US010647239B2

(12) **United States Patent**
Roberts et al.

(10) **Patent No.: US 10,647,239 B2**
(45) **Date of Patent: May 12, 2020**

(54) **DOOR PROP ASSEMBLY**

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(72) Inventors: **Landon Roberts**, Navasota, TX (US); **Leland Sutton, Jr.**, Navasota, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/901,880**

(22) Filed: **Feb. 21, 2018**

(65) **Prior Publication Data**

US 2018/0236922 A1 Aug. 23, 2018

Related U.S. Application Data

(60) Provisional application No. 62/461,237, filed on Feb. 21, 2017.

(51) **Int. Cl.**

B60P 1/26	(2006.01)
E05C 17/20	(2006.01)
B60J 5/10	(2006.01)
B60P 3/22	(2006.01)

(52) **U.S. Cl.**

CPC ***B60P 1/26*** (2013.01); ***E05C 17/20*** (2013.01); *B60J 5/108* (2013.01); *B60P 3/2245* (2013.01)

(58) **Field of Classification Search**

CPC B60P 1/26; B60P 1/16; B60P 1/267; B60P 1/165; B60P 1/28; B60P 1/38; B60P 1/483; E05C 17/365; E05C 19/10; E05C 3/34

USPC ... 298/23 R, 1 R, 7, 38, 22 R, 23 MD, 23 D, 298/25, 27, 30, 6; 414/425, 519, 528, 414/414, 424, 713, 705

See application file for complete search history.

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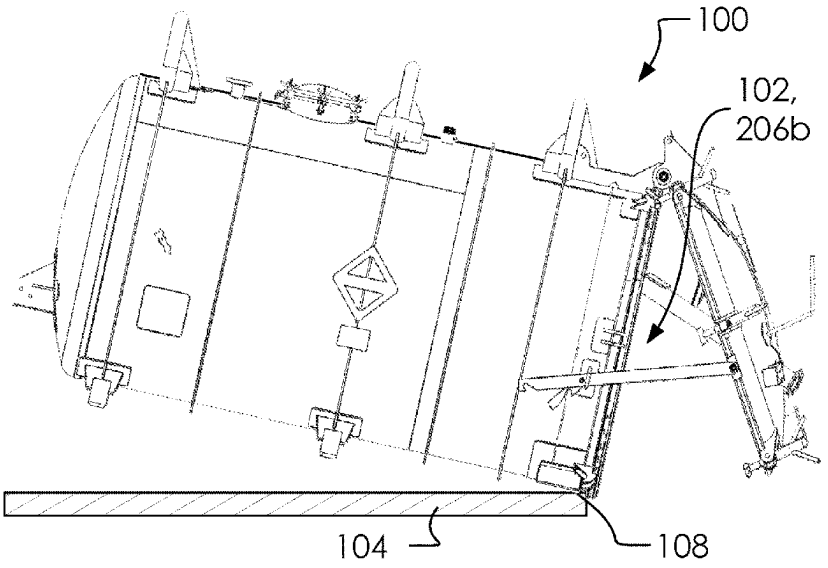
(74) *Attorney, Agent, or Firm* — Shannon Warren

(57) **ABSTRACT**

A door prop assembly for selectively supporting a rear gate of a tilting vehicle. Said door prop assembly is configured to selectively prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration. Said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm. Said distal mount assembly is attached to a side portion of said rear gate. Said lock bar assembly is attached to a side portion of a tilting body. Said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly. Said rotating lock arm is configured to rotate freely on a locking hook hinge. A side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly.

18 Claims, 14 Drawing Sheets



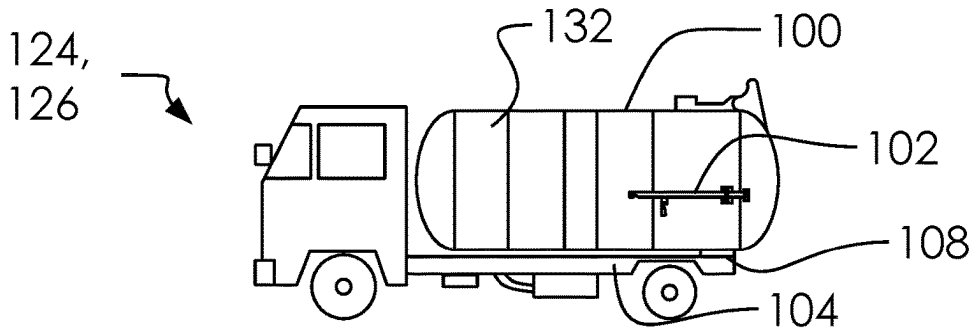


FIG. 1A

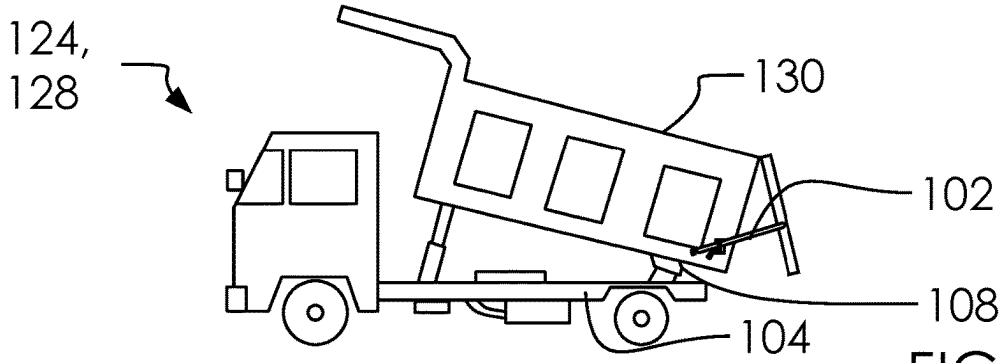


FIG. 1B

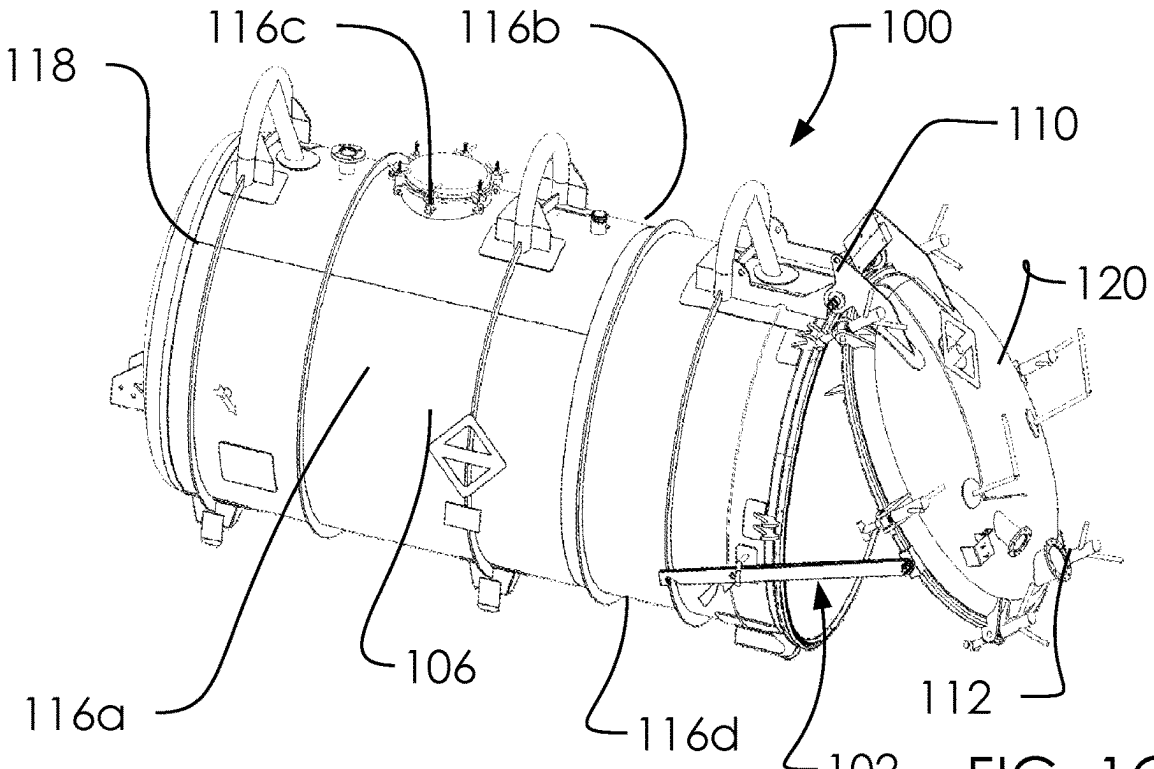


FIG. 1C

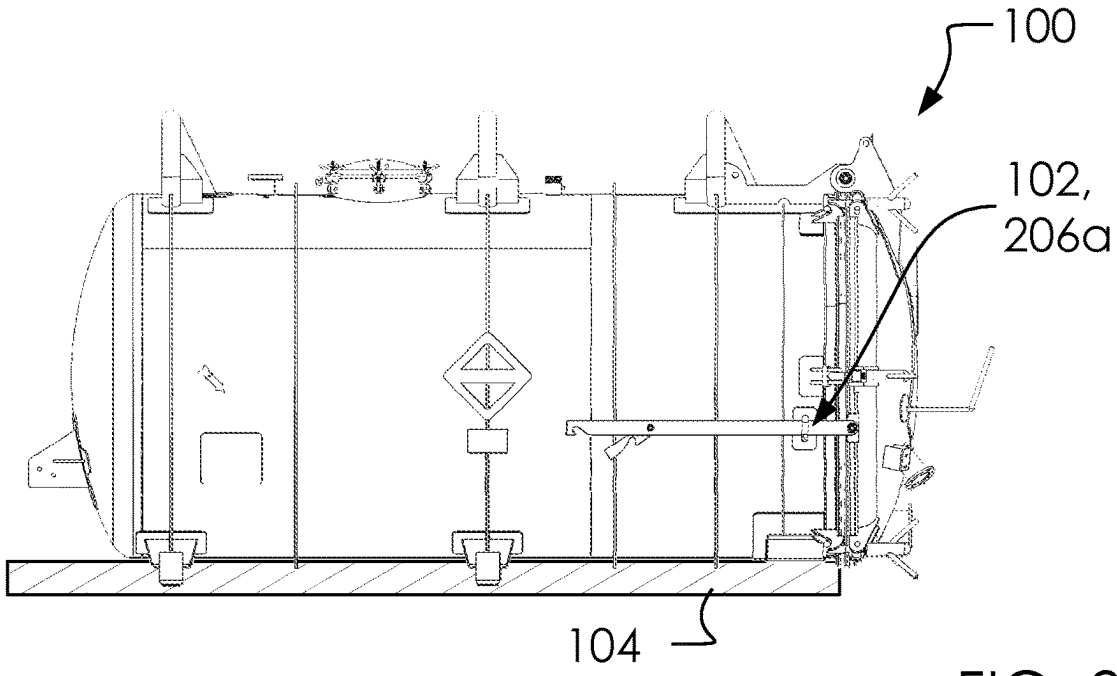


FIG. 2A

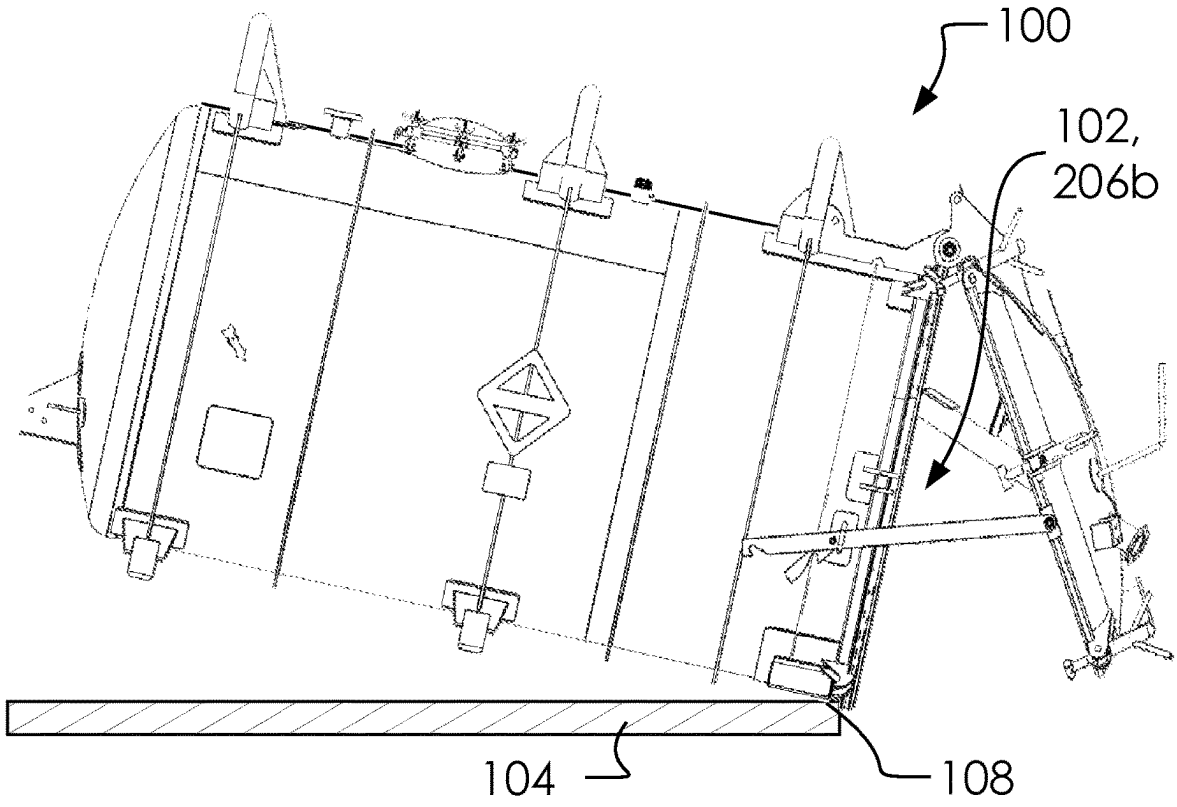


FIG. 2B

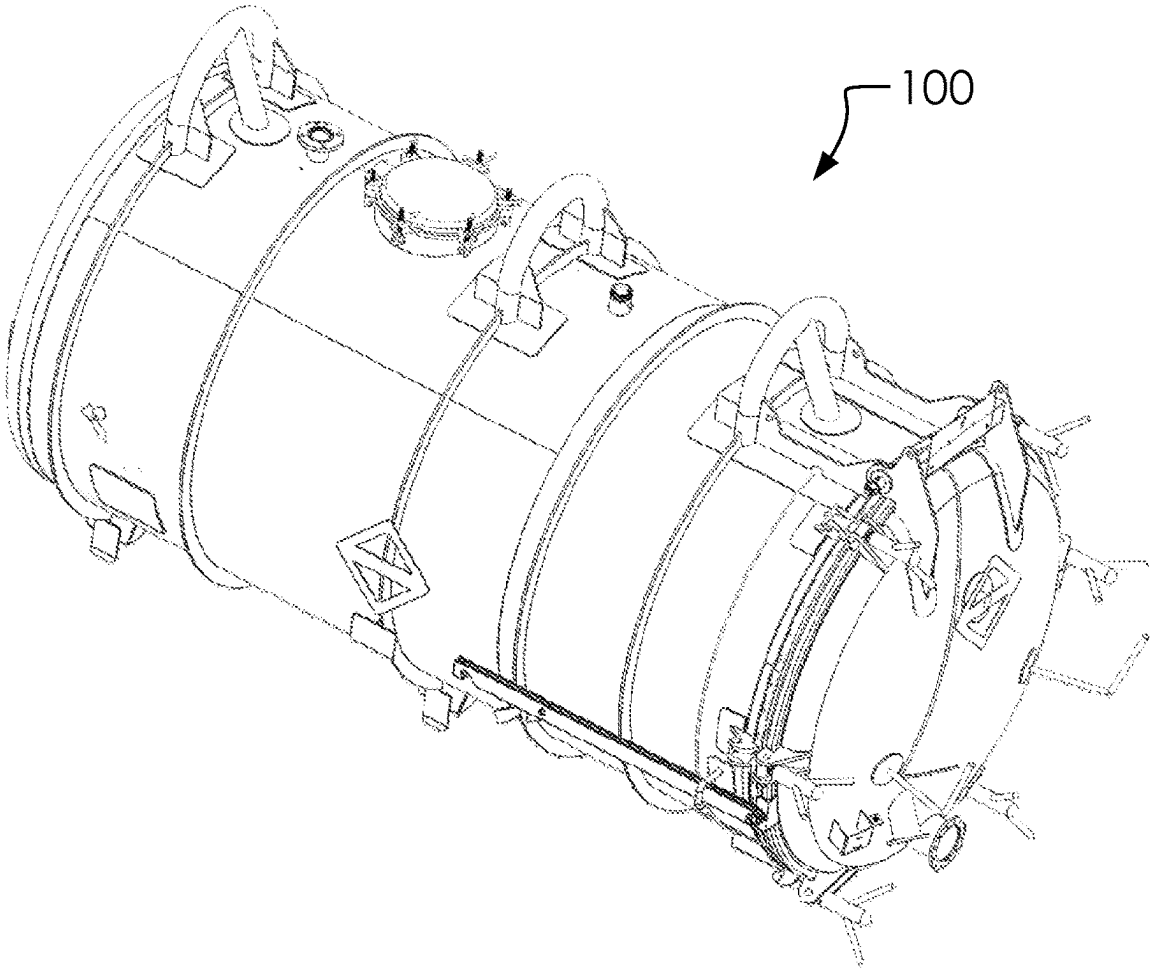


FIG. 3

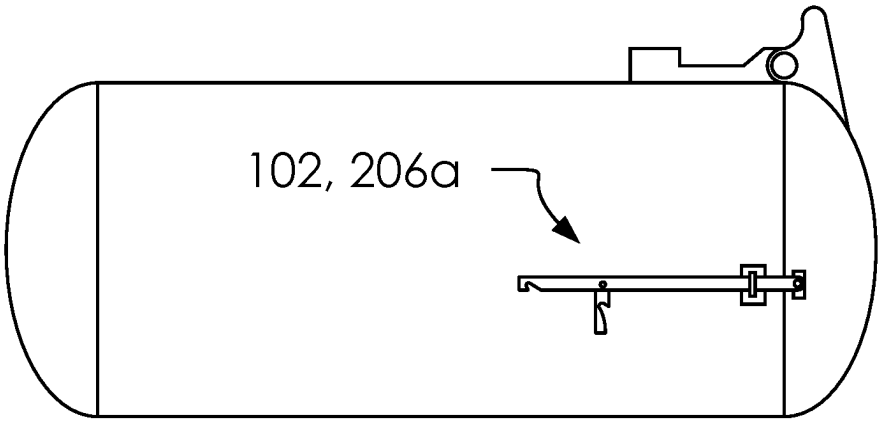


FIG. 4A

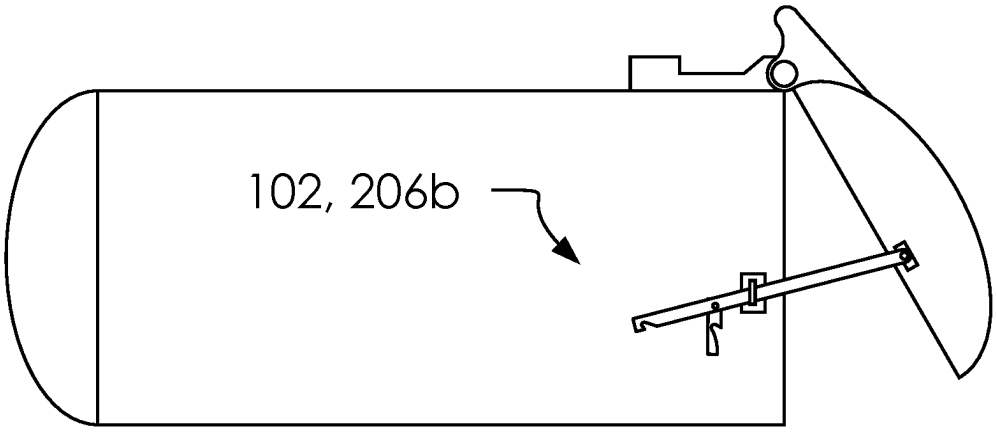


FIG. 4B

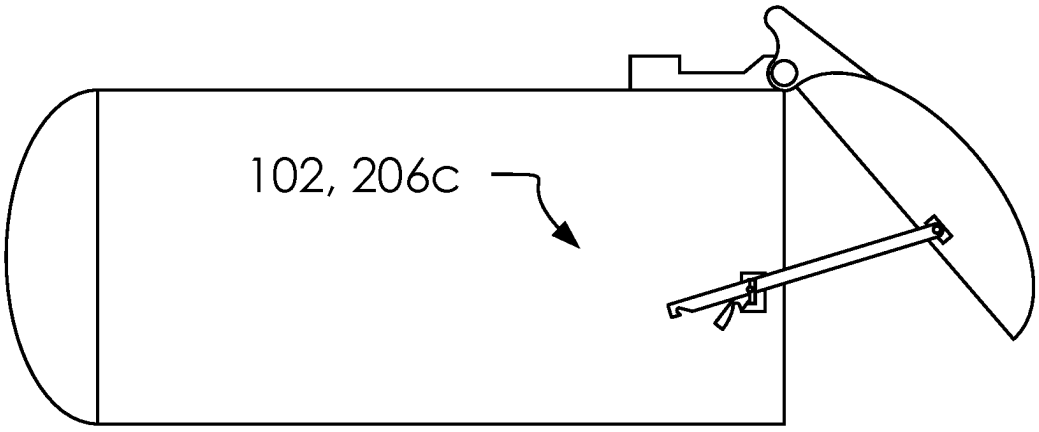


FIG. 4C

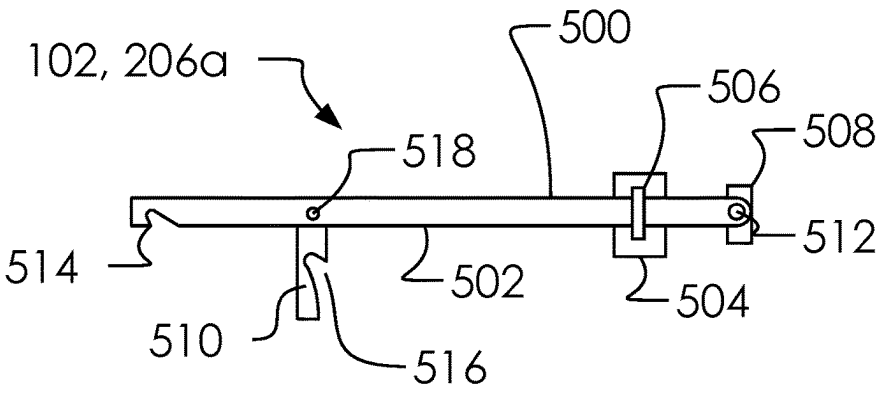


FIG. 5A

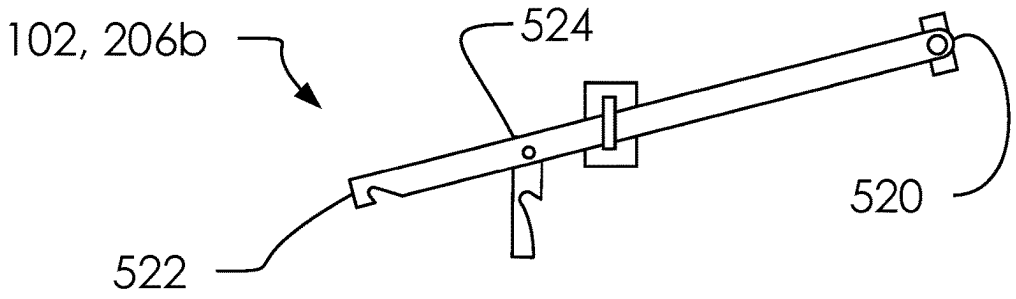


FIG. 5B

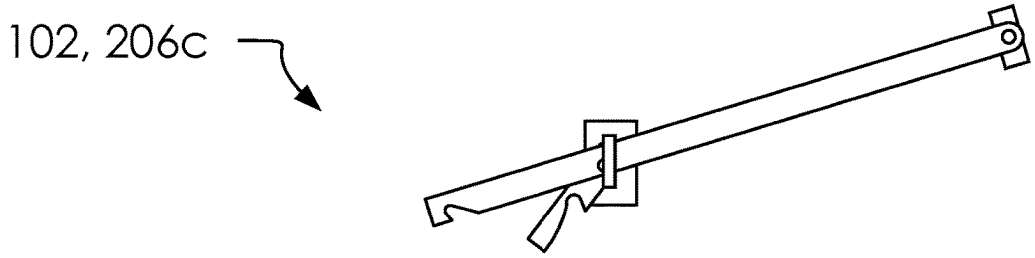


FIG. 5C

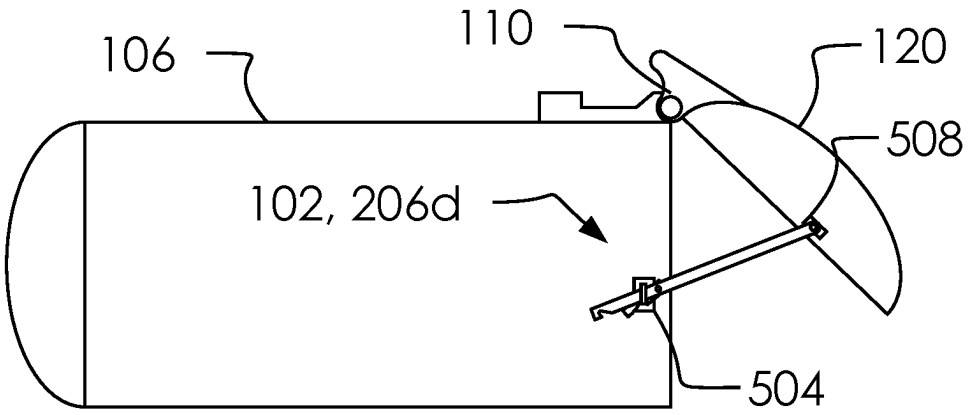


FIG. 6A

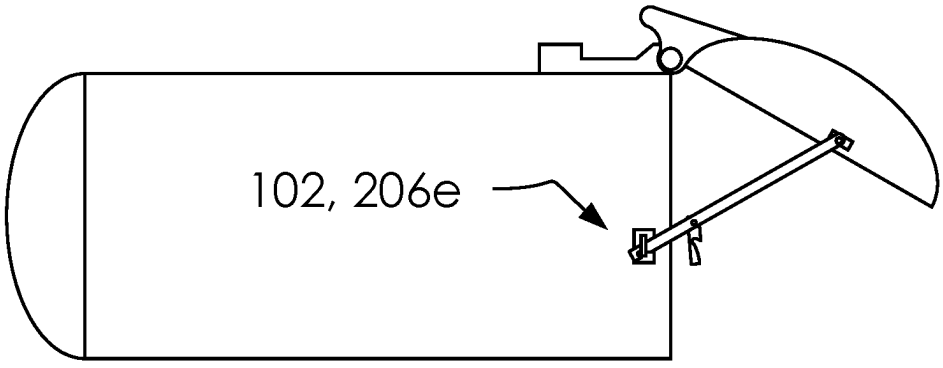


FIG. 6B

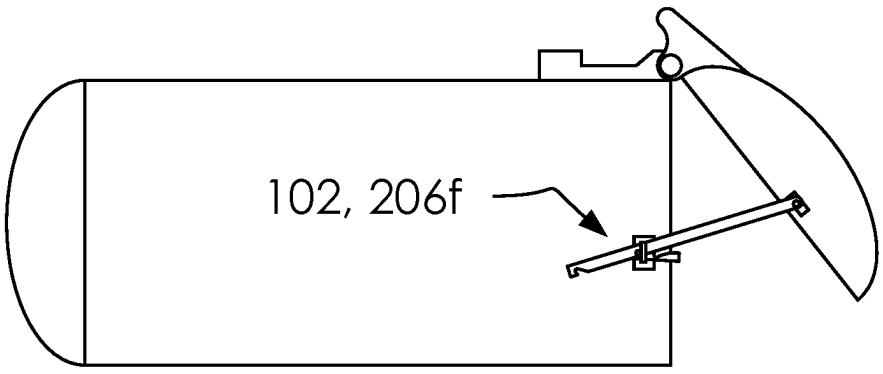


FIG. 6C

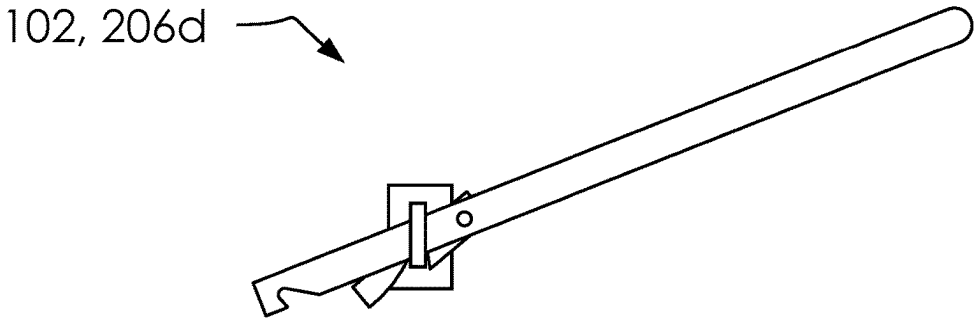


FIG. 7A

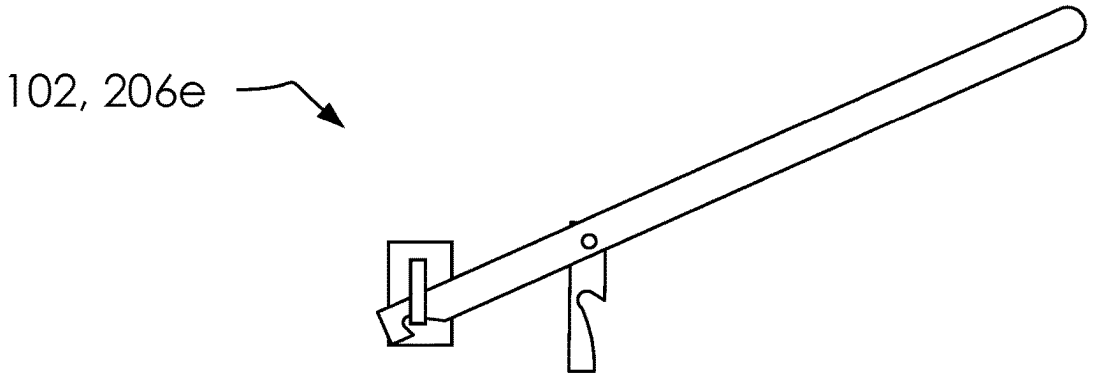


FIG. 7B

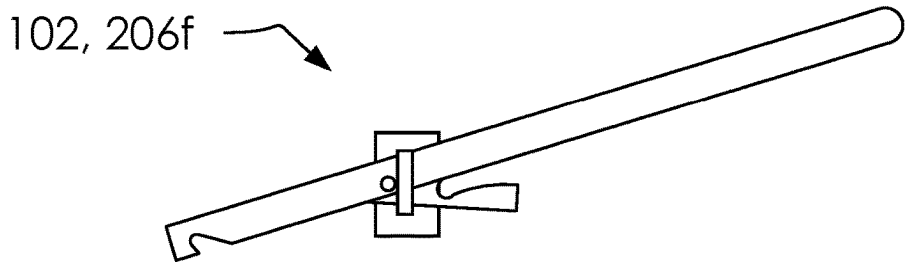
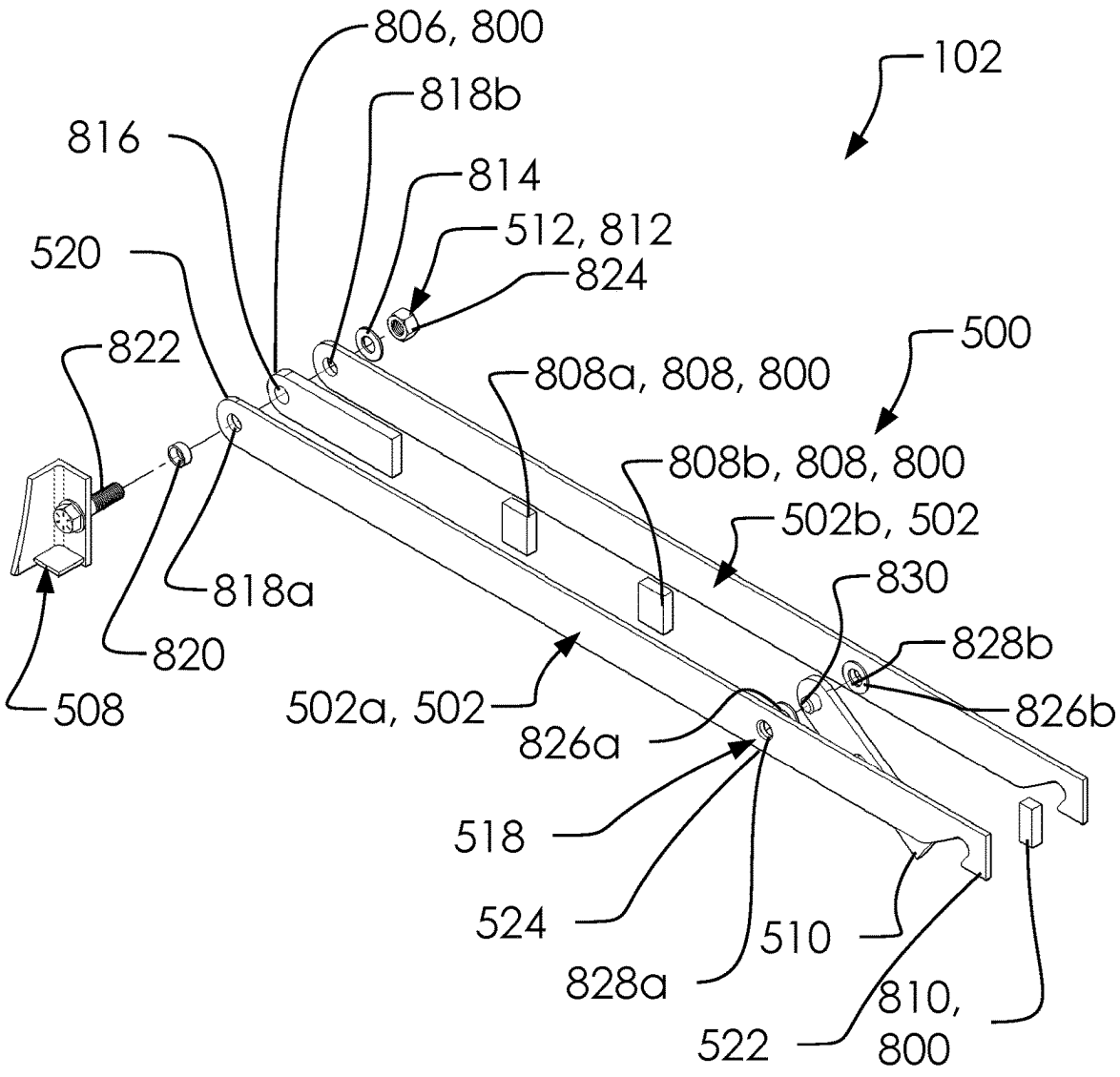


FIG. 7C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816
814
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824
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818a
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FIG. 8

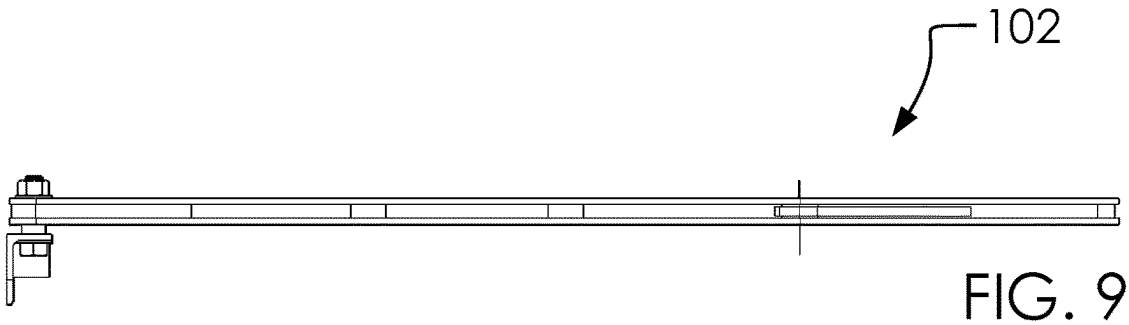

FIG. 9A

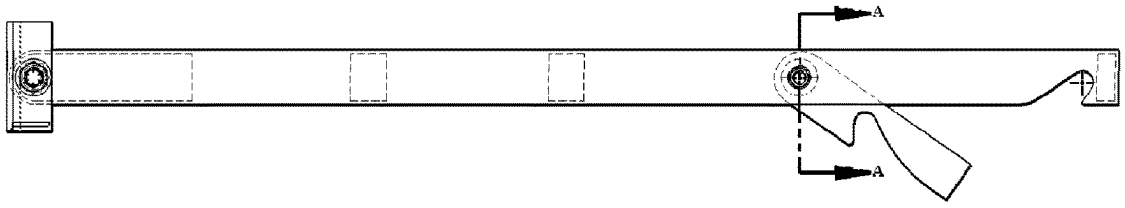

FIG. 9B

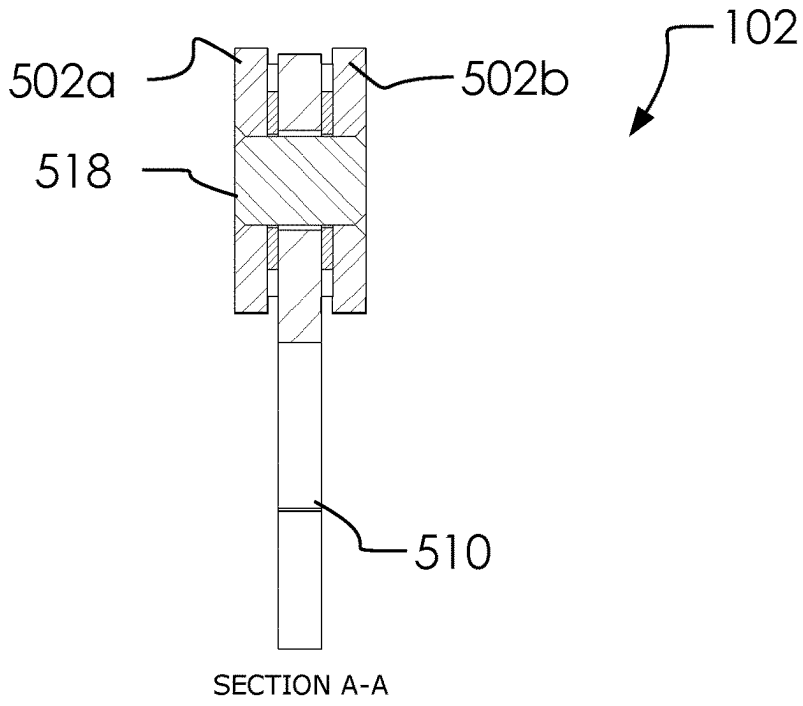

FIG. 9C

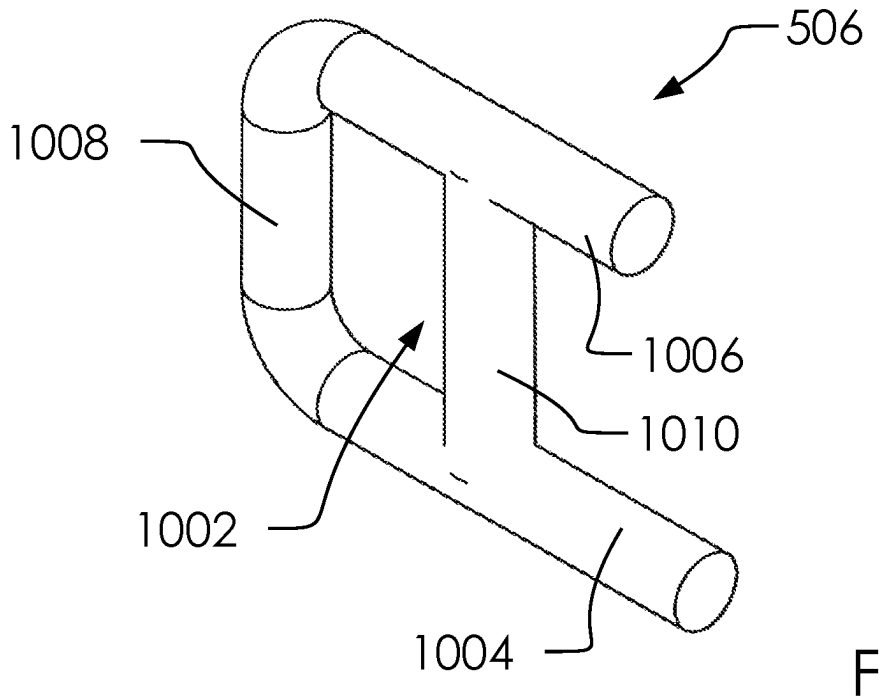

FIG. 10A

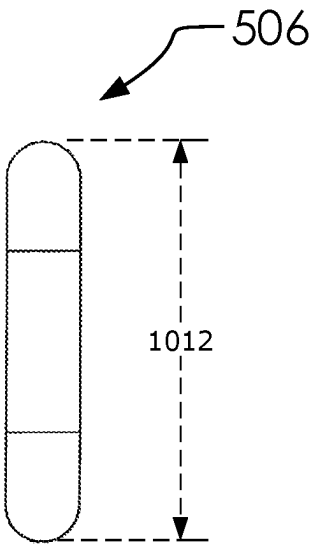

FIG. 10B

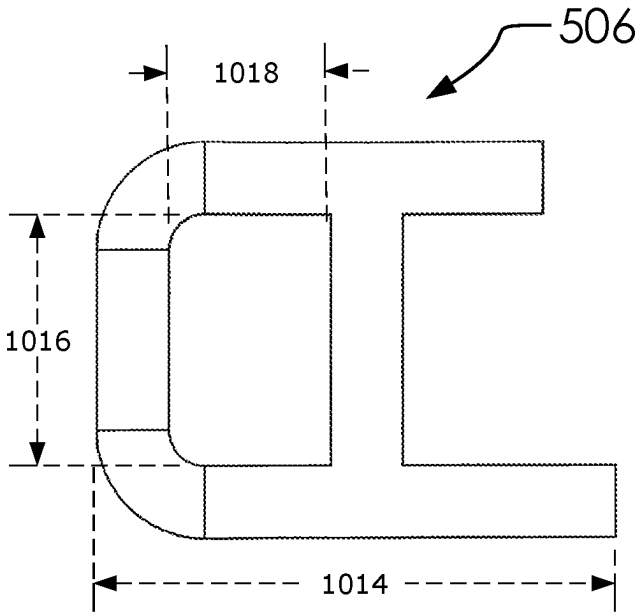

FIG. 10C

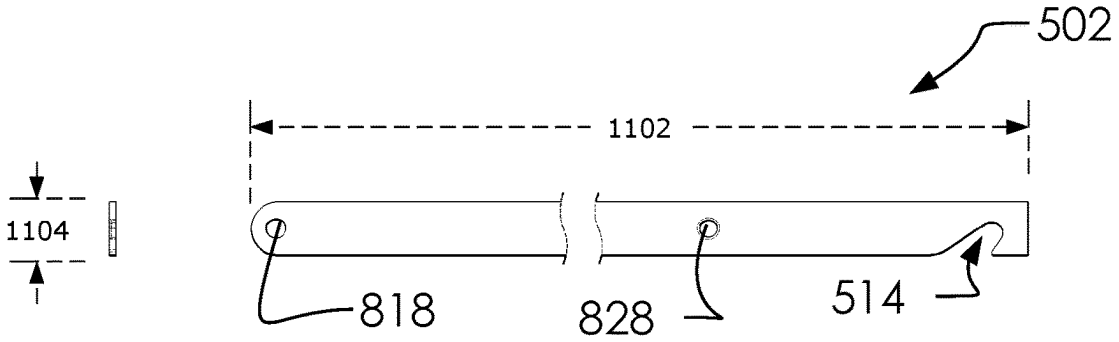

FIG. 11A

FIG. 11B

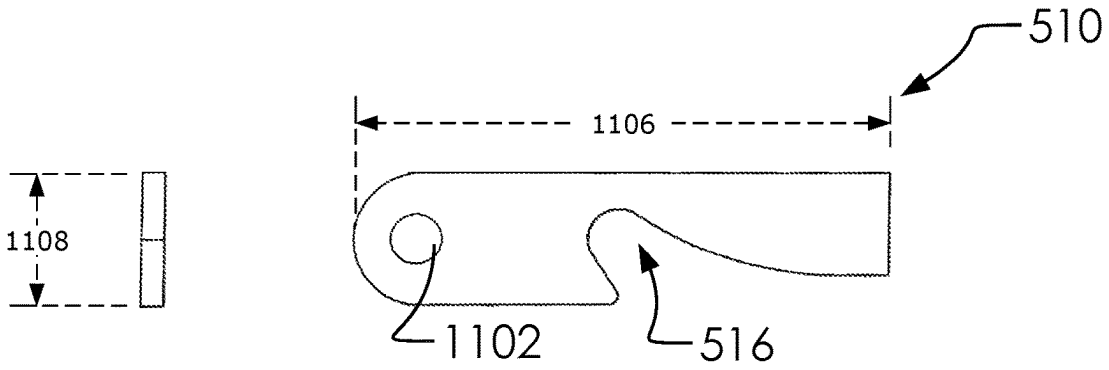

FIG. 11C

FIG. 11D

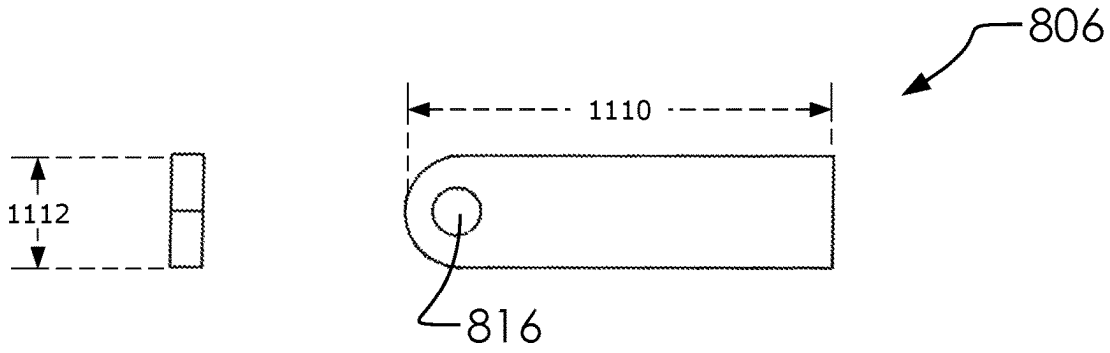

FIG. 11E

FIG. 11F

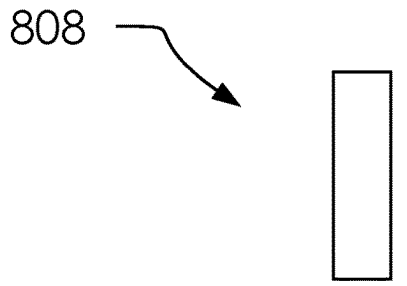

FIG. 12A

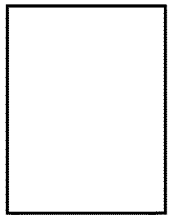

FIG. 12B

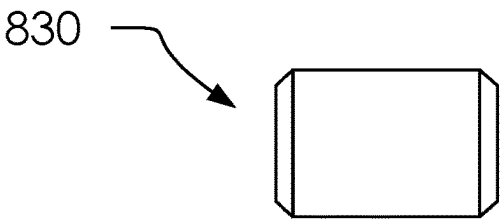

FIG. 12C

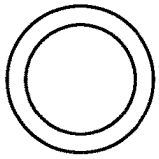

FIG. 12D

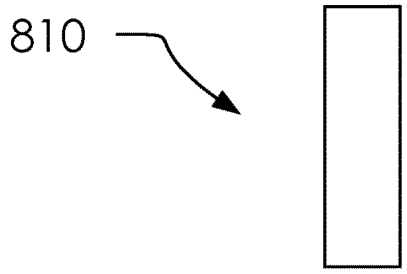

FIG. 12E

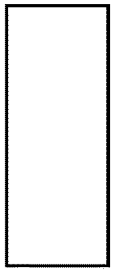

FIG. 12F

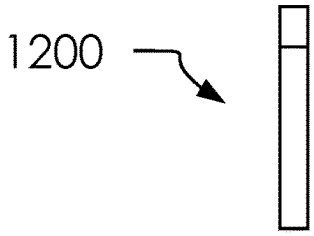

FIG. 12G

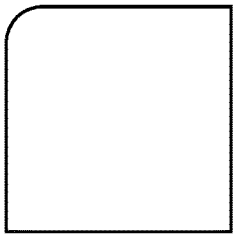

FIG. 12H

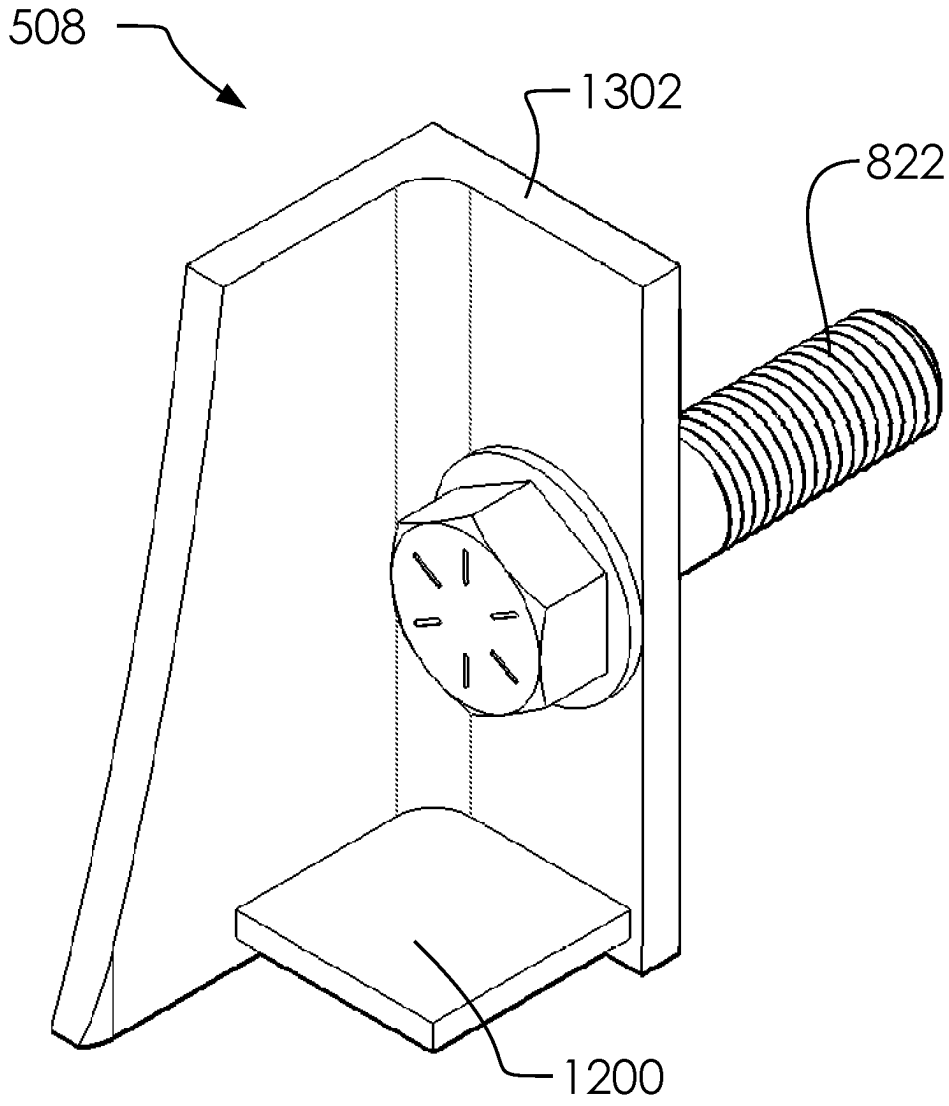

FIG. 13

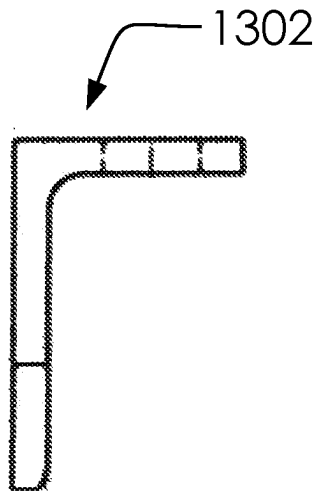

FIG. 14A

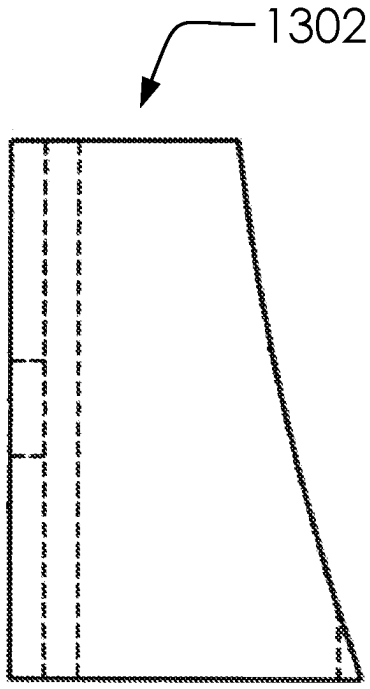

FIG. 14B

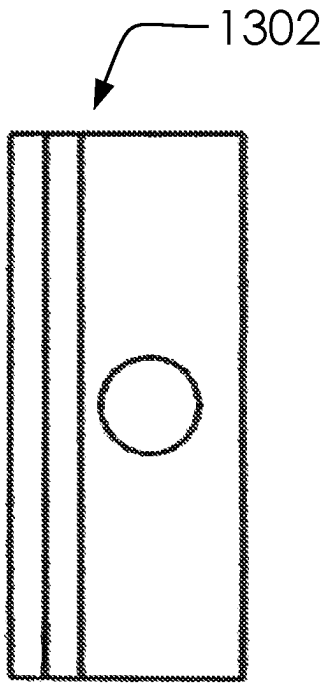

FIG. 14C

DOOR PROP ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims benefit to U.S. Patent Application No. 62/461,237 filed on Feb. 21, 2017.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT (IF APPLICABLE)

Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX (IF APPLICABLE)

Not applicable.

BACKGROUND OF THE INVENTION

No prior art is known to the Applicant

None of the known inventions and patents, taken either singularly or in combination, is seen to describe the instant disclosure as claimed.

BRIEF SUMMARY OF THE INVENTION

A door prop assembly for selectively supporting a rear gate of a tilting vehicle. Said door prop assembly is configured to selectively prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration. Said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm. Said distal mount assembly is attached to a side portion of said rear gate. Said lock bar assembly is attached to a side portion of a tilting body. Said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly. Said rotating lock arm is configured to rotate freely on a locking hook hinge. A side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly. Said rotating lock arm can rotate so as to slide through said lock bar as said door prop assembly transitions from a closed configuration and an open and locked configuration. Said door prop assembly is configured to rotate be transitioned back to said closed configuration by rotating said rear gate still further from said tilting body so as to pass the remaining portions of said rotating lock arm through said lock bar, catching a proximal locking hook on said lock bar with said door prop assembly at a fully extended configuration. Stopping rotation of said rear gate with said proximal locking hook, reversing rotating direction, and pressing said rotating lock arm through said lock bar in the opposite direction until said rear gate is closed and said door prop assembly is in said closed configuration.

A door prop assembly for selectively supporting a rear gate of a tilting vehicle. Said door prop assembly is configured to selectively prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration. Said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm. Said distal mount assembly is attached to a side portion of said rear gate. Said tilting vehicle comprises a trailer platform, a tilting body, a door hinge. Said tilting body being rotatably attached to said trailer platform. Said tilting body comprises said rear gate. Said rear gate is rotateably attached to said tilting body with said door hinge. Said lock bar assembly is attached to a side portion of said tilting body. Said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly. Said rotating lock arm is configured to rotate freely on a locking hook hinge. A side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly. Said door prop assembly is configured to transition through a plurality of configurations with a closed configuration being closed and an open and locked configuration being engaged to support said rear gate.

A door prop assembly for selectively supporting a rear gate of a tilting vehicle. Said door prop assembly is configured to selectively prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration. Said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm. Said distal mount assembly is attached to a side portion of said rear gate. Said tilting vehicle comprises a trailer platform, a tilting body, a door hinge. Said tilting body being rotateably attached to said trailer platform. Said tilting body comprises said rear gate. Said rear gate is rotateably attached to said tilting body with said door hinge. Said lock bar assembly is attached to a side portion of said tilting body. Said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly. Said rotating lock arm is configured to rotate freely on a locking hook hinge. A side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly. Said door prop assembly is configured to transition through a plurality of configurations with a closed configuration being closed and an open and locked configuration being engaged to support said rear gate. Said prop arm assembly comprises said side plates and a spacers. Said side plates comprises a first side plate, and a second side plate. Said spacers are configured to be pressed between said side plates and provide a space for said rotating lock arm. Said prop arm assembly comprises a first end, a second end and a mid-point. Said prop arm assembly is rotateably attached to said rear gate with said distal mount assembly and selectively rotate on said distal hinge. Said distal hinge is at said first end of said prop arm assembly. Said rotating lock arm is rotateably attached to said prop arm assembly and selectively rotates on said locking hook hinge. Said locking hook hinge is at said mid-point of said prop arm assembly. Said distal mount assembly attaches to said rear gate so as to allow said prop arm assembly and said rear gate to rotate relative to one another on said distal hinge. Said rotating lock arm selectively rotates relative to said prop arm assembly on said locking hook hinge. A spacer eye is welded between said side plates at said first end. A center spacers is welded between said side plates between said first end and said mid-point of said prop arm assembly. A distal spacer is welded between said side plates proximate to said second end. Said center spacers comprises a first center spacer, and a second center spacer. Said spacers comprises said center spacers, a proximal spacer, and said distal spacer. Said proximal spacer, said center spacers portions of said rotating lock arm, and said distal spacer can be pressed between said first side plate and said second side plate.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. **1**A illustrates an elevated front side view of vacuum truck **126**.

FIG. **1**B illustrates an elevated front side view of vacuum truck **126**.

FIG. **1**C illustrates a perspective overview view of trailer assembly **100**.

FIG. **2**A illustrates an elevated front side view of closed configuration **206***a*.

FIG. **2**B illustrates an elevated front side view of second configuration **206***b*.

FIG. **3** illustrates a perspective overview view of trailer assembly **100**.

FIG. **4**A illustrates an elevated front side view of closed configuration **206***a*.

FIG. **4**B illustrates an elevated front side view of second configuration **206***b*.

FIG. **4**C illustrates an elevated front side view of third configuration **206***c*.

FIG. **5**A illustrates an elevated front side view of closed configuration **206***a*.

FIG. **5**B illustrates an elevated front side view of second configuration **206***b*.

FIG. **5**C illustrates an elevated front side view of third configuration **206***c*.

FIG. **6**A illustrates an elevated front side view of open and locked configuration **206***d*.

FIG. **6**B illustrates an elevated front side view of fully extended configuration **206***e*.

FIG. **6**C illustrates an elevated front side view of sixth configuration **206***f*.

FIG. **7**A illustrates an elevated front side view of open and locked configuration **206***d*.

FIG. **7**B illustrates an elevated front side view of fully extended configuration **206***e*.

FIG. **7**C illustrates an elevated front side view of sixth configuration **206***f*.

FIG. **8** illustrates a perspective exploded overview view of door prop assembly **102**.

FIG. **9**A illustrates an elevated top side view of door prop assembly **102**.

FIG. **9**B illustrates an elevated front side view of door prop assembly **102**.

FIG. **9**C illustrates an elevated cross-section side view of door prop assembly **102**.

FIG. **10**A illustrates a perspective overview view of lock bar **506**.

FIG. **10**B illustrates an elevated first side view of lock bar **506**.

FIG. **10**C illustrates an elevated front side view of lock bar **506**.

FIG. **11**A illustrates an elevated first side view of side plates **502**.

FIG. **11**B illustrates an elevated front side view of side plates **502**.

FIG. **11**C illustrates an elevated first side view of rotating lock arm **510**.

FIG. **11**D illustrates an elevated front side view of rotating lock arm **510**.

FIG. **11**E illustrates an elevated first side view of proximal spacer **806**.

FIG. **11**F illustrates an elevated front side view of proximal spacer **806**.

FIG. **12**A illustrates an elevated first side view of center spacers **808**.

FIG. **12**B illustrates an elevated front side view of center spacers **808**.

FIG. **12**C illustrates an elevated first side view of round bar **830**.

FIG. **12**D illustrates an elevated front side view of round bar **830**.

FIG. **12**E illustrates an elevated first side view of distal spacer **810**.

FIG. **12**F illustrates an elevated front side view of distal spacer **810**.

FIG. **12**G illustrates an elevated first side view of support plate **1200**.

FIG. **12**H illustrates an elevated front side view of support plate **1200**.

FIG. **13** illustrates an elevated overview view of distal mount assembly **508**.

FIG. **14**A illustrates an elevated top side view of L-bracket **1302**.

FIG. **14**B illustrates an elevated front side view of L-bracket **1302**.

FIG. **14**C illustrates an elevated first side view of L-bracket **1302**.

DETAILED DESCRIPTION OF THE INVENTION

The following description is presented to enable any person skilled in the art to make and use the invention as claimed and is provided in the context of the particular examples discussed below, variations of which will be readily apparent to those skilled in the art. In the interest of clarity, not all features of an actual implementation are described in this specification. It will be appreciated that in the development of any such actual implementation (as in any development project), design decisions must be made to achieve the designers' specific goals (e.g., compliance with system- and business-related constraints), and that these goals will vary from one implementation to another. It will also be appreciated that such development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the field of the appropriate art having the benefit of this disclosure. Accordingly, the claims appended hereto are not intended to be limited by the disclosed embodiments, but are to be accorded their widest scope consistent with the principles and features disclosed herein.

These parts are illustrated in the figures and discussed below:

- a trailer assembly **100**
- a door prop assembly **102**
- a trailer platform **104**
- a tilting body **106**
- a tilting hinge **108**
- a door hinge **110**
- a one or more latches **112**
- a first side **116***a*
- a second side **116***b*
- a top **116***c*
- a bottom **116***d*
- a front portion **118**
- a rear gate **120**
- a locking arm hinge **122**
- a tilting vehicle **124**
- a vacuum truck **126**
- a dump truck **128**
- an open box bed **130**
- a sealed vessel **132**
- a plurality of configurations **206**
- a closed configuration **206***a*
- a second configuration **206***b*
- a third configuration **206***c*

an open and locked configuration **206***d*
a fully extended configuration **206***e*
a sixth configuration **206***f*
a prop arm assembly **500**
a side plates **502**
a first side plate **502***a*
a second side plate **502***b*
a lock bar assembly **504**
a lock bar **506**
a distal mount assembly **508**
a rotating lock arm **510**
a distal hinge **512**
a proximal locking hook **514**
a locking hook **516**
a locking hook hinge **518**
a first end **520**
a second end **522**
a mid-point **524**
a spacers **800**
a mounting bracket assembly **802**
a proximal spacer **806**
a center spacers **808**
a first center spacer **808***a*
a second center spacer **808***b*
a distal spacer **810**
a nut and bolt assembly **812**
a washer **814**
a spacer eye **816**
a proximate plate eyes **818**
a first proximate plate eye **818***a*
a second proximate plate eye **818***b*
a pipe **820**
a bolt **822**
a nut **824**
a washers **826**
a first washer **826***a*
a second washer **826***b*
a hook hinge eyes **828**
a first hook hinge eye **828***a*
a second hook hinge eye **828***b*
a round bar **830**
a lock bar eye **1002**
a lower bar **1004**
an upper bar **1006**
a distal bar **1008**
a proximate bar **1010**
a length **1102**
a width **1104**
a length **1106**
a width **1108**
a length **1110**
a width **1112**
a lock arm eye **1114**
a support plate **1200**
a L-bracket **1302**

FIG. **1**A illustrates an elevated front side view of vacuum truck **126**.

FIG. **1**B illustrates an elevated front side view of vacuum truck **126**.

FIG. **1**C illustrates a perspective overview view of trailer assembly **100**.

In one embodiment, said trailer assembly **100** can comprise said door prop assembly **102**, said tilting body **106** and said tilting hinge **108**.

In one embodiment, said tilting body **106** can comprise said door hinge **110**, said one or more latches **112**, said first side **116***a*, said second side **116***b*, said top **116***c*, said bottom **116***d*, said front portion **118** and said rear gate **120**.

In one embodiment, said tilting vehicle **124** can comprise said trailer platform **104**, said vacuum truck **126** and said dump truck **128**.

In one embodiment, said dump truck **128** can comprise said open box bed **130** and said sealed vessel **132**.

Said trailer assembly **100** can comprise a trailer portion of a tilting vehicle **124** (such as vacuum truck **126** and/or dump truck **128**), as is known in the art.

As stated in the background section, said trailer assembly **100** can be applicable to other tilting trucks such as dump trucks, tip trucks or the like.

Said tilting body **106** can comprise said sealed vessel **132** being substantially sealed from the outer atmosphere, as is known in the art. In another embodiment, said tilting portion **106** can comprise said open box bed **130** as in the case of a dump truck.

In one embodiment, said rear gate **120** can comprise a door being selectively sealed to said tilting body **106** with said one or more latches **112**. In one embodiment, said door hinge **110** can selectively rotate on said door hinge **110**.

In one embodiment, said tilting body **106** can selectively rotate with respect to said trailer platform **104** on said tilting hinge **108**.

In one embodiment, said door prop assembly **102** can be used to protect and support users of said trailer assembly **100**. In one embodiment, said door prop assembly **102** can latch and hold said rear gate **120** open and minimize danger to the end user. In one embodiment, in the prior art, a user of tilting vehicle **124** often use a tension rod to hold said rear gate **120** open. Said door prop assembly **102** is a substantial improvement to the art and is designed for safety and simplicity of use.

FIG. **2**A illustrates an elevated front side view of closed configuration **206***a*.

FIG. **2**B illustrates an elevated front side view of second configuration **206***b*.

In one embodiment, said plurality of configurations **206** can comprise said closed configuration **206***a*, said second configuration **206***b*, said third configuration **206***c*, said open and locked configuration **206***d*, said fully extended configuration **206***e* and said sixth configuration **206***f*.

In one embodiment, said door prop assembly **102** can comprise said plurality of configurations **206**.

In one embodiment, said tilting body **106** can tilt on said tilting hinge **108**, as illustrated and as is known in the art.

In one embodiment, said plurality of configurations **206** can range from open (such as said open and locked configuration **206***d*), to closed (said closed configuration **206***a*) and transitional stages in between as illustrated herein.

In one embodiment, as said tilting body **106** tilts back on said tilting hinge **108**, said rear gate **120** can open due to gravitational forces acting on said rear gate **120** and pulling on said door hinge **110**. In one embodiment, said door prop assembly **102** can prevent said rear gate **120** from swinging on said door hinge **110** by selectively locking into said open and locked configuration **206***d* (illustrated below). In another embodiment, said rear gate **120** can be moved around said door hinge **110** by lifting systems, wherein, said door prop assembly **102** can hold said rear gate **120** in a safe position (such as said open and locked configuration **206***d*) without relying on gravitational forces for movement.

FIG. **3** illustrates a perspective overview view of trailer assembly **100**.

As illustrated, said door prop assembly **102** can attach to a side portion of said tilting body **106** and remain un obtrusive between uses.

FIG. **4**A illustrates an elevated front side view of closed configuration **206***a*.

FIG. **4**B illustrates an elevated front side view of second configuration **206***b*.

FIG. **4**C illustrates an elevated front side view of third configuration **206***c*.

Said first configuration **206***a* can comprise said door prop assembly **102** in a closed position. Said second configuration **206***b* can comprise said rear gate **120** opening but not yet opened. Again, said third configuration **206***c* can comprise said rear gate **120** opening, as illustrated.

FIG. **5**A illustrates an elevated front side view of closed configuration **206***a*.

FIG. **5**B illustrates an elevated front side view of second configuration **206***b*.

FIG. **5**C illustrates an elevated front side view of third configuration **206***c*.

In one embodiment, said side plates **502** can comprise said prop arm assembly **500**, said first side plate **502***a*, said second side plate **502***b*, said distal hinge **512** and said proximal locking hook **514**.

In one embodiment, said lock bar assembly **504** can comprise said lock bar **506**.

In one embodiment, said rotating lock arm **510** can comprise said locking hook **516** and said locking hook hinge **518**.

In one embodiment, said locking hook hinge **518** can comprise said locking hook hinge **518**.

In one embodiment, said prop arm assembly **500** can comprise said side plates **502**, said first end **520**, said second end **522** and said mid-point **524**.

In one embodiment, said door prop assembly **102** can comprise said side plates **502**, said lock bar assembly **504**, said distal mount assembly **508**, said rotating lock arm **510**, said distal hinge **512** and said proximal locking hook **514**.

In one embodiment, said side plates **502** can selectively slide through said lock bar **506** of said lock bar assembly **504**.

Said distal mount assembly **508** can attach to a portion of said rear gate **120**. Said lock bar assembly **504** can attach to a portion of said tilting body **106**.

Said rotating lock arm **510** can rotate freely on said locking hook hinge **518**, and said side plates **502** at said distal hinge **512** can rotate freely relative to said distal mount assembly **508**.

As illustrated in said third configuration **206***c*, said rotating lock arm **510** can rotate so as to slide through said lock bar **506** as said door prop assembly **102** transitions from said closed configuration **206***a* and said open and locked configuration **206***d*.

FIG. **6**A illustrates an elevated front side view of open and locked configuration **206***d*.

FIG. **6**B illustrates an elevated front side view of fully extended configuration **206***e*.

FIG. **6**C illustrates an elevated front side view of sixth configuration **206***f*.

In one embodiment, said door prop assembly **102** can be transitioned back to said closed configuration **206***a* by: rotating said rear gate **120** still further from said tilting body **106** so as to pass the remaining portions of said rotating lock arm **510** through said lock bar **506**; catching said proximal locking hook **514** on said lock bar **506** with said door prop assembly **102** at said fully extended configuration **206***e*; stopping rotation of said rear gate **120** with said proximal locking hook **514**; reversing rotating direction; and pressing said rotating lock arm **510** through said lock bar **506** in the opposite direction until said rear gate **120** is closed and said door prop assembly **102** is in said closed configuration **206***a*.

FIG. **7**A illustrates an elevated front side view of open and locked configuration **206***d*.

FIG. **7**B illustrates an elevated front side view of fully extended configuration **206***e*.

FIG. **7**C illustrates an elevated front side view of sixth configuration **206***f*.

FIG. **8** illustrates a perspective exploded overview view of door prop assembly **102**.

In one embodiment, said mounting bracket assembly **802** can comprise said nut and bolt assembly **812**.

In one embodiment, said center spacers **808** can comprise said first center spacer **808***a* and said second center spacer **808***b*.

In one embodiment, said nut and bolt assembly **812** can comprise said washer **814**, said spacer eye **816**, said spacer eye **816**, said proximate plate eyes **818**, said pipe **820**, said bolt **822** and said nut **824**.

In one embodiment, said proximate plate eyes **818** can comprise said first proximate plate eye **818***a* and said second proximate plate eye **818***b*.

In one embodiment, said washers **826** can comprise said first washer **826***a* and said second washer **826***b*.

In one embodiment, said hook hinge eyes **828** can comprise said first hook hinge eye **828***a* and said second hook hinge eye **828***b*.

In one embodiment, said spacers **800** can comprise said proximal spacer **806**, said center spacers **808** and said distal spacer **810**.

In one embodiment, said door prop assembly **102** can comprise said mounting bracket assembly **802**, said proximal spacer **806**, said proximal spacer **806**, said center spacers **808** and said distal spacer **810**.

In one embodiment, said distal mount assembly **508** can comprise said nut and bolt assembly **812**.

In one embodiment, said distal hinge **512** can comprise said nut and bolt assembly **812**.

In one embodiment, said locking hook hinge **518** can comprise said washers **826**, said second washer **826***b*, said hook hinge eyes **828** and said round bar **830**.

In one embodiment, said prop arm assembly **500** can comprise said spacers **800**, said proximal spacer **806**, said center spacers **808** and said distal spacer **810**.

In one embodiment, said prop arm assembly **500** can be a formed form one piece of metal to form the cross-sectional shape of said side plates **502**. However, as illustrated, said prop arm assembly **500** can take on complexity so as to provide additional functionality.

In one embodiment, said prop arm assembly **500** can comprise a plurality of components comprising said side plates **502** (first side plate **502***a*, second side plate **502***b*), said center spacers **808** (first center spacer **808***a*, second center spacer **808***b*), proximal spacer **806**, and distal spacer **810**; wherein, said proximal spacer **806**, center spacers **808** portions of rotating lock arm **510**, and said distal spacer **810** can be pressed between said first side plate **502***a* and said second side plate **502***b*.

In one embodiment, portions of said prop arm assembly **500** can be welded to one another. For example, in one embodiment, said 805/can be welded between said side plates **502** at said first end **520**; said center spacers **808** can be welded between said side plates **502** between said first end **520** and said mid-point **524** of said prop arm assembly **500**; and said distal spacer **810** can be welded between said

side plates **502** proximate to said second end **522**. In one embodiment, said proximal spacer **806**, said center spacers **808** and said distal spacer **810** can comprise spacers to provide a space for said rotating lock arm **510** to rotate between said side plates **502**.

In one embodiment, said rotating lock arm **510** can be configured to selectively rotate said locking hook hinge **518** by rotating on said round bar **830** between said first hook hinge eye **828***a* and said second hook hinge eye **828***b* at said mid-point **524**.

In one embodiment, said proximate plate eyes **818** of said side plates **502** and said spacer eye **816** of said proximal spacer **806** can align to allow a portion of said bolt **822** to pass through and create said distal hinge **512** at said first end **520**. Further, said pipe **820**, bolt **822**, and nut **824** can rotate within said proximate plate eyes **818** and said spacer eye **816**, as illustrated.

In one embodiment, said distal mount assembly **508** can attach to said rear gate **120** so as to allow said prop arm assembly **500** and said rear gate **120** to rotate relative to one another on said distal hinge **512**.

In one embodiment, said rotating lock arm **510** can rotate relative to said prop arm assembly **500** on said locking hook hinge **518**.

FIG. **9**A illustrates an elevated top side view of door prop assembly **102**.

FIG. **9**B illustrates an elevated front side view of door prop assembly **102**.

FIG. **9**C illustrates an elevated cross-section side view of door prop assembly **102**.

FIG. **10**A illustrates a perspective overview view of lock bar **506**.

FIG. **10**B illustrates an elevated first side view of lock bar **506**.

FIG. **10**C illustrates an elevated front side view of lock bar **506**.

In one embodiment, said lock bar **506** can comprise said lock bar eye **1002**, said lower bar **1004**, said upper bar **1006**, said distal bar **1008** and said proximate bar **1010**.

In one embodiment, said lock bar eye **1002** can comprise a space between distal bar **1008**, said proximate bar **1010** and portions of said upper bar **1006** and said lower bar **1004**. In one embodiment, said lock bar eye **1002** can comprise a space for allowing portions of prop arm assembly **500** and rotating lock arm **510** to selectively pass through, as discussed below. Said lock bar eye **1002** comprises a width **1018**, and a height **1016**. Said lock bar **506** comprises a length.

In one embodiment, said lock bar assembly **504** can attach to a side portion of said tilting body **106** and extend out so as to handle portions of said prop arm assembly **500**, as illustrated herein.

FIG. **11**A illustrates an elevated first side view of side plates **502**.

FIG. **11**B illustrates an elevated front side view of side plates **502**.

FIG. **11**C illustrates an elevated first side view of rotating lock arm **510**.

FIG. **11**D illustrates an elevated front side view of rotating lock arm **510**.

FIG. **11**E illustrates an elevated first side view of proximal spacer **806**.

FIG. **11**F illustrates an elevated front side view of proximal spacer **806**.

In one embodiment, said side plates **502** can comprise said length **1102** and said width **1104**.

In one embodiment, said rotating lock arm **510** can comprise said length **1106**, said width **1108** and said lock arm eye **1114**.

In one embodiment, said proximal spacer **806** can comprise said length **1110** and said width **1112**.

In one embodiment, said prop arm assembly **500** can comprise width **1104** being substantially identical with width **1104** of side plates **502**.

In one embodiment, width **1104**, width **1108** and width **1112** can be substantially identical with one another. Accordingly, with said side plates **502** and said spacers **800** attached to one another, said prop arm assembly **500** can comprise a uniform thickness being approximately said width **1104**.

In one embodiment, said width **1104** of prop arm assembly **500** can be less than **1016**/of lock bar eye **1002** to allow movement of said prop arm assembly **500** through said lock bar eye **1002**.

FIG. **12**A illustrates an elevated first side view of center spacers **808**.

FIG. **12**B illustrates an elevated front side view of center spacers **808**.

FIG. **12**C illustrates an elevated first side view of round bar **830**.

FIG. **12**D illustrates an elevated front side view of round bar **830**.

FIG. **12**E illustrates an elevated first side view of distal spacer **810**.

FIG. **12**F illustrates an elevated front side view of distal spacer **810**.

FIG. **12**G illustrates an elevated first side view of support plate **1200**.

FIG. **12**H illustrates an elevated front side view of support plate **1200**.

In one embodiment, said distal mount assembly **508** can comprise said support plate **1200**.

In one embodiment, said mounting bracket assembly **802** can comprise said support plate **1200**.

FIG. **13** illustrates an elevated overview view of distal mount assembly **508**.

In one embodiment, said distal mount assembly **508** can comprise said L-bracket **1302**.

In one embodiment, said mounting bracket assembly **802** can comprise said L-bracket **1302**.

In one embodiment, said distal mount assembly **508** can attach to said rear gate **120**, as discussed above.

In one embodiment, said L-bracket **1302** can provide two faces with one attached to rear gate **120** and another providing a substantially perpendicular face for receiving a portion of bolt **822**.

In one embodiment, said support plate **1200** can reinforce and support said two faces of said L-bracket **1302**.

In one embodiment, said support plate **1200** can be welded into said L-bracket **1302**, as illustrated.

FIG. **14**A illustrates an elevated top side view of L-bracket **1302**.

FIG. **14**B illustrates an elevated front side view of L-bracket **1302**.

FIG. **14**C illustrates an elevated first side view of L-bracket **1302**

The following sentences are included for completeness of this disclosure with reference to the claims.

A door prop assembly **102** for selectively supporting a rear gate **120** of a tilting vehicle **124**. Said door prop assembly **102** is configured to selectively prop said rear gate **120** in an open configuration and safely release said rear gate **120** to transition to a closed configuration. Said door prop assembly **102** comprises a prop arm assembly **500**, a lock

bar assembly **504**, a distal mount assembly **508**, and a rotating lock arm **510**. Said distal mount assembly **508** is attached to a side portion of said rear gate **120**. Said lock bar assembly **504** is attached to a side portion of a tilting body **106**. Said prop arm assembly **500** comprises a substantially straight element being adapted to slide through portions of a lock bar **506** of said lock bar assembly **504**. Said rotating lock arm **510** is configured to rotate freely on a locking hook hinge **518**. A side plates **502** at a distal hinge **512** is configured to rotate freely relative to said distal mount assembly **508**. Said rotating lock arm **510** can rotate so as to slide through said lock bar **506** as said door prop assembly **102** transitions from a closed configuration **206***a* and an open and locked configuration **206***d*. Said door prop assembly **102** is configured to rotate be transitioned back to said closed configuration **206***a* by rotating said rear gate **120** still further from said tilting body **106** so as to pass the remaining portions of said rotating lock arm **510** through said lock bar **506**, catching a proximal locking hook **514** on said lock bar **506** with said door prop assembly **102** at a fully extended configuration **206***e*. Stopping rotation of said rear gate **120** with said proximal locking hook **514**, reversing rotating direction, and pressing said rotating lock arm **510** through said lock bar **506** in the opposite direction until said rear gate **120** is closed and said door prop assembly **102** is in said closed configuration **206***a*.

Said door prop assembly **102** comprises said lock bar assembly **504** attached to a side portion of said door prop assembly **102**. Said lock bar assembly **504** comprises said lock bar **506** extending out to selectively handle portions of said prop arm assembly **500**. Said lock bar **506** comprises a lock bar eye **1002**, a lower bar **1004**, an upper bar **1006**, a distal bar **1008**, and a proximate bar **1010**. Said lock bar eye **1002** comprises a space between said distal bar **1008**, said proximate bar **1010** and portions of said upper bar **1006** and said lower bar **1004**. Said lock bar eye **1002** comprises a space for allowing portions of said prop arm assembly **500** and said rotating lock arm **510** to selectively pass through. A portion of said rotating lock arm **510** is configured to hook onto said lower bar **1004**. A width **1104** of said prop arm assembly **500** is less than **1016**/of said lock bar eye **1002** to allow movement of said prop arm assembly **500** through said lock bar eye **1002**.

Said prop arm assembly **500** comprises said side plates **502** and a spacers **800**. Said side plates **502** comprises a first side plate **502***a*, and a second side plate **502***b*. Said spacers **800** are configured to be pressed between said side plates **502** and provide a space for said rotating lock arm **510**. Said prop arm assembly **500** comprises a first end **520**, a second end **522** and a mid-point **524**. Said prop arm assembly **500** is rotateably attached to said rear gate **120** with said distal mount assembly **508** and selectively rotate on said distal hinge **512**. Said distal hinge **512** is at said first end **520** of said prop arm assembly **500**. Said rotating lock arm **510** is rotateably attached to said prop arm assembly **500** and selectively rotates on said locking hook hinge **518**. Said locking hook hinge **518** is at said mid-point **524** of said prop arm assembly **500**. Said distal mount assembly **508** attaches to said rear gate **120** so as to allow said prop arm assembly **500** and said rear gate **120** to rotate relative to one another on said distal hinge **512**. Said rotating lock arm **510** selectively rotates relative to said prop arm assembly **500** on said locking hook hinge **518**.

Portions of said prop arm assembly **500** are welded to one another. Said spacers **800** are welded between said side plates **502**.

Said spacers **800** comprises a center spacers **808**, a proximal spacer **806**, and a distal spacer **810**. Said proximal spacer **806**, said center spacers **808** portions of said rotating lock arm **510**, and said distal spacer **810** can be pressed between said first side plate **502***a* and said second side plate **502***b*.

A center spacers **808** comprises a first center spacer **808***a*, and a second center spacer **808***b*.

A spacer eye **816** is welded between said side plates **502** at said first end **520**. A center spacers **808** is welded between said side plates **502** between said first end **520** and said mid-point **524** of said prop arm assembly **500**. A distal spacer **810** is welded between said side plates **502** proximate to said second end **522**.

Said prop arm assembly **500** is formed form one piece of metal. Said prop arm assembly **500** comprises a first end **520**, a second end **522** and a mid-point **524**. Said prop arm assembly **500** is rotateably attached to said rear gate **120** and selectively rotate on said distal hinge **512**. Said distal hinge **512** is at said first end **520** of said prop arm assembly **500**. Said rotating lock arm **510** is rotateably attached to said prop arm assembly **500** and selectively rotates on said locking hook hinge **518**. Said locking hook hinge **518** is at said mid-point **524** of said prop arm assembly **500**. A door prop assembly **102** for selectively supporting a rear gate **120** of a tilting vehicle **124**.

Said door prop assembly **102** is configured to selectively prop said rear gate **120** in an open configuration and safely release said rear gate **120** to transition to a closed configuration. Said door prop assembly **102** comprises a prop arm assembly **500**, a lock bar assembly **504**, a distal mount assembly **508**, and a rotating lock arm **510**. Said distal mount assembly **508** is attached to a side portion of said rear gate **120**. Said tilting vehicle **124** comprises a trailer platform **104**, a tilting body **106**, a door hinge **110**. Said tilting body **106** being rotateably attached to said trailer platform **104**. Said tilting body **106** comprises said rear gate **120**. Said rear gate **120** is rotateably attached to said tilting body **106** with said door hinge **110**. Said lock bar assembly **504** is attached to a side portion of said tilting body **106**. Said prop arm assembly **500** comprises a substantially straight element being adapted to slide through portions of a lock bar **506** of said lock bar assembly **504**. Said rotating lock arm **510** is configured to rotate freely on a locking hook hinge **518**. A side plates **502** at a distal hinge **512** is configured to rotate freely relative to said distal mount assembly **508**. Said door prop assembly **102** is configured to transition through a plurality of configurations **206** with a closed configuration **206***a* being closed and an open and locked configuration **206***d* being engaged to support said rear gate **120**.

Said rotating lock arm **510** can rotate so as to slide through said lock bar **506** as said door prop assembly **102** transitions from said closed configuration **206***a* and said open and locked configuration **206***d*. Said door prop assembly **102** is configured to rotate be transitioned back to said closed configuration **206***a* by rotating said rear gate **120** still further from said tilting body **106** so as to pass the remaining portions of said rotating lock arm **510** through said lock bar **506**, catching a proximal locking hook **514** on said lock bar **506** with said door prop assembly **102** at a fully extended configuration **206***e*. Stopping rotation of said rear gate **120** with said proximal locking hook **514**, reversing rotating direction, and pressing said rotating lock arm **510** through said lock bar **506** in the opposite direction until said rear gate **120** is closed and said door prop assembly **102** is in said

closed configuration **206***a*. A door prop assembly **102** for selectively supporting a rear gate **120** of a tilting vehicle **124**.

Said door prop assembly **102** is configured to selectively prop said rear gate **120** in an open configuration and safely release said rear gate **120** to transition to a closed configuration. Said door prop assembly **102** comprises a prop arm assembly **500**, a lock bar assembly **504**, a distal mount assembly **508**, and a rotating lock arm **510**. Said distal mount assembly **508** is attached to a side portion of said rear gate **120**. Said tilting vehicle **124** comprises a trailer platform **104**, a tilting body **106**, a door hinge **110**. Said tilting body **106** being rotateably attached to said trailer platform **104**. Said tilting body **106** comprises said rear gate **120**. Said rear gate **120** is rotateably attached to said tilting body **106** with said door hinge **110**. Said lock bar assembly **504** is attached to a side portion of said tilting body **106**. Said prop arm assembly **500** comprises a substantially straight element being adapted to slide through portions of a lock bar **506** of said lock bar assembly **504**. Said rotating lock arm **510** is configured to rotate freely on a locking hook hinge **518**. A side plates **502** at a distal hinge **512** is configured to rotate freely relative to said distal mount assembly **508**. Said door prop assembly **102** is configured to transition through a plurality of configurations **206** with a closed configuration **206***a* being closed and an open and locked configuration **206***d* being engaged to support said rear gate **120**. Said prop arm assembly **500** comprises said side plates **502** and a spacers **800**. Said side plates **502** comprises a first side plate **502***a*, and a second side plate **502***b*. Said spacers **800** are configured to be pressed between said side plates **502** and provide a space for said rotating lock arm **510**. Said prop arm assembly **500** comprises a first end **520**, a second end **522** and a mid-point **524**. Said prop arm assembly **500** is rotateably attached to said rear gate **120** with said distal mount assembly **508** and selectively rotate on said distal hinge **512**. Said distal hinge **512** is at said first end **520** of said prop arm assembly **500**. Said rotating lock arm **510** is rotateably attached to said prop arm assembly **500** and selectively rotates on said locking hook hinge **518**. Said locking hook hinge **518** is at said mid-point **524** of said prop arm assembly **500**. Said distal mount assembly **508** attaches to said rear gate **120** so as to allow said prop arm assembly **500** and said rear gate **120** to rotate relative to one another on said distal hinge **512**. Said rotating lock arm **510** selectively rotates relative to said prop arm assembly **500** on said locking hook hinge **518**. A spacer eye **816** is welded between said side plates **502** at said first end **520**. A center spacers **808** is welded between said side plates **502** between said first end **520** and said mid-point **524** of said prop arm assembly **500**. A distal spacer **810** is welded between said side plates **502** proximate to said second end **522**. Said center spacers **808** comprises a first center spacer **808***a*, and a second center spacer **808***b*. Said spacers **800** comprises said center spacers **808**, a proximal spacer **806**, and said distal spacer **810**. Said proximal spacer **806**, said center spacers **808** portions of said rotating lock arm **510**, and said distal spacer **810** can be pressed between said first side plate **502***a* and said second side plate **502***b*.

Various changes in the details of the illustrated operational methods are possible without departing from the scope of the following claims. Some embodiments may combine the activities described herein as being separate steps. Similarly, one or more of the described steps may be omitted, depending upon the specific operational environment the method is being implemented in. It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-described embodiments may be used in combination with each other. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein."

The invention claimed is:

1. A door prop assembly for selectively supporting a rear gate of a tilting vehicle, wherein:

said door prop assembly is configured to prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration;

said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm;

said distal mount assembly is attached to a side portion of said rear gate;

said tilting vehicle comprises a trailer platform, a tilting body, a door hinge;

said tilting body being rotateably attached to said trailer platform;

said tilting body comprises said rear gate;

said rear gate is rotateably attached to said tilting body with said door hinge;

said lock bar assembly is attached to a side portion of a tilting body;

said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly;

said rotating lock arm is configured to rotate freely on a locking hook hinge;

a side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly;

said door prop assembly is configured to transition through a plurality of configurations with a closed configuration being closed and an open and locked configuration being engaged to support said rear gate;

said rotating lock arm can rotate so as to slide through said lock bar as said door prop assembly transitions from a closed configuration and an open and locked configuration; and

said door prop assembly is configured to rotate be transitioned back to said closed configuration by

rotating said rear gate still further from said tilting body so as to pass the remaining portions of said rotating lock arm through said lock bar,

catching a proximal locking hook on said lock bar with said door prop assembly at a fully extended configuration; stopping rotation of said rear gate with said proximal locking hook,

reversing rotating direction, and

pressing said rotating lock arm through said lock bar in the opposite direction until said rear gate is closed and said door prop assembly is in said closed configuration.

2. The door prop assembly from claim **1**, wherein:

said door prop assembly comprises said lock bar assembly attached to a side portion of said door prop assembly;

said lock bar assembly comprises said lock bar extending out to selectively handle portions of said prop arm assembly;

said lock bar comprises a lock bar eye, a lower bar, an upper bar, a distal bar, and a proximate bar;

said lock bar eye comprises a space between said distal bar, said proximate bar and portions of said upper bar and said lower bar;

said lock bar eye comprises a space for allowing portions of said prop arm assembly and said rotating lock arm to selectively pass through;

a portion of said rotating lock arm is configured to hook onto said lower bar; and

a width of said prop arm assembly is less than a height of said lock bar eye to allow movement of said prop arm assembly through said lock bar eye.

3. The door prop assembly from claim **1**, wherein:

said prop arm assembly comprises said side plates and a spacers;

said side plates comprises a first side plate, and a second side plate;

said spacers are configured to be pressed between said side plates and provide a space for said rotating lock arm;

said prop arm assembly comprises a first end, a second end and a mid-point;

said prop arm assembly is rotateably attached to said rear gate with said distal mount assembly and selectively rotate on said distal hinge;

said distal hinge is at said first end of said prop arm assembly;

said rotating lock arm is rotateably attached to said prop arm assembly and selectively rotates on said locking hook hinge;

said locking hook hinge is at said mid-point of said prop arm assembly;

said distal mount assembly attaches to said rear gate so as to allow said prop arm assembly and said rear gate to rotate relative to one another on said distal hinge; and

said rotating lock arm selectively rotates relative to said prop arm assembly on said locking hook hinge.

4. The door prop assembly from claim **3**, wherein:

portions of said prop arm assembly are welded to one another; and

said spacers are welded between said side plates.

5. The door prop assembly from claim **3**, wherein:

said spacers comprises a center spacers, a proximal spacer, and a distal spacer; and

said proximal spacer, said center spacers portions of said rotating lock arm, and said distal spacer can be pressed between said first side plate and said second side plate.

6. The door prop assembly from claim **3**, wherein:

a center spacers comprises a first center spacer, and a second center spacer.

7. The door prop assembly from claim **3**, wherein:

a spacer eye is welded between said side plates at said first end;

a center spacers is welded between said side plates between said first end and said mid-point of said prop arm assembly; and

a distal spacer is welded between said side plates proximate to said second end.

8. The door prop assembly from claim **1**, wherein:

said prop arm assembly is formed form one piece of metal;

said prop arm assembly comprises a first end, a second end and a mid-point;

said prop arm assembly is rotateably attached to said rear gate and selectively rotate on said distal hinge;

said distal hinge is at said first end of said prop arm assembly;

said rotating lock arm is rotateably attached to said prop arm assembly and selectively rotates on said locking hook hinge; and

said locking hook hinge is at said mid-point of said prop arm assembly.

9. A door prop assembly for selectively supporting a rear gate of a tilting vehicle, wherein:

said door prop assembly is configured to prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration;

said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm;

said distal mount assembly is attached to a side portion of said rear gate;

said tilting vehicle comprises a trailer platform, a tilting body, a door hinge;

said tilting body being rotateably attached to said trailer platform;

said tilting body comprises said rear gate;

said rear gate is rotateably attached to said tilting body with said door hinge;

said lock bar assembly is attached to a side portion of said tilting body;

said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly;

said rotating lock arm is configured to rotate freely on a locking hook hinge;

a side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly; and

said door prop assembly is configured to transition through a plurality of configurations with a closed configuration being closed and an open and locked configuration being engaged to support said rear gate.

10. The door prop assembly from claim **9**, wherein:

said rotating lock arm can rotate so as to slide through said lock bar as said door prop assembly transitions from said closed configuration and said open and locked configuration; and

said door prop assembly is configured to rotate be transitioned back to said closed configuration by

rotating said rear gate still further from said tilting body so as to pass the remaining portions of said rotating lock arm through said lock bar,

catching a proximal locking hook on said lock bar with said door prop assembly at a fully extended configuration; stopping rotation of said rear gate with said proximal locking hook,

reversing rotating direction, and

pressing said rotating lock arm through said lock bar in the opposite direction until said rear gate is closed and said door prop assembly is in said closed configuration.

11. A door prop assembly for selectively supporting a rear gate of a tilting vehicle, wherein:

said door prop assembly is configured to prop said rear gate in an open configuration and safely release said rear gate to transition to a closed configuration;

said door prop assembly comprises a prop arm assembly, a lock bar assembly, a distal mount assembly, and a rotating lock arm;

said distal mount assembly is attached to a side portion of said rear gate;

said tilting vehicle comprises a trailer platform, a tilting body, a door hinge;

said tilting body being rotateably attached to said trailer platform;

said tilting body comprises said rear gate;

said rear gate is rotateably attached to said tilting body with said door hinge;

said lock bar assembly is attached to a side portion of said tilting body;

said prop arm assembly comprises a substantially straight element being adapted to slide through portions of a lock bar of said lock bar assembly;

said rotating lock arm is configured to rotate freely on a locking hook hinge;

a side plates at a distal hinge is configured to rotate freely relative to said distal mount assembly;

said door prop assembly is configured to transition through a plurality of configurations with a closed configuration being closed and an open and locked configuration being engaged to support said rear gate;

said prop arm assembly comprises said side plates and a spacers;

said side plates comprises a first side plate, and a second side plate;

said spacers are configured to be pressed between said side plates and provide a space for said rotating lock arm;

said prop arm assembly comprises a first end, a second end and a mid-point;

said prop arm assembly is rotateably attached to said rear gate with said distal mount assembly and selectively rotate on said distal hinge;

said distal hinge is at said first end of said prop arm assembly;

said rotating lock arm is rotateably attached to said prop arm assembly and selectively rotates on said locking hook hinge;

said locking hook hinge is at said mid-point of said prop arm assembly;

said distal mount assembly attaches to said rear gate so as to allow said prop arm assembly and said rear gate to rotate relative to one another on said distal hinge;

said rotating lock arm selectively rotates relative to said prop arm assembly on said locking hook hinge;

a spacer eye is welded between said side plates at said first end;

a center spacers is welded between said side plates between said first end and said mid-point of said prop arm assembly;

a distal spacer is welded between said side plates proximate to said second end;

said center spacers comprises a first center spacer, and a second center spacer;

said spacers comprises said center spacers, a proximal spacer, and said distal spacer; and

said proximal spacer, said center spacers portions of said rotating lock arm, and said distal spacer can be pressed between said first side plate and said second side plate.

12. The door prop assembly from claim **9**, wherein:

said door prop assembly comprises said lock bar assembly attached to a side portion of said door prop assembly;

said lock bar assembly comprises said lock bar extending out to selectively handle portions of said prop arm assembly;

said lock bar comprises a lock bar eye, a lower bar, an upper bar, a distal bar, and a proximate bar;

said lock bar eye comprises a space between said distal bar, said proximate bar and portions of said upper bar and said lower bar;

said lock bar eye comprises a space for allowing portions of said prop arm assembly and said rotating lock arm to selectively pass through;

a portion of said rotating lock arm is configured to hook onto said lower bar; and

a width of said prop arm assembly is less than a height of said lock bar eye to allow movement of said prop arm assembly through said lock bar eye.

13. The door prop assembly from claim **9**, wherein:

said prop arm assembly comprises said side plates and a spacers;

said side plates comprises a first side plate, and a second side plate;

said spacers are configured to be pressed between said side plates and provide a space for said rotating lock arm;

said prop arm assembly comprises a first end, a second end and a mid-point;

said prop arm assembly is rotateably attached to said rear gate with said distal mount assembly and selectively rotate on said distal hinge;

said distal hinge is at said first end of said prop arm assembly;

said rotating lock arm is rotateably attached to said prop arm assembly and selectively rotates on said locking hook hinge;

said locking hook hinge is at said mid-point of said prop arm assembly;

said distal mount assembly attaches to said rear gate so as to allow said prop arm assembly and said rear gate to rotate relative to one another on said distal hinge; and

said rotating lock arm selectively rotates relative to said prop arm assembly on said locking hook hinge.

14. The door prop assembly from claim **13**, wherein:

portions of said prop arm assembly are welded to one another; and

said spacers are welded between said side plates.

15. The door prop assembly from claim **13**, wherein:

said spacers comprises a center spacers, a proximal spacer, and a distal spacer; and

said proximal spacer, said center spacers portions of said rotating lock arm, and said distal spacer can be pressed between said first side plate and said second side plate.

16. The door prop assembly from claim **13**, wherein:

a center spacers comprises a first center spacer, and a second center spacer.

17. The door prop assembly from claim **13**, wherein:

a spacer eye is welded between said side plates at said first end;

a center spacers is welded between said side plates between said first end and said mid-point of said prop arm assembly; and

a distal spacer is welded between said side plates proximate to said second end.

18. The door prop assembly from claim **9**, wherein:

said prop arm assembly is formed form one piece of metal;

said prop arm assembly comprises a first end, a second end and a mid-point;

said prop arm assembly is rotateably attached to said rear gate and selectively rotate on said distal hinge;

said distal hinge is at said first end of said prop arm assembly;

said rotating lock arm is rotateably attached to said prop arm assembly and selectively rotates on said locking hook hinge; and

said locking hook hinge is at said mid-point of said prop arm assembly.

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