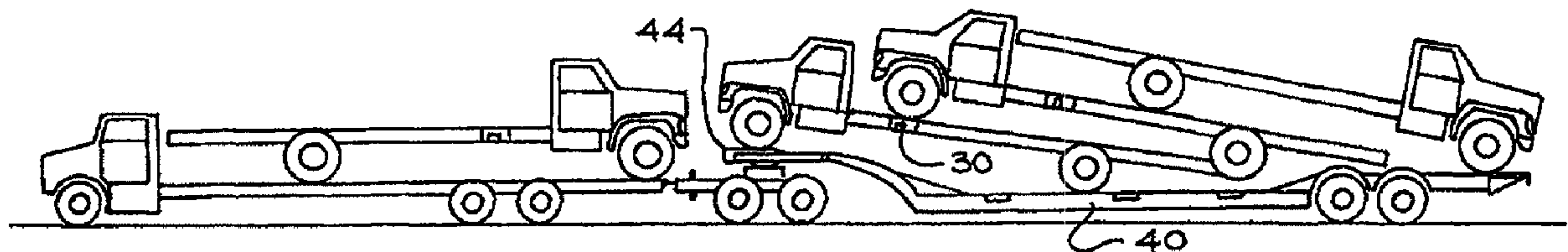




(86) Date de dépôt PCT/PCT Filing Date: 1999/07/09
(87) Date publication PCT/PCT Publication Date: 2000/01/20
(45) Date de délivrance/Issue Date: 2007/10/30
(85) Entrée phase nationale/National Entry: 2001/01/08
(86) N° demande PCT/PCT Application No.: US 1999/015523
(87) N° publication PCT/PCT Publication No.: 2000/002742
(30) Priorité/Priority: 1998/07/09 (US09/113,804)

(51) Cl.Int./Int.Cl. *B60P 3/07* (2006.01),
B62D 53/00 (2006.01)
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(54) Titre : APPAREIL DE REMORQUE ET ENSEMBLE DESTINES AU TRANSPORT DE VEHICULES A ROUES
(54) Title: TRAILER APPARATUS AND ASSEMBLY FOR TRANSPORTATION OF WHEELED VEHICLES

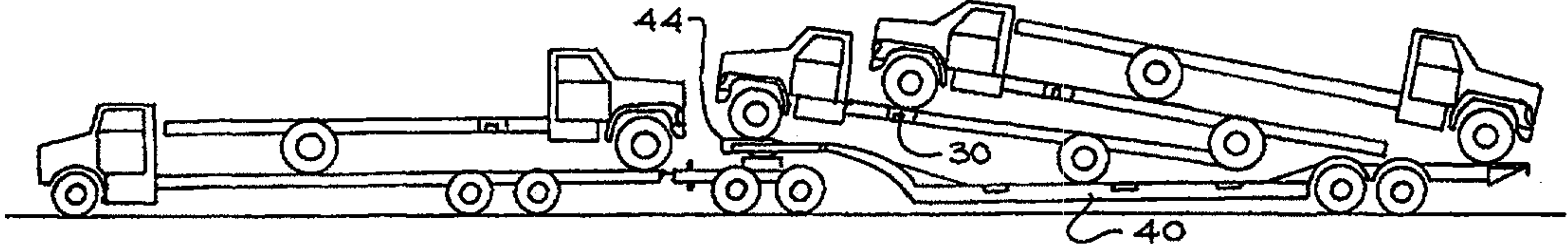


(57) Abrégé/Abstract:

A trailer arrangement (40) in combination with a tractor (10) to transport wheeled vehicles (T1, T2) over a highway, in compliance with current state and federal regulatory requirements and with a view toward future modification of those requirements. The arrangement includes a connector (36) for coupling a tractor bed (12) to the trailer. A trailer gooseneck (42) is coupled to the connector.

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B60D 3/07	A1	(11) International Publication Number: WO 00/02742 (43) International Publication Date: 20 January 2000 (20.01.00)
(21) International Application Number: PCT/US99/15523 (22) International Filing Date: 9 July 1999 (09.07.99) (30) Priority Data: 09/113,804 9 July 1998 (09.07.98) US (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 09/113,804 (CIP) Filed on 9 July 1998 (09.07.98) (71) Applicant (for all designated States except US): ATC LEASING COMPANY [US/US]; 4316 39th Avenue, Kenosha, WI 53144 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): TROHA, Dennis, M. [US/US]; 1709 32nd Avenue, Kenosha, WI 53144 (US). TINKER, Charles [US/US]; 1311 20th Avenue, Kenosha, WI 53140 (US). (74) Agents: DeKRUIF, Rodney, D. et al.; Reinhart, Boerner, Van Deuren, Norris & Rieselbach, s.c., Suite 2100, 1000 North Water Street, Milwaukee, WI 53202-3400 (US).		(81) Designated States: AU, BR, CA, KR, MX, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>
(54) Title: TRAILER APPARATUS AND ASSEMBLY FOR TRANSPORTATION OF WHEELED VEHICLES  (57) Abstract A trailer arrangement (40) in combination with a tractor (10) to transport wheeled vehicles (T1, T2) over a highway, in compliance with current state and federal regulatory requirements and with a view toward future modification of those requirements. The arrangement includes a connector (36) for coupling a tractor bed (12) to the trailer. A trailer gooseneck (42) is coupled to the connector.		

TRAILER APPARATUS AND ASSEMBLY FOR TRANSPORTATION OF WHEELED VEHICLES

Background of the Invention

The present invention relates generally to trailer apparatus typically transported over the highway, pulled by tractor vehicles. In particular, the invention relates to over the highway trailers and related assemblies configured and arranged for the transportation of trucks and truck chassis, all the while meeting various industry standards and complying with state and federal highway, transportation and related regulatory requirements.

Trucks can be transported to a delivery site by using one of the trucks to tow the others. In such an arrangement, the towing truck has a saddle arrangement on which the first towed truck can be mounted. The first towed truck, in turn, also has a saddle arrangement by which a second towed truck can be mounted. Typically, the axle of each towed truck is coupled to the corresponding saddle arrangement on the truck towed before it. Any frame member of a towed truck can also be used to accomplish the same purpose.

Such a decking arrangement has associated with it, however, a number of problems and deficiencies. The number or size of the towed trucks is limited by existing state and federal regulations. Handling problems abound as the number of towed trucks and/or chassis lengths increase.

Summary of the Invention

This invention provides a trailer apparatus and/or assembly for the transportation of wheeled vehicles. The invention overcomes certain well-known problems and deficiencies, but also with a view toward future revisions to the regulated transport of such vehicles.

Accordingly, the present invention seeks to provide a trailer suitable for the transportation of extended length truck chassis. A corollary objective is to provide such a trailer and/or assembly for the transportation of wheeled vehicles in a number or having an overall length which exceeds existing regulatory standards.

The invention in one broad aspect provides an assembly for over the highway transportation of wheeled vehicles, comprising a tractor having a bed, a trailer, and a connector for coupling the tractor bed to the trailer, the trailer having a gooseneck end proximate to and coupled with the connector, and a truck chassis secured to at least one of the tractor bed and the trailer.

Another aspect of the invention provides a loaded chassis assembly, comprising, a tractor and a trailer pivotally connected to the tractor, the tractor having a bed. A plurality of truck chassis are detachably secured to the tractor bed and the trailer, wherein a first chassis is detachably secured to the bed, a second chassis is detachably secured to the trailer, and a third chassis is detachably secured to the second chassis.

It will be understood by those skilled in the art one or more aspects of this invention can meet certain objectives, while one or more other aspects can meet certain other objectives. Each objective may not apply equally, in all instances, to every aspect of the present invention. In this regard, the aforementioned objects--as well as those aspects and features which follow--can be viewed in the alternative with respect to any one aspect of the present invention.

Other aspects, features and advantages of the present invention will be apparent from the following to those skilled in the art having knowledge of the design and manufacture of truck transportation trailers. Such objects, features, benefits and advantages will be apparent from the above as taken in conjunction with the accompanying figures, data and all reasonable inferences to be drawn therefrom.

Brief Description of the Drawings

FIGURE 1 is a schematic representation of a trailer and/or assembly depicted, in accordance with this invention, as hauling a number of trucks.

FIGURE 2 is another representation showing, in particular, a trailer and/or assembly with ramp extension members.

FIGURE 3 is a schematic representation of a trailer and/or assembly, in accordance with this invention.

FIGURE 4 shows the trailer/assembly of FIG. 3 loaded with a number of extended chassis trucks.

Detailed Description of Preferred Embodiments

Referring to FIG. 1, tractor 10 is shown with bed 12 on which pivots ramp 14. Bed ramp 14 is positioned relative to bed 12 with elevator 16. In preferred embodiments, elevator 16 is a component of a hydraulic mechanism secured to bed 12 and movable along a length of ramp 14. Ramp 14 can conform to the surface structure of bed 12 when elevator 16 is retracted.

Bed extender 18 can be used to attach bed 12 to trailer 20. A coupling mechanism 22 includes corresponding components of extender 18 and trailer 20. In preferred embodiments, such a component of extender 18 is coupling mechanism 22 of a fifth wheel assembly, which can couple to a corresponding component of trailer 20.

Trailer ramp 24 is connected to trailer 20 at pivot 26. Ramp 24 can be elevated and positioned relative to trailer 20 by way of elevator 28. In preferred embodiments, elevator 28 is a hydraulic mechanism secured to bed 20 and moveable along a length of ramp 24. Ramp 24 can conform to the surface of structure of trailer 20 when elevator 28 is retracted.

FIG. 1 also shows, schematically, bed 12 and trailer 20 loaded with truck chassis. Using mechanisms well-known to those skilled in the art, the chassis are either secured to the bed or trailer ramps and/or one to another. Various coupling or saddle mechanisms 30, including those of the sort described in U.S. Pat. No. 5,722,677, which may be referred to for further details, can be utilized effectively. Such mechanisms can also include skid mounts of the type known to those skilled in the art. Such mechanisms can be, as illustrated in FIG. 1, secured to an underlying truck chassis T_1 , to couple chassis T_2 therewith. Positioning chassis T_2 on chassis T_1 , can be accomplished using auxiliary skids as, likewise, would be well known to those skilled in the art and made aware of this invention. The present invention also contemplates use of rigid supports in conjunction with elevators 16 and/or 28. Such supports can have a linear configuration corresponding to the elevators shown and be placed adjacent thereto prior to loading.

FIG. 2 shows another embodiment of the trailer and/or assembly of FIG. 1. In particular, bed ramp 14 can be lengthened with bed ramp extension member 32. In a similar fashion, trailer ramp 24 can be lengthened using trailer ramp extension member 34. Various mechanical mechanisms can be used effectively to lengthen each respective ramp. In preferred embodiments, each extension member has a telescopic relationship and operation relative to the respective ramp. Likewise, in preferred embodiments each ramp can be thereby extended hydraulically.

While not shown in FIG. 2, the present invention contemplates an assembly including ramp 24 and extension member 34 positioned relative to bed 12 and trailer 20 such that wheeled access is provided to bed 12 from trailer 20. In preferred embodiments, extension member 34 can be secured to the rear surface portion of bed 12 to permit such wheeled access.

Preferred embodiments of the assemblies shown in FIGS. 1 and 2 provide a length of about 75 feet, as measured from the front end of tractor 10 to the rear end of trailer 20. While standard tractor and bed assemblies can be used effectively, a preferred trailer embodiment has a length of about 34 feet, as measured from the rear wheel axle of trailer 20 to coupling mechanism 22. Preferably, in such embodiments, bed extender 18 has a length of about 60 inches, as measured from the rear wheel axle of tractor 10 to coupling mechanism 22. As shown in both FIGS. 1 and 2, the trucks loaded on trailer 20 extend past the rear portion thereof at a permissible distance in compliance with applicable regulations. As shown in FIGS. 3 and 4, and more fully discussed below, the trailer component of this invention can be used in conjunction with retractable rear extension 48, a preferred embodiment of which can be positioned within supporting framework of such a trailer when not used to extend the effective length thereof.

As best shown in FIG. 3, the present invention also includes, in part, connector 36 coupling tractor bed 12 and trailer 40. In preferred embodiments, connector 36 further includes fifth wheel assembly 38. Other coupling mechanisms well-known to those skilled in the art can also be used effectively. Such connectors and related assemblies include but are not limited to those described in U.S. Pat. No. 5,326,123 which may be referred to for further details. Likewise, in preferred embodiments, connector 36 can assist in steering and/or the directional control and stability of trailer 40. Those skilled in the art would refer to a stinger-steered trailer as one having such an embodiment of connector 36 used in conjunction with trailer 40.

Regardless, trailer 40 is extended with gooseneck 42, which terminates with end portion 44. Adjustment of the angular relationship of end portion 44 with gooseneck 42 imparts an increment of stability with relationship to any truck or chassis loaded onto gooseneck 42. Alternatively, as shown in FIG. 4, end portion 44 can be positioned on gooseneck 42 and used to secure a loaded truck thereon. As shown schematically in FIG. 3, securing members 46 can be incorporated into the frame of trailer 40 to further secure the position of trucks and chassis thereon. One embodiment of such a member, as

would be well-known to those skilled in the art, can comprise a tie hole for placement of a chain other fastener therethrough.

With reference to the embodiments illustrated by FIGS. 3 and 4, the overall length of such an assembly can be up to about and beyond 95 feet, as measured from the front end of tractor 10 to the rear end of trailer 40. While any commercially-available tractor/bed combination can be used, a preferred tractor is one having a length of about 32 feet, as measured from the front end of tractor 10 to the rear wheel axle of trailer 12. With such a tractor/bed combination, trailer 40 can have a length of about 46 feet, as measured from the point of coupling with connector 36.

With respect to either a trailer or an assembly of the present invention, the connectors, tractor beds, trailers and/or ramps and related mechanisms can suitably comprise, consist of, or consist essentially of the aforementioned components. Each such component is distinguishable, characteristically contrasted and can be practiced in conjunction with the present invention separate and apart from another. Accordingly, it should also be understood that the inventive trailers and/or assemblies, as illustratively disclosed herein, can be practiced or utilized in the absence of any one component which may or may not be disclosed, referenced or inferred herein, the absence of which may or may not be specifically disclosed, referenced or inferred herein.

While the principles of this invention have been described in connection with the specific embodiments, it should be understood clearly that these descriptions, along with the chosen figures and data referenced therewith, are made only by way of example and are not intended to limit the scope of this invention, in any manner. Other advantages and features of the invention will become apparent from the following claims, with the scope thereof determined by the reasonable equivalents, as understood by those skilled in the art.

WHAT IS CLAIMED IS:

1. An assembly for over the highway transportation of wheeled vehicles, comprising a tractor having a bed, a trailer, and a connector for coupling said tractor bed to said trailer, said trailer having a gooseneck end proximate to and coupled with said connector; and a truck chassis secured to at least one of said tractor bed and said trailer.
2. The assembly of claim 1, wherein said tractor bed has a retractable ramp, said ramp further including an extension member.
3. The assembly of claim 2, wherein said truck chassis is secured to said retractable ramp.
4. The assembly of claim 3, wherein said truck chassis is secured to an extended ramp.
5. The assembly of claim 1, wherein said trailer has a retractable ramp.
6. The assembly of claim 5, wherein said trailer ramp further includes an extension member.
7. The assembly of claim 6, wherein said trailer extension member is positionable on said tractor bed.
8. The assembly of claim 1, wherein at least one said truck chassis is detachably secured to said bed and a plurality of said chassis are detachably secured to said trailer.
9. The assembly of claim 8, wherein a first chassis is detachably secured to said trailer and a second chassis is detachably secured to said first chassis.
10. The assembly of claim 9, wherein a saddle secures said second chassis to said first chassis.

11. The assembly of claim 10, wherein said first truck chassis is detachably secured to said gooseneck end and said second truck chassis is detachably secured to said first chassis.

12. A loaded chassis assembly, comprising:

a tractor and a trailer attached with a coupling mechanism to said tractor, said tractor having a bed; and

a plurality of truck chassis detachably secured to said tractor bed and said trailer, wherein a first chassis is detachably secured to said bed, a second chassis detachably secured to said trailer, and a third chassis detachably secured to said second chassis.

13. The assembly of claim 12, wherein each of said bed and said trailer has a retractable ramp, each of said bed and said trailer having a chassis detachably secured thereto.

14. The assembly of claim 13, wherein at least one of said ramps further includes an extension member.

15. The assembly of claim 13, wherein said second chassis is detachably secured to said trailer ramp and a saddle detachably secures said third chassis to said second chassis.

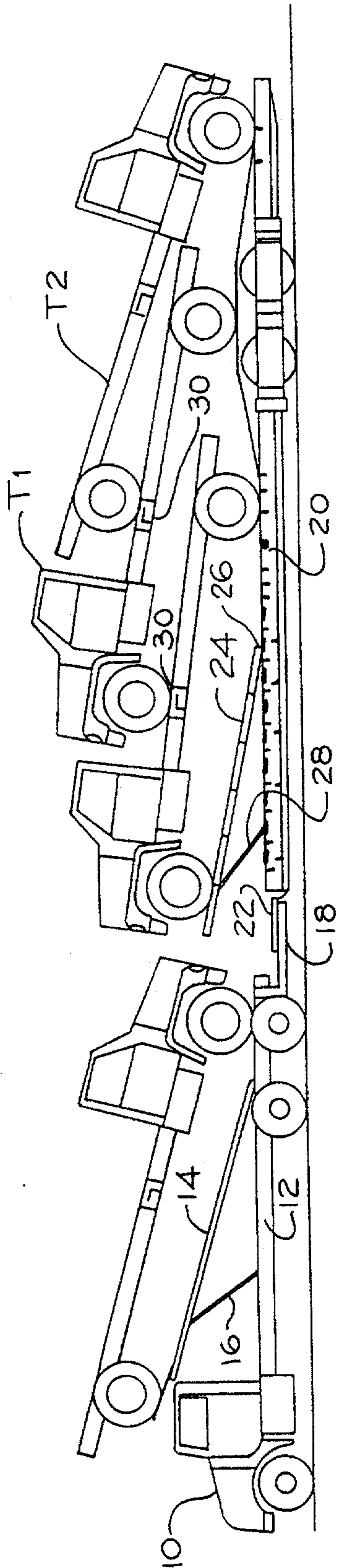
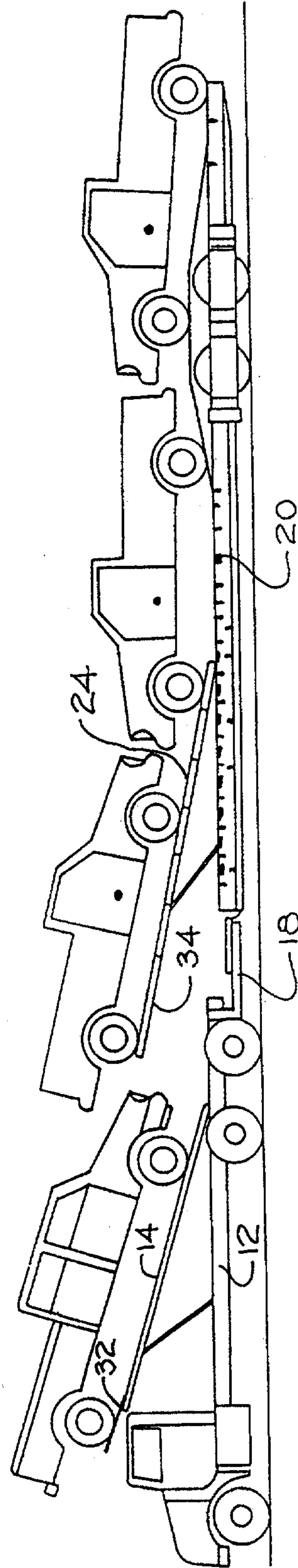
16. The assembly of claim 12 further including a connector between said tractor and said trailer.

17. The assembly of claim 16, wherein said connector is a stinger-steered trailer.

18. The assembly of claim 17 wherein said connector further includes a fifth wheel assembly for engagement with said trailer.

19. The assembly of claim 12, wherein said trailer has a gooseneck, and said second chassis is detachably secured to said gooseneck, and said third chassis is detachably secured with a saddle to said second chassis.

20. A loaded chassis assembly, comprising:
a tractor and a trailer pivotally connected to said tractor, said tractor having a bed;
and
a plurality of truck chassis secured to said tractor bed and said trailer, wherein a first chassis is detachably secured to said bed, a second chassis is detachably secured to said first chassis, said second chassis having a saddle detachably secured thereto and connected to an axle of a third chassis.
21. The assembly of claim 20 wherein said saddle has parallel fixed jaws and parallel moving jaws clamping said chassis axle.
22. A method of using a tractor bed to increase the load capacity of an assembly for over the highway transportation of truck chassis, said method comprising:
providing a tractor and a trailer, said trailer arranged and configured to detachably secure a plurality of truck chassis thereon;
pivotally connecting said trailer to said tractor, said tractor having a bed, said bed arranged and configured to detachably secure at least one truck chassis thereon; and
loading at least one truck chassis on said tractor bed.
23. The method of claim 22 wherein said trailer has a retractable ramp, said ramp further including an extension member.
24. The method of claim 23 wherein said trailer ramp is extended to said tractor bed for loading a truck chassis on said bed.
25. The method of claim 22 wherein said trailer has a gooseneck.
26. The method of claim 22 wherein a connector is provided between said tractor and said trailer.

*Fig. 1**Fig. 2*

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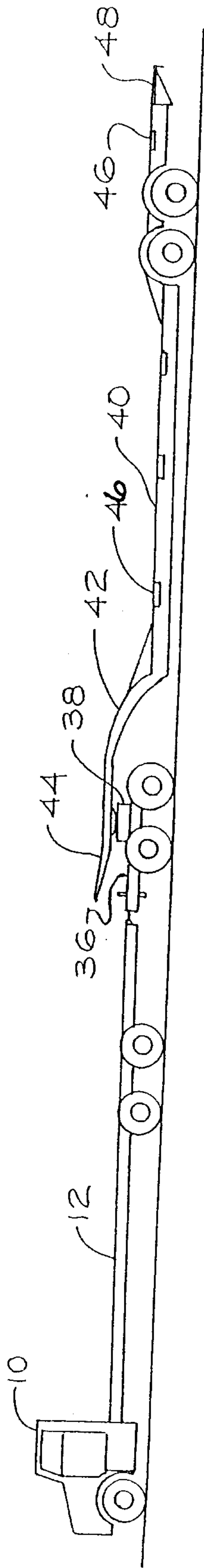


Fig. 3

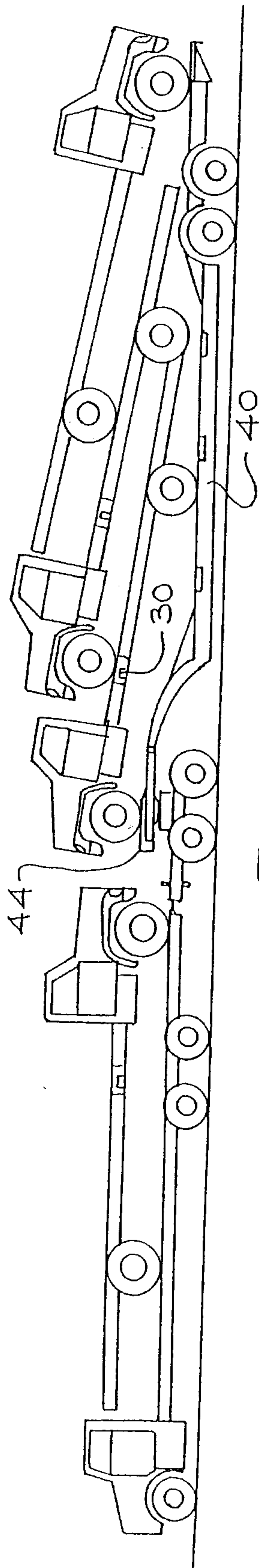


Fig. 4

