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(54) **RUNNING BOARD SUPPORT MEMBER**

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Related U.S. Application Data

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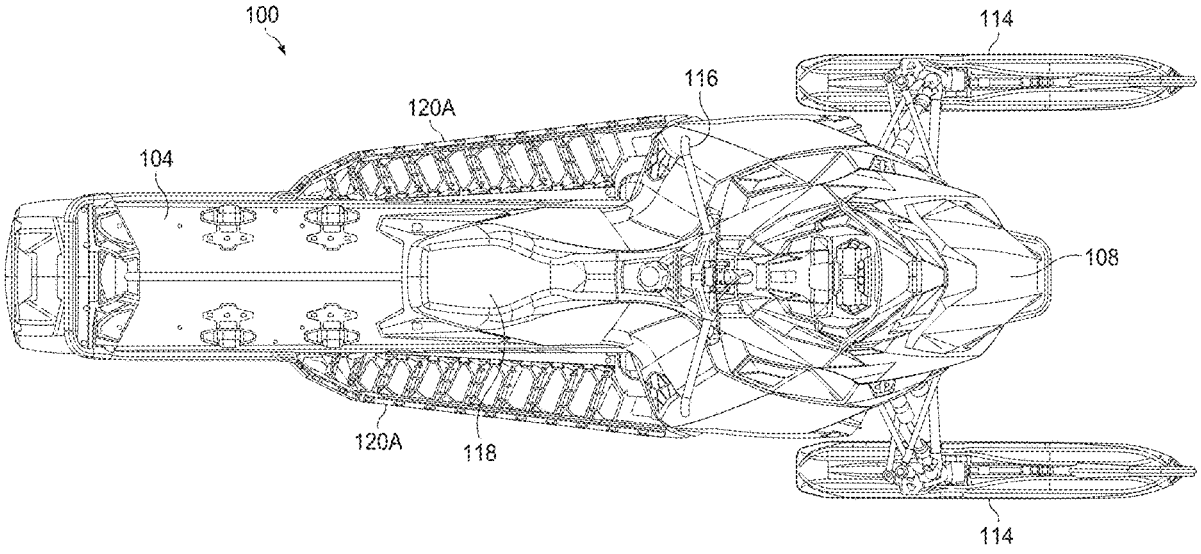
(51) **Int. Cl.**
B62M 27/02 (2006.01)

(52) **U.S. Cl.**
CPC ***B62M 27/02*** (2013.01); *B62M 2027/028* (2013.01)

(57) **ABSTRACT**

A running board assembly for a snow vehicle includes a support member positioned outboard from a tunnel of the snow vehicle. The support member includes a first end, a second end, and an attachment element located intermediate of the first end and the second end. One or more foot support members is disposed inboard from the support member. A support leg is removably securable to the attachment element of the support member. The support leg includes a mounting feature securable to a rear suspension component disposed below an upper surface of a drive track.



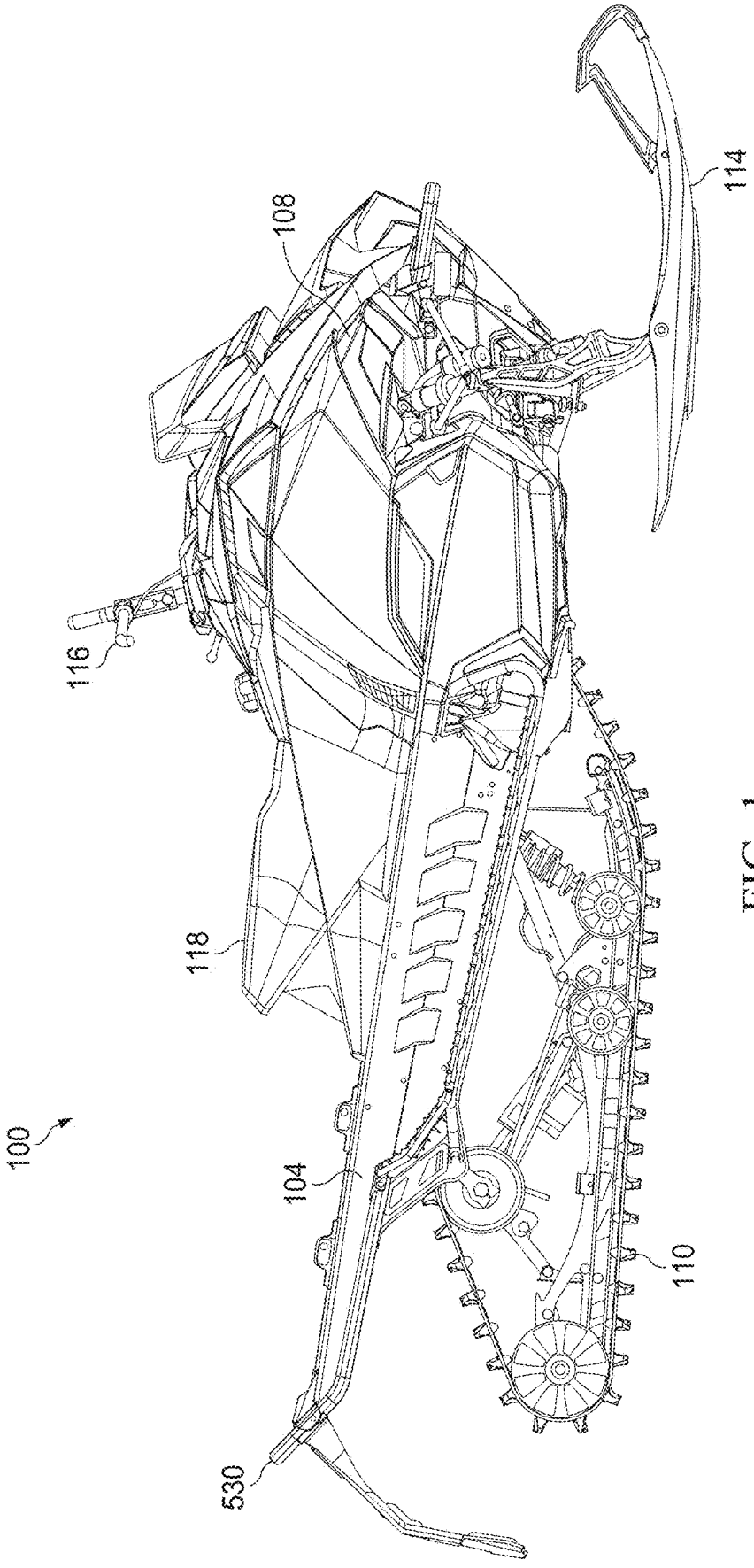


FIG. 1

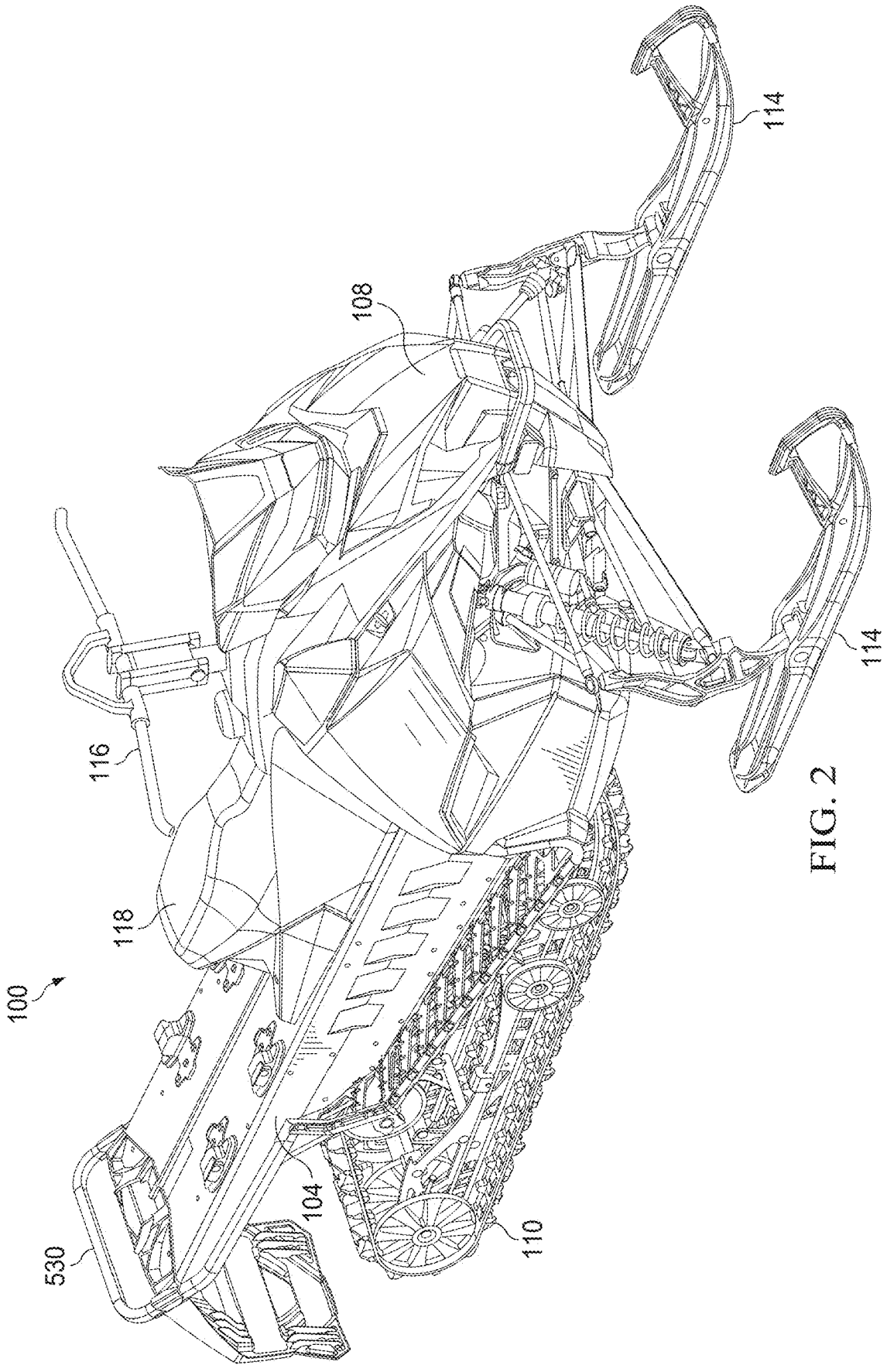


FIG. 2

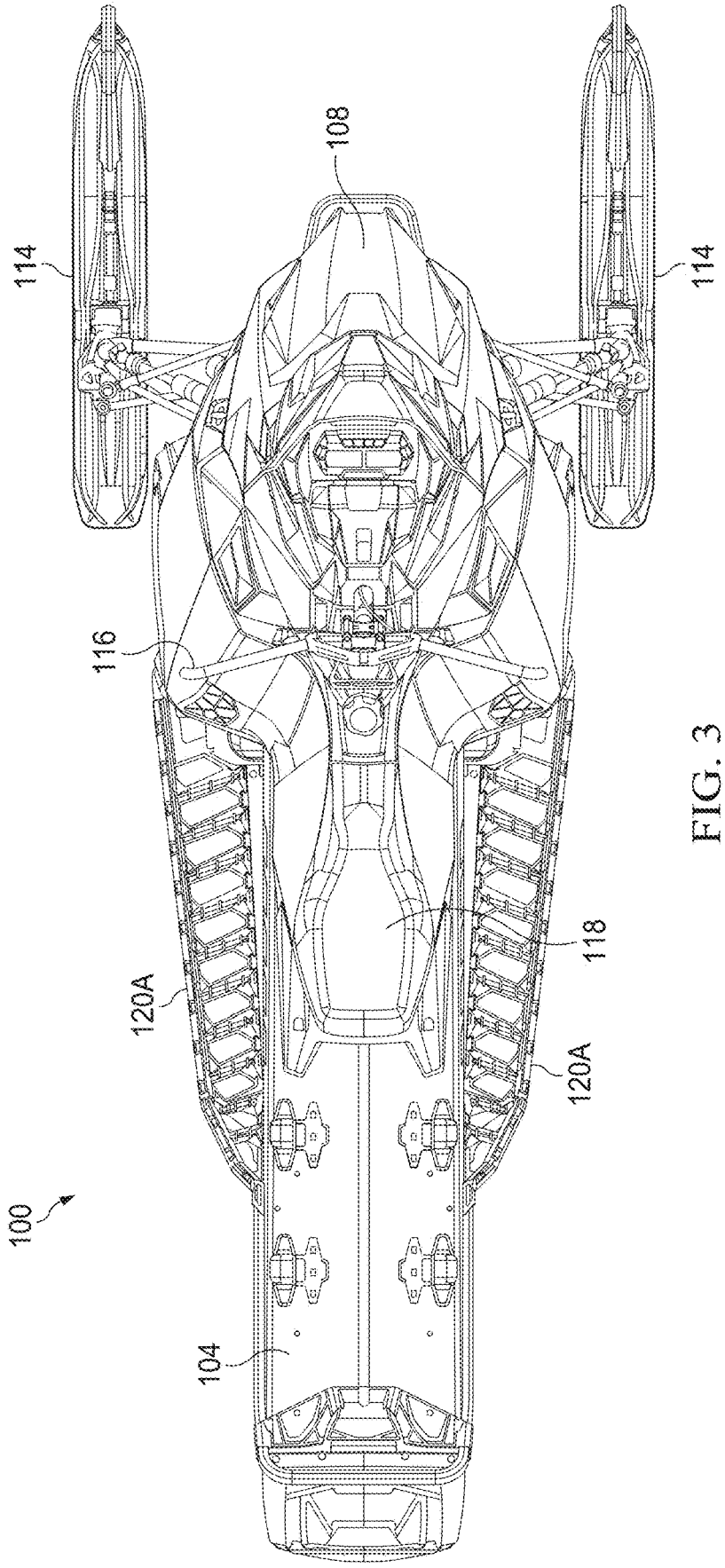


FIG. 3

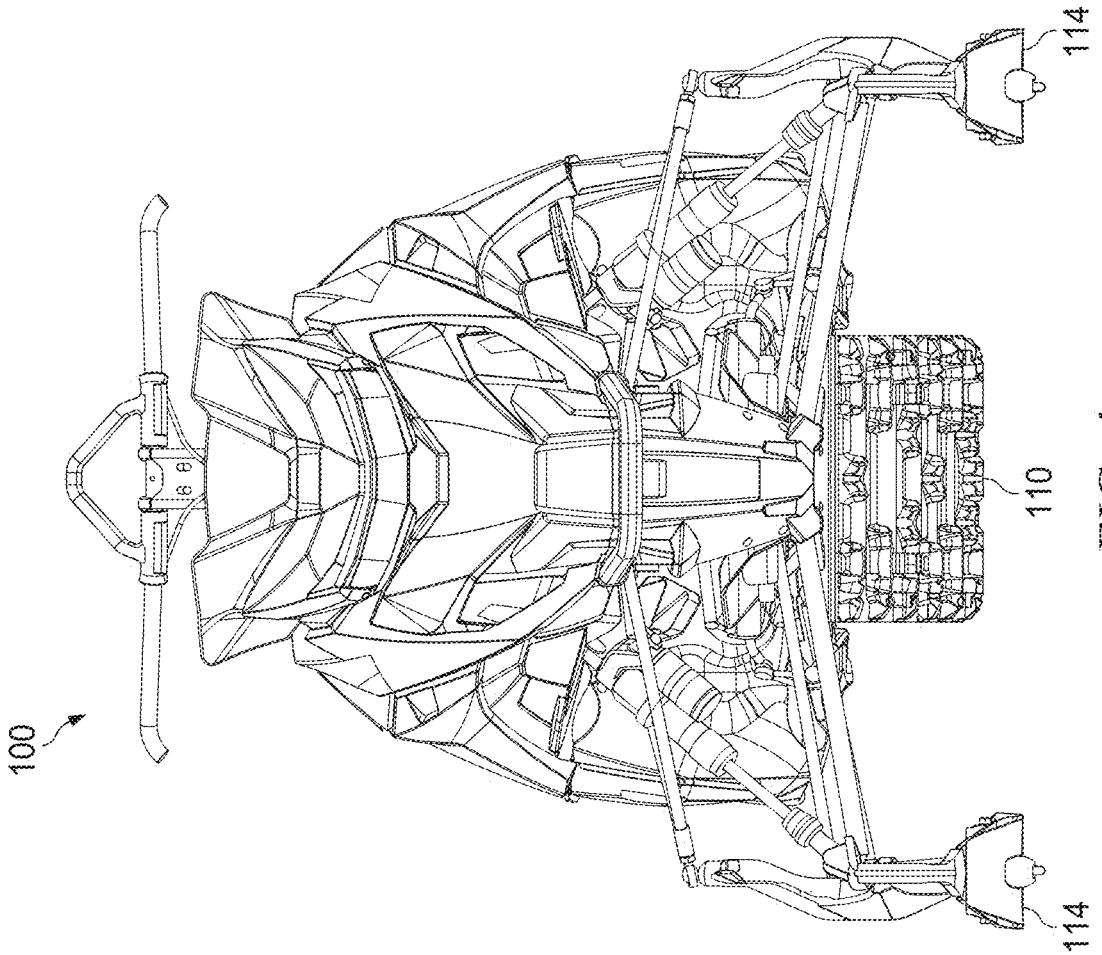


FIG. 4

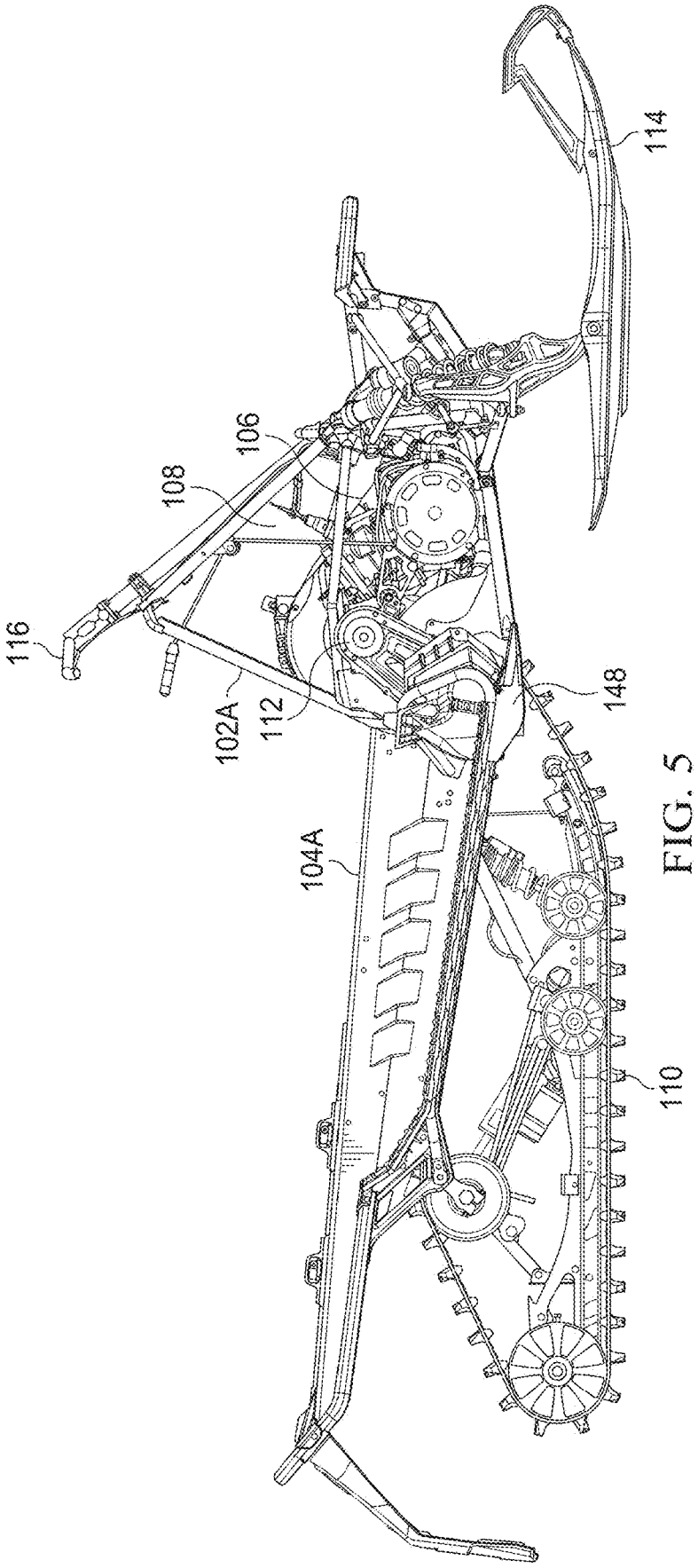


FIG. 5

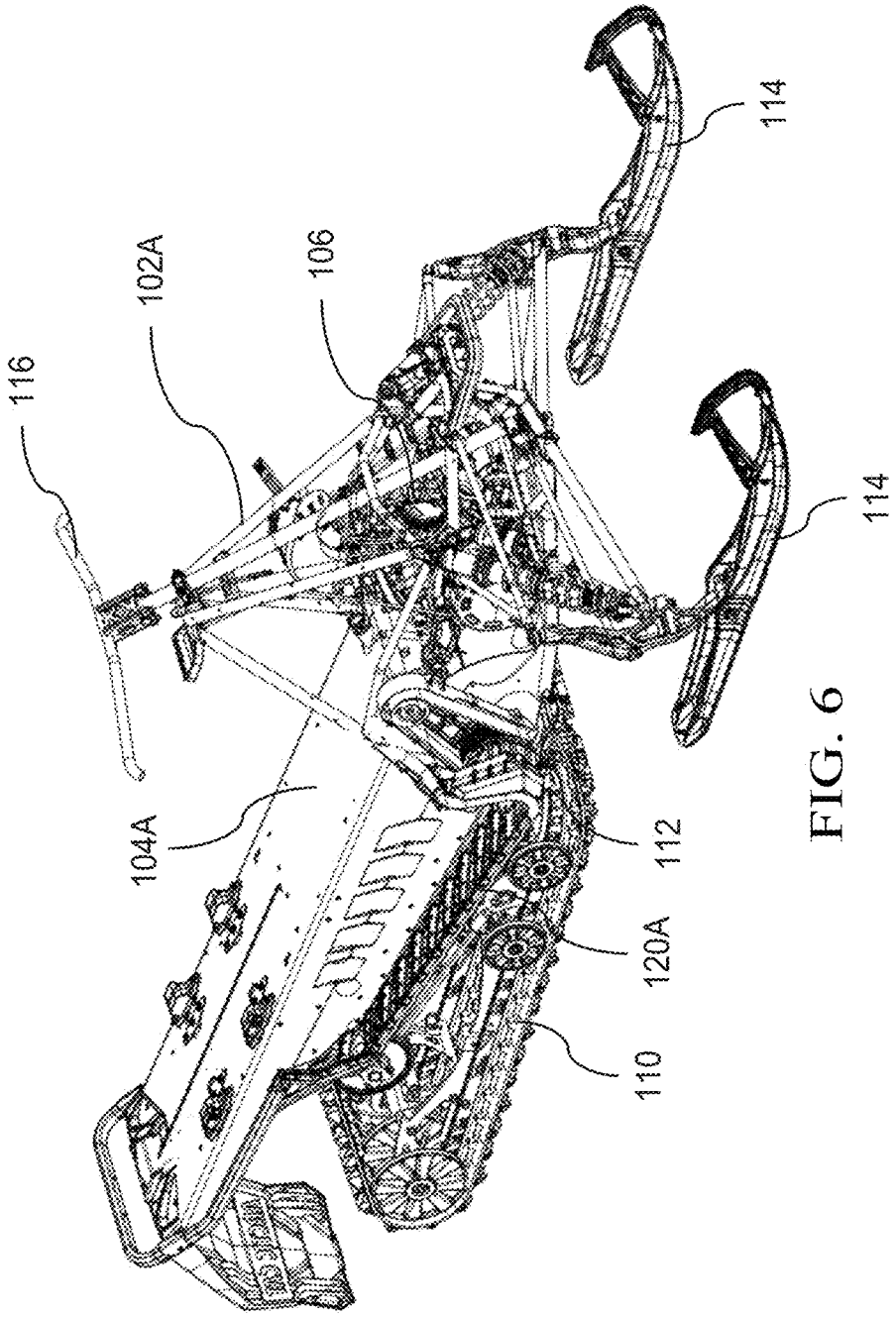


FIG. 6

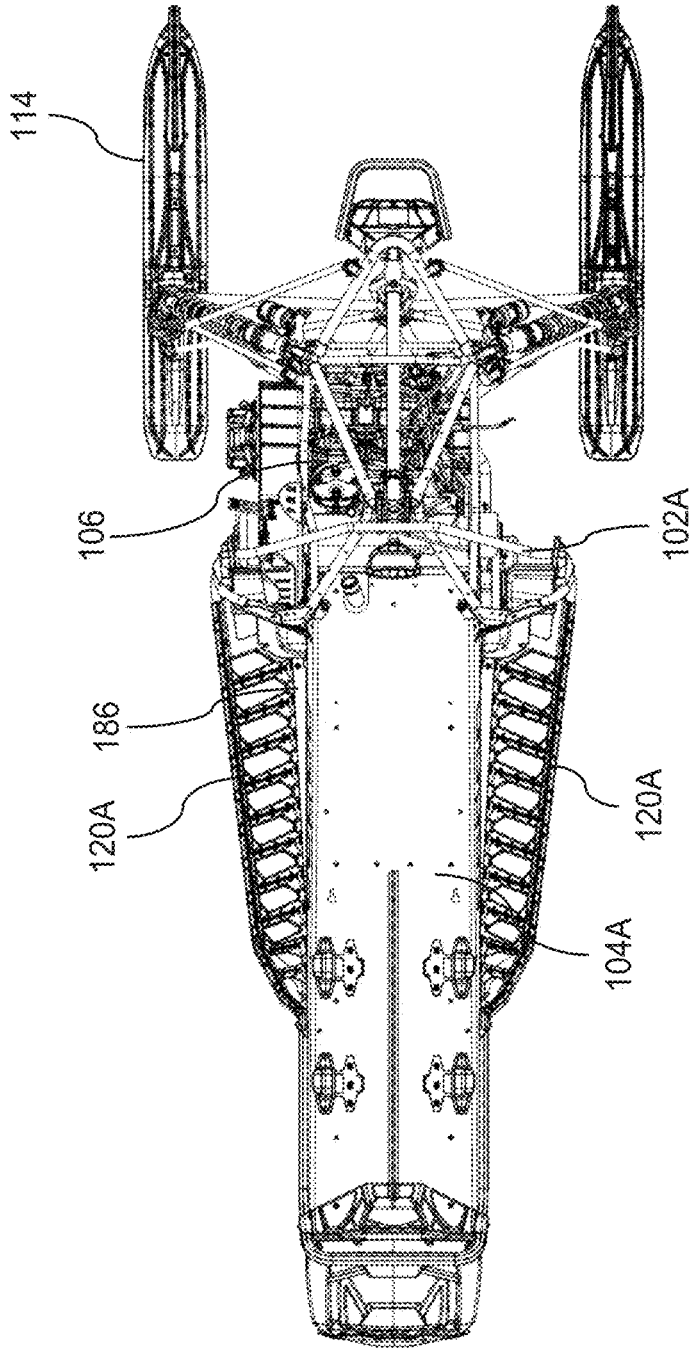


FIG. 7

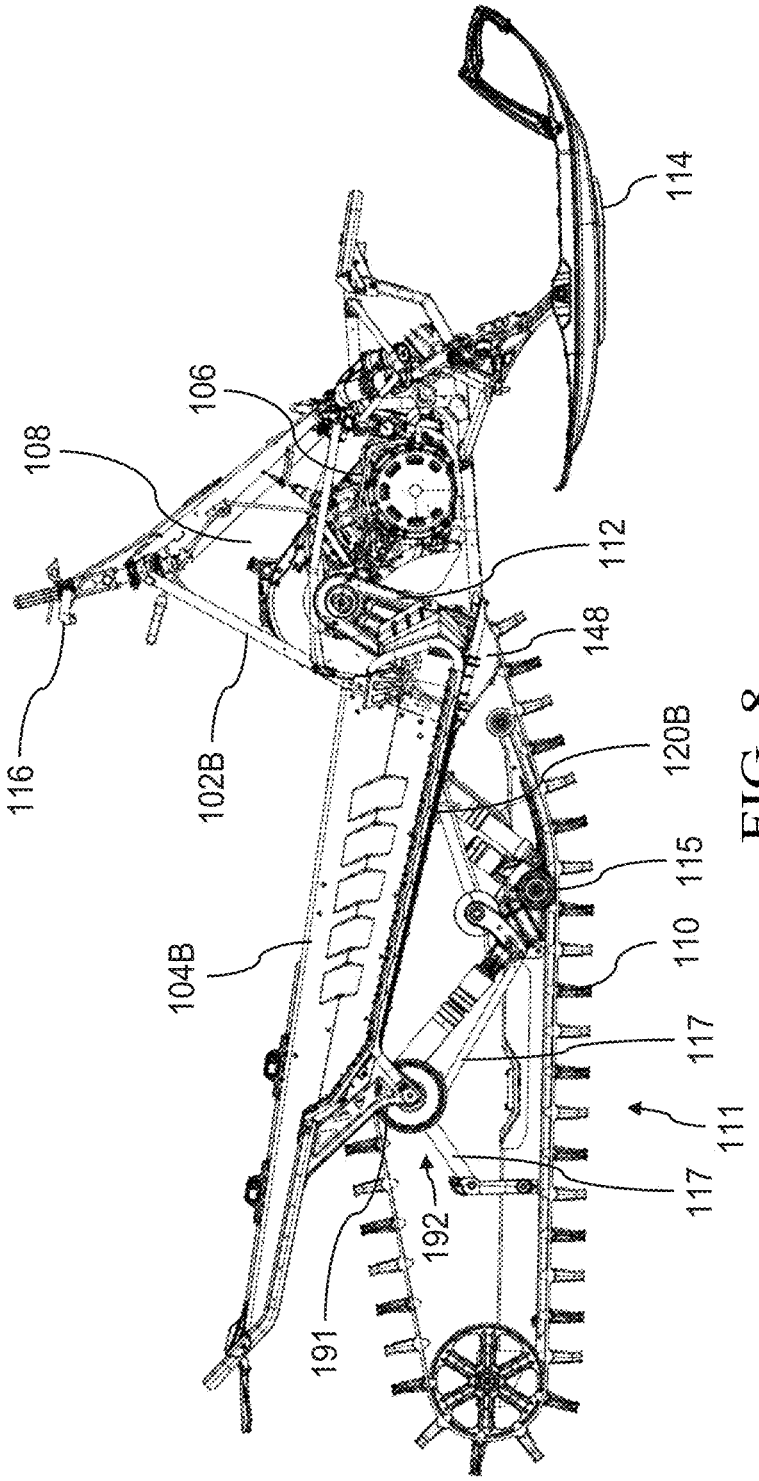

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FIG. 8

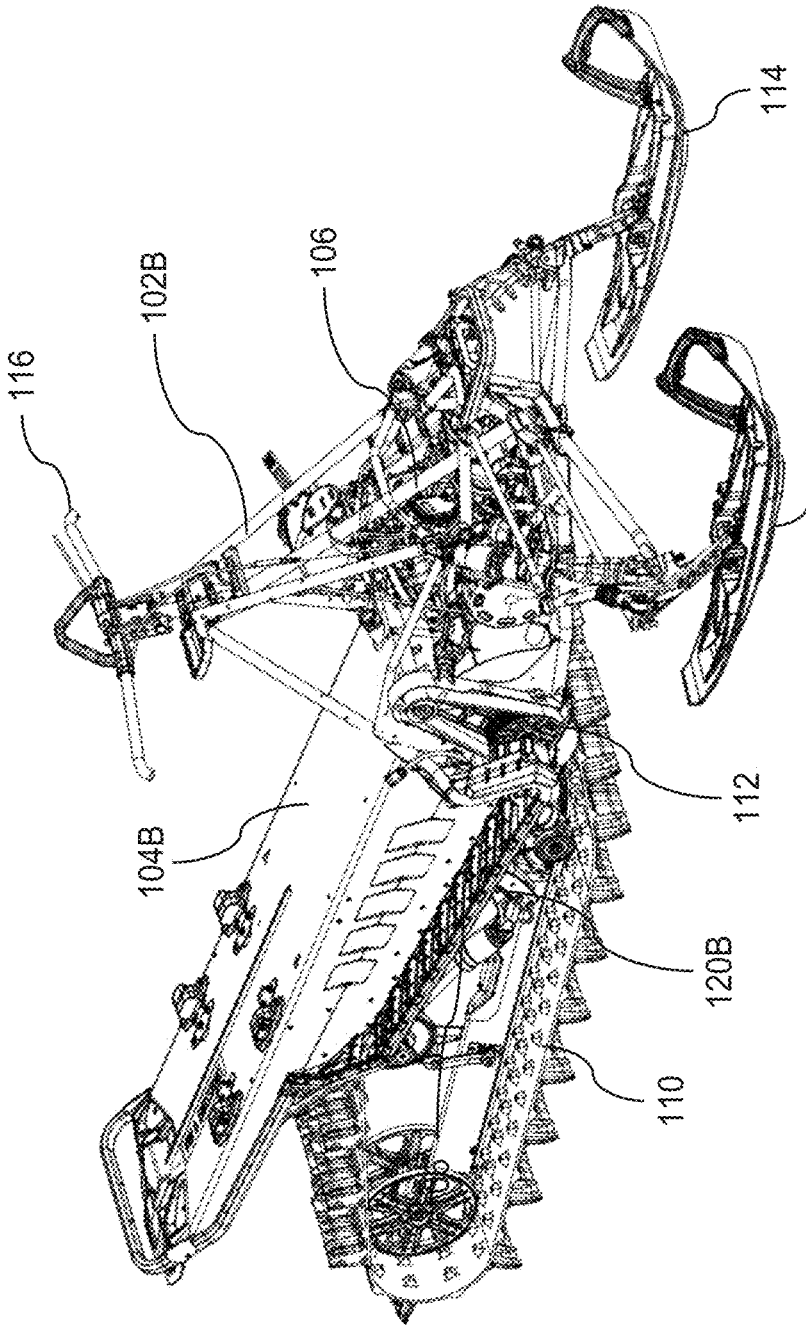

FIG. 9

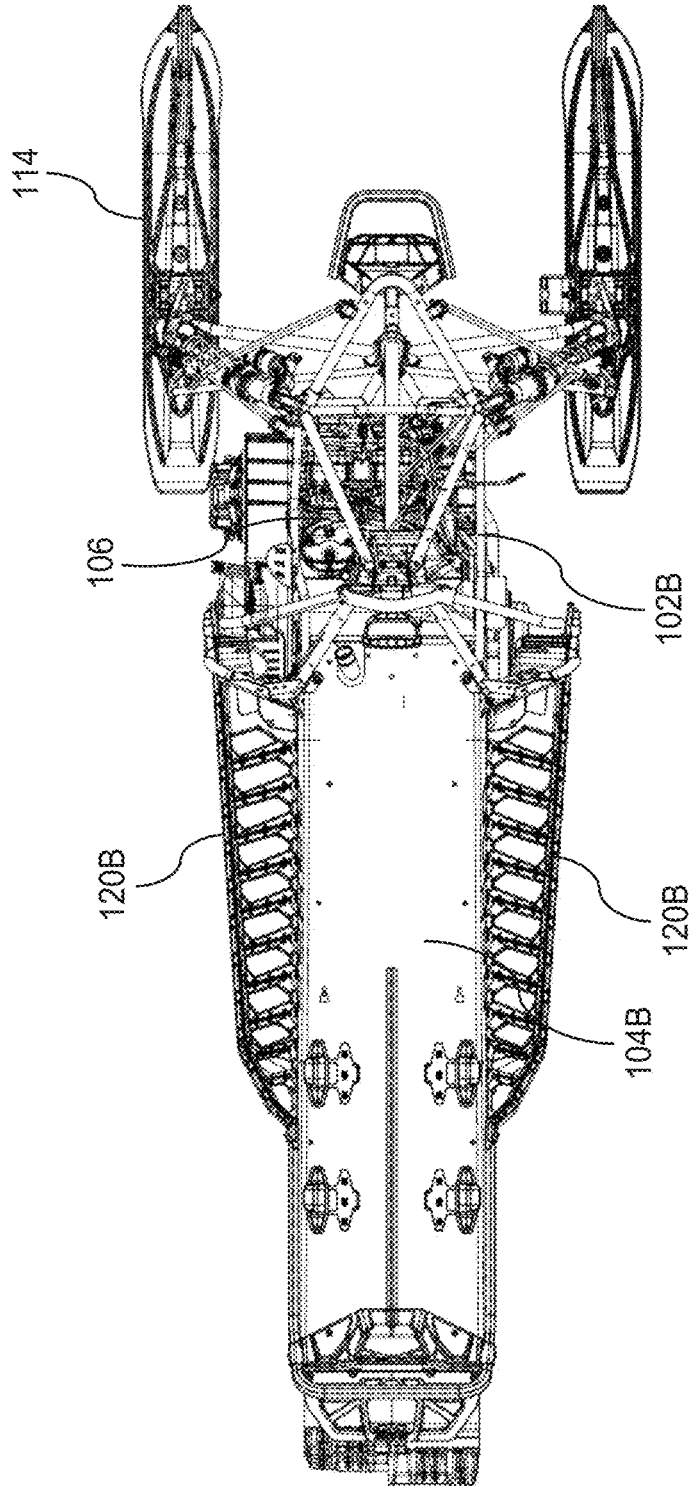

FIG. 10

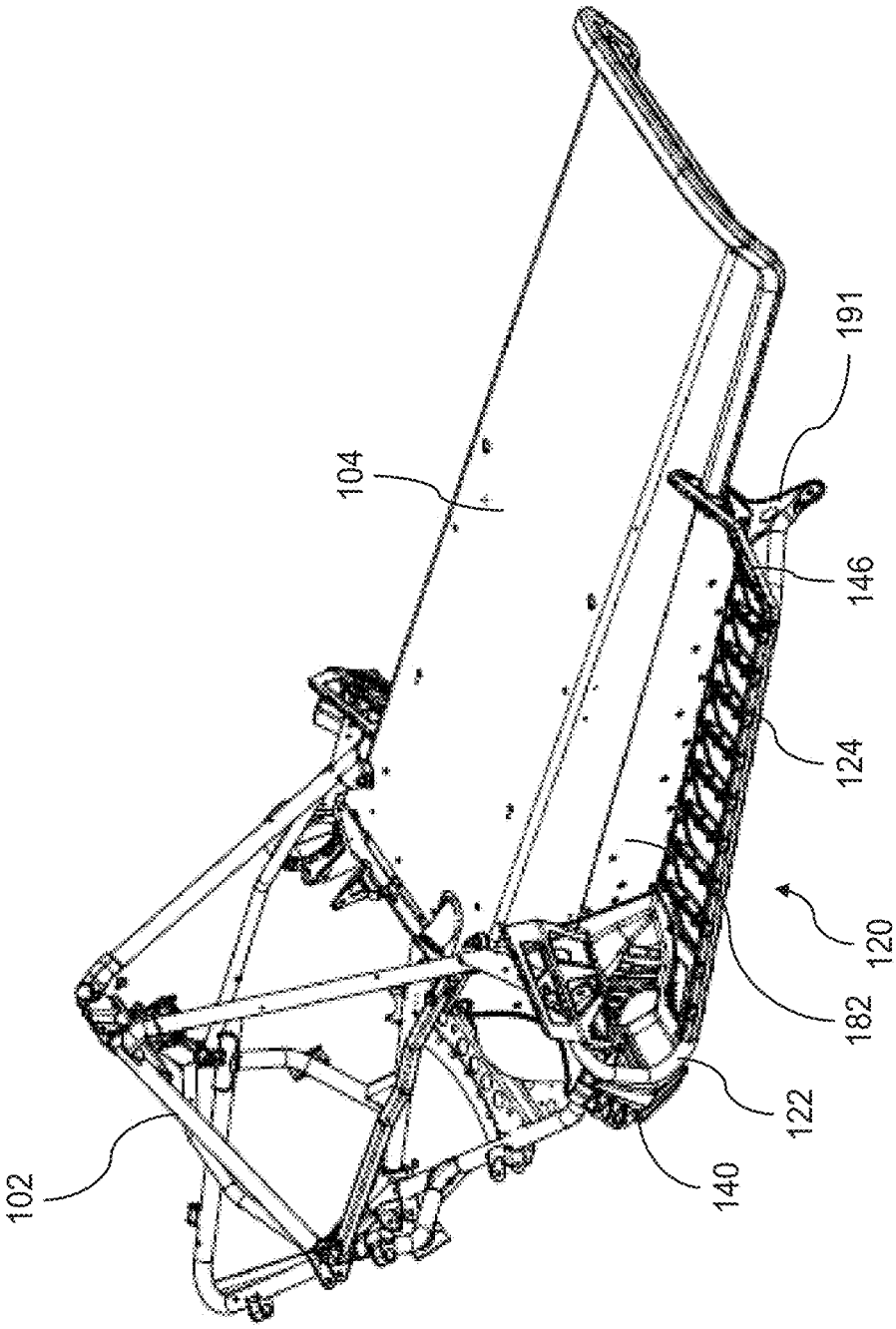

FIG. 11

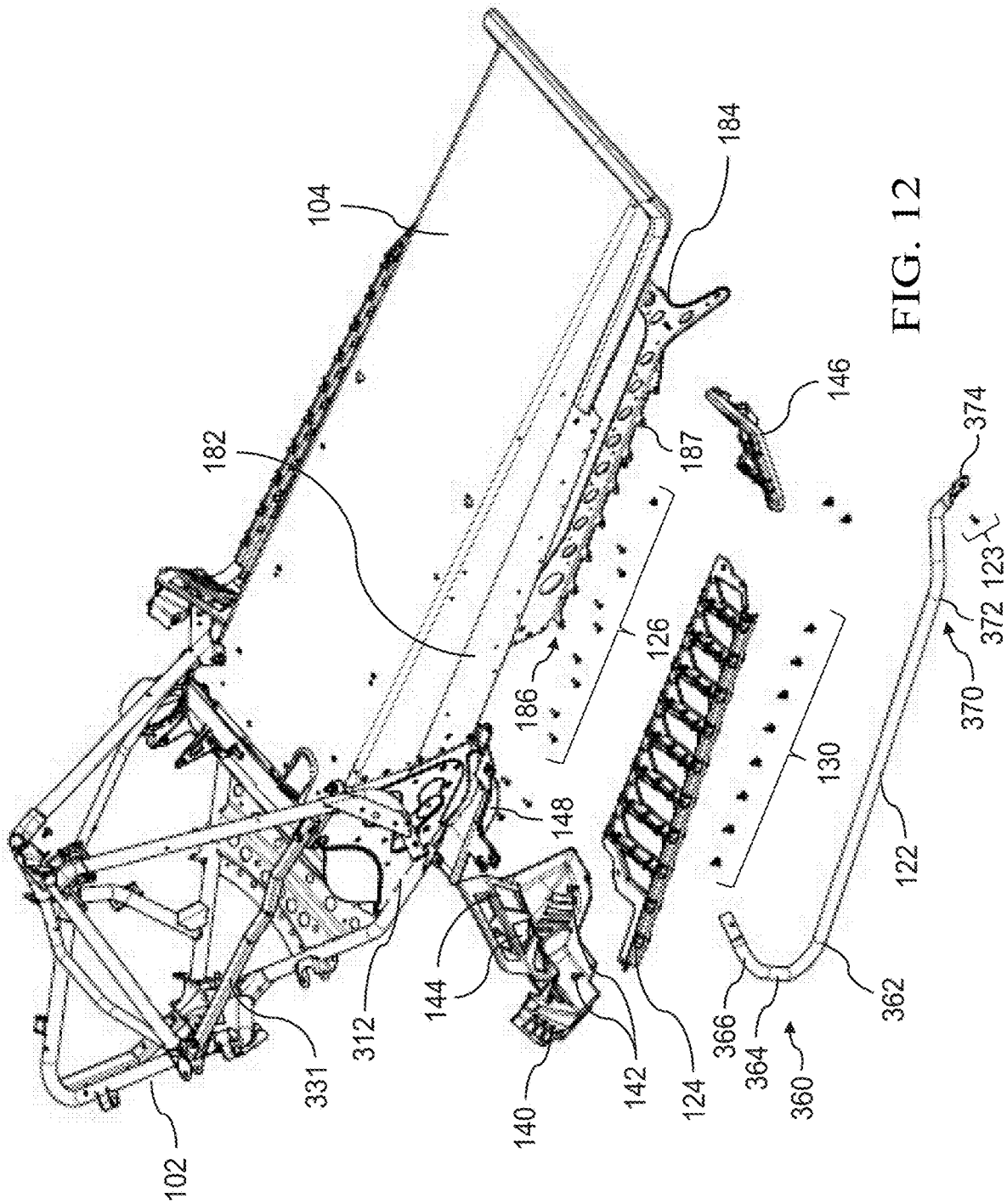
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FIG. 12

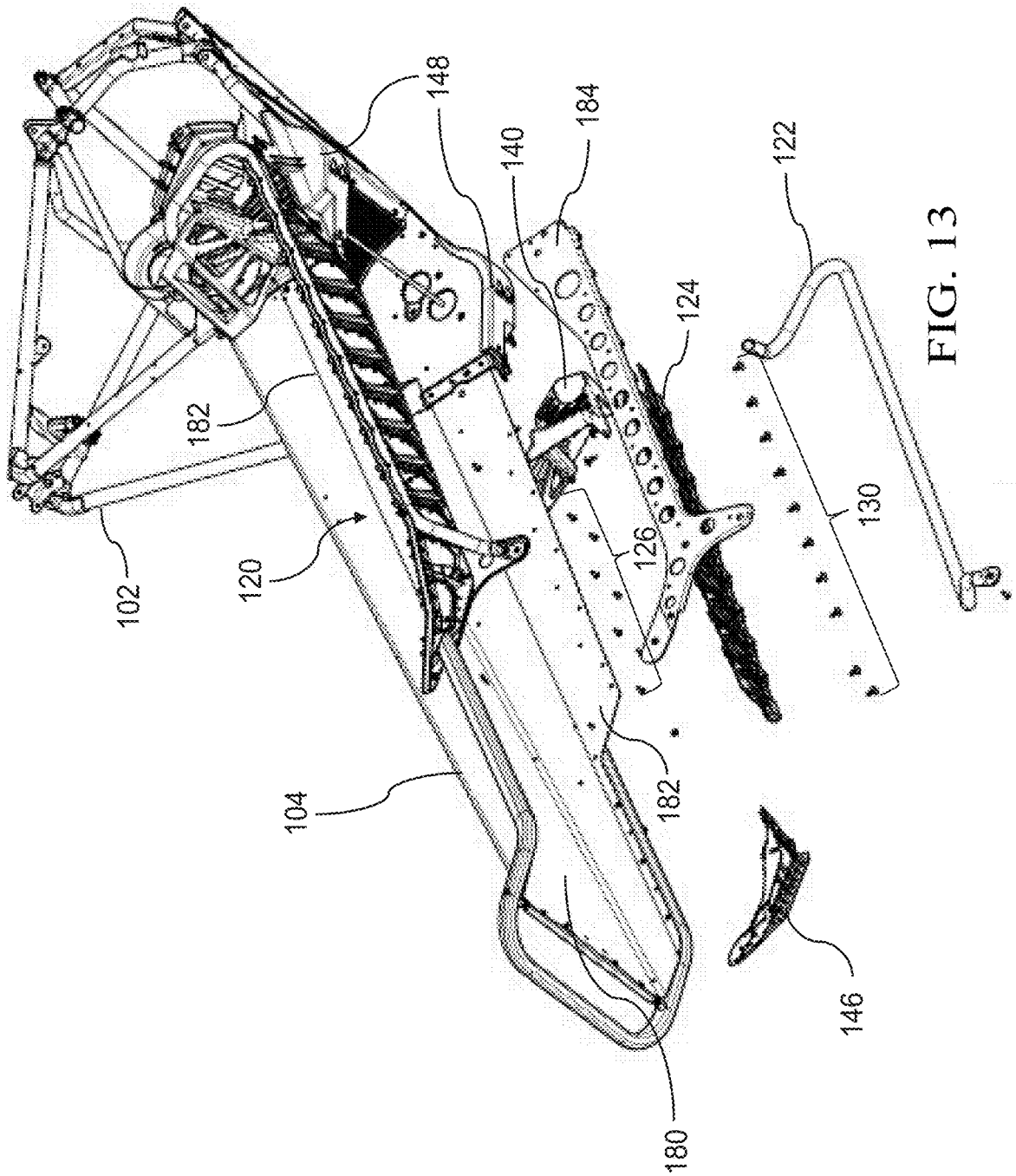


FIG. 13

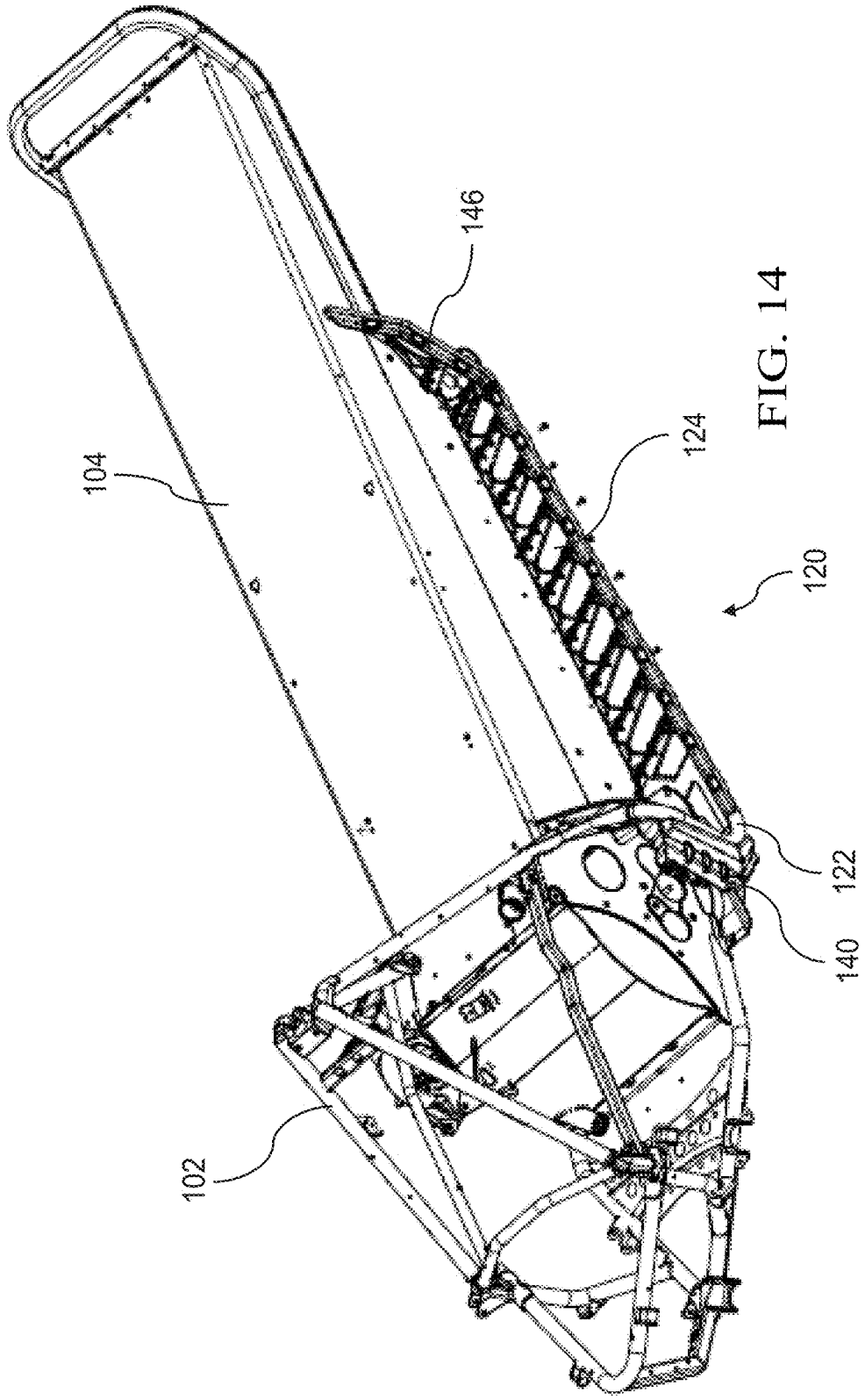


FIG. 14

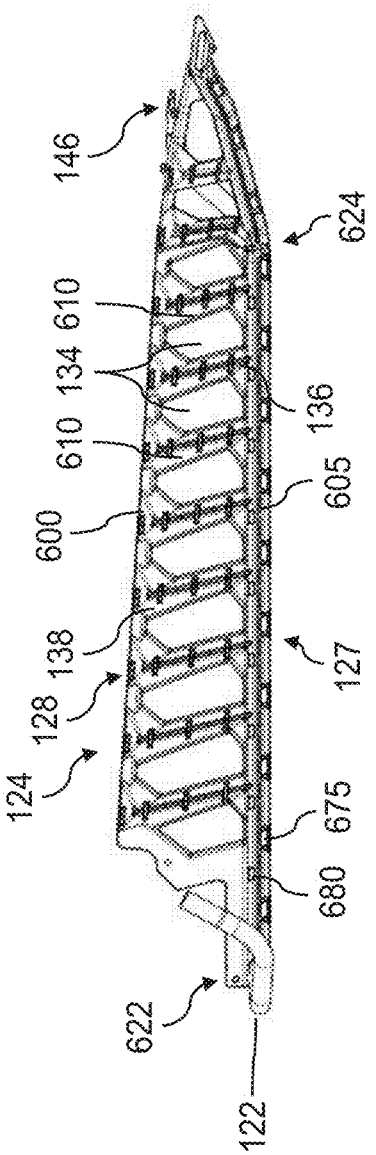


FIG. 15A

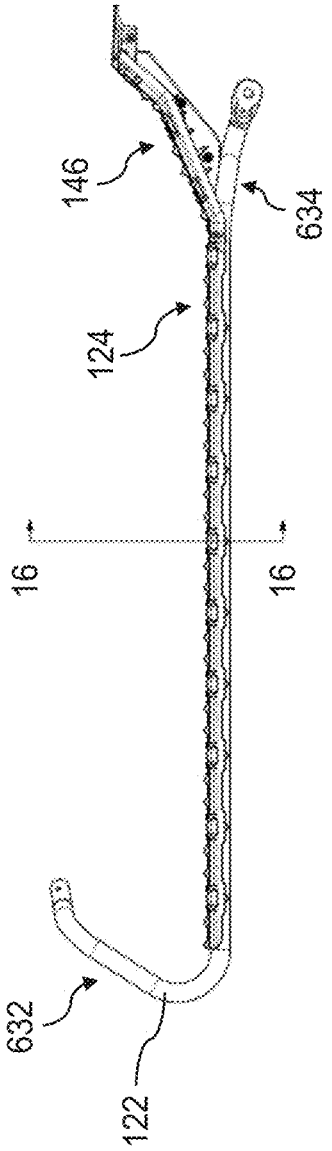


FIG. 15B

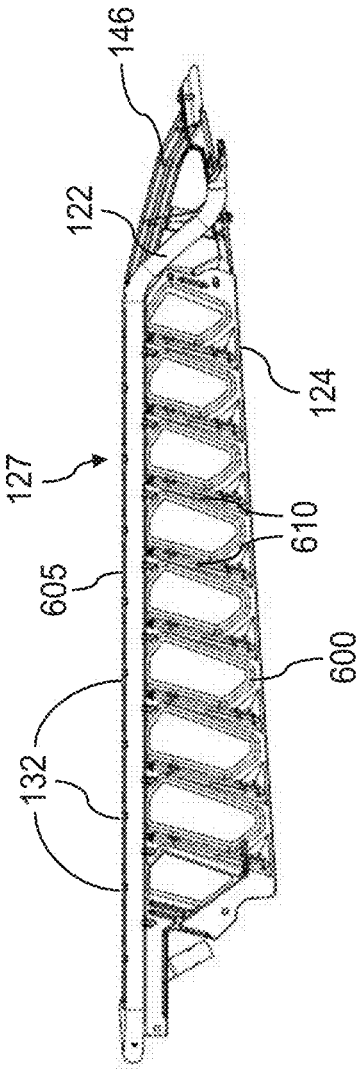


FIG. 15C

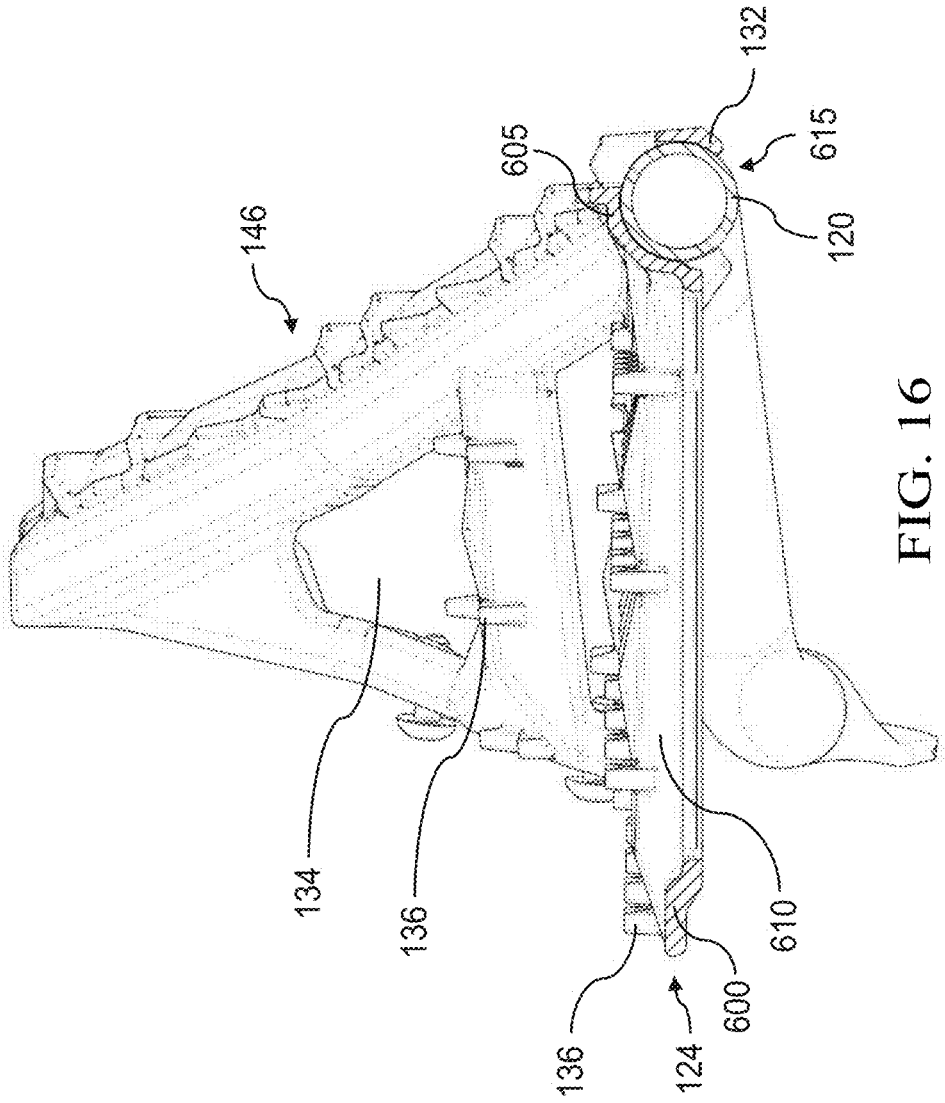


FIG. 16

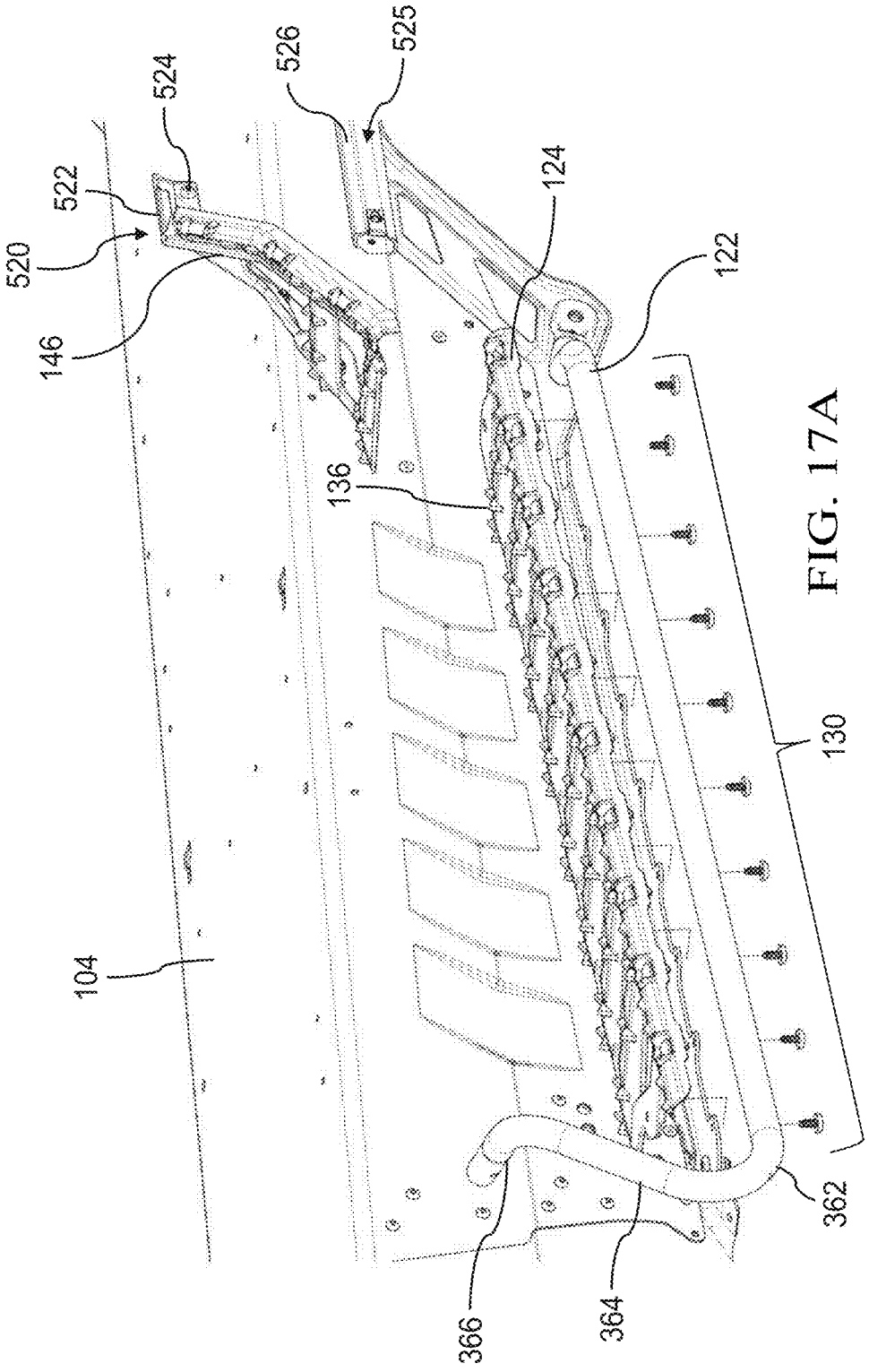


FIG. 17A

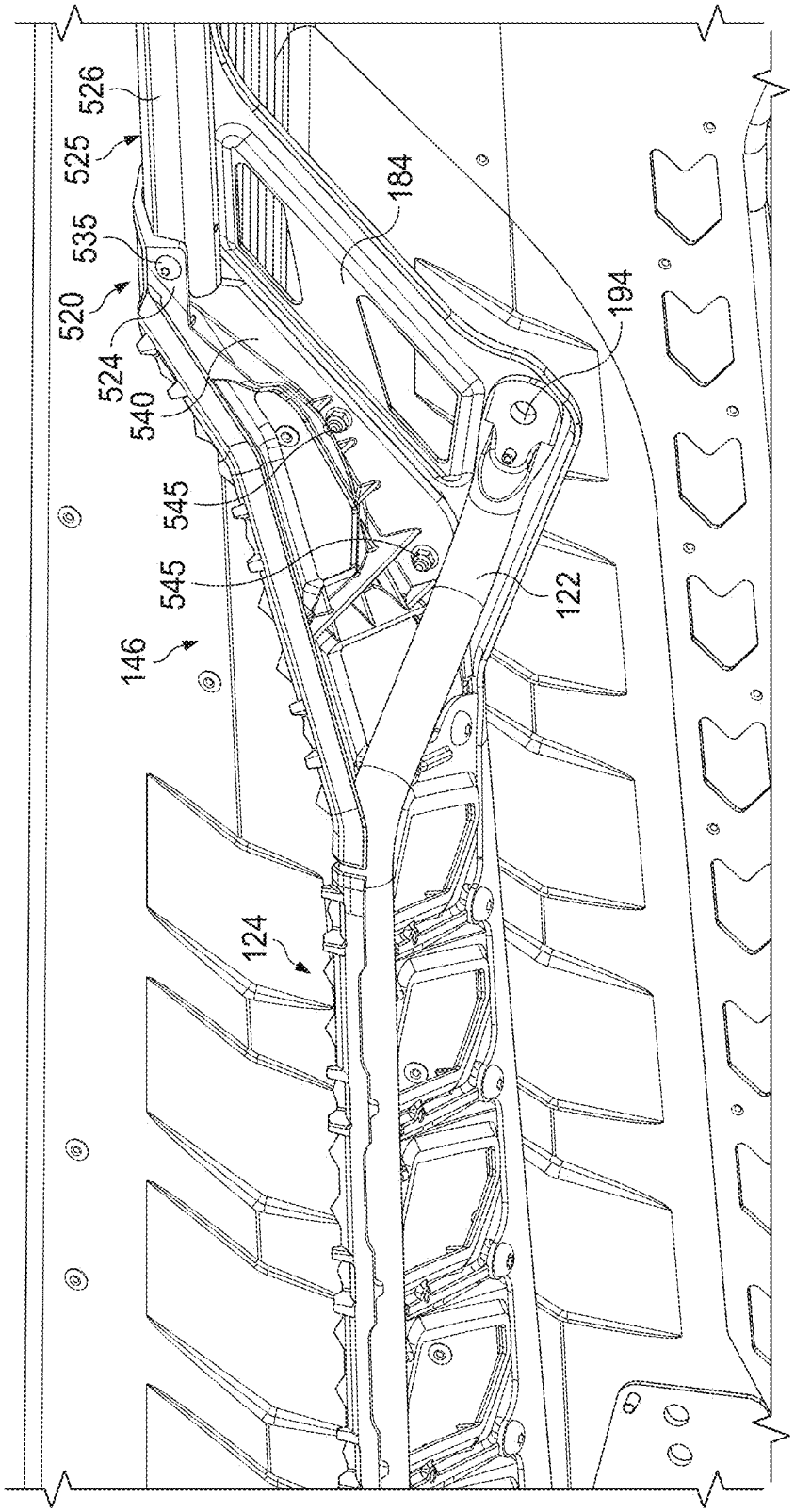
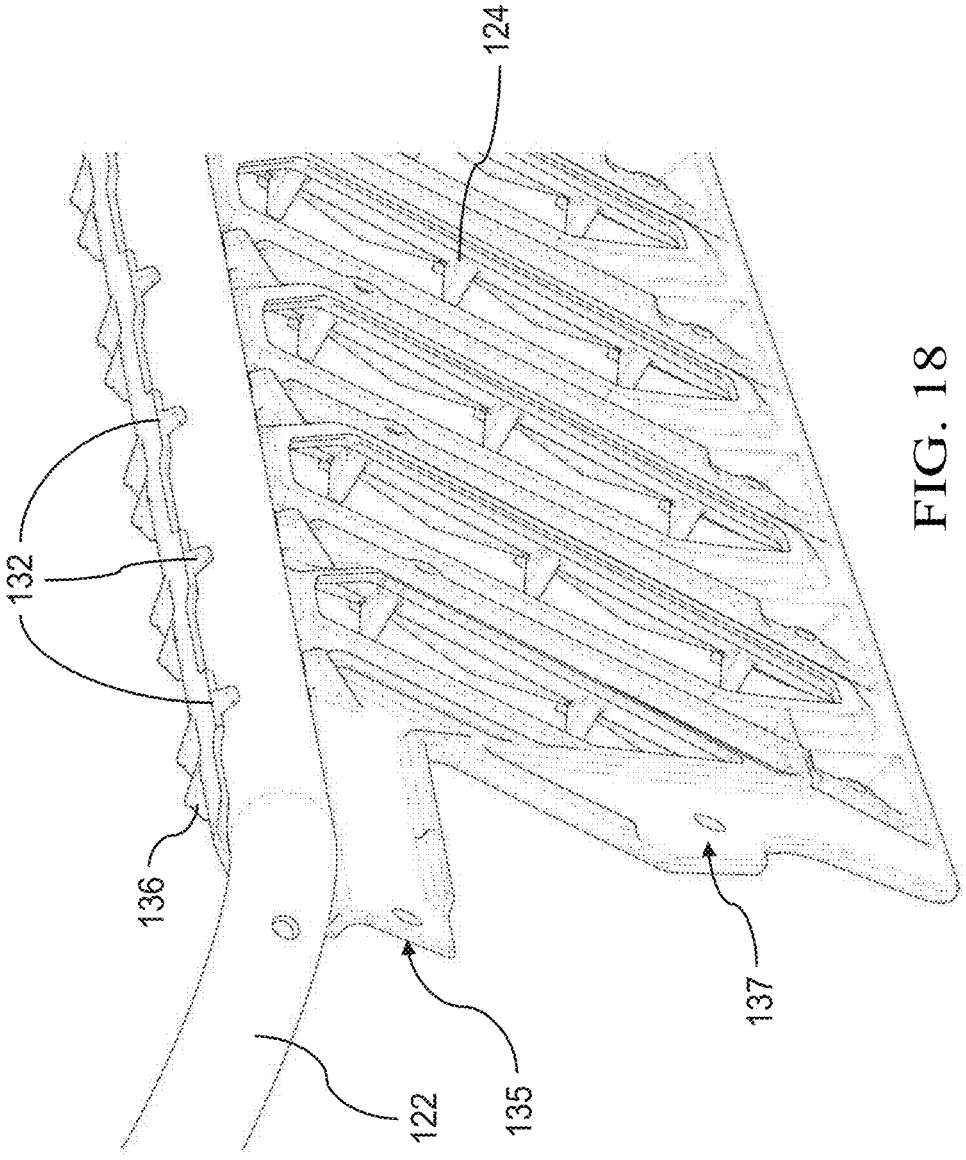


FIG. 17B



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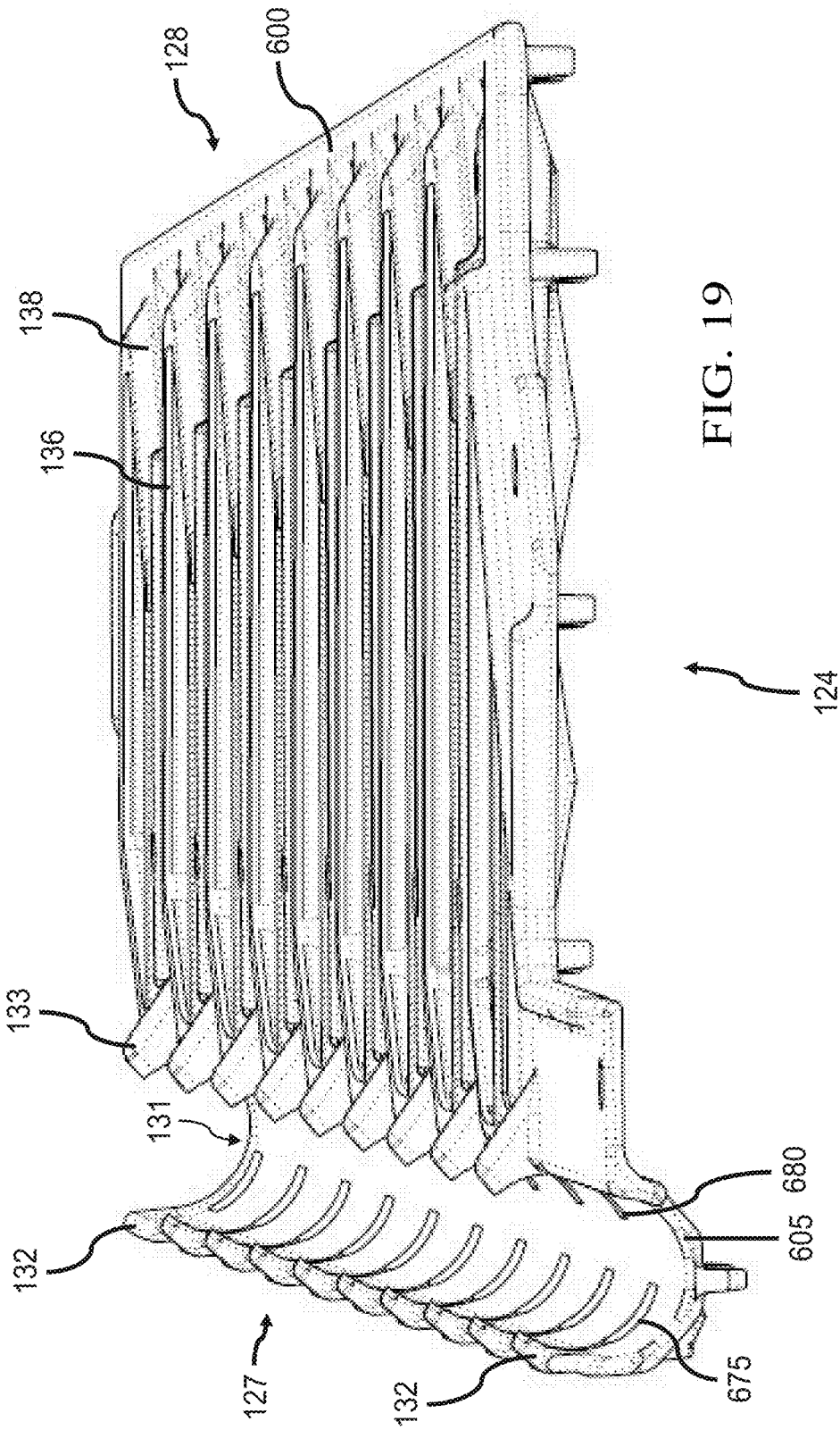

FIG. 19

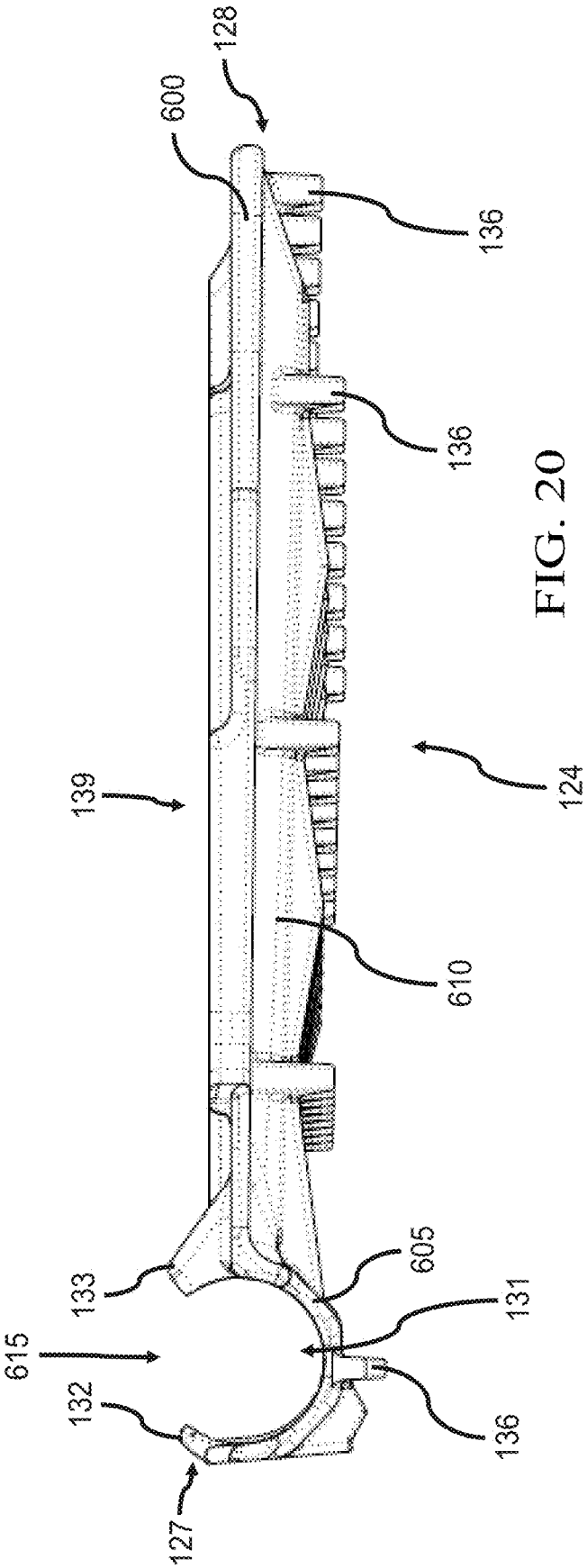

FIG. 20

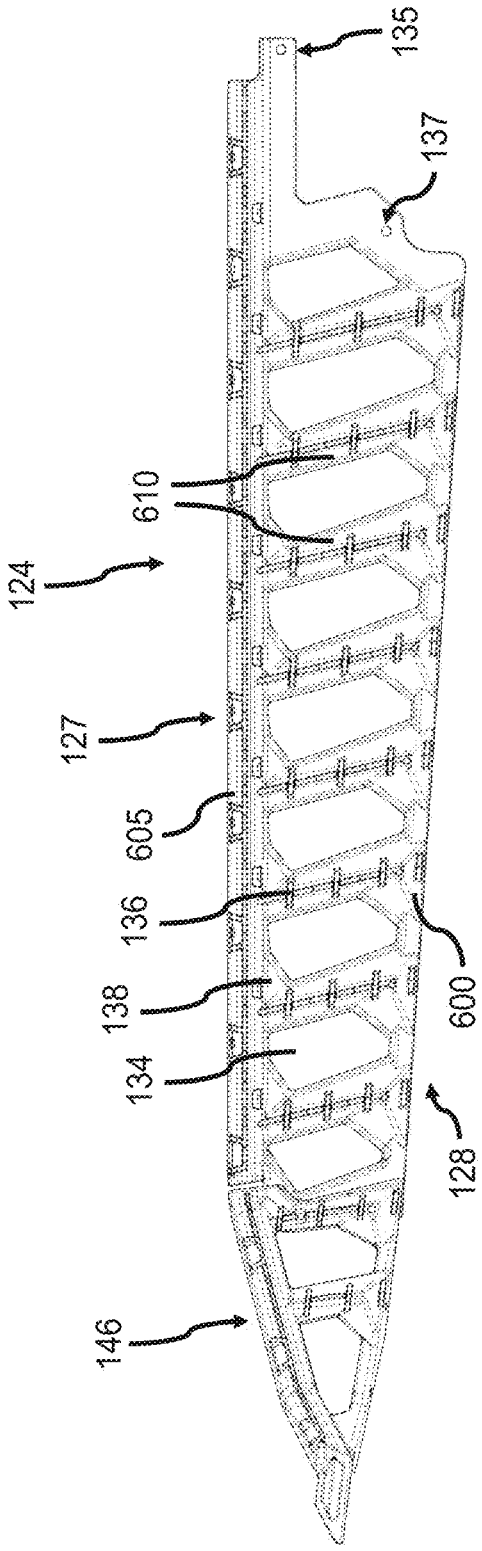

FIG. 21A

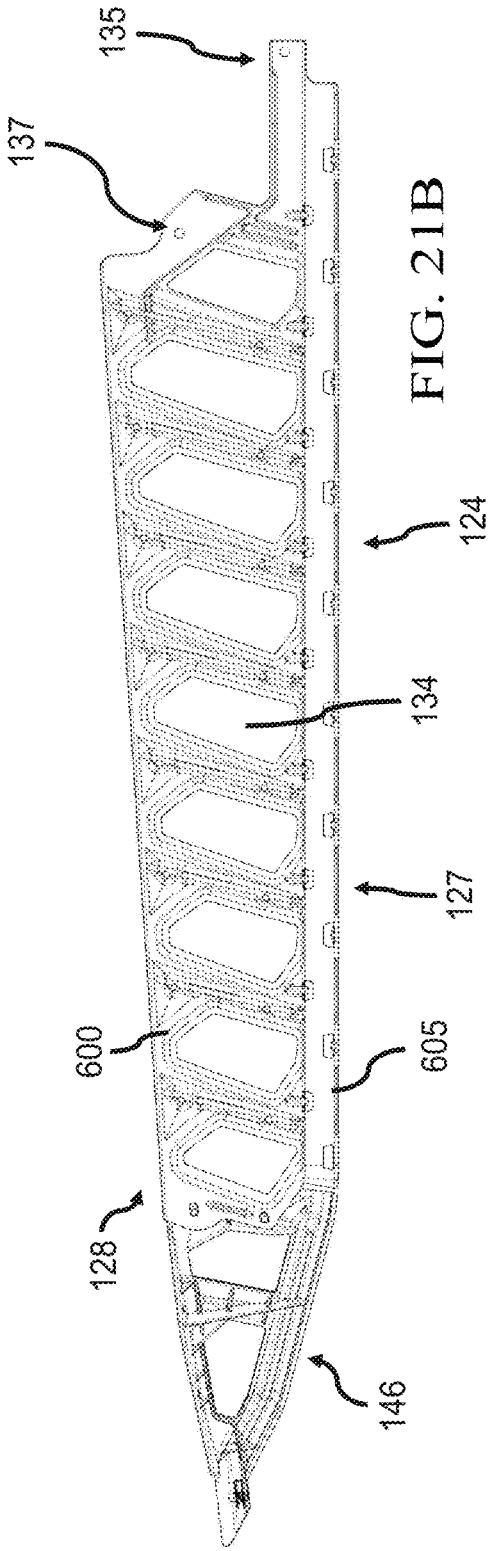

FIG. 21B

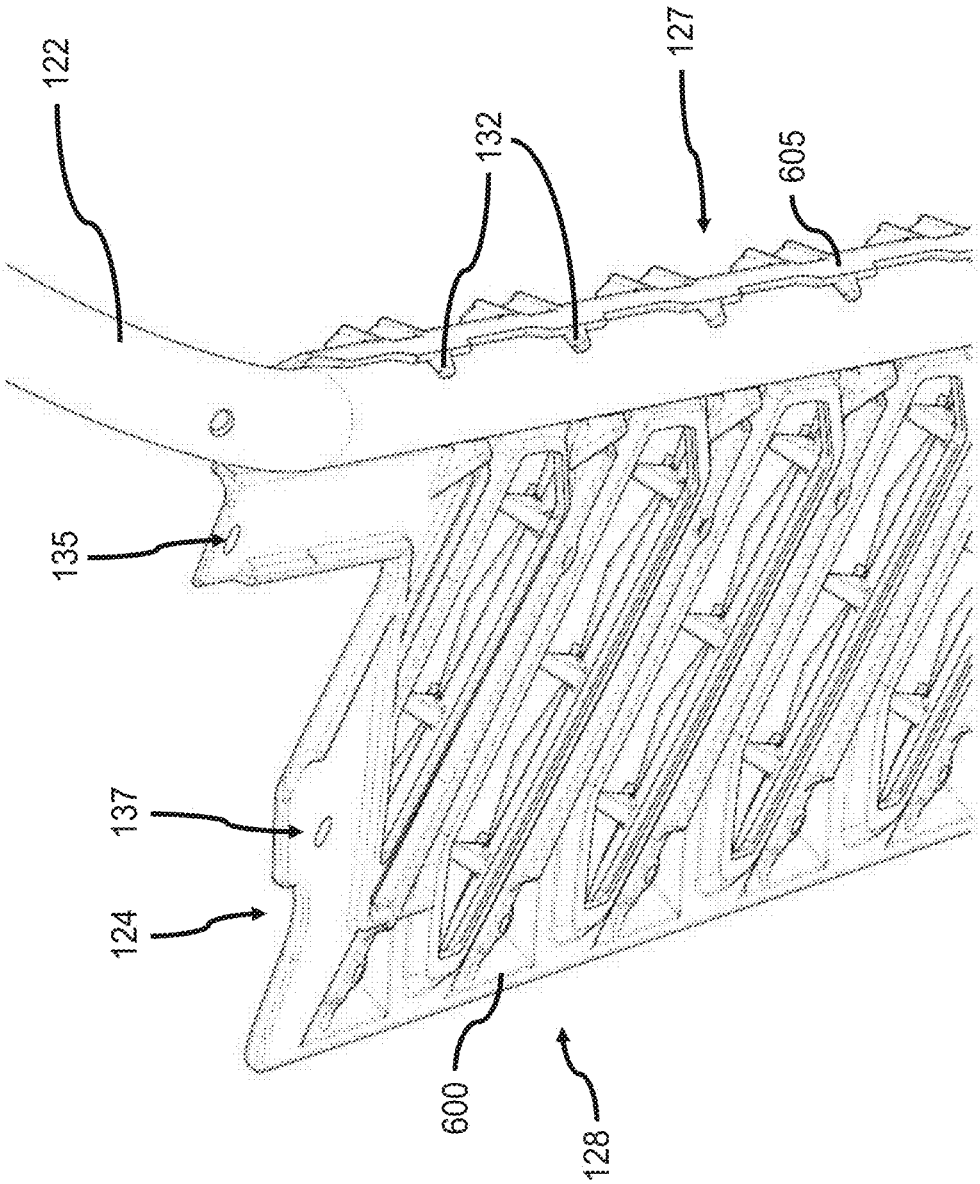

FIG. 22

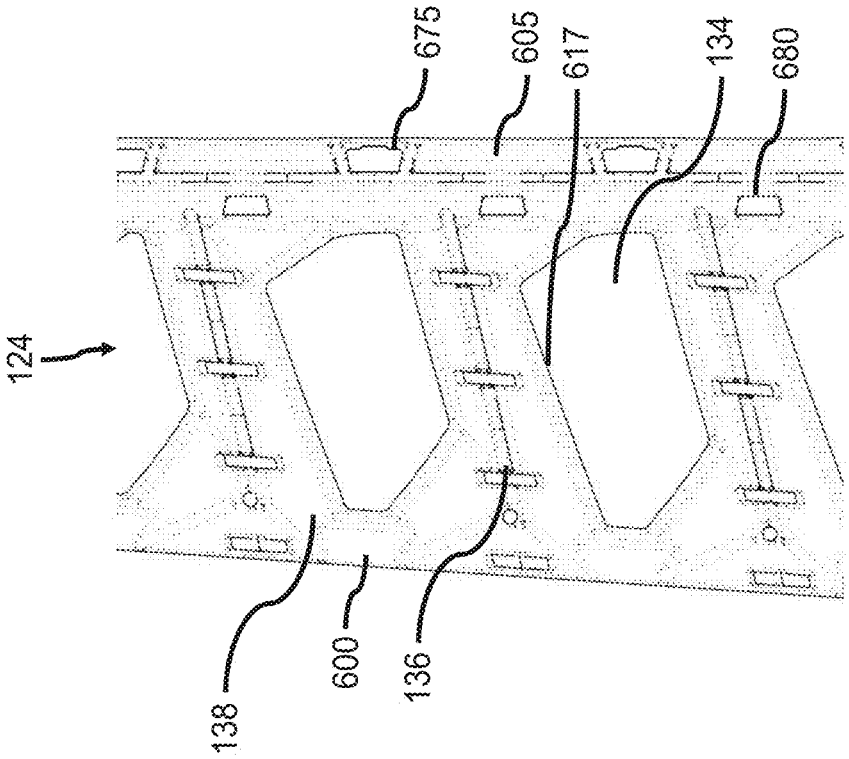

FIG. 23B

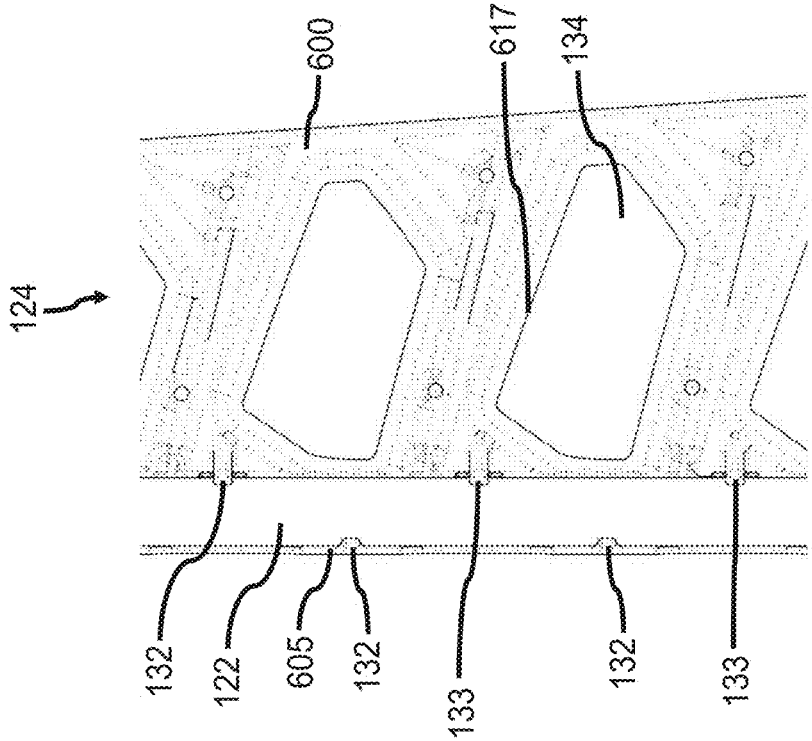

FIG. 23A

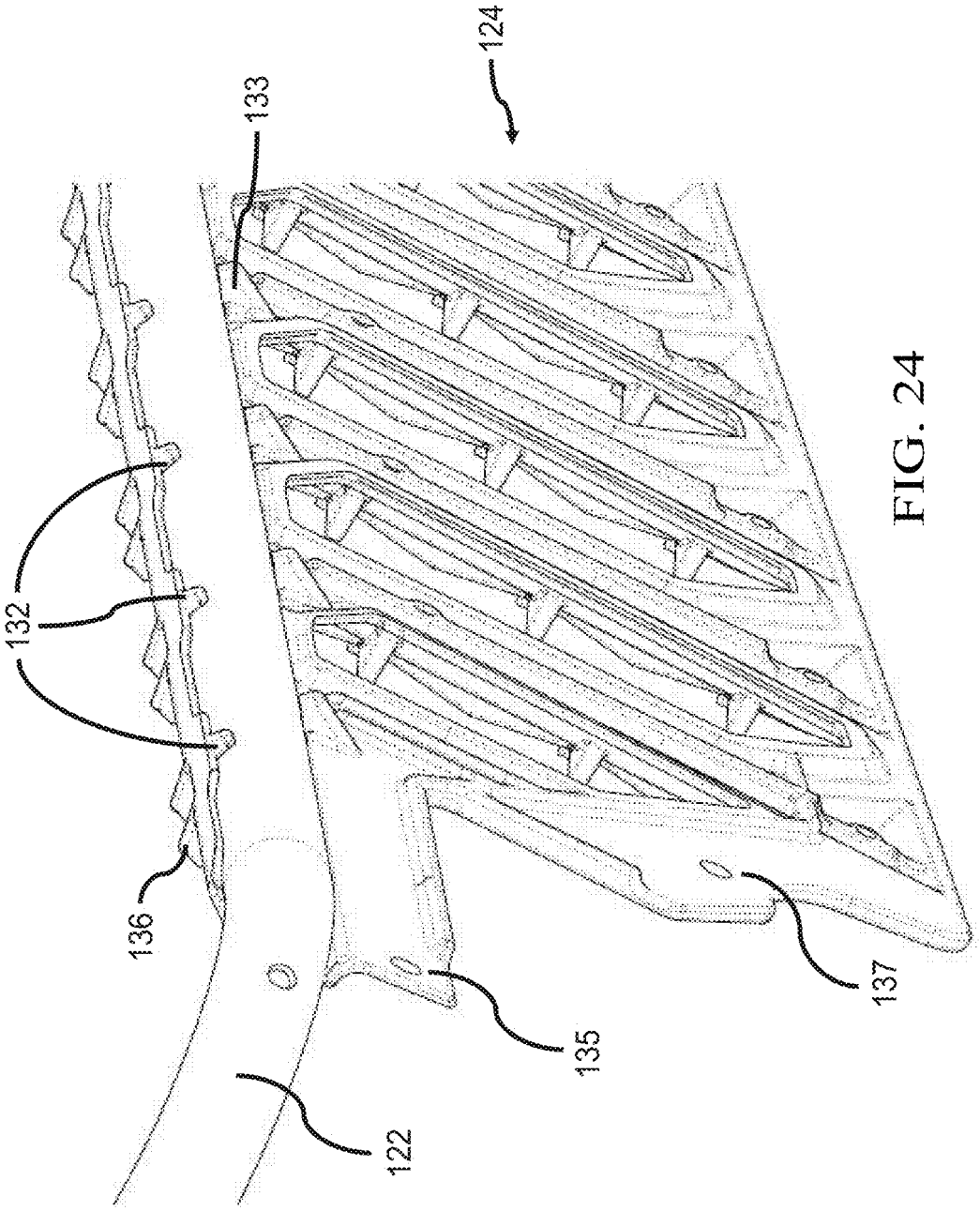

FIG. 24

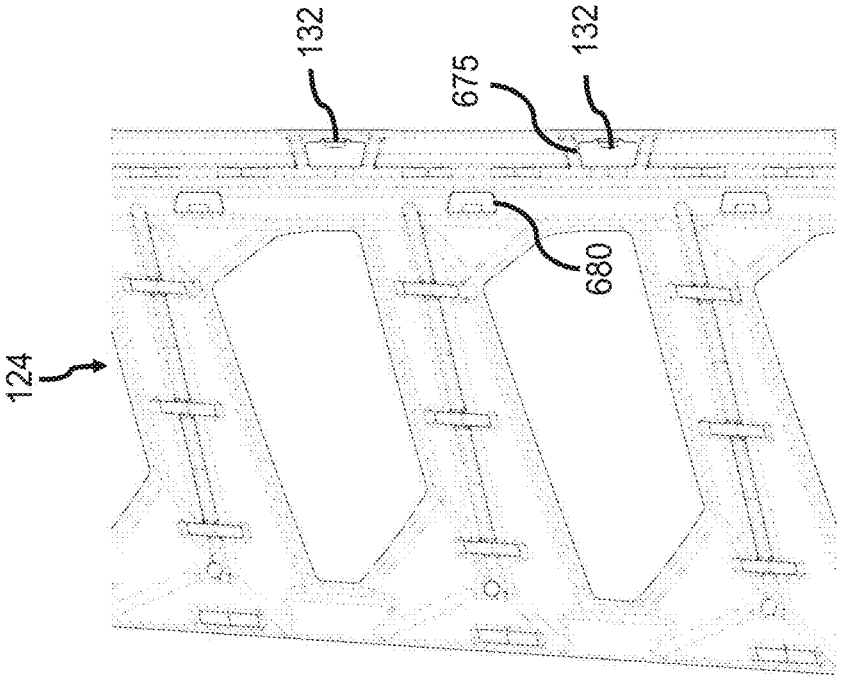

FIG. 25B

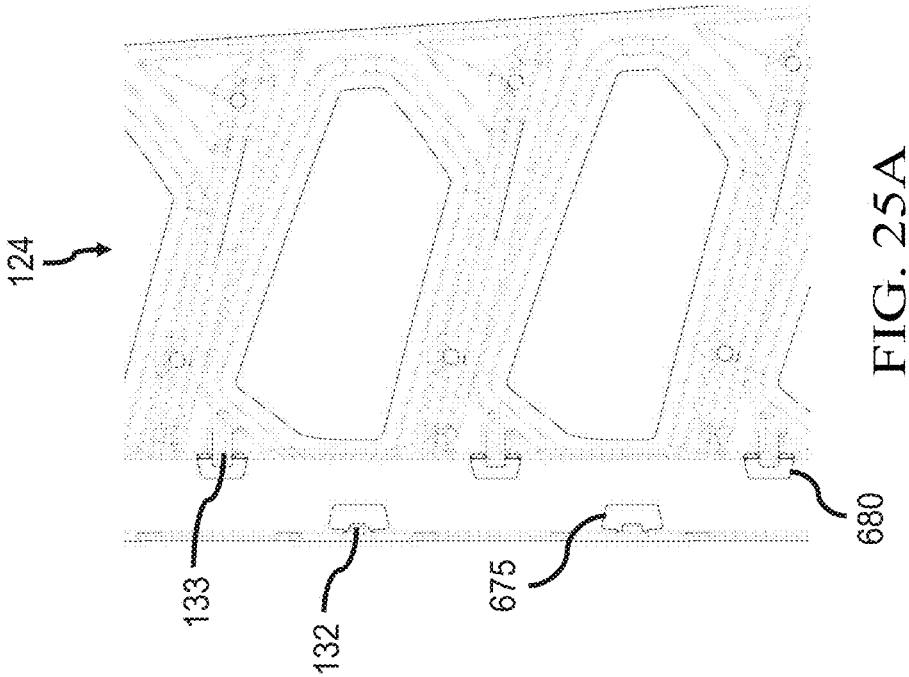

FIG. 25A

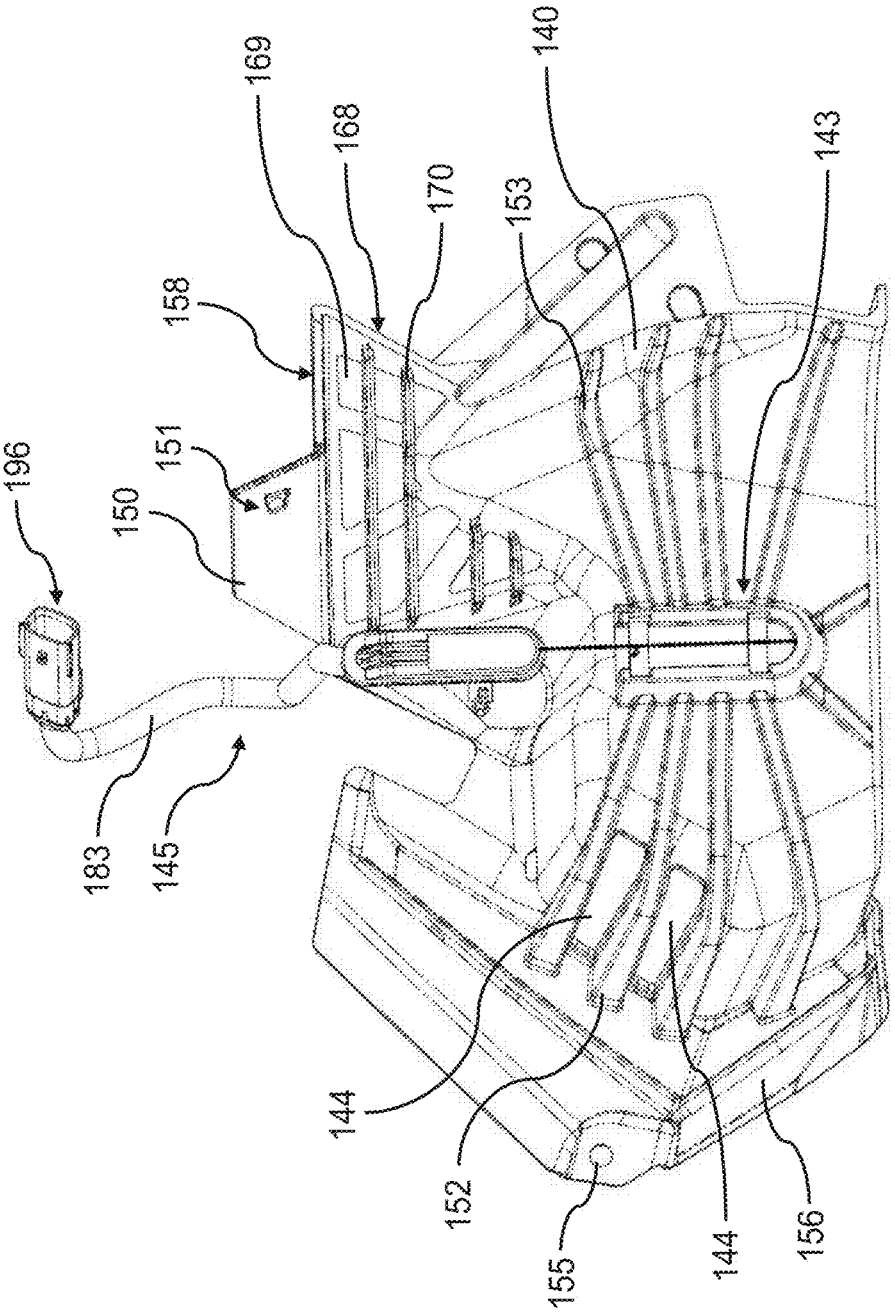
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FIG. 26

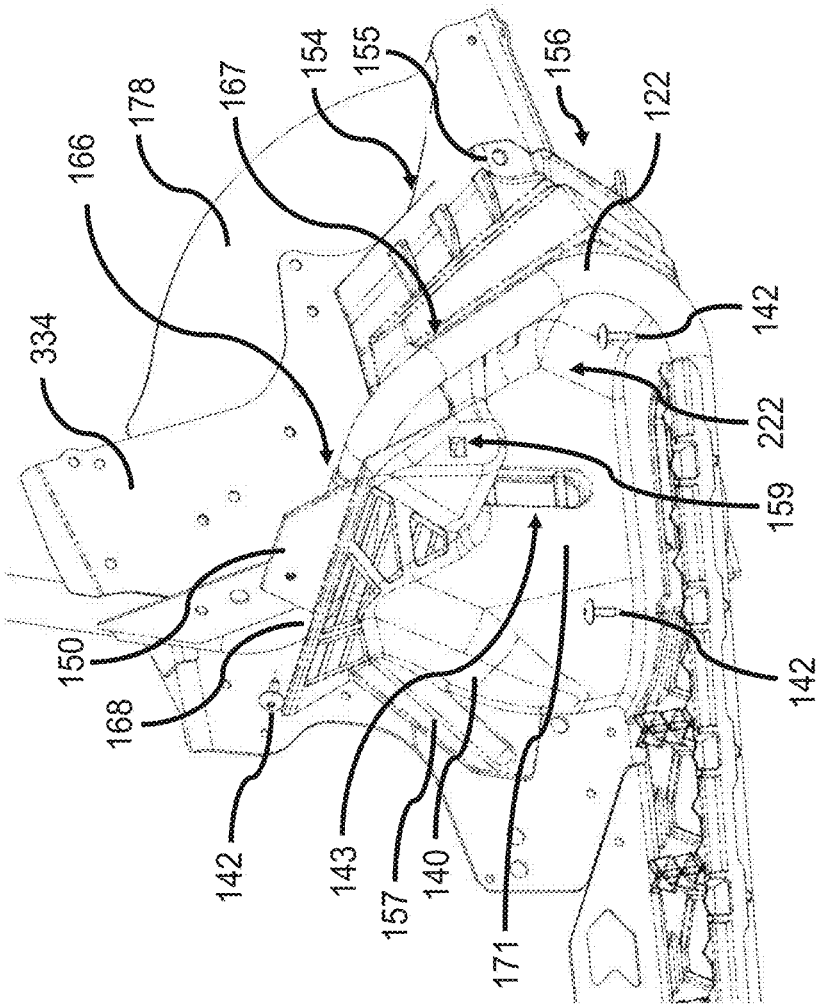
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FIG. 27A

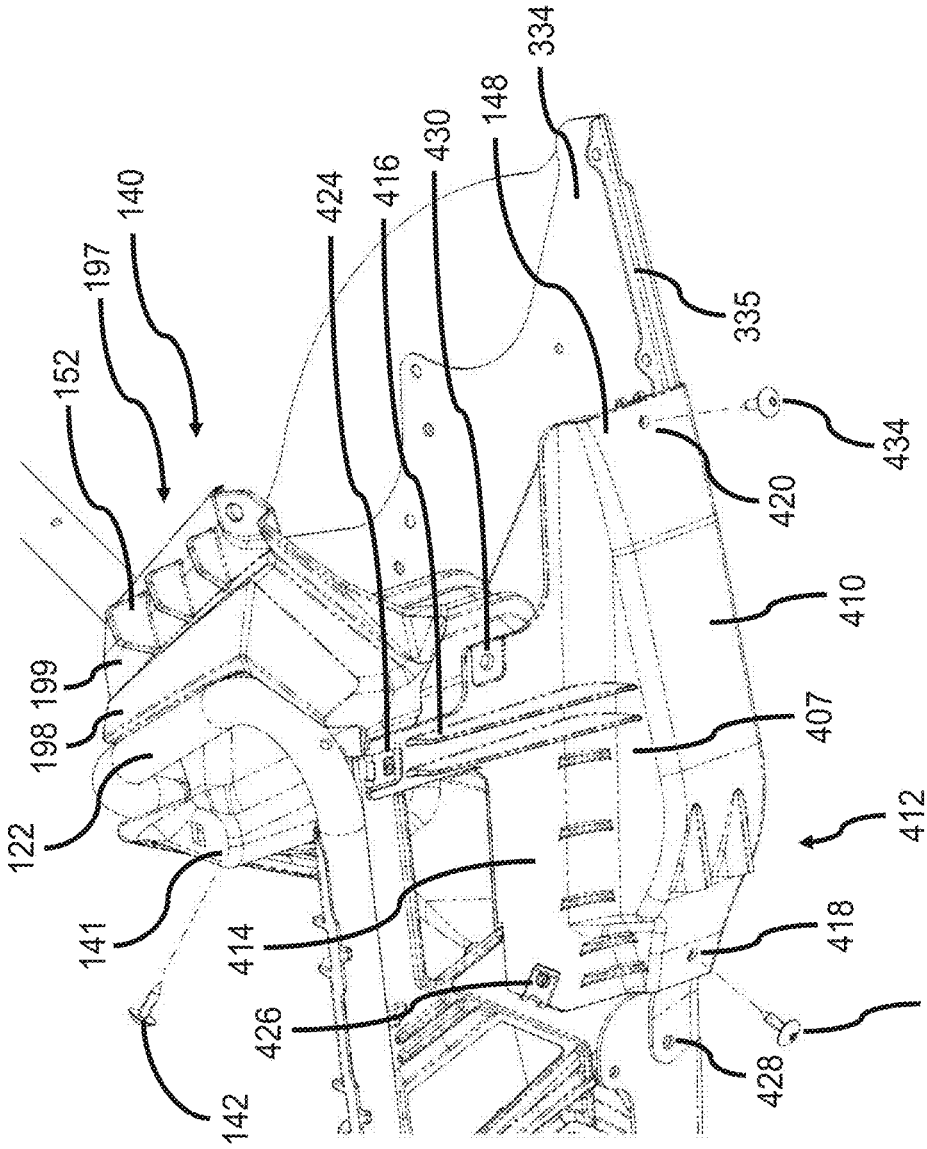
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FIG. 27B

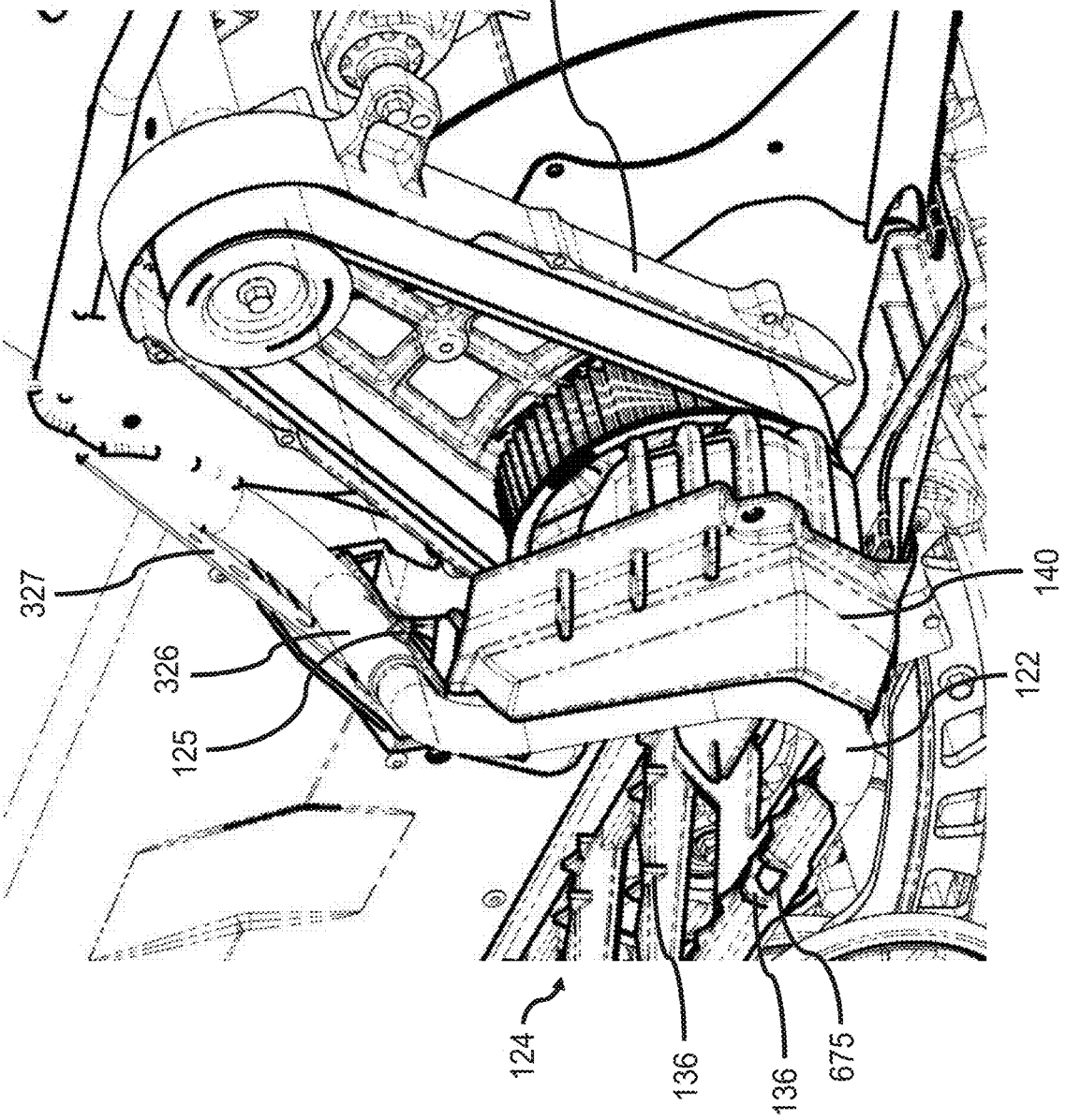

FIG. 28

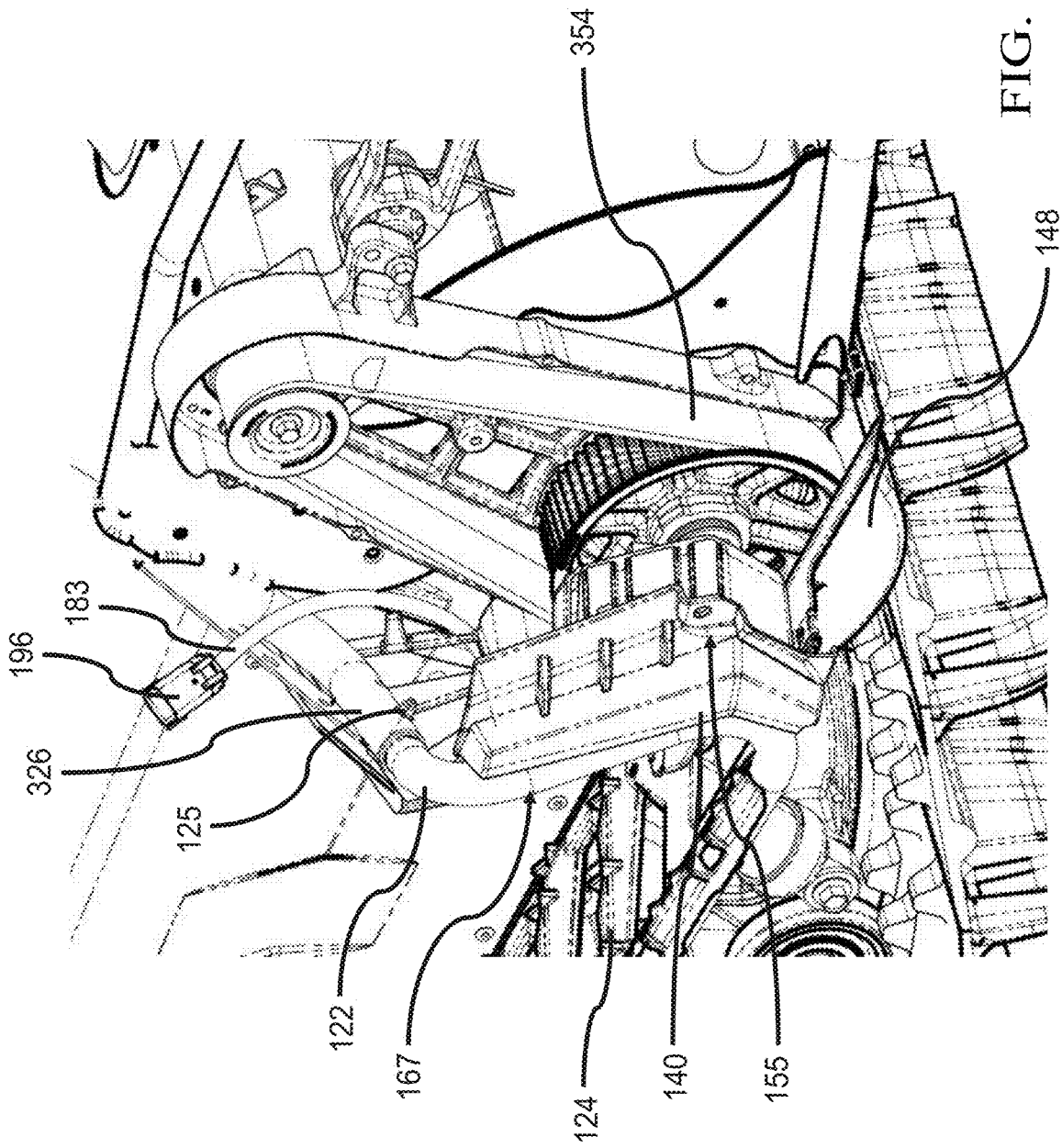

FIG. 29

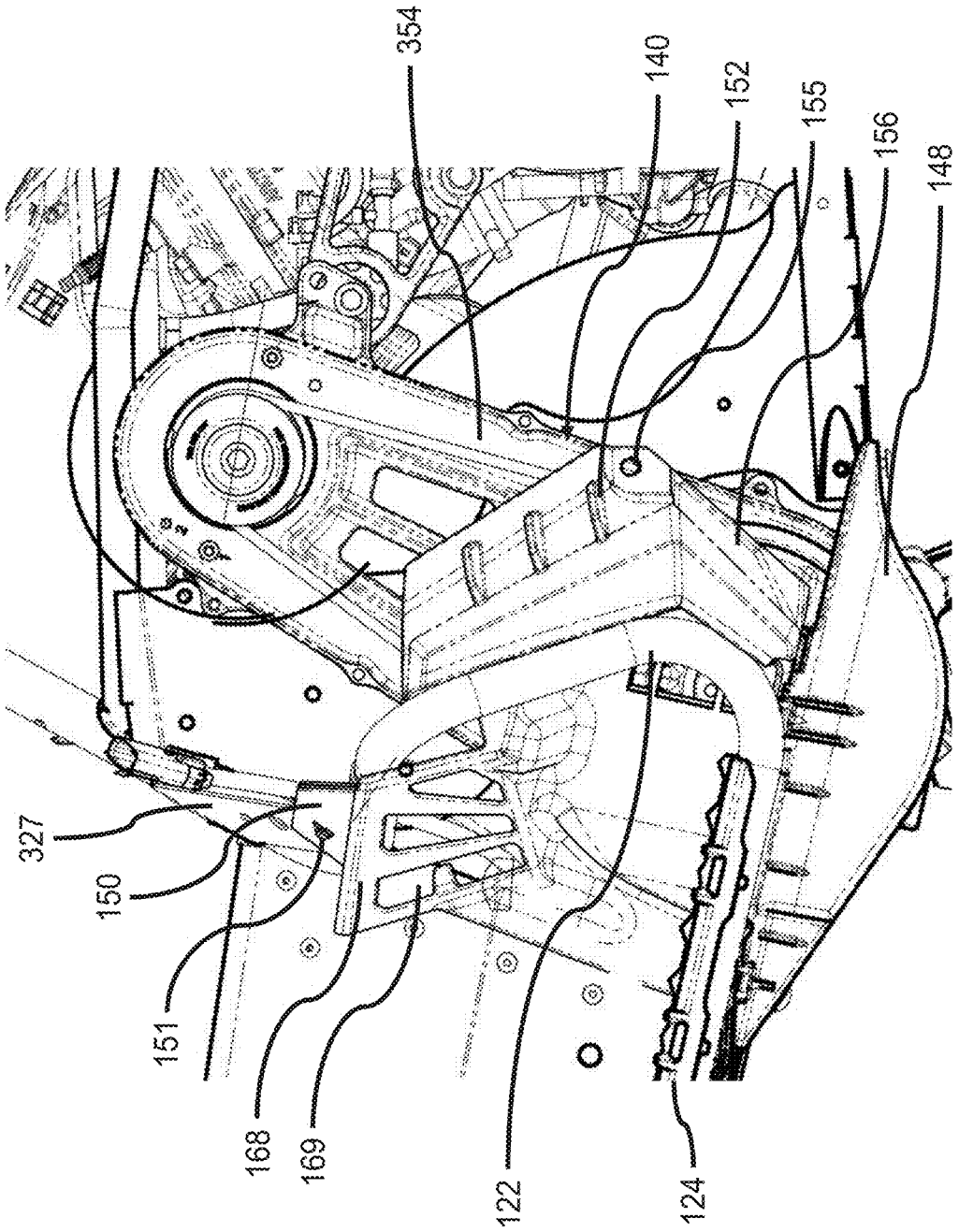

FIG. 30

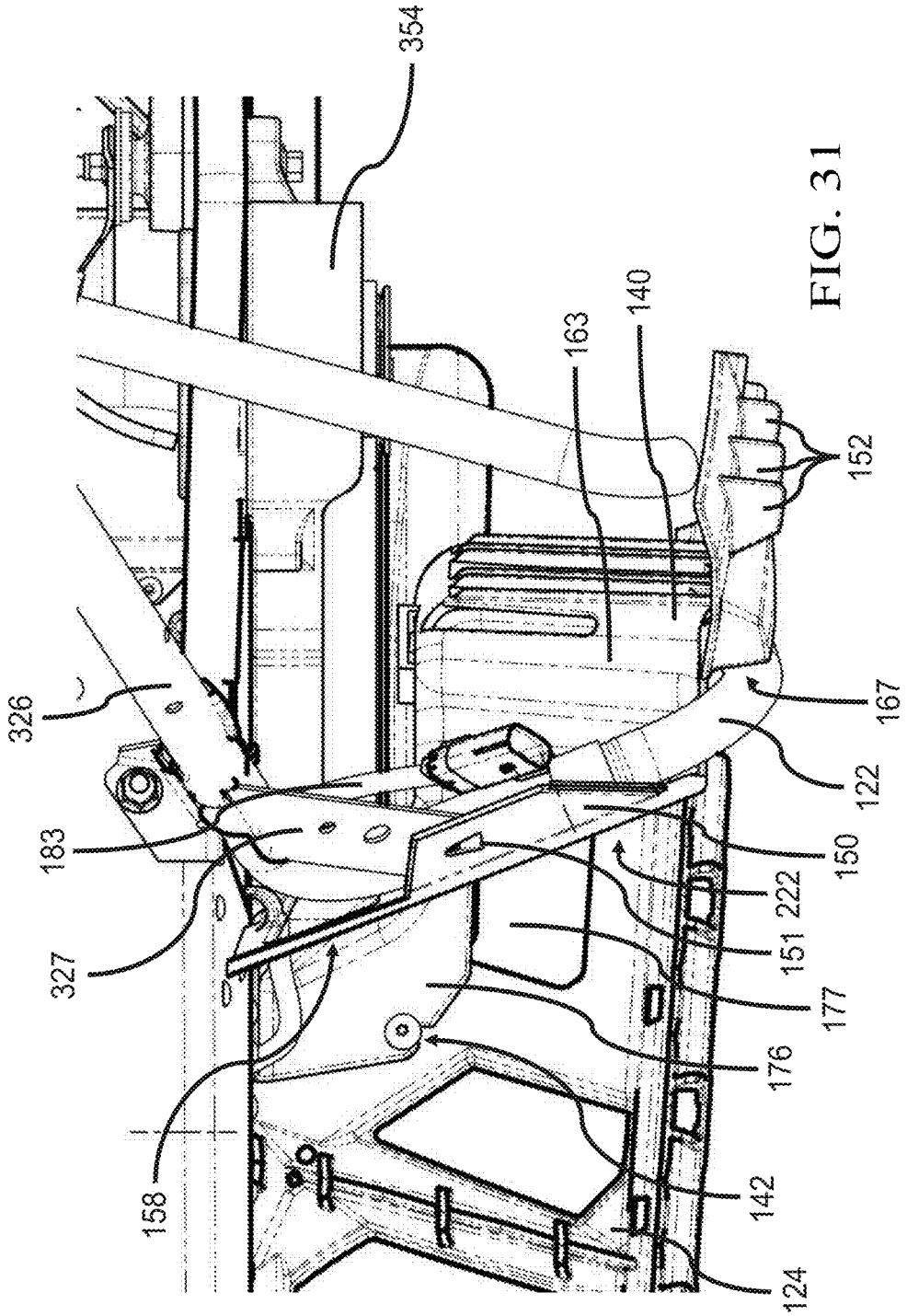
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FIG. 31

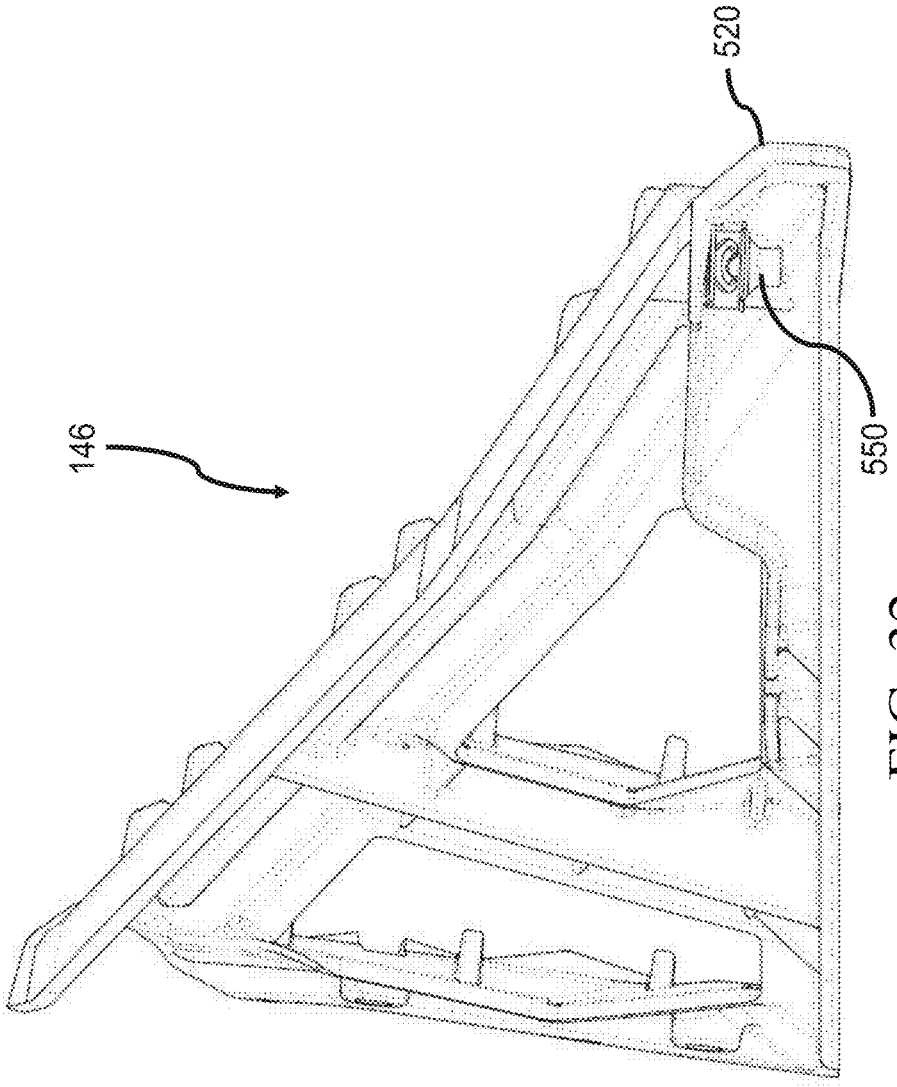

FIG. 32

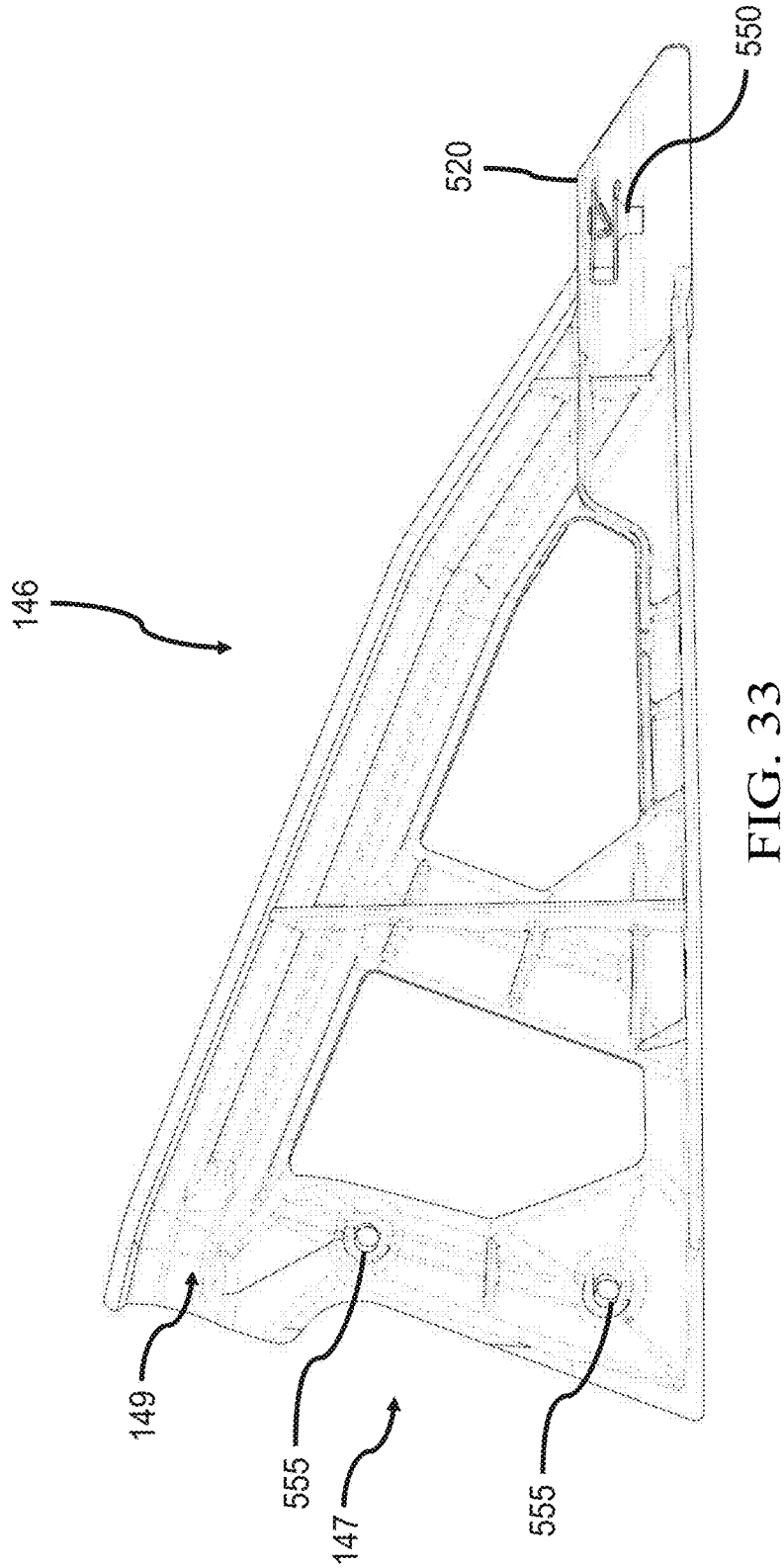

FIG. 33

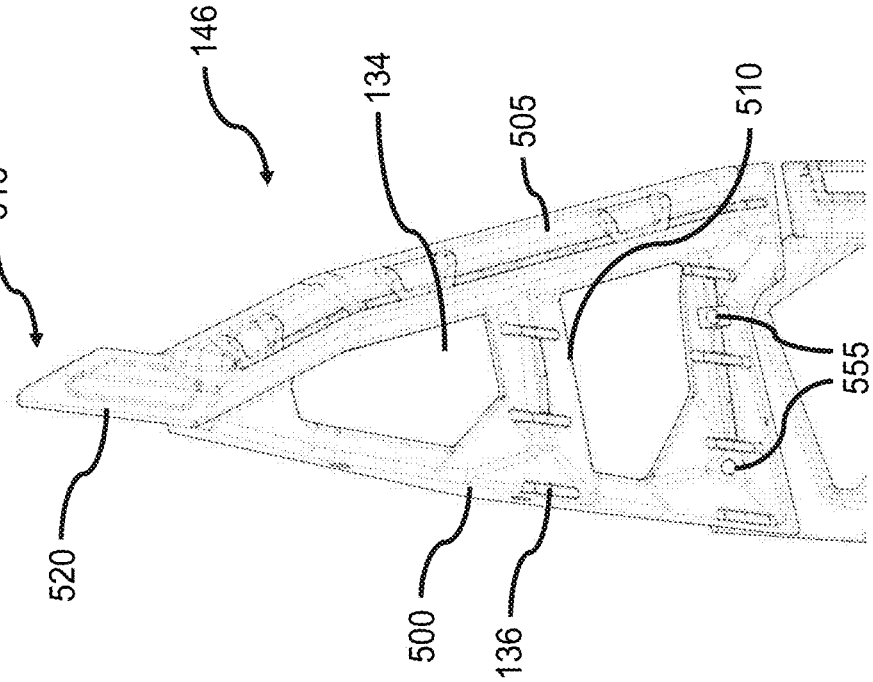

FIG. 34B

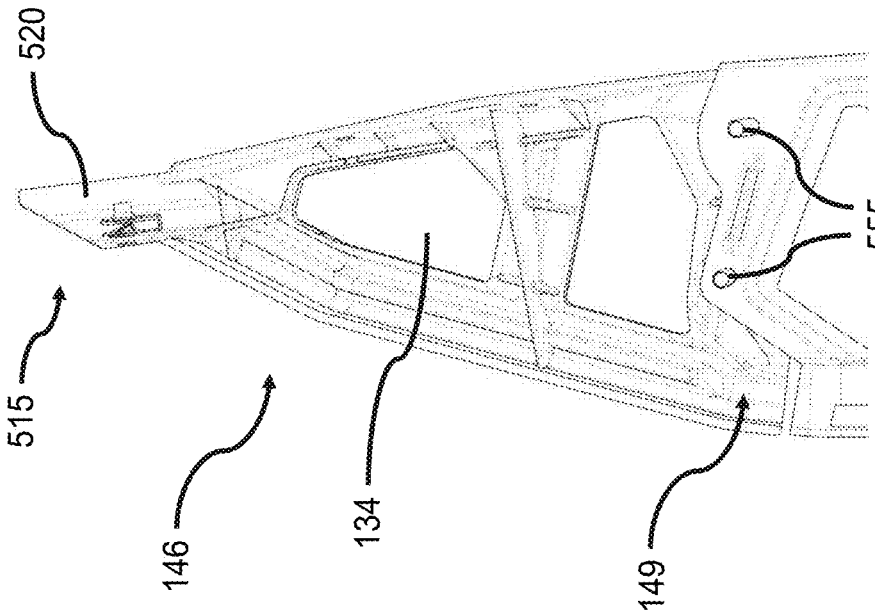

FIG. 34A

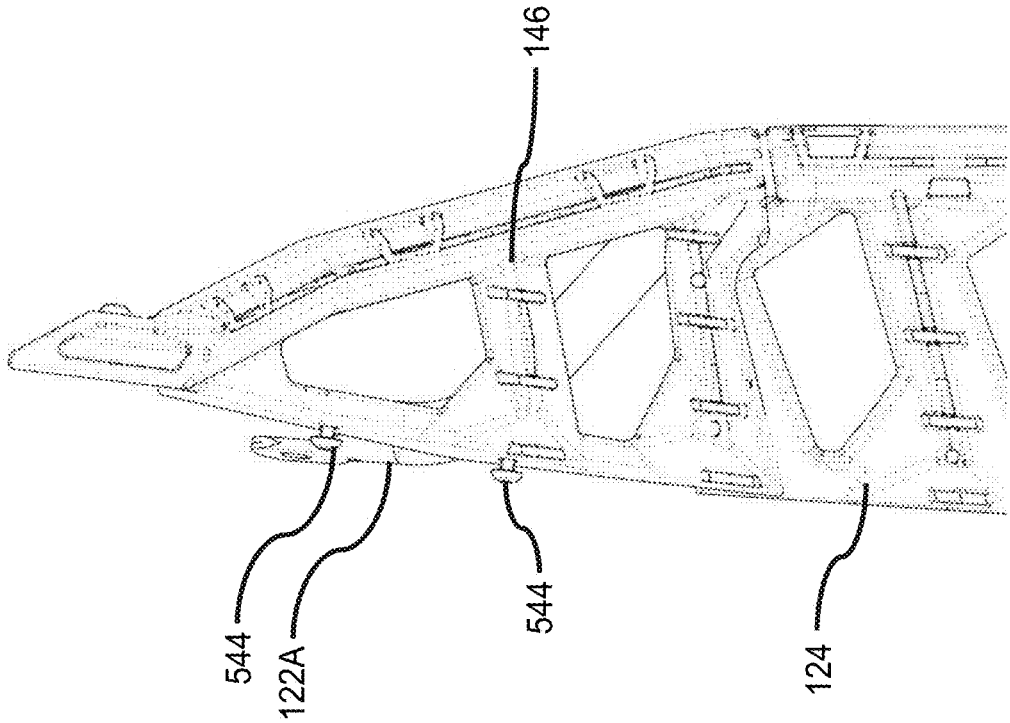

FIG. 35B

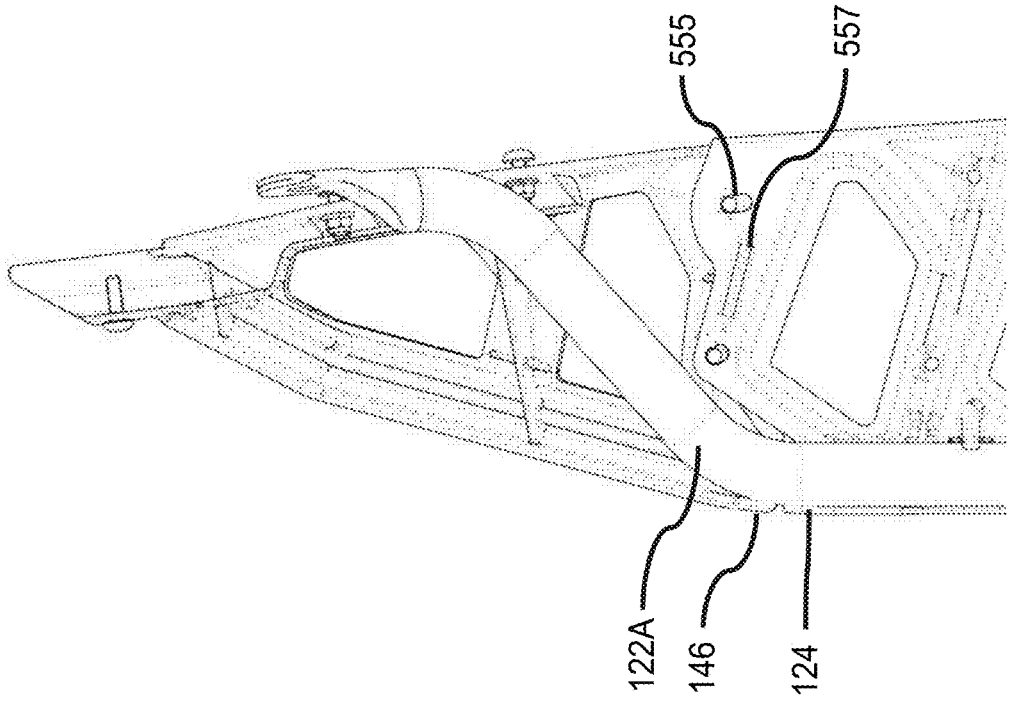

FIG. 35A

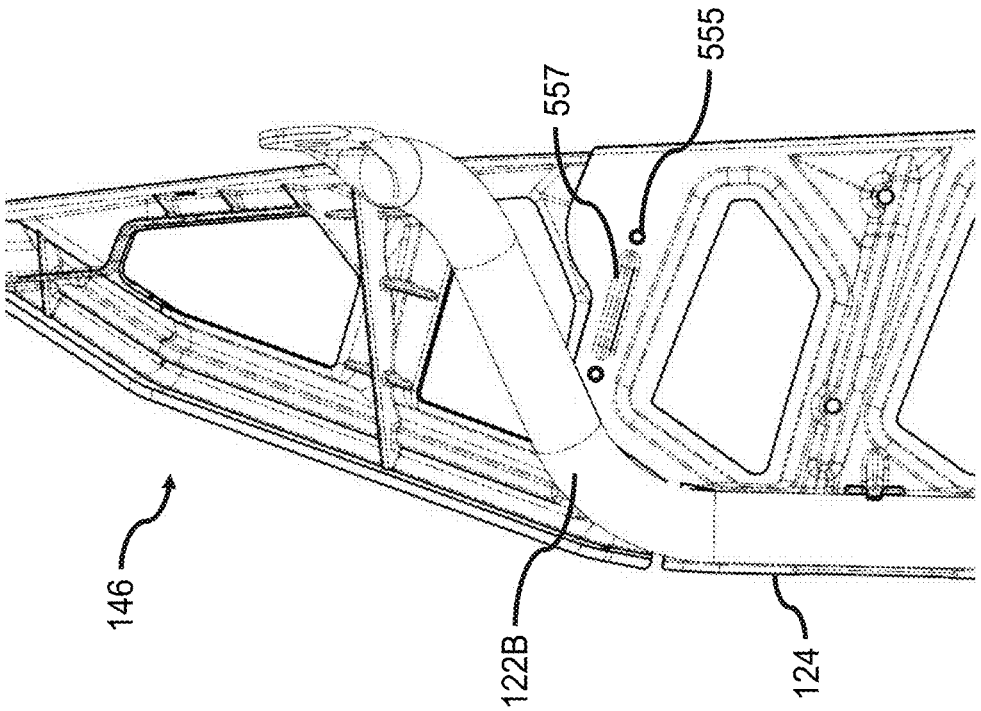

FIG. 35C

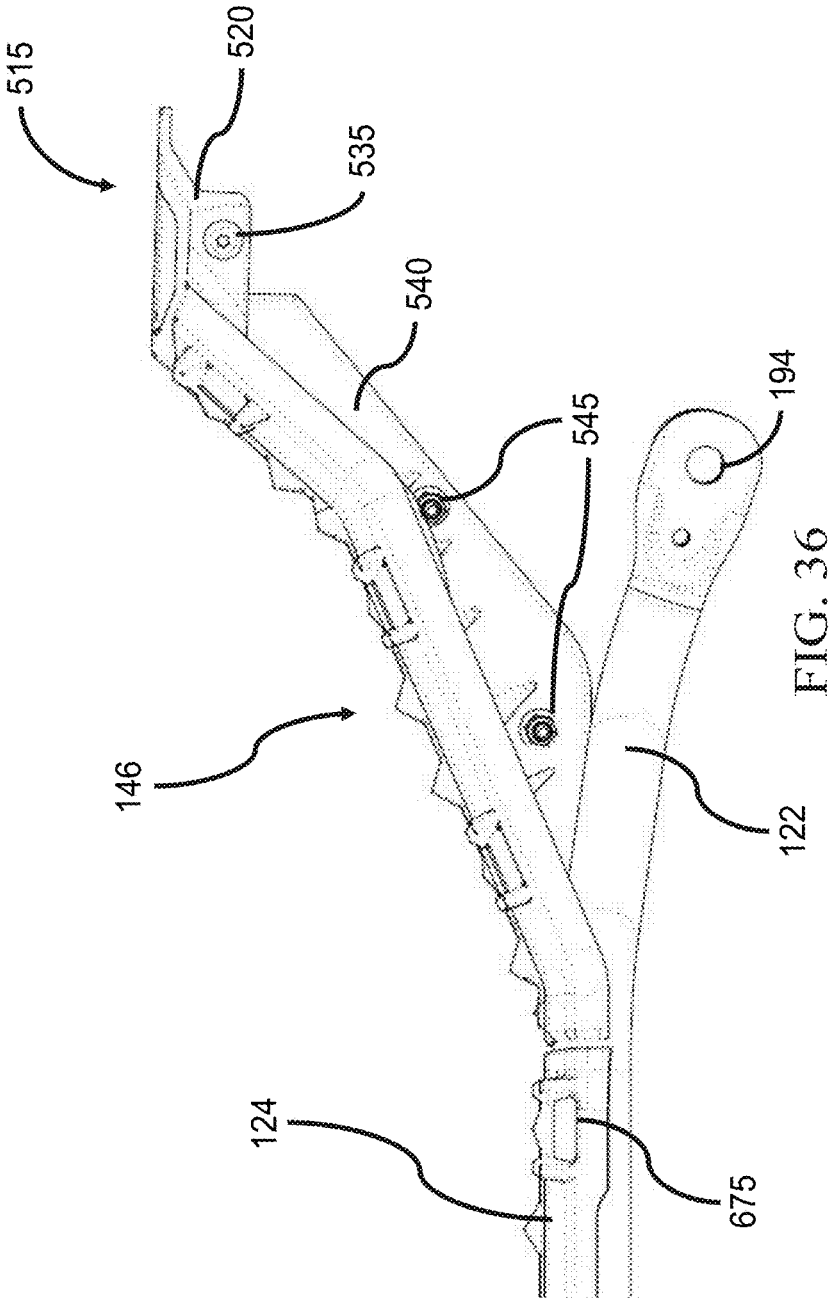

FIG. 36

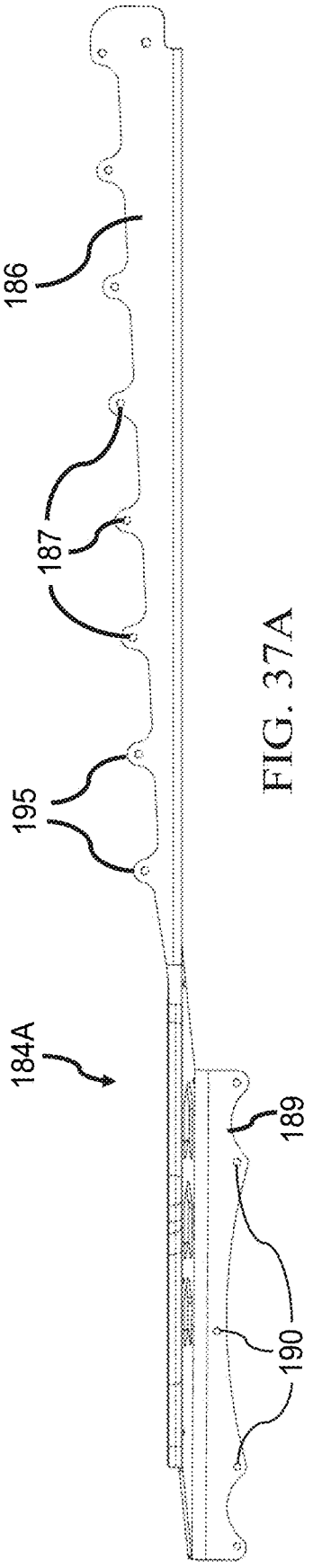

FIG. 37A

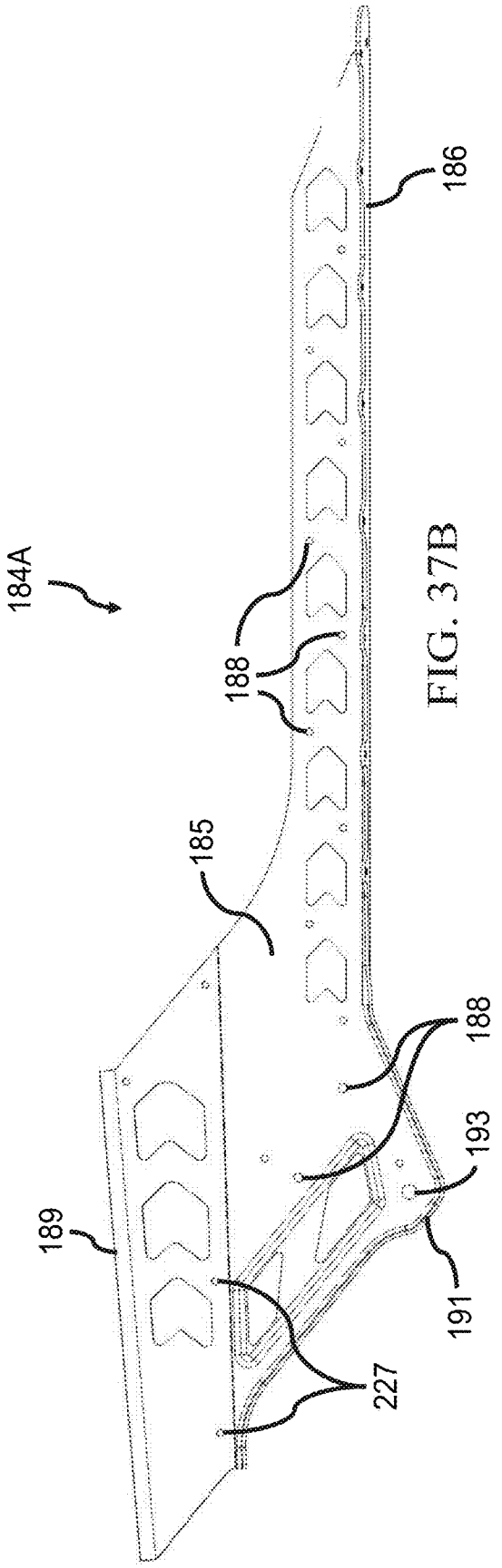

FIG. 37B

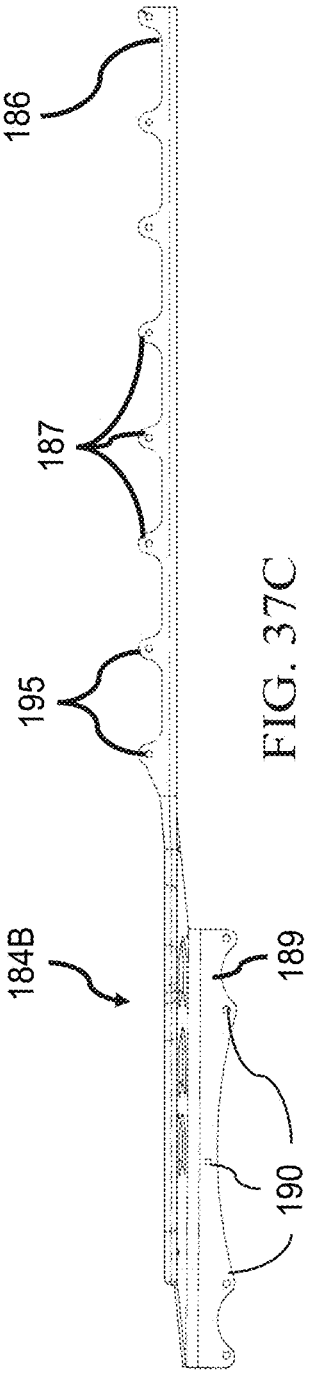

FIG. 37C

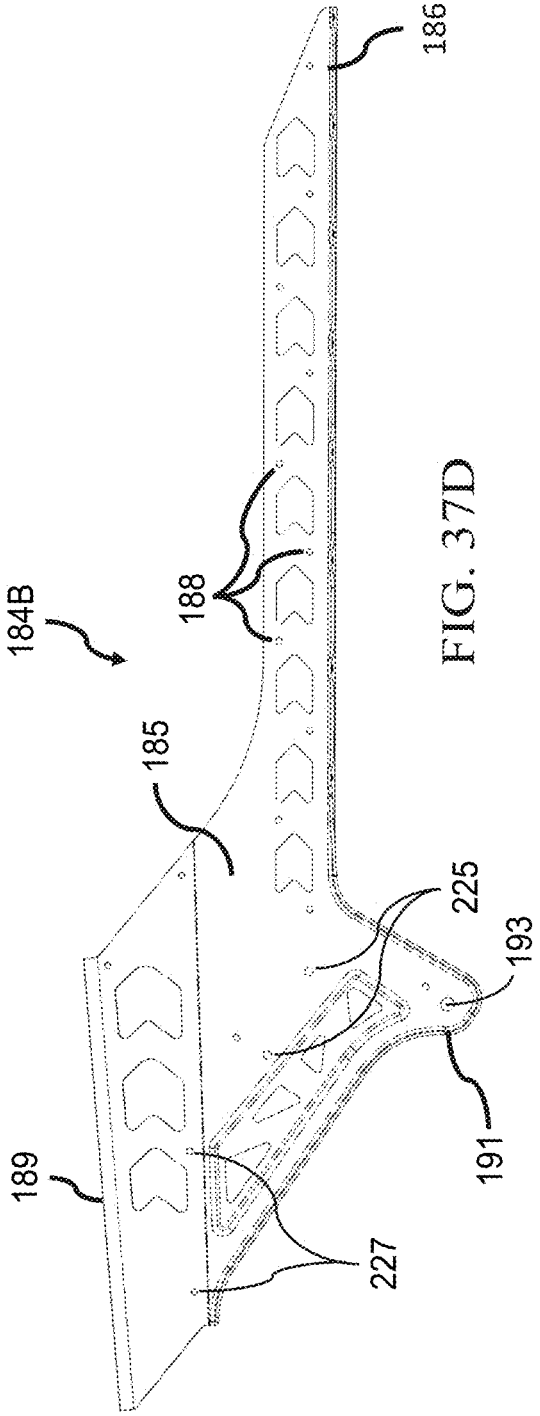

FIG. 37D

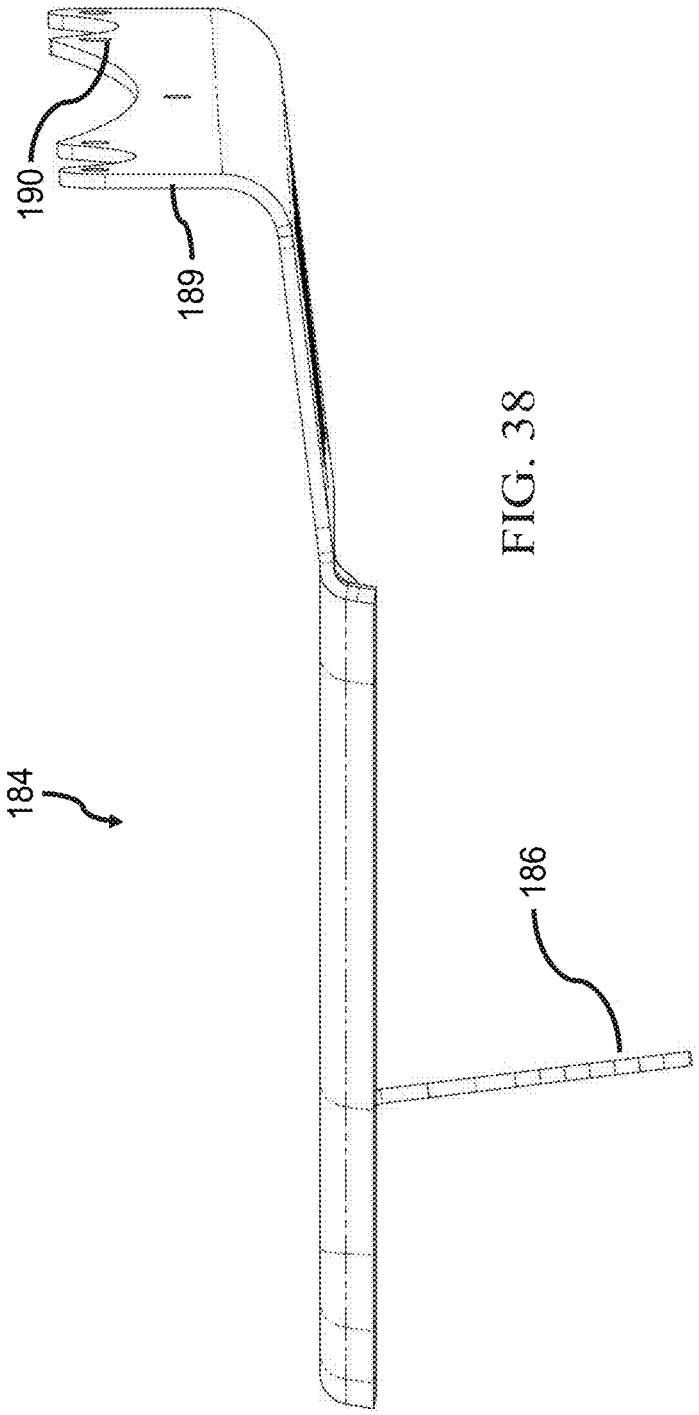

FIG. 38

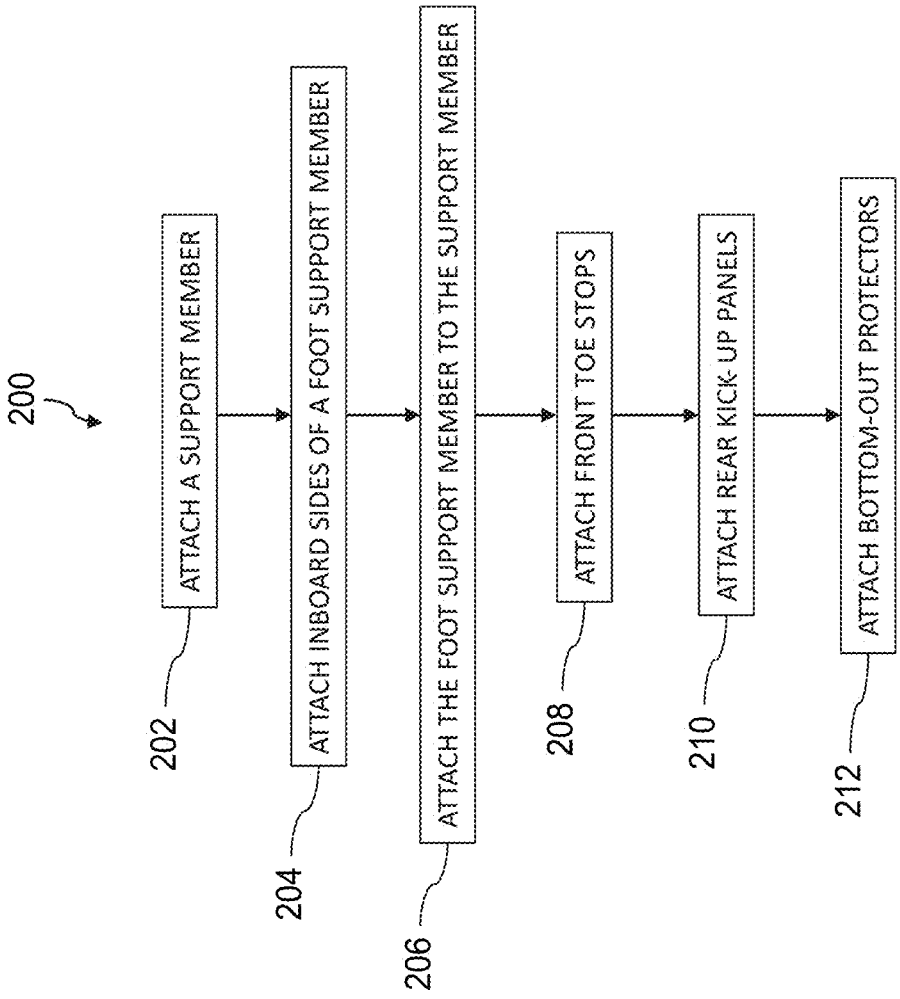
200
ATTACH A SUPPORT MEMBER
202
ATTACH INBOARD SIDES OF A FOOT SUPPORT MEMBER
204
ATTACH THE FOOT SUPPORT MEMBER TO THE SUPPORT MEMBER
206
ATTACH FRONT TOE STOPS
208
ATTACH REAR KICK-UP PANELS
210
ATTACH BOTTOM-OUT PROTECTORS
212

FIG. 39

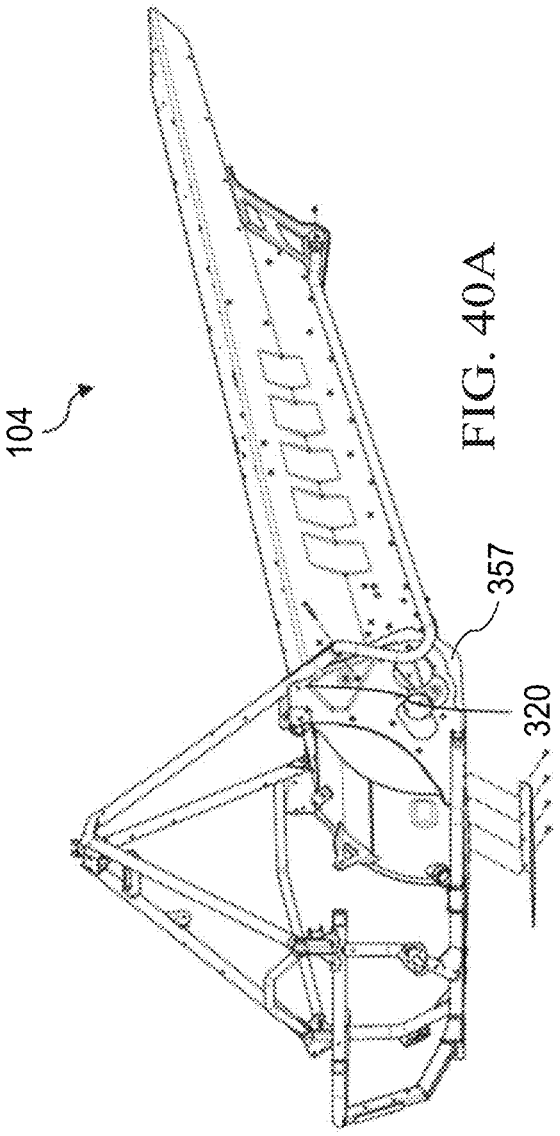

FIG. 40A

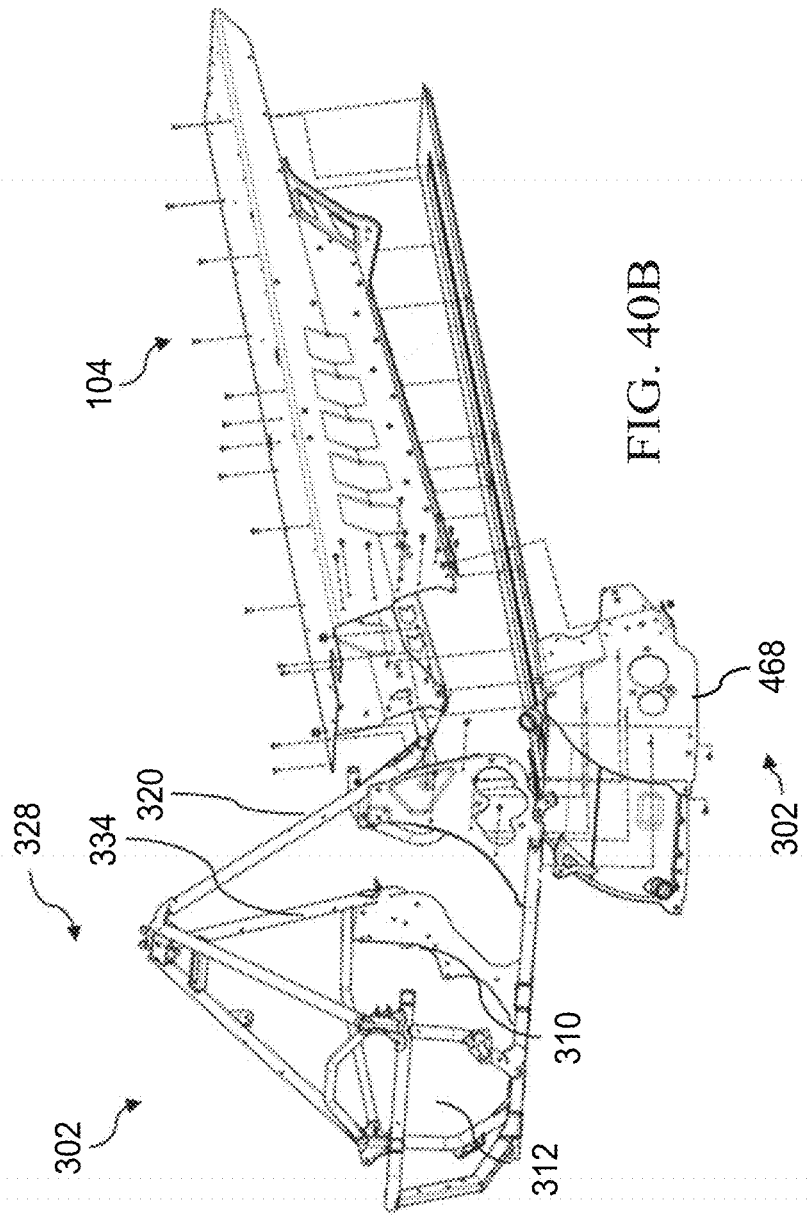

FIG. 40B

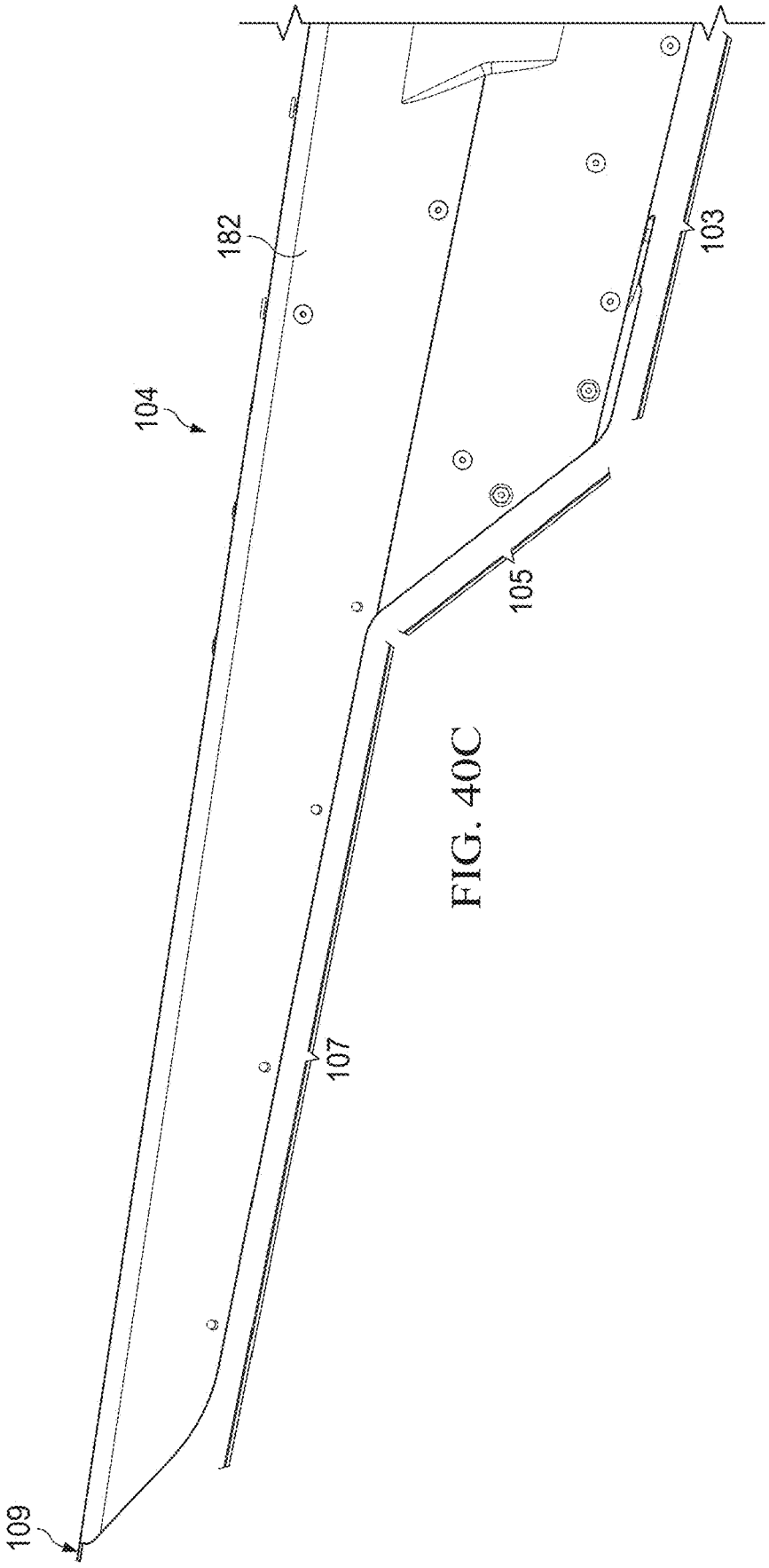

FIG. 40C

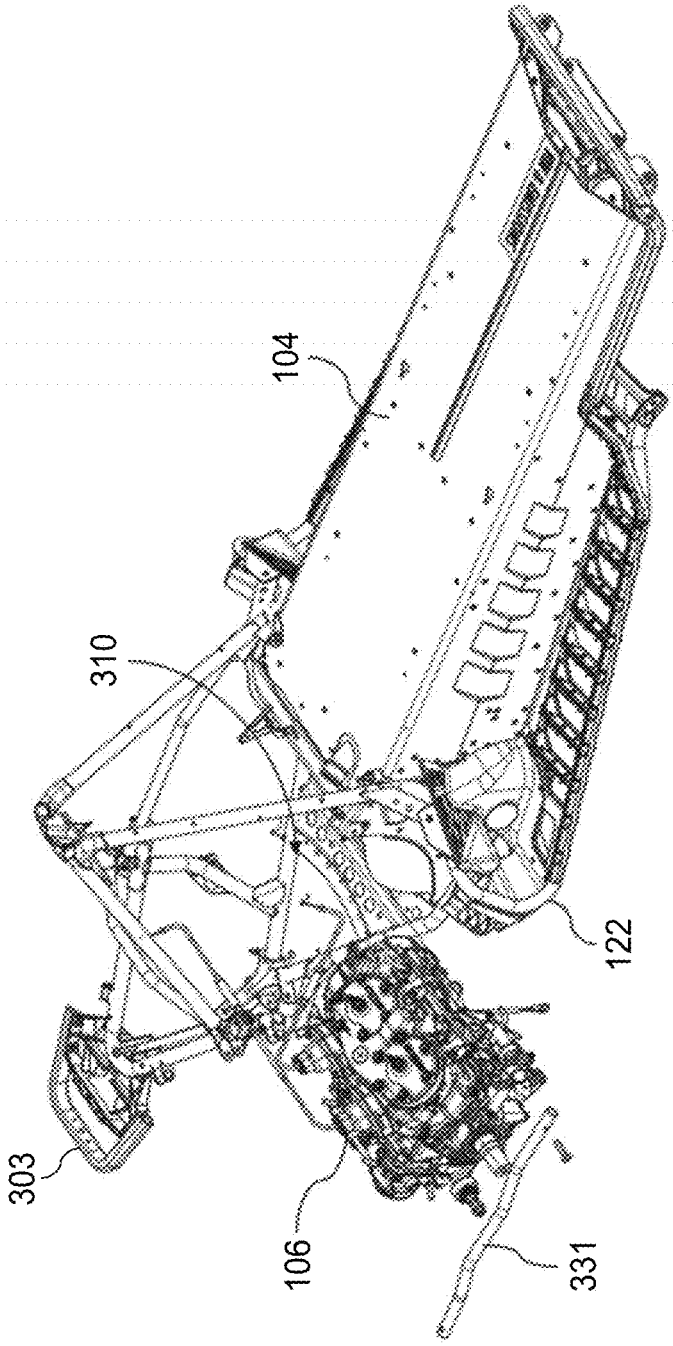

FIG. 41A

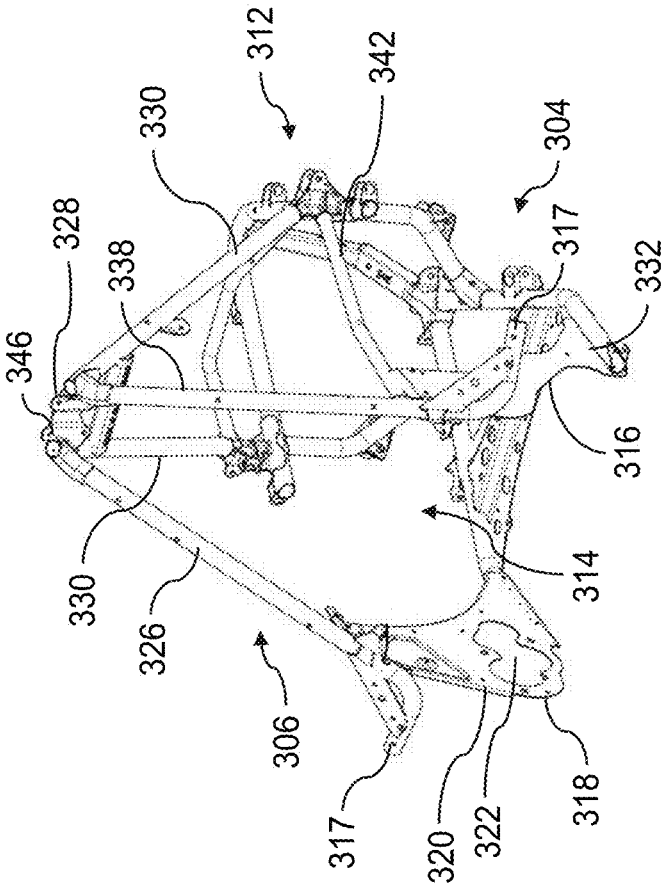
312
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FIG. 41B

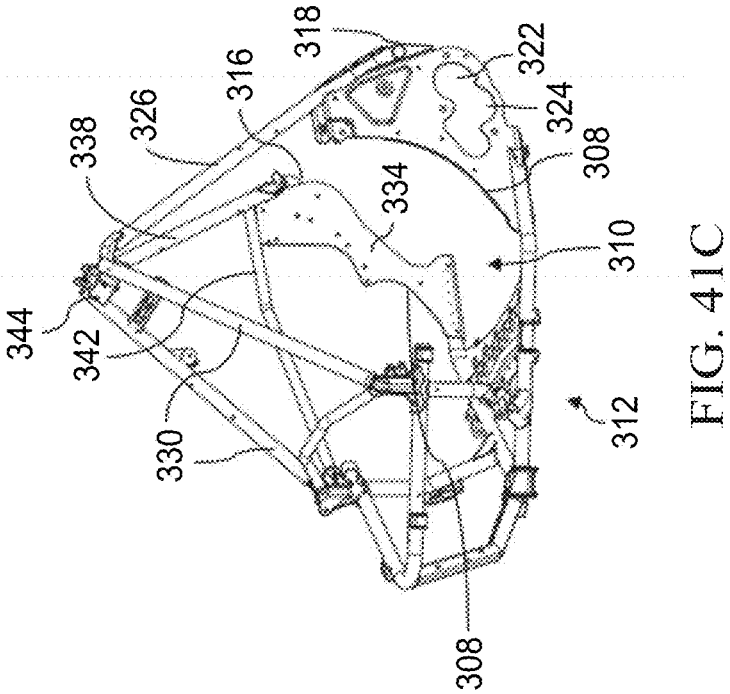

FIG. 41C

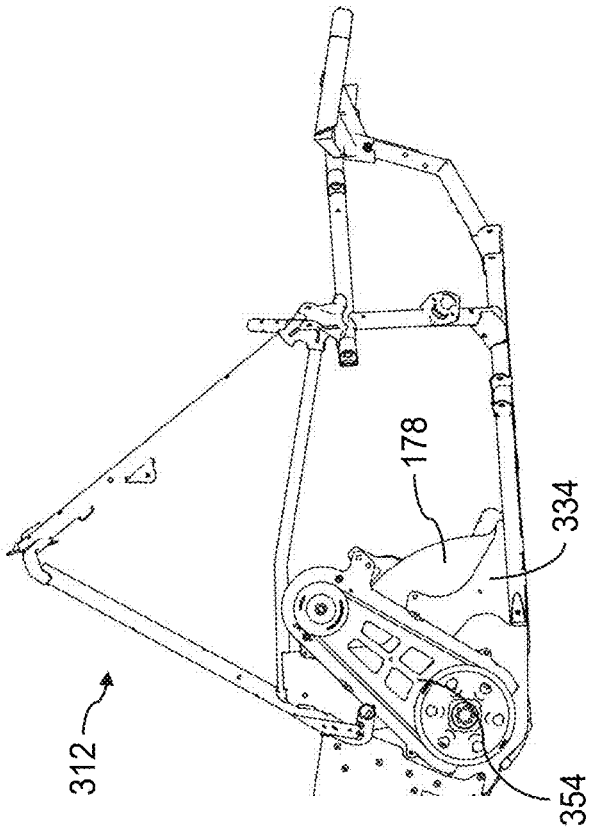

FIG. 42A

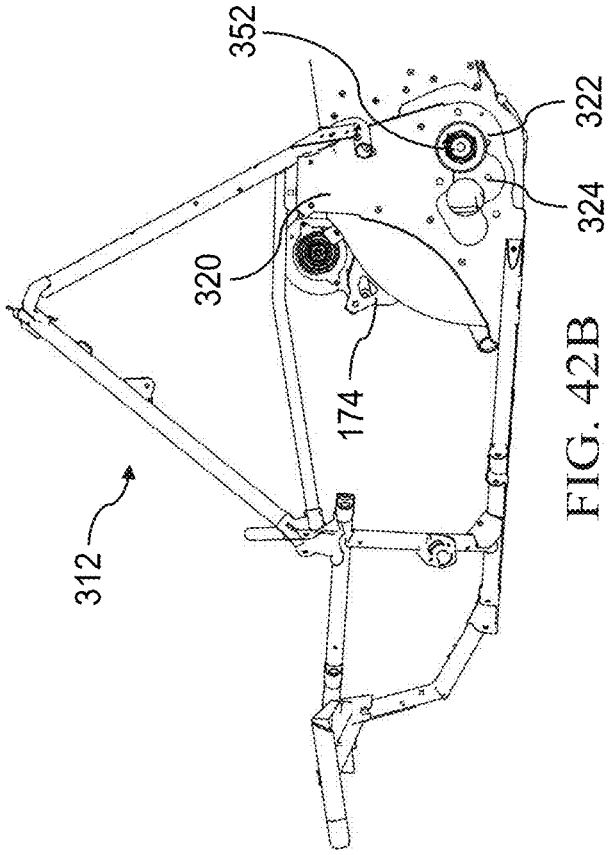

FIG. 42B

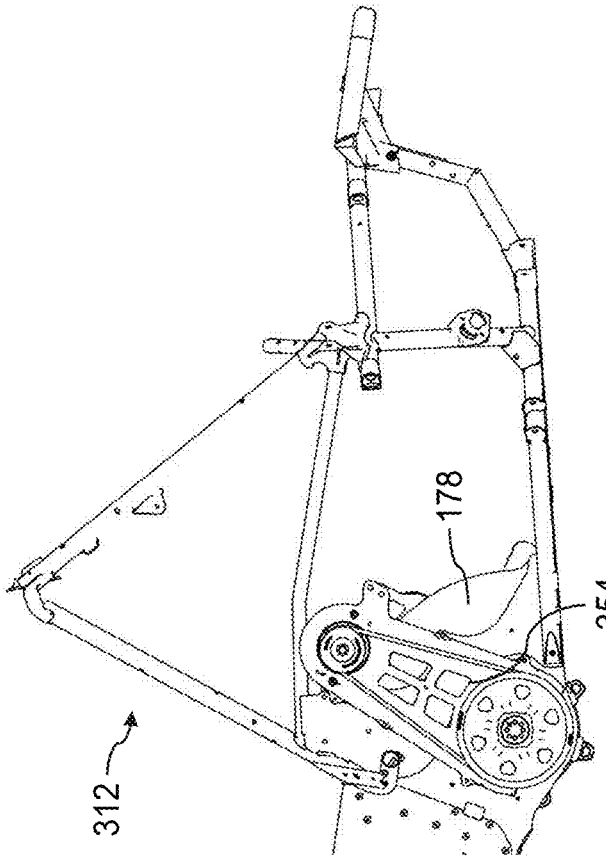

FIG. 42C

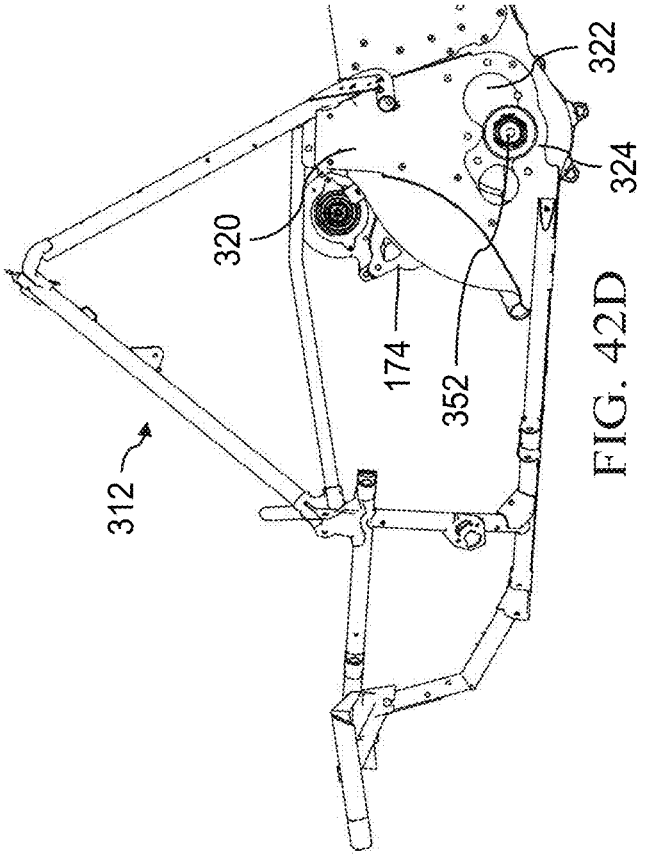

FIG. 42D

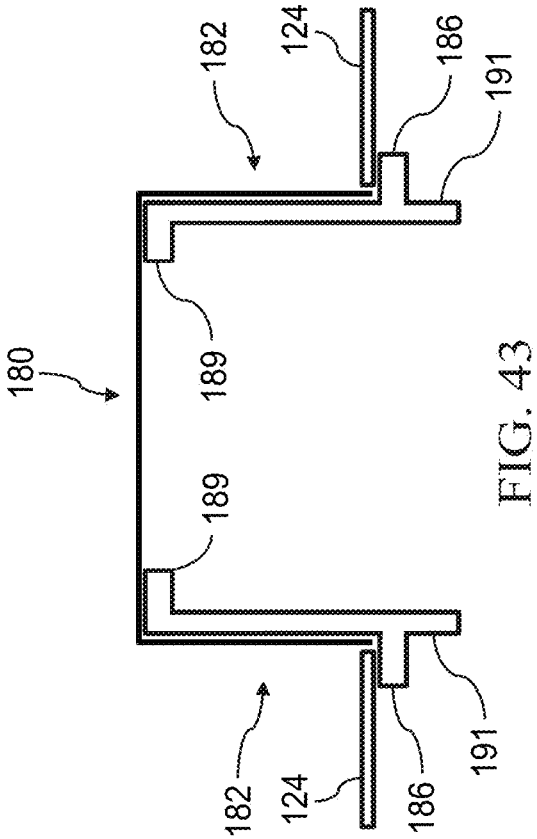

FIG. 43

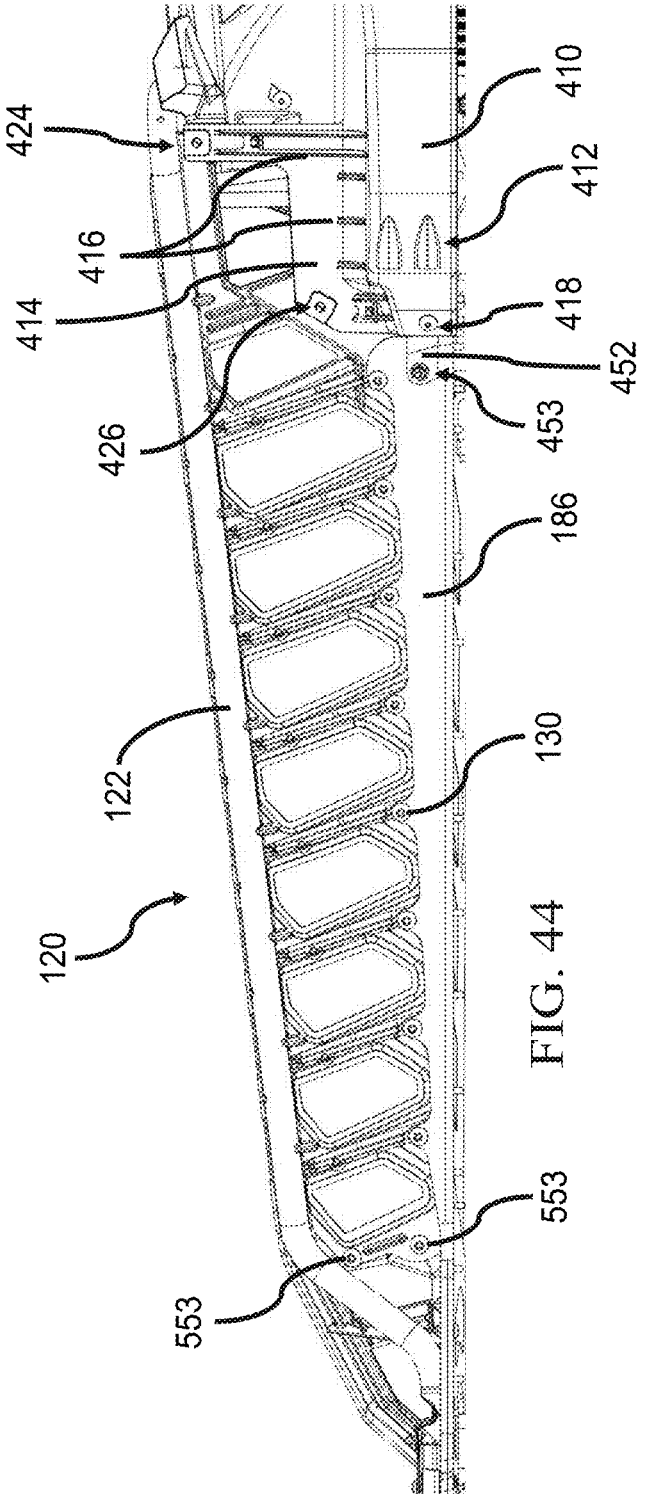

FIG. 44

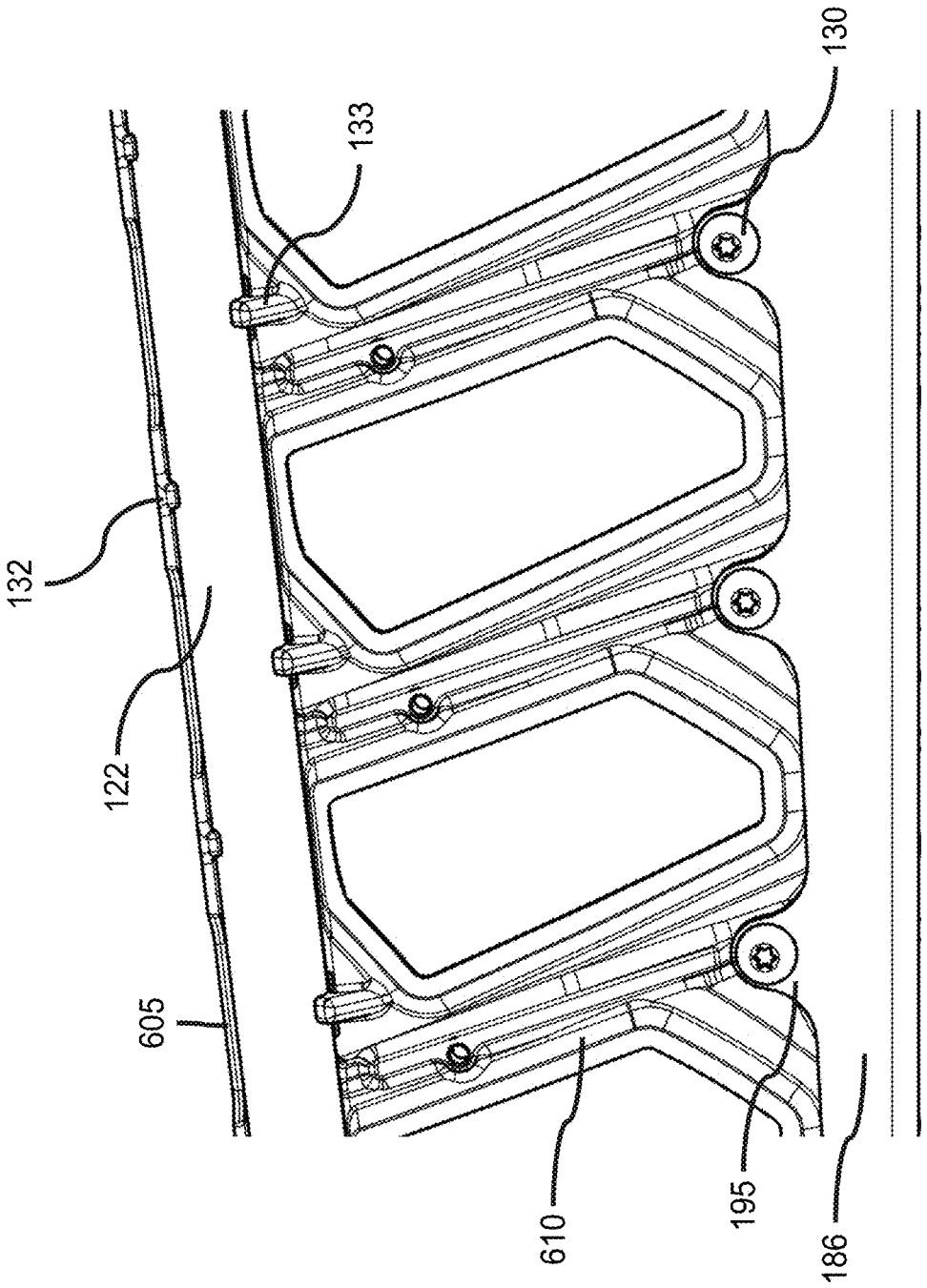

FIG. 45

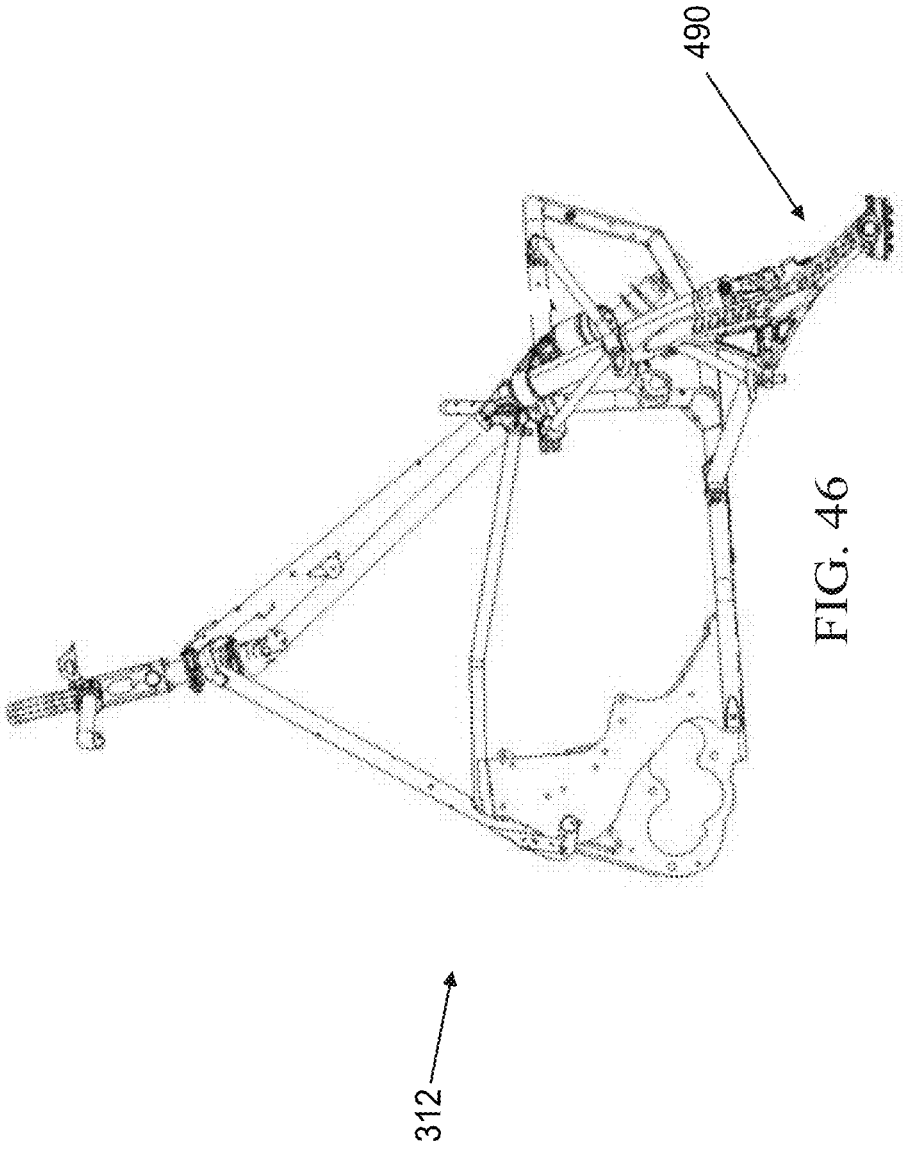

FIG. 46

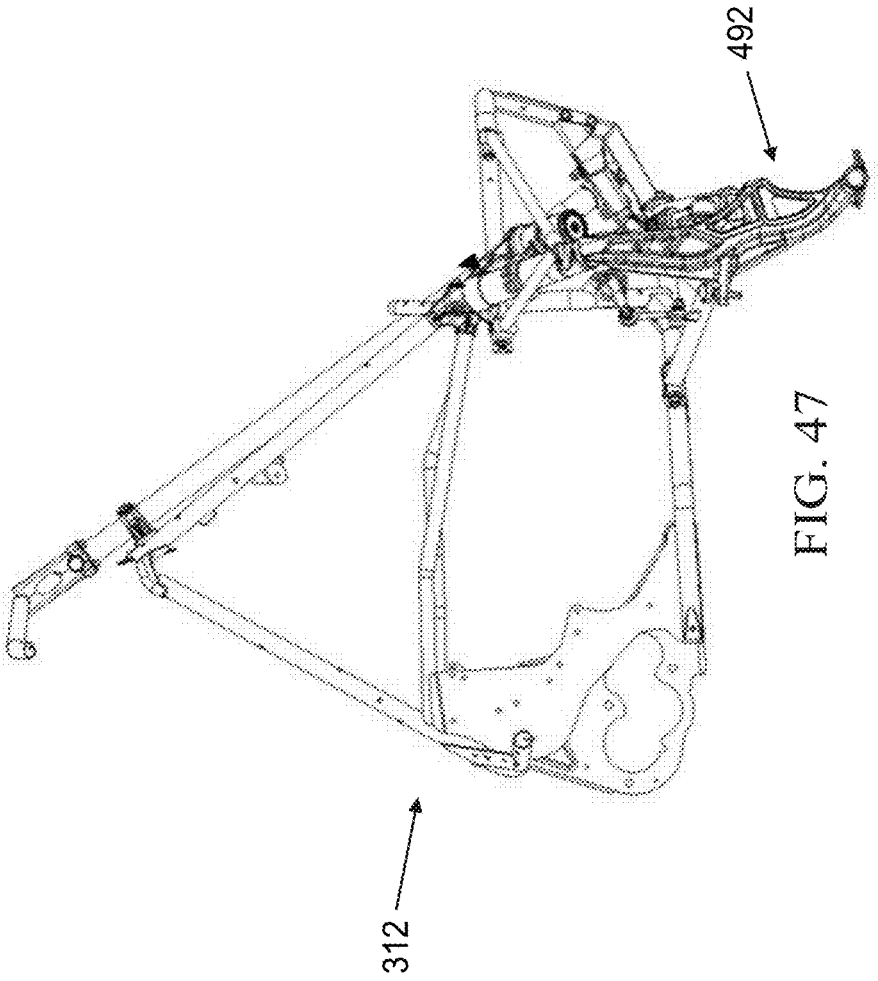

FIG. 47

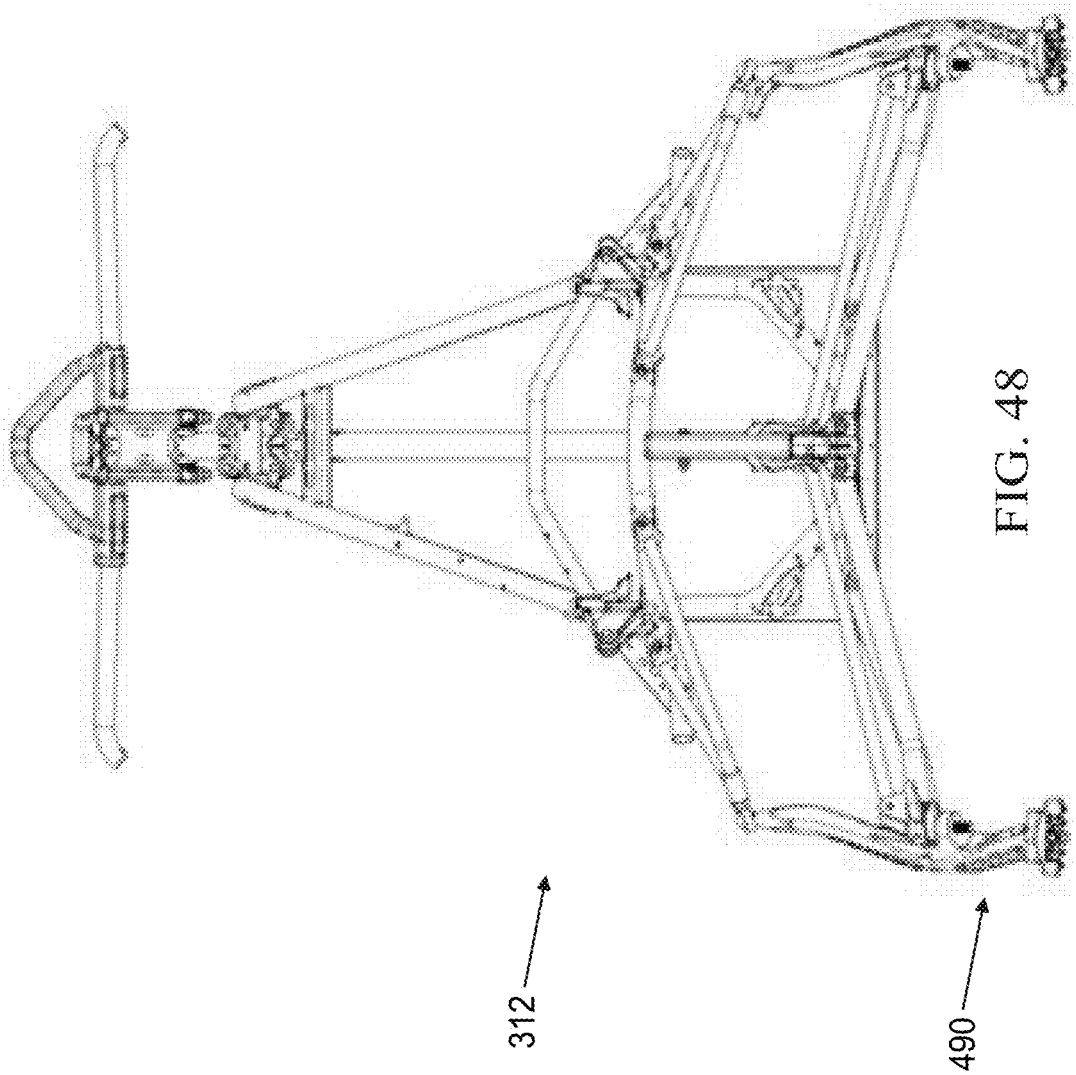

FIG. 48

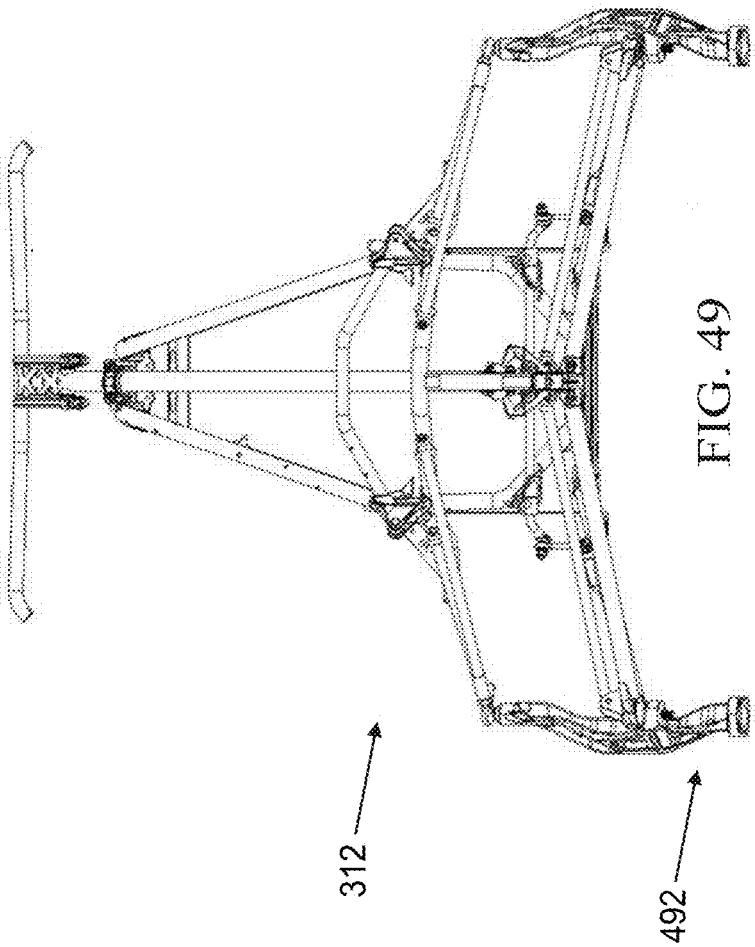

FIG. 49

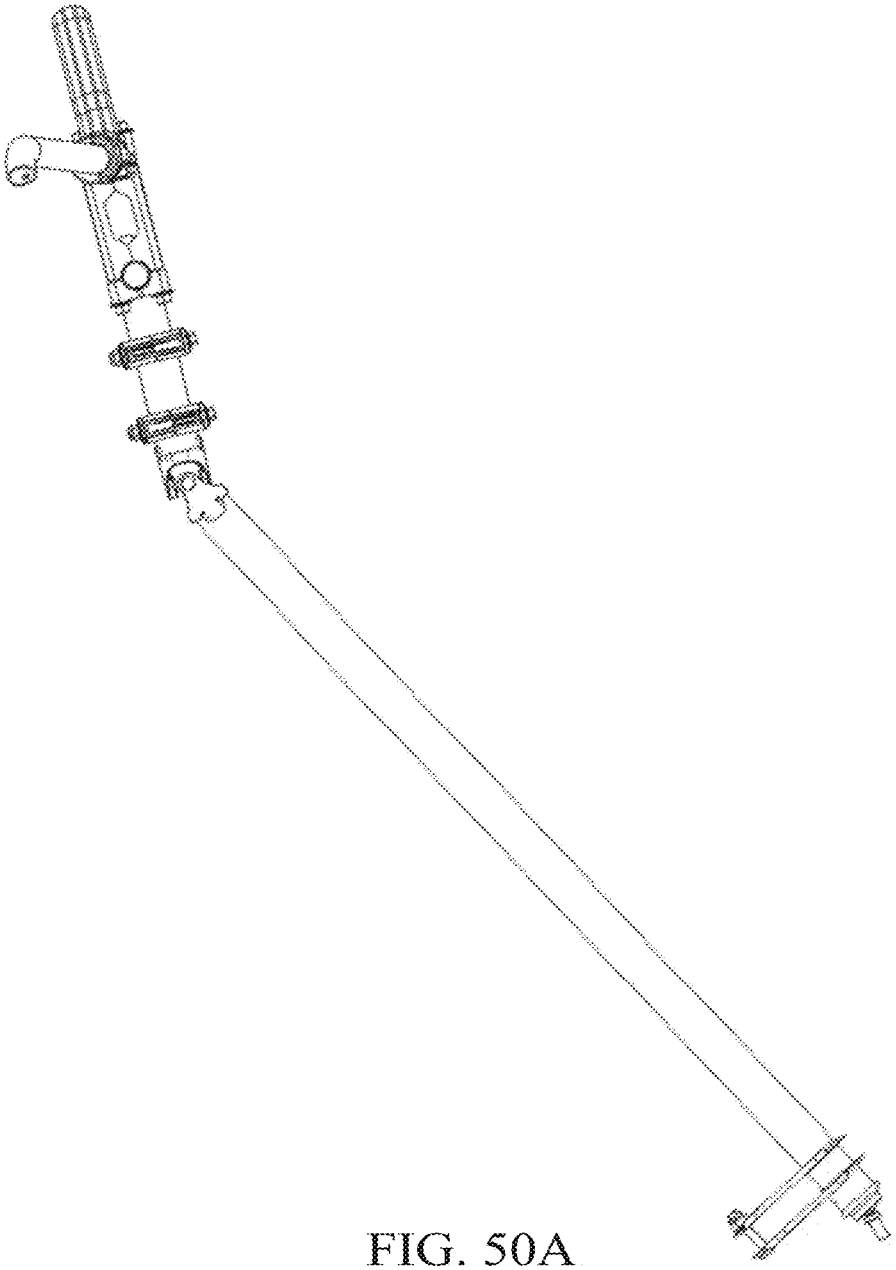

FIG. 50A

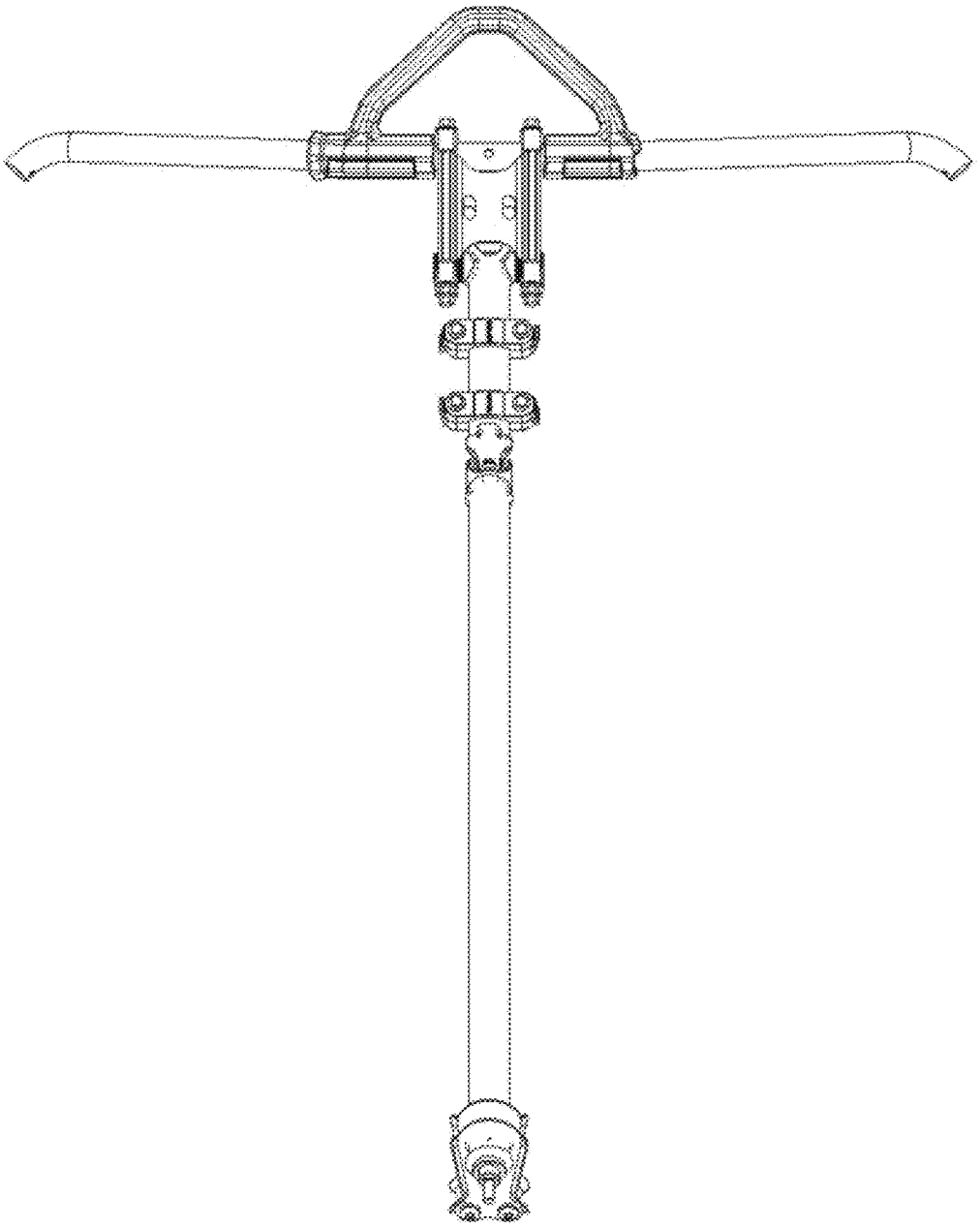

FIG. 50B

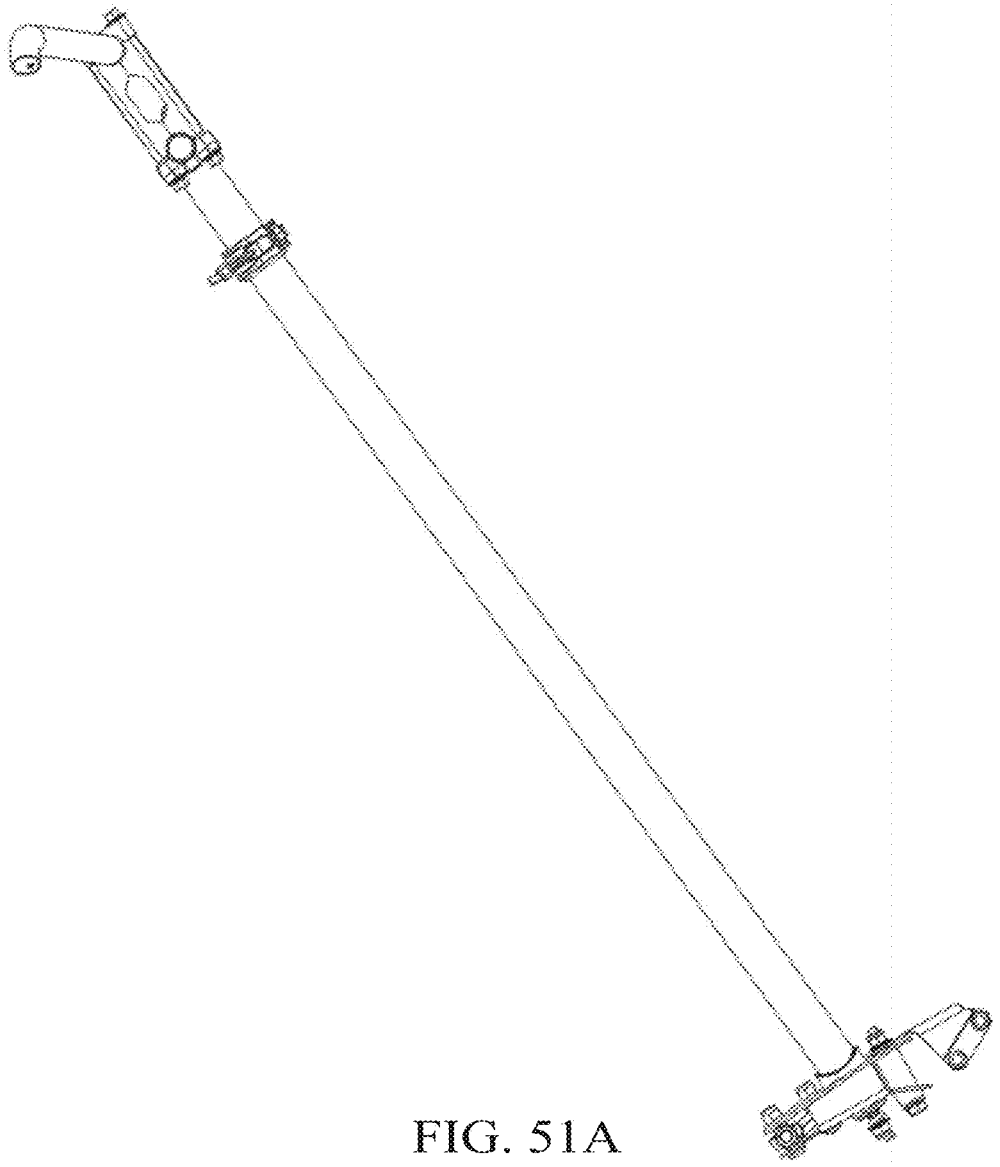

FIG. 51A

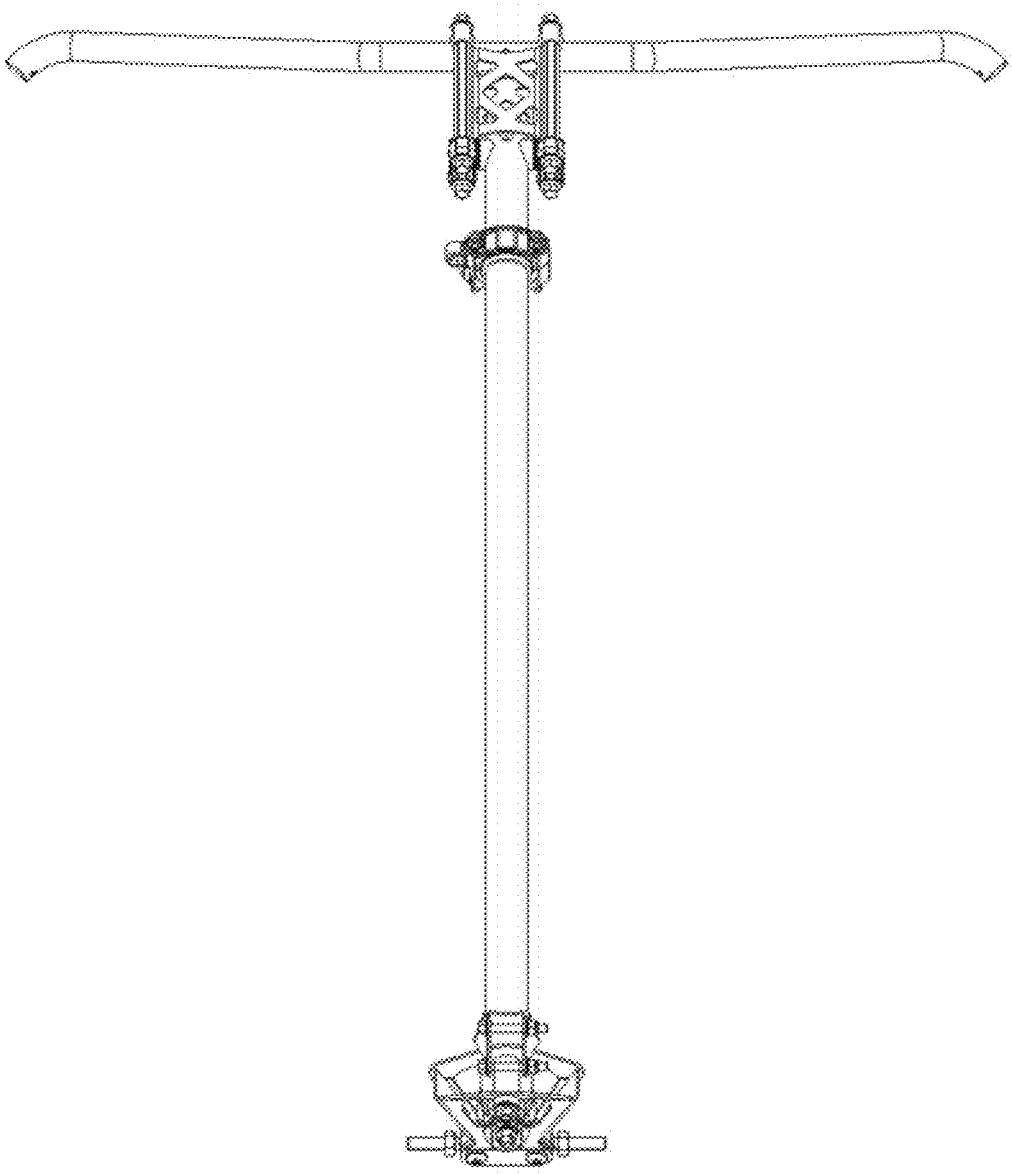

FIG. 51B

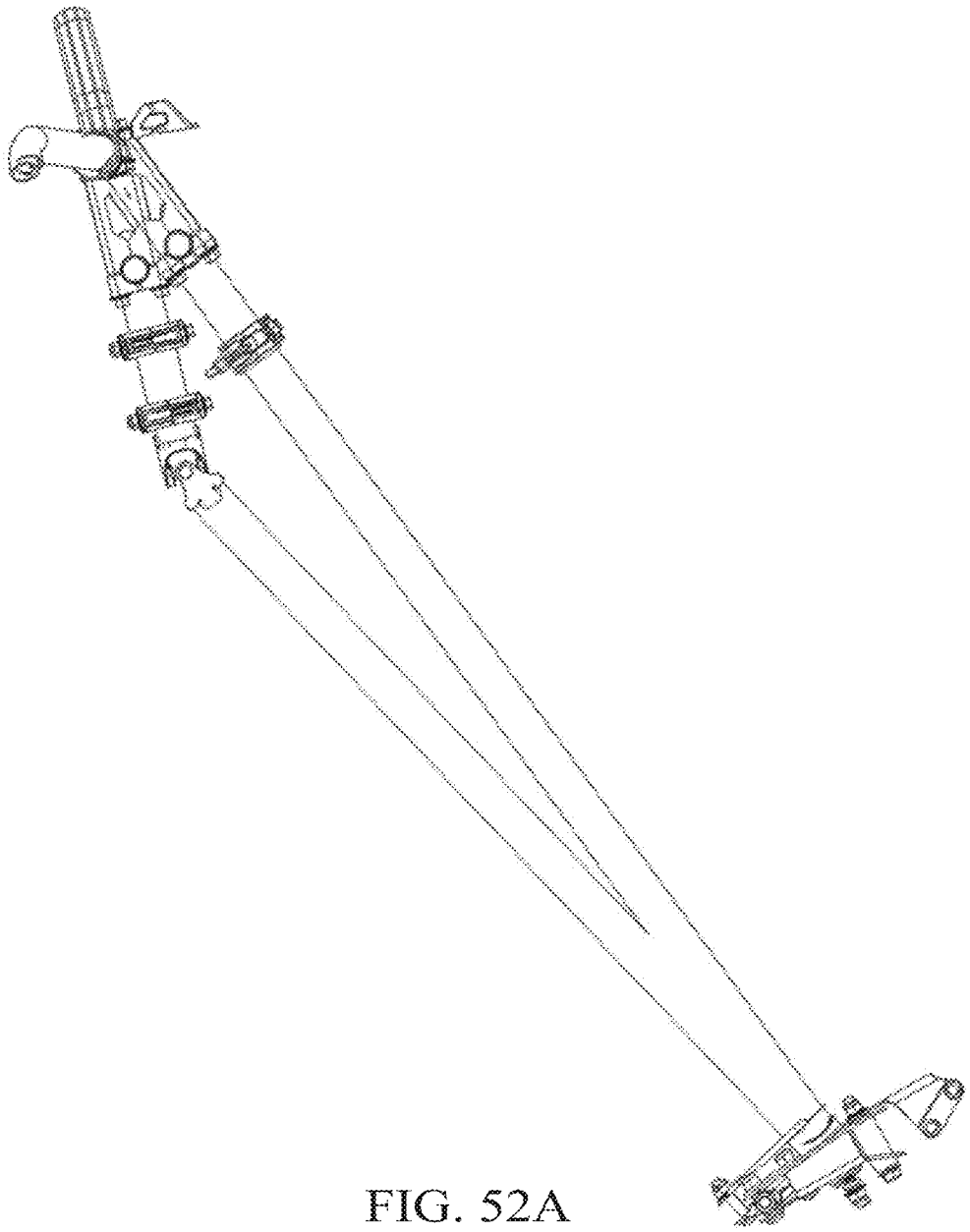

FIG. 52A

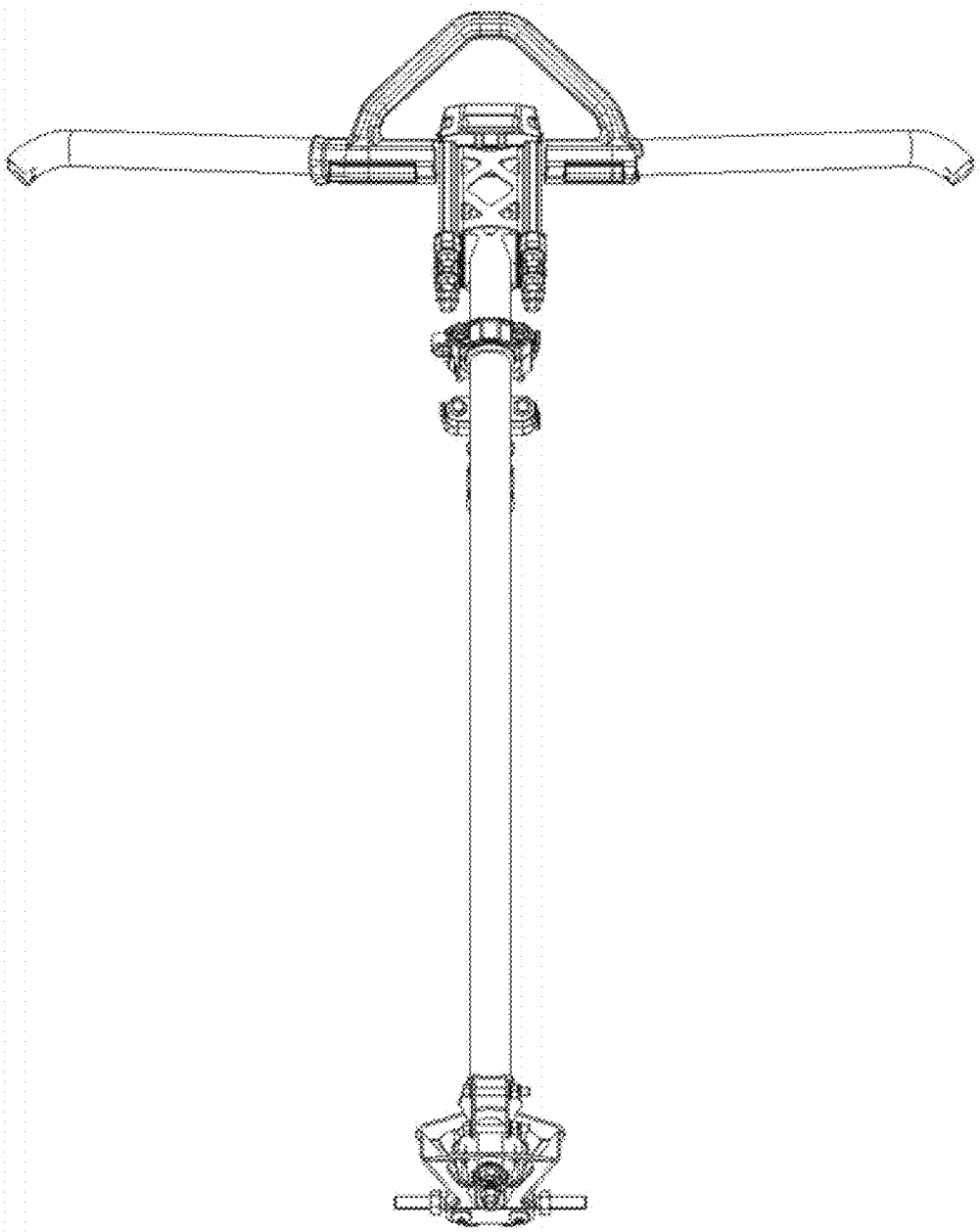

FIG. 52B

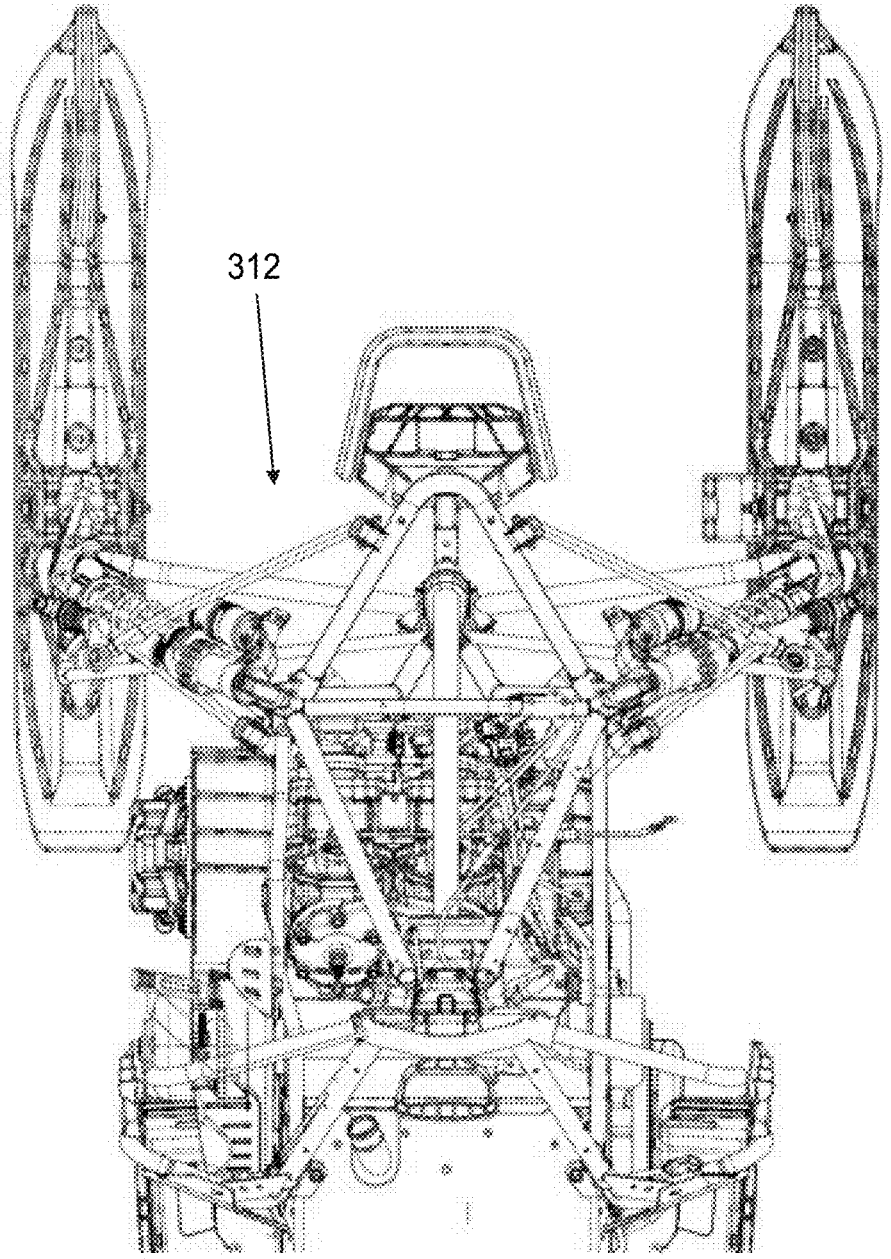

FIG. 53

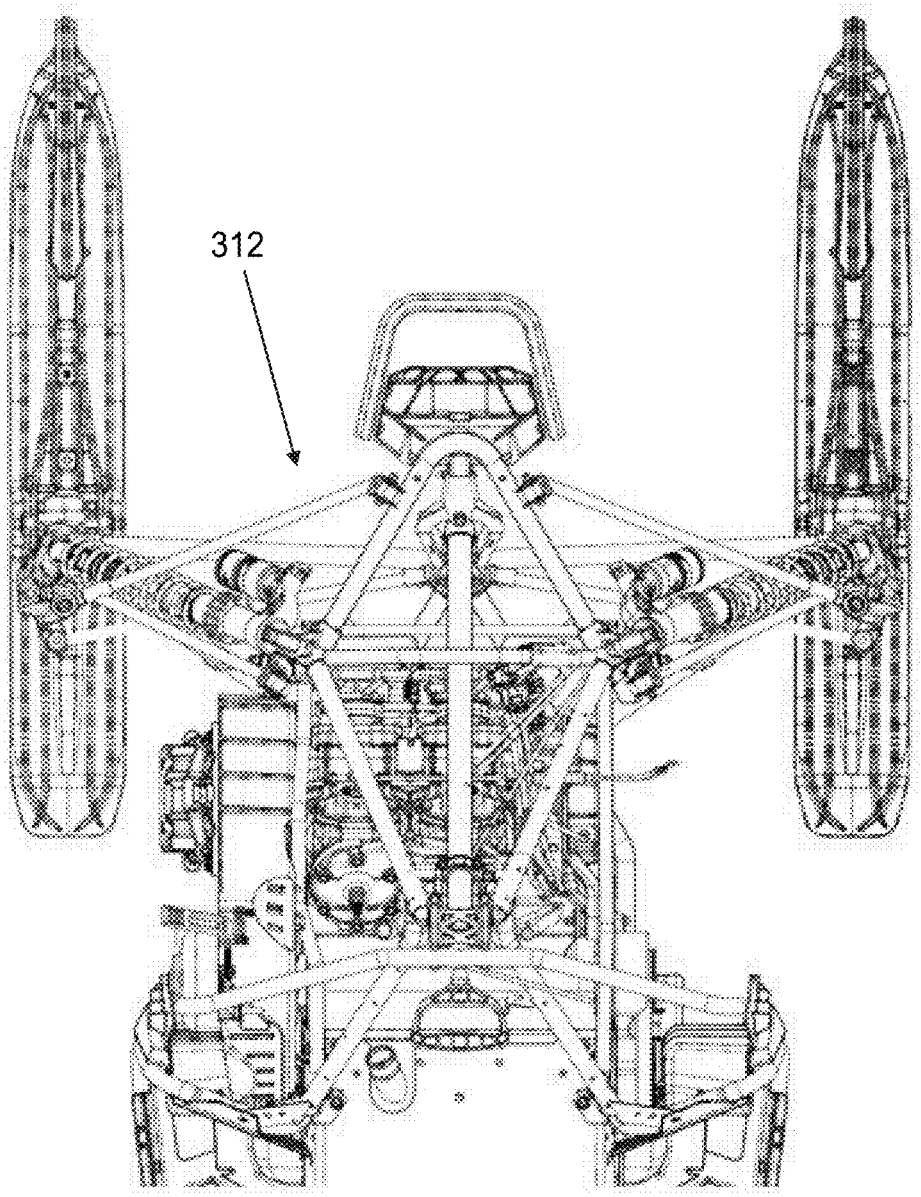

FIG. 54

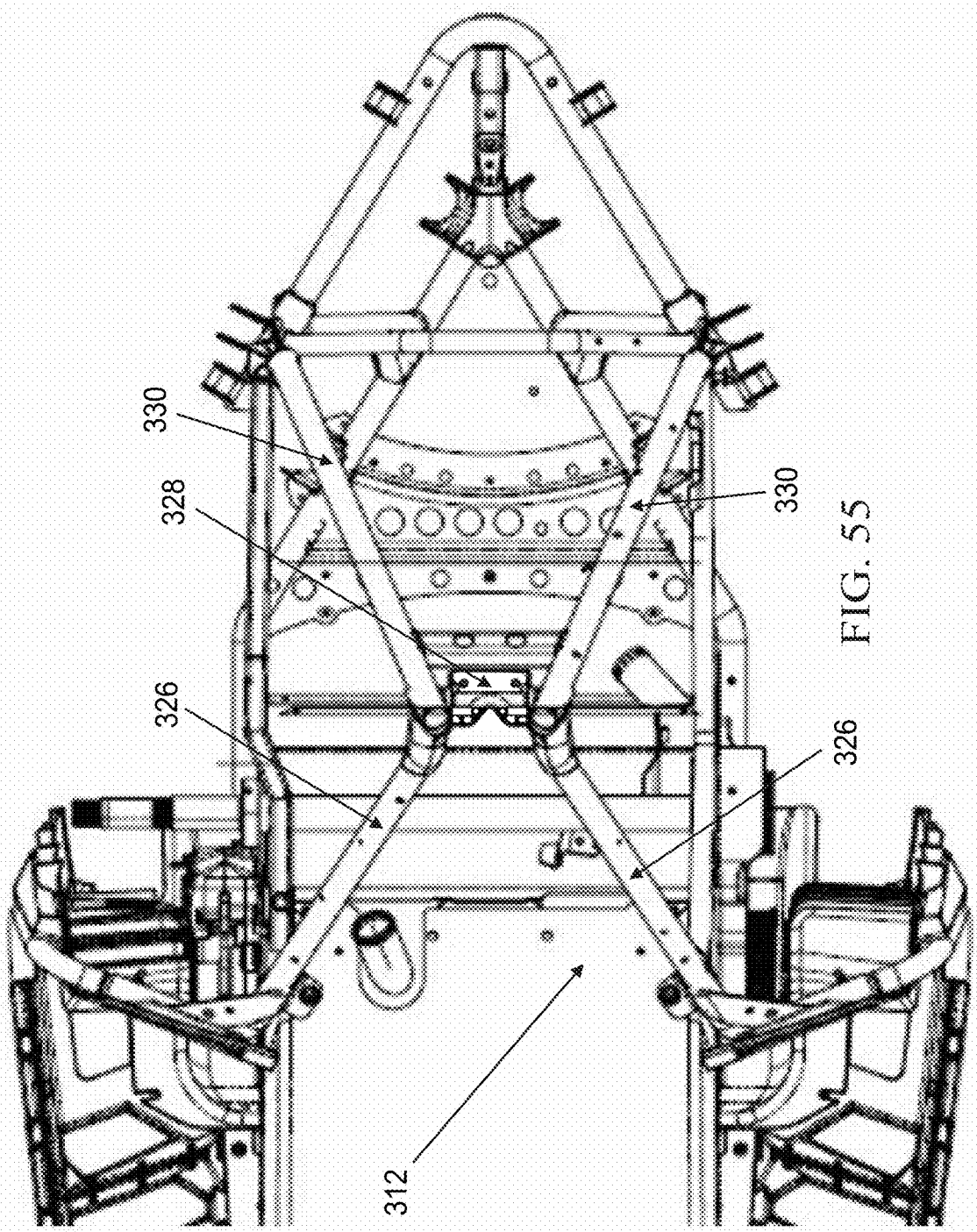

FIG. 55

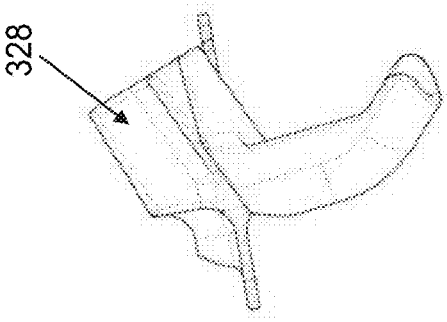

FIG. 56B

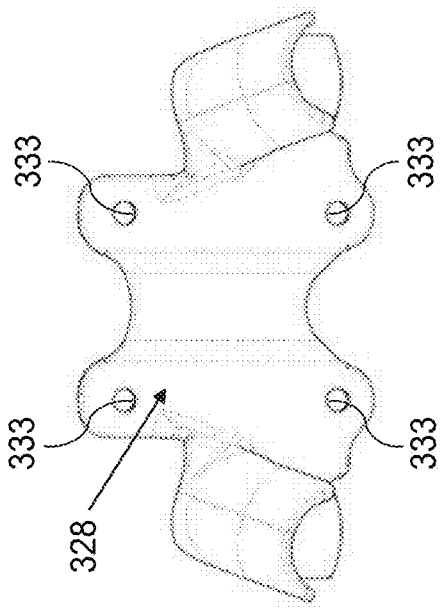

FIG. 56C

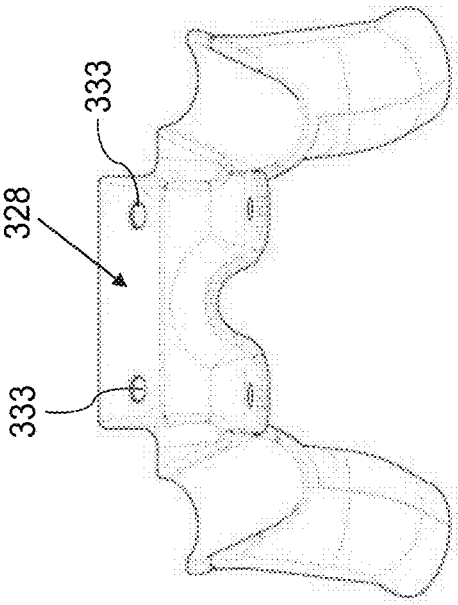

FIG. 56A

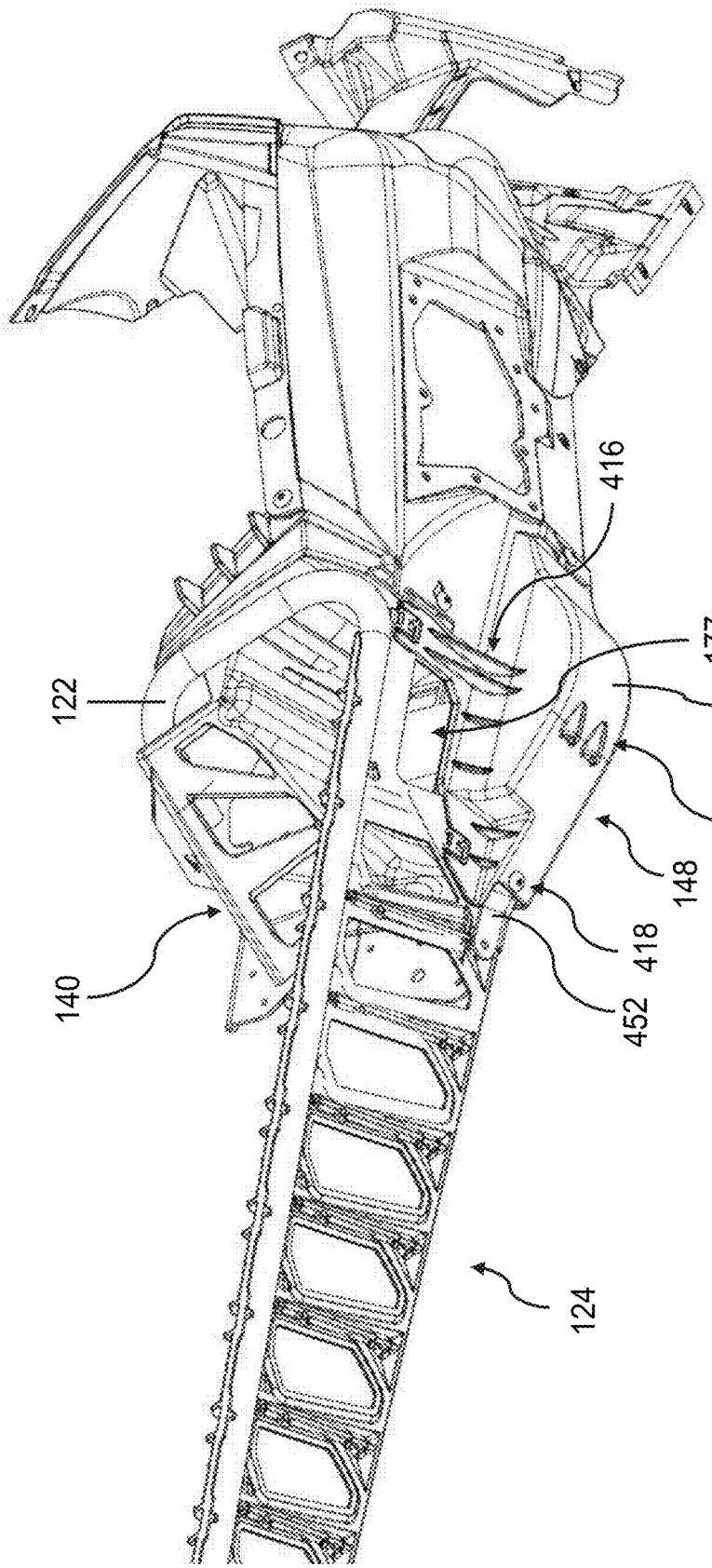

FIG. 57

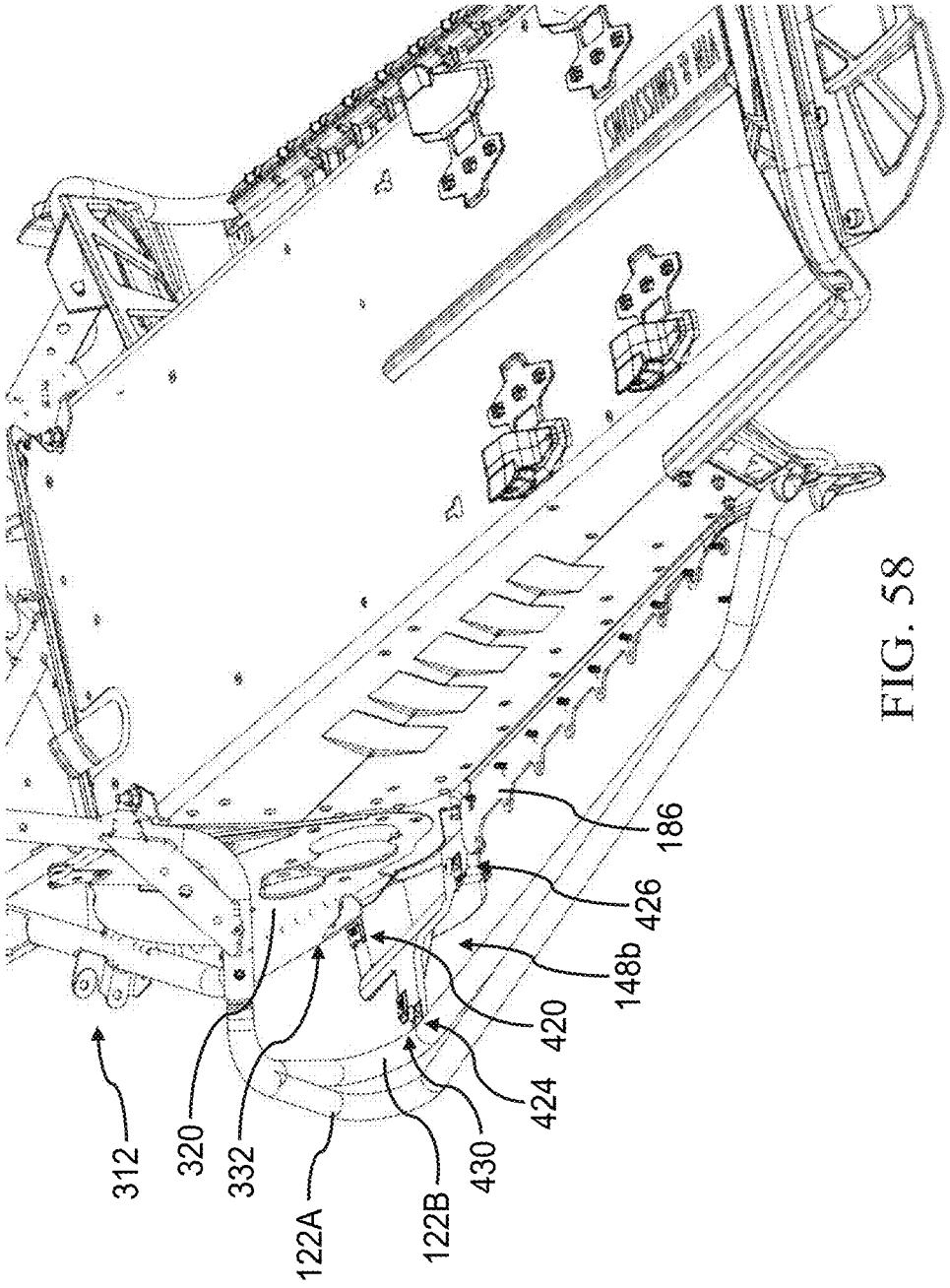

FIG. 58

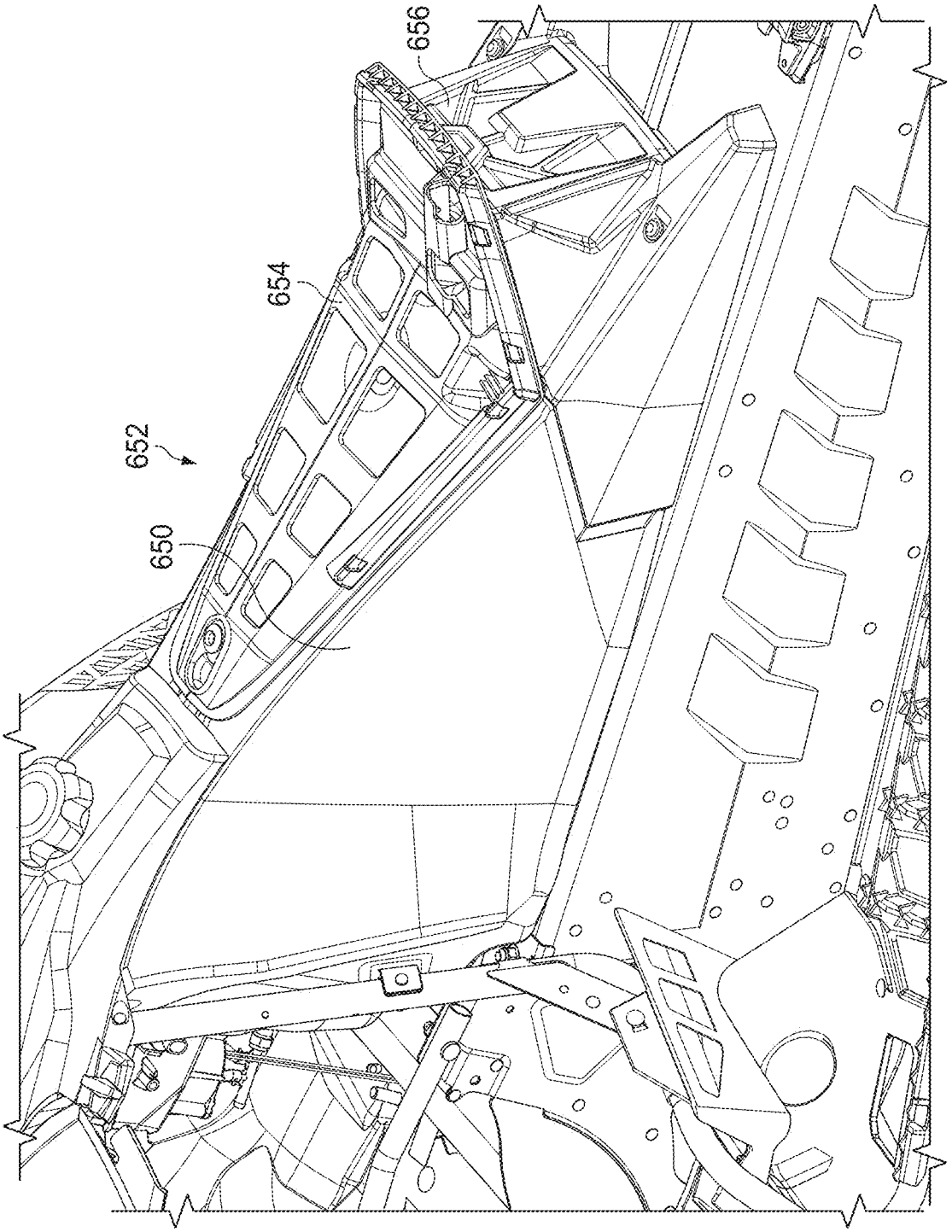

FIG. 59

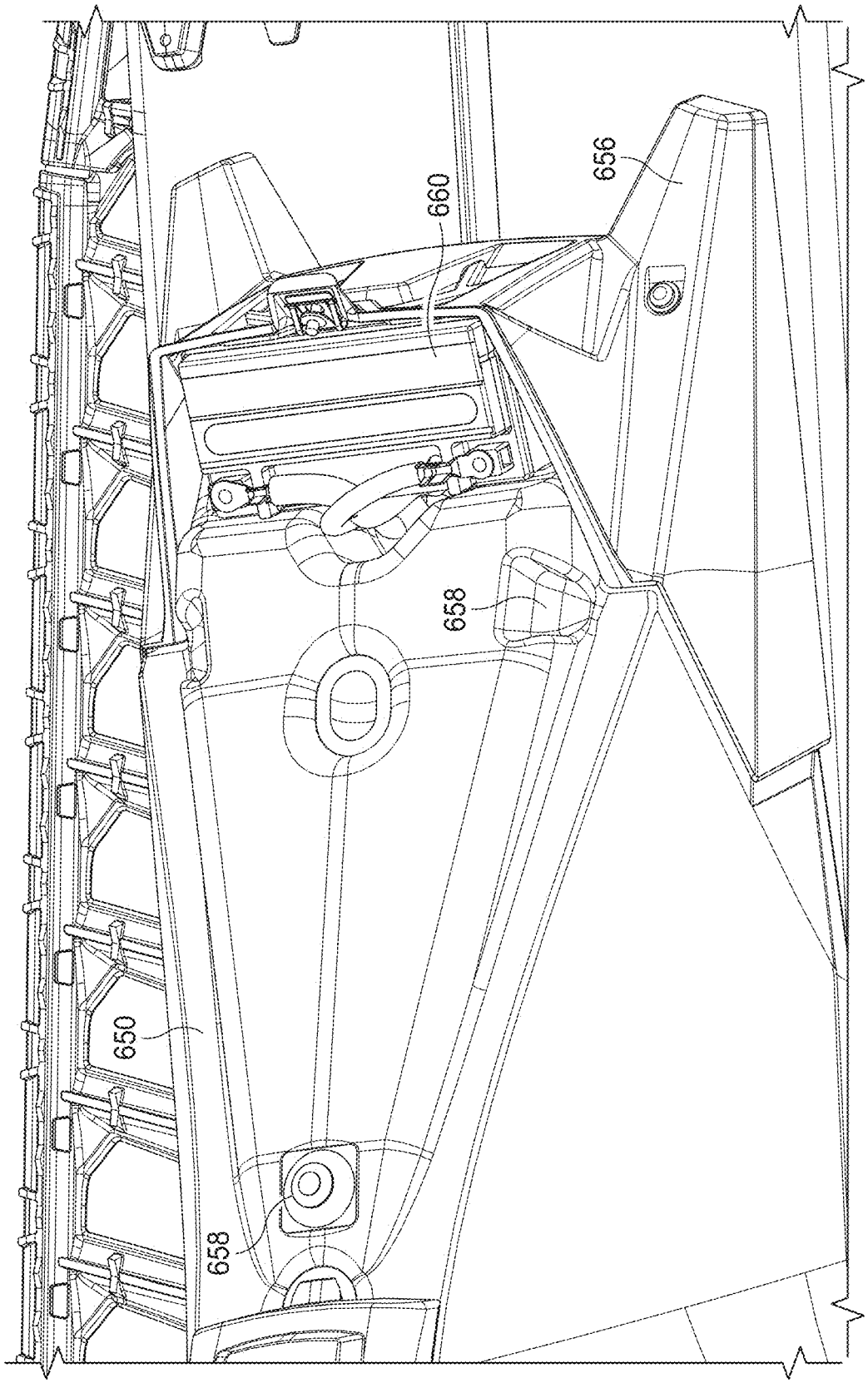

FIG. 60

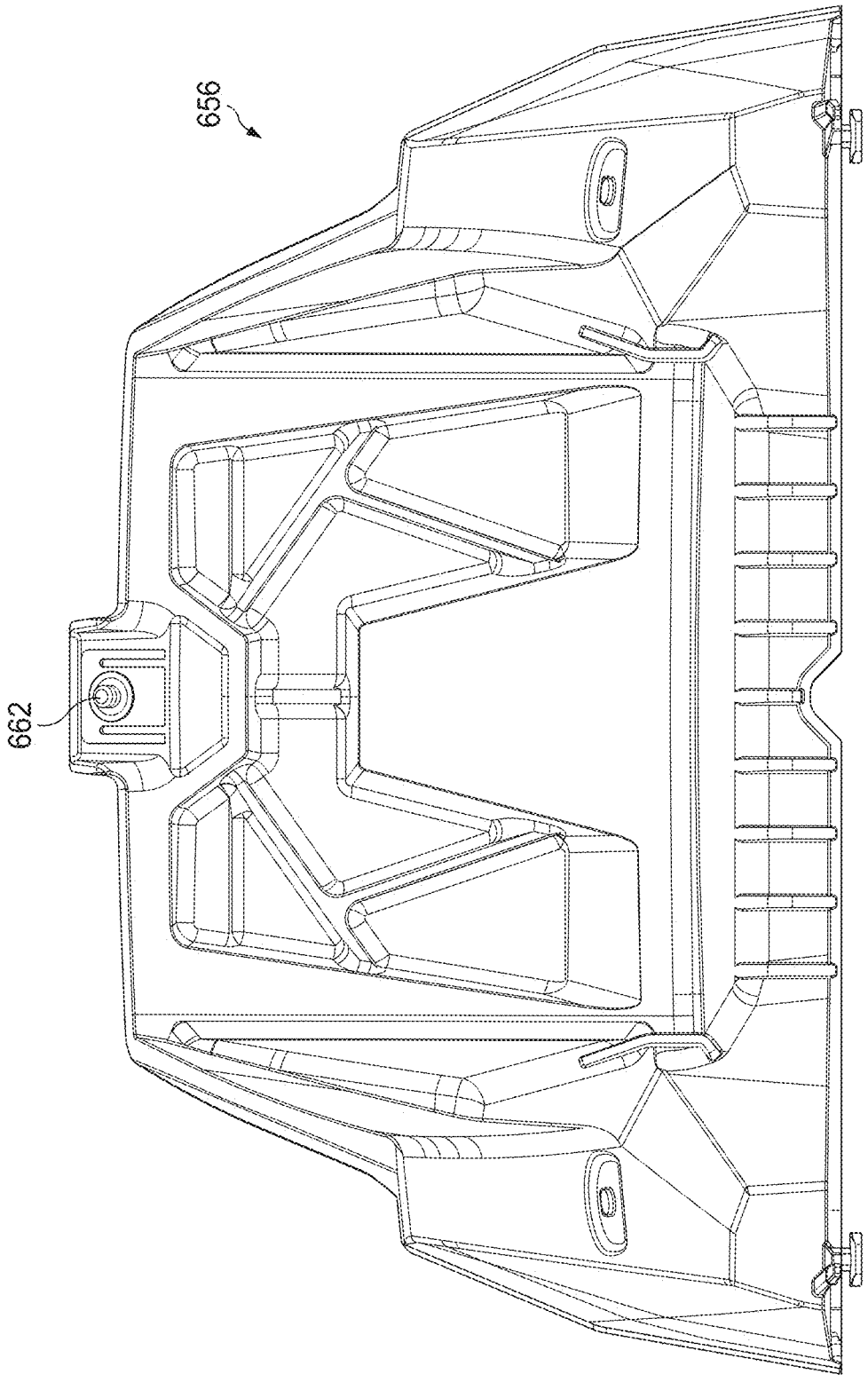

FIG. 61

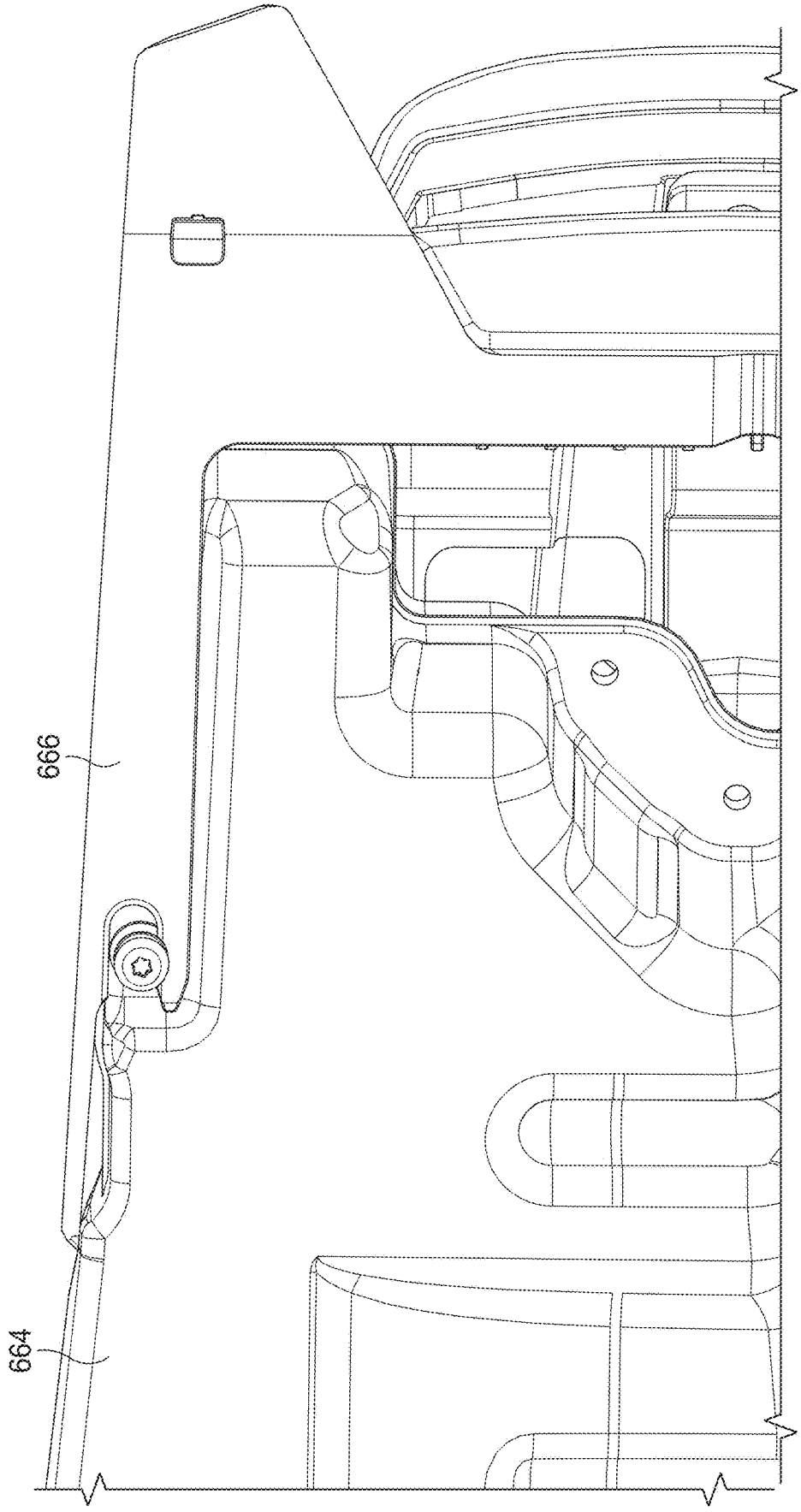

FIG. 62

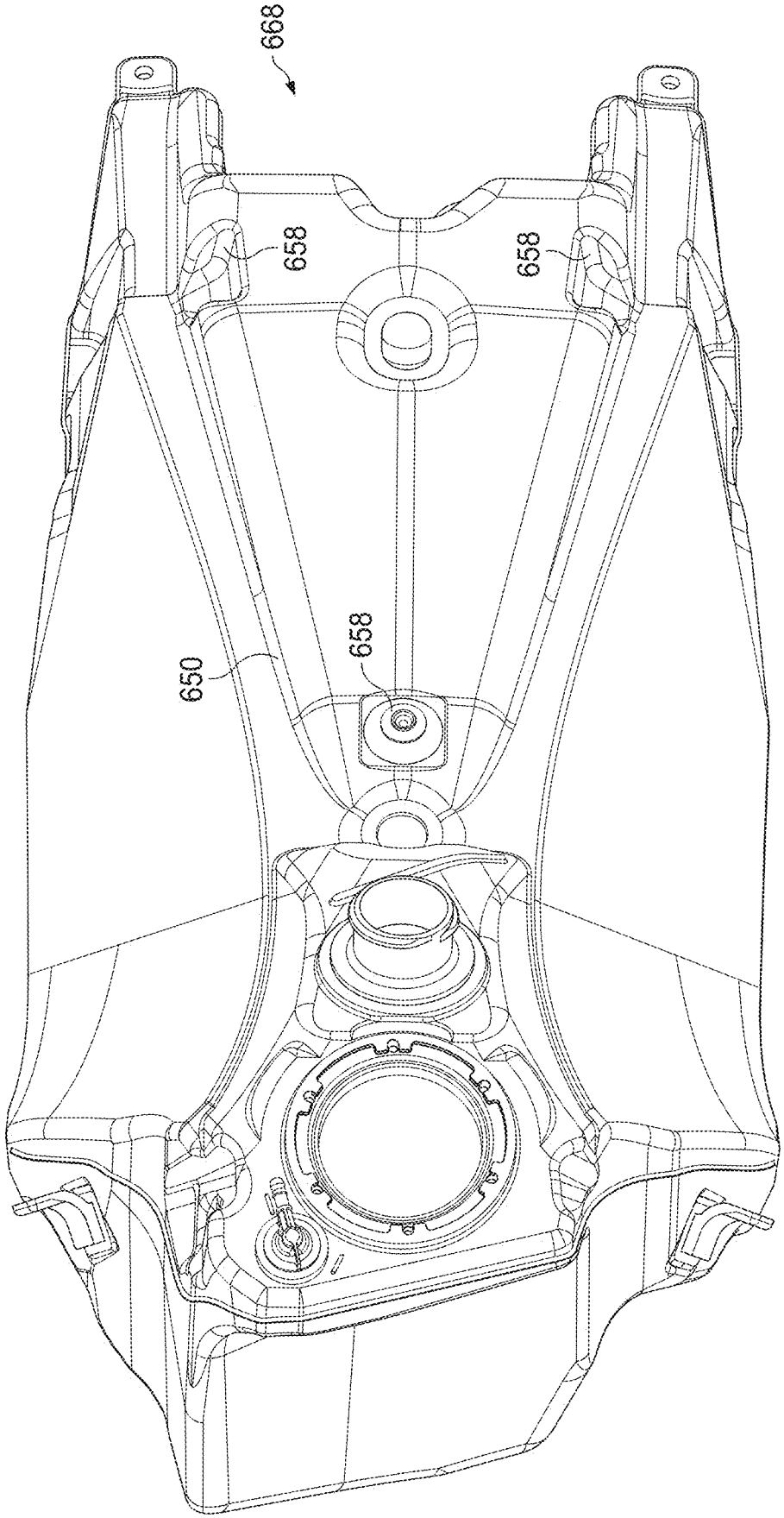

FIG. 63

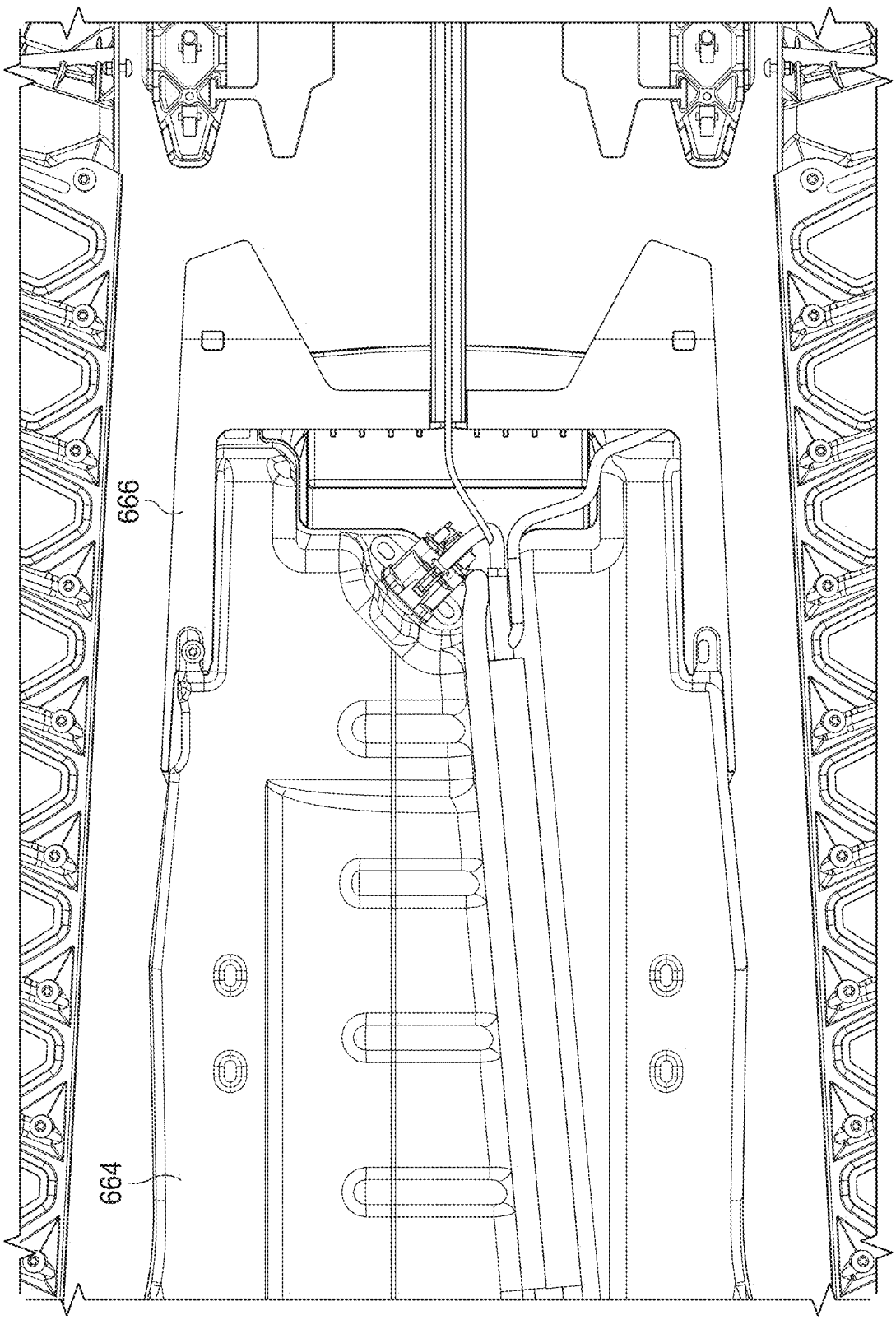

FIG. 64

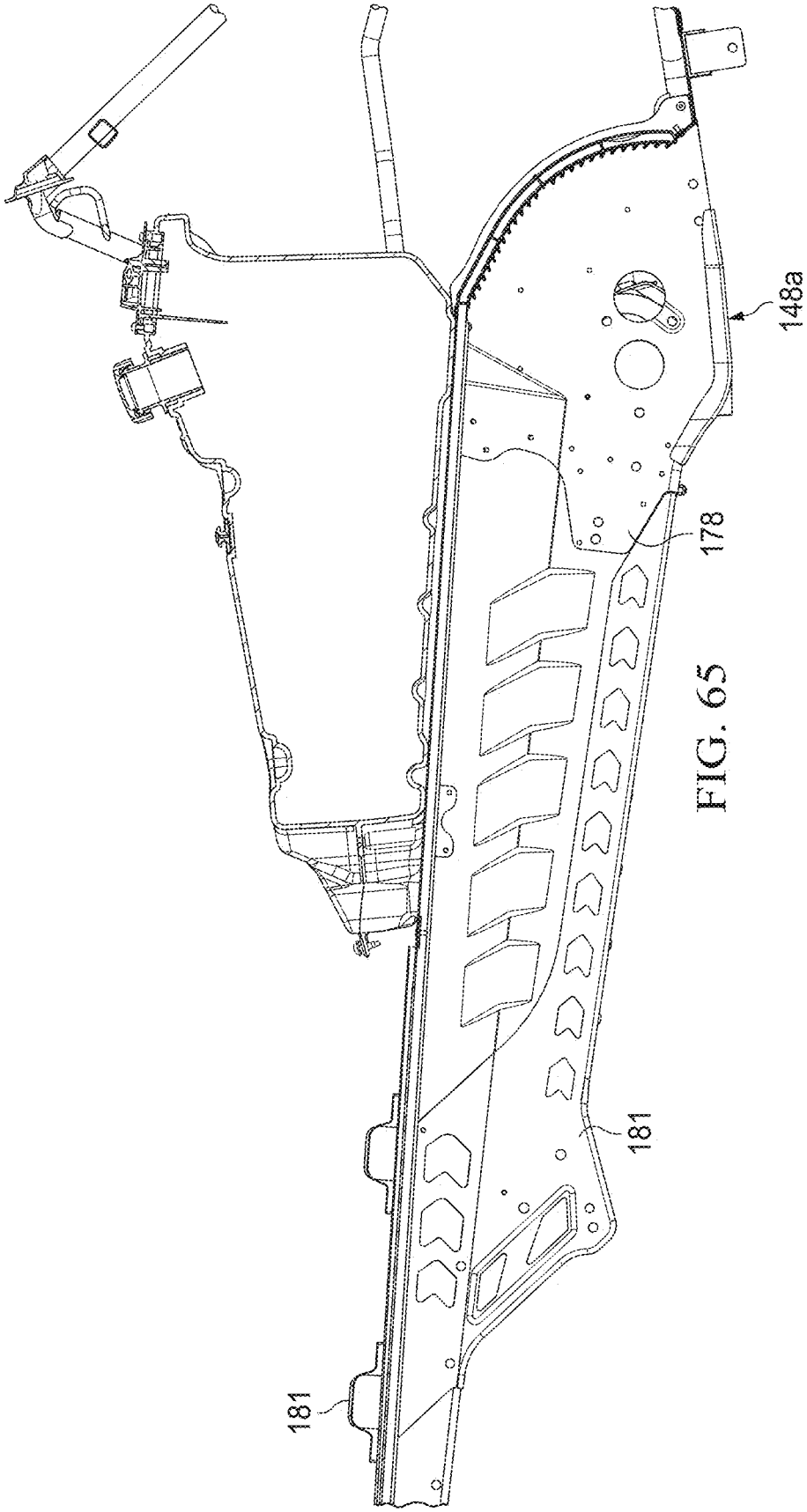

FIG. 65

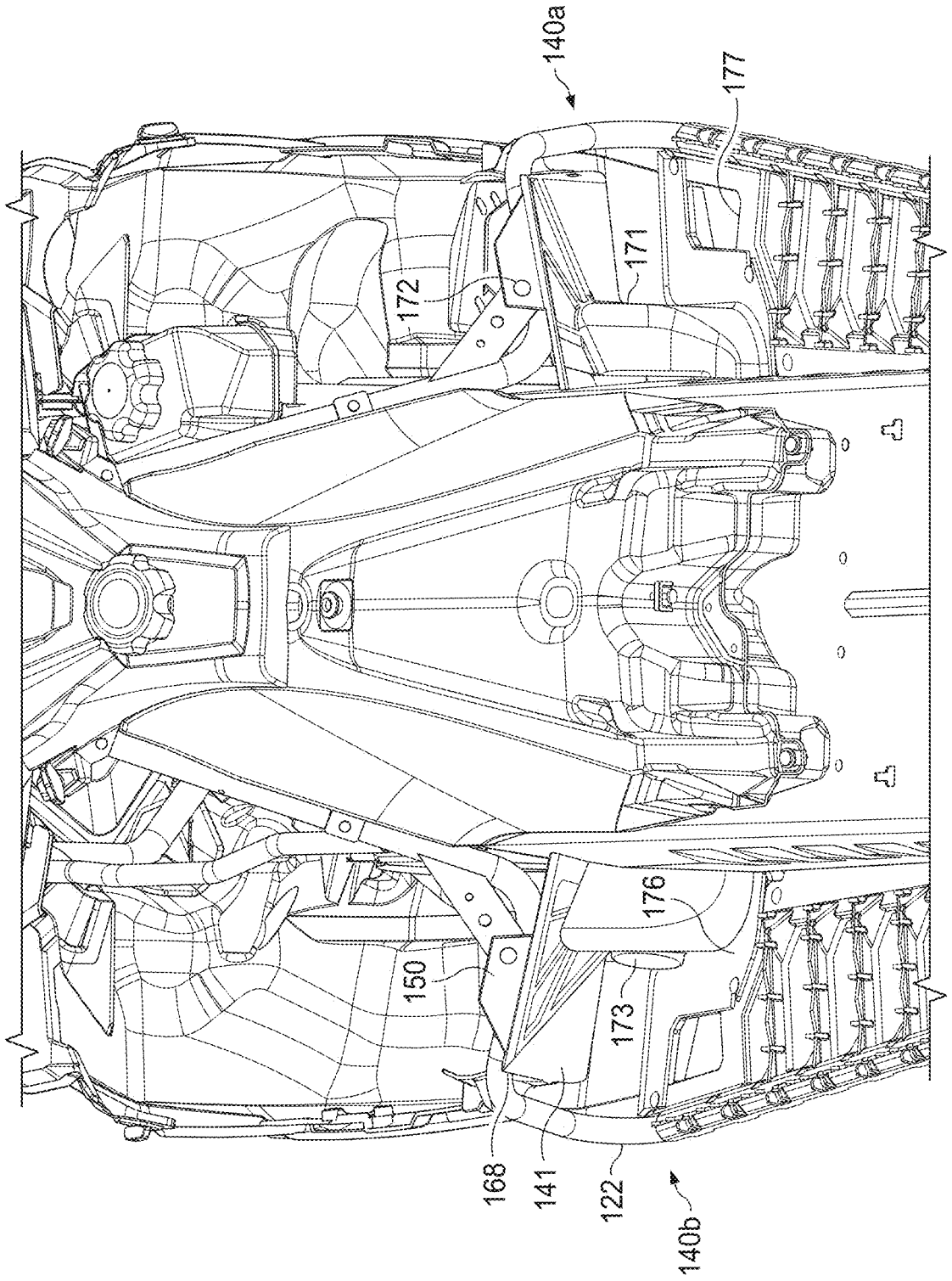

FIG. 66

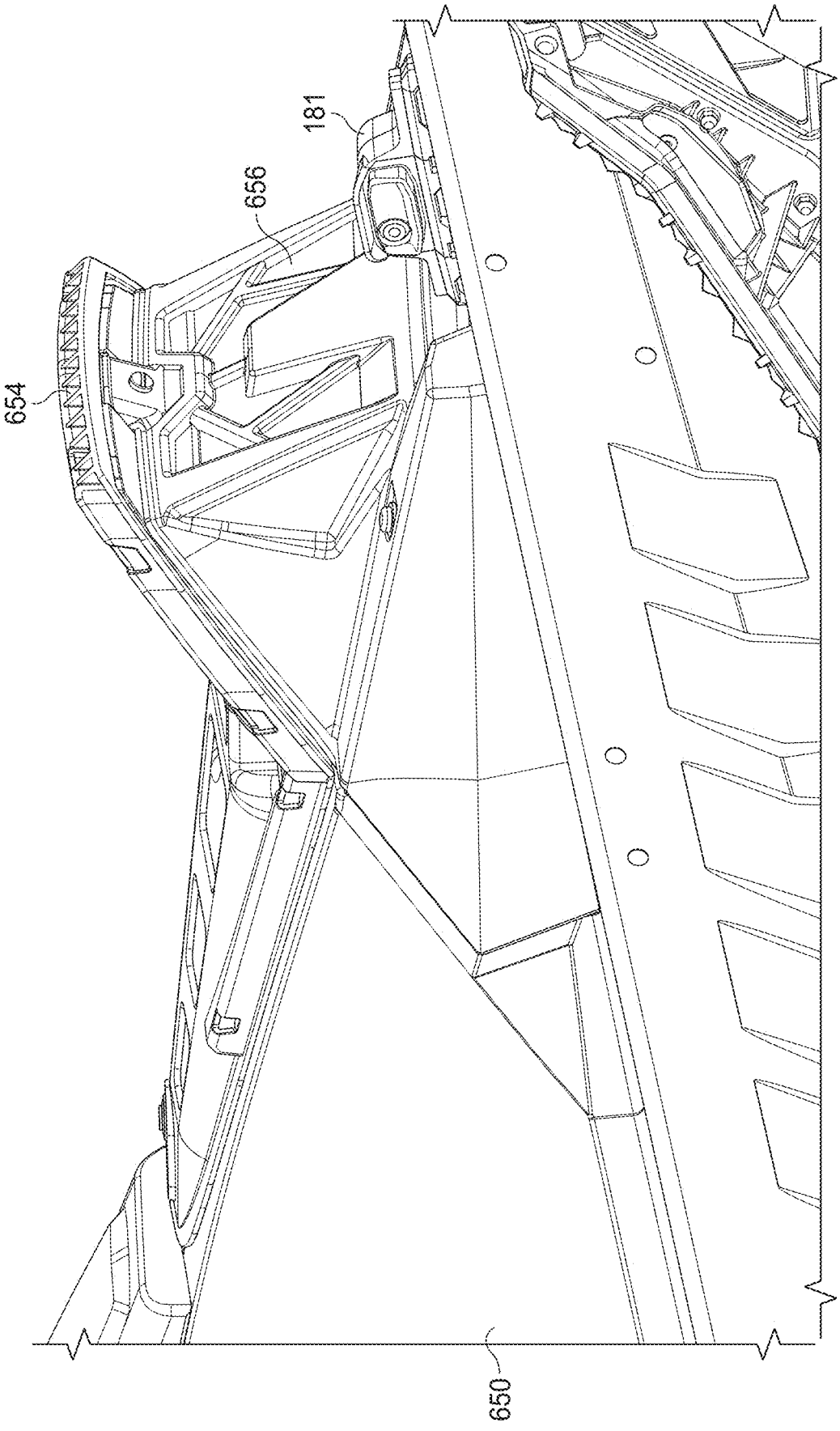

FIG. 67

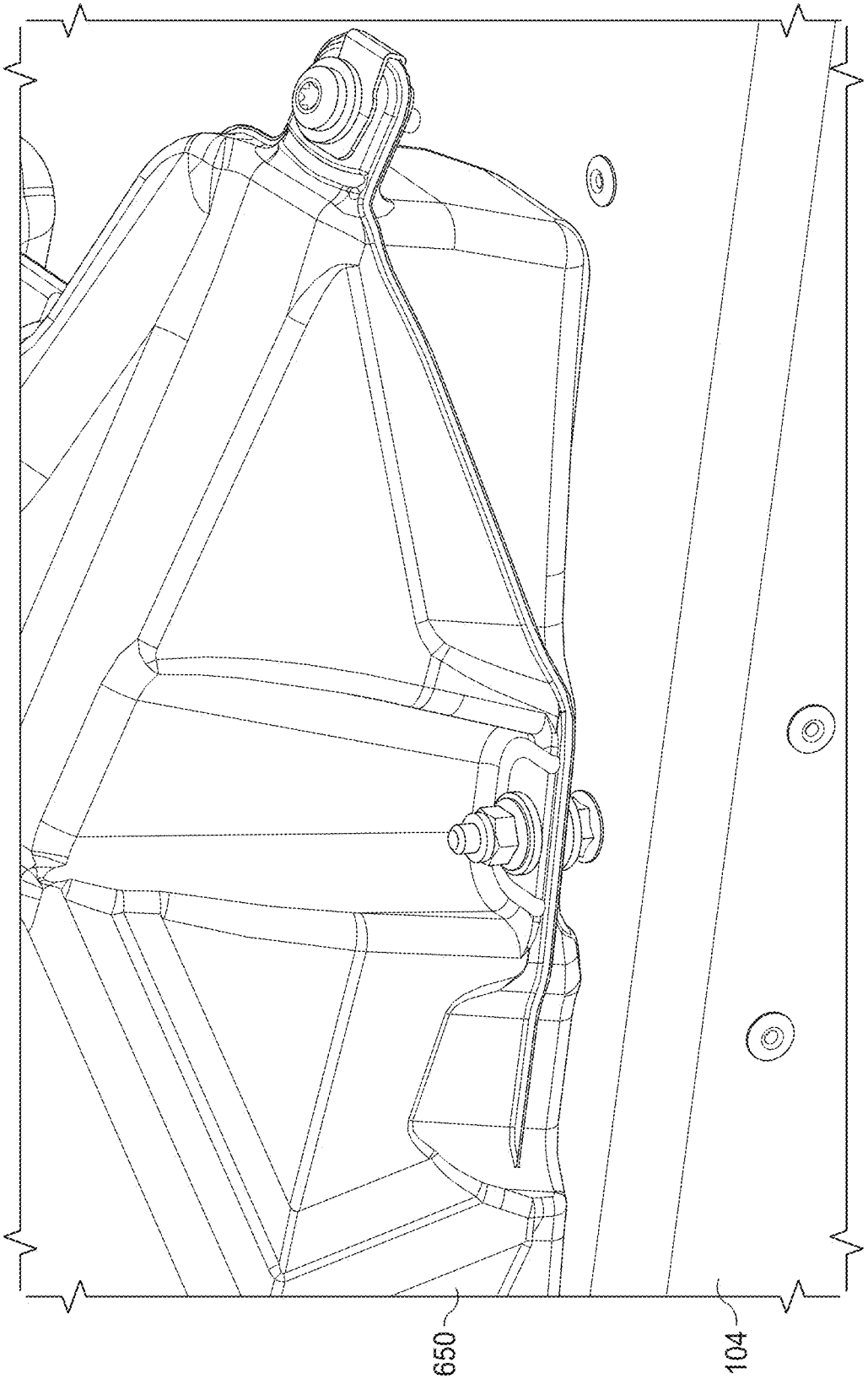

FIG. 68

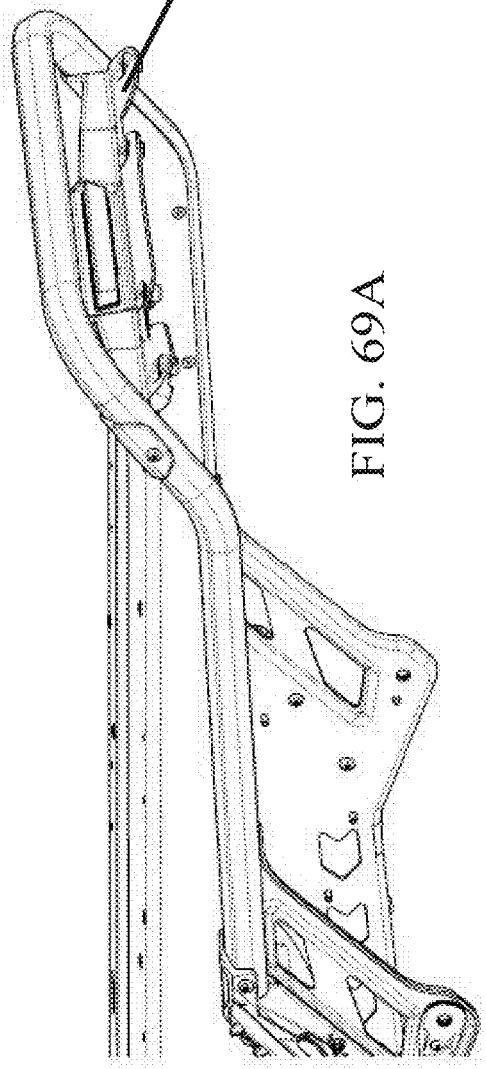

FIG. 69A

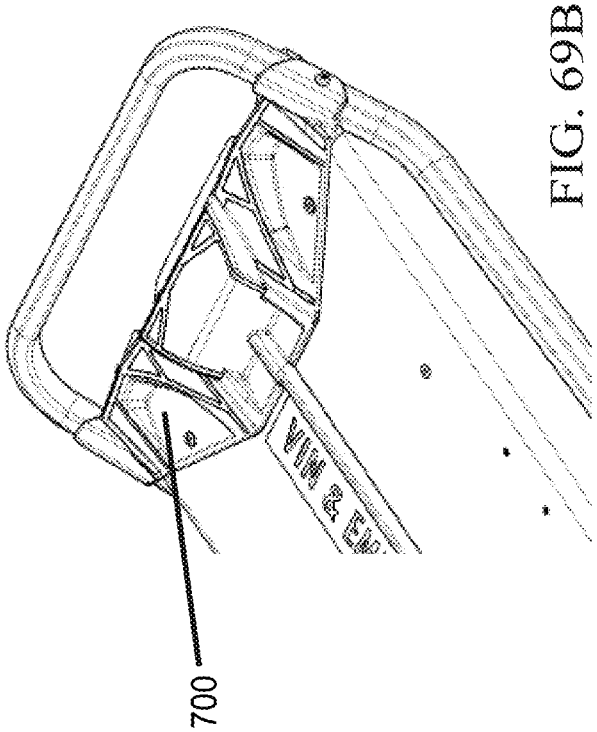

FIG. 69B

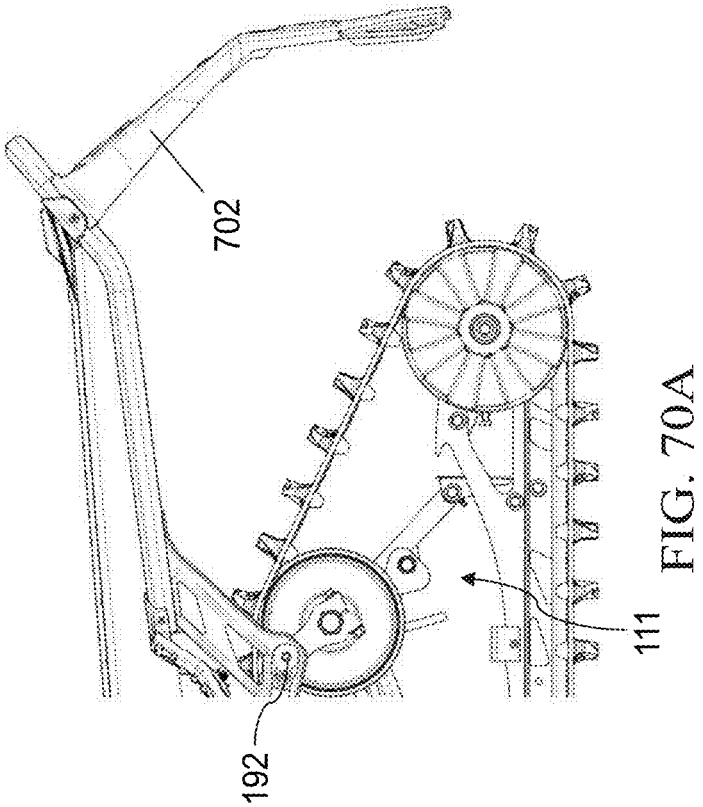

FIG. 70A

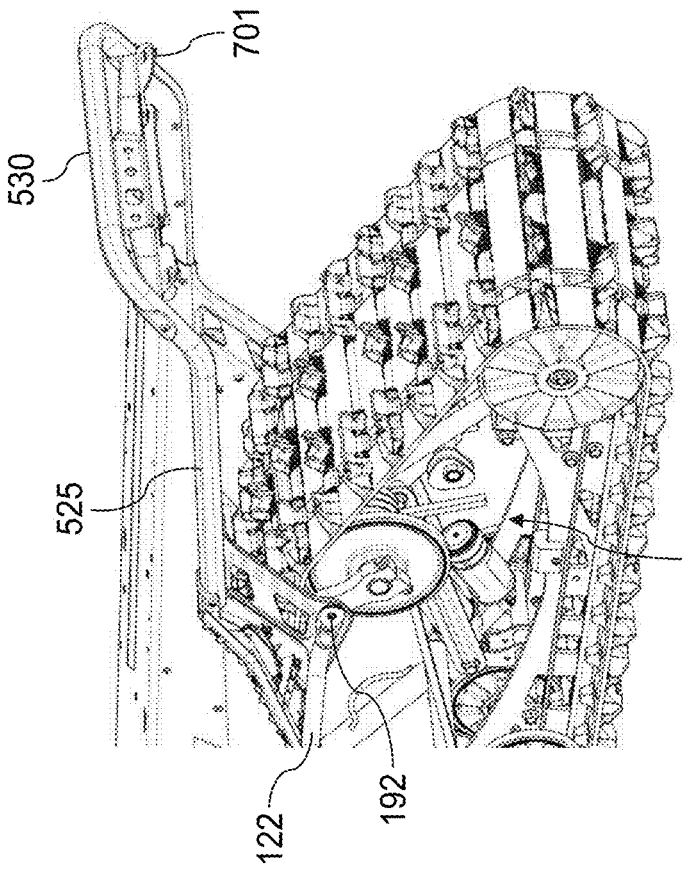

FIG. 70B

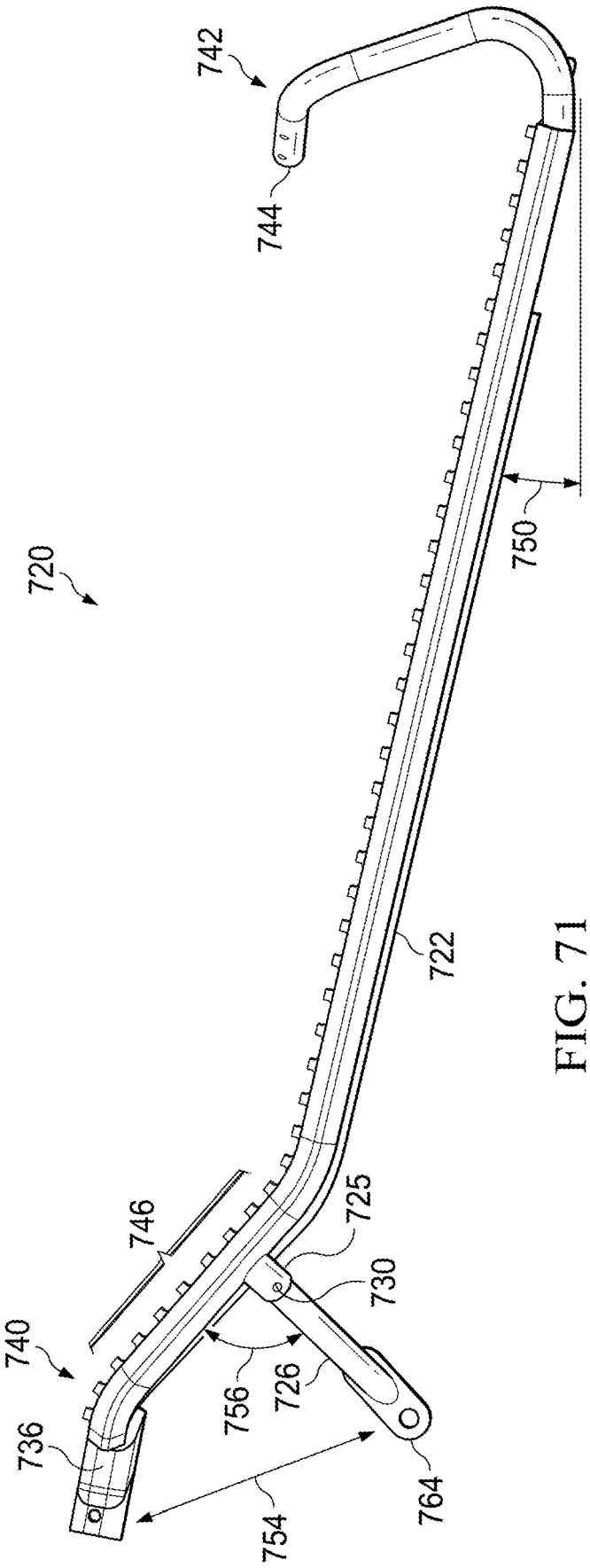

FIG. 71

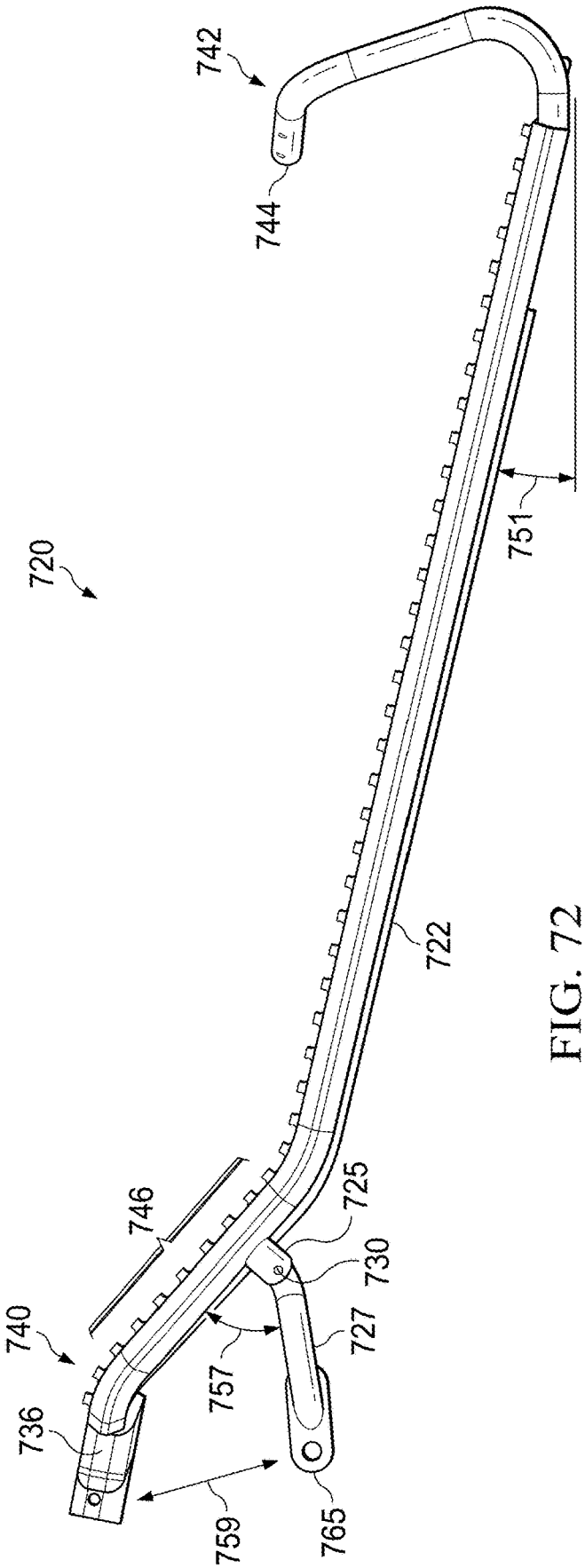

FIG. 72

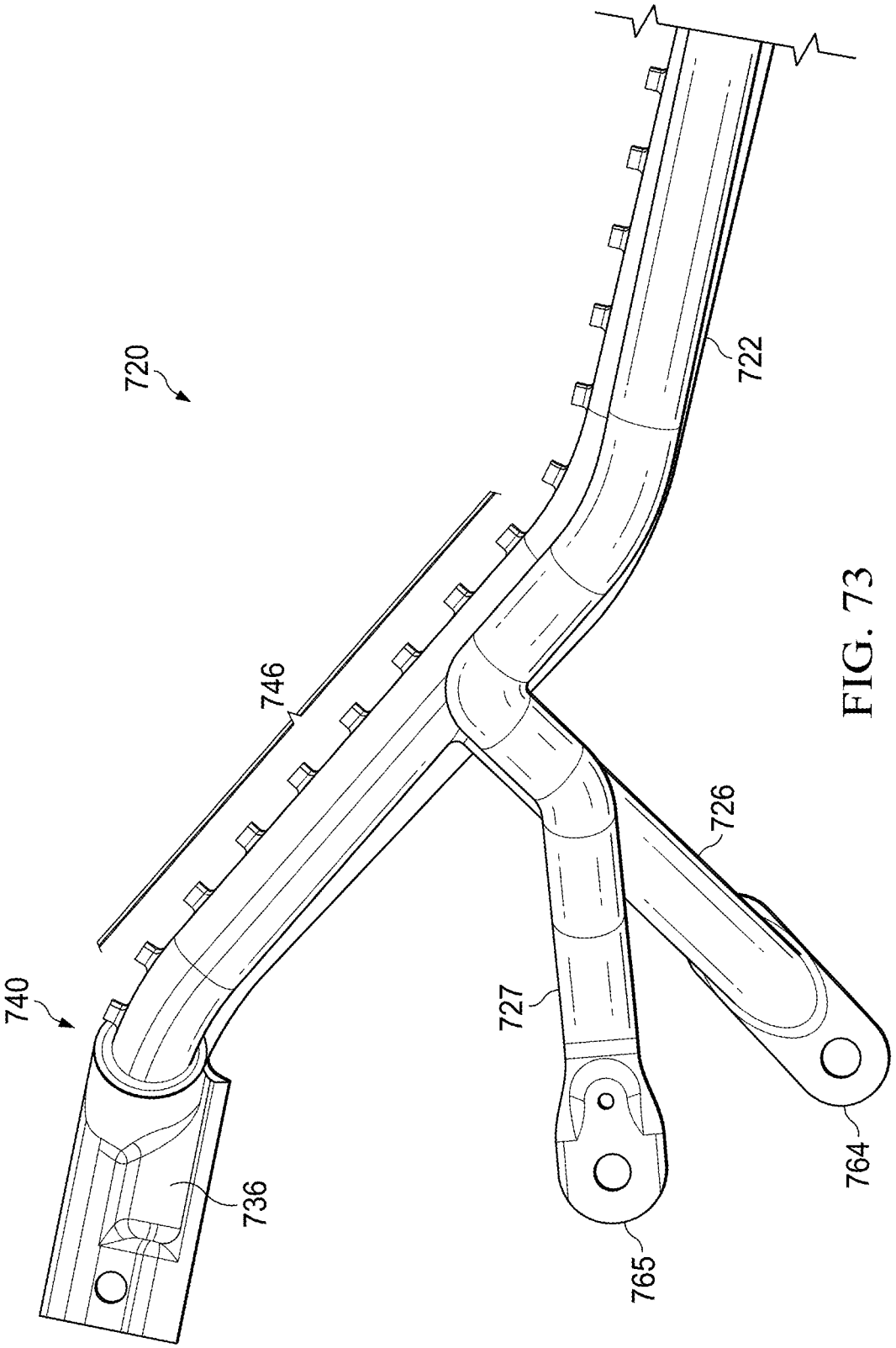

FIG. 73

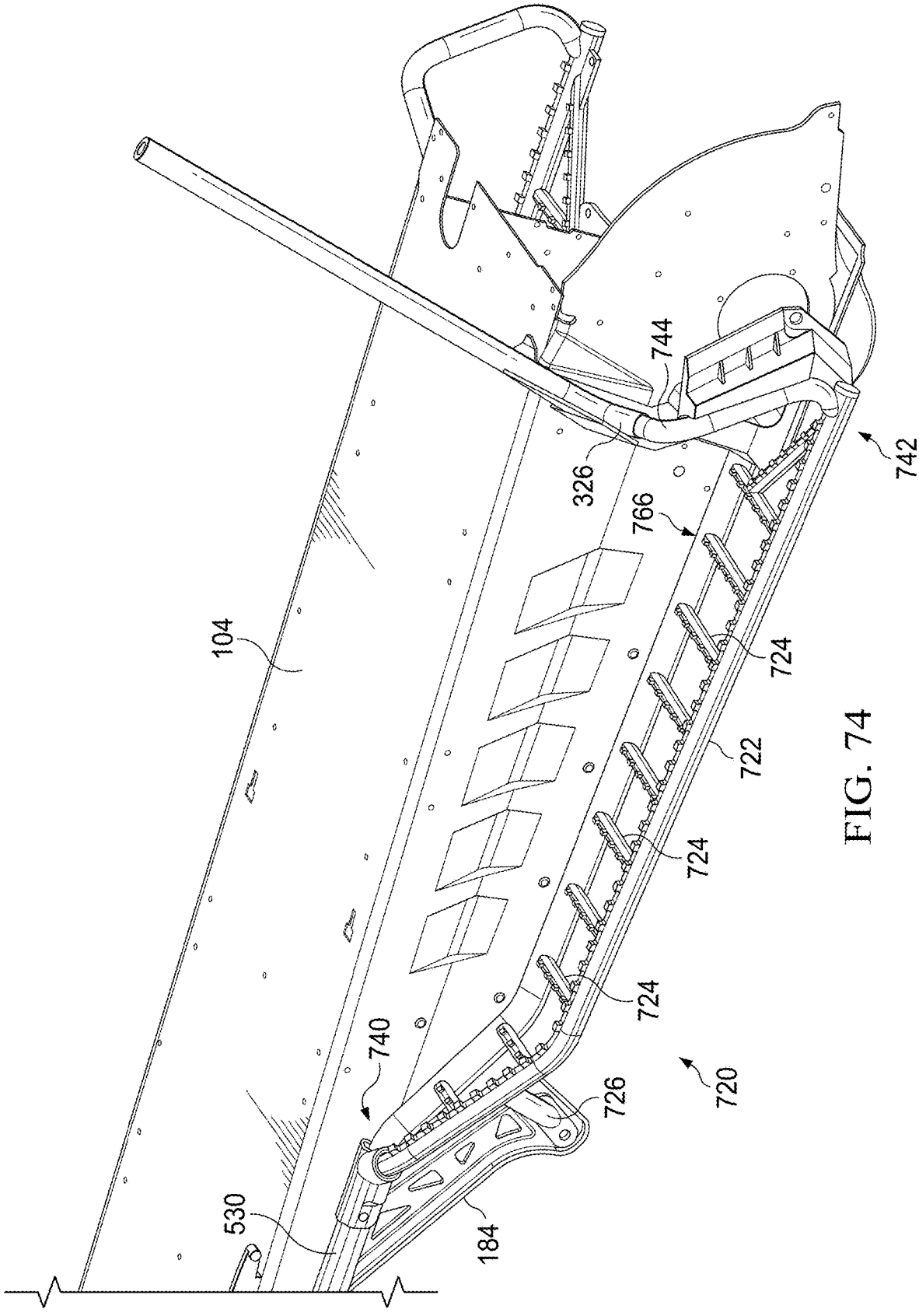

FIG. 74

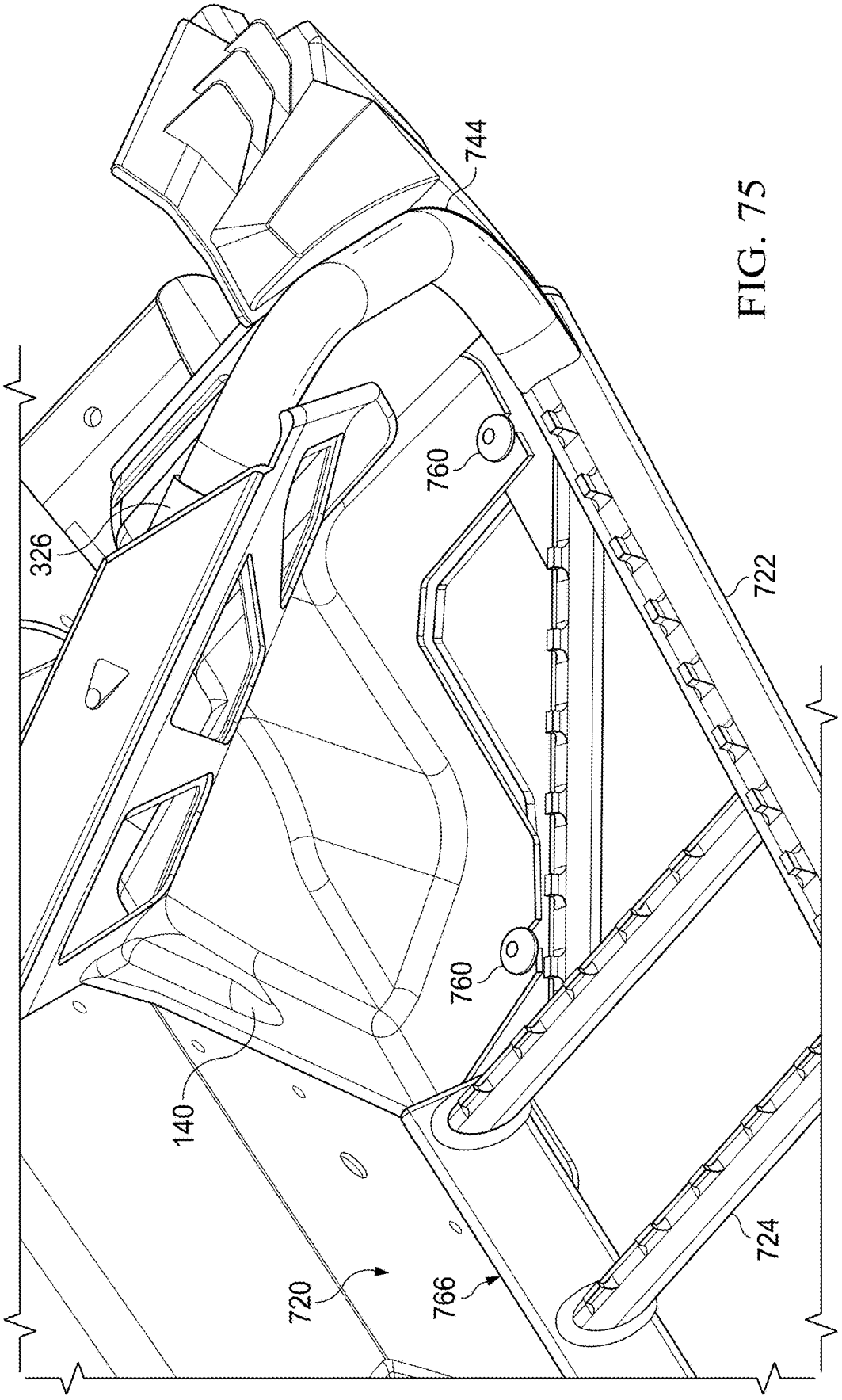

FIG. 75

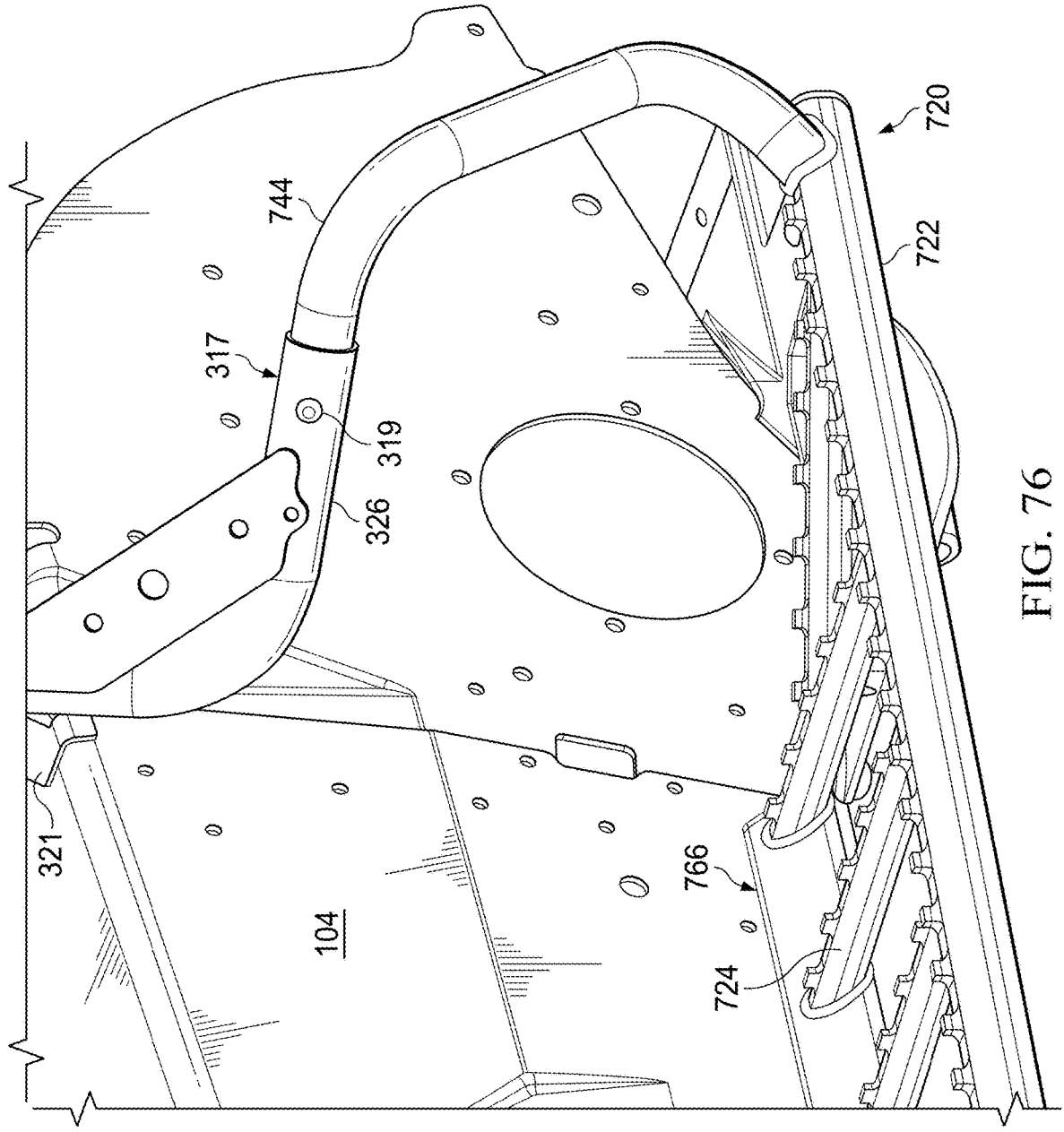

FIG. 76

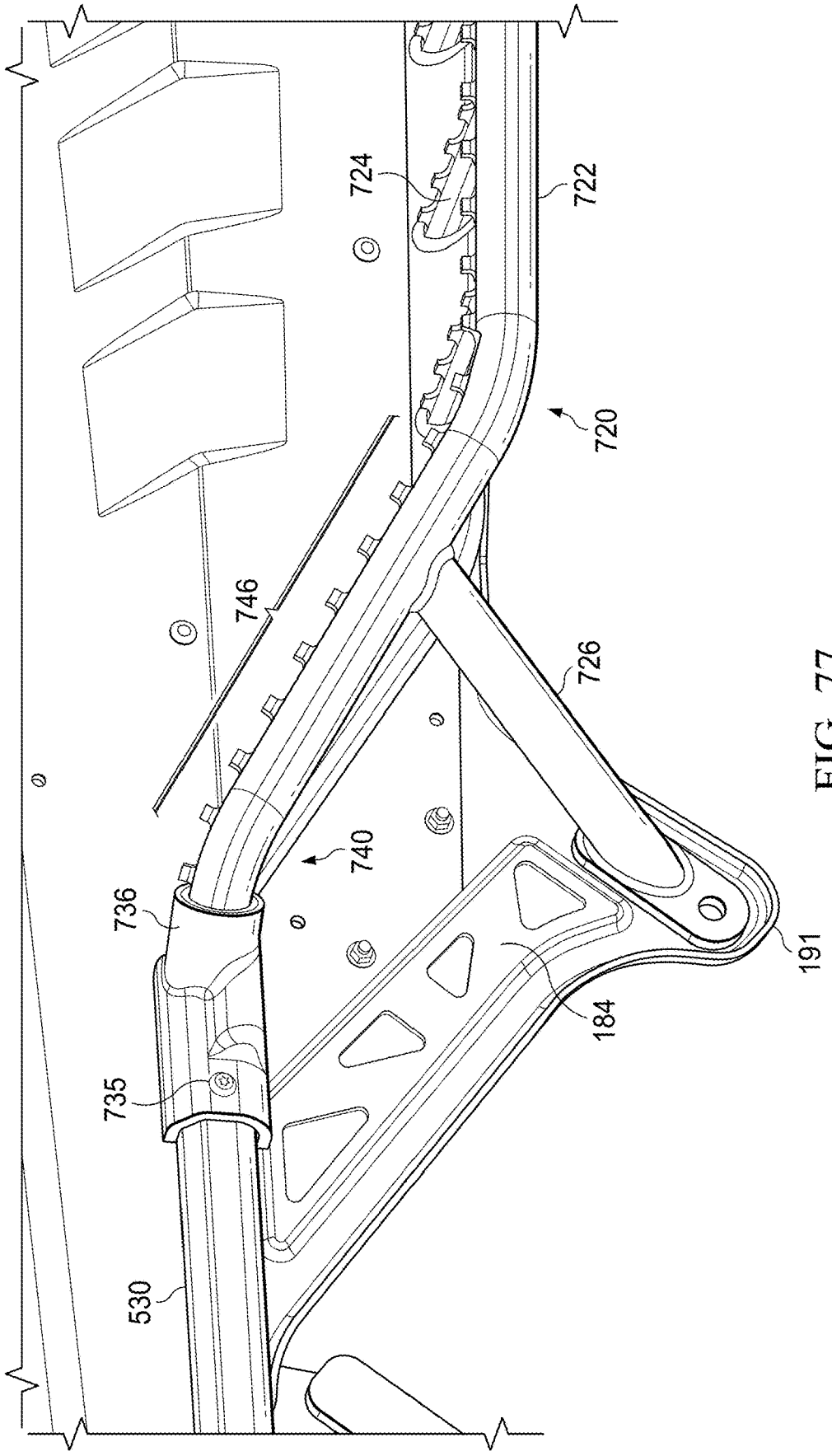

FIG. 77

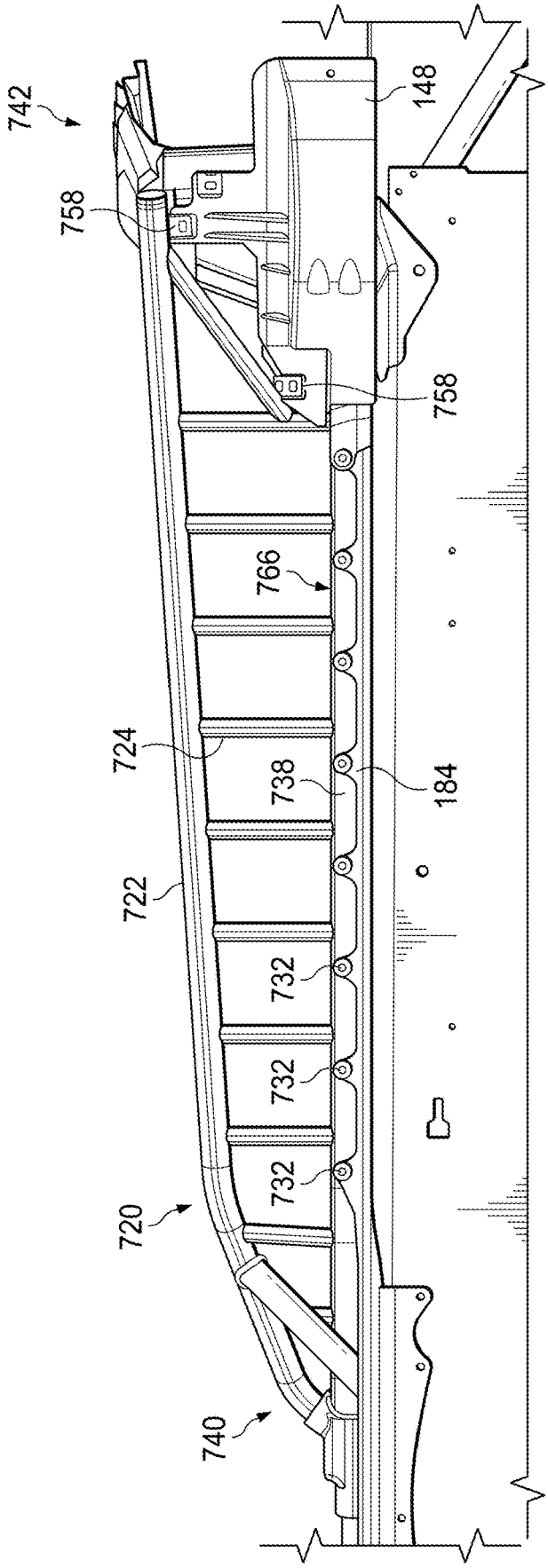

FIG. 78

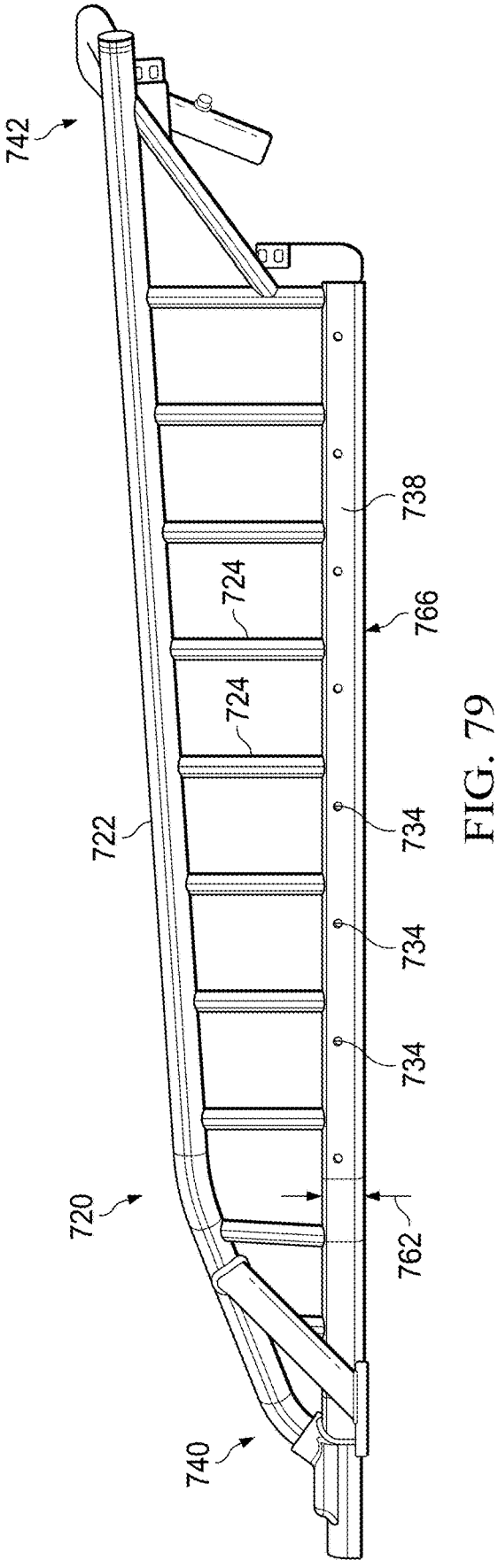

FIG. 79

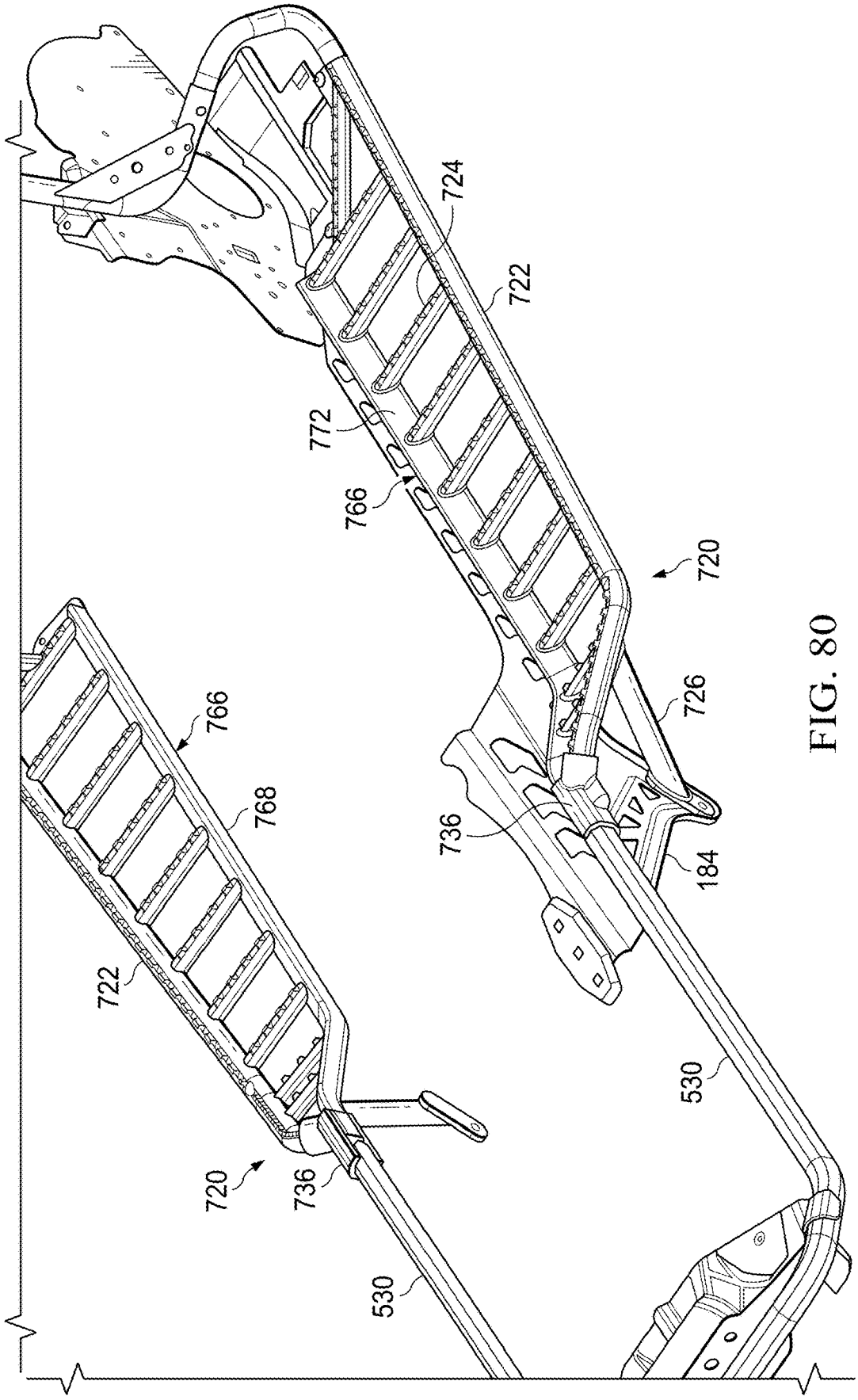

FIG. 80

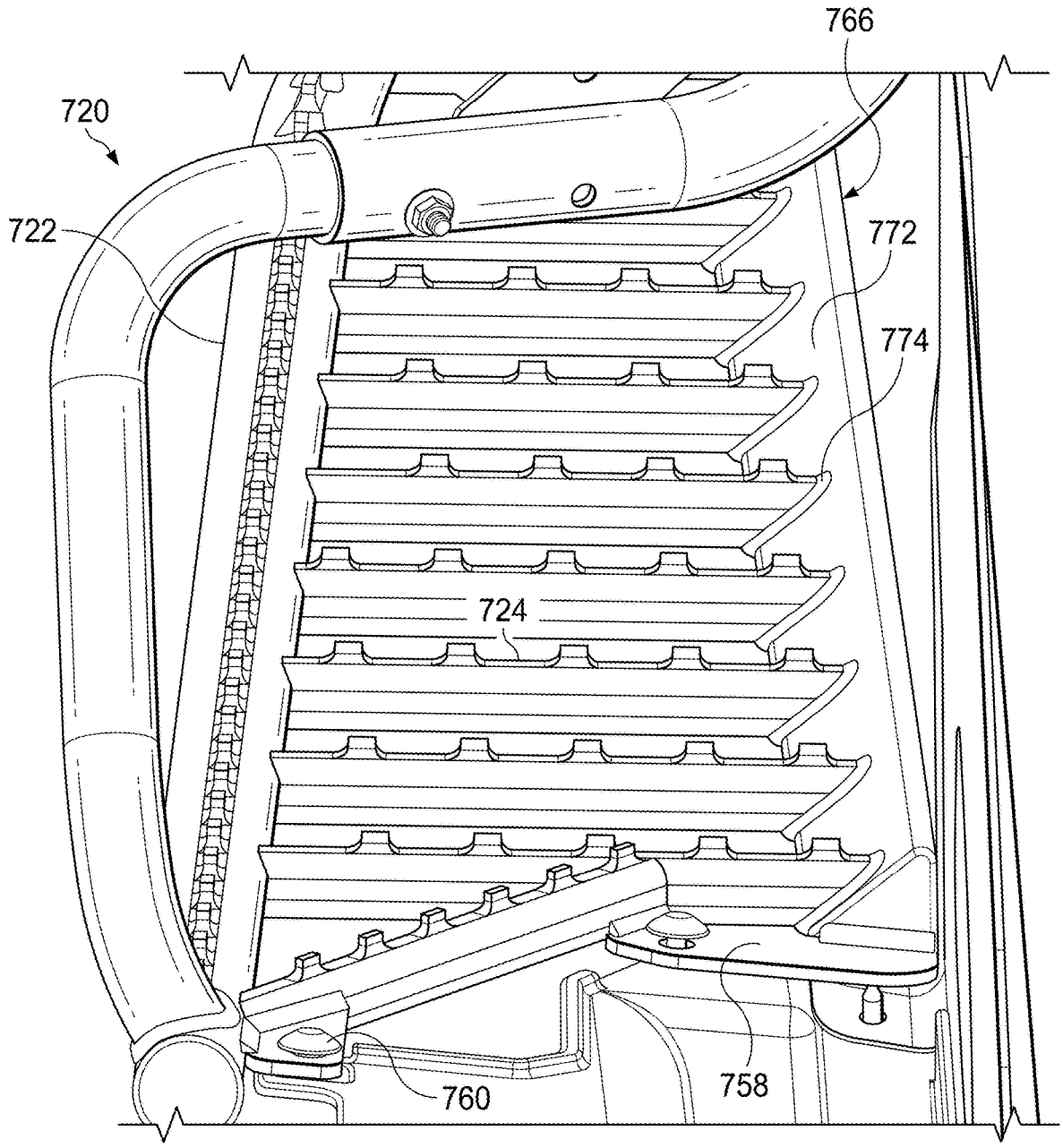

FIG. 81

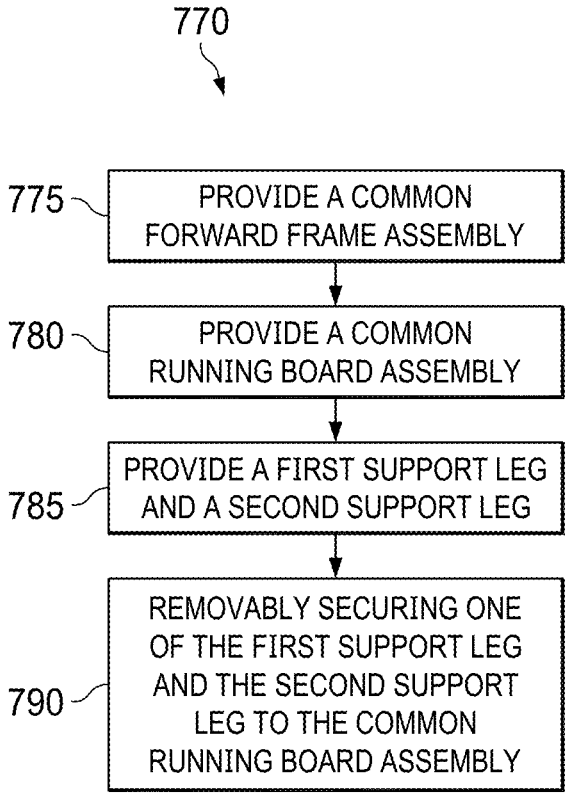
770
775
PROVIDE A COMMON FORWARD FRAME ASSEMBLY
780
PROVIDE A COMMON RUNNING BOARD ASSEMBLY
785
PROVIDE A FIRST SUPPORT LEG AND A SECOND SUPPORT LEG
790
REMOVABLY SECURING ONE OF THE FIRST SUPPORT LEG AND THE SECOND SUPPORT LEG TO THE COMMON RUNNING BOARD ASSEMBLY

FIG. 82

RUNNING BOARD SUPPORT MEMBER

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is related to commonly-owned U.S. Provisional Application No. 63/310,264, filed on Feb. 15, 2022 and entitled "Accessory Attachment System", U.S. Provisional Application No. 63/310,254, filed on Feb. 15, 2022 and entitled "Recreational Vehicle Spindle", U.S. Provisional Application No. 63/310,276, filed on Feb. 15, 2022 and entitled "Spindle for Recreational Vehicle", U.S. Provisional Application No. 63/310,232, filed on Feb. 15, 2022 and entitled "Headlight Assembly", U.S. Provisional Application No. 63/310,951, filed on Feb. 16, 2022 and entitled "Clutch Guard with Integrated Torque Control Link", U.S. Provisional Application No. 63/310,983, filed on Feb. 16, 2022 and entitled "Composite Running Board", U.S. Provisional Application No. 63/310,994, filed on Feb. 16, 2022 and entitled "Two-Stroke Engine", U.S. Provisional Application No. 63/342,447, filed on May 16, 2022 and entitled "Off-Road Vehicle", U.S. Provisional Application No. 63/344,165, filed on May 20, 2022 and entitled "Snowmobile Frame", U.S. Provisional Application No. 63/350,553, filed on Jun. 9, 2022 and entitled "Snowmobile with Seat and Gas Tank Assembly", U.S. Provisional Application No. 63/400,056, filed on Aug. 23, 2022 and entitled "Taillight Housing, Snow Flap and Assembly Thereof", U.S. Provisional Application No. 63/402,768, filed on Aug. 31, 2022 and entitled "Snow Vehicle Heat Exchanger Shield", U.S. Provisional Application No. 63/404,171, filed on Sep. 6, 2022 and entitled "Bumper Mount for a Snowmobile", U.S. Provisional Application No. 63/404,167, filed on Sep. 6, 2022 and entitled "Intake, Airbox, and Storage Assembly for Snowmobile", U.S. Provisional Application No. 63/404,856, filed on Sep. 8, 2022 and entitled "Recreational Vehicle Spindle", U.S. Provisional Application No. 63/404,841, filed on Sep. 8, 2022 and entitled "Spindle for a Recreational Vehicle", U.S. Provisional Application No. 63/404,655, filed on Sep. 8, 2022 and entitled "Snowmobile with Seat Assembly", U.S. Provisional Application No. 63/404,682, filed on Sep. 8, 2022 and entitled "Snowmobile with Seat Assembly", U.S. Provisional Application No. 63/404,822, filed on Sep. 8, 2022 and entitled "Recoil Housing, Engine Assembly, and Method of Assembling Engine Assembly", U.S. Provisional Application No. 63/404,617, filed on Sep. 8, 2022 and entitled "Recreational Vehicle Running Board", U.S. Provisional Application No. 63/404,731, filed on Sep. 8, 2022 and entitled "Muffler Assembly, Snow Vehicle Including a Muffler Assembly, Snow Vehicle Including Electronic Power Steering, and Methods of Assembling Thereof", U.S. Provisional Application No. 63/405,121, filed on Sep. 9, 2022 and entitled "Snowmobile Drive Shaft", U.S. Provisional Application No. 63/405,033, filed on Sep. 9, 2022 and entitled "Recreational Vehicle Toe Stop, Toe Stop Assemblies, and Methods of Assembling a Recreational Vehicle", U.S. Provisional Application No. 63/405,016, filed on Sep. 9, 2022 and entitled "Skid Plate, Secondary Skid Plate, and Track Drive Protector for a Recreational Vehicle", U.S. Provisional Application No. 63/405,176, filed on Sep. 9, 2022 and entitled "Recreational Vehicle Heat Exchanger End Caps and Assembly", U.S. Provisional Application No. 63/404,992, filed on Sep. 9, 2022 and entitled "Recreational Vehicle Bottom-Out Protector and Assemblies Thereof", and U.S. Provisional Application No. 63/434,382 filed on Dec. 21, 2022 and entitled "Skid Plate, Secondary Skid Plate, and Track Drive Protector for a Recreational Vehicle", and which applications are hereby incorporated by reference in their entirety.

[0002] A claim of priority is made to commonly-owned U.S. Provisional Application No. 63/404,617, filed on Sep. 8, 2022 and entitled "Recreational Vehicle Running Board".

BACKGROUND

[0003] Snowmobiles are popular land vehicles used as transportation vehicles or as recreational vehicles in cold and snowy conditions. Generally, snowmobiles are available for various applications such as deep snow, high performance, luxury touring, and trail riding, for example. In general, a snowmobile has a chassis on or around which the various components of the snowmobile are assembled. Typical snowmobiles include one or more skis for steering, a seat, handlebars, and an endless track for propulsion mounted to a central chassis. The engine drives a ground-engaging endless track disposed in a longitudinally extending drive tunnel. One or more skis serve to facilitate steering as well as to provide flotation of the front of the snowmobile over the snow in which it is operated. A handlebar assembly, positioned forward of the seat, is operatively linked to the skis for steering the snowmobile. The skis may be pivoted to steer the snowmobile, for example, by turning the handlebars. The snowmobile also includes a footrest for the rider while riding.

SUMMARY

[0004] According to one or more aspects of the present disclosure, a running board assembly for a snow vehicle includes a support member positioned outboard from a tunnel of the snow vehicle. The support member includes a first end, a second end, and an attachment element located intermediate of the first end and the second end. One or more foot support members is disposed inboard from the support member. A support leg is removably securable to the attachment element of the support member. The support leg includes a mounting feature securable to a rear suspension component disposed below an upper surface of a drive track.

[0005] According to some embodiments, a snow vehicle includes a tunnel including a top panel and a side panel extending downward therefrom. A drive track is operably positioned in the tunnel. A forward frame assembly includes a tubular leg extending outboard past the side panel of the tunnel. A rear suspension component is positioned in the tunnel. A support member is spaced apart from and extends along the side panel of the tunnel. The support member includes a first end and a second end. The first end is securable to the tubular leg of the forward frame assembly and the second end is securable to a second attachment feature. A support leg extends downward and inboard from an outboard edge of the support member. The support leg includes a mounting feature at a distal end. A rear bumper is disposed along the side panel of the tunnel. The second attachment feature is removably securable to the rear bumper. A bracket is positionable along an inboard surface of the side panel of the tunnel. The bracket includes a rearward mounting point securable to the mounting feature of the support leg and the rear suspension component.

[0006] According to some embodiments, a method of assembling two snowmobiles with a common running board

assembly includes providing a common forward frame assembly. The common forward frame assembly includes a running board mounting feature. The common running board assembly is provided. The common running board assembly includes a support member having a first end and a second end. An inboard tubular member is positioned along a tunnel of the snowmobile. The common running board assembly further includes an attachment element and a plurality of foot support members extending from the support member to the inboard tubular member. A first support leg and a second support leg are provided. One of the first support leg and the second support leg are removably secured to the attachment element of the common running board assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] This written disclosure describes illustrative embodiments that are non-limiting and non-exhaustive. Reference is made to illustrative embodiments that are depicted in the figures, in which:

[0008] FIG. **1** illustrates a side view of a first snowmobile, according to some embodiments.

[0009] FIG. **2** illustrates a perspective of the snowmobile of FIG. **1**, according to some embodiments.

[0010] FIG. **3** illustrates a top view of the snowmobile of FIG. **1**, according to some embodiments.

[0011] FIG. **4** illustrates a front view of the snowmobile of FIG. **1**, according to some embodiments.

[0012] FIG. **5** illustrates a right side view of the snowmobile of FIG. **1** with portions of the engine cover removed, according to some embodiments.

[0013] FIG. **6** illustrates a right side perspective view of the snowmobile of FIG. **1** with portions of the engine cover removed, according to some embodiments.

[0014] FIG. **7** illustrates a top view of the snowmobile of FIG. **1** with portions of the engine cover removed, according to some embodiments.

[0015] FIG. **8** illustrates a right side view of a second snowmobile with portions of the engine cover removed, according to some embodiments.

[0016] FIG. **9** illustrates a right side perspective view of the snowmobile of FIG. **8** with portions of the engine cover removed, according to some embodiments.

[0017] FIG. **10** illustrates a top view of the snowmobile of FIG. **10** with portions of the engine cover removed, according to some embodiments.

[0018] FIG. **11** illustrates a perspective top view of the snowmobile chassis having a running board assembly connected thereto, according to some embodiments.

[0019] FIG. **12** illustrates an exploded top view of the running board assembly of FIG. **11**, according to some embodiments.

[0020] FIG. **13** illustrates an exploded bottom view of the running board assembly of FIG. **11**, according to some embodiments.

[0021] FIG. **14** illustrates an alternative perspective top view of the snowmobile chassis having the running board assembly attached to the tunnel, according to some embodiments.

[0022] FIG. **15**A illustrates an isolated top view of the running board assembly, according to some embodiments.

[0023] FIG. **15**B illustrates an isolated side view of the running board assembly, according to some embodiments.

[0024] FIG. **15**C illustrates an isolated bottom view of the running board assembly, according to some embodiments.

[0025] FIG. **16** illustrate a cross section view of the running board assembly from line **16-16** in FIG. **15**B, according to some embodiments.

[0026] FIG. **17**A illustrates an exploded side view of the running board assembly, according to some embodiments.

[0027] FIG. **17**B illustrates an isometric side view of the rear kick up assembly, according to some embodiments.

[0028] FIG. **18** illustrates a close up bottom view of the running board assembly, according to some embodiments.

[0029] FIG. **19** illustrates a bottom view of a foot support member of the running board assembly, according to some embodiments.

[0030] FIG. **20** illustrates a view of the forward end the foot support member of the running board assembly, according to some embodiments.

[0031] FIG. **21**A illustrates a top view of the foot support member and a rear kick-up panel of the running board assembly, according to some embodiments.

[0032] FIG. **21**B illustrates a bottom view of the foot support member and the rear kick-up panel of the running board assembly, according to some embodiments.

[0033] FIG. **22** illustrates a close-up bottom perspective view of a front end of the foot support member and support member of the running board assembly, according to some embodiments.

[0034] FIG. **23**A illustrates a close-up bottom view of the foot support member and support member of the running board assembly, according to some embodiments.

[0035] FIG. **23**B illustrates a close-up top view of the foot support member and support member of the running board assembly, according to some embodiments.

[0036] FIG. **24** illustrates another close-up bottom perspective view of the front end of the foot support member and support member of the running board assembly, according to some embodiments.

[0037] FIG. **25**A illustrates a close-up bottom view of the foot support member of the running board assembly, according to some embodiments.

[0038] FIG. **25**B illustrates a close-up top view of the foot support member of the running board assembly, according to some embodiments.

[0039] FIG. **26** illustrates an inboard view of a front toe stop of the running board assembly, according to some embodiments.

[0040] FIG. **27**A illustrates a top perspective view of the front toe stop, the foot support member, and the support member of the running board assembly, with the tunnel and a portion of the forward frame assembly not shown for illustrative purposes, according to some embodiments.

[0041] FIG. **27**B illustrates a bottom perspective view of the front toe stop, the foot support member, and the support member of the running board assembly, with the tunnel and a portion of the forward frame assembly not shown for illustrative purposes, according to some embodiments.

[0042] FIG. **28** illustrates a front perspective view of the front toe stop, the foot support member, the support member of the running board assembly, and bottom-out protector, with a belt housing assembly in a first position associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0043] FIG. **29** illustrates an alternative front perspective view of the front toe stop, the foot support member, the

support member of the running board assembly, and bottom-out protector, with the belt housing assembly in a second position associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0044] FIG. **30** illustrates a side view of the assembly of FIG. **29**, according to some embodiments.

[0045] FIG. **31** illustrates a top view of the assembly of FIG. **29**, according to some embodiments.

[0046] FIG. **32** illustrates a rear view of the rear kick-up panel of the running board assembly, according to some embodiments.

[0047] FIG. **33** illustrates a bottom view of the rear kick-up panel of the running board assembly, according to some embodiments.

[0048] FIG. **34**A illustrates a bottom view of the foot support member and the rear kick-up panel of the running board assembly in a first position associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0049] FIG. **34**B illustrates a top view of the foot support member and the rear kick-up panel of the running board assembly of FIG. **34**A, according to some embodiments.

[0050] FIG. **35**A illustrates a bottom view of the foot support member, the support member, and the rear kick-up panel of the running board assembly in a first position associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0051] FIG. **35**B illustrates a top view of the assembly of FIG. **35**A, according to some embodiments.

[0052] FIG. **35**C illustrates a bottom view of a foot support member in a second position associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0053] FIG. **36** illustrates a side view of the foot support member, the support member, and the rear kick-up panel of the running board assembly, according to some embodiments.

[0054] FIG. **37**A illustrates a top view of a support bracket for the running board assembly associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0055] FIG. **37**B illustrates a side view of the support bracket of FIG. **37**A, according to some embodiments.

[0056] FIG. **37**C illustrates a top view of a support bracket for the running board assembly associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0057] FIG. **37**D illustrates a side view of the support bracket of FIG. **37**C, according to some embodiments.

[0058] FIG. **38** illustrates an end view of the support bracket of FIG. **37**A, according to some embodiments.

[0059] FIG. **39** is a flowchart for a method of assembling a snowmobile, according to some embodiments.

[0060] FIG. **40**A illustrates a perspective view of a snowmobile including a forward frame assembly, a heat exchanger assembly, and a tunnel, according to some embodiments.

[0061] FIG. **40**B illustrates an exploded view of the snowmobile of FIG. **40**A, according to some embodiments.

[0062] FIG. **40**C illustrates a side view of the tunnel of FIG. **40**A with the support bracket and support tube removed for viewing purposes, according to some embodiments.

[0063] FIG. **41**A illustrates an engine being inserted into a forward frame assembly, according to some embodiments.

[0064] FIG. **41**B illustrates right rear perspective view of a snowmobile forward frame assembly, according to some embodiments.

[0065] FIG. **41**C illustrates left front perspective view of the snowmobile forward frame assembly, according to some embodiments.

[0066] FIG. **42**A illustrates a right side view of the forward frame assembly with a belt housing assembly in a first position associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0067] FIG. **42**B illustrates a left side view of the forward frame assembly of FIG. **42**A with a track drive shaft in a first position associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0068] FIG. **42**C illustrates a right side view of the forward frame assembly with the belt housing assembly in a second position associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0069] FIG. **42**D illustrates a left side view of the forward frame assembly of FIG. **42**C with a track drive shaft in a second position associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0070] FIG. **43** illustrates a schematic rear view of the tunnel, the support bracket, and the foot support member, according to some embodiments.

[0071] FIG. **44** illustrates a bottom view of the foot support member, the support member, and the rear kick-up panel of the running board assembly installed on the snowmobile in a first position associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0072] FIG. **45** illustrates a close-up bottom view of the foot support member and the support member of FIG. **44**, according to some embodiments.

[0073] FIG. **46** illustrates a side view of a forward frame assembly with a steering column and suspension components associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0074] FIG. **47** illustrates a side view of the forward frame assembly with a steering column and suspension components associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0075] FIG. **48** illustrates a front view of the assembly of FIG. **46**, according to some embodiments.

[0076] FIG. **49** illustrates a front view of the assembly of FIG. **47**, according to some embodiments.

[0077] FIG. **50**A illustrates a side view of the steering column assembly of FIG. **46**, according to some embodiments.

[0078] FIG. **50**B illustrates a front view of the steering column assembly of FIG. **50**A, according to some embodiments.

[0079] FIG. **51**A illustrates a side view of the steering column assembly of FIG. **47**, according to some embodiments.

[0080] FIG. **51**B illustrates a front view of the steering column assembly of FIG. **51**A, according to some embodiments.

[0081] FIG. **52**A illustrates a side view of the steering column assembly of FIG. **50**A superimposed with the steering column assembly of FIG. **51**A, according to some embodiments.

[0082] FIG. **52**B illustrates a front view of the steering column assembly of FIG. **50**B superimposed with the steering column assembly of FIG. **51**B, according to some embodiments.

[0083] FIG. **53** illustrates a top-down view of the forward frame assembly, suspension, and engine components associated with the second snowmobile of FIG. **8**, according to some embodiments.

[0084] FIG. **54** illustrates a top-down view of the forward frame assembly, suspension, and engine components associated with the first snowmobile of FIG. **1**, according to some embodiments.

[0085] FIG. **55** illustrates a top-down view of a forward frame assembly with steering column bracket, according to some embodiments.

[0086] FIG. **56**A illustrates a top perspective view of a steering column bracket, according to some embodiments.

[0087] FIG. **56**B illustrates a side perspective view of the steering column bracket of FIG. **56**A, according to some embodiment.

[0088] FIG. **56**C illustrates a rear perspective view of the steering column bracket of FIG. **56**A, according to some embodiment

[0089] FIG. **57** illustrates a bottom perspective view of an assembly comprising a toe stop, bottom-out protector, running board components, and a body panel, according to some embodiments.

[0090] FIG. **58** illustrates a perspective view of a forward frame assembly with the support member associated with the first snowmobile of FIG. **1** superimposed with the support member associated with the second snowmobile of FIG. **8** to illustrate the common connection with the forward frame assembly for each support member.

[0091] FIG. **59** illustrates an isometric view of a seat assembly including a fuel tank, a rear panel, and seat frame, according to some embodiments.

[0092] FIG. **60** illustrates an isometric view of the seat assembly of FIG. **59** with the seat frame removed, according to some embodiments.

[0093] FIG. **61** illustrates a rear view of the rear panel of the seat assembly of FIG. **59**, according to some embodiments.

[0094] FIG. **62** illustrates a bottom isometric view of the rear panel and the fuel tank of the seat assembly of FIG. **59**, according to some embodiments.

[0095] FIG. **63** illustrates a top view of the fuel tank of the seat assembly of FIG. **59**, according to some embodiments.

[0096] FIG. **64** illustrates a bottom view of the fuel tank and the rear panel of the seat assembly of FIG. **59**, according to some embodiments.

[0097] FIG. **65** illustrates a right side cross-sectional view of the fuel tank, the tunnel, the heat exchanger assembly, and the forward frame assembly, according to some embodiments.

[0098] FIG. **66** illustrates a perspective top view of the fuel tank, toe stop, and running board components configured for the first snowmobile of FIG. **1**, according to some embodiments.

[0099] FIG. **67** illustrates an isometric view of the seat assembly, according to some embodiments.

[0100] FIG. **68** illustrates an isometric view of the fuel tank of the seat assembly secured to the tunnel, according to some embodiments.

[0101] FIG. **69**A illustrates an isometric view of a structural composite taillight housing, according to some embodiments.

[0102] FIG. **69**B illustrates an isometric view of the structural composite taillight housing of FIG. **69**A, according to some embodiments.

[0103] FIG. **70**A illustrates a left side view of a snowmobile with a snow flap secured to the structural composite taillight housing of FIG. **69**A, according to some embodiments.

[0104] FIG. **70**B illustrates an isometric view of a structural composite taillight housing of FIG. **69**A with a mounting point, according to some embodiments.

[0105] FIG. **71** illustrates a side view of a running board assembly including a support leg, according to some embodiments.

[0106] FIG. **72** illustrates a side view of a running board assembly including a second support leg, according to some embodiments.

[0107] FIG. **73** illustrates a side view of running board assembly including a support leg overlayed with a second support leg, according to some embodiments.

[0108] FIG. **74** illustrates an isometric view of a running board assembly secured to a frame and tunnel of a snow vehicle, according to some embodiments.

[0109] FIG. **75** illustrates an isometric view of a running board assembly secured to a toe stop and a bottom out protector, according to some embodiments.

[0110] FIG. **76** illustrates an isometric view of a running board assembly secured to a frame and tunnel of a snow vehicle, according to some embodiments.

[0111] FIG. **77** illustrates an isometric side view of a running board assembly secured to a rear bumper and tunnel of a snow vehicle, according to some embodiments.

[0112] FIG. **78** illustrates a bottom view of a running board assembly secured to a running board support bracket, according to some embodiments.

[0113] FIG. **79** illustrates a bottom view of a running board assembly, according to some embodiments.

[0114] FIG. **80** illustrates an isometric view of a running board assembly secured to a forward frame and rear bumper, according to some embodiments.

[0115] FIG. **81** illustrates a front view of a running board assembly secured to a tunnel of a snow vehicle, according to some embodiments.

[0116] FIG. **82** illustrates a flow chart of a method of assembling two snowmobiles with a common running board assembly, according to some embodiments.

DETAILED DESCRIPTION

[0117] Embodiments of the present disclosure describe one or more components of a running board assembly, a toe stop, a bottom-out protector, and an accessory skid plate assembly, and combinations thereof, that can be removably secured to one or more vehicles, such as snowmobiles **100**. The snowmobiles **100** are generally shown in FIGS. **1-10** and may include a chassis **102**, a tunnel **104**, a motor or engine **106** (hereinafter referred to as "the engine **106**") attached to the chassis **102** and disposed within an engine bay **108**, a drive track **110** disposed within the tunnel **104**, and a drivetrain **112** configured to provide motive power from the engine **106** to the drive track **110**. The snowmobile **100** further includes one or more skis **114** operably connected to handlebars **116** that are used to turn the snowmobile **100** and a seat **118** for the snowmobile driver/passenger.

[0118] As shown in FIGS. **11-26**B, a running board assembly **120** may include a support member **122** and a running

board or foot support member **124** (hereinafter referred to as "the foot support member **124**"). The support member **122** may be a tube, may be hollow, and may be comprised of a metal, a metal alloy, a polymeric material, or a fiber reinforced polymer composite. In a non-limiting example, the support member **122** is a steel tube. The rearward end of the support member **122** is removably securable to the tunnel **104**, or to a support bracket **184** that is secured to an interior surface of a side panel **182** of the tunnel **104** by a first plurality of screws or threaded fasteners **126**. As shown in FIGS. **8** and **11**, the rearward end of the support member **122** may extend downwardly from an outboard side **127** of the foot support member **124** and inward to where it is removably attached to a rearward portion **191** of the support bracket **184** that extends below the adjacent portion of the tunnel side panel **182**. As shown in FIGS. **5**, **8**, **70**A and **70**B, the rearward portion **191** may also provide a common mounting point for a rear suspension component **192** positioned in or below the tunnel **104**. In a non-limiting example, a fastener **123** may be inserted through an aperture **194** in the support member **122** and an aperture **193** in the rearward portion **191** to secure the support member **122** to an outward facing surface of the rearward portion **191**, and into an aperture in the rear suspension component **192** to secure the rear suspension component **192** to an inward facing surface of the rearward portion **191**. In an illustrative example, the rear suspension component **192** may be an upper horizontal member of a rear idler arm that is connected to a rear arm of a rear suspension on a skid frame assembly, or a component operably coupled thereto. An example of such an upper horizontal member is shown in U.S. Pat. No. 9,771,130, entitled "Snowmobile Skid Frame Assembly", the contents of which are hereby incorporated by reference in its entirety. A forward end **632** of the support member **122** may be removably secured to the snowmobile by, for example, inserting within a tubular rearward leg **326**/**338** of a forward frame **312** and securing the two tubes together with a removable fastener **125** as best shown in FIGS. **28** and **29**. It is also to be understood that the end of the rearward leg **326**/**338** may be inserted in the forward end of the support member **122** to secure the two together. The forward frame **312** may be the forward frame assembly described in U.S. Provisional Patent Application No. 63/344,165 filed on May 20, 2022, and entitled "Snowmobile Frame," the contents of which are incorporated by reference in its entirety. The forward end **632** of the support member **122** extends outward, forward, and downward from the rearward leg **326** and transitions into a rearward extending portion that provides an outboard support platform for the foot support member **124**. This provides a continuous tubular member comprised of the support member **122** and the rearward leg **326**, **338** of the forward frame **312**. The continuous tubular member extends from a steering column mount component **328**, shown in FIGS. **41**B and **41**C, located at the top of the forward frame **312** forward of the tunnel **104** and the track drive shaft **352**. One or more fasteners **123**, **125** provide a removable attachment of the support member **122** to the snowmobile **100** in case the support member **122** needs to be removed or replaced. For example, removal of the fastener **123** allows the support member **122** to be decoupled from the rearward leg **326** or **338**. It is to be understood that the forward end **632** and rearward ends **634** of the support member **122** may be fastened to the tunnel **104**, a support bracket **184**, and/or forward frame **312** by removeable threaded fasteners, fir tree fasteners, clips, etc. The support member **122** may alternatively be formed integrally with the tunnel **104**, the foot support member **124**, and/or the forward frame **312**.

[0119] The foot support member **124** provides a support platform for the rider's feet while mounting and riding the snowmobile **100**. In an illustrative example as shown in FIG. **15**A, a first rail **600** defines an inboard side **128** of the foot support member **124** that is attached to the tunnel **104** or a mounting surface **186** of the support bracket **184** by a second plurality of screws or threaded fasteners **130**. As illustrated in FIGS. **19** and **20**, a second rail **605** of the foot support member **124** defines a channel **131** extending along an outboard side **127** of the foot support member **124** that receives the support member **122** therein. The first rail **600** may be positioned a first distance apart from the second rail **605** at the forward end **622** of the foot support member **124**, and the first rail **600** may intersect or be positioned a second distance apart from the second rail **605** at a rearward end **624** of the foot support member **124**. The second rail **605** may be longer than the first rail **600**. As used herein, inboard may refer to a location or direction closer to the longitudinal centerline of the snowmobile and outboard may refer to a location or direction further from the longitudinal centerline of the snowmobile. As best shown in FIGS. **16**, **19**, **25**A and **25**B, an interior surface of the channel **131** defines a downward facing opening **615** and has a generally semicircular cross section having a radius that is substantially equal to the radius of an outer surface of the support member **122**. The downward facing opening **615** may extend continuously along the length of the channel **131** to allow the support member **122** to be inserted into the channel **131** via the opening **615**. The second rail **605** defines a plurality of retaining members including, but not limited to, flexible curved clips **132** extending from an outer side of the channel **131** toward the downward facing opening **615** of the channel **131**. The retaining members may be integrally formed with the foot support member **124**. A second set of retaining members may be provided, such as clips **133** that are positioned adjacent the cross members **610** and extend from the opposite side of the channel **131** toward the downward facing opening **615** of the channel **131**. The clips **132** and **133** may have a radius substantially equal to that of the channel **131**. The combination of the channel **131** and the clips **132**, and optionally the clips **133**, may have a cross section with a circular sector shape having a measurement greater than 1.02π radians and less than 1.5π radians so that the channel **131** and clips **132** (with or without the clips **133**) wrap around at least 40% of a circumference of the support member **122**, and optionally at least 50% of a circumference of the support member **122**, and optionally between 51% and 75% of a circumference of the support member **122**. The radius of this circular sector is substantially equal to the radius of an outer surface of the support member **122** and is sized so that the flexible clips **132** apply a compressive force to the support member **122** to removably secure the foot support member **124** to the support member **122**. The clips **132** are offset from the clips **133** along the length of the channel **131**. Offsetting the clips **132** and **133** along the length of the channel **131** facilitates insertion and removal of the support member **122** in the channel **131** and maintains the strength of the region of the foot support member **124** forming the channel **131**. The outboard side **127** of the foot support member **124** may be retained to the support member

122 solely by the clips **132** and **133** to allow the support member to be inserted in or removed from the channel **131** without tools. However, it is to be understood that fasteners may be driven through the foot support member **124** and the support member **122** to removably secure the foot support member **124** to the outboard side of the support member **122**. In a non-limiting example, fasteners may be used in combination with the clips **132** and **133** to secure the foot support member **124** to the support member **122**.

[0120] In some examples, the foot support member **124** is formed of a polymeric material. Illustrative polymeric materials may include, but are not limited to, a polyamide, e.g., NYLON 6/6 OR NYLON 12. In other non-limiting examples, such a polymeric material includes, but is not limited to, polyetheretherketone (PEEK), polypropylene (PP), polyphthalamide (PPA) and/or polybutylene terephthalate (PBT). In some examples, the foot support member **124** may be formed of a composite of a polymer and other materials. For example, the foot support member **124** may comprise a composite including one or more of the above-described polymers and one or more types of reinforcements including, but not limited to, glass and/or carbon fibers, e.g., 30 wt % glass filled polyamide. In a non-limiting example, the fiber % by weight of the composite material may range from 10 wt % to 50 wt %, and may optionally be in the range of 20 wt % to 60 wt %, or optionally in the range of 45 wt % to 55 wt %. In some embodiments, the foot support member **124** includes polymeric material including, but not limited to, Nylon 6/6, Polyetheretherketone (PEEK), Polypropylene (PP), or Polyphthalamide (PPA) as a matrix material with glass, carbon, or ratio of both carbon and fiber material for fiber fill varying in percent volume from 10%-50%, optionally from 40%-60%, and in some embodiments, from 45%-55%. These materials have the advantages of being tough enough to withstand impacts while also being flexible enough to form the flexible clips **132** and **133** so that the flexible clips **132** and **133** may be integrally formed with the foot support member **124**. The polymeric composite materials may comprise a thermal conductivity that is less than 10 W/m-° K, and optionally less than 5 W/m-° K, and optionally less than 1 W/m-° K. This thermal conductivity may provide the benefit of reducing conductive heat loss through a rider's boot from contact with the foot support member **124**.

[0121] The support member **122** and the foot support member **124** are removably attached to the tunnel **104** or to a support bracket **184** that is secured to a side panel **182** of the tunnel **104**. The foot support member **124** is removably secured to the support member **122**, thereby allowing these components to be separately replaced.

[0122] As shown in FIGS. **15**A, **21**A-**21**B, and **23**A-**23**B, the foot support member **124** includes a first rail **600**, a second rail **605** that at least partially defines the channel **131**, and plurality of cross members **610** extending between the first rail **600** and the second rail **605**. The cross members **610** partially define a plurality of apertures **134** extending from the first rail **600** to the second rail **605**. These apertures **134** are configured to shed snow or other debris through the cross members **610** of the foot support member **124** and may reduce the weight of the snowmobile and/or the material needed to form the foot support member **124**. The foot support member **124** may define a plurality of ridges **136** that extending from a top surface **138** of the cross members and optionally along the first rail **600**. At least some of the ridges **136** are located intermediate at least some of the apertures **134**. The ridges **136** are configured to enhance traction of a rider's boot with the foot support member **124**. As shown in FIGS. **17**A-B, the ridges **136** may be notched or serrated to further enhance traction. As best shown in FIG. **16**, the inclusion of a series of ridges **136** inboard of the cross members **610** along the first rail **600** provides additional surface area for boot traction when at least a portion of the forward end of the foot support member **124** is positioned further outboard from the tunnel **104** in a first configuration (running board assembly **120**A) as shown in FIG. **3** than a second configuration (running board assembly **120**B) as shown in FIG. **10**. In an illustrative example, the running board assembly **120**A may include a first support tube **122**A (FIG. **58**) and a first support bracket **184**A (FIG. **37**A-B), and the running board assembly **120**B may include a second support tube **122**B (FIG. **37**C-D) that is different than the first support tube **122**A, and a second support bracket **184**B that is different than the first support bracket **184**A. Although the support tubes **122**A, **122**B and the support brackets **184**A, **184**B are different, each are still compatible with and can be removable secured to the common foot support member **124**. Accordingly, the same foot support member **124** can be used on different snowmobile configurations or models that arrange the foot support member **124** in a different configuration or position with respect to the tunnel **104**. The series of ridges **136** positioned along the first rail **600** may have a base or a crown that is positioned lower than a corresponding base or crown of the ridges **136** on the cross members **610**, and the base or crown of ridges **136** positioned along the second rail **605** be positioned higher than the corresponding base or crown of the ridges **136** on the cross members **610**.

[0123] In an embodiment as shown in FIGS. **26**-**31**, toe stops **140** are provided. In an illustrative example, the toe stops **140** may be removably securable to one or more of the foot support member **124**, the forward frame assembly **312**, and the tunnel **104** by screws or threaded fasteners **142**. The toe stops **140** may be configured to receive at least a portion of the rider's boots. The front toe stops **140** are positionable at the front end of the running board assembly **120** and may be at least partially disposed within or positioned adjacent to a front cowl or body panel **400** of the snowmobile forming the engine bay **108**. As shown in FIG. **26**, the front toe stops **140** define a plurality of openings **144** that are in fluid communication with the engine bay **108** and are configured to exhaust air warmed by the engine **106** from inside the engine bay **108**. These openings **144** may transfer heat from inside the engine bay **108** and direct it toward the toe pocket **222**. The front toe stops **140** may include one or more features to receive and optionally secure the support member **122** thereto. The support member **122** may define a substantially U-shaped configuration along the outboard side **127** of the foot support member **124** with an open end facing rearwardly to accommodate the transition between the toe stops **140** and the foot support member **124**. The front toe stops **140** may comprise a polymeric composite material, optionally the same material used to form the foot support member **124**. For example, the toe stop **140** may comprise a composite including one or more of the above-described polymers and one or more types of reinforcements including, but not limited to, glass and/or carbon fibers, e.g., 30 wt % glass filled polyamide. In a non-limiting example, the fiber % by weight of the composite material may range from

10 wt % to 50 wt %, and may optionally be in the range of 20 wt % to 60 wt %, or optionally in the range of 45 wt % to 55 wt %. In some embodiments, the toe stop **140** includes polymeric material including, but not limited to, Nylon 6/6, Polyetheretherketone (PEEK), Polypropylene (PP), or Polyphthalamide (PPA) as a matrix material with glass, carbon, or ratio of both carbon and fiber material for fiber fill varying in percent volume from 10%-50%, optionally from 40%-60%, and in some embodiments, from 45%-55%.

[0124] In an embodiment as shown in FIGS. **32-37**, a rear kick-up panel **146** is provided. In an illustrative example, the rear kick-up panel **146** extends from the foot support member **122** along a transition length **105** of the tunnel **104** to a part of the bumper assembly, such as an arm **525**. In addition to, or alternatively, the rear kick-up panel **146** is supported by the support member **122** on the forward outboard end of the rear kick-up panel **146**. The rear kick-up panel **146** may be removably secured to one or more of the rearward end of the foot support member **124**, the support bracket **184**, the rear bumper **530**, and the side panel **182** of the tunnel **104**. In a non-limiting example, the rear kick-up panel **146** includes a first rail **500**, a second rail **505**, and one or more cross members **510** extending between the first rail **500** and the second rail **505**. The forward end **147** of the rear kick-up panel **146** may overlap a rearward end of the foot support member **124**, and the rear kick-up panel **146** may define one or more apertures **555** that may receive a fastener (e.g., fastener **553** in FIG. **44**) to maintain positioning of the foot support member **124** and the rear kick-up panels **146**. In an illustrative example as shown in FIGS. **35**A and **35**C, the foot support member **124** may define one or more slots **557** that are alignable with the apertures **555** in the rear kick-up panel **146**. Although the position of the rear kick-up panel **146** may be fixed with respect to the tunnel **104**, the slots allow the foot support member **124** to be fastened to the rear kick-up panel **146** in either of the running board assembly positions **120**A or **120**B. As shown in FIG. **35**A, the apertures **555** are located near a rearward end of the slots when in the running board assembly **120**A configuration is desired. As shown in FIG. **35**C, the apertures are located near a forward end of the slots when the running board assembly **120**B configuration is desired. As shown in FIG. **44**, a self-tapping (and removable) fastener may be inserted from the bottom of the foot support member **124** through the slot and into the apertures **555** to secure the foot support member **124** to the rear kick-up panel **146**. Accordingly, the slots allow for the same foot support member **124** and the same kick-up panel **146** to be used on both running board assembly **120**A-B configurations, thereby reducing inefficiencies associated with the production of different components specific to a particular configuration. Although the slots are included on the foot support member **124** and the apertures **555** are included on the rear kick-up panels **146**, it is to be understood that the rear kick-up panels **146** could include the slots and the foot support member **124** could include the apertures **555**. It is also to be understood that the present disclosure is not limited to a slot and aperture system for allowing the foot support member **124** to be selectively positioned in different configurations with respect to the tunnel **104** and/or the rear kick-up panel **146**. As shown in FIGS. **33** and **36**, the second rail **505** may define a channel **149** at the forward end **147** that is positioned adjacent the foot support member **124** and is shaped to receive a portion of the support member **122** therein. The first rail **500** and the second rail **505** may extend from the forward end **147** and converge at a rearward end **515** to define a member **520** extending therefrom. As shown in FIG. **17**, the member **520** is removably securable to, for example, the side panel **182** of the tunnel **104** and/or an arm **525** extending from the rear bumper **530**. In a non-limiting example, the arm **525** may be a hollow member. The member **520** may an upper wall **522** that is positionable on top of an upper surface of the arm **525** to support the rear kick-up panel **146** thereon. An outboard wall **524** of the member **520** overlaps an outboard wall **526** of the arm **525** and defines an aperture for receiving a threaded fastener **535** therethrough. The threaded fastener **535** may be inserted through coaxially aligned apertures on the member **520** and the arm **525** to removably secure the kick-up panel **146** to the rear bumper **530** with, for example, a clip nut **550** positioned on an underside of the member **520** and the arm **525** when installed thereon. The member **520** is optionally removably secured to the side panel **182**. As shown in FIG. **36**, a flange **540** extends downward from the first rail **500** and is positioned adjacent an edge of a transitional length of the side panel **182** of the tunnel **104**, and is removably secured thereto with threaded fasteners **544** inserted from the inner surface of the side panel **182** through apertures **227**, that optionally also extend through the body **185** of the support bracket **184** through apertures **188** (as shown in FIGS. **37**B and **37**D), and outward through the flange **540** and removably secured with nuts **545**. The rear kick-up panels **146** may comprise a polymeric composite material, optionally the same material used to form the foot support member **124**. The rear kick-up panels **146** may also define apertures **134** and ridges **136** similar to those of the foot support member **124** as t shown in FIGS. **34**A and **34**B.

[0125] In an embodiment, bottom-out protectors **148** may be provided. In an illustrative example as shown in FIGS. **13**, **27**B, and **30**, the bottom-out protectors may project from a portion of the chassis **102** and are configured to inhibit the transmission of forces directly to the chassis **102**. The bottom-out protectors **148** are positioned on the chassis **102** in a location lower than the foot support member **124**. In a non-limiting example, the bottom-out protectors **148** are positioned at least partially outboard of the tunnel **104**, and at least partially inboard of the support member **122** of the running board assembly. The bottom-out protectors **148** may be positioned to contact a ground-based obstacle before another part of the chassis **102**. The bottom-out protectors **148** are formed from a resilient material, such as, for example, an unfilled thermoplastic olefin material. In some embodiments, the bottom-out protector **148** may be formed of a fiber reinforced polymer material including one or more of the above-described polymers and one or more types of reinforcements including, but not limited to, glass and/or carbon fibers, e.g., 30 wt % glass filled polyamide. In a non-limiting example, the fiber % by weight of the composite material may range from 20 wt % to 60 wt %, and may optionally be in the range of 20 wt % to 40 wt %, or optionally in the range of 25 wt % to 35 wt %. In some embodiments, the bottom-out protector **148** includes polymeric material including, but not limited to, Nylon 6/6, Polyetheretherketone (PEEK), Polypropylene (PP), or Polyphthalamide (PPA) as a matrix material with glass, carbon, or ratio of both carbon and fiber material for fiber fill varying in percent volume from 10%-50%, optionally from 40%-60%, and in some embodiments, from 45%-55%.

[0126] As shown in FIGS. **37**A and **37**B, the support bracket **184** is provided with a body **185** that includes a plurality of apertures **188** for receiving the fasteners **126** to secure the support bracket **184** to an interior surface of the side panel **182**. As shown in FIGS. **37**A and **43**, the support bracket includes an upper flange **189** that is positionable along the underside of the center plate **180** and extends toward a centerline of the tunnel **104**. The upper flange **189** is provided with a plurality of apertures **190** for receiving fasteners therethrough to secure the upper flange **189** to the underside of the center plate **180**. As shown in FIG. **40**C, the tunnel **104** comprises a lower end, the lower end including a first length **103**, a transition length **105**, and a second length **107** extending to a rear end **109** (i.e., a second end) of the tunnel **104**. The support bracket **184** may be configured to extend from the first length **103** to the second length **107** along the transition length **105**. In some embodiments, the first length **103** and the second length **107** may be substantially parallel, with the transition length **105** oriented non-parallel to the first length **103** and the second length **107**. In some embodiments, the first length **103** and the second length **107** may be substantially parallel to the top surface of the tunnel **104**. In some embodiments, the bumper arm **525** may be positioned along the second length **107** of the side panel **182**.

[0127] The tunnel **104** of the snowmobile **100** may also include a center plate **180** and a first and second side panel **182**. The first side panel **182** includes a first end that is connected to the center plate **180** and a second, or free, end extending away from the center plate **180**. The second side panel **182** also includes a first end that is connected to the center plate **180** and a second end that extends from the center plate **180**. As shown in FIG. **43**, a first support bracket **184** is secured to an interior surface of the first side panel **182**, and a second support bracket **184** is secured to an interior surface of the second side panel **182**. In a non-limiting example, the support brackets **184** may extend along one or more lengths of the free end of the side panels **182** of the tunnel **104**. The free end of the side panels **182** may comprise a first length, a second length positioned rearward from the first length, and a transition length extending from the first length to the second length. The support bracket **184** may be positioned along at least a portion of one or more of the first length, the second length, and the transition length. The portion of the support bracket **184** positioned along the first length may be secured to the foot support member **124**, the portion of the support bracket **184** positioned along the transition length may be secured to the rear kick-up panel **146**, and the portion of the support bracket **184** positioned along the second length may be secured to a portion of the bumper **530**. Accordingly, the support bracket **184** can reinforce the tunnel **104** to support components positioned outboard thereof. Each support bracket **184** may include a mounting surface **186** extending underneath the second ends of the side panels **182** and outboard from the side panel **182** that the foot support members **124** are removably secured to. The mounting surface **186** may be provided with one or more projections **195** extending outward, and the apertures **187** may be provided on the projections **195**. The apertures **187** for receiving the fasteners **130** for securing the foot support members **124** to the mounting surface **186** may each be positioned at the same distance from the longitudinal centerline of the tunnel **104** as utilized in the running board assembly **120**B configuration. Optionally, one or more of the apertures **187** may be positioned at a greater distance from the longitudinal centerline of the tunnel **104** than the other apertures **187**, as utilized in the running board assembly **120**A configuration.

[0128] As shown in FIGS. **44** and **45**, the inboard side of the foot support members **124** may be positioned on top of the mounting surfaces **186** and the fasteners **130** used to secure the foot support member **124** may be inserted through the apertures **187** in the support bracket **184** and threaded into the foot support member **124**. The fasteners may be inserted into the first rail **600**, the cross member **610**, or an area positioned at the intersection of the first rail **600** and the cross member **610**.

[0129] As explained above, the foot support member **124** may be positioned in different configurations with respect to one or both of the chassis **102** and tunnel **104** by modifying one or both of the support member **122** and the support bracket **184**. As shown in FIG. **37**A, the support bracket **184** is provided with a series of the apertures **187** for receiving fasteners **130** for removably securing the foot support member **124** thereto. In a first configuration (running board assembly **120**A) as shown in FIGS. **7** and **37**A the apertures **187** on the mounting surface **186** are positioned along a line that extends progressively outward from the body **185** of the support bracket **184** and the adjacent side panel **182**. In a second configuration as shown in FIGS. **10**, **12**, and **37**C the apertures **187** on the mounting surface **186** may be positioned the same distance from the body **185** of the support bracket **184**, so that the apertures **187** are positioned along a line parallel to the adjacent side panel **182**. The distance that the forward end of the support member **122** extends outward from the rearward leg **326** and the sides of the snowmobile **100** can be increased or decreased to accommodate the differences between the first and second configurations. Accordingly, the same foot support member **124** can be applied to different snowmobile configurations or models without modification of the foot support member **124**, simply by using a support bracket **184** with a different mounting surface **186** configuration. It is to be understood, however, that different support members could be used with the different support brackets. As shown in FIG. **58**, different support members **122**A, **122**B may be provided to accommodate the different orientation of the foot support member **124** due to the use of different support brackets **184**. When the support bracket **184** shown in FIG. **37**A is used, the support tube **122**A is used and it extends further outboard than the support tube **122**B used when the support bracket **184** shown in FIG. **37**C is used. The rear end of the support tubes **122**A, **122**B are secured to either the side panel **184** of the tunnel **104** and/or the support bracket **184**. The rear end of the support tubes **122**A, **122**B may be secured in the same location on the different snowmobiles, or at different positions. For example, the support tube **122**A may be connected to a first rear suspension, and the support tube **122**B may be connected to a second rear suspension that is different than the first rear suspension.

[0130] In a non-limiting example, the support bracket **184** may be used to provide targeted reinforcement to portions of the tunnel **104**, thereby allowing the tunnel **104** to be made of a thinner and lighter gauge of sheet metal or a fiber reinforced polymer. In a non-limiting example, the first side panel **182** comprises a sheet metal or metal alloy that has a first thickness and the first support bracket **184** comprises a

sheet metal or metal alloy that has a second thickness that is different than, and optionally greater than the first thickness. In addition to, or alternatively, the tunnel **104** may be comprised of a first material, e.g., aluminum or an aluminum alloy, and the first support bracket **184** may be comprised of a second material, such as steel, that is different than the first material and has a higher value of Young's modulus. It is to be understood, however, that the support bracket **184** may be comprised of the same material as the tunnel **104**.

[0131] With respect to the foot support member **124**, the second rail **605** may define a plurality of openings **675** from the top surface **138** to the channel **131** that extend along an outboard side of the second rail **605** and face outwardly from the tunnel **104**. Optionally, the second rail **605** may define a second plurality of openings **680** from the top surface **138** to the channel **131** that extend along an inboard side of the second rail **605** and face inwardly toward the tunnel **104**. The openings **680** may be offset from the openings **675** along the length of the channel **131**. One or more ridges **136** may at least partially define the outer perimeter of the openings **675**, and optionally the outer perimeter of the openings **680**. As shown in FIG. **25**A, the clips **132** may be positioned along the second rail **605** below the openings **675** and extend downward and inward toward the downward facing opening **615**. As shown in FIG. **25**B, the clips **133** may be positioned along the second rail **605** below the openings **680** and extend downward from the bottom surface **139** of the foot support member **124** and outward towards the downward facing opening **615**. The clips **133** may be at least partially positioned along a leading edge **617** of the cross members **610** and extend outward therefrom toward the downward facing opening **615**.

[0132] While the running board and running board assembly presented herein is employed on a snowmobile, different embodiments of the running board and running board assembly may be applied to other types of vehicles, such as a snow bike or a personal off-road vehicle.

[0133] FIG. **39** shows a illustrative method **200** of assembling a snowmobile that includes a chassis **102**, an engine **106** attached to the chassis and disposed within an engine bay **108**, a drive track **110**, a drivetrain **112** operatively interconnecting the engine with the drive track **110** and configured to deliver propulsive power to the drive track **110**, a tunnel **104** attached to the chassis **102**, and a running board assembly **120** attached to the tunnel **104**. The method **200** includes the following steps:

[0134] STEP **202**, ATTACH A SUPPORT MEMBER, includes attaching a support member **122** to one or more of the forward frame assembly **312**, the tunnel **104** and the support bracket **184** to position the support member **122** outboard of the tunnel **104**;

[0135] STEP **204**, ATTACH INBOARD SIDES OF A FOOT SUPPORT MEMBER, includes attaching inboard sides **128** of a foot support member **124** to the tunnel **104** and/or the support bracket **184** using a plurality of threaded fasteners **130**;

[0136] STEP **206**, ATTACH THE FOOT SUPPORT MEMBER TO THE SUPPORT MEMBER, includes retaining outboard sides **127** of the foot support member **124** to the support member **122** optionally using a plurality of flexible clips **132** that are integrally formed with the foot support member **124** and are defined on an outboard edge of the foot support member **124**. Each of the flexible clips **132** wraps around at least 51% and at most 75% of a circumference of the support member **122**. The flexible clips **132** are sized to apply a compressive force to the support member **122**;

[0137] STEP **208**, ATTACH FRONT TOE STOPS, includes attaching front toe stops **140** to one or more of the foot support member **124**, the support member **122**, the tunnel **104**, body panels **400**, **402**, and the forward frame assembly **312**;

[0138] STEP **210**, ATTACH REAR KICK-UP PANELS, includes attaching rear kick-up panels **146** to one or more of the bumper **530**, the support bracket **184**, the foot support member **124**, the support member **122**, and the tunnel **104**; and

[0139] STEP **212**, ATTACH BOTTOM-OUT PROTECTORS, includes attaching bottom-out protectors **148** to one or more of the tunnel **104**, the heat exchanger end cap **178**, the forward frame assembly **312**, the foot support member **124**, the toe stop **140**, and body panels **400**, **402**. The bottom-out protectors **148** may be formed of an unfilled thermoplastic olefin material or a thermoplastic polyurethane material. The bottom-out protectors **148** may be located outboard of at least a portion of the tunnel **104** and inboard of at least a portion of the support member **122**, wherein the bottom-out protectors **148** are positioned on the chassis **102** in a location that is lower, i.e., closer to the ground, than the tunnel **104** and the foot support member **124**. It is to be understood that steps **202**, **204**, **206**, **208**, **210** and **212** may be performed in any order, and that one or more of the steps may be optional.

[0140] As illustrated in a non-limiting example of FIGS. **40**A-**42**D, the snowmobile **100** may include a forward frame assembly **312** including a plurality of tube members. The forward frame assembly **312** may be assembled prior to securing to one or both the tunnel **104** and heat exchanger assembly **174**. The forward frame assembly **312** may define a front, a rear, and a longitudinal centerline. The forward frame assembly **312** may include a first side **304** extending substantially along the longitudinal centerline and a second side **306** extending substantially along the longitudinal centerline and spaced apart from the first side **304**. Each of the first side **304** and the second side **306** includes an inner perimeter **308** defining a side opening **310**. The first side **304** and the second side **306** are positioned to define a rear opening **314** therebetween at the rear of the forward frame assembly **312** for receiving the heat exchanger assembly **174**, tunnel **104**, or both therein.

[0141] According to one or more aspects of the present disclosure, a forward frame assembly **312** for a snowmobile **100** is provided including a front, a rear, and a longitudinal centerline extending from front to rear. The forward frame **312** includes a first side **304** extending along the longitudinal centerline, a second side **306** extending along the longitudinal centerline and spaced apart from the first side **304**. Each of the first side **304** and the second side **306** includes an inner perimeter **308** defining a side opening **310**. The first side **304** and the second side **306** define a rear opening **314** therebetween at the rear of the forward frame **312** for receiving a heat exchanger assembly **174** and/or tunnel **104** therein.

[0142] Optionally, the first side **304** defines an outer perimeter **318**, the second side **306** defines an outer perimeter **318**, and a track drive shaft **352** extends across the forward frame assembly **312**. The track drive shaft **352** is

positioned rearward of the outer perimeter **318** of the first side **304** and forward of the outer perimeter **318** of the second side **306**.

[0143] Optionally, the track drive shaft **352** is positioned rearward of the inner perimeter **308** of the first side **304** and rearward of the inner perimeter **308** of the second side **306**.

[0144] Optionally, the second side **306** includes a metal plate or sheet **320** (hereinafter referred to as "the metal sheet **320**") defining an aperture **322** for receiving the track drive shaft **352** therethrough when the metal sheet **320** is positioned to overlap a heat exchanger end cap **178** of the heat exchanger assembly **174** or a side of the tunnel **104**.

[0145] Optionally, the metal sheet **320** of the second side **306** defines a first aperture **324** therein for receiving the track drive shaft **352** in a first position or a second position that is different than the first position.

[0146] Optionally, the second side **306** includes a rearward leg **326**, such as a hollow tube, extending upward and forward from the metal sheet **320** to a steering column mount component **328**, a forward leg **330**, such as a hollow tube, extending upward and rearward to the steering column mount component **328**, and a horizontal member **331** (shown in FIGS. **12** and **41**A) substantially extending along the longitudinal centerline from the forward leg **330** to the rearward leg **326**. An upper end of the metal sheet **320** is shaped to support a rearward end of the horizontal member **331** and is removably secured thereto, and the rearward end of the horizontal member **331** is vertically positioned higher than the front end of the tunnel **104**.

[0147] Optionally, the steering column mount component **328** may be configured to secured to the forward legs **330** and the rearward legs **326** (see e.g., FIGS. **55-56**C). The steering column mount component **328** may include one or more mounting points **333** configured to secured to a steering column.

[0148] Optionally, the first side **304** includes a metal plate or sheet **334** (hereinafter referred to as "the metal sheet **334**") defining an aperture for securing a belt housing assembly **354** thereto when the metal sheet **334** is positioned to overlap the heat exchanger end cap **178** of the heat exchanger assembly **174** and/or a side panel **182** of the tunnel **104**.

[0149] Optionally, the metal sheet **334** of the first side **304** defines a first aperture therein for securing the belt housing assembly **354** in a first position as shown in FIG. **42**A or a second position as shown in FIG. **42**C that is different than the first position.

[0150] Optionally, the first side **304** includes a rearward leg **338** extending upward and forward from the metal sheet **334** to a steering column mount component **328**, a forward leg **330** extending upward and rearward to the steering column mount component **328**, and a horizontal member **342** substantially extending along the longitudinal centerline from the forward leg **330** to the rearward leg **326**, and a rearward end of the horizontal member **342** is vertically positioned higher than the front of the tunnel **104**.

[0151] Optionally, a jack shaft, as disclosed in U.S. patent application Ser. No. 17/588,487, entitled ADJUSTABLE BELT DRIVE ASSEMBLY, SYSTEM AND METHOD, filed Jan. 31, 2022, which is commonly owned and incorporated herein by reference in its entirety, extends across the forward frame **312** and is positioned beneath the horizontal member **342** of the first side **304**.

[0152] Optionally, a steering column mount component **328** extends between the first side **304** and the second side **306**. The first side **304** and the second side **306** each includes a leg **326**, **338** extending upward and forward from the rear of the forward frame **312** to the steering column mount component **328**.

[0153] Optionally, the steering column mount component **328** includes a first side including a first steering mount **344** that is securable to the steering column assembly shown in FIGS. **41**C, **51**A and **51**B, and a second side that includes a second steering mount **346** that is securable to the steering column assembly shown in FIGS. **41**B, **50**A and **50**B, wherein the second side is positioned rearward of the first side along the longitudinal centerline.

[0154] Optionally, the first steering mount **344** is positioned forward along the longitudinal centerline of the forward frame assembly **312**, of the heat exchanger assembly **174**, and the tunnel **104**.

[0155] Optionally, the first side **304** includes a rearward tube **338**. The rearward tube **338** include a first end extending upward and forward from the metal sheet **334** to a steering column mount component **328**, and a second end extending outward from the first side **304**. A support member **122** is provided that includes a tube with a first end that is mated with the second end of the first side rearward tube **338** and a second end secured to a rearward portion of the tunnel **104** and/or support bracket **184**. The rearward tube **338** of the first side **304** and the tube of the support member **122** define a continuous tubular length extending from the steering column mount component **328** to rearward of the foot support member **124** to a rear suspension component.

[0156] According to one or more aspects of the present disclosure, a method of assembling a snowmobile **100** is provided including providing a preassembled forward frame **312** including a front and rear, the forward frame **312** including a first side **304** and a second side **306**. The first and second sides **304**, **306** are spaced apart from each other to define a rear opening **314** at the rear of the forward frame **312**. At least a portion of a heat exchanger assembly **174**, a tunnel **104**, or both are positioned in the rear opening **314** between the first side **304** and the second side **306**. The preassembled forward frame **312** is then secured to the heat exchanger assembly **174**, the tunnel **104**, or both.

[0157] Optionally, each of the first side **304** and the second side **306** includes an inner perimeter **308** defining a side opening **310**.

[0158] Optionally, the method includes inserting an engine **106** through the side opening **310** of the second side **306** and securing the engine **106** to the forward frame **312**.

[0159] According to one or more aspects of the present disclosure, a method of assembling two different snowmobiles with a common forward frame, optionally on a common assembly line, is provided including providing a common forward frame, providing a first rear body component or a second rear body component, securing either the first body component or the second body component to the forward frame, and securing a track drive shaft **352** in a first position with respect to the forward frame when the first body component is secured to the forward frame or securing a track drive shaft **352** in a second position with respect to the forward frame when the second body component is secured to the forward frame, wherein the first position is different than the second position. In a non-limiting example, the first body component and the second body

component are different tunnels. In a non-limiting example, the first body component and the second body component are different heat exchanger assemblies. In a non-limiting example, the first body component and the second body component are different support members **122**. In a non-limiting example, the first body component and the second body component are different steering column assemblies. In a non-limiting example, the first body component and the second body component are different front suspensions. In a non-limiting example, the first body component and the second body component are different steering column assemblies. In a non-limiting example, the first body component and the second body component are different toe stops. In a non-limiting example, the first body component and the second body component are different bottom-out protectors.

[0160] Optionally, the method includes securing a belt housing assembly to the forward frame, the belt drive housing defining a track drive shaft opening, wherein the track drive shaft opening is located at a first position with respect to the forward frame when the forward frame is secured to the first rear body component, and wherein the track drive shaft opening is located at a second position with respect to the forward frame when the forward frame is secured to the second rear body component, wherein the first position is different than the second position.

[0161] Optionally, the first body component is a tunnel, a heat exchanger assembly component, or both. Optionally, the first body component is a running board assembly. Optionally, the second body component is a tunnel, a heat exchanger assembly, or both. Optionally the second body component is a running board assembly.

[0162] According to one or more aspects of the present disclosure, a method of assembling two types of snowmobiles with different drive track requirements is provided including providing a common forward frame, providing a first body component with a first drive track requirement and a second body component with a second drive track requirement that is different than the first drive track requirement, wherein at least a first engine mount is provided on one or more of the forward frame, the first body component, and the second body component, positioning either the first body component or the second body component adjacent the forward frame, and securing a belt housing assembly **354** to the first engine mount, the belt housing assembly **354** defining a track drive opening, wherein the track drive opening is located at a first position with respect to the first engine mount when the forward frame is secured to the first body component, and wherein the track drive opening is located at a second position with respect to the first engine mount when the forward frame is secured to the second body component, wherein the first position is different than the second position.

[0163] Optionally, the first body component is a tunnel, a heat exchanger assembly, or both. Optionally the first body component is a running board assembly. Optionally, the second body component is a tunnel, a heat exchanger assembly, or both. Optionally the second body component is a running board assembly.

[0164] According to one or more aspects of the present disclosure, a method of assembling two types of snowmobiles with different drive track requirements is provided including providing a common forward frame including a front and rear, the forward frame including a first side, and a second side spaced apart from the first side to define a rear opening at the rear of the forward frame. The method includes providing a first body component with a first drive track shaft position and a second body component with a second drive track shaft position that is different than the first drive track position. The method includes positioning either the first body component or the second body component in the rear opening between the first side and the second side, providing a belt drive housing that defines a track drive shaft opening, securing the belt housing assembly to the first side of the forward frame, wherein the track drive shaft opening is located at a first position with respect to the first side when the forward frame is secured to the first body component, and wherein the track drive shaft opening is located at a second position with respect to the first side when the forward frame is secured to the second body component, wherein the first position is different than the second position.

[0165] Optionally, each of the first side and the second side includes an inner perimeter defining a side opening.

[0166] Optionally, the belt housing assembly is secured to the first side for both body components with a jackshaft axis extending through the side openings of the first side and the second side, and a track drive shaft axis positioned outside of an outer perimeter of the first side and inside of an outer perimeter of the second side.

[0167] Optionally, the method includes inserting an engine through the side opening of the second side and securing the engine to the preassembled frame at a position between the first and second sides.

[0168] According to one or more aspects of the present disclosure, a front frame assembly **312** for a snowmobile **100** is provided including a front, a rear, and a longitudinal centerline. The forward frame **312** includes a first side **304** extending along the longitudinal centerline and a second side **306** extending along the longitudinal centerline and spaced apart from the first side **304**. Each of the first side **304** and the second side **306** includes an inner perimeter **308** defining a side opening **310**. The first side **304** and the second side **306** define a rear opening **314** at the rear of the forward frame **312** therebetween for receiving a heat exchanger assembly **174**, a tunnel **104**, or both therein.

[0169] Optionally, the first side **304** defines an outer perimeter **318**, and the second side **306** defines an outer perimeter **318**. A track drive shaft **352** extends across the forward frame **312** and is positioned rearward of the outer perimeter **318** of the first side **304** and forward of the outer perimeter **318** of the second side **306**.

[0170] Optionally, the first side **304** defines an inner perimeter **308**, the second side **306** defines an inner perimeter **308**, and the track drive shaft **352** is positioned rearward of the inner perimeter **308** of the first side **304** and rearward of the inner perimeter **308** of the second side **306**.

[0171] Optionally, the second side **306** includes a plate or metal sheet, hereinafter referred to as metal sheet **320**, defining an aperture **322** for receiving the track drive shaft **352** therethrough when the metal sheet **320** is positioned to overlap an end cap **178** of the heat exchanger assembly **174**, a side panel **182** of the tunnel **104**, or both.

[0172] Optionally, the aperture of the metal sheet **320** of the second side **306** defines is shaped to receive the track drive shaft **352** in a first position **322** or a second position **324** that is different than the first position.

[0173] Optionally, the second side **306** includes a support tube or rearward leg, hereinafter referred to as rearward leg **326**, extending upward and forward from the metal sheet **320** to a steering column mount component **328**, a support tube or forward leg, hereinafter referred to as forward leg **330**, extending upward and rearward to the steering column mount component **328**, and a horizontal member **331** substantially extending along the longitudinal centerline from the forward leg **330** to the rearward leg **326**. An upper end of the metal sheet **320** is shaped to support a rearward end of the horizontal member **331** and is removably secured thereto, and the rearward end of the horizontal member **331** is vertically positioned higher than a forward end of the tunnel **104**.

[0174] Optionally, the first side **304** includes a metal sheet or plate, hereinafter referred to as metal sheet **334**, defining an aperture for securing a belt housing assembly **354** thereto when the metal sheet **320** is positioned to overlap an end cap **178** of the heat exchanger assembly **174**, a side panel **182** of the tunnel **104**, or both.

[0175] Optionally, the metal sheet **334** of the first side **304** defines a first aperture therein for securing the belt housing assembly **354** in a first position as shown in FIG. **42**A, and a second aperture therein for securing the belt housing assembly **354** in a second position as shown in FIG. **42**C that is different than the first position.

[0176] Optionally, the first side **304** includes a rearward leg **338** extending upward and forward from the metal sheet **334** to a steering column mount component **328**, a forward leg **330** extending upward and rearward to the steering column mount component **328**, and a horizontal member **342** substantially extending along the longitudinal centerline from the forward leg **330** to the rearward leg **326**, and a rearward end of the horizontal member **342** is vertically positioned higher than a forward end of the tunnel **104**.

[0177] Optionally, a jack shaft extends across the forward frame **312** and is positioned beneath the horizontal member **342** of the first side **304**.

[0178] Optionally, a steering column mount component **328** extends between the first side **304** and the second side **306**, wherein the first side **304** and the second side **306** each includes a leg extending upward and forward from the rear of the forward frame to the steering column mount component.

[0179] Optionally, the steering column mount component **328** includes a first side including a first steering mount, and a second side that includes a second steering mount, wherein the second side is positioned rearward of the first side along the longitudinal centerline.

[0180] Optionally, the first steering mount is positioned forward along the longitudinal centerline of the heat exchanger and the tunnel.

[0181] Optionally, the first side **304** includes a rearward tube **338** including a first end extending upward and forward from the metal sheet **334** to a steering column mount component **328**, and a second end extending outward from the first side **304**, and further including a support member **122** including a tube with a first end that is mated with the second end of the first side tube and a second end secured to a rearward portion of the tunnel **104** and/or support bracket **184**, wherein the rearward tube **338** of the first side and the tube of the support member **122** define a continuous tubular length extending from the steering column mount component **328** to a rear suspension component, and/or rearward of the foot support member **124**.

[0182] In an embodiment, a method of assembling two different types of snowmobiles with a common forward frame **312** is provided that includes providing a common forward frame **312** including a longitudinal centerline and a support member **122** mounting point **317** positioned outboard of the longitudinal centerline, providing a first running board assembly **120**A including a support member **122**A; providing a second running board assembly **120**B including at least one component that is different than at least one component of the first running board assembly, the second running board assembly **120**B including a support member **122**B, and securing either the first running board assembly **120**A or the second running board assembly **120**B to the mounting point **317**, wherein the first running board assembly **120**B is located at a first position with respect to the longitudinal centerline of the forward frame **312** when secured to the mounting point **317**, and wherein the second running board assembly **120**B is located at a second position with respect to the longitudinal centerline of the forward frame **312** when secured to the mounting point **317**, wherein the first position is different than the second position.

[0183] Optionally, each running board assembly includes a foot support member **124**, a support member **122**, and optionally a support bracket **184**. Optionally, the foot support member **124** is a fiber reinforced polymer composite, and the support member **122** is a hollow tube.

[0184] Optionally, the mounting point **317** extends outward and forwardly from the forward frame **312**. Optionally, the mounting point **317** is positioned below an upper surface of a portion of the tunnel **104** that is secured to the forward frame **312**. Optionally, the support member **122** of the first running board assembly **120**A extends outward from the centerline of the vehicle farther than the support member **122**B of the second running board assembly **120**B.

[0185] Optionally, the common forward frame **312** includes an A-arm mounting point, and the method may further comprise providing a first suspension assembly (FIGS. **47** and **54**) including a control arm and a spindle **492** that includes a lower A-arm ball joint, providing a second suspension assembly (FIGS. **46** and **53**) that is different than the first suspension assembly, the second suspension assembly including a control arm and a spindle **490** that includes a lower A-arm ball joint, and securing the A-arm of the first suspension assembly to the A-arm mounting point when the first running board assembly **120**A is secured to the mounting point **317** or the second suspension assembly to the A-arm mounting point when the second running board assembly **120**B is secured to the mounting point **317**, wherein optionally the first lower A-arm ball joint is positioned at a different position with respect to the common forward frame **312** than the second lower A-arm ball joint when the respective suspension assembly is secured to the common forward frame **312**. The first suspension assembly may comprise the assemblies disclosed in U.S. Provisional Patent Application No. 63/310,254 filed Feb. 15, 2022, and entitled "Recreational Vehicle Spindle", U.S. Provisional Patent Application No. 63/404,856 filed Sep. 8, 2022, and entitled "Recreational Vehicle Spindle", and U.S. patent application Ser. No. 17/982,748 filed on Nov. 8, 2022, and entitled "Recreational Vehicle Spindle," the contents of each is incorporated by reference in its entirety. The second suspension assembly may comprise the assemblies disclosed

in U.S. Provisional Patent Application No. 63/310,276 filed Feb. 15, 2022, and entitled "Spindle for a Recreational Vehicle", U.S. Provisional Patent Application No. 63/404,841 filed Sep. 8, 2022, and entitled "Spindle for a Recreational Vehicle," and U.S. patent application Ser. No. 17/988,304 filed on Nov. 16, 2022, and entitled "Spindle for a Recreational Vehicle," the contents of each is incorporated by reference in its entirety.

[0186] Optionally, the support member **122**A of the first running board assembly **120**A extends outward from the centerline of the vehicle farther than the support member **122**B of the second running board assembly **120**B, and the lower A-arm ball joint of the first suspension assembly is positioned outward from the centerline of the vehicle a greater distance than the lower A-arm ball joint of the second suspension assembly.

[0187] Optionally, wherein the support member **122**A of the first running board assembly **120**A extends outward from the centerline of the vehicle farther than the support member **122**B of the second running board assembly **120**B, and the lower A-arm ball joint of the first suspension assembly is positioned farther forward with respect to the common forward frame **312** than the lower A-arm ball joint of the second suspension assembly.

[0188] Optionally, wherein the support member **122**A of the first running board assembly **120**A extends outward from the centerline of the vehicle farther than the support member **122**B of the second running board assembly **120**B, and the lower A-arm ball joint of the first suspension assembly is positioned along the centerline of the common forward frame **312** farther forward from the mounting point **317** than the lower A-arm ball joint of the second suspension assembly.

[0189] In a non-limiting example, different snowmobile models may be assembled using a common forward frame assembly by changing one or more of a spindle, a suspension component such as a control or A-arm, and a steering assembly between models. FIGS. **46** and **47** illustrates a side view of a common forward frame assembly **312** with different suspension components including a second spindle **490** and a first spindle **492**, according to some embodiments. FIGS. **48** and **49** show a front view of the two different models utilizing the common forward frame assembly. As shown in FIGS. **49** and **54**, the model with the first spindle **492** may have a wider width or stance than the model shown in FIGS. **48** and **53** with the second spindle **490**. This difference in width may be configured by providing different control arms for the different models (that extend different distances from the vehicle longitudinal centerline). The location of the spindles **490**/**492** (and/or at least a portion of the attached skis) may be positioned at different locations along the longitudinal centerline of the vehicle. As shown in FIG. **53**, the model may position the second spindle **490** and/or the rearward end of the ski attached to the second spindle **490** farther forward along the longitudinal centerline (and farther forward with respect to the forward frame) than the model with the first spindle **492** and/or the rearward portion of the ski attached to the first spindle **492** (those being positioned further rearward along the longitudinal centerline and further rearward with respect to the forward frame). The height of the two different models may be the same, or different. It is also to be understood that the steering assembly may be the same or different for the different models and may extend forward (FIG. **47**) or rearward (FIG. **48**) of a steering column bracket (shown in FIGS. **56**A, B, C) positioned at the upper portion of the forward frame.

[0190] FIGS. **50**A-B illustrate side and front views of a steering column assembly used in the assembly of FIGS. **46** and **48**, according to some embodiments. FIGS. **51**A-B illustrate side and front views of the steering column assembly used in the assembly of FIGS. **47** and **49**, according to some embodiments. FIGS. **52**A-B illustrate side and front views of the different steering column assemblies superimposed for comparison of the location of the different steering column assemblies when mounted to the forward frame, according to some embodiments. In a non-limiting example, the lower forward end of both steering columns are secured to the same location on the forward frame assembly **312**.

[0191] FIGS. **53** and **54** illustrate a top-down view of forward frame, suspension, and engine components in a second configuration (FIG. **53**) and a first configuration (FIG. **54**), according to some embodiments.

[0192] FIG. **55** illustrates a top-down view of a forward frame assembly with steering column bracket, according to some embodiments; and FIGS. **56**A-C illustrate perspective views of a steering column bracket, according to some embodiments. The steering column bracket may include the one described in U.S. Provisional Patent Application No. 63/344,165 filed on May 20, 2022, and entitled "Snowmobile Frame," the contents of which are incorporated by reference in its entirety.

[0193] FIG. **57** is a view of a polymeric assembly including one or more of the foot support member **124**, the toe stop **140**, the bottom out protector **148**, a rear kick-up panel **146** (not shown) and a body panel **400** or **402**. The polymeric assembly may extend from the front of the vehicle to the bumper **530**. Optionally, the polymeric assembly comprises one or more components that are positioned outboard of the side panel **182** of the tunnel **104** and extend rearward from the track drive shaft **352** to a point rearward of the fuel tank **650**, and optionally to the bumper **530**.

[0194] FIG. **58** is a side view of two different running board support tubes **122**A, **122**B used for two different models for comparison purposes. As shown, the one model (high performance) includes the support tube **122**A that extends further outboard from the forward frame and is secured to the suspension assembly at a point higher than the support tube **122**B for the other model that does not extend outboard as far from the forward frame.

[0195] FIGS. **59**-**68** illustrate a seat support assembly in an illustrative embodiment. The support assembly may include a fuel tank **650** with mounting features **658** for securing a seat or seat frame **652** thereto. A rear panel **656** slidingly engages the fuel tank **650** to define a compartment **668** therebetween that may be used for storage or to house a battery **660** therein. The mounting features **658** may be integral with the fuel tank **650** and may provide a locking feature with the seat frame to provide for more stability both vertically, laterally, and in the forward/rearward directions. The mounting features **658** may be positioned on a raised portion of the fuel tank that may have a triangular shape that is at least partially surrounded by a flat or flangelike surface. A seat fastener feature **662** may be provided on the rear panel **656** for engaging a portion of the seat or the seat frame **652**. The underside **664** of the fuel tank **650** may be upwardly recessed along the lower perimeter to slidingly receive extensions **666** of the rear panel **656** therealong so that the extensions **666** of the rear panel **656** are positioned

between the underside **664** of the fuel tank **650** and the upper surface of the tunnel. As shown in FIG. **65**, a removable accessory mount **181** may be secured to both the tunnel **104** and the support bracket **184**. As shown in FIG. **63**, the fuel tank **650** may have a convex outer shape and may be almost entirely contained within the rider envelope (all positioned inboard of the upper legs of the front frame member and greater than 95% of the fuel tank volume is positioned inboard of the tunnel side walls, and optionally greater than 97% of the fuel tank volume is positioned inboard of the tunnel side walls, and optionally 99% or greater. The seat assembly may include the one described in U.S. Provisional Patent Application No. 63/350,553 filed on Jun. 9, 2022, and entitled "Snowmobile with Seat and Gas Tank Assembly," U.S. Provisional Patent Application No. 63/404,682 filed on Sep. 8, 2022, and entitled "Snowmobile with Seat Assembly," and U.S. patent application Ser. No. 17/988,111 filed on Nov. 16, 2022, and entitled "Fuel Tank and Seat Assembly for a Vehicle," the contents of each of which are incorporated by reference in its entirety.

[0196] FIGS. **69**A-**70**B show a structural composite taillight housing **700** that is positioned on the upper surface of the rearward end of the tunnel **104**. The composite may comprise a polymeric matrix and a fiber reinforcement. The structural composite taillight housing **700** houses the taillight and provides a structural reinforcement on the upper surface of the rearward end of the tunnel **104** that optionally may allow for thinner gauges of tunnel material and may optionally eliminate internal tunnel reinforcements at the rearward end. The structural composite taillight housing **700** also provides a plurality of mounting points **701** for a snow flap **702** that helps to maintain the snow flap position away from the track and rear suspension components. As shown in FIGS. **69**A-B and **70**A-B, the ends of the structural composite taillight housing **700** extend around the sides of the rear bumper or grab bar and may engage the outer sides of the snow flap **702**. The structural composite taillight housing and the snow flap may include those described in U.S. Provisional Patent Application No. 63/400,056 filed on Aug. 23, 2022, and entitled "Taillight Housing, Snow Flap and Assembly Thereof," U.S. patent application Ser. No. 17/979,091 filed on November 2, and entitled "Snow Vehicle Heat Exchanger Shield," and U.S. patent application Ser. No. 17/979,066 filed on Nov. 2, 2022, and entitled "Taillight Housing, Snow Flap and Assembly Thereof," the contents of each of which are incorporated by reference in its entirety.

[0197] FIG. **71** illustrates a side view of a running board assembly **720**, according to some embodiments. The running board assembly **720** may include one or more features of the running board assembly **120**. The running board assembly **720** may include a support member **722** extending along an outboard side of the running board assembly **720**. A first end **742** of the support member **722** may include a running board mounting feature **744** configured to mate with and/or removably secure to a mounting point (e.g., the mounting point **317**) on the forward frame **312**. A second end **740** of the support member **722** may include a kick-up portion **746** and a second attachment feature **736** configured to mate with and/or removably secure to a bumper (e.g., the bumper **530**) and/or a tunnel (e.g., the tunnel **104**). In some embodiments, the running board assembly **720** may include a support leg **726** located near the second end **740** ("near" meaning within 30% of the total distance between the first end **742** and the second end **740**). In some embodiments, the support leg **726** may be secured to the kick up portion **746** of the support member **722**.

[0198] In some embodiments, the support leg **726** may be removably securable to the support member **722**. The support member **722** may include an attachment element **725**. The attachment element **725** may include a socket to receive the support leg **726** therein (e.g., the attachment element **725** and the support leg **726** may form a male/female mating connection). In some embodiments, the attachment element **725** may be configured to removably secure the support leg **726** to the support member via a fastener **730**. The fastener **730** may include a pin, a bolt, a threaded member, a spring/biasing member, etc. The support leg **726** may include a mounting feature **764** at a distal end removably securable to a rear suspension component (e.g., the rear suspension component **192**) and/or a running board support (e.g., the running board support bracket **184**). The mounting feature **764** of the support leg **726** may be secured to the snow vehicle at a first position below the tunnel **104**, and in some embodiments, at a position below the drive track **110**.

[0199] The support leg **726** may be oriented at angle **756** relative to the support member **722**. In some embodiments, the angle **756** may be approximately 90°. In some embodiments, the angle **756** may be in the range of 60°-120°, and in some embodiments, the angle **756** may be in the range of 70°-95°. The second attachment feature **736** of the support member **722** may be separated from the mounting feature **764** on the support leg **726** by a distance **754**. In some embodiments, the main body of the support member **722** may define an angle **750** relative to the ground plane.

[0200] FIG. **72** illustrates a side view of a running board assembly **720**, according to some embodiments. The running board assembly **720** may be largely identical to the running board assembly illustrated in FIG. **71**, but the running board assembly **720** may include a second support leg **727** (instead of the support leg **726**). In some embodiments, the second support leg **727** may be removably securable to the support member **722**. The second support leg **727** may be swapped out and replaced with the support leg **726**, and/or vice-versa.

[0201] The second support leg **727** may include a second mounting feature **765** removably securable to a rear suspension component (e.g., the rear suspension component **192**) and/or a running board support (e.g., the running board support bracket **184**). The second mounting feature **765** of the second support leg **727** may be secured to the snow vehicle at a second position below the tunnel **104**, and in some embodiments, at a position below the drive track **110**. The second position may be different from the first position (referred to above in the description of FIG. **71**). Thus, the support leg **726** and the second support leg **727** may be selectively attached and/or removed based on the desired mount position (e.g., the first position versus the second position).

[0202] The second support leg **727** may be oriented at angle **757** relative to the support member **722**. In some embodiments, the angle **757** may be approximately 60°. In some embodiments, the angle **757** may be in the range of 30°-90°, and in some embodiments, the angle **757** may be in the range of 45°-75°. The angle **757** may be less than the angle **756**. The second attachment feature **736** of the support member **722** may be separated from the second mounting feature **765** on the support leg **726** by a distance **759**. The distance **759** may be less than the distance **754**. For example,

in some embodiments the distance **759** may be within a range of 50%-90% of the distance **754**. In some embodiments, the main body of the support member **722** may define an angle **751** relative to the ground plane. In some embodiments, the angle **751** may be within the range of 10°-40°, and in some embodiments, the angle **751** may be within the range of 15°-25°. The differences between the support leg **726** and the second support leg **727** are further illustrated in FIG. **73**.

[0203] FIG. **73** illustrates a side view of the support leg **726** overlayed with the second support leg **727**, according to some embodiments. The first mounting feature **764** is located at a different location than the second mounting feature **765**, and thus, the first mounting feature **764** may be securable at a different location on a snow vehicle than the second mounting feature **765**. For example, FIGS. **37**A-B illustrate a first support bracket **184**A wherein the rearward portion **191** is located in a different position than the second support bracket **184**B (FIGS. **37**C-D). Thus, the support leg **726** may be securable to the support bracket **184**B and the second support leg **727** may be securable to the support bracket **184**A. The support leg **726** and/or the second support leg **727** may extend from the kick-up portion **746** of the support member **722**. The second end **740** of the support member **722** may be secured to the second attachment feature **736**. In some embodiments, the second attachment feature **736** may receive the support member **722** therein. The second attachment **736** may be welded to the second end **740** of the support member **722**, and in other embodiments, the second attachment element **736** may be integrally formed with the support member **722** to form a one-piece component. In some embodiments, the support leg **726** may be integrally formed with the support member **722** as a one-piece component. In some embodiments, the second support leg **727** may be integrally formed with the support member **722** as a one-piece component.

[0204] The interchangeability of the support legs (removal and attachment of the support leg **726** and the second support leg **727**) is beneficial, as it allows a user/manufacturer to modify the running board assembly without replacing the support member **722**, the kick-up portion **746**, and/or the other features of the assembly. In some embodiments, a common support member (i.e., the support member **722**) may be used on various snow vehicle models having different rear suspension assemblies (e.g., the rear suspension component **192** and/or a running board support **184** may be located at different positions relative to the running board assembly).

[0205] To accommodate the different rear suspension mount positions, the support legs (e.g., of the support leg **726** and the second support leg **727**) may be selected to secure the common support member to the rear suspension mount position. Said configuration reduces manufacturing and tooling costs, as multiple snow vehicle models may share a common support member. Users may also modify the running board assemblies, for example, by modifying the outboard distance of the support member or modifying the forward/rearward position of the running board assembly, without replacing the entire running board assembly.

[0206] FIG. **74** illustrates an isometric view of a running board assembly **720** secured to a tunnel **104** and/or frame **102** of a snow vehicle, according to some embodiments. The first end **742** of the support member **722** may be removably securable to the tubular rearward leg **326** of the forward frame **312**. The second end **740** of the support member **722** may be removably securable to the rear bumper **530**. The leg support **726** may be removably securable to the support member **722** and the first mounting feature **764** may be removably securable to the running board support **184** (and/or the rear suspension component **192**). One or more foot support members **724** may be secured to the support member **722** and extend toward the tunnel **104**. The foot support member **724** may include a one-piece construction. In some embodiments, the foot support member(s) **724** may be secured to an inboard tubular member **766**. For instance, in the embodiment illustrated in FIG. **74**, the inboard tubular member **766** abuts a side wall of the tunnel **104**. The inboard tubular member **766** may be mounted on the running board bracket **184** and/or mounted to the tunnel **104**. The inboard tubular member **766** may at least partially receive an inboard end of the foot support member(s) **724** therein. In some embodiments, the inboard tubular member **766** may define a triangular cross section.

[0207] FIGS. **75-76** illustrate an isometric view of a running board assembly **720** secured to a tunnel **104** and/or frame **102** of a snow vehicle, according to some embodiments. The running board assembly **720** may include one or more mounting tabs **758** (see e.g., FIGS. **78-79**) configured to secure the toe stop **140** and/or bottom out protector **148** to the running board assembly **720**. A fastener **760** may extend through each of the mounting tabs **758** to secure the toe stop **140** to the running board assembly **720**. The running board mounting feature **744** may be securable to the tubular rearward leg **326** of the forward frame **312** at the mounting point **317** via a fastener **319**. In some embodiments, the tubular rearward leg **326** of the forward frame **312** may be secured to a top surface of the tunnel **104** via a bracket **321**.

[0208] FIG. **77** illustrates an isometric view of a running board assembly secured to a tunnel and/or frame of a snow vehicle, according to some embodiments. The running board assembly **720** includes the leg support **726** removably attached to the rearward portion **191** of the running board support **184**. The rearward portion **191** may provide a common mounting point for the rear suspension component **192**. In some embodiments, the leg support **726** may be removed from the support member **722** and replaced with an alternative leg support (e.g., the second leg support **727**). The second leg support **727** (see e.g., FIG. **72**) may be securable to a second running board support bracket having a rearward portion at a different location from the rearward portion **191**. The second attachment feature **736** of the support member **722** may be configured to at least partially receive the rear bumper **530** therein. In some embodiments, the second attachment feature **736** may include a groove, ridge, detent, and/or channel to mate with a groove, ridge, detent, and/or channel of the rear bumper **530**. In some embodiments, the second attachment feature **736** may receive a threaded fastener **735** therethrough to removably secure the second attachment feature **736** to the rear bumper **530**.

[0209] FIG. **78** illustrates a bottom view of a running board assembly **720** secured to a tunnel **104** and/or frame **102** of a snow vehicle, according to some embodiments. A bottom surface **738** of the inboard tubular member **766** is securable to the running board support bracket **184** via fasteners **732**. In some embodiments, the fasteners **732** are removeable, i.e., include a threading or release mechanism to allow selective removal of the running board assembly

720 from the tunnel/frame of the snow vehicle. The running board assembly 720 may be secured to the tunnel/frame of the snow vehicle via removable fasteners 123, 319, 732, 735 at all mounting points (e.g., at the running board mounting feature 744 (see e.g., FIG. 76), at the second attachment feature 736 (see e.g., FIG. 77), at the mounting feature 764/765 (see e.g., FIGS. 12 and 77), and at the running board support bracket 184). Thus, the running board assembly 720 may be removable from the tunnel/frame without breaking, cutting, or otherwise altering the tunnel or frame. This is beneficial, as users may choose to replace a running board assembly due to wear, aesthetic preference, terrain type (i.e., mountain riding versus trail riding), etc. In some embodiments, mounting tabs 758 secure the bottom out protector 148 to the running board assembly 720.

[0210] FIG. 79 illustrates a bottom view of a running board assembly 720, according to some embodiments. The inboard tubular member 766 includes a bottom surface 738. A plurality of apertures 734 extend through the inboard tubular member 766. The plurality of apertures 734 may be configured to receive the fasteners 732 therethrough (see e.g., FIG. 78). The inboard tubular member 766 may be removably secured to the running board bracket 184 via the fasteners 732 extending through the running board bracket 184 and extending through the apertures 734 of the inboard tubular member 766. In some embodiments, the bottom surface 738 of the inboard tubular member 766 may be a planar surface configured to lay flush against the running board support bracket 184. The inboard tubular member 766 may include a width 762. In some embodiments, the width 762 of the inboard tubular member 766 may be approximately equal to an outboard width of the running board support bracket 184 (see e.g., FIG. 78, showing the outboard edge of the running board support bracket 184 approximately aligned with the outboard edge of the inboard tubular member 766).

[0211] FIG. 80 illustrates an isometric view of a running board assembly 720 secured to a frame 102 of a snow vehicle, according to some embodiments. The second attachment feature 736 may receive one or more of an end of the rear bumper 530, an end of the inboard tubular member 766, and/or the second end 740 of the support member 722. In some embodiments, the second attachment feature 736 may abut the running board support bracket 184. The inboard tubular member 766 may include an inboard surface 768 and an angled surface 772. The angled surface 772 may define an angle relative to the side panel 182 of the tunnel 104. In some embodiments, the angled surface 772 may have an angle of approximately 45°, and in some embodiments, the angled surface 772 may have an angle within the range of 30°-70°. The inboard surface 768 may be a planar surface configured to lay flush against the running board support bracket 184 and/or the tunnel 104 of the snow vehicle. The angled surface 772 may be a planar surface extending between the inboard surface 768 and the bottom surface 738.

[0212] FIG. 81 illustrates a front view of a running board assembly 720 secured to a frame 102 of a snow vehicle, according to some embodiments. The foot support members 724 may extend through the angled surface 772 and into a body of the inboard tubular member 766. The body of the inboard tubular member 766 may include a hollow portion (i.e., a cavity formed between the angled surface 772, the inboard surface 768, and the bottom surface 738).

[0213] The foot support member 724 may abut the bottom surface 738 in the body of the inboard tubular member 766. The contact between the foot support member 724 and the bottom surface 738 may provide structural support for the foot support member 724, as for example, a load force may be distributed from the foot support member 724 to the bottom surface 738. In some embodiments, the foot support member 724 may abut the inboard surface 768 in the body of the inboard tubular member 766. The contact between the foot support member 724 and the inboard surface 768 may provide structural support for the foot support member 724, e.g., a load force may be distributed from the foot support member 724 to the inboard surface 768. In some embodiments, the foot support member 724 may be secured to the inboard tubular member 766 via a weld 774 on the angled surface 772. The weld 774 may provide structural support for the foot support member 724, e.g., a load force may be distributed from the foot support member 724 to the angled surface 772.

[0214] In some embodiments, the angled surface 772, the inboard surface 768, and the bottom surface 738 of the inboard tubular support 766 may form a triangular cross-sectional profile The triangular cross-sectional profile of the inboard tubular support 766 may be beneficial for preventing buildup of snow or debris on the running board assembly 720. For instance, snow/debris that contacts the angled surface 772 may be directed through the gaps between adjacent foot support members 724 toward the ground (via gravity). The triangular cross-sectional profile of the inboard tubular support 766 may maximize the footrest area for a rider, i.e., the angled surface 772 does not significantly encroach on the area between the tunnel and the support member 722.

[0215] The running board assembly 720 may be made from a metal or metal alloy. In some embodiments, the running board assembly 720 may be made from one or more of aluminum, aluminum alloy, steel alloy, and/or an iron alloy. The members of the running board assembly 720 (e.g., the support member 720, the support leg 726/727, the foot support members 724, etc.) may be hollow or partially hollow to reduce weight of the running board assembly 720.

[0216] FIG. 82 illustrates a flowchart of a method of assembling two snowmobile models with a common running board assembly. The method 770 may include step 775, providing a common forward frame assembly. The common forward frame assembly may include one or more features of the forward frame assembly 312. The common forward frame assembly may include a running board mounting feature configured to secure to the first end 740 of the support member 722. In some embodiments, the running board mounting feature may include the rearward leg 326 of the forward frame assembly 312. The running board mounting feature may be securable to various running board assemblies (e.g., the running board assembly 720 having the support leg 726 and/or the running board assembly 720 having the second support leg 727).

[0217] The method 770 may include step 780, providing a common running board assembly. The common running board assembly may include one or more features from the running board assembly 720 and/or the running board assembly 120. In some embodiments, the common running board assembly may include the support member 722 and the inboard tubular member 766 with the plurality of foot support members 724 extending therebetween. The common

running board assembly may include the attachment element **725** located on the support member **722**.

[0218] The method **770** may include step **785**, providing a first support leg and/or a second support leg. In some embodiments, step **785** may include providing the support leg **726** and the second support leg **727**.

[0219] The method **770** may include step **790**, removably securing one of the first support leg or the second support leg to the common running board assembly. In some embodiments, the support leg **726** may be removably secured to the attachment element **725** via the fastener **730** inserted through the support leg **726** and/or the attachment element **725**. In some embodiments, the second support leg **727** may be removably secured to the attachment element **725** via the fastener **730** inserted through the second support leg **727** and/or the attachment element **725**.

[0220] In some embodiments, the method **770** may include removably securing the common running board assembly to the running board mounting feature of the common forward frame assembly. The method **770** may include providing a first running board bracket (e.g., the running board support bracket in FIGS. **37**C-D) and providing a second running board bracket (e.g., the running board support bracket in FIGS. **37**A-B). The first and second running board brackets may have a different location for the support leg attachment, and thus, the first support leg may be used with the first running board bracket and the second support leg may be used with the second running board bracket. For instance, the first running board bracket may include a first mount location configured to secure a rear suspension component to the first support member, and the second running board bracket may include a second mount location configured to secure the rear suspension component to the second support member.

[0221] In some embodiments, the method **770** includes removably securing the inboard tubular member **766** to the tunnel **104** of the snowmobile via the fasteners **732**. In some embodiments, the inboard tubular member **766** may be secured to the running board support bracket **184**. The toe stop **140** and the bottom out protector **148** may be secured to the mounting tab **758** of the support member **722**.

[0222] While the running board and running board assembly presented herein is employed on a snowmobile, different embodiments of the running board and running board assembly may be applied to other types of vehicles, such as a snow bike or a personal off-road vehicle.

[0223] While the disclosed snowmobile has been described with reference to an exemplary embodiment(s), it will be understood by those skilled in the art that various changes may be made, and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention is not limited to the particular embodiment(s) disclosed, but that the invention will include all embodiments falling within the scope of the appended claims.

1. A running board assembly for a snow vehicle, comprising:

a support member positioned outboard from a tunnel of the snow vehicle, the support member including a first end, a second end, and an attachment element located intermediate of the first end and the second end;

one or more foot support members disposed inboard from the support member; and

a support leg removably securable to the attachment element of the support member, the support leg including a mounting feature securable to a rear suspension component disposed below an upper surface of a drive track.

2. The running board assembly of claim **1**, wherein the attachment element removably secures the support leg to the support member via a fastener extending through the attachment element.

3. The running board assembly of claim **2**, wherein the support leg is a tubular member, and wherein the attachment element and the tubular member form a male/female matting connection.

4. The running board assembly of claim **3**, further comprising:

an inboard tubular member positioned adjacent to a side panel of the tunnel, wherein the inboard tubular member defines a hollow body,

wherein the one or more foot support members are receivable within the hollow body of the inboard tubular member.

5. The running board assembly of claim **4**, further comprising:

a running board support bracket including a rearward portion configured to align the mounting feature with the rear suspension component, the running board support bracket including a mounting surface configured to abut a bottom surface of the inboard tubular member,

wherein the inboard tubular member is removably securable to the mounting surface of the bracket.

6. The running board assembly of claim **5**, wherein the second end of the support member is secured to a second attachment feature, the second attachment feature securable to a rear bumper positioned outboard of the side panel of the tunnel.

7. The running board assembly of claim **6**, wherein the second attachment feature at least partially receives the rear bumper within a channel of the second attachment feature and wherein a threaded fastener removably secures the second attachment feature to the rear bumper, the second attachment feature removably securable to the snow vehicle below a top panel of the tunnel and outboard of the side panel of the tunnel.

8. The running board assembly of claim **7**, wherein the first end of the support member is removably securable to a forward frame below the top panel of the tunnel and outboard of the side panel of the tunnel.

9. A snow vehicle, comprising:

a tunnel including a top panel and a side panel extending downward therefrom;

a drive track operably positioned in the tunnel;

a forward frame assembly including a tubular leg extending outboard past the side panel of the tunnel;

a rear suspension component positioned in the tunnel;

a support member spaced apart from and extending along the side panel of the tunnel, the support member including a first end and a second end, the first end securable to the tubular leg of the forward frame assembly and the second end securable to a second attachment feature;

a support leg extending downward and inboard from an outboard edge of the support member, the support leg including a mounting feature at a distal end;

a rear bumper disposed along the side panel of the tunnel, the second attachment feature removably securable to the rear bumper; and

a bracket positionable along an inboard surface of the side panel of the tunnel, the bracket including a rearward mounting point securable to the mounting feature of the support leg and the rear suspension component.

10. The snow vehicle of claim **9**, further comprising:

an inboard tubular member disposed along the side panel of the tunnel; and

a plurality of foot support members extending from the support member to the inboard tubular member.

11. The snow vehicle of claim **10**, wherein the bracket includes a flange extending outboard from the side panel to define a mounting surface, wherein the inboard tubular member is removably securable to the mounting surface.

12. The snow vehicle of claim **11**, wherein the inboard tubular member includes a triangular cross sectional profile and a hollow body.

13. The snow vehicle of claim **12**, wherein the support leg is removably securable to the support member via an attachment element.

14. The snow vehicle of claim **9** further comprising:

a toe stop assembly including a toe pocket disposed adjacent the first end of the support member,

wherein the support member includes a mounting tab securable to the toe stop assembly.

15. The snow vehicle of claim **14** further comprising:

a bottom out protector including a curved bottom wall and a chamber for receiving a vehicle component operably connected to a track drive shaft,

wherein the mounting tab is securable to the bottom out protector.

16. A method of assembling two snowmobiles with a common running board assembly, the method comprising:

providing a common forward frame assembly including a running board mounting feature;

providing a common running board assembly, including:

a support member having a first end and a second end,

an inboard tubular member positioned along a tunnel of the snowmobile,

an attachment element, and

a plurality of foot support members extending from the support member to the inboard tubular member;

providing a first support leg and a second support leg; and

removably securing one of the first support leg and the second support leg to the attachment element of the common running board assembly.

17. The method of claim **16**, further comprising:

removably securing the common running board assembly to the running board mounting feature of the common forward frame assembly.

18. The method of claim **16**, further comprising:

providing a first running board bracket and a second running board bracket, the first running board bracket including a first mount location to a rear suspension component and the second running board bracket including a second mount location to the rear suspension component; and

securing one of the first support leg to the first mount location and the second support leg to the second mount location.

19. The method of claim **16**, wherein the inboard tubular member is removably securable to the tunnel of the snowmobile via a plurality of fasteners at least partially received within a body of the inboard tubular member.

20. The method of claim **16**, further comprising:

securing a toe stop to a mounting tab located on the support member; and

securing a bottom out protector to the mounting tab located on the support member.

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