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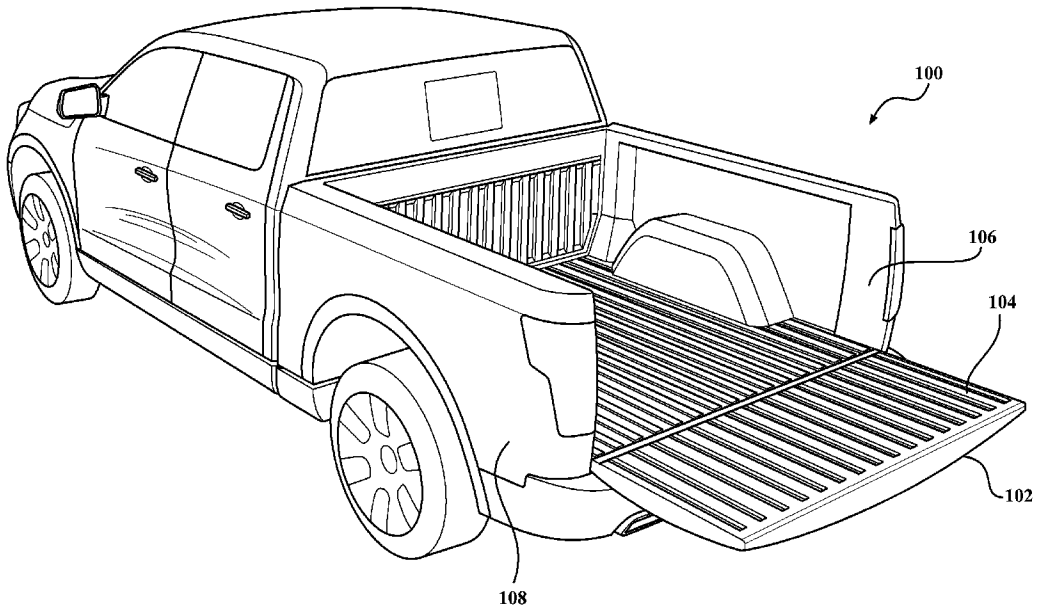
(54) Titre : ACCESSIBILITE DE HAYON
(54) Title: TAILGATE ACCESSIBILITY



(57) Abrégé/Abstract:
An articulating tailgate assembly with improved accessibility into a cargo bed of a pickup truck, incorporating at least one door. The tailgate system provides a tailgate with a combination of predetermined plurality of functions for accessibility into the cargo bed of the vehicle and to improve functionality of the tailgate assembly.

ABSTRACT

An articulating tailgate assembly with improved accessibility into a cargo bed of a pickup truck, incorporating at least one door. The tailgate system provides a tailgate with a combination of predetermined plurality of functions for accessibility into the cargo bed of the vehicle and to improve functionality of the tailgate assembly.

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TAILGATE ACCESSIBILITY

FIELD OF THE INVENTION

[0001] The present invention relates to tailgate assemblies.

BACKGROUND OF THE INVENTION

[0002] Pickup cargo bed accessability is a longstanding issue. The tailgate tends to be large and, even when rotated down to the open position, typically does not improve access to the truck bed enough or typically does not include features that improve the overall functionality of the tailgate. The truck bed access is made more difficult by the size and bulk of the tailgate and the lack of access enhancing arrangements and features. In addition, pickup truck tailgates also have little functionality. They typically mainly just provide access to the bed of the pickup truck for cargo load/load, and that is substantially all that known tailgate provide.

[0003] Accordingly, there exists a need for a tailgate system that improves access into the bed of the cargo area of pickup trucks, provides accessories, and increases functionality of the tailgate, thereby to improve accessibility and functionality.

SUMMARY OF THE INVENTION

[0004] In accordance with the present invention, there is provided a tailgate assembly adapted for improved access to the cargo bed of pickup trucks and improves tailgate functionality. The present invention is directed to a multi-functional tailgate system integrating combinations of a plurality of features for increased access

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to the cargo bed or functionality of the tailgate. Integrated features include, but are not limited to, multi-functional tailgate, horizontal split gate, vertical split gate, accordion gate, side hinged, slidable (e.g., guides in tracks, step(s), seat(s), angled downward adapted for step surface(s), lighting source(s), power source(s), extendable gates, stability handle(s), and any other predetermined desired feature, etc., and any predetermined various combinations of features.

[0005] Further areas of applicability of the present invention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating the preferred embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The present invention will become more fully understood from the detailed description and the accompanying drawings, wherein:

[0007] Figure 1 is a perspective view of a conventional tailgate on a pickup truck;

[0008] Figures 2-3 are perspective views of a tailgate assembly incorporating a hidden panel arrangement shown in an exemplary environment of use, in accordance with aspects of the present invention;

[0009] Figures 4-5 are perspective views of a tailgate assembly incorporating accordion panels shown in an exemplary environment of use, in accordance with aspects of the present invention;

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[0010] Figures 6-7 are perspective views of a tailgate assembly incorporating a plurality of features including an extendable tailgate forming a step shown in an exemplary environment of use, in accordance with aspects of the present invention;

[0011] Figures 8-9 are perspective views of a tailgate assembly incorporating a slidable panel shown in an exemplary environment of use, in accordance with aspects of the present invention;

[0012] Figures 10-11 are perspective views of a tailgate assembly incorporating a horizontally split gate shown in an exemplary environment of use, in accordance with aspects of the present invention; and

[0013] Figure 12 is a perspective view of a tailgate assembly incorporating a horizontally split gate shown in an exemplary environment of use, in accordance with aspects of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] The following description of the preferred embodiment(s) is merely exemplary in nature and is in no way intended to limit the invention, its application, or uses.

[0015] Figure 1 is a conventional tailgate 10 on a vehicle 12 providing access to the cargo bed 14 when down (down position shown in Fig. 1). Access to the bed 14 is hindered by the width W of the tailgate surface 16 and height H of the tailgate surface 16 from the ground. For bed access from the rear of the vehicle, a user needs to reach over/past the tailgate surface 16 or climb up onto the tailgate 10 into the bed

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14. If the tailgate is up/closed 10, the user has to reach over bed sides or the top of the tailgate 10. There is a need for improved truck bed access.

[0016] Referring to Figures 2-12 generally, there is provided a tailgate assembly incorporating at least one articulating tailgate door or "gate", in accordance with the present invention.

[0017] Referring now more particularly to Figures 2-3, there is illustrated a tailgate assembly adapted to slide into the cargo bed (as indicated by the arrow in Fig. 3). There is depicted a tailgate assembly shown generally at 100 incorporating at least one articulating tailgate door 102 or "panel", in accordance with the present invention. In the rotated down position, the tailgate surface 104 (interior face of the tailgate) allows a resting surface as well as access into the cargo bed 106 of the vehicle. For improved truck bed 106 access, however, the tailgate 102 is adapted to operably slide into at least one opening 110 (or pocket, etc) provided in the vehicle (e.g., adjacent the cargo bed surfaces, under the bottom of the cargo bed 106, into an open space below the cargo bed 106, etc).

[0018] The tailgate 102 is illustrated slid below the floor 112 of the cargo bed 106, however, it is understood that the tailgate 102 is adaptable depending on the application to slide below or behind any predetermined surface, e.g., cargo bed side walls, cargo bed floor, or any alternative suitable location.

[0019] One door 102 is shown, but it is understood that at least two tailgate panels 102,102 can be provided that selectively open/close and slide either independently or together or optionally selectively connectable together, e.g., with a latch, plunger, etc., to open/close or slide together.

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[0020] At least one track or any other predetermined suitable sliding device is contemplated.

[0021] Optionally, the assembly 100 includes at least one locking mechanism (e.g., plunger(s) into a tab(s), plunger(s) into aperture(s), rotating tab(s), link(s), linkage assembly(ies), releasable plunger(s) in a track(s), etc.) to maintain the panel 102 in the down position (e.g., Fig. 2), that when selectively released allows said panel 102 to be slid, is contemplated without departure from the scope of the present invention.

[0022] The panel 102 is operably rotatably and releasably operably coupled to the vehicle adjacent the opening to rotate the tailgate to the first down/open position (e.g., incorporating hinge(s), link(s), linkage assemblies, etc. and combinations thereof).

[0023] Any other accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application.

[0024] Referring now more particularly to Figs. 4-5, there is illustrated a split tailgate shown generally at 120 with at least a first panel 122 and a second panel 124 that accordion together in a first or second direction to bring the tailgate 120 to at least one side of the cargo bed rear opening, according to aspects of the present invention. Selectively moving the panels 122,124 in either direction is contemplated. While the accordion off to one side is illustrated as generally outward of the cargo bed, it is understood that alternatively, the doors are adapted to additionally, or alternatively, accordion inward into the cargo bed. Either panel is rotataby connected, e.g., hinged, to

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either substantially vertical side at the opening to the cargo bed, e.g, for left accordian door opening or right accordian door opening.

[0025] Preferably, at least one guide track 125 is provided on a bottom surface adjacent the cargo bed opening to operably guide the accordian doors as they collapse together off to one side substantially out of the way so that access into the cargo bed is improved. By way of non-limiting example, at least one pin, at least one roller, or any suitable guide provided on at least one door, preferably on both door bottoms 122,124, traverses along the guide track 125 to accordian the doors together to the open position substantially off to one side in the footprint of the rear opening of the vehicle. Preferably, the guide track 125 is operably connected to or integraglly formed with the opening framework or cargo bed liner.

[0026] At least one track or any other predetermined suitable sliding device, hinge(s), locations, latches etc is/are contemplated, depending on the application without departure from the scope of the present invention. Preferably, the panels 122,124 are operably hinged together to accordion. Additionally, preferably, the first or second panel 122,124 is operably hinged to the vehicle adjacent the opening. The at least one of the panels 122 or 124 or both of the panels 122,124 are operably adapted to allow another opening direction, wherein the tailgate can also selectively rotate down to another open position (e.g., similar to down/open position depicted in Fig. 2).

[0027] Any other accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application.

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[0028] Referring now more particularly to Figs. 6-7, there is illustrated a tailgate shown generally at 130 with at least one door 132 that operably extends out (as indicated by the arrow in Fig. 6), according to aspects of the present invention. There is provided at least one extension member 134 of predetermined width and length that is operably connected to the vehicle adjacent the opening into the rear cargo bed. The at least one door 132 is operably coupled to the at least one extension member 134 and operable to extend outward to extend the tailgate. At least one accessory is also provided on the tailgate 130 for improved functionality. At least one power source is preferably provided 136 (e.g., 12V plug). Preferably, at least one step surface 138 is also provided. At least one lighting device 140 is preferably provided, more preferably, a lighting device 140 located in at least one predetermined location to illuminate a ground surface where an operator approaches the vehicle.

[0029] Optionally, the assembly 130 includes at least one locking mechanism (e.g., plunger(s) into a tab(s), plunger(s) into aperture(s), rotating tab(s), link(s), linkage assembly(ies), releasable plunger(s) in a track(s), etc.) to maintain the panel 132 in the down position (e.g., Fig. 6), that when selectively released allows said panel 132 to be extended, is contemplated without departure from the scope of the present invention.

[0030] To give improved access to the cargo bed 106, the tailgate 130 lowers down, e.g., at an angle preferably, to provide the step 138 access into the cab 106. A predetermined release mechanism is operably provided, e.g., at least one handle, paddle latch, etc, accessed by opening an access panel 142. The access panel 142 selectively serves as a stepping assist handle grabbed by an operator.

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[0031] The tailgate 130 is operably rotatably and releasably operably coupled to the vehicle adjacent the opening to rotate the tailgate to the first down/open position (e.g., incorporating hinge(s), link(s), linkage assemblies, etc. and combinations thereof).

[0032] The tailgate 130 is operably rotatably and releasably operably coupled to the vehicle adjacent the opening to further rotate the tailgate to the second down/angled step open position (e.g., incorporating hinge(s), link(s), linkage assemblies, etc. and combinations thereof).

[0033] Any other accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application.

[0034] Referring now more particularly to Figs. 8-9, there is illustrated a tailgate shown generally at 150 including at least one door 152, according to aspects of the present invention. The tailgate 150 tips up (Fig. 9) to allow improved access into the cargo bed 106. The door 152 operably traverses along at least one first pair of tracks 156 (e.g., substantially vertical tracks operably attached to, or integrally formed with, the side walls of the cargo bed 106 adjacent an opening 158 to the rear of the bed). The door 152 also operably traverses along at least one second pair of tracks 154 (e.g., substantially horizontal tracks operably attached to, or integrally formed with, the side wall uppers of the cargo bed 106 adjacent a top opening to the cargo bed. Typically, operable guides (e.g., guide rollers, guide pins, links, link assemblies, etc. and combinations thereof) are operably connected to the door 152 which operably slide along the tracks 156,154 to move the tailgate up 150 and then substantially horizontally

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toward the vehicle cab out of the way to increase accessibility through the rear opening 158 into the cargo bed 106.

[0035] Any other accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application.

[0036] Referring now more particularly to Figs. 11-12 there is illustrated a tailgate shown generally at 160 with at least two doors or "panels", a first door 162 and a second door 162, preferably half doors, according to aspects of the present invention. At least one of the doors is moveable. The gate 160 is split in half, e.g., in longitudinal, horizontal direction preferably, or alternatively vertically. The tailgate 160 being split in half makes it easier to reach through the rear opening 169 into the carbo bed 106 when the second gate 164 is opened (e.g., rotated down/open). The tailgate surface 166 is preferably relatively flat. It is understood that the door 162 can operable selectively rotate open independently or alternatively be fixed. Alternatively, the tailgate halves 162,164 are operably selectively latchable to each other to selectively open together (e.g., drop down to orientation of 164 in the figure). It is contemplated that, additionally, the first door 162 is adopted to tip up/back (similar to Fig. 9).

[0037] The tailgate halve 164 is operably rotatably and releasably operably coupled to the vehicle adjacent the opening 169 to rotate the tailgate to the first down/open position (e.g., can incorporate guides, guide rollers, guide pins, hinge(s), link(s), linkage assemblies, etc. and combinations thereof).

[0038] The tailgate 160 halves 162,164 are operably selectively connected for a closed position. Optionally, adapted to operably rotate together down to a second open position (e.g., similar to the position depicted in Fig. 2).

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[0039] Alternatively, the lower half 164 is operably rotatably coupled to the vehicle to rotate between open/closed positions, and the second half 162 (e.g., upper half) is operably slidably coupled to the vehicle to slide up and out of the way, e.g., using vertical guide tracks or vertical and upper horizontal guide tracks.

[0040] Any other accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application.

[0041] Referring now to Figure 12, which is identical to Figs. 10-11 except that at least one seat is provided, according to aspects of the present invention. Preferably, at least one depression is provided 168 in the tailgate surface 166 that serves as a seat for a person.

[0042] Any other accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application.

[0043] Any of the aforementioned aspects of the present invention are understood to be adaptable to be combinable in any combination. Any of the aforementioned Figs. 2-12 materials are metal, aluminum, composite, SMC, reinforced, steal, and any combinations thereof. Any of the aforementioned aspects of the present invention of Figs. 2-12 or described are understood to be adaptable to be combinable with each other and any accessories and combinations thereof are contemplated depending on the application without departure from the scope of the application. Any of the aforementioned aspects of the present invention are understood to be adaptable to incorporate at least one lift assist. Any of the aforementioned aspects of the present invention are understood to be adaptable to incorporate at least one manual, mechanical, or electrical lift assist. The tailgate assembly incorporates at least one

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improved assessability feature, e.g., at least one door pocket system, accordian tailgate system, tailgate step system, tailgate track system, tailgate tip system, split tailgate system, horizontal split tailgate system and combinations thereof. Preferably, in combination with improved accessability and functionality features including, but not limited to, step-up surfaces, lighting, power sources, independently articulatable doors, etc. and any combinations thereof.

[0044] The description of the invention is merely exemplary in nature and, thus, variations that do not depart from the gist of the invention are intended to be within the scope of the invention. Such variations are not to be regarded as a departure from the spirit and scope of the invention.

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CLAIMS

What is claimed is:

1. A tailgate assembly, comprising:

at least one tailgate door adapted to operably connect at an opening of a cargo bed of a vehicle, said at least one tailgate door operable selectively moveable between a closed position and at least one open position; and

at least one feature incorporated with said at least one door adapted for improved access to the cargo bed of the vehicle.

2. The tailgate assembly of claim 1, wherein said at least one feature is selected rom the group consisting of at least one door pocket system, accordian tailgate system, tailgate step system, tailgate track system, tailgate tip system, split tailgate system, and combinations thereof.

3. The tailgate assembly of claim 1, wherein the at least one tailgate door is adapted to operably selectively slide out of the way of the opening into a pocket operably provided adjacent to the cargo bed.

4. The tailgate assembly of claim 1, wherein the tailgate assembly is adapted to operably selectively move out of the way of the opening into a pocket operably provided below the cargo bed.

5. The tailgate assembly of claim 1, wherein said at least one tailgate door comprises at least a first panel operably connected to at least one second panel, said at least one of said first or second panels is adapted to operably connect to the vehicle, wherein the first and second panels are selectively accordianed together off to a predetermined side of the opening of the cargo bed for accessability to the cargo bed.

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6. The tailgate assembly of claim 5, further comprising at least one guide track adapted to operably couple to said cargo bed, said at least one guide track operably to selectively guide said first and second panels between open and closed positions.

7. The tailgate assembly of claim 1, wherein the at least one tailgate door is adapted to rotataby connect to a substantially vertical side of the opening of the vehicle.

8. The tailgate assembly of claim 1, further comprising at least one guide track located adjacent to the opening to selectively operably guide the at least one tailgate door to at least one open position.

9. The tailgate assembly of claim 8, wherein said at least one guide track is located at a lower, substantially horizontal surface adjacent said opening operable to slide said at least one tailgate door off to either side of the opening for access into the cargo bed.

10. The tailgate assembly of claim 8, wherein said at least one guide track is located at a side, substantially vertical surface adjacent said opening operable to slide said at least one tailgate door out of the way of the opening for access into the cargo bed.

11. The tailgate assembly of claim 8, wherein said at least one guide track is is a pair of guide tracks adapted to operable couple at substantially vertical sides of the opening, said at least one tailgate door is operably slidable up/down said pair of guide tracks, wherein sliding said at least one tailgate door up clears the opening for access into the cargo bed.

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12. The tailgate assembly of claim 11, further comprising substantially horizontal portions of said pair of guide tracks adapted to operably couple to substantially horizontal upper portions of opposite side walls of the cargo bed, said at least one tailgate door is operably slidable in substantially fore/aft directions along said substantialy horizontal portions of said pair of guide tracks, wherein sliding said at least one tailgate door in a fore direction further moves said tailgate assembly out of the way of the opening for access into the cargo bed.

13. The tailgate assembly of claim 1, wherein the tailgate assembly further comprises at least one accessorty selected from the group consisting of at least one power source, at least one stability handle, at least one lighting source, at least one seat portion, and any combinations thereof.

14. The tailgate assembly of claim 1, wherein the tailgate assembly is a horizontally split tailgate, wherein said at least one tailgate door includes a first panel adapted to rotatably couple to the vehicle to selectively rotate between an open and a closed position, and a second panel operably selectively coupled to the first panel and adapted to operably couple to the vehicle.

15. The tailgate assembly of claim 1, wherein the first and second panels are operably latchable together to selectively rotate to an open position together.

16. The tailgate assembly of claim 1, wherein the tailgate assembly is split and one liftgate door half operably rotates to an open position and another liftgate door half operably slides up to an open position.

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17. The tailgate assembly of claim 1, wherein the at least one liftgate assembly is adapted to operably slide out from the vehicle when in a rotated down/open position to extend a length of the at least one tailgate door.

18. The tailgate assembly of claim 17, wherein said liftgate assembly comprises an integrated step portion with an operator stepping surface, wherein the liftgate assembly is additionally selectively rotatable further to an angled step position operable for said stepping surface to provide a step for an operator to step up into the cargo bed.

19. A tailgate assembly adapted for a vehicle, comprising:

at least one multifunctional tailgate portion adapted to operably connect at an opening of a cargo bed of the vehicle, said at least one multifunctional tailgate portion is operable selectively moveable between a closed position and at least one open position; and

at least one feature incorporated with said at least one multifunctional tailgate portion adapted for access to the cargo bed of the vehicle and functionality of said tailgate assembly, wherein said at least one feature is selected rom the group consisting of at least one door pocket system, accordian tailgate system, tailgate step system, tailgate track system, vertical track system, veritcal and horizontal track system, horizontal guide track system, tailgate tip up system, horizontal split tailgate system, and combinations thereof.

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20. A tailgate assembly adapted for a pickup truck cargo bed, comprising:

at least one tailgate portion adapted to operably connect to or adjacent to the cargo bed, said at least one tailgate portion is operable selectively moveable between a closed position and at least one open position to allow access into the cargo bed; and

a plurality of features incorporated with said at least one tailgate portion, wherein said at least one feature is selected rom the group consisting of at least one door pocket system, accordian tailgate system, tailgate step system, tailgate track system, tailgate tip up system, horizontal split tailgate system, and combinations thereof; and

at least one accessory, wherein said at least one accessory is selectived from the group consisting of at least one lighting source, at least one power source, at least one seat, at least one stability handle, and combinations thereof.

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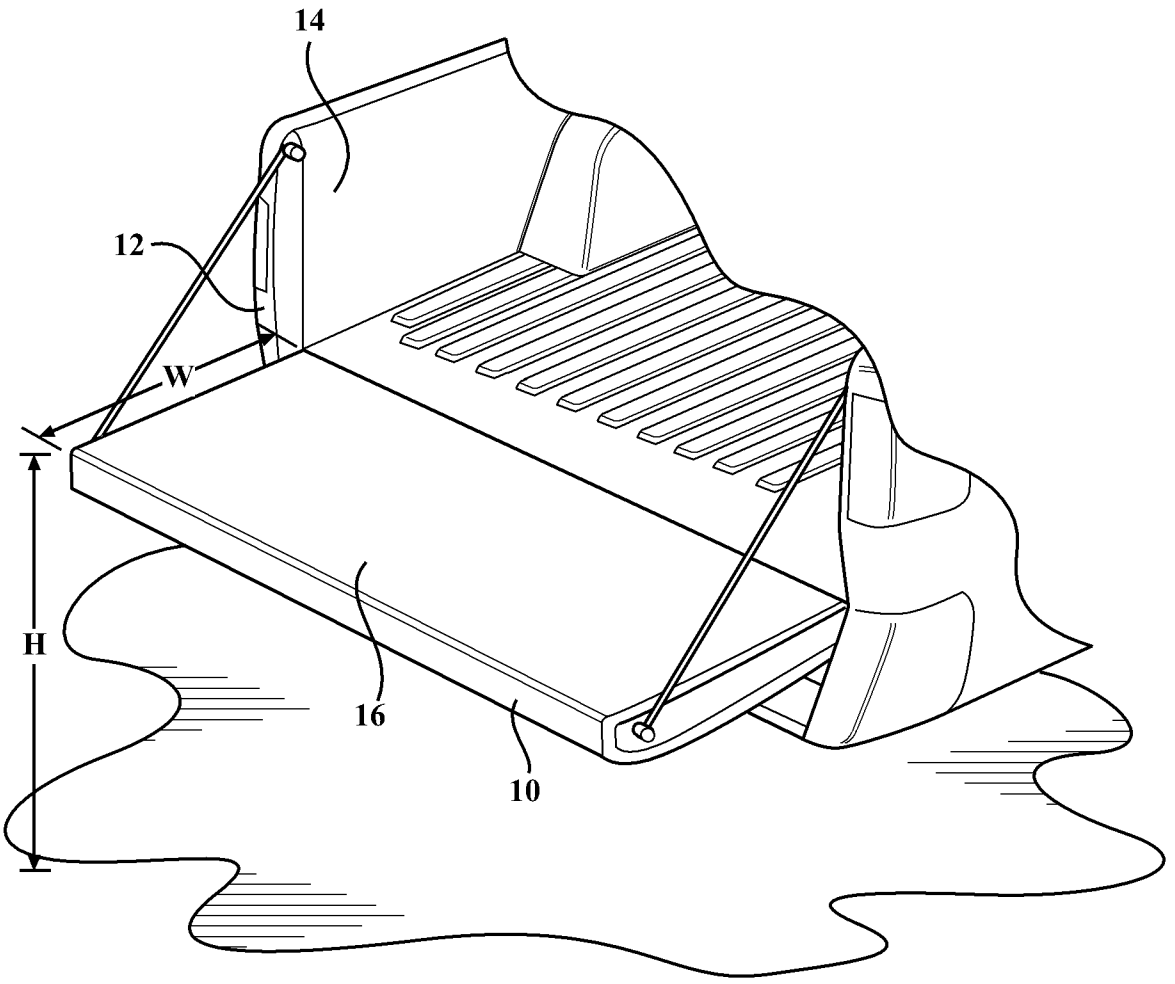

FIG. 1
PRIOR ART

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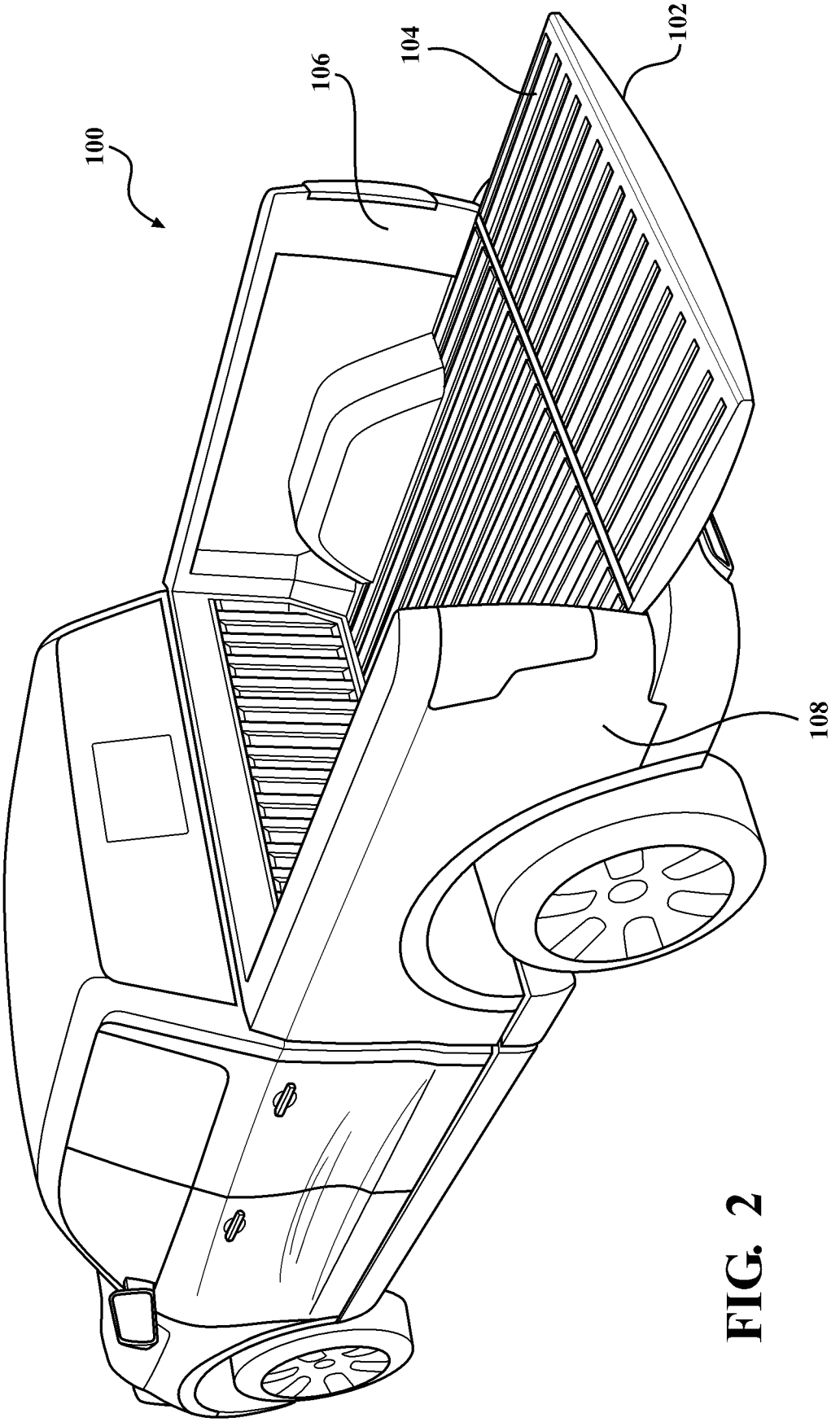

FIG. 2

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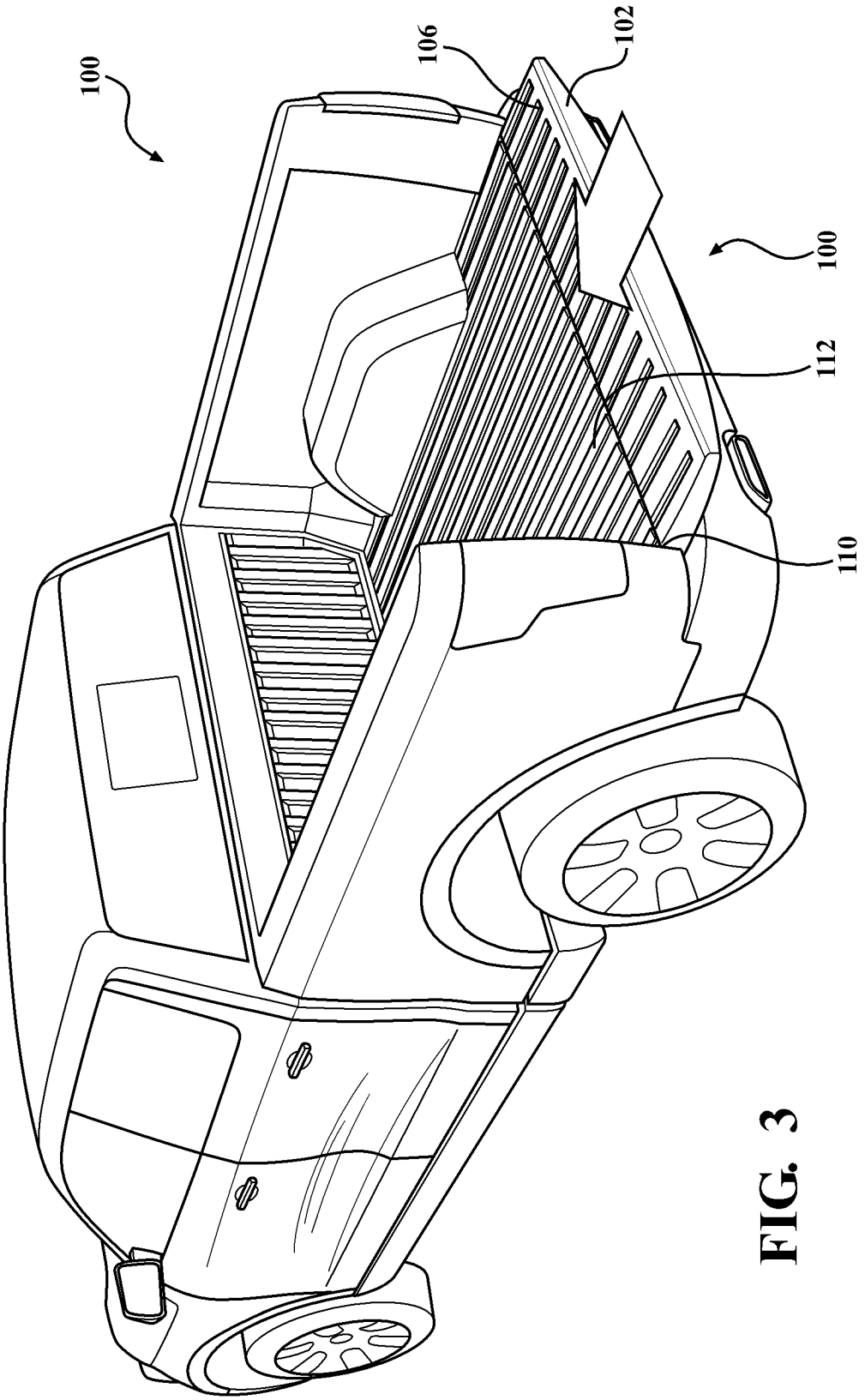

FIG. 3

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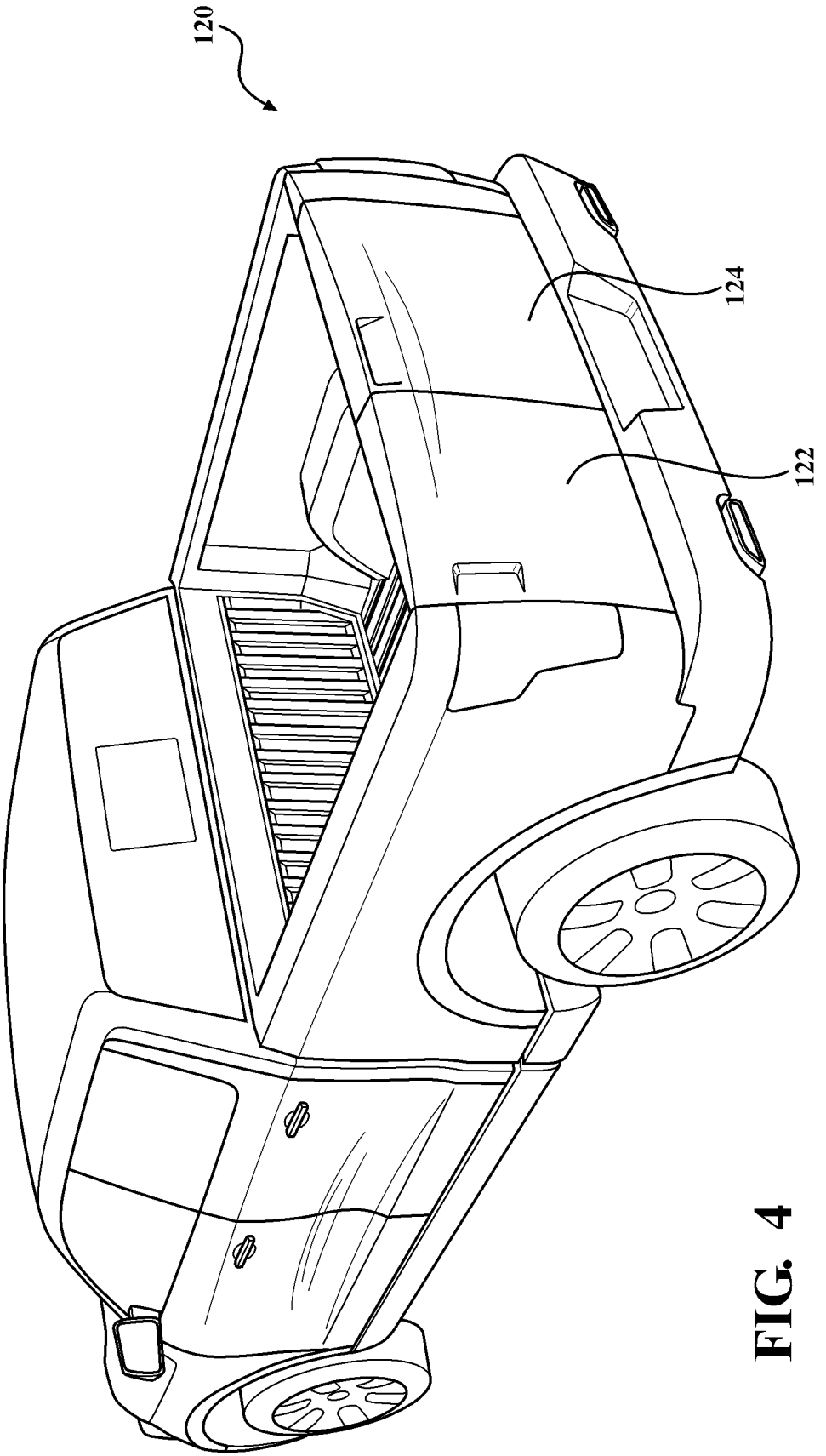

FIG. 4

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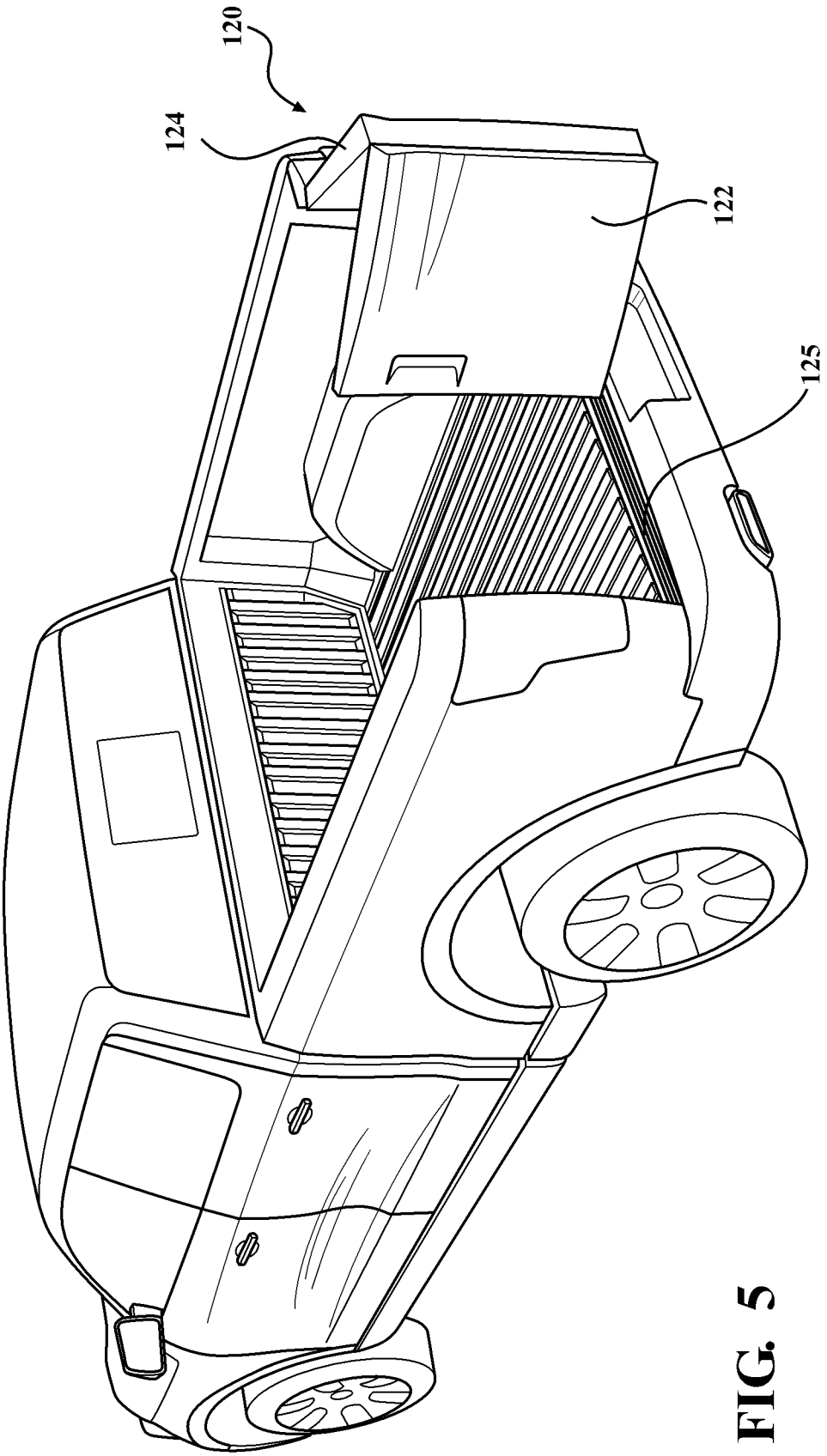

FIG. 5

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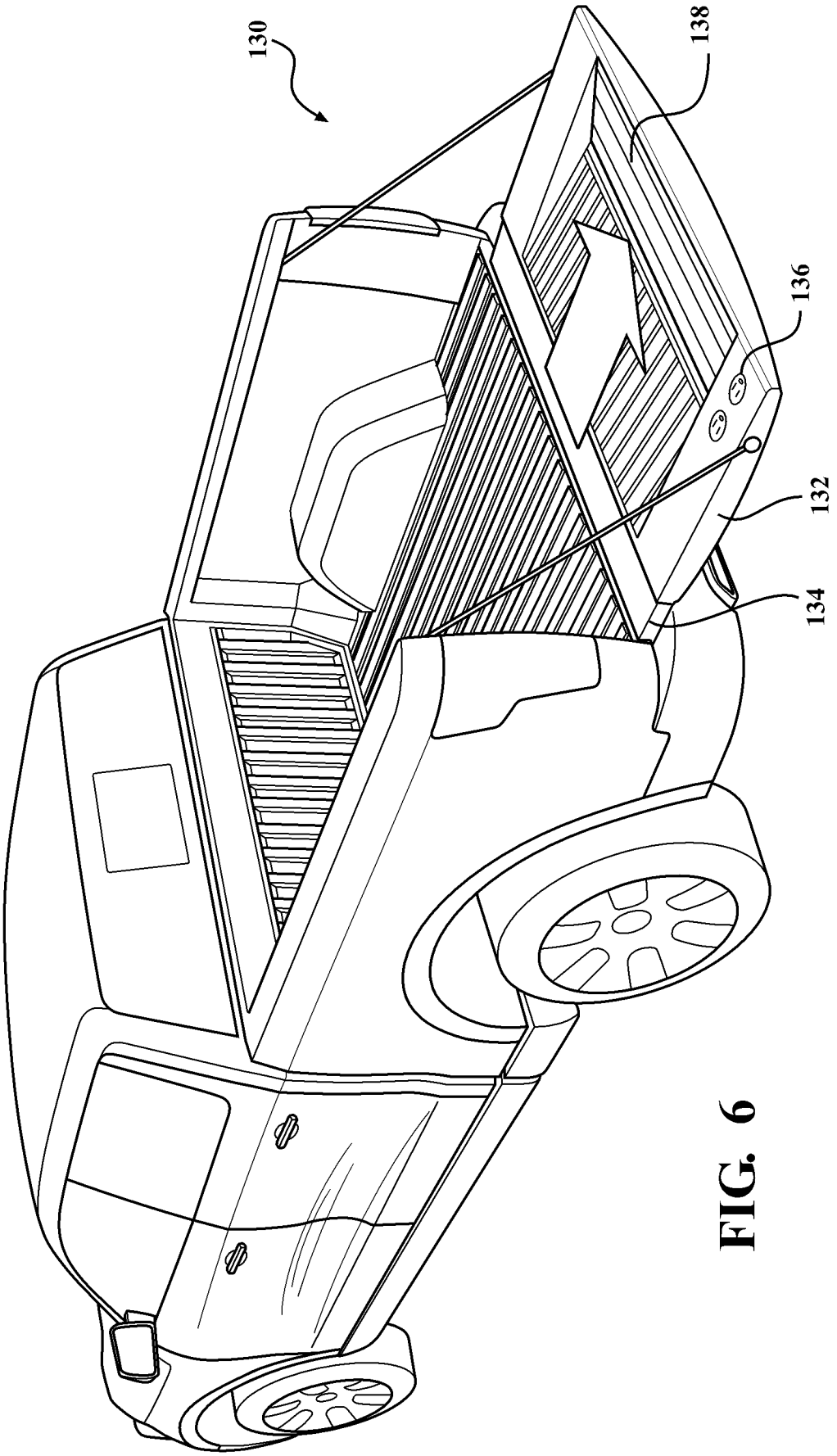

FIG. 6

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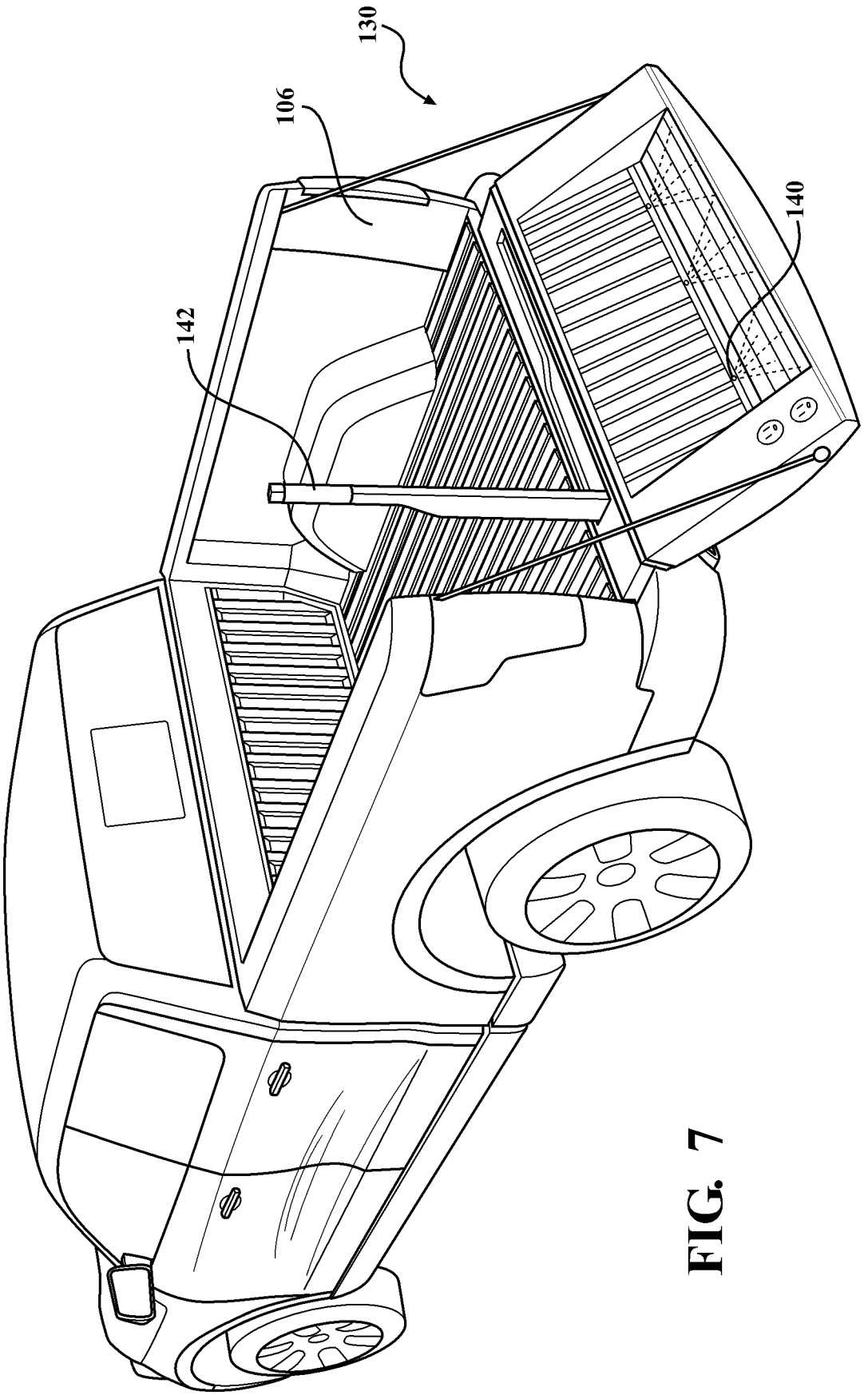

FIG. 7

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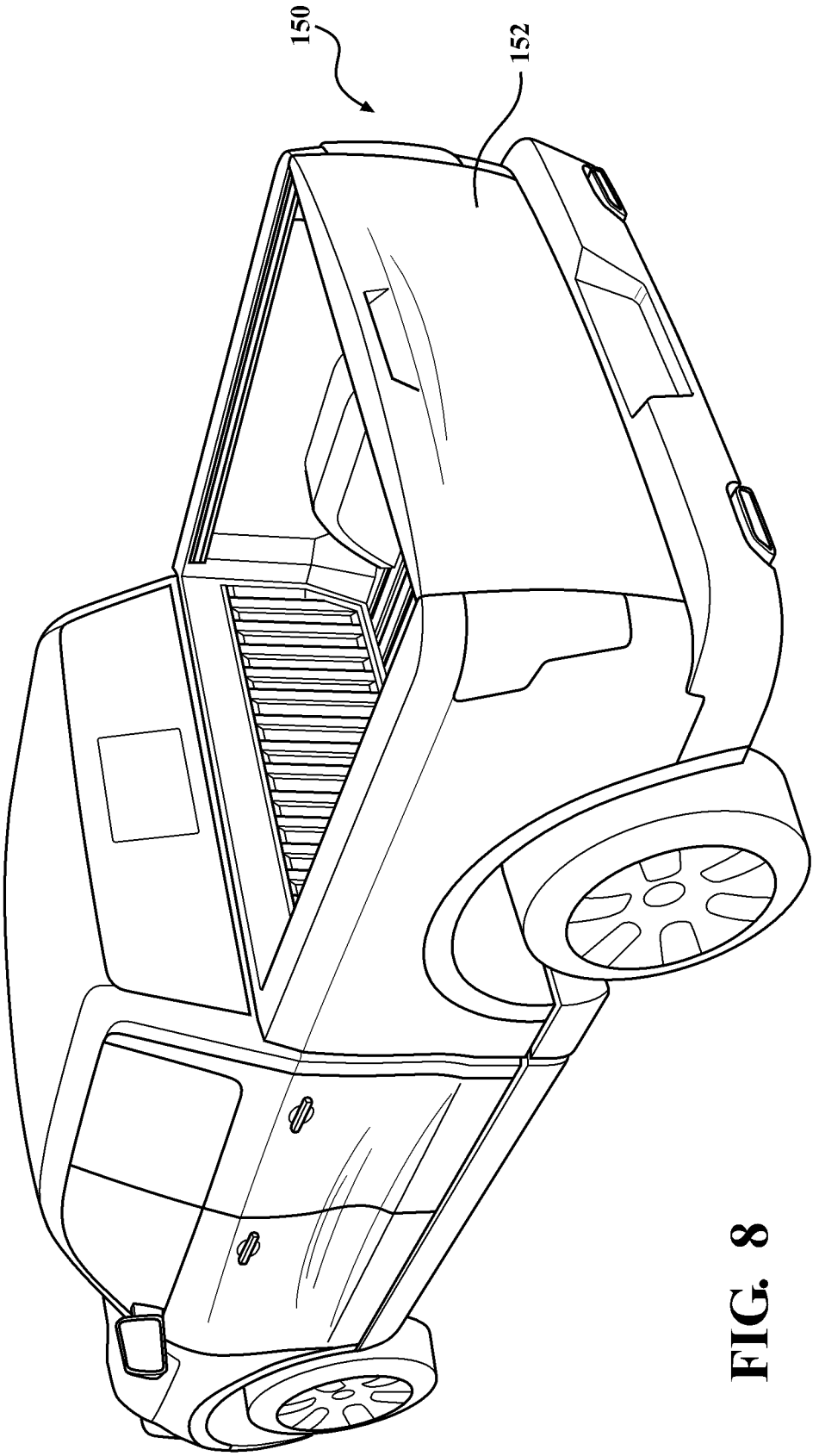

FIG. 8

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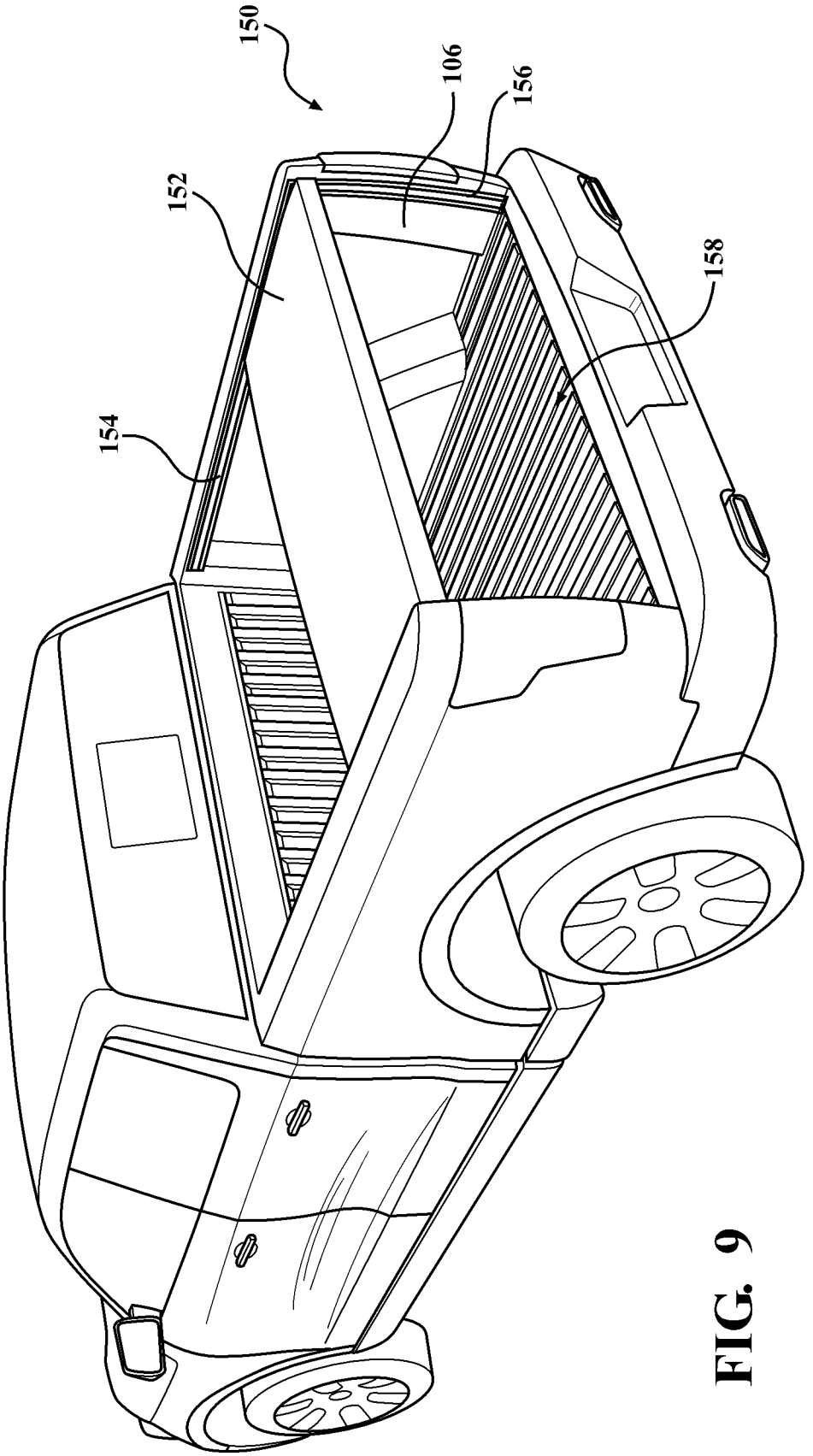

FIG. 9

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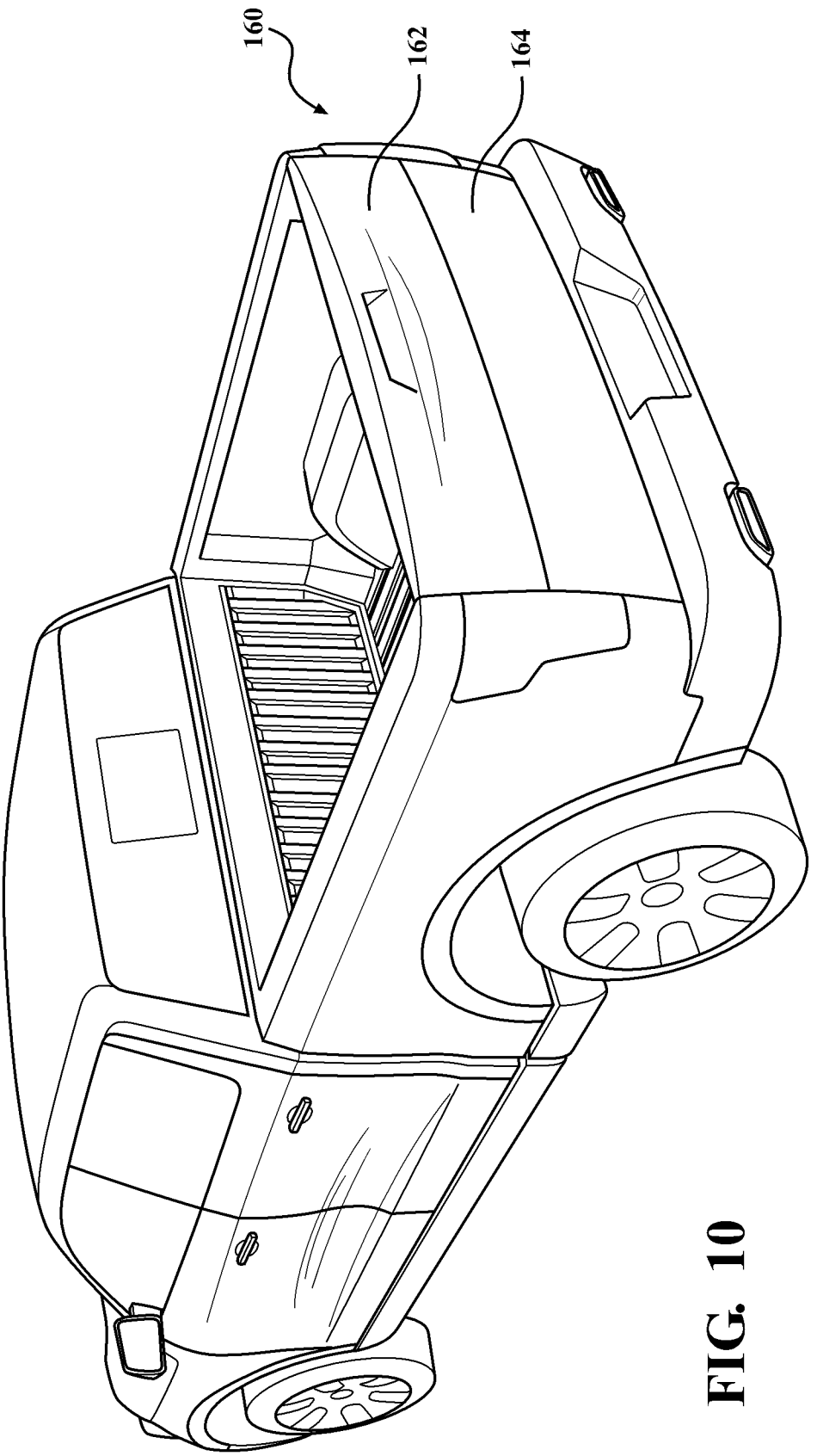

FIG. 10

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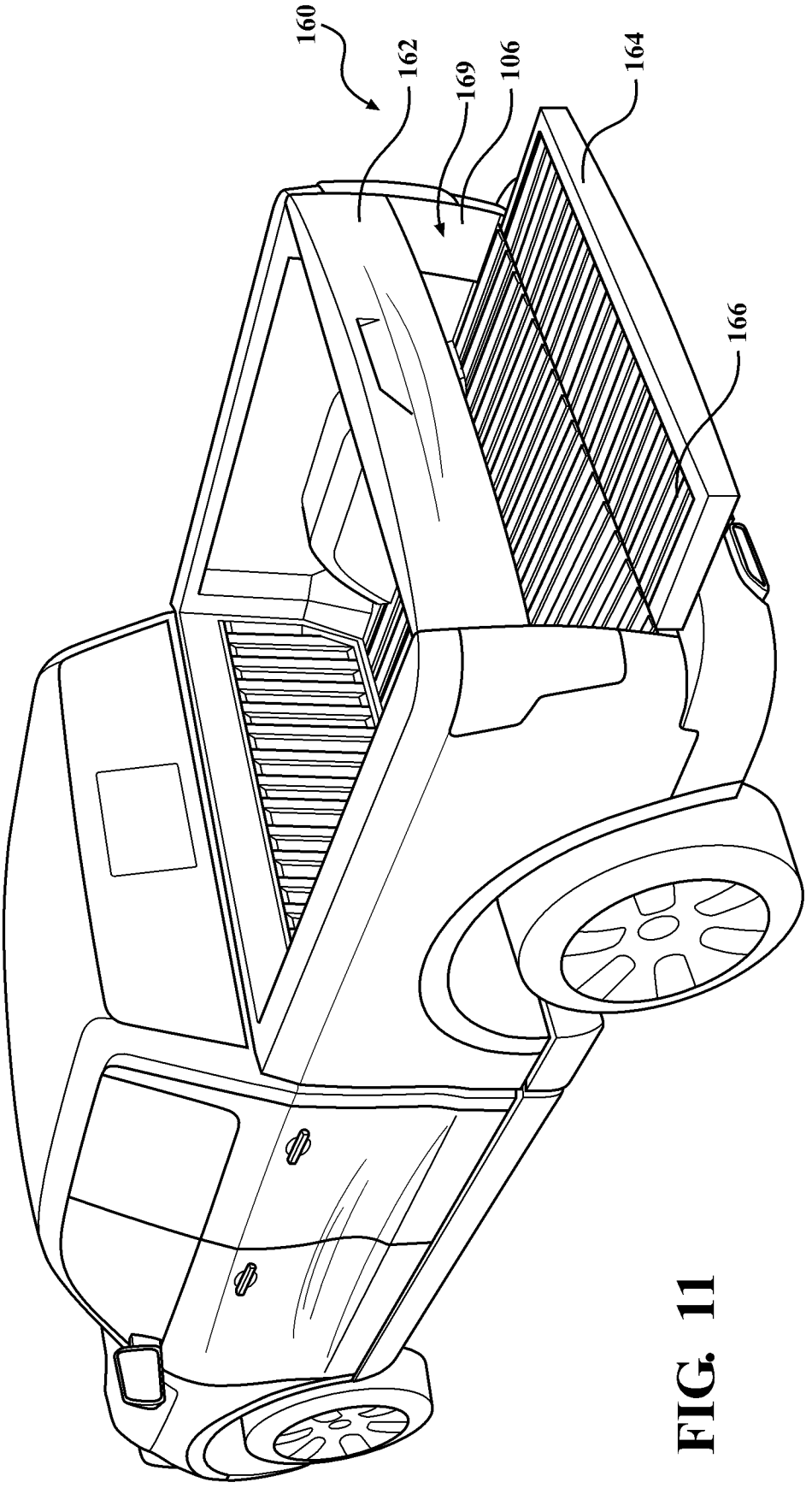

FIG. 11

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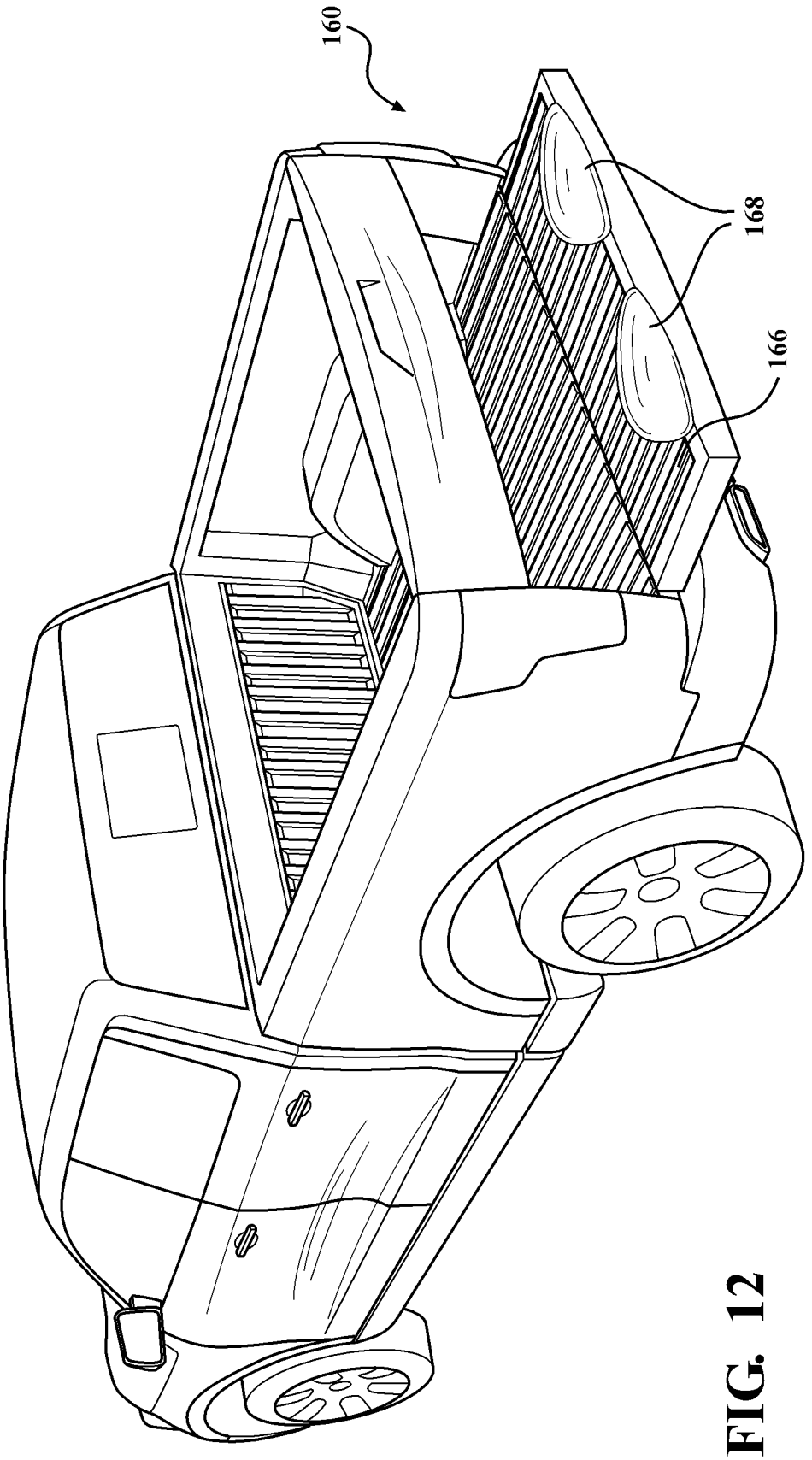

FIG. 12

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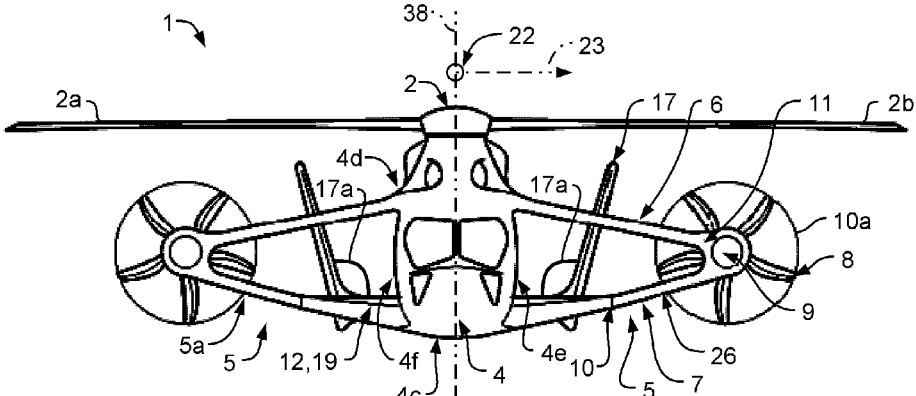
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