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(54) Endboard for Person-Support Apparatus

(57) An endboard for a person support apparatus comprises a housing, a first opening, and a passage. The housing includes a first surface and a second surface spaced apart from the first surface. The first opening in the housing is configured to receive a fluid from a fluid supply. The passage is positioned between the first surface and the second surface of the housing. The passage is configured to facilitate communication of fluid from the first opening to a second opening in the housing.

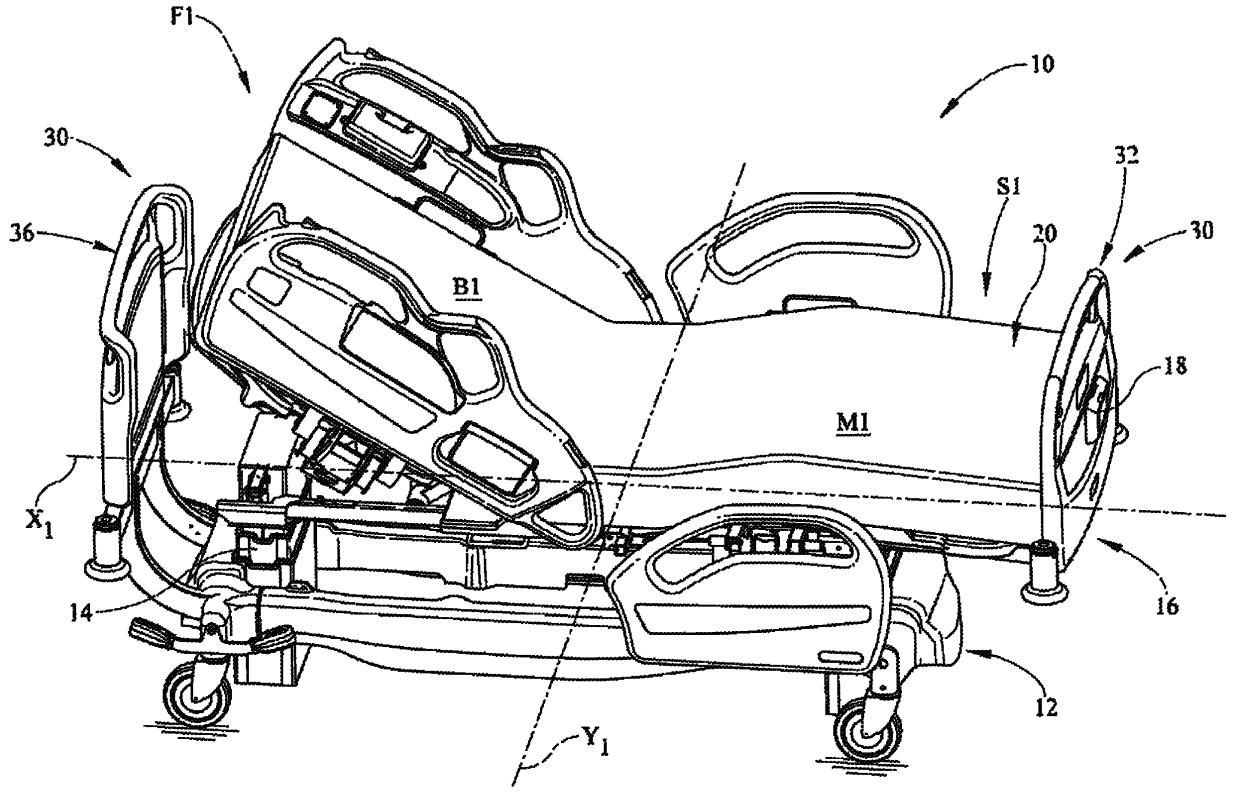

FIG. 1

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Description

[0001] The present disclosure relates to an endboard for a person support apparatus. More particularly, the present disclosure relates to an endboard for a person support apparatus that provides for the removable coupling of a fluid supply to the endboard.

[0002] Person support apparatuses, such as hospital beds, support person support surfaces, e.g., mattresses, thereon Some person support surfaces include fluid chambers or bladders that are supplied with fluid, such as air, by an external fluid supply. It is known to coupled the external fluid supply to an endboard to supply fluid to the person support surface through a hose. In some prior art systems, the external fluid supply is located in a housing that is hung on the end of the footboard. Such housings add to the overall length of the hospital bed and can even interfere with the ability of the hospital bed to fit into an elevator. Thus, while various footboards and fluid supplies have been developed, there is still room for improvement. Accordingly, a need persists for further contributions in this area of technology.

[0003] The present invention includes one or more of the following features alone or in any combination.

[0004] An endboard for a person support apparatus may have a housing and a passage in the housing configured to facilitate communication of fluid from a fluid supply.

[0005] An endboard of a person support apparatus may have an opening therein configured to receive a fluid supply, a locking mechanism configured to removably couple a fluid supply to the endboard, and a passage within the endboard extending from the opening to an outlet configured to couple with a person support surface to communicate fluid from the fluid supply to the person support surface.

[0006] The endboard may have a housing that may include a first surface and a second surface spaced apart from the first surface. The endboard may also have another opening extending through at least one of the first surface and the second surface to define a receptacle that may receive a portion of the fluid supply. The receptacle may include a connector configured to communicate data or power or both to and/or from the fluid supply. The receptacle may receive a cover when the fluid supply is not positioned within the receptacle. The first opening may be positioned in the receptacle.

[0007] The fluid supply may include a housing with a portion sized to fit within the receptacle and a portion sized to be larger than the receptacle. The locking mechanism may include, for example, a latching mechanism that may be configured to removably coupled the fluid supply to the endboard. In some embodiments, the fluid supply may include a handle configured to engage the latching mechanism. A connector may be provided to couple to the outlet and facilitate communication of fluid from the passage to a person support surface.

[0008] According to this disclosure, a person support surface system may include a person support surface that, in turn, may have an inflatable bladder, a fluid supply configured to supply fluid to the person support surface, and an endboard. The endboard may include a housing with a receptacle configured to receive a portion of the fluid supply and a passage within the housing that may facilitate communication of fluid from the fluid supply to the person support surface through the housing of the endboard.

[0009] The endboard may include an opening into the passage proximate the person support surface. The person support surface may be connected to the opening by a connector. Thus, the passage may be formed in the housing and the receptacle may include an opening into the passage. The receptade may include a connector configured to communicate data or power or both to and/or from the fluid supply.

[0010] The person support surface system may further comprise a latching mechanism that may be coupled to the endboard proximate the receptacle. The latching mechanism may be configured to engage a handle coupled to the fluid supply to removably couple the fluid supply to the endboard.

[0011] The fluid supply may include a housing with a first portion and a second portion. The first portion may be sized to fit within the receptacle and the second portion may be configured to engage an external portion of the end board proximate the receptacle. The first portion of the housing may include a connector and a fluid outlet. The connector may be configured to engage a complementary connector that may be coupled to the receptacle to facilitate communication of data or power or both. The fluid outlet may be configured to engage an opening into the passage located on a surface of the receptacle to communicate fluid from the fluid supply to the passage.

[0012] According to this disclosure, therefore, an endboard for a person support apparatus may comprising an endboard housing with a first side and a second side spaced apart from the first side. An opening may extend through at least one of the first side and the second side. The opening may be configured to receive a first portion of a fluid supply therein. A locking mechanism may be coupled to one of the first side and the second side and located proximate the opening. The locking mechanism may be configured to engage a second portion of the fluid supply to removably retain the first portion of the fluid supply within the opening.

[0013] The fluid supply may include a handle coupled to the second portion of the fluid supply. The handle may be configured to engage the locking mechanism when the first portion of the fluid supply is within the opening to removably couple the fluid supply to the endboard. In some embodiments, the locking mechanism comprises a latch

[0014] The invention will now be further described by way of example with reference to the accompanying drawings, in which

[0015] Fig. 1 is a perspective side view of a person

support apparatus including an endboard according to one illustrative embodiment;

[0016] Fig. 2 is a partial diagrammatic view of a person support surface supportable on the person support apparatus of Fig. 1;

[0017] Fig. 3 is a perspective front view of the person support apparatus of Fig. 1 showing an endboard couple to an upper frame of the person support apparatus and a fluid supply couplable to the endboard;

[0018] Fig 4 is a perspective front view of the endboard of Fig. 3 with a cover positioned within the receptacle;

[0019] Fig. 5 is a perspective front view of the endboard of Fig. 3 showing the fluid supply coupling portion, the grip portion, and the upper frame engaging portion;

[0020] Fig. 6 is a perspective rear view of the endboard of Fig 3 showing the fluid outlet portion: and

[0021] Fig. 7 is a perspective view of the fluid supply of Fig. 3 showing the fluid supply connector and fluid outlet on the second portion and the controller and gas blower within the inner chamber of the housing.

[0022] One illustrative embodiment includes an endboard of a person support apparatus with an opening therein configured to receive a fluid supply, a locking mechanism configured to removably couple a fluid supply to the endboard, and a passage within the endboard extending from the opening to an outlet configured to couple with a person support surface to communicate fluid from the fluid supply to the person support surface.

[0023] A person support apparatus 10 according to one illustrative embodiment of the current disclosure is shown in Fig. 1. The person support apparatus 10 has a first section F1 or head support section F1, where the head of a person is typically positioned, and a second section S1 or a foot support section S1, where the feet of the person is typically positioned. In the illustrative embodiment, the person support apparatus 10 is a hospital bed 10. In other embodiments, the person support apparatus 10 comprises a hospital stretcher or an operating table or the like. The person support apparatus 10 includes a lower frame 12 or base 12, a plurality of supports 14 coupled with the lower frame 12, an upper frame 16 supported on the supports 14 above the lower frame 12, and a fluid supply 18. The supports 14 are lift mechanisms 14 that move the upper frame 16 with respect to the lower frame 12.

[0024] The person support apparatus 10 supports a person support-surface 20 on the upper frame 14 as shown in Figs. 1-3. The person support surface 20 is configured to support a person (not shown) in multiple articulated positions. In some embodiments, the person support surface 20 is formed of multiple sections such as a back portion B1 and a main portion M1. In the some embodiments, the person support surface 20 is formed of a single section.

[0025] In one illustrative embodiment, the person support surface 20 includes an inflatable mattress 22 and a coverlet 24 that overlays the mattress 22 as shown in Figs 1-3. In some embodiments, the coverlet 24 is omitted such that the mattress 22 is used independent of the coverlet 24. The mattress 22 includes a fluid inlet 26 and a plurality of fluid bladders 28 that are inflated with a fluid, such as, air, to provide support to an occupant of the person support surface 20. In some embodiments, the mattress 20 includes one or more support sections having foam and/or fluid bladders that deliver therapy to the person through expansion/contraction, changes in pressure, and/or blowing air. For example, if desired, one or more sections of the person support surface 20 can be configured to provide alternating pressure therapy, continuous lateral rotation therapy, low air loss therapy, boost assistance, percussion/vibration therapy, and/or turn assistance.

[0026] The upper frame 16 defines a longitudinal axis X1 that extends at least the length of the person support apparatus 10 through the first section F1 and the second section S1 along the lateral center of the upper frame assembly 14, and a lateral axis Y1 that is perpendicular to the longitudinal axis X as shown in Figs. 1 and 3. The upper frame 16 includes an endboard 30. such as, a footboard 32, coupled to the foot section S1. and a frame connector 34. In the illustrative example, the upper frame 16 also has another endboard 30, such as, a headboard 36, coupled thereto. The frame connector 34 is configured to facilitate communication of power and/or data between a power/control system (not shown) and the footboard 32. It should be appreciated that the power/control system can be integrated into the person support apparatus 10 or in communication with the person support apparatus 10.

[0027] The footboard 32 includes a housing 38 with a grip portion 40, an upper frame engaging portion 42, a fluid supply coupling portion 44. and a fluid outlet portion 46 as shown in Figs. 3-6. In some embodiments, the footboard 32 has a user interface portion (not shown) where a user interface (not shown) is located. The grip portion 40 includes handles 48 integrated therein and configured to be pushed and/or pulled by a person in order to move the person support apparatus 10. The upper frame engaging portion 42 includes a first footboard connector 50 configured to engage the frame connector 34 to facilitate communication of power and/or data between a power/control system (not shown) and the footboard 32.

[0028] The housing 38 includes a first surface 52, a second surface 54, and a side surface 56 as shown in Figs. 3-6. The first surface 52 is oriented such that the first surface 52 faces toward the person support surface 20. The second surface 54 is spaced apart from the first surface 52 and is generally parallel to the first surface 52. The side surface 56 extends between an edge of the first surface 52 and an edge of the second surface 54. The first surface 52, the second surface 54. and the side surface 56 cooperate to define an internal chamber 58.

[0029] The internal chamber 58 includes at least one passage 60 therein as shown in Figs. 3,5. and 6. In one illustrative embodiment, the passage 60 connects the fluid supply coupling portion 44 and the fluid outlet portion

48 and is configured to communicate fluid from the fluid supply 18 coupled to the fluid supply coupling portion 44 to the person support surface 20 coupled to the fluid outlet portion 46. It should be appreciated that other passages 60 can be configured to receive at least one of data and power cables (not shown). The passage 60 helps negate the need for external hoses (not shown) extending between the fluid supply 18 and the person support surface 20 that are often draped over the grip portion 40 of the footboard 32 or are hanging loosely below or alongside the footboard 32.

[0030] The fluid supply coupling portion 44 includes a first opening 62, a latching mechanism 64, a second footboard connector 66, and a second opening 68 as shown in Figs. 3-6. The first opening 62 extends through the first surface 52 and the second surface 54 of the housing 38 to define a receptacle 70. That is, in the illustrative example, receptacle 70 comprises a hole that extends all the way through housing 38 of endboard 32. In some embodiments, the First opening 62 extends through only the second surface 52 and cooperates with the first surface to define the receptacle 70. In such embodiments, therefore, the receptacle does not extend all the way through housing 38 of endboard 32.

[0031] The receptacle 70 is configured to receive and removably retain a portion of the fluid supply 18 therein, A cover C1 is removably retained within the receptacle 70 when the fluid supply 18 is not being retained therein as shown in Fig. 4. In some embodiments, the cover C1 comprises a retractable cover or hinged doors (not shown). The cover C1 is removably retained within the receptacle by the latching mechanism 64. In other embodiments, the covei C1 is removably retained within the receptacle by a ruction fit, fasteners, or a portion configured to engage the second footboard connector 66 or second opening 68. In other embodiments, the cover C1 is hingedly connected to the footboard 32.

[0032] The second footboard connector 66 and the second opening 68 are located on a portion of the receptacle 70 as shown in Figs. 3-6. The footboard connector 66 is configured to facilitate communication of power and/or data to the fluid supply 18. The second opening 68 opens into the passage 60 and is configured to facilitate communication of fluid from the fluid supply 18 to the passage 60.

[0033] The latching mechanism 84 is coupled to the second surface 54 of the housing 38 and positioned adjacent the receptacle. 70 as shown in Figs. 3-5 The latching mechanism 64 includes a spring 72 and a latching member 74 configured to engage a portion of the fluid supply 98. The latching member 74 is moved in a first direction to compress the spring 72 and release the portion of the fluid supply 18, and moved in a second direction as the spring 72 expands to retain the portion of the fluid supply 18. It should be appreciated that other latching mechanisms 64 can be used to retain a portion of the fluid supply 18 within the receptacle 70. For example, suitable latching mechanisms 64 in accordance with the present disclosure include a grab catch, a bullet catch, a magnetic catch, a draw latch, a cam latch, a spring plunger, a roller catch, a hook latch, a slide bolt, or other latches and/or catches.

[0034] The fluid outlet portion 46 is positioned on the first surface 52 of the housing 38 and adjacent the person support surface 20 as shown in Figs. 3, 5. and 6. The fluid outlet portion 46 includes an opening 76 and a connector 78 configured to couple to the opening 76. The opening 76 opens into the passage 60 to facilitate communication of fluid from the fluid supply 18 to the person support surface 20 via the connector 78. In one illustrative embodiment, the connector 78 is a quick coupling connector configured to receive the complementary fluid inlet 26. In some embodiments, the connector 78 includes a deformable portion to allow for movement of the footboard 32 with respect to the person support surface 20.

[0035] The fluid supply 18 is configured to supply a fluid, such as, air, to the person support surface 20 as shown in FIG. 3 and 7. In some embodiments, the fluid supply 18 supplies various other gasses and/or liquids, and alternatively or additionally, is configured to provide therapies, such as, percussion/vibration, continuous lateral rotation, low-air loss, turn assistance, pressure redistribution, deep-vein thrombosis, or other therapies The fluid supply 18 includes a housing 80 with a first portion 82 and a second portion 84. The first portion 82 has a handle 86 coupled thereto that can be used to transport the fluid supply 18 and couple the fluid supply 18 to the footboard 32. in some embodiments, a user interface (not shown) is also positioned on the first portion 82. The second portion 84 is configured to be removably retained within the receptacle 70. The second portion 84 has a fluid supply connector 88 coupled thereto and a fluid outlet 90. The fluid supply connector 88 is configures to facilitate communication of power and/or data between the footboard 32 and the fluid supply 18. The fluid outlet 90 is configured to facilitate communication of fluid from the fluid supply 18 to the passage 60.

[0036] The housing 80 includes an inner chamber 92 containing a gas blower 94 and a controller 96 in communication with the gas blower 94 as shown in Fig. 7. in some embodiments, the fluid supply 18 also includes a heating/cooling element (not shown) within the housing 80. The gas blower 94 is coupled to the fluid outlet 90 to supply fluid therethrough The controller 96 is configured to control the operation of the gas blower 94 in response to an input. In one illustrative embodiment, the input is received from a remote location through the footboard 32. In another illustrative embodiment, the input is received from a user through a user input (not shown) on the person support apparatus 10, footboard 32. and/or second portion 84 of the housing 80.

[0037] In use, the second portion 84 of the fluid supply 18 is inserted into the receptacle 70 such that the second footboard connector 66 engages the fluid supply connector 88 and the passage 60 is in fluid communication with the fluid outlet 90 through the second opening 68. The

handle 86 engages the latching member 74 of the latching mechanism 64 to retain the second portion 84 of the fluid supply 18 within the receptacle 70. The controller 96 activates the blower 94 in response to an input signal. The blower 94 communicates fluid out of the fluid outlet 90, through the second opening 68 into the passage 60, through the passage 60, out of the opening 76, and into the fluid inlet 26 of the person support surface 20 by way of the connector 78.

[0038] Many other embodiments are also envisioned according to the present disclosure. For example, an endboard for a person support apparatus comprises a housing, a first opening, and a passage. The housing includes a first surface and a second surface spaced apart from the first surface. The first opening in the housing is configured to receive a fluid from a fluid supply. The passage is positioned between the first surface and the second surface of the housing. The passage is configured to facilitate communication of fluid from the first opening to a second opening in the housing.

[0039] In another example, a person support-surface system comprises a person support surface, a fluid supply, and an endboard. The person support surface includes an inflatable bladder. The fluid supply is configured to supply fluid to the person support surface. The endboard includes a housing with a receptacle configured to receive a portion of the fluid supply and a passage within the housing that is configured to facilitate communication of fluid from the fluid supply to the person support surface through the housing of the endboard.

[0040] In yet another example, an endboard for a person support apparatus comprises an endboard housing, an opening, and a locking mechanism. The endboard housing has a first side and a second side spaced apart from the first side. The opening extends through at least one of the first side and the second side. The opening is configured to receive a first portion of a fluid supply therein. The locking mechanism is coupled to one of the first side and the second side and is located proximate the opening The locking mechanism is configured to engage a second portion of the fluid supply to removably retain the first portion of the fluid supply within the opening.

[0041] While embodiments of the disclosure have been illustrated and described in detail in the drawings and foregoing description, the same are to be considered as illustrative and not restrictive in character.

Claims

1. An endboard for a person support apparatus. the endboard comprising:

   a housing including a first surface and a second surface spaced apart from the first surface,
   a first opening in the housing configured to receive a fluid from a fluid supply: and
   a passage positioned between the first surface and the second surface of the housing, the passage configured to facilitate communication of fluid from the first opening to a second opening in the housing.

2. The endboard of claim 1, further comprising a third opening extending through at least one of the first surface and the second surface to define a receptacle, the receptacle being configured to receive a portion of a fluid supply.

3. The endboard of claim 2, wherein the receptacle includes a connector configured to communicate at least one of data and power at least one of to and from the fluid supply.

4. The endboard of either claim 2 or claim 3. wherein the first opening is positioned in the receptacle.

5. The endboard of any preceding claim, further comprising a latching mechanism configured to removably couple a fluid supply to the endboard.

6. The endboard of any preceding claim, further comprising a connector configured to couple to the second opening and facilitate communication of fluid from the passage to a person support surface.

7. A person support surface system comprising.
   a person support surface including an inflatable bladder;
   a fluid supply configured to supply fluid to the person support surface; and
   an endboard including a housing with a receptacle configured to receive a portion of the fluid supply and a passage within the housing being configured to facilitate communication of fluid from the fluid supply to the person support surface through the housing of the endboard.

8. The person support surface system of claim 7. wherein the endboard includes an opening into the passage proximate the person support surface, the person support surface being connected to the opening by a connector.

9. The person support surface system of either claim 7 or claim 8, wherein the passage is formed in the housing.

10. The person support surface system of any one of claims 7 to 9, wherein the receptacle includes an opening into the passage.

11. The person support surface system of any one of claims 7 to 10, wherein the receptacle includes a connector configured to communicate at least one of data and power at least one of to and from the

fluid supply.

12. The person support surface system of any one of claims 7 to 11. further comprising a latching mechanism coupled to the endboard proximate the receptacle, the latching mechanism being configured to engage a handle coupled to the fluid supply to removably couple the fluid supply to the endboard.

13. The person support surface system of any one of claims 7 to 12, wherein the fluid supply includes a housing with a first portion and a second portion, the first portion being sized to fit within the receptacle, the second portion being configured to engage an external portion of the endboard proximate the receptacle.

14. The person support surface system of claim 13. wherein the first portion of the housing includes a connector and a fluid outlet, the connector being configured to engage a complementary connector coupled to the receptacle to facilitate communication of at least one of data and power, the fluid outlet being configured to engage an opening into the passage located on a surface of the receptacle to communicate fluid from the fluid supply to the passage.

15. An endboard for a person support apparatus, the end board comprising:

an endboard housing with a first side and a second side spaced apart from the first side:
an opening extending through at least one of the first side and the second side, the opening being configured to receive a first portion of a fluid supply therein: and
a locking mechanism coupled to one of the first side and the second side and located proximate the opening, the lacking mechanism being configured to engage a second portion of the fluid supply to removably retain the first portion of the fluid supply within the opening.

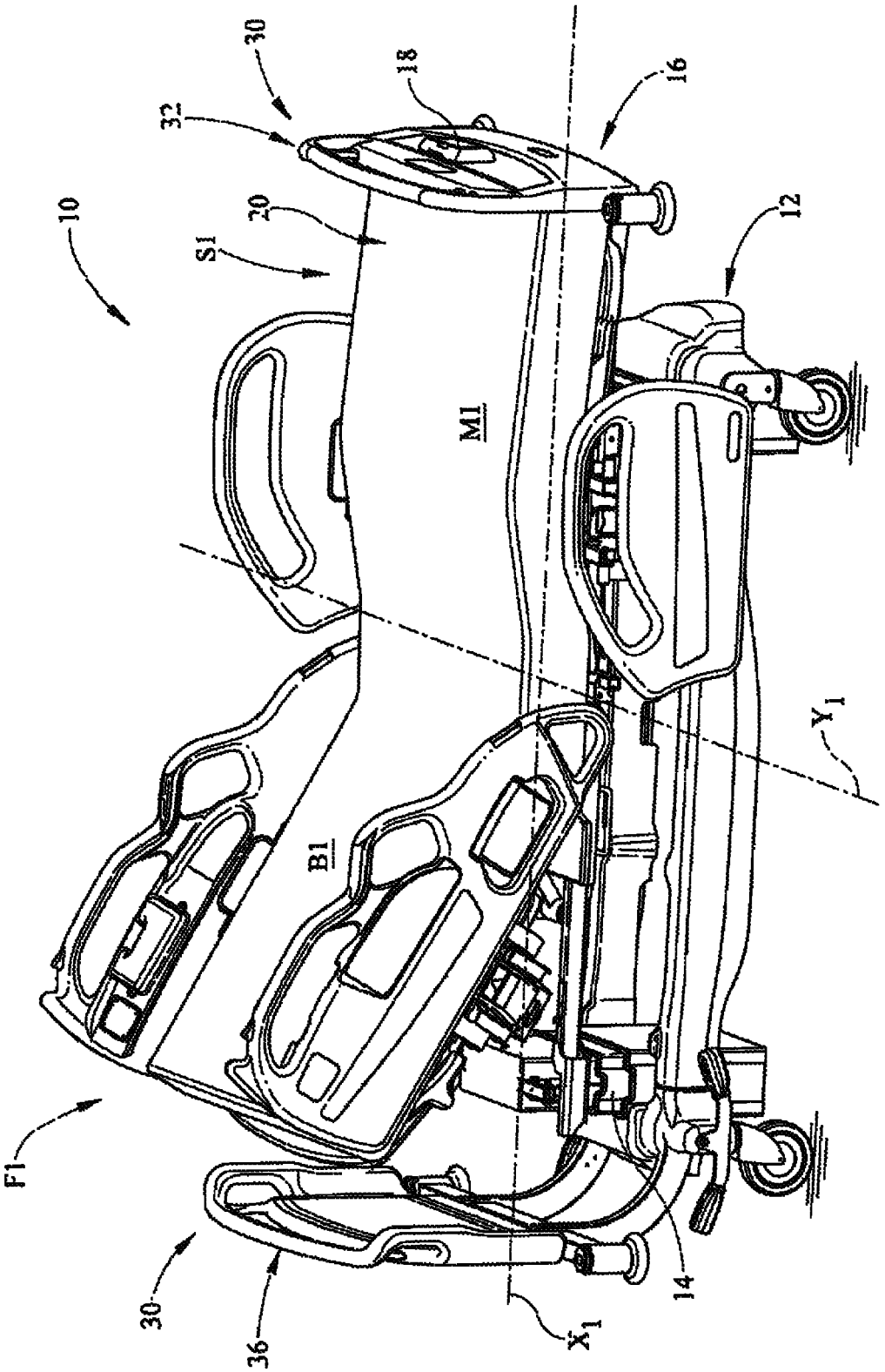

FIG. 1

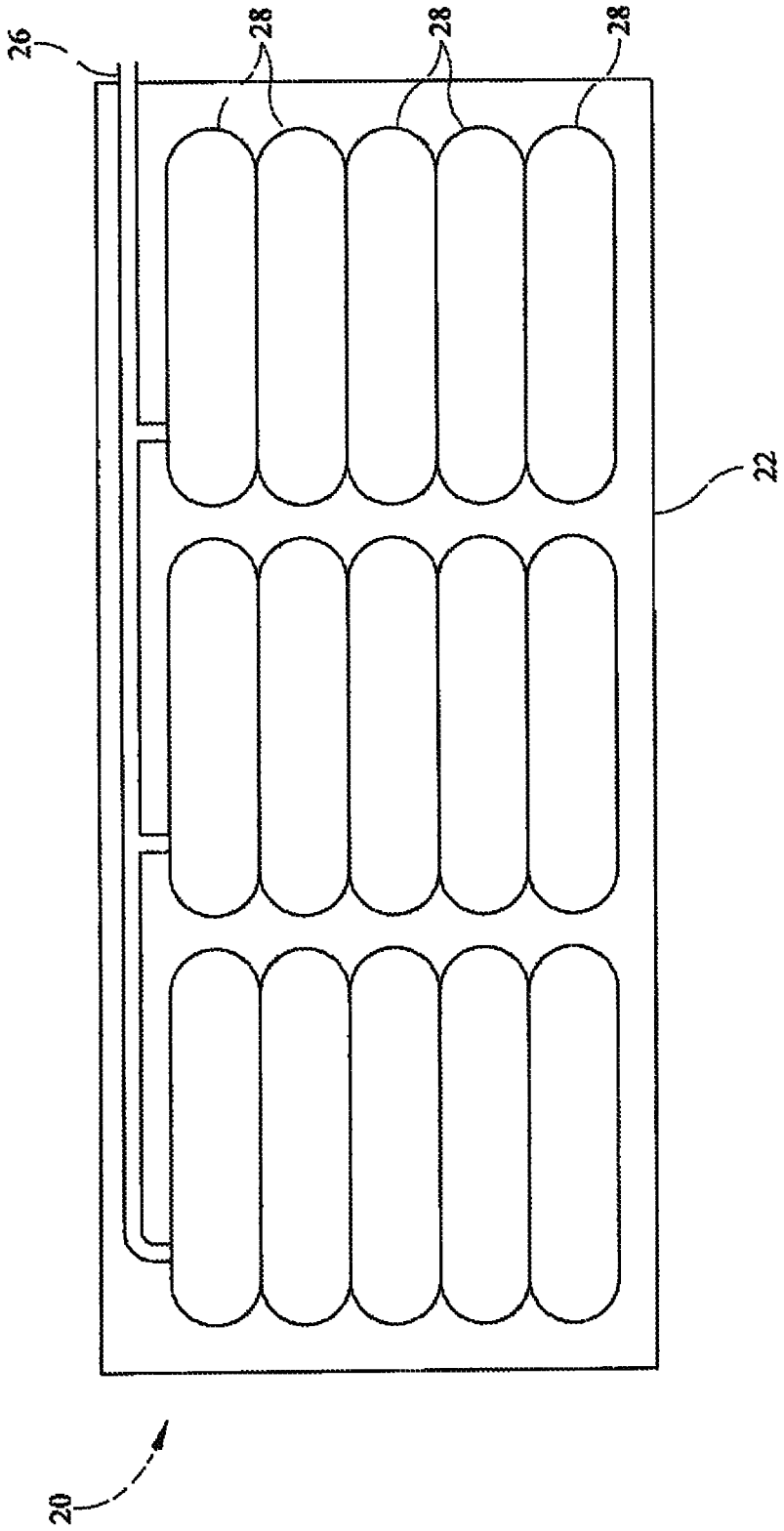

FIG. 2

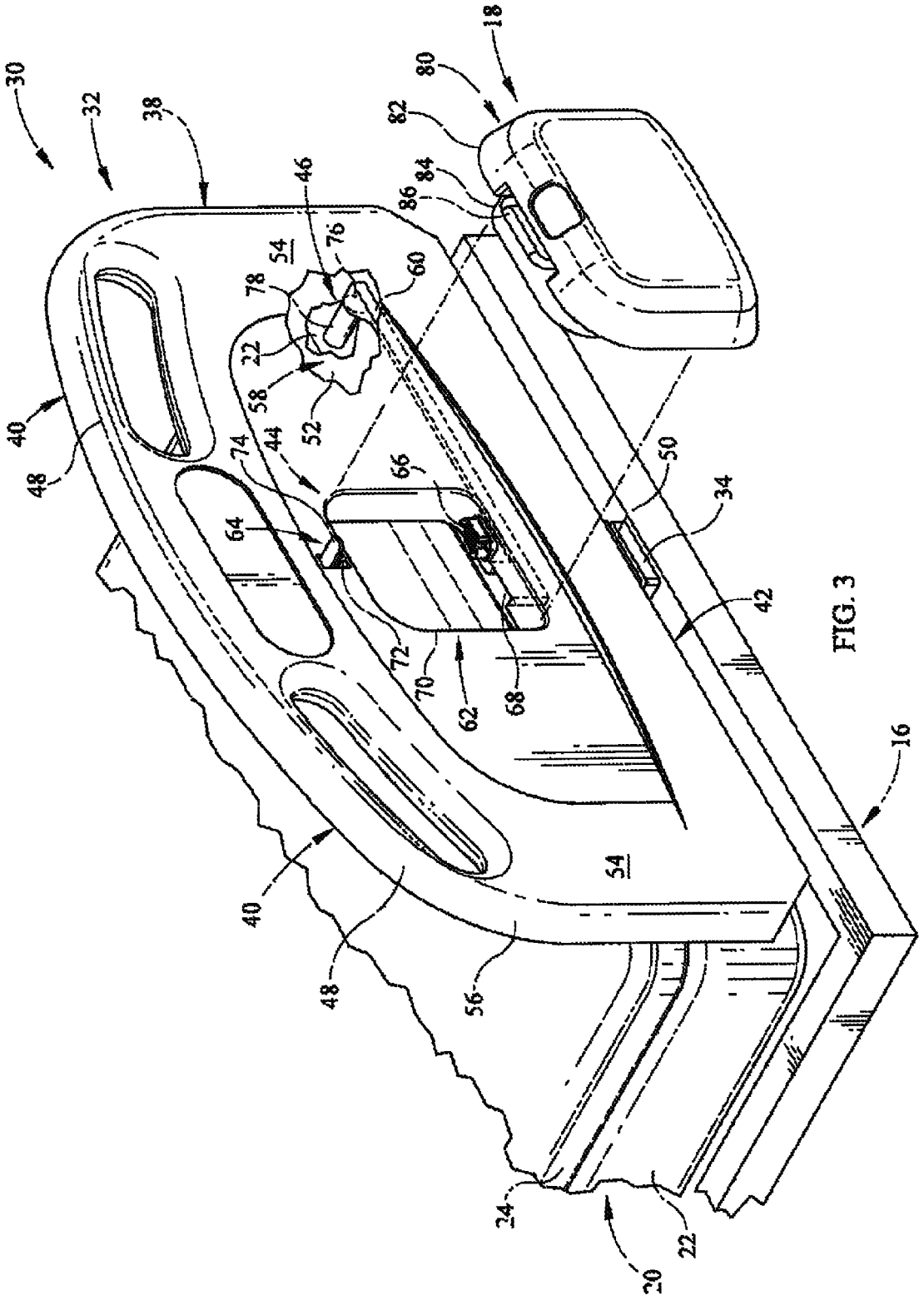
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FIG. 3

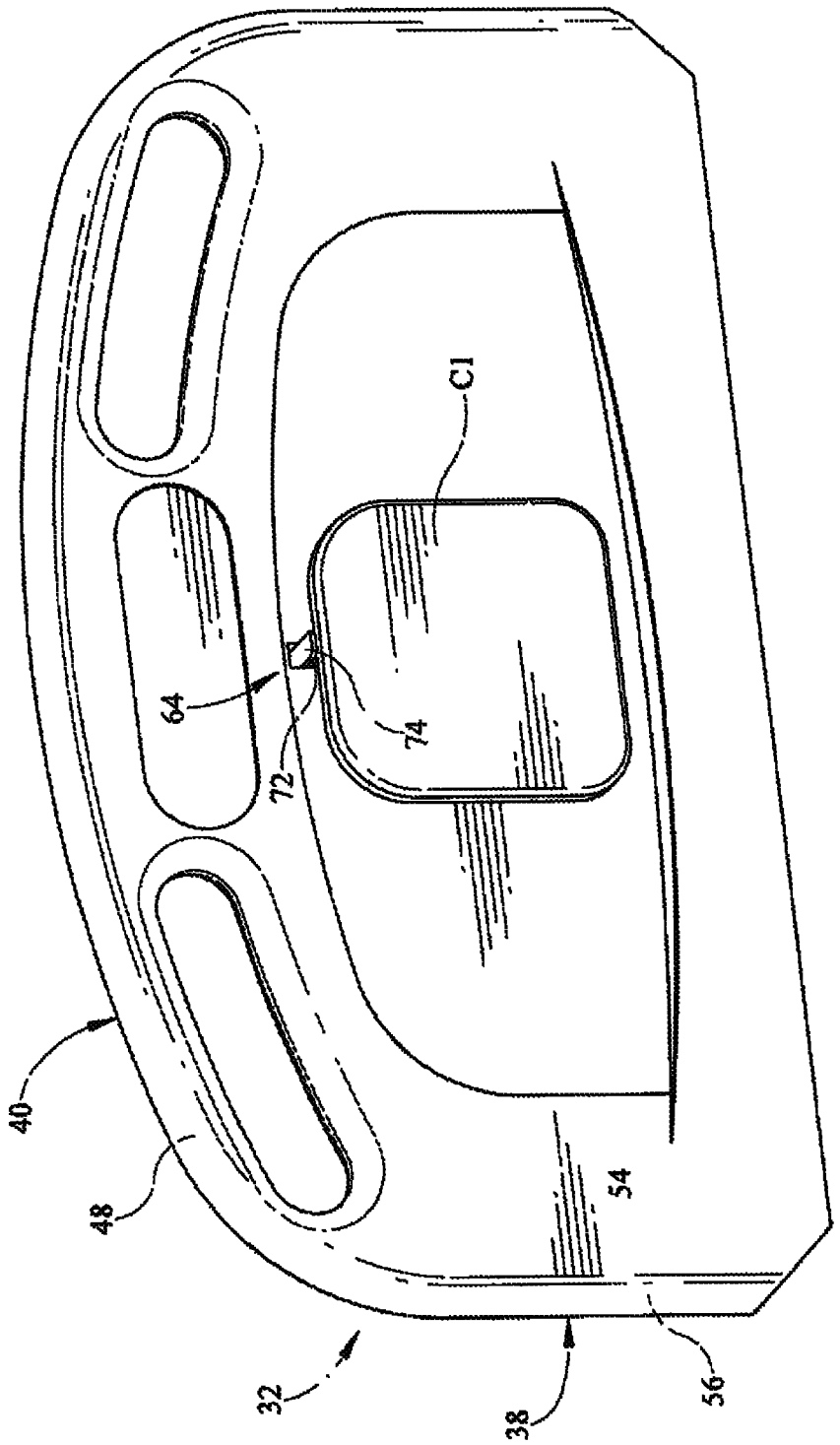

FIG. 4

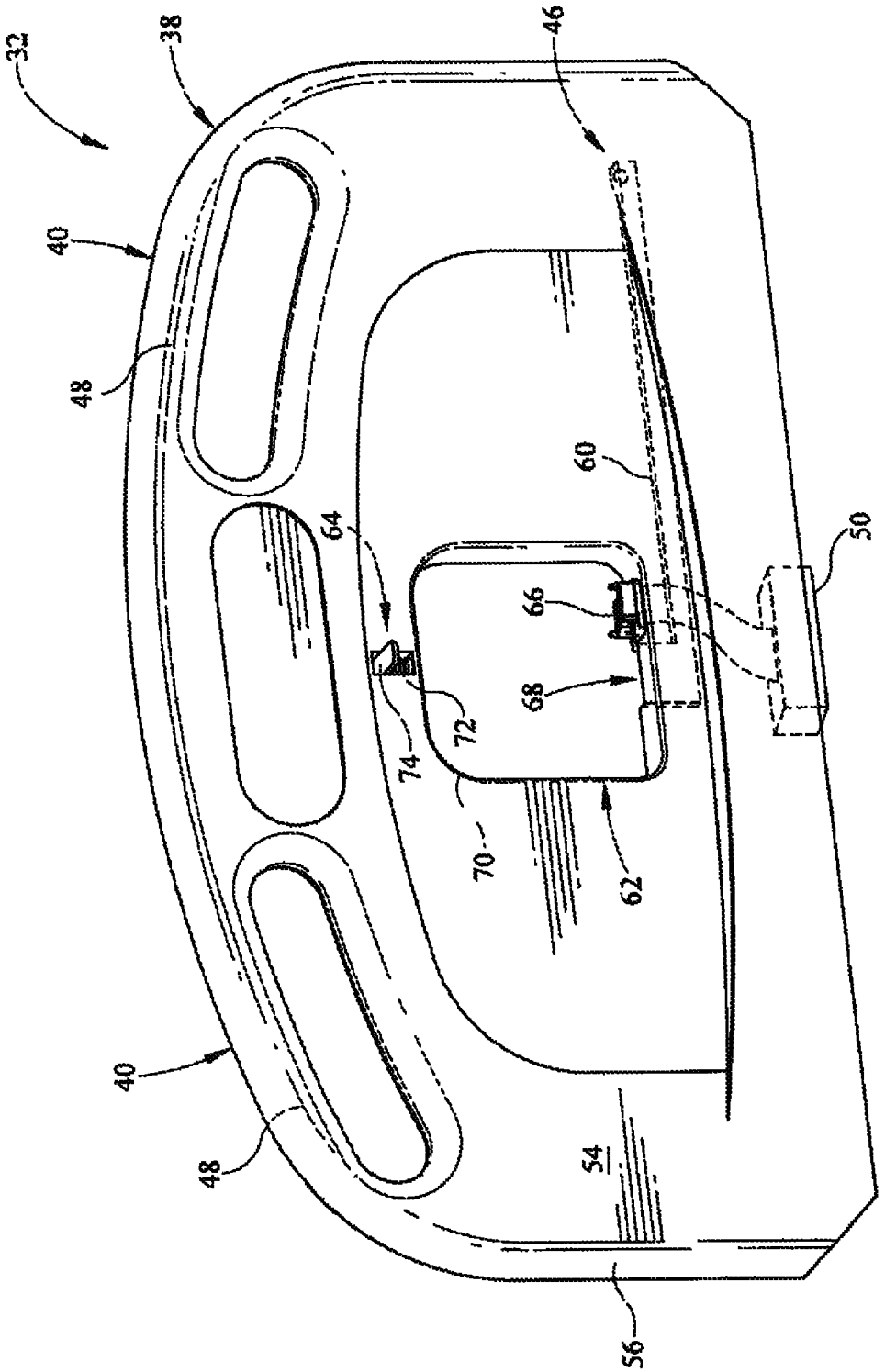

FIG. 5

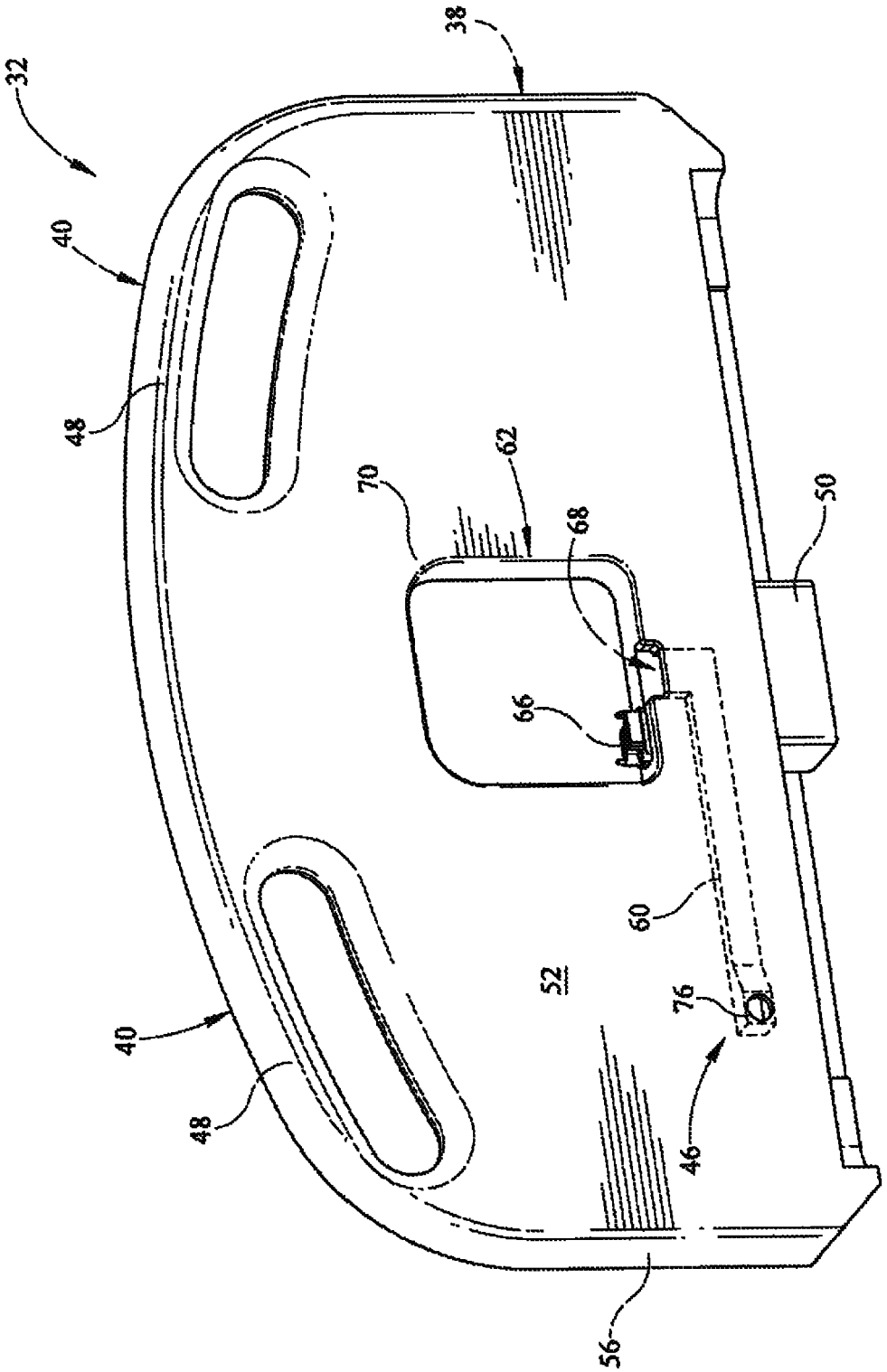

FIG. 6

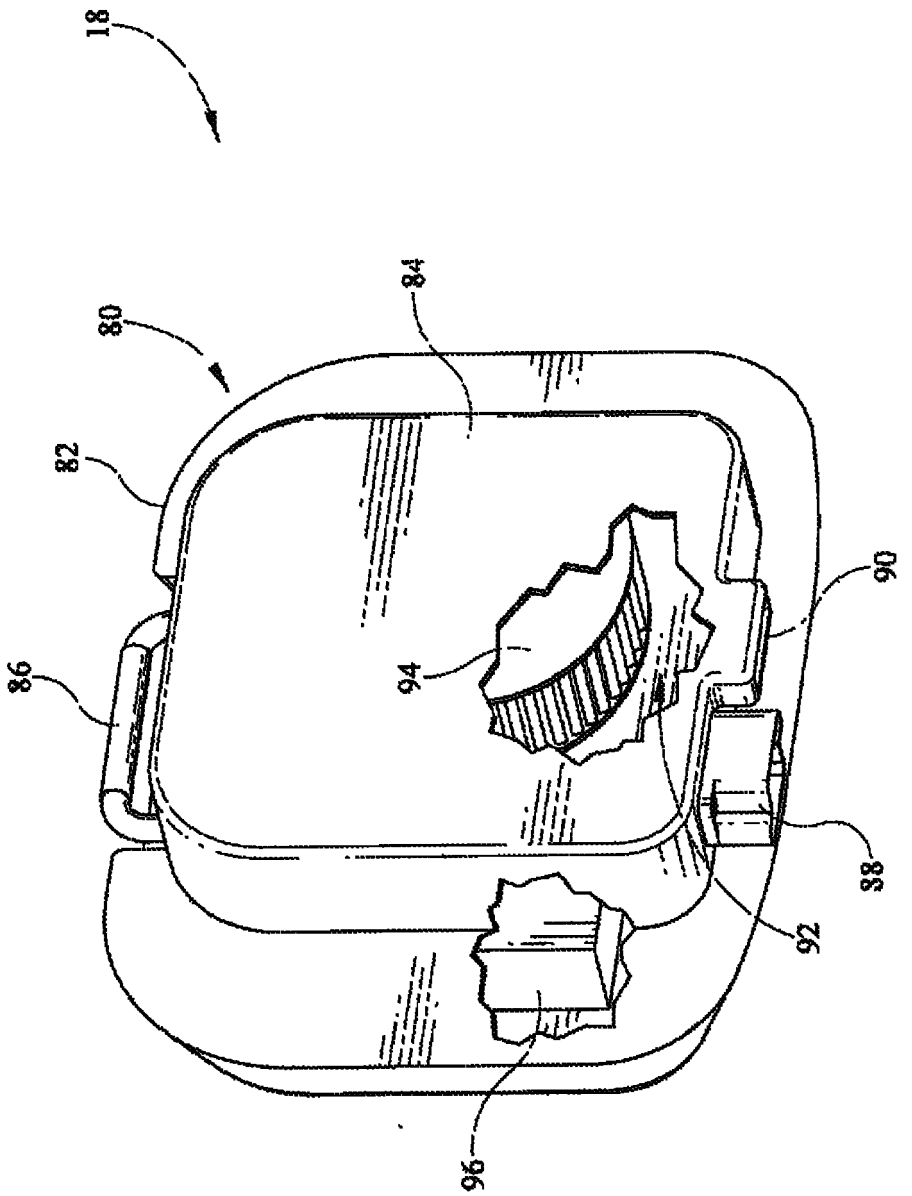

FIG. 7