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(54) **Safety trailer**

Sicherheitsanhänger

Remorque de sécurité

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Description

FIELD

[0001] The present invention relates generally to the field of trailers and other types of barriers used to shield road construction workers from traffic. More specifically, the present invention discloses a safety and construction trailer having a safety wall.

BACKGROUND

[0002] Various types of barriers have long been used to protect road construction workers from passing vehicles. For example, cones, barrels and flashing lights have been widely used to warn drivers of construction zones, but provide only limited protection to road construction workers in the event a driver fails to take heed. Some construction projects routinely park a truck or other heavy construction equipment in the lane between the construction zone and on-coming traffic. This reduces the risk of worker injury from traffic in that lane, but does little with regard to errant traffic drifting laterally across lanes into the construction zone. In addition, conventional barriers require significant time and effort to transport to the work site, and expose workers to significant risk of accident while deploying the barrier at the work site. Therefore, a need exists for a safety barrier that can be readily transported to and deployed at the work site. In addition, the safety barrier should protect against lateral incursions by traffic from adjacent lanes, as well as traffic in the same lane.

[0003] US 7125198 discloses a mobile work zone protection device including a front carrier, a barrier beam assembly, consisting of two sets of telescopic beam structures, and a rear carrier.

SUMMARY

[0004] These and other needs are addressed by a safety trailer according to claim 1.

[0005] A system is provided that includes first and second platforms comprising at least one set of wheels and a safety wall positionable between the first and second platforms to define an area protected from a vehicular incursion. The system includes different segments of the safety wall and at least a sliding mechanism, between the safety wall and the first and second platforms of the safety trailer and/or between said different segments of the safety wall, for deploying or undeploying said different segments.

[0006] The present invention can provide a number of advantages depending on the particular configuration. By way of example, the safety trailer can have sufficient mass and energy absorption to resist, without substantial displacement, the kinetic energy from the impact. The safety wall itself can be made of any rigid material, such as steel. Lighter weight materials having high strength

are typically disfavored as their reduced weight is less able to withstand, without significant displacement, the force of a vehicular collision. Energy absorption can be provided by shocks and inflated wheels. Preferred trailer configurations are not deployed on jack stands, which can minimize energy absorption by these mechanisms.

[0007] The safety wall or barrier (and thus the entire trailer) can be of any selected length or extendable to provide a work area protected from vehicular incursions. This can provide maintenance workers with substantial safety benefits while also providing enhanced driver safety.

[0008] The traffic-incursion side of the safety trailer, including any elongated safety wall, can be substantially planar to avoid hang ups and snags with an impacting vehicle. Hang ups and snags can direct more kinetic impact energy into the wall and/or cause the vehicle to flip over the safety wall.

[0009] The height of the safety wall can be high enough to inhibit entry of an impacting vehicle into the protected work area by climbing, flipping, and careening over the wall.

[0010] End platforms integral to the trailer's design can minimize the need for workers to leave the protected zone and eliminate the need for separate maintenance vehicles by providing onboard hydraulics, compressors, generators and related power, fuel, water, storage and portable restroom facilities.

[0011] Optional overhead protection can be extended out over the work area for even greater environmental relief (rain or shine).

[0012] The trailer can carry independent directional and safety lighting at both ends and will work with any standard semi tractor. Directional lighting and impact-absorbing features incorporated at each end of the trailer and in the rear platform can combine with the safety wall and improved lighting to provide increased protection for both work crews and the public, especially with ever-increasing amounts of night-time construction. Optionally, an impact-absorbing caboose can be attached at the end of the trailer opposite the tractor to provide additional safety lighting and impact protection.

[0013] The trailer can be designed to eliminate the need for separate lighting trucks or trailers, to reduce glare to traffic, to eliminate the need for separate vehicles pulling portable restroom facilities, to provide better a brighter, more controlled work environment and enhanced safety, and to, among other things, better facilitate 24-hour construction along the nation's roadways.

[0014] The trailer can be designed to provide road maintenance personnel with improved protection from ongoing, oncoming and passing traffic, to reduce the ability of passing traffic to see inside the work area (to mitigate rubber-necking and secondary incidents), and to provide a fully-contained, mobile, enhanced environment within which the work crews can function day or night, complete with optional power, lighting, ventilation, heating, cooling, and overhead protection including extend-

able mesh shading for sun protection, or tarp covering for protection from rain, snow or other inclement weather.

[0015] Platforms can be provided at both ends of the trailer for hydraulics, compressors, generators, batteries, water misters, water sprayers, pumps for liquid removal from the protected work area, fans, tool storage, related fuel, water, storage, and restroom facilities and other amenities. The trailer can be fully rigged with direction and safety lighting, as well as lighting for the work area and platforms. Power outlets can be provided in the interior of the work area for use with construction tools and equipment, with minimal need for separate power trailers or extended cords. Both the front and rear platforms can provide areas for fuel, water and storage. Additional fuel, water and miscellaneous storage space can be provided in an optional extended caboose of like but lengthened design.

[0016] Other applications include but are not limited to public safety, portable shielding and shelter, communications and public works. Two or more trailers can be used together to provide a fully enclosed inner area, such as may be necessary in multi-lane freeway environments.

[0017] With significant shifts to night construction and maintenance, the trailer can provide a well-lit, self-contained, and mobile safety enclosure. Cones can still be used to block lanes, and detection systems or personnel can be used to provide notice of an errant driver, but neither offers physical protection or more than split second warning for drivers who may be under the influence of alcohol or intoxicants, or who, for whatever reason, become fixated on the construction/maintenance equipment or lights and veer into or careen along the same.

[0018] The safety trailer can be readily, easily and conveniently deployable. The tractor can, for instance, be able to engage the hitch of the safety trailer from multiple directions, rather than only from one specific orientation. The safety trailer can have an air ride on the rear platform to permit either side or the entirety of the front and/or rear platforms to be raised or lowered.

[0019] The safety trailer can have semi-tractor hookups at both ends and a safety wall that is fixed to one side of the trailer. That side, however, can be changed to the right or left side of the road, depending on the end to which the semi-tractor attaches. A caboose can be attached at the end of the trailer opposite the tractor to provide additional lighting and impact protection. These and other advantages will be apparent from the disclosure of the invention(s) contained herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The accompanying drawings are incorporated into and form a part of the specification to illustrate several examples of the present invention(s). These drawings, together with the description, explain the principles of the invention(s). The drawings simply illustrate preferred and alternative examples of how the invention(s)

can be made and used and are not to be construed as limiting the invention(s) to only the illustrated and described examples. Further features and advantages will become apparent from the following, more detailed, description of the various embodiments of the invention(s), as illustrated by the drawings referenced below.

Fig. 1 is a side view of an undeployed safety trailer according to the prior art;

Fig. 2 is a side view of a deployed safety trailer according to the prior art of Fig. 1;

Fig. 3 shows a safety trailer according to the invention;

Fig. 4 shows a deployed safety trailer according to an embodiment;

Fig. 5 is an isometric view of an undeployed safety trailer according to an embodiment;

Fig. 6 is an isometric view of the deployed safety trailer of Fig. 5;

Fig. 7 is an isometric view of an undeployed safety trailer according to an embodiment;

Fig. 8 is an isometric view of a deployed safety trailer of Fig. 7;

Fig. 9 is a cross sectional view of an interface between a safety wall segment and another safety wall segment according to an embodiment;

Fig. 10 is a rear view of a locking mechanism between two expandable and retractable safety wall members according to an embodiment.

DETAILED DESCRIPTION

General

[0021] In designing a vehicular impact resistant safety trailer, there are a number of design considerations. For example, the safety trailer should have sufficient mass and energy absorption to resist, without substantial displacement, the kinetic energy from the impact. Energy absorption can be provided by shocks and inflated wheels. Deploying the trailer on jack stands can minimize energy absorption by these mechanisms. If there is insufficient mass and energy absorption, the vehicular impact can displace the safety trailer into the protected work area, with concomitant injuries to maintenance personnel. On the oncoming traffic-facing end of the trailer, the safety trailer should have crash attenuation devices to absorb energy from vehicular collisions and lighting and illuminated message boards to provide adequate warn-

ings to drivers. The traffic-incursion side of the safety trailer, including any elongated safety wall, should be substantially planar to avoid hang ups and snags with an impacting vehicle. Hang ups and snags can direct more kinetic impact energy into the wall and/or cause the vehicle to flip over the safety wall. The safety wall, itself, should have sufficient structural strength (e.g., a relatively high tensile and compressive yield strength) and elastic deformation to resist the kinetic energy of vehicular impact. The height of the safety wall should be high enough to inhibit entry of an impacting vehicle into the protected work area by climbing, flipping, and careening over the wall. The safety trailer should have embedded equipment and associated plumbing/wiring to assist workers in the work area. Examples include generators, lighting, compressors, batteries, water misters, water sprayers, pumps for liquid removal from the protected work area, fans, tool storage, and the like. The safety trailer should be readily, easily and conveniently deployable. The tractor should, for instance, be able to engage the hitch of the safety trailer from multiple directions, rather than only from one specific orientation. The safety trailer should have an air ride on the rear platform to permit either side or the entirety of the front and/or rear platforms to be raised or lowered. The various configurations and embodiments disclosed herein have one or more of these features.

Rotatable Arm Safety Wall Trailer Designs

[0022] According to the prior art, the safety wall rotates to either side of the trailer, by a rotatable arm aligned (in a substantially vertical plane) substantially with the longitudinal axis of the safety trailer. Each of the rotatable arms, when deploying the safety wall, can drop into, or engage, a channel and/or retainer to provide added strength to the safety wall.

[0023] Figs. 1-2 depict a safety trailer according to the prior art design. The trailer 100 includes first and second platforms 104 and 108 interconnected by an extendible and retractable safety wall 112. The safety wall 112 includes first and second sections 120 and 124, with the first section 120 telescopically receiving the second section 124. Fig. 1 depicts the safety wall in an undeployed configuration while Fig. 2 depicts the safety wall in a deployed configuration. In the undeployed configuration, the safety wall is retracted while in the deployed configuration the safety wall is extended to define a protected work area for maintenance personnel. The first and/or second platforms 104 and 108 each include a ballast 116, which is positioned on the trailer 100 to offset, at least substantially, the weight of the safety wall 112.

Slide Safety Wall Trailer Designs

[0024] In a number of safety trailer embodiments, according to the invention, the safety wall is deployed via a sliding mechanism, between

the safety wall and safety trailer and/or between different segments of the safety wall.

[0025] Figs. 3-4 and 9 depict a safety trailer according to an embodiment of this design. The safety trailer 5900 includes first and second platforms 5904 and 5908 and safety wall 5912 positioned between, and engaged with, the first and second platforms 5904 and 5908. First and second segments 6900 and 6904 of the safety wall 5912 are interconnected by a matching tongue 7200 and groove 7204 mechanism as shown in Fig. 9. This mechanism permits the first and second segments 6900 and 6904 to move linearly, in the directions shown, relative to one another. In one configuration, independently operable brakes on the second platform 5908 are activated to hold the second platform 5908 stationary while the first platform 5904 is moved in the direction shown. When the safety wall 5912 is extended to the desired degree, dowels are inserted into holes 7208 passing from a backside of and through the safety wall segment 6900 and into the safety wall segment 6904. In this manner, the dowels are inserted and removed from the protected work area. In one configuration, the wall length is adjustable by positioning a plurality of holes 7208 at selected intervals along a length of the safety wall 5912, as shown in Fig. 10. In this manner, the safety wall is moved to the desired position, the holes in the wall segments 6900 and 6904 aligned, and dowels placed in the aligned holes. The edge 6040 may be beveled to reduce the likelihood of the edge becoming a snag to an impacting vehicle.

[0026] Figs. 5-6 depict a safety trailer according to an embodiment of this design. The safety trailer 6500 includes first and second platforms 6504 and 6508 and safety wall 6512 positioned between, and engaged with, the first and second platforms 6504 and 6508. The safety wall 6512 is secured to the first and second platforms by a matching tongue (not shown) and groove 6600 mechanism, such as that shown in Fig. 6. This mechanism permits the first and second platforms, when moved apart, to move, relatively to the safety wall 6512, linearly, in the directions shown. In one configuration, independently operable brakes on the second platform are activated to hold the second platform stationary while the first platform is moved in the direction shown.

[0027] Figs. 7-8 depict a safety trailer according to an embodiment of this design. The safety trailer 6700 includes first and second platforms 6704 and 6708 and safety wall 6712 positioned between, and engaged with, the first and second platforms 6704 and 6708.

[0028] First and second segments 6800 and 6804 of the safety wall 6712 are interconnected by a matching tongue 6808 and groove mechanism, such as that shown in Fig. 9. This mechanism permits the first and second segments 6800 and 6804 to move linearly, in the directions shown, relative to one another. The first and second segments 6800 and 6804, while being movably (slidably) engaged relative to one another, are each fixedly or permanently engaged to a corresponding adjacent one of the first and second platforms 6704 and 6708. In one

configuration, independently operable brakes on the second platform are activated to hold the second platform stationary while the first platform is moved in the direction shown.

Claims

1. A safety trailer (5900, 6500, 6700), comprising:

first (5904, 6504, 6704) and second (5908, 6508, 6708) platforms comprising at least one set of wheels,

a safety wall (5912, 6512, 6712) positioned between, and engaged with, the first (5904, 6504, 6704) and

second (5908, 6508, 6708) platforms to define an area protected from a vehicular incursion, wherein

the safety wall (5912, 6512, 6712) comprises different segments (6900, 6904, 6800, 6808, 6512), and

at least a sliding mechanism, between the safety wall (5912, 6512, 6712) and the first (5904, 6504, 6704) and second (5908, 6508, 6708) platforms of the safety trailer (5900, 6500, 6700) and/or between said different segments of the safety wall (5912, 6512, 6712), is provided for deploying and/or undeploying said different segments (6900, 6904, 6800, 6808, 6512) of the safety wall (5912, 6512, 6712); said safety wall (5912, 6512, 6712) including first (6900) and second (6904) segments, **characterized in that** said sliding mechanism is not telescopic and comprises a matching tongue (7200) and a groove (7204), wherein

said sliding mechanism permits the first (6900) and second (6904) segments to move linearly relative to one another.

2. The safety trailer (6500) of claim 1, wherein said safety wall (6512) is positioned between, and engaged with, said first (6504) and second (6508) platforms, said safety wall (6512) is secured to said first and second platforms by said matching tongue on said safety wall (6512) and said groove (6600) mechanism on said first (6504) and second (6508) platforms, wherein said first (6504) and second (6508) platforms, when moved linearly apart, move relatively to said safety wall (6512) in deployed configuration from the undeployed configuration or to the undeployed configuration.

3. The safety trailer (6700) of claim 1, comprising: first (6800) and second (6804) segments of said safety wall (6712) positioned between, and engaged with, said first (6704) and second (6708) platforms, said matching tongue (6808) and said groove mech-

anism are provided on said first (6800) and second (6804) segments of said safety wall (6712) for interconnecting said segments, wherein said mechanism permits the first (6800) and second (6804) segments to move linearly relative to one another.

4. The safety trailer (6700) of claim 3, wherein said first (6800) and second (6804) segments, while being movably and slidably engaged relative to one another, are each fixedly or permanently engaged to a corresponding adjacent one of said first (6704) and second (6708) platforms.

5. The safety trailer (5900) of claims 1, 3, or 4, further comprising holes (7208) on a backside of and through the first safety wall segment (6900) and into the second safety wall segment (6904) and dowels, wherein when said safety wall (5912) is extended to the desired degree, the dowels are inserted into holes (7208) passing from a backside of and through the safety wall segment (6900) and into the safety wall segment (6904).

6. The safety trailer (5900) of claim 5, wherein said plurality of holes (7208) are at selected intervals along a length of the safety wall (5912) so that said holes in the wall segments (6900, 6904) align where dowels are placed.

7. The safety trailer (5900, 6500, 6700) of claims 1-6 wherein an edge (6040) of said first safety wall segment (6900) is beveled for reducing the likelihood of the edge to become a snag to an impacting vehicle.

8. The safety trailer (5900, 6500, 6700) of claims 1-7 wherein said second platform (5908, 6508, 6708) is provided with independently operable brakes which in use are activated to hold the second platform (5908, 6508, 6708) stationary while the first platform (5904, 6504, 6704) is moved linearly to one another.

Patentansprüche

1. Sicherheitsanhänger (5900, 6500, 6700), aufweisend:

erste (5904, 6504, 6704) und zweite (5908, 6508, 6708) Plattformen, die zumindest einen Satz von Rädern umfassen, eine Sicherheitswand (5912, 6512, 6712), die zwischen den ersten (5904, 6504, 6704) und (5908, 6508, 6708) Plattformen angeordnet ist und im Eingriff mit diesen steht, um einen Bereich festzulegen, der vor einem Eindringen von Fahrzeugen geschützt ist, wobei die Sicher-

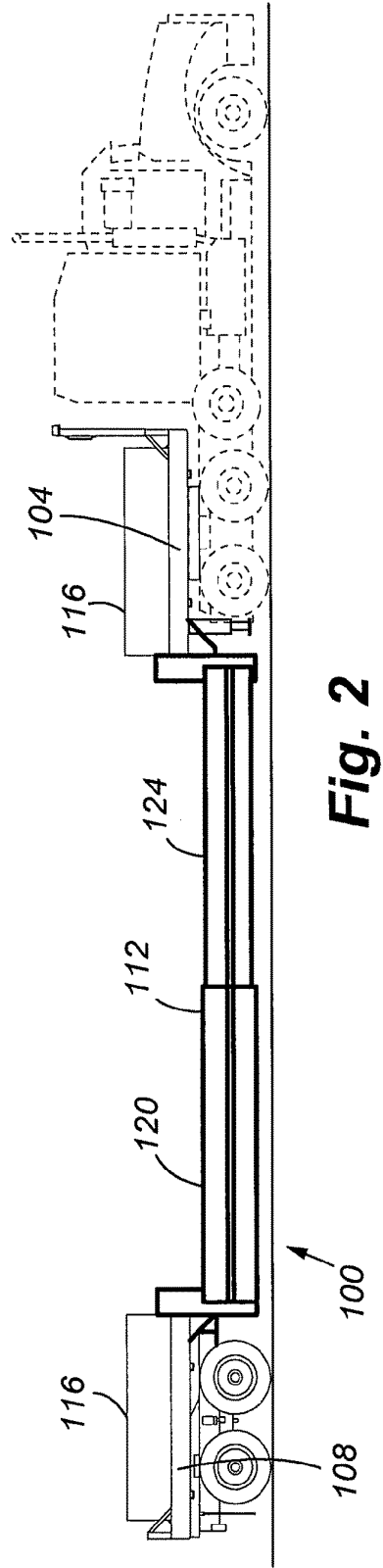
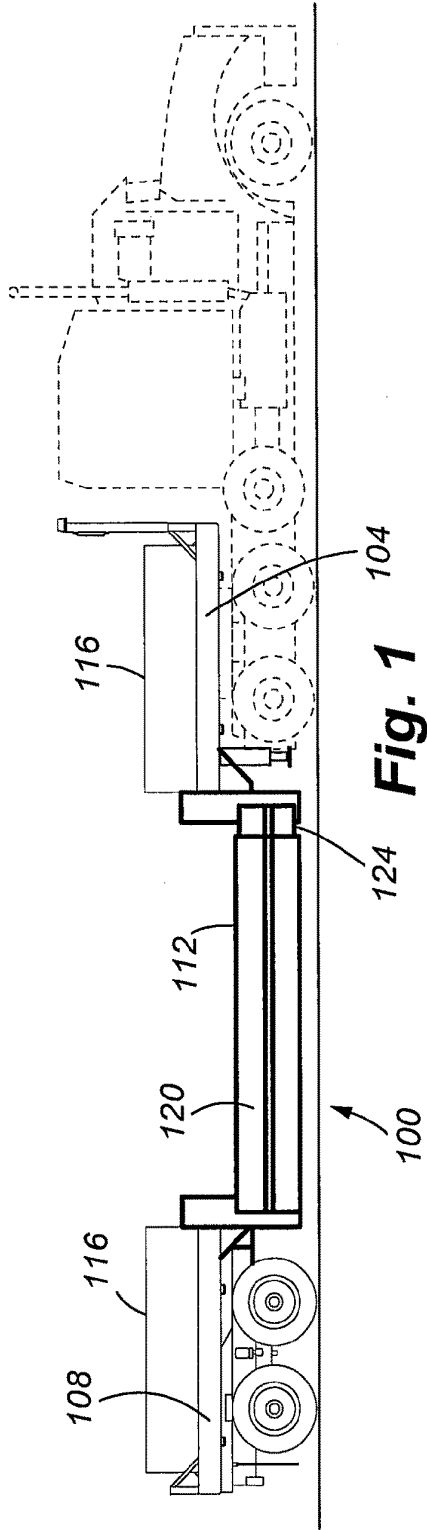
- heitswand (5912, 6512, 6712) unterschiedliche Segmente (6900, 6904, 6800, 6808, 6512) umfasst, und
 zumindest einen Gleitmechanismus zwischen der Sicherheitswand (5912, 6512, 6712) und den ersten (5904, 6504, 6704) und zweiten (5908, 6508, 6708) Plattformen des Sicherheitsanhängers (5900, 6500, 6700) und/oder zwischen den unterschiedlichen Segmenten der Sicherheitswand (5912, 6512, 6712) vorgesehen ist, um die unterschiedlichen Segmente (6900, 6904, 6800, 6808, 6512) der Sicherheitswand (5912, 6512, 6712) zu entfalten und/oder zusammenzufalten;
 die Sicherheitswand (5912, 6512, 6712) erste(6900) und zweite (6904) Segmente enthält, **dadurch gekennzeichnet, dass** der Gleitmechanismus nicht ausziehbar ist und eine Passzunge (7200) und eine Nut (7204) aufweist, wobei der Gleitmechanismus es den ersten (6900) und zweiten (6904) Segmenten erlaubt, sich linear zueinander zu bewegen.
2. Sicherheitsanhänger (6500) nach Anspruch 1, wobei die Sicherheitswand (6512) zwischen den ersten (6504) und zweiten (6508) Plattformen angeordnet ist und im Eingriff mit diesen steht, wobei die Sicherheitswand (6512) durch den Mechanismus aus der Passzunge auf der Sicherheitswand (6512) und der Nut (6600) auf den ersten (6504) und zweiten (6508) Plattformen festgelegt ist, wobei die ersten (6504) und zweiten (6508) Plattformen, wenn sie voneinander linear weg bewegt werden, sich in entfalteter Konfiguration ausgehend von der zusammengefalteten Stellung oder in die zusammengefaltete Position relativ zu der Sicherheitswand (6512) bewegen.
3. Sicherheitsanhänger (6700) nach Anspruch 1, aufweisend erste (6800) und zweite (6804) Segmente der Sicherheitswand (6712), angeordnet zwischen und im Eingriff mit den ersten (6704) und zweiten (6708) Plattformen, wobei der Mechanismus aus Passzunge (6808) und Nut auf den ersten (6800) und zweiten (6804) Segmenten der Sicherheitswand (6712) zum miteinander Verbinden der Segmente vorgesehen sind, wobei der Mechanismus es den ersten (6800) und zweiten (6804) Segmenten erlaubt, sich relativ zueinander linear zu bewegen.
4. Sicherheitsanhänger (6700) nach Anspruch 3, wobei die ersten (6800) und zweiten (6804) Segmente, wenn sie durch relatives Bewegen und Gleiten lassen miteinander in Eingriff gebracht werden, sich jeweils fest oder dauerhaft im Eingriff mit einer entsprechenden benachbarten der ersten (6704) und zweiten (6708) Plattformen befinden.
5. Sicherheitsanhänger (5900) nach Anspruch 1, 3 oder 4, außerdem aufweisend Löcher (7208) auf einer Rückseite des ersten Sicherheitswandsegments (6900) sowie durch dieses hindurch und in das zweite Sicherheitswandsegment (6904) hinein, und Passstifte, wobei dann, wenn die Sicherheitswand (5912) um ein gewünschtes Ausmaß ausgefahren wird, die Passstifte in die Löcher (7208) eingeführt werden, indem sie ausgehend von einer Rückseite des Sicherheitswandsegments (6900) sowie durch dieses hindurch und in das Sicherheitswandsegment (6904) hinein gelangen.
6. Sicherheitsanhänger (5900) nach Anspruch 5, wobei die mehreren Löcher (7208) sich mit vorbestimmten Zwischenräumen entlang einer Längserstreckung der Sicherheitswand (5912) derart befinden, dass die Löcher in den Wandsegmenten (6900, 6904) mit den Stellen fluchten, in denen die Passstifte angeordnet werden.
7. Sicherheitsanhänger (5900, 6500, 6700) nach Anspruch 1-6, wobei eine Kante (6040) des ersten Sicherheitswandsegments (6900) zur Verringerung der Wahrscheinlichkeit abgeschrägt ist, dass die Kante für ein auftretendes Fahrzeug zu einem Hindernis wird.
8. Sicherheitsanhänger (5900, 6500, 6700) nach Anspruch 1-6, wobei die zweite Plattform (5908, 6508, 6708) mit unabhängig betätigbaren Bremsen versehen ist, die im Gebrauch aktiviert werden, um die zweite Plattform (5908, 6508, 6708) an Ort und Stelle zu halten, während die erste Plattform (5904, 6504, 6704) linear zu dieser bewegt wird.

Revendications

1. Remorque de sécurité (5900, 6500, 6700), comprenant :

des première (5904, 6504, 6704) et seconde (5908, 6508, 6708) plates-formes comprenant au moins un ensemble de roues, une paroi de sécurité (5912, 6512, 6712) positionnée entre les première (5904, 6504, 6704) et seconde (5908, 6508, 6708) plates-formes, et en prise avec celles-ci, pour définir une zone protégée d'une incursion de véhicule, dans laquelle la paroi de sécurité (5912, 6512, 6712) com-

- prend différents segments (6900, 6904, 6800, 6808, 6512), et
 au moins un mécanisme coulissant, entre la paroi de sécurité (5912, 6512, 6712) et les première (5904, 6504, 6704) et seconde (5908, 6508, 6708) plates-formes de la remorque de sécurité (5900, 6500, 6700) et/ou entre lesdits différents segments de la paroi de sécurité (5912, 6512, 6712), est fourni pour déploiement et/ou rétraction desdits différents segments (6900, 6904, 6800, 6808, 6512) de la paroi de sécurité (5912, 6512, 6712) ;
 ladite paroi de sécurité (5912, 6512, 6712) comprenant des premier (6900) et second (6904) segments, **caractérisée en ce que** ledit mécanisme coulissant n'est pas télescopique et comprend une patte d'appariement (7200) et une rainure (7204), dans laquelle ledit mécanisme coulissant permet aux premier (6900) et second (6904) segments de se déplacer linéairement l'un par rapport à l'autre.
2. Remorque de sécurité (6500) selon la revendication 1, dans laquelle
 ladite paroi de sécurité (6512) est positionnée entre, et en prise avec, lesdites première (6504) et seconde (6508) plates-formes, ladite paroi de sécurité (6512) est fixée auxdites première et seconde plates-formes par ladite patte d'appariement sur ladite paroi de sécurité (6512) et ledit mécanisme à rainure (6600) sur lesdites première (6504) et seconde (6508) plates-formes, dans laquelle lesdites première (6504) et seconde (6508) plates-formes, lorsqu'elles sont éloignées linéairement, se déplacent par rapport à ladite paroi de sécurité (6512) dans la configuration déployée à partir de la configuration rétractée ou vers la configuration rétractée.
3. Remorque de sécurité (6700) selon la revendication 1, comprenant :
 les premier (6800) et second (6804) segments de ladite paroi de sécurité (6712) positionnés entre lesdites première (6704) et seconde (6708) plates-formes, et en prise avec celles-ci ladite patte d'appariement (6808) et ledit mécanisme de rainure sont fournis sur lesdits premier (6800) et second (6804) segments de ladite paroi de sécurité (6712) pour interconnecter lesdits segments, dans laquelle
 ledit mécanisme permet aux premier (6800) et second (6804) segments de se déplacer linéairement l'un par rapport à l'autre.
4. Remorque de sécurité (6700) selon la revendication 3, dans laquelle
 lesdits premier (6800) et second (6804) segments, tout en étant en prise de manière mobile et coulissante l'un par rapport à l'autre, sont chacun en prise de manière fixe ou permanente avec une plate-forme correspondante adjacente parmi lesdites première (6704) et seconde (6708) plates-formes.
5. Remorque de sécurité (5900) selon les revendications 1, 3 ou 4, comprenant en outre des trous (7208) sur une face arrière du premier segment de paroi de sécurité (6900) et à travers celui-ci et dans le second segment de paroi de sécurité (6904) et des goujons, dans laquelle
 lorsque ladite paroi de sécurité (5912) est en extension au degré souhaité, les goujons sont insérés dans les trous (7208) passant d'une face arrière du segment de paroi de sécurité (6900) et à travers celui-ci et dans le segment de paroi de sécurité (6904).
6. Remorque de sécurité (5900) selon la revendication 5, dans laquelle
 ladite pluralité de trous (7208) se trouve à des intervalles sélectionnés le long d'une longueur de la paroi de sécurité (5912) de sorte que lesdits trous dans les segments de paroi (6900, 6904) s'alignent là où sont placés les goujons.
7. Remorque de sécurité (5900, 6500, 6700) selon les revendications 1 à 6, dans laquelle
 un bord (6040) dudit premier segment de paroi de sécurité (6900) est biseauté pour réduire la probabilité que le bord devienne une aspérité pour un véhicule entrant en collision.
8. Remorque de sécurité (5900, 6500, 6700) selon les revendications 1 à 7, dans laquelle
 ladite seconde plate-forme (5908, 6508, 6708) comporte des freins pouvant être mis en oeuvre indépendamment qui, en cours d'utilisation, sont activés pour maintenir la seconde plate-forme (5908, 6508, 6708) fixe tandis que la première plate-forme (5904, 6504, 6704) est déplacée linéairement l'une par rapport à l'autre.



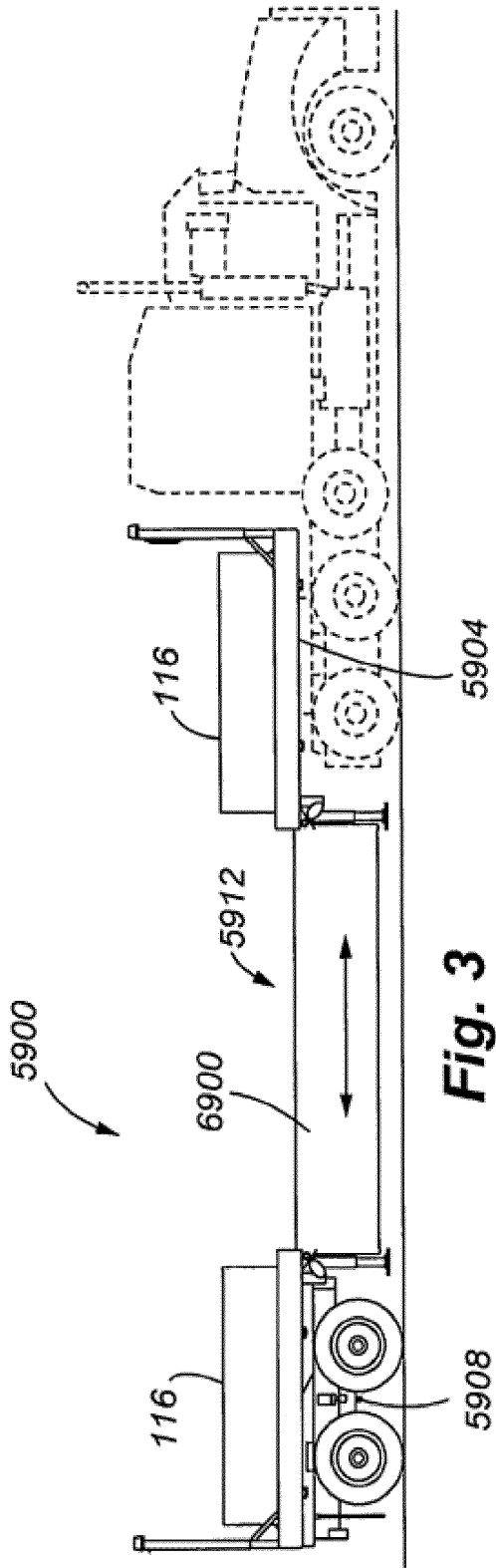


Fig. 3

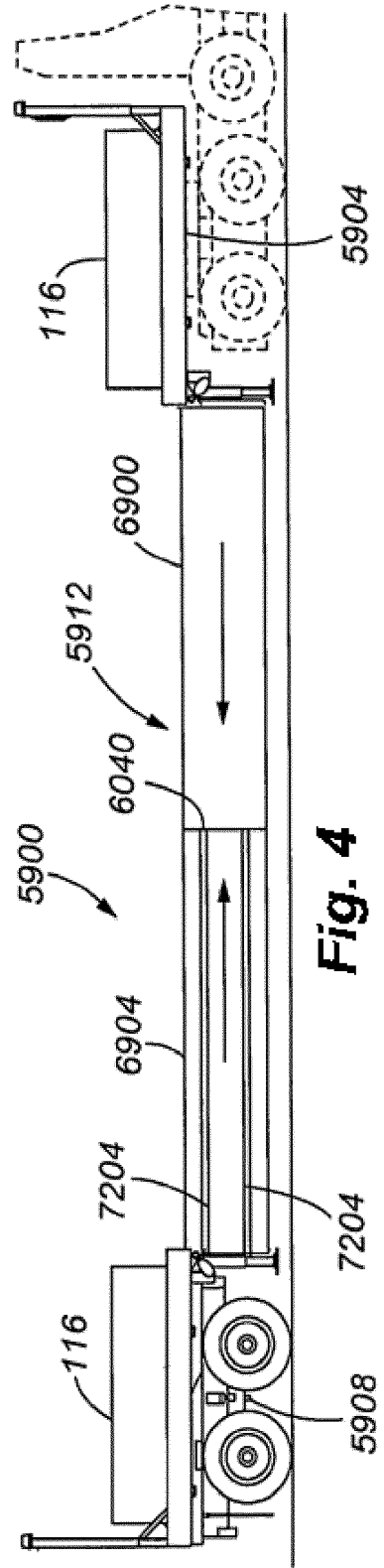


Fig. 4

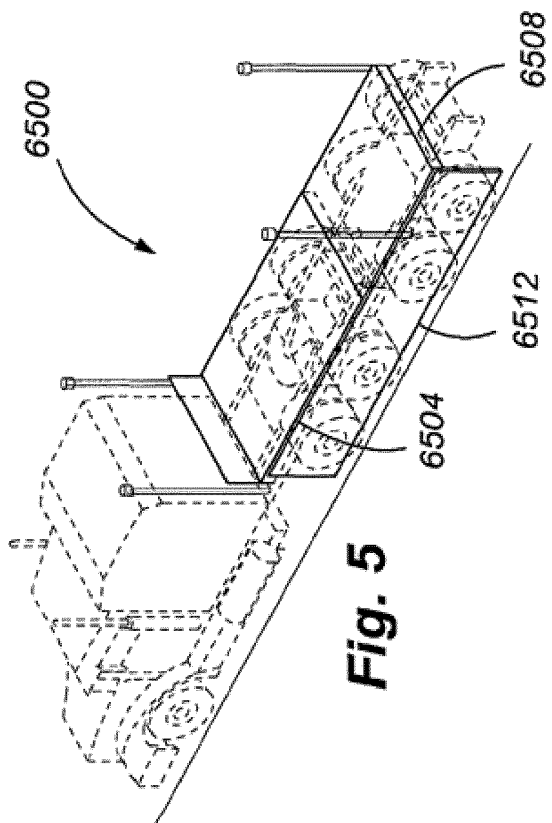


Fig. 5

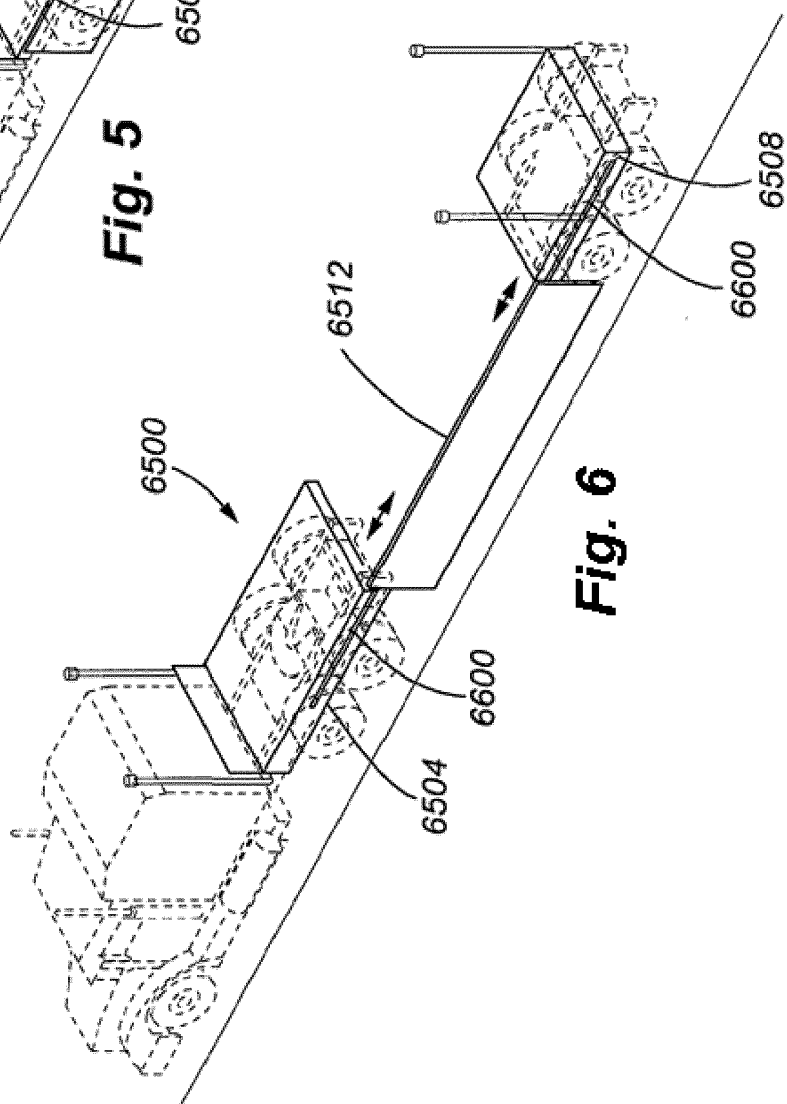
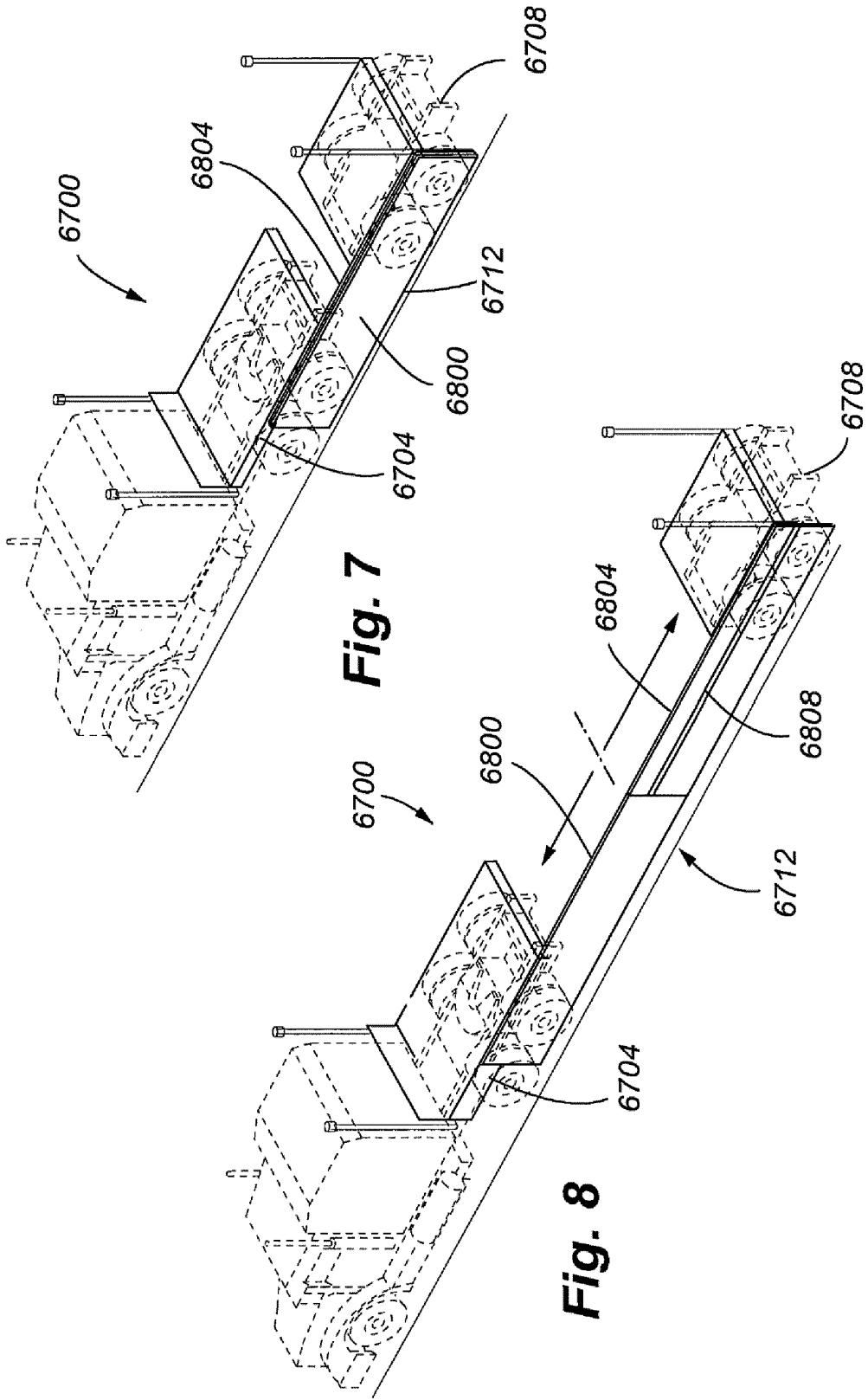


Fig. 6



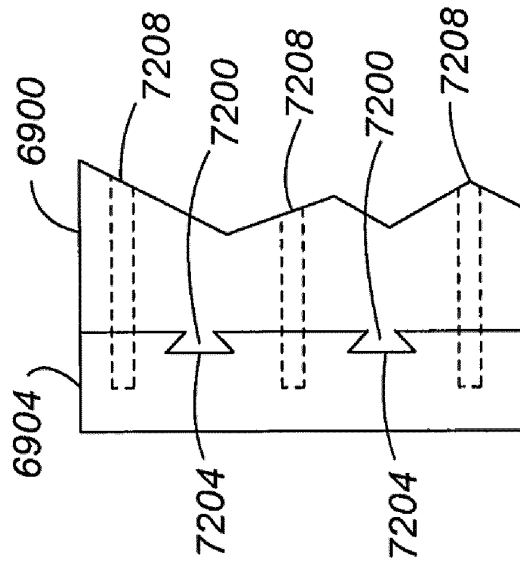


Fig. 9

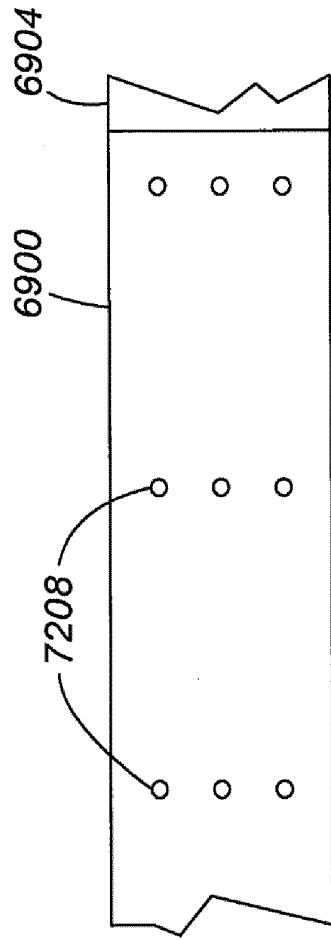


Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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