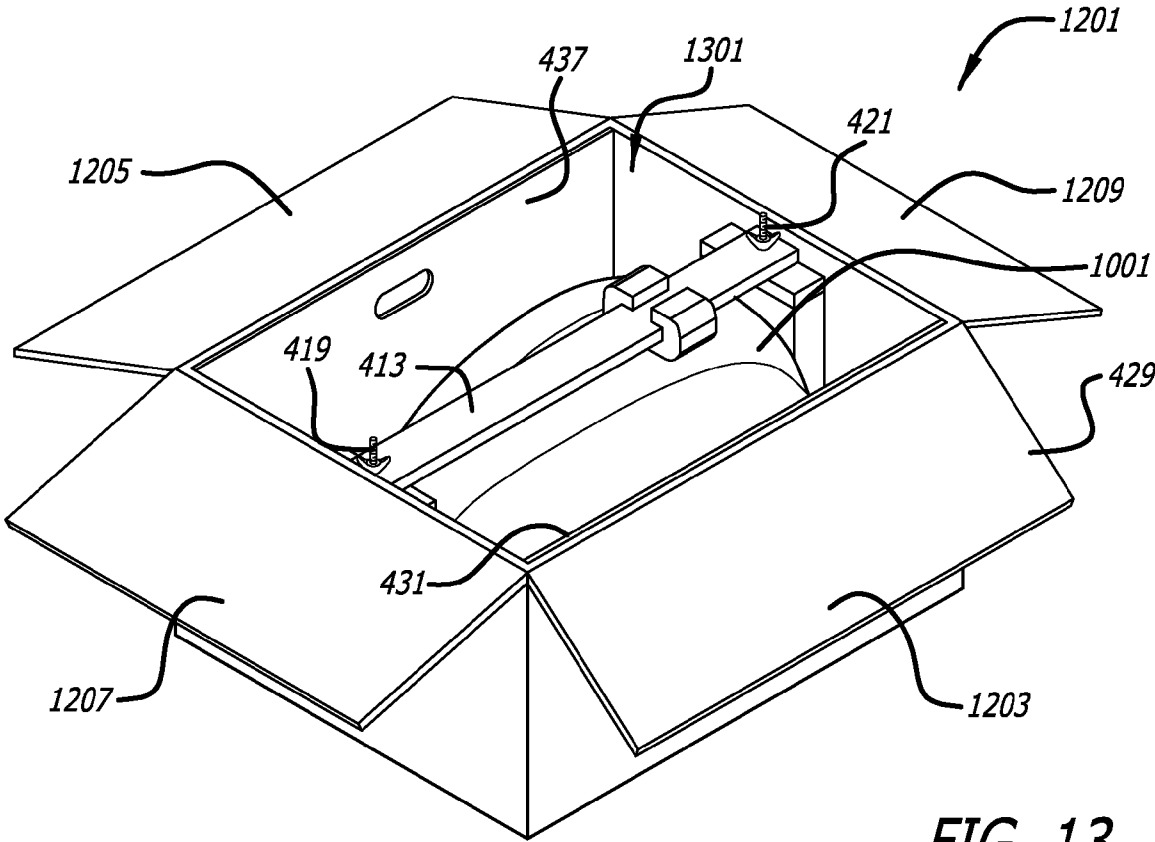


FIG. 13

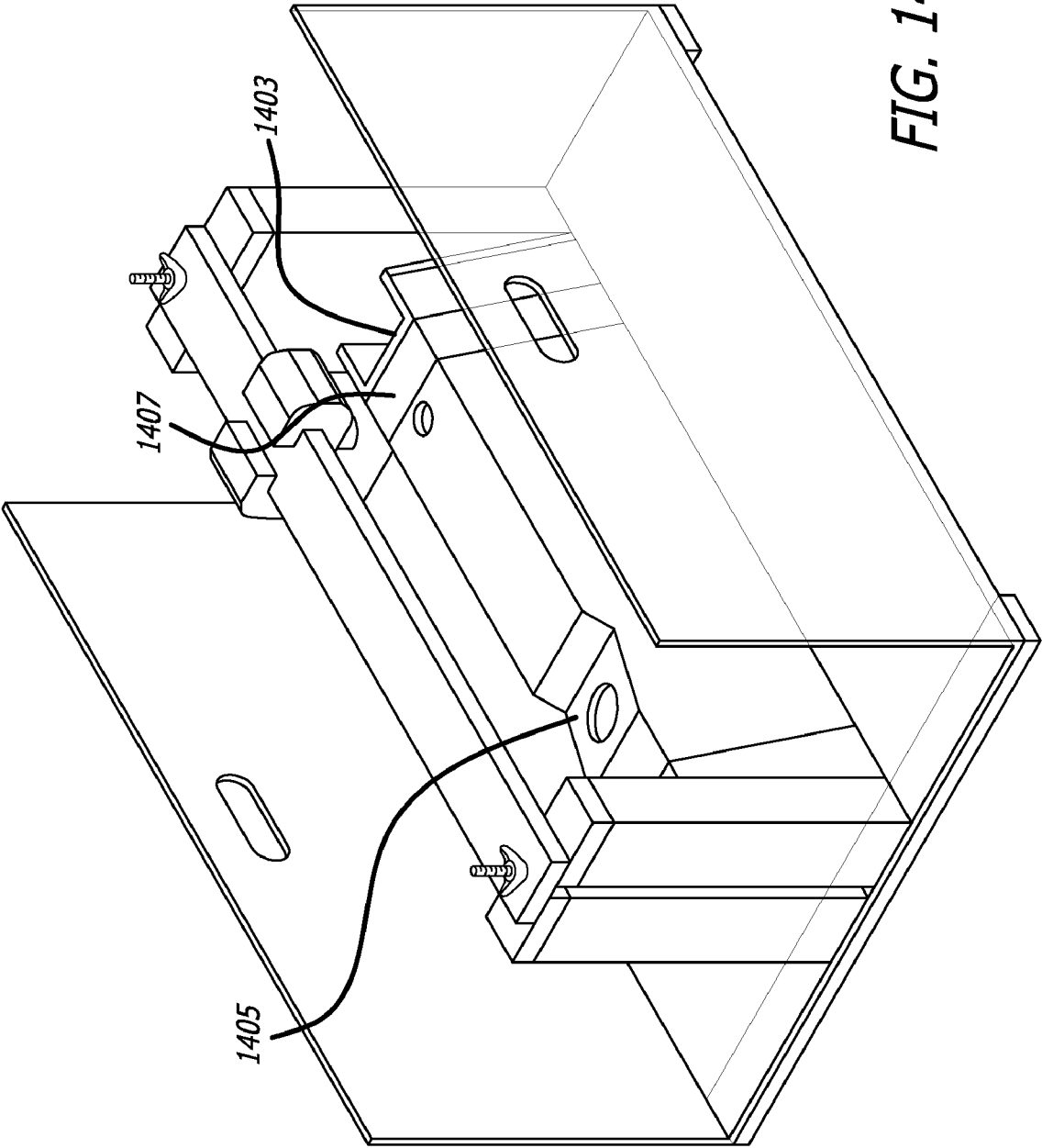


FIG. 14

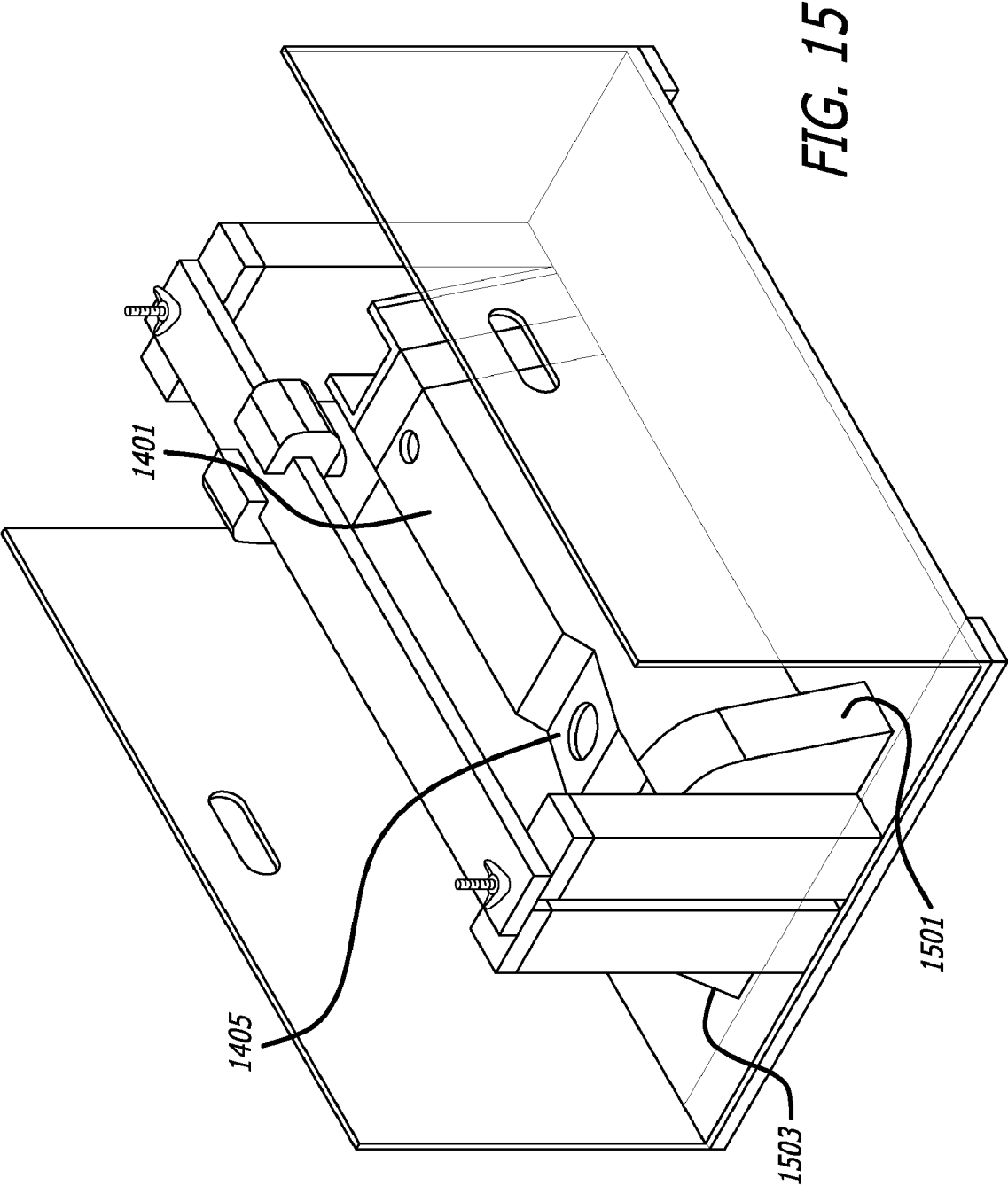


FIG. 15

**MOTORCYCLE FUEL TANK PACKAGING SYSTEM**

**TECHNICAL FIELD**

[0001] This disclosure relates to packaging systems, including packaging systems for motorcycle fuel tanks.

**DESCRIPTION OF RELATED ART**

[0002] Parts and other types of components can be damaged during shipment. For example, they can be dented, scratched, or otherwise marred.

[0003] Motorcycle fuel tanks may be particularly prone to damage during shipment. Not only can they be dented and scratched, but they may have a delicate painted surface which can be easily marred. The painted surface may be damaged merely by prolonged pressure from packaging material pressed against it, particularly when the tank is packaged before the paint has fully dried.

[0004] The size and configuration of parts and other components, such as motorcycle fuel tanks, may vary. Thus, a packaging system designed to fit an article having one size and configuration may not fit other articles of the same type, if they have a different size and/or configuration.

[0005] A packaging system has been designed to address these needs. However, experience with this packaging system demonstrates that it can itself be damaged during shipment. In turn, this may expose its contents, such as a motorcycle fuel tank, to damage during shipment.

**SUMMARY**

[0006] A motorcycle fuel tank packaging system may include a carton for housing the motorcycle fuel tank during shipment. The carton may have a plurality of walls. The motorcycle fuel tank packaging system may have a panel fixedly positioned within the carton in a position that is substantially parallel to one of the walls of the carton. The motorcycle fuel tank packaging system may have a clamp within the carton that is configured to releasably secure the motorcycle fuel tank. The motorcycle fuel tank packaging system may have a clamp base attached to the clamp at a location on the clamp base that causes the motorcycle fuel tank when secured by the clamp to be substantially spaced from each of the walls of the carton. The clamp base may include one or more rigid cross-beams sandwiched snugly between the panel and the wall of the carton that is substantially parallel to the panel.

[0007] The rigid cross-beams may be parallel and spaced apart from one another.

[0008] The rigid cross-beams may be made of wood.

[0009] The wall of the carton which is substantially parallel to the panel may have a wall width. The rigid cross-beams may each have a length that is approximately equal to the wall width.

[0010] The rigid cross-beams may each abut an opposing wall of the carton different from the wall of the carton that is parallel to the panel.

[0011] The panel may be corrugated cardboard.

[0012] The rigid cross-beams may be attached to the panel, such as with glue.

[0013] The rigid cross-beams may not be attached to any wall of the carton.

[0014] The panel may lie between the clamp and the rigid cross beams. The rigid cross-beams may each be attached to the clamp by a bolt which passes through the panel.

[0015] The clamp may be configured to engage the motorcycle fuel tank only at an under surface of the motorcycle fuel tank and at an inner surface of a neck of the motorcycle fuel tank.

[0016] The clamp may include a tapered plug configured to frictionally engage the inner surface of the neck of the motorcycle fuel tank.

[0017] The clamp may include a transverse arm, and the tapered plug may be slidably attached to the transverse arm.

[0018] The clamp may include two support posts. The transverse arm may have two ends, and each of the support posts may support a different end of the transverse arm.

[0019] The clamp may include a seat that is configured to support the under surface of the motorcycle fuel tank. The seat and the panel may be part of a continuous folded sheet. The continuous folded sheet may be corrugated cardboard.

[0020] The clamp may include one or more support posts configured to support the seat from beneath the seat.

[0021] The seat may have opposing ends. Each of the posts may be positioned beneath a different one of the opposing ends of the seat.

[0022] The motorcycle fuel tank packaging system may include support flaps that are configured to cooperate with the clamp base to cause the panel to be fixedly positioned within the carton.

[0023] The clamp may include a seat. The support flaps, the panel, and the seat may be part of a continuous folded sheet. The continuous folded sheet may be corrugated cardboard.

[0024] The support flaps, the panel, and the rigid cross-beams may form a three dimensional structure having a length, a width, and a height. The carton may have an interior with substantially the same length, width and height.

[0025] The panel may include two spaced-apart portions within the same plane.

[0026] The clamp may be approximately centered between two walls of the carton.

[0027] These, as well as other components, steps, features, objects, benefits, and advantages, will now become clear from a review of the following detailed description of illustrative embodiments, the accompanying drawings, and the claims

**BRIEF DESCRIPTION OF DRAWINGS**

[0028] The drawings disclose illustrative embodiments. They do not set forth all embodiments. Other embodiments may be used in addition or instead. Details that may be apparent or unnecessary may be omitted to save space or for more effective illustration. Conversely, some embodiments may be practiced without all of the details that are disclosed. When the same numeral appears in different drawings, it is intended to refer to the same or like components or steps.

[0029] FIG. 1 illustrates a prior art internal motorcycle fuel tank support system with cross beams that are on top of an upper surface of a panel.

[0030] FIG. 2 illustrates damage to the prior art internal motorcycle fuel tank support system that is illustrated in FIG. 1 that occurred after being dropped while in a shipping carton holding a motorcycle fuel tank.

[0031] FIG. 3 illustrates a close up of related damage to the prior art internal motorcycle fuel tank support system that is illustrated in FIG. 1.

[0032] FIG. 4 illustrates an internal motorcycle fuel tank support system with cross-beams that are beneath an under surface of a panel.

[0033] FIG. 5 illustrates the slidable clamp that is illustrated in FIG. 4.

[0034] FIG. 6 illustrates one of the seat support posts that is illustrated in FIG. 4.

[0035] FIG. 7 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 4 from beneath.

[0036] FIG. 8 illustrates a continuous sheet from which the flaps, panel, and seat that is illustrated in FIG. 4 may be formed.

[0037] FIG. 9 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 4 with the transverse arm removed and the support flaps lying substantially flat.

[0038] FIG. 10 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 9 with a motorcycle fuel tank placed on top of the seat and after the flaps have been folded to a perpendicular position.

[0039] FIG. 11 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 10 with a tapered plug inserted within a neck of the tank.

[0040] FIG. 12 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 11 after wing nuts have been fully tightened and while being inserted into a shipping carton.

[0041] FIG. 13 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 11 within a shipping carton.

[0042] FIG. 14 illustrates an internal motorcycle fuel tank support system with an alternate embodiment of a seat.

[0043] FIG. 15 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 14 with added external support for the seat.

#### DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0044] Illustrative embodiments are now discussed. Other embodiments may be used in addition or instead. Details that may be apparent or unnecessary may be omitted to save space or for a more effective presentation. Conversely, some embodiments may be practiced without all of the details that are disclosed.

[0045] FIG. 1 illustrates a prior art internal motorcycle fuel tank support system with cross beams that are on top of an upper surface of a panel. This system includes a panel 101, that includes two spaced-apart portions within the same plane. The system includes a clamp that includes a seat 103 with openings 143 and 145, seat support posts 105 and 107, a tapered plug 109, a slidable clamp 111, a transverse arm 113, arm support posts 115 and 117, bolts 119 and 121, and wing nuts 123 and 125. The system includes support flaps 131 and 137 having carrying handles 139 and 141, respectively. The system includes a clamp base that includes cross beams 127 and 129 that are on top of an upper surface 147 of the panel 101. The cross beams are glued to the upper surface 147.

[0046] A motorcycle fuel tank (not shown in FIG. 1) was clamped between the tapered plug 109 and the seat 103. The internal motorcycle fuel tank support system illustrated in FIG. 1, with the motorcycle fuel tank clamped within it, was then locked within a shipping carton that had internal dimensions approximately the same as the overall dimensions of the internal motorcycle fuel tank support system illustrated in FIG. 1.

[0047] During shipment, this motorcycle fuel tank packaging system was dropped on the side of the shipping carton

against which the support flap 131 rested and/or at the lower corner edge of that side. This caused damage to the shipping carton.

[0048] FIG. 2 illustrates damage to the prior art internal motorcycle fuel tank support system that is illustrated in FIG. 1 that occurred after being dropped while in a shipping carton holding a motorcycle fuel tank. As illustrated in FIG. 2, the panel 101 partially tore along an interior edge of the cross-beam 127. This tearing was caused by the motorcycle fuel tank applying force on the clamp as the clamp broke the flap and, in turn, the clamp applying rotational force to the cross beams 127 and 129. The tearing exposed the motorcycle fuel tank 201 to undesirable movement within the shipping container during shipment. It also allowed the motorcycle fuel tank to move be closer to a wall of the shipping container, thus exposing the tank to damage from side impacts.

[0049] FIG. 3 illustrates a close up of related damage to the prior art internal motorcycle fuel tank support system that is illustrated in FIG. 1. Specifically, it illustrates a corresponding tear of the panel 101 along an interior edge of the cross-beam 129.

[0050] FIG. 4 illustrates an internal motorcycle fuel tank support system with cross-beams that are beneath an under surface of a panel.

[0051] As shown in FIG. 4, the internal motorcycle fuel tank support system may include a panel 401. The panel 401 may include an upper surface 447 and an under surface 449. As is more clearly illustrated in FIG. 7, this panel may have two spaced-apart portions in the same plane.

[0052] The internal motorcycle fuel tank support system may include a clamp that is configured to releasably secure a motorcycle fuel tank. The clamp may include a seat 403, seat support posts 405 and 407, a tapered plug 409, a slidable clamp 411, a transverse arm 413, arm support posts 415 and 417, arm support plates 416 and 418, bolts 419 and 421, and wing nuts 423 and 425.

[0053] The internal motorcycle fuel tank support system may include a clamp base that may include cross-beams 427 and 429.

[0054] The internal motorcycle fuel tank support system may include support flaps 431 and 437 having carrying handles 439 and 441, respectively.

[0055] The panel 401 may serve as a surface upon which the clamp may be placed. The panel 401 may have a rectangular shape, as illustrated in FIG. 4, or may have any other shape. The panel 401 may be thin, rigid, and/or light. The panel 401 may be made of any material, such as plastic or cardboard. The plastic or cardboard may be corrugated.

[0056] The seat 403 may be centered between opposing perimeter edges of the panel 401. It may instead be offset from the center, but still substantially spaced from each of these opposing perimeter edges.

[0057] The seat 403 may have any shape. For example, it may be configured to support an under surface of a motorcycle fuel tank.

[0058] The seat 403 may include openings 443 and 445. The openings 443 and 445 in the seat may be oriented to allow air flow and/or to allow one or more protrusions from the under surface of the motorcycle fuel tank, such as a fuel line, to protrude through them.

[0059] The seat 403 may be made from any material. The material may be thin, rigid, and/or light. For example, the seat may be made from cardboard or plastic. The cardboard or plastic may be corrugated.

[0060] The seat support posts 405 and 407 may be configured to support the seat 403 under the seat 403. They may be positioned at opposite ends of the seat 403, or may be placed in other positions. A different number of seat support posts may be provided, such as one or three.

[0061] The seat support posts 405 and 407 may or may not be affixed to the seat 403. For example, they may be glued to the under surface of the seat 403 or attached by other means.

[0062] The seat support posts 405 and 407 may be of any shape and may be made of any material. For example, they may be trapezoidal in shape and may be made of a substantially rigid material, but of a material that also provides cushioning, such as Expanded polypropylene.

[0063] The tapered plug 409 may be configured to fit within the neck of the motorcycle fuel tank so as to engage an interior surface of the neck. The tapered plug 409 may instead have a lower diameter that is greater than the diameter of the neck of the motorcycle fuel tank. The tapered plug 409 need not be tapered or cylindrical.

[0064] The tapered plug 409 may be made of any material. For example, it may be made of a material that is firm, but compressible, so as to not scratch any portion of the motorcycle fuel tank. For example, the tapered plug 409 may be made of rubber or plastic.

[0065] The tapered plug 409 may be detachable from the slidable clamp 411. For example, a screw or other type of attachment device may be used. This may enable tapered plugs of different sizes and shapes to be affixed to the slidable clamp, so as to better accommodate motorcycle fuel tanks of different sizes and/or configurations.

[0066] The tapered plug 409 may be attached to the transverse arm 413 by means other than the slidable clamp 411. For example, the tapered plug 409 may be fixedly attached to the transverse arm 413 by a nail, screw or glue.

[0067] The slidable clamp 411 may be configured so as to slide along the length of the transverse arm 413 while being attached to the tapered plug 409. This may enable the tapered plug 409 to be adjusted to different positions so as to fit motorcycle fuel tanks having necks at different positions.

[0068] The slidable clamp 411 may have any shape. For example, it may have the shape illustrated in FIG. 4. It may include a locking mechanism that locks the slidable clamp 411 in place, once adjusted to a desired location.

[0069] The slidable clamp 411 may be made of any material. For example, it may be made of a material that is relatively rigid, but that readily compresses to provide cushioning. For example, the slidable clamp 411 may be made of Expanded polypropylene.

[0070] The transverse arm 413 may have any shape and may be made of any material. For example, it may be made of a material that is fairly rigid, but that can provide some degree of flexure, thereby allowing some variation in the distance between the neck of the motorcycle fuel tank and its under surface, while still firmly clamping the motorcycle fuel tank between the tapered plug 409 and the seat 403. For example, the transverse arm 413 may be made of wood, and may be cut such that the grain of the wood runs along the length of the transverse arm 413, thereby facilitating some degree of flexure.

[0071] The arm support posts 415 and 417 may be of any size or shape. For example, they may be of a height that causes the tapered plug 409 to snugly fit within the neck of a motorcycle fuel tank when resting on the seat 403. They may be of a width sufficient to provide the arm support posts 415 and

417 with structural integrity. They may be made of a material which is substantially rigid, but which may provide cushioning during shipment. For example, the arm support posts may be made of Expanded polypropylene. In other embodiments, the arm support posts 415 and 417 may be eliminated.

[0072] The seat support posts 405 and 407 may be attached to the arm support post 415 and 417, respectively, such as by glue, staples, nails, or by other means. They may instead be integral with the arm support posts, respectively.

[0073] The arm support posts 405 and 407 may be rested against or may be affixed to the upper surface 447 of the panel 401. In one embodiment, for example, they may be glued to the upper surface 447. In another embodiment, they may be affixed to the upper surface 447 by nails, staples, or screws. The nails, staples, or screws may pass through the corresponding cross-beams 427 and 429 to provide additional rigidity. They may instead be held against the panel 401 merely by the force asserted by the bolts 419 and 421, respectively.

[0074] A longitudinal channel 451 may be provided in the arm support post 415 and a corresponding longitudinal channel may be provided in the arm support post 417 (not visible in FIG. 4). These channels may be configured to accommodate the bolts 419 and 421, respectively.

[0075] The arm support plates 416 and 418 may serve to distribute the force asserted by the transverse arm 413 across the entire upper surface area of the arm support post 415 and 417, respectively. They may in addition or instead serve to adjust the height of the transverse arm 413. The arm support plates 416 and 418 may be of any material, such as wood or Expanded polypropylene. In some configurations, they may be omitted. The arm support plates 416 and 418 may or may not be affixed to the top of the arm support posts 415 and 417, respectively, and/or to the bottom of the transverse arm 413. Glue, nails, staples, or other means may be used.

[0076] The bolts 419 and 421 may have flat heads which rest flush against an under surface of the cross-beams 427 and 429, respectively. These bolts may pass through the panel 401, including openings that may be provided in the panel 401 for this purpose. The transverse arm 413 may be secured to the bolts 419 and 421 by wing nuts 423 and 425, respectively. Washers may be added. Means other than nuts and bolts may be used to secure the transverse arm 413 to the support posts 415 and 417, such as glue, nails, and/or staples.

[0077] The cross-beams 427 and 429 may be of any shape. They may be oriented so as to abut the under surface 449 of the panel 401. They may be attached or not attached to the under surface 449. When attached, they may be attached by any means, such as by staples, tacks, nails, and/or glue. The attachment may be throughout the length of the cross-beams 427 and 429 or only at one or more spaced-apart locations. The cross-beams 427 and 429 may be configured to span across the entire width of the panel 401, that is, the full width between two of the other opposing perimeter edges of the panel 401. The cross-beams 427 and 429 may instead span across only a portion of this distance.

[0078] The cross-beams 427 and 429 may each be positioned such to abut an opposing perimeter edge of the under surface 449 of the panel 401 along a length of the cross beams 427 and 429, as illustrated in FIG. 4. The cross-beams 427 and 429 may instead be spaced inwardly from these opposing perimeter edges.



[0079] The cross-beams 427 and 429 may be oriented perpendicular to the length of the transverse arm 413, as illustrated in FIG. 4. They may instead be oriented at a different angle.

[0080] FIG. 4 illustrates two cross-beams. However, a different number may be used, such as three four, or even one.

[0081] The cross-beams 427 and 429 may have any width or thickness. For example, they may be thinner, thicker, narrower, or wider. The width and thickness may be sufficient to provide substantial rigidity. A single planer surface could instead be used spanning across most if not all of the area of the under surface 449 of the panel 401.

[0082] The cross-beams 427 and 429 may be made of any material. For example, they may be made of a rigid material such as wood or plastic.

[0083] The support flaps 431 and 437 may be of any shape. For example, they may be substantially rectangular. The carrying handles 439 and 441 may be of any shape and may be positioned so as to allow the entire internal motorcycle fuel tank support system to be easily lifted and placed within a shipping container. Additional support handles may be provided. These support handles may be omitted.

[0084] The support flaps 431 and 437 may be made of any material. They may be made of material which is rigid, thin, and/or light. For example, they may be made of cardboard or plastic, such as corrugated cardboard or plastic.

[0085] FIG. 5 illustrates the slidable clamp that is illustrated in FIG. 4. The configuration of the slidable clamp may be different.

[0086] FIG. 6 illustrates one of the seat support posts that is illustrated in FIG. 4. It may have a trapezoid shape or any other shape. It may be configured to conform to the interior curvature of the seat 403.

[0087] FIG. 7 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 4 from beneath. This includes the under surface 449 of the panel 401 and the under side of the seat 403, the seat support posts 405 and 407, the cross-beams 427 and 429, and the heads of the bolts 419 and 421. It also illustrates that the holes for the bolts 419 and 421 in the cross-beams 427 and 429, respectively, may be countersunk. It also illustrates that the panel 401 may include two spaced-apart sections in the same plane.

[0088] FIG. 8 illustrates a continuous sheet from which the flaps, panel, and seat that is illustrated in FIG. 4 may be formed. As illustrated in FIG. 8, this sheet may be scored with scores 801, 803, 805, 807, 809, and 811 to define the edges that may be folded and to make the folding easier. Cuts 813, 814, 815, and 816 may be made to provide surfaces 817, 818, 819, and 820, respectively, on which the arm support posts 415 and 417 may, respectively, be mounted, while simultaneously permitting the sides 821 and 823 of the seat 403 to fold upwardly.

[0089] The foldable sheet illustrated in FIG. 8 may be made of any material. For example, it may be made of cardboard or plastic, such as corrugated cardboard or plastic. When using corrugated cardboard or plastic, the flutes may run either along the length or the width.

[0090] FIG. 9 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 4 with the transverse arm removed and the support flaps lying substantially flat. This illustrates an initial position at which the internal motorcycle fuel tank may be placed in preparation for receiving the motorcycle fuel tank.

[0091] FIG. 10 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 9 with a motorcycle fuel tank placed on top of the seat and after the flaps have been folded to a perpendicular position. As illustrated in FIG. 10, a motorcycle fuel tank 1001 has been placed on top of the seat 403 and the flaps 431 and 437 have been folded perpendicular to the panel 401. The tank may be placed upon the seat before paint on the motorcycle fuel tank has fully dried.

[0092] FIG. 11 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 10 with a tapered plug inserted within a neck of the tank. As illustrated in FIG. 11, the transverse arm 113 may be placed on top of the bolts 419 and 421 after the motorcycle fuel tank 1001 has been placed on top of the seat 403. The slidable clamp 411 may be moved along the length of the transverse arm 413 until the tapered plug 409 aligns with a neck 1003 of the motorcycle fuel tank 1001. The transverse arm 413 may then be pressed downwardly so as to cause the bolts 419 and 421 to travel through holes in ends of the transverse arm 413.

[0093] FIG. 12 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 11 after wing nuts have been fully tightened and while being inserted into a shipping carton. As illustrated in FIG. 12, the wing nuts 423 and 425 may be fully tightened on the bolts 419 and 421, respectively. In turn, this may cause the ends of the transverse arm 413 to abut against the arm support plates 416 and 418, respectively, and for the arm support plates 416 and 418 to abut against the arm support posts 415 and 417, respectively. This may cause the transverse arm 413 to bend slightly, thereby insuring that the motorcycle fuel tank is securely clamped between the tapered plug 409 and the seat 403.

[0094] After the motorcycle fuel tank is securely clamped, the support flaps 431 and 437, the entire internal motorcycle fuel tank support system with the motorcycle fuel tank securely clamped to it may then be placed within a shipping carton 1201, as illustrated in FIG. 12. Exterior flaps 1203, 1205, 1207, and 1209 of the shipping carton may then be closed and sealed.

[0095] FIG. 13 illustrates the internal motorcycle fuel tank support system that is illustrated in FIG. 11 within a shipping carton.

[0096] As illustrated in FIG. 13, the internal motorcycle fuel tank support system 1301 may snugly fit within the shipping carton 1201. The interior dimensions of the shipping carton 1201 may correspond closely with the external dimensions of the internal motorcycle fuel tank support system 1301, thereby ensuring that the internal motorcycle fuel tank support system cannot move within the shipping carton 1201. While within the shipping carton 1201, the support flaps 431 and 437 may be substantially perpendicular to the panel 401, thereby causing their top edges to abut the under surface of the top of the shipping carton 1201 after the exterior flaps 1203, 1205, 1207, and 1209 of the shipping carton 1201 are closed and sealed. The support flaps 431 and 437 may have a height that is sufficient to cause this abutment and to ensure that the tops of the bolts 419 and 421 do not come in contact with the upper surface of the shipping carton 1201 and, preferably, are spaced by a comfortable margin from it. By making the support flaps 431 and 437 foldable portions of a larger surface which includes the panel 401, such as an integral part of the continuous sheet illustrated in FIG. 8, the support flaps 431 and 437 may have a natural tendency to bow outwardly, thus ensuring that they maintain their perpendicular position with respect to the panel 401 while within the shipping carton

**1201.** A top cross bar may be inserted between the upper ends of the support flaps **431** and **437** to insure that they maintain this position while within the shipping carton **1201**.

**[0097]** The flutes of the shipping carton **1201** may be in any direction. For example, they may be vertical, thus maximizing stacking strength, or they may be horizontal, thus maximizing protection against side impact.

**[0098]** The motorcycle fuel tank **1001** may be suspended securely within the shipping carton **1201** after the exterior flaps **1203**, **1205**, **1207**, and **1209** of the shipping carton **1201** are closed and sealed. The motorcycle fuel tank **1001** may be substantially spaced from each of the walls of the shipping carton **1201**, thus protecting the tank against impact damage. No portion of the visible painted surfaces of the motorcycle fuel tank may be pressing against anything, such as packaging material, thus ensuring that any paint on these surfaces may fully dry without concern over marring or other types of damage.

**[0099]** FIG. **14** illustrates an internal motorcycle fuel tank support system with an alternate embodiment of the seat. As illustrated in FIG. **14**, a seat **1401** has a surface that may include large openings **1403** and **1405**. These openings may allow the seat **1401** to support a motorcycle fuel tank that has objects which protrude from its under surface. As also illustrated in FIG. **14**, a seat support post **1407** may be positioned inwardly from the end of the seat **1401**, so as to allow one of these objects to protrude downwardly below the seat without colliding with the seat support post **1407**.

**[0100]** FIG. **15** illustrates the motorcycle fuel tank support system that is illustrated in FIG. **14** with added external support for the seat. As illustrated in FIG. **15**, the seat **1401** may additionally be supported by external supports **1501** and **1503**. These may be pressed against the sides of the seat **1401**, so as to provide external lateral support.

**[0101]** The components, steps, features, objects, benefits and advantages that have been discussed are merely illustrative. None of them, nor the discussions relating to them, are intended to limit the scope of protection in any way. Numerous other embodiments are also contemplated, including embodiments that have fewer, additional, and/or different components, steps, features, objects, benefits and advantages. The components and steps may also be arranged and ordered differently.

**[0102]** For example, the packaging systems that have been described may be used to support articles and components during shipment other than motorcycle fuel tanks. In this regard, this application is related to U.S. Pat. No. 6,752,271, entitled "WINDSHIELD PACKAGING SYSTEM USING SYNERGISTIC CLAMP JAW COMPONENTS," issued Jun. 22, 2004, attorney docket No. 064706-0019; U.S. Pat. No. 6,789,674, entitled "WINDSHIELD PACKAGING SYSTEM USING PRESSURE-REGULATED CLAMPS," issued Sep. 14, 2004, attorney docket No. 064706-0021; U.S. Pat. No. 6,886,692, entitled "WINDSHIELD PACKAGING SYSTEM USING CORRUGATED BOX WITH HORIZONTALLY-RUNNING FLUTES," issued May 3, 2005, attorney docket No. 064706-0020; U.S. Pat. No. 7,080,735, entitled "WINDSHIELD PACKAGING SYSTEM USING PRESSURE-REGULATED CLAMPS WITH SYNERGISTIC CLAMP JAW COMPONENTS," issued Jul. 25, 2005, attorney docket No. 064706-0065; U.S. patent application Ser. No. 11/279,533, entitled "WINDSHIELD PACKAGING SYSTEM USING PRESSURE-REGULATED CLAMPS WITH SYNERGISTIC CLAMP JAW COMPONENTS," filed Apr. 12, 2006, attorney docket No. 064706-0072; and U.S. patent application Ser. No. 11/932,277,

entitled "PACKAGING SYSTEM USING SYNERGISTIC CLAMP JAW COMPONENTS," filed Oct. 31, 2007, attorney docket No. 064706-0072. The entire content of each of the applications and patents identified above is incorporated herein by reference. Components, features, and methods described in these applications and patents may be used in connection with any of the embodiments that are described or illustrated in the subject patent application, to the extent that they are not inconsistent or otherwise incompatible.

**[0103]** The phrase "means for" when used in a claim embraces the corresponding structures and materials that have been described and their equivalents. Similarly, the phrase "step for" when used in a claim embraces the corresponding acts that have been described and their equivalents. The absence of these phrases means that the claim is not limited to any of the corresponding structures, materials, or acts or to their equivalents.

**[0104]** Nothing that has been stated or illustrated is intended to cause a dedication of any component, step, feature, object, benefit, advantage, or equivalent to the public, regardless of whether it is recited in the claims.

**[0105]** The scope of protection is limited solely by the claims that now follow. That scope is intended to be as broad as is reasonably consistent with the language that is used in the claims when interpreted in light of this specification and to encompass all structural and functional equivalents.

1. A motorcycle fuel tank packaging system comprising:
  - a corrugated cardboard carton for housing the motorcycle fuel tank during shipment, the carton having a plurality of walls;
  - a single piece of corrugated cardboard folded within the carton so as to create:
    - a panel that is substantially parallel to a wall of the carton;
    - two support flaps that are substantially perpendicular to the panel; and
    - a seat configured to support an under surface of the motorcycle fuel tank;
  - a clamp within the carton that includes the seat and that is configured to releasably secure the motorcycle fuel tank by applying force to the motorcycle fuel tank only at an under surface of the motorcycle fuel tank and at inner surface of a neck of the motorcycle fuel tank; and
  - a clamp base attached to the clamp at a location on the clamp base that causes the motorcycle fuel tank when secured by the clamp to be substantially in the center of the carton and spaced from each of the walls of the carton, the clamp base including two rigid cross-beams that are parallel to and spaced apart from one another, that are sandwiched snugly between the panel and the wall of the carton that is substantially parallel to the panel, that are attached to the panel, and that are not attached to any wall of the carton.
2. A motorcycle fuel tank packaging system comprising:
  - a carton for housing the motorcycle fuel tank during shipment, the carton having a plurality of walls;
  - a panel fixedly positioned within the carton in a position that is substantially parallel to one of the walls of the carton;
  - a clamp within the carton that is configured to releasably secure the motorcycle fuel tank; and
  - a clamp base attached to the clamp at a location on the clamp base that causes the motorcycle fuel tank when secured by the clamp to be substantially spaced from

each of the walls of the carton, the clamp base including one or more rigid cross-beams sandwiched snugly between the panel and the wall of the carton that is substantially parallel to the panel.

3. The motorcycle fuel tank packaging system of claim 2 wherein the rigid cross-beams are parallel and spaced apart from one another.

4. The motorcycle fuel tank packaging system of claim 2 wherein the rigid cross-beams are made of wood.

5. The motorcycle fuel tank packaging system of claim 2 wherein the wall of the carton which is substantially parallel to the panel has a wall width and wherein the rigid cross-beams each have a length that is approximately equal to the wall width.

6. The motorcycle fuel tank packaging system of claim 2 wherein the rigid cross-beams each abut an opposing wall of the carton different from the wall of the carton that is parallel to the panel.

7. The motorcycle fuel tank packaging system of claim 2 wherein the panel is corrugated cardboard.

8. The motorcycle fuel tank packaging system of claim 2 wherein the rigid cross-beams are attached to the panel.

9. The motorcycle fuel tank packaging system of claim 8 wherein the rigid cross-beams are attached to the panel with glue.

10. The motorcycle fuel tank packaging system of claim 8 wherein the rigid cross-beams are not attached to any wall of the carton.

11. The motorcycle fuel tank packaging system of claim 2 wherein the panel lies between the clamp and the rigid cross beams and wherein the rigid cross-beams are each attached to the clamp by a bolt which passes through the panel.

12. The motorcycle fuel tank packaging system of claim 2 wherein the clamp is configured to engage the motorcycle fuel tank only at an under surface of the motorcycle fuel tank and at an inner surface of a neck of the motorcycle fuel tank.

13. The motorcycle fuel tank packaging system of claim 12 wherein the clamp includes a tapered plug configured to frictionally engage the inner surface of the neck of the motorcycle fuel tank.

14. The motorcycle fuel tank packaging system of claim 13 wherein the clamp includes a transverse arm and wherein the tapered plug is slidably attached to the transverse arm.

15. The motorcycle fuel tank packaging system of claim 14 wherein the clamp includes two support posts, wherein the transverse arm has two ends, and wherein each of the support posts supports a different end of the transverse arm.

16. The motorcycle fuel tank packaging system of claim 12 wherein the clamp includes a seat that is configured to support the under surface of the motorcycle fuel tank.

17. The motorcycle fuel tank packaging system of claim 16 wherein the seat and the panel are part of a continuous folded sheet.

18. The motorcycle fuel tank packaging system of claim 17 wherein the continuous folded sheet is corrugated cardboard.

19. The motorcycle fuel tank packaging system of claim 16 wherein the clamp includes one or more support posts configured to support the seat from beneath the seat.

20. The motorcycle fuel tank packaging system of claim 19 wherein the seat has opposing ends and wherein each of the posts is positioned beneath a different one of the opposing ends of the seat.

21. The motorcycle fuel tank packaging system of claim 2 further comprising support flaps that are configured to cooperate with the clamp base to cause the panel to be fixedly positioned within the carton.

22. The motorcycle fuel tank packaging system of claim 21 wherein the clamp includes a seat and wherein the support flaps, the panel, and the seat are part of a continuous folded sheet.

23. The motorcycle fuel tank packaging system of claim 22 wherein the continuous folded sheet is corrugated cardboard.

24. The motorcycle fuel tank packaging system of claim 19 wherein the support flaps, the panel, and the rigid cross-beams form a three dimensional structure having a length, a width, and a height, and wherein the carton has an interior with substantially the same length, width and height.

25. The motorcycle fuel tank packaging system of claim 2 wherein the panel include two spaced-apart portions within the same plane.

26. The motorcycle fuel tank packaging system of claim 2 wherein the clamp is approximately centered between two walls of the carton.

27. A motorcycle fuel tank packaging system comprising:  
a panel configured to be placed within a carton and parallel to a wall of the carton, the panel having a upper surface, a bottom surface, and two opposing perimeter edges;  
a clamp configured to be placed within the carton and to releasably secure the motorcycle fuel tank, the clamp abutting the upper surface of the panel at a location that is spaced substantially from both of the two opposing perimeter edges of the panel; and  
one or more rigid cross-beams that are configured to be placed within the carton, that are each attached to the clamp, that have a length that approximately spans between the two opposing perimeter edges of the panel, and that abuts the bottom surface of the panel along its length.

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