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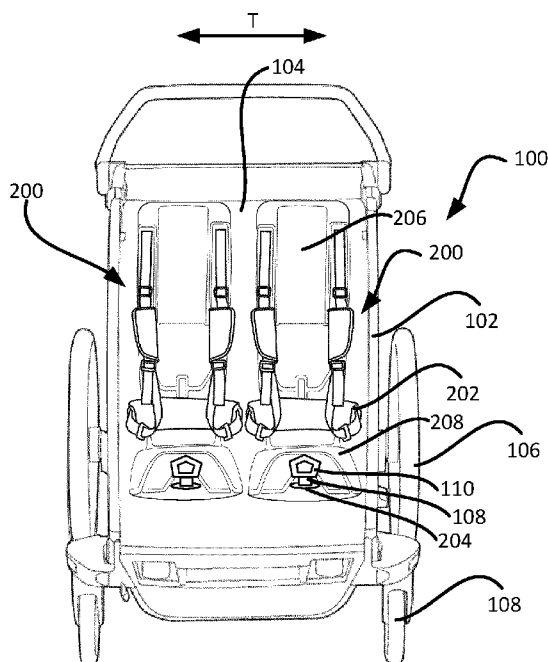


Fig. 1

(57) Abstract: A multipurpose trailer (100) for carrying at least one person, wherein said trailer (100) comprises: a chassis (102) forming a load carrying structure of the multipurpose trailer (100), a sheet element (104) supported by the chassis (102), a removeable seat (200), wherein the multipurpose trailer (100) is configured for attachment of the removeable seat (200) in at least two transverse positions of which one is a central position in relation to a transverse direction (T) of the multipurpose trailer (100), and a method (1000) for securing a removeable seat (200) to a multipurpose trailer (100).

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A MULTIPURPOSE TRAILER AND A METHOD FOR SECURING A REMOVABLE SEAT TO A MULTIPURPOSE TRAILER

TECHNICAL FIELD

- 5 The present disclosure relates to trailers for transporting one or more persons, more particularly the present disclosure relates to a multipurpose trailer and to a method for securing a removable seat to a multipurpose trailer.

BACKGROUND OF THE INVENTION

- 10 Multipurpose trailers are popular items facilitating the active lifestyle of their owners. As the name implies, a multipurpose trailer can serve a variety of purposes. For instance, the multipurpose trailer can be used to transport children on family trips or during the daily commute. The multipurpose trailer can further naturally be used for transporting luggage, pets etc.

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Most multipurpose trailers are suitable for use as a trailer during walks and when running (i.e. when the user is pushing or pulling the trailer by foot). Additionally, it is common to provide accessories allowing the trailer to be used for instance when skiing or for attaching the trailer to a bicycle such that it can be towed.

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Trailers which are adapted for transporting persons are subject to a plurality of requirements when it comes to the safety they provide for the occupants, manufacturers of multipurpose trailers are constantly seeking to improve their products to meet and surpass these requirements. Moreover, ease of use is an area of constant development

- 25 especially for multipurpose trailers which can be adapted not only depending on the activity at hand but also for carrying a different number of passengers.

SUMMARY OF THE INVENTION

In view of the above, an object of the present invention is to provide an improved

- 30 multipurpose trailer which alleviates at least one of the drawbacks of the prior art as well as a method for securing a removable seat to a multipurpose trailer. For example, an object of the present invention is to provide a multipurpose trailer having improved safety while allowing a user to adapt the multipurpose trailer for use with one or two passengers.

Further, it is an object to facilitate removal, attachment and repositioning of a removable seat for a multipurpose trailer.

The objects are achieved by the subject-matter of the independent claims. Advantageous
5 embodiments may be found in the dependent claims and in the accompanying description and drawings.

According to a first aspect of the present disclosure is a multipurpose trailer for carrying at least one person provided. The trailer comprises:

- 10 a chassis forming a load carrying structure of the trailer,
 a sheet element supported by the chassis,
 at least one removeable seat, wherein the trailer is configured for attachment of the removeable seat in at least two transverse positions of which one is a central position in relation to a transverse direction of the multipurpose trailer. The weight distribution of
15 the load in the multipurpose trailer can thus be adapted depending on the number of passengers travelling in the trailer. When one passenger is present, the removable seat may be placed centrally in the multipurpose trailer, reducing the risk of an uneven load that could risk the stability of the trailer for instance during rapid turns or similar.
- 20 The multipurpose trailer may comprise at least one upper seat attachment and at least one lower seat attachment to which the removable seat is configured to be secured. The at least one upper seat attachment and/or the at least one lower seat attachment may be attached to the sheet element. The provision of the upper and lower seat attachments facilitates attachment and removal of the at least one removable seat to and from the
25 multipurpose trailer. The respective seat attachments being attached to the sheet element facilitates manufacturing of the trailer, as the respective seat attachments may be formed in or integrated with the sheet element before the sheet element is attached to the trailer. Moreover, the chassis of the trailer does not have to be provided with any separate feature for providing the upper and lower seat attachments as they may be attached to the sheet
30 element.

In an embodiment where the multipurpose trailer comprises at least one upper seat attachment and at least one lower seat attachment to which the removable seat is configured to be secured, a distance between the at least one upper seat attachment and
35 the at least one lower seat attachment may be configured to vary depending on folding

state of the chassis. Attachment of the at least one removable seat is thus facilitated and the risk of unintentional release of the removable seat is further reduced.

The distance between the at least one upper seat attachment and the at least one lower seat attachment may be larger in a use state than in a folded state of the trailer. The distance being larger in the use state may provide a pretensioning force to the at least one removable seat, thus facilitating correct positioning of the removable seat and further securing the attachment thereof to the multipurpose trailer.

10 In an embodiment in which the multipurpose trailer comprises at least one upper seat attachment and at least one lower seat attachment to which the removable seat is configured to be secured, the chassis may comprise a folding hinge arranged between the at least one upper seat attachment and the at least one lower seat attachment. The folding hinge facilitates controlling the distance between the at least one upper seat
15 attachment and the at least one lower seat attachment as a function of the folding state of the multipurpose trailer.

The multipurpose trailer may comprise at least two pairs of upper seat attachments and at least two pairs of lower seat attachments being aligned in the transverse direction of the trailer and to which the removable seat is configured to be secured. A distance between
20 each upper seat attachment and each lower seat attachment in each pair may be essentially the same as the distance between two adjacent pairs of upper seat attachments and lower seat attachments respectively. Thus may two pairs of upper and/or lower seat attachments provide three different positions of the removable seat in the
25 transverse direction of the trailer, two lateral and one central position.

The multipurpose trailer may further comprises a plurality of straps configured to be secured to a buckle for connection to a harness of each removable seat, wherein one strap is arranged intermediately in the transverse direction of the trailer between every
30 two upper and/or lower seat attachments.

The strap may be attached to the sheet element and/or to the chassis of the trailer.

The removable seat may comprise at least one upper connector and at least one lower
35 connector, the at least one upper connector being configured to be attached a respective

upper seat attachment and the at least one lower connector being configured to be attached to a respective lower seat attachment.

Each upper and lower seat attachment may comprises a first opening and a second
5 opening through which a respective connector of the removable seat is configured to pass. The first opening may be larger than the second opening and wherein the first opening on the at least one upper attachment and/or the first opening of the at least one lower attachment is arranged facing in a proximal direction in relation to the trailer. The larger size of the first opening facilitates insertion of the connector into the first opening
10 while the smaller size of the second opening reduces the risk of the connector unintentionally becoming detached from the seat attachment.

Each removable seat may comprise an opening through a seat portion thereof and wherein each strap is configured to extend through said opening. The strap thus further
15 secures the at least one removable seat to the multipurpose trailer.

Each seat attachment may comprise a securing portion configured to be threaded through an attachment opening in a respective connector. Accordingly, a seat attachment may be formed without any through openings in the multipurpose trailer. The attachment opening
20 in each connector only needs to be of sufficient dimensions to allow threading of the seat attachment therethrough, thus removing or reducing the risk of for instance a child could insert a finger and get stuck in either of the seat attachment or the connector.

Each seat attachment may comprise a stem portion forming the attachment between the
25 securing portion and the multipurpose trailer and wherein the securing portion is arranged at an angle in relation to the stem portion. Preferably, the securing portion and the stem portion forms a T-shaped seat attachment. The stem portion facilitates threading of the securing portion into the connector.

30 The securing portion may comprise a reinforcing element configured to increase the rigidity of the securing portion.

The trailer may comprise a reclinable backrest and wherein the at least removeable seat is configured to follow the reclining of the backrest.

In a second aspect is a method for securing a removable seat to a multipurpose trailer provided. The multipurpose trailer comprising

a chassis forming a load carrying structure of the trailer,

a sheet element supported by the chassis,

5 wherein the multipurpose trailer comprises at least one upper seat attachment and at least one lower seat attachment to which the removable seat is configured to be secured, the method comprising the steps of:

setting the multipurpose trailer in a seat attachment state,

attaching the at least one removable seat to at least one upper seat attachment

10 and to at least one lower seat attachment,

setting the multipurpose trailer in a removable seat securing state whereby the at least one removable seat is secured to the multipurpose trailer. Attachment of a removable seat to a multipurpose trailer is thus facilitated, such that the multipurpose trailer can be easily adapted depending on the number of passengers of the trailer. This further improves the useability of the trailer as well as the safety thereof.

Attaching the at least one removable seat may comprise threading at least one upper connector on the removable seat through a corresponding upper seat attachment and threading at least one lower connector on the removable seat through a corresponding lower seat attachment.

Attaching the at least one removable seat may comprise threading at least one upper seat attachment through a corresponding upper connector and threading at least one lower seat attachment through a corresponding lower connector.

25 Setting the multipurpose trailer in a seat attachment state may comprise at least partially folding the chassis of the multipurpose trailer and wherein setting the multipurpose trailer in a removable seat securing state comprises at least partially unfolding the chassis into a use state of the multipurpose trailer.

30

BRIEF DESCRIPTION OF THE DRAWINGS

With reference to the appended drawings, below follows a more detailed description of embodiments of the invention cited as examples.

35 In the drawings:

Figure 1 discloses a front view of a multipurpose trailer configured for transport of two passengers side by side.

- 5 Figure 2 discloses a front view of a multipurpose trailer with the removable seats removed.

Figure 3 discloses a front view of a multipurpose trailer configured for transport of one passenger.

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Figure 4 discloses a front view of a removable seat for a multipurpose trailer.

Figure 5 discloses a rear view of a removable seat for a multipurpose trailer.

- 15 Figure 6 discloses a rear view of a removable seat for a multipurpose trailer.

Figure 7 discloses a rear view of a removable seat for a multipurpose trailer.

Figure 8 discloses a rear view of a removable seat for a multipurpose trailer.

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Figure 9 discloses a side view of a multipurpose trailer.

Figure 10 discloses a schematic side view of a part of a chassis for a multipurpose trailer in a use state.

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Figure 11 discloses a schematic side view of a part of a chassis for a multipurpose trailer in a folded state.

Figure 12 discloses a detail view of a seat attachment and a connector.

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Figure 13 discloses a detail view of a seat attachment and a connector.

Figure 14 discloses a detail view of a seat attachment.

- 35 Figure 15 discloses a detail view of a seat attachment.

Figure 16 discloses a detail view of a seat attachment.

Figure 17 discloses a detail view of a connector.

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Figure 18 discloses a detail view of a connector attached to a seat attachment.

Figure 19 discloses a schematic flow chart of a method for securing a removable seat to a multipurpose trailer.

10

The drawings show diagrammatic exemplifying embodiments of the present invention and are thus not necessarily drawn to scale. It shall be understood that the embodiments shown and described are exemplifying and that the invention is not limited to these embodiments. It shall also be noted that some details in the drawings may be

15 exaggerated in order to better describe and illustrate the invention. Like reference characters refer to like elements throughout the description, unless expressed otherwise.

DETAILED DESCRIPTION

The teachings herein will now be described more fully hereinafter with reference to the
20 accompanying drawings, in which certain embodiments are shown. Like numbers refer to like elements throughout.

Figure 1 discloses a multipurpose trailer 100 for carrying at least one passenger.

Preferably, the multipurpose trailer 100 is configured to optionally carry one or two
25 passengers, preferably one or two infants/children. As such, the multipurpose trailer 100 has a single passenger configuration (shown in Figure 3) and a dual passenger configuration as illustrated in Figure 1.

The trailer 100 comprises a chassis 102 forming a load carrying structure of the trailer
30 100. The chassis 102 may be foldable, thus allowing the trailer 100 to be folded into a more compact state for instance for fitting the trailer into a vehicle for transport or for storage. As is further illustrated in Figure 1, the trailer 100 may be fitted with main wheels 106 and front wheels 108. Each wheel 106, 108 may be removable for instance for transport or for attachment of an accessory such as a tow bar. The main wheels 106 may
35 for instance be replaced with skis for allowing the trailer 100 to be used for skiing.

The trailer further comprises a sheet element 104 supported by the chassis 102. The sheet element 104 may be a textile element, which is supported by the chassis 102 and in itself at least partially forms a support for instance for a removable seat 200. The sheet
5 element 104 may be made from natural fibers and/or from a plastic material or a combination of several materials. The sheet element 104 may further comprises several separate portions, for instance one or several rear portions forming a backrest and one or several side and front portions which may have an integrated transparent window section. Moreover, the sheet element 104 may be provided with one or more zippers for instance
10 for connecting different portions of the sheet element 104 and/or for providing an opening in the sheet element 104.

As mentioned, the multipurpose trailer 100 further comprises a removeable seat 200, wherein the trailer 100 is configured for attachment of the removeable seat 200 in at least
15 two transverse positions of which one is a central position (illustrated in Figure 3) in relation to a transverse direction T of the multipurpose trailer 100. The transverse direction T is perpendicular to the longitudinal direction L of the trailer 100, the longitudinal direction L (shown in Figure 7) being arranged in the main travelling direction of the multipurpose trailer 100. Each removable seat 100 may be formed out of a plurality of
20 materials, such as a textile having natural and/or plastic fibers. Moreover, each removable seat 200 may be provided with padding and/or structural reinforcement portions for increasing comfort for the passenger.

As is illustrated in Figure 1, the removable seat 200 may comprise a harness 202 being
25 attached to the seat 200 and thus following it when it is removed or attached to the trailer 100. The harness 202 may further be connectable to a buckle 110, which in turn is connected to the trailer 100.

In Figure 2, the multipurpose trailer 100 is illustrated in a front view with the removable
30 seats 200 removed. As illustrated, the multipurpose trailer 100 may comprise at least one upper seat attachment 112 and at least one lower seat attachment 114 to which the removable seat 200 is configured to be secured. The upper seat attachments 112 and/or the lower seat attachments 114 may be provided in the sheet element 104, thus being indirectly connected to the chassis 102 of the trailer 100 via the sheet element 104. It is
35 however also possible that the each of the upper seat attachments 112 and/or each lower

seat attachment 114 may be provided directly connected to the chassis 102 of the trailer 100. Each upper and lower seat attachment 112, 114 is configured for cooperation with a corresponding connector 212, 214 (shown in Figures 5 to 8) on the removable seat 200. The connection between each removable seat 200 and the multipurpose trailer 100 must be able to withstand the resulting forces from a pulling force applied on the harness in the forward direction of at least 1500 N. The pulling force thus simulating a sudden deceleration/impact and the forces generated by the occupants of the multipurpose trailer 100 during the deceleration. This is applicable to all embodiments disclosed herein.

10 Each pair of upper seat attachments 112 may be arranged such that a distance D1 between two adjacent pairs of upper seat attachment 112 is essentially the same as a distance D6 between each upper seat attachment 112 in each pair. The removable seat 200 can thus be connected both between two adjacent pairs of upper seat attachments 112 as well as aligned with each pair of upper seat attachments 112.

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Each pair of lower seat attachments 114 may be arranged such that a distance D2 between two adjacent pairs of lower seat attachment 114 is essentially the same as a distance D7 between each lower seat attachment 114 in each pair. The removable seat 200 can thus be connected both between two adjacent pairs of lower seat attachments 114 as well as aligned with each pair of lower seat attachments 114.

20

Each upper seat attachment 112 may be aligned with a corresponding lower seat attachment 114 in the transverse direction T of the trailer 100. The transverse direction T is perpendicular to the longitudinal direction L of the trailer 100, the longitudinal direction L (shown in Figure 7) being arranged in the travelling direction of the multipurpose trailer 100.

25

As is further shown in Figure 2, the multipurpose trailer 100 may further comprise a plurality of straps 108. Each strap 108 may be made from a textile material and/or be in the form of a webbing. Each strap 108 is configured to be secured to a buckle 110 (shown in Figure 1) for connection to a harness 202 of the removable seat 200. The plurality of straps 108 are arranged such that one strap 108 is positioned in the transverse direction T of the trailer between every two upper seat attachments 112 and/or lower seat attachments 114. One strap 108 may be arranged centrally in the middle of the trailer 100

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in the transverse direction T. One strap 108 may be arranged centrally in the middle in the transverse direction T of a respective backrest portion 116a, 116b the trailer 100.

Each strap 108 may be attached to the sheet element 104 and/or to the chassis 102 of
5 the trailer 100. In one embodiment, the strap 108 is attached both to the sheet element 104 and to the chassis 102 of the trailer 100.

Each removable seat 100 may comprise an opening 204 (shown in Figure 1) through a
seat portion 208 thereof, wherein each strap 208 is configured to extend through said
10 opening 204 thus allowing the harness 202 of the removable seat 200 to be connected to the chassis 102 and/or the sheet member 104 of the trailer 100.

The multipurpose trailer 100 may comprise a reclinable backrest 116a, 116b. In case of the trailer 100 being a dual seat trailer, each backrest 116a, 116b may be individually
15 reclinable. Each removeable seat 200 is configured to follow the reclining of the backrest 116a, 116b.

Figure 3 discloses a front view of a multipurpose trailer 100 in which the removable seat 100 is arranged centrally in the transverse direction T. The multipurpose trailer 100 is a
20 dual seated side-by-side multipurpose trailer 100, however when only one passenger is to be travelling in the trailer it is desired to be able to arrange the seat 200 centrally. This allows the center of gravity to be arranged towards the center of the trailer 100 and thus reducing the risk of that the trailer 100 tips over to either side when subjected to high lateral forces as is the case in a sudden and sharp high speed turn.

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Figure 4 discloses a front view of a removable seat 200, the removable seat 200 comprising a seat portion 208, a back portion 206 and may further comprise a harness 202 attached to the back portion 206. The harness 202 may be adjustable in relation to the back portion 206, for instance such that the height thereof in may be altered to suit
30 passengers of different heights. Further, as mentioned above, the removable seat 200 may comprise a through opening 204 in the seat portion 208 being configured to receive a strap 108 of the trailer 100.

In Figure 5 is a rear view of a back portion 206 of a removable seat 200 shown. As
35 illustrated in Figure 5, the removable seat 200 may comprise at least one upper connector

212 and at least one lower connector 214, each connector 212, 214 being configured to be connected to a respective upper and lower seat attachment 112, 114.

Each connector 212, 214 may be formed by a metallic or plastic member, each connector
5 212, 214 being attached to the removable seat 200 by means of a webbing 210. The webbing 210 may be a textile webbing or be made from another material providing sufficient tensile strength. The webbing 210 may be sewn to the removable seat 200 or attached thereto in another fashion. Each connector 212, 214 may be arranged at a distal end of a respective webbing 210, distal being interpreted as furthest away from the center
10 of the back portion 206 of the removable seat 200.

As is illustrated in Figure 6, the webbing 210 may form a connection between an upper connector 212 and a lower connector 214 thus relieving the material of the removable seat 200 from forces generated by the connectors 212, 214 interaction with the seat
15 attachments 112, 114 on the trailer 100.

Preferably is two upper connectors 212 provided to each removable seat 200, the two upper connectors 212 being arranged at a distance D3 from each other. The distance D3 preferably corresponds the distance D6 between every two upper seat attachments 112
20 and/or to the distance D1 between every pair of upper seat attachments 112.

Preferably are two lower connectors 214 provided to each removable seat 200, the two lower connectors 214 being arranged at a distance D4 from each other. The distance D4 preferably corresponds the distance D7 between every two lower seat attachments 114
25 and/or to the distance D2 between every pair of lower seat attachments 114.

Figure 7 shows a rear view of a back portion 206 of a removable seat 200. As illustrated, the removable seat 200 may comprise at least one upper connector 212 and at least one lower connector 214, each connector 212, 214 being configured to be connected to a
30 respective upper and lower seat attachment 112, 114. Each connector 212, 214 may be formed by a metallic or plastic member. As is illustrated in Figure 7, at least one upper connector 212 and/or at least one lower connector 214 may comprise an attachment opening 216 being configured to allow insertion of a securing portion 124 therethrough, shown in Figures 14 to 18, of a respective upper and/or lower seat attachment 112, 114.

Each upper and lower connectors 212, 214 may be provided with an attachment opening 216 as illustrated in Figure 7. Each attachment opening 216 may be formed as a slot extending perpendicularly in relation to the longitudinal extension of the webbing 210 which attaches the connector 212, 214 to the removable seat 200.

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Each connector 212, 214 may be formed by a metallic or plastic member. The webbing 210 may be a textile webbing or be made from another material providing sufficient tensile strength. The webbing 210 may be sewn to the removable seat 200 or attached thereto in another fashion. Each connector 212, 214 may be arranged at a distal end of a respective
10 webbing 210, distal being interpreted as furthest away from the center of the back portion 206 of the removable seat 200.

Figure 8 further illustrates a further embodiment having upper and lower connectors 212, 214 as described in conjunction with Figure 7 above. As shown in Figure 8, the webbing
15 210 may form a connection between an upper connector 212 and a lower connector 214 thus relieving the material of the removable seat 200 from forces generated by the connectors 212, 214 interaction with the seat attachments 112, 114 on the trailer 100.

Preferably are two upper connectors 212 provided to each removable seat 200, the two
20 upper connectors 212 being arranged at a distance D3 from each other. The distance D3 preferably corresponds the distance D6 between every two upper seat attachments 112 and/or to the distance D1 between every pair of upper seat attachments 112.

Preferably are two lower connectors 214 provided to each removable seat 200, the two
25 lower connectors 214 being arranged at a distance D4 from each other. The distance D4 preferably corresponds the distance D7 between every two lower seat attachments 114 and/or to the distance D2 between every pair of lower seat attachments 114.

Turning to Figure 9, in which a side view of a multipurpose trailer 100 is shown with the
30 extension of the removable seat 200 being schematically illustrated and overlaid. As is shown, the back portion 206 of the removable seat 200 is kept taught by the upper seat attachment 112 and the lower seat attachments 114. The seat portion 208 of the removable seat 200 may be held in place by the strap 108 (shown in Figure 2) and/or for instance by Velcro® or magnetic fasteners.

35

Figures 10 and Figures 11 disclose a side view of a multipurpose trailer 100 which is collapsible, where the chassis 102 can be folded between a use state illustrated in Figure 10 and a folded state of the trailer 100 illustrated in Figure 11. A folded state is to be interpreted as any state of folding of the chassis 102 when it is not in its use state.

5

As illustrated in Figures 10 and 11, a distance D5 between the at least one upper seat attachment 112 and the at least one lower seat attachment 114 may be configured to vary depending on folding state of the chassis 102. The distance D5 between the at least one upper seat attachment 112 and the at least one lower seat attachment 114 is preferably
10 larger in a use state than in a folded state of the trailer 102 and may thus be configured such that the upper and lower seat attachments 112, 114 provide tension to the back portion 206 of the removable seat 200 for correct orientation and such that the removable seat 200 cannot be released from the trailer 100 when the trailer 100 is in the use state. As such, the distance D5 may be at least equal to, preferably larger than, the
15 corresponding distance between the upper connectors 212 and lower connectors 214 when the trailer 100 is in the unfolded / use state.

Further, connection of the upper connectors 212 and the lower connectors 214 to respective upper seat attachments 112 and lower seat attachments 114 is facilitated when
20 the trailer 200 is in the folded state whereby the distance D5 is decreased. Once the removable seat 200 is attached, the trailer 200 is brought into the use state whereby the removable seat 200 is further secured.

As is further illustrated in Figures 10 and 11, the multipurpose trailer 100 may comprise a
25 folding hinge 118 arranged between the at least one upper seat attachment and the at least one lower seat attachment. The folding hinge 118 on the chassis 102 provides for allowing the distance D5 to vary between the use state and folded state of the trailer 100. The folding hinge 118 may as shown be arranged on an upright chassis element extending along the rear of the trailer 100 which folds in the longitudinal direction L
30 towards the center of the trailer 100, thus reducing the distance D5 between the upper seat attachments 112 and the lower seat attachments 114.

Figures 12 and 13 show a respective detail view of an embodiment of the connector 212, 214 in the process of being attached/removed and as it is attached respectively to a
35 corresponding embodiment of the seat attachment 212, 214. The embodiments illustrated

in Figures 10 and 11 is applicable to both the upper and lower connector 212, 214 and upper and lower seat attachment 112, 114.

As illustrated, each seat attachment 112, 114 may comprise a first opening 120 and a
5 second opening 122 through which a respective connector 212, 214 of the removable seat 200 is configured to pass. The seat attachment 112, 114 may be formed by a strip of a suitable material being attached at opposite ends thereof to the trailer 100 while a central portion is free, thus forming the first and second openings 120, 122. The seat attachment 112, 114 may be formed by a textile material, for instance webbing.

10

The first opening 120 may be larger than the second opening 122 and the first opening 120 on the at least one upper attachment 112 and/or the first opening 120 of the at least one lower attachment 114 is arranged facing in a proximal direction in relation to the trailer 100. Proximal in the foregoing is to be interpreted as towards the center of the
15 backrest portion 116a, 116b. In other words, the first opening 120 on each upper seat attachment 112 may be arranged facing towards a corresponding lower seat attachment 114. The first opening 120 being larger than the second opening 122 facilitates attachment of the connector 212, 214 to the seat attachment 112, 114.

20 The first opening 120 defines the insertion direction of the connector 212, 214 which is first passed through the first opening 120 and secondly through the second opening 122 during attachment of the connector 212, 214 to the seat attachment 112, 114.

Further illustrated in Figure 13 is that a width W1 of the second opening 122 of each seat
25 attachment 112, 114 may be less than a width W2 of the corresponding connector 112, 114. The ratio between the width W1 and the width W2 may be between 0,3 and 0,8.

Figure 14 shows a detail view of a seat attachment 112, 114 according to one embodiment. As is illustrated, the seat attachment 112, 114 may comprise a securing
30 portion 124. The securing portion 124 is, as mentioned, configured to be inserted through the attachment opening 216 of a corresponding connector 212, 214. The securing portion 124 may be connected to the sheet element 104 and/or to the chassis 102 of the multipurpose trailer 100 by means of a stem portion 122 configured to allow a flexibility in the relative orientation of the securing portion 124 and the sheet element 106 and/or the
35 chassis 102. The flexibility in the relative orientation facilitates attachment of each

connectors 212, 214 to each respective seat attachment 112, 114. The securing portion 124 is configured to be arranged when connector 212, 214 is attached to a seat attachment 112, 114 such that a rear side 126 is facing towards the connector 212, 214. The rear side 126 of each securing portion 124 further faces towards the stem portion 122 and towards the sheet element 104.

The securing portion 124 and the stem portion 122 together forms an essentially T-shaped seat attachment 212, 214.

10 The stem portion 122 may extend through the sheet element 106 and form a loop around a portion of the chassis 102 and/or be secured by other means thereto.

The securing portion 124 is configured to be sufficiently rigid to reduce the risk of being folded or otherwise collapsing when the seat 200 exerts a pulling force on one more of the associated seat attachments 112, 114. Accordingly, the risk of that a securing portion 124 is pulled through the attachment opening 116 in the connector 212, 214 can be reduced.

The securing portion 124 may be made from a textile material, from a plastic material, from a composite material and or from a metallic material. The securing portion 124 may be made from a different material than that of the stem portion 122. In one embodiment, the securing portion 124 is made from a plastic material and secured to the stem portion 122 by means of molding the plastic material of the securing portion 124 around the stem portion 122.

25 Moreover, the stem portion 122 may be secured to the securing portion 124 by forming a loop in the stem portion 122 extending through corresponding openings (not shown) and around a rib (not shown) formed by the openings in the securing portion 124.

The securing portion 124 may thus be formed from a homogenous material having sufficient tensile strength for providing a strong connection between each connector 212, 214 and each corresponding seat attachment 112, 114.

The stem portion 122 is preferably formed from a textile material for instance webbing or another high strength woven textile material. It is also considered that the stem portion 122 may be formed from for instance a rubber material or a plastic material.

Figure 15 shows an embodiment in which the securing portion 124 and the stem portion 122 are formed in the same material. The securing portion 124 is formed by folding the material of the stem portion 122. The stem portion 122 may be folded at least one time to form the securing portion. In the embodiment shown in Figure 15, the stem portion 122 is folded three times such that the stem portion 122 attaches centrally to the securing portion 124 and such at least two layers 134, 136, 138 of the material is overlaid on top of each other in the securing portion 124. The securing portion 124 will thus be provided with rigidity to reduce the risk of it being folded and pulled through the attachment opening 116 in the connector 112, 114 unintentionally. Moreover, by the layering of the material in the securing portion 124, it is provided with a sufficient thickness in relation the width D8 (shown in Figure 17) of the attachment opening 116 such that it cannot be pulled through the attachment opening 116 when folded as is induced by its attachment to the stem portion 122 when a pulling force is subjected to an attached connector 212, 214.

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As is illustrated in Figure 15, a first layer 134 being arranged furthest away from the stem portion 122 may be provided. A second layer 138 may be provided forming the layer closest to the stem portion 122. At least one intermediate layer 136 may further be provided. In the embodiment illustrated in Figure 15, one intermediate layer 136 is provided but it is to be realized that more than one intermediate layer 136 may be provided. Each layer 134, 136, 138 is preferably formed by a folding of the material of the stem portion 122 thus forming the securing portion 124.

Preferably, the layers 134, 136, 138 forming the securing portion 124 are sewn to each other at least around the edges and/or adjacent to and parallel with a first fold 132 with a stitching 130. The stitching 130 being parallel with the first fold 132 defines the position of the first fold 132 and is thus preferable arranged essentially in the middle of the securing portion 124.

A peripheral stitching 130a may be provided securing the edges of each layer of the securing portion 124 to each other. Moreover, a central stitching 130b may be provided defining the position of the first fold 132. The central stitching 130b being parallel with the first fold 132 and extending from the first layer 134 of the securing portion 124 to second layer 138 which faces the stem portion 122.

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The stitching 130, 130a, 130b described in conjunction with Fig. 15 is equally applicable to the embodiments of Figure 14 and Figure 16.

Figure 16 discloses an embodiment of the seat attachment 112, 114 in which the securing portion 124 thereof comprises a reinforcing element 128. The reinforcing element 128 is formed from a material being more rigid and having a higher strength than the material of the securing portion 124. Accordingly, the strength of the securing portion 124 can be improved without having to replace all of the material thereof. Each of the layers 134, 136, 138 of the securing portion 124 may be manufactured from the same material as the stem portion 122, where the stem portion 122 needs to be somewhat flexible to facilitate movement of the securing portion 124 during attachment of the associated connector 112, 124. The material of the stem portion 122 and that of the layers 134, 136, 138 of the securing portion can thus be optimized for the properties required for the stem portion 122, which are high tensile strength and flexibility. The reinforcing element 128 meanwhile facilitates providing the desired properties to the securing portion 124. This further reduces the risk of the seat 200 becoming detached from the seat attachments 112, 114 unintentionally while facilitating manufacturing and reduces cost of manufacturing of the seat attachment 112, 114.

The reinforcing element 128 may be formed from any suitable material having higher rigidity than that of the material in the securing portion 124. Preferably, the reinforcing element 128 is formed out of a plastic material. The reinforcing element 128 may be of a recycled and/or renewable material such as bioplastics. The reinforcing element 128 may be formed from Polypropylene (PP) plastics.

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The reinforcing element 128 may have a thickness between 0,5 mm and 2,5 mm, preferably approximately 1 mm.

Figure 17 discloses a front view detail view of a connector 212, 214. The connector 212, 214 shown in Figure 17 corresponds to connectors 212, 214 illustrated in the embodiments of Figures 7 and 8. Each connector 212, 214 comprises an attachment opening 216. The attachment opening 216 is configured to allow insertion of the securing portion 124 therethrough, such that each connector 212, 214 can be threaded over a respective securing portion 124.

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The attachment opening 216 as mentioned has a width D8, the width direction being defined as the longitudinal direction of the associated webbing 210. The webbing 210 preferably being attached to each connector 212, 214 by means of a separate opening in the connector 212, 214.

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Figure 18 discloses a perspective view of a connector 212, 214 when attached to a seat attachment 112, 114. When the connector 212, 214 is subjected to a pulling force from the seat 200 in the direction of the webbing 210, the securing portion 112, 114 prevents the connector 212, 214 from being released from the respective seat attachment 112, 114 by engagement with the connector 212, 214.

In an embodiment, as described in conjunction with Figure 10 and 11, the connectors 212, 214 and the respective seat attachments 112, 114 may be arranged in a secured state such that each connector 212, 214 is in contact or arranged adjacent to a respective seat attachment 112, 114 during use of the trailer 100. This reduces the risk of the connectors 212, 214 being unintentionally released from the seat attachments 112, 114, as the distance for relative acceleration/deceleration that could otherwise allow for high impulse forces to be generated is reduced or even removed. In case there is too much slack in the seat 200, a sudden deceleration of the trailer 100 would give the seat 200 time to decelerate in relation to the trailer 100 such that when the connector 212, 214 makes contact with the seat attachment 112, 114, the forces become too high and there is risk of detachment or failure of the connection between the seat 200 and the trailer 100. It is further to be realized that the secured state may comprise providing a pretensioning force to the seat 200 when by increasing the distance D5, as mentioned above.

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Figure 19 discloses a schematic flowchart of a method 1000 for securing a removable seat 200 to a multipurpose trailer 100. The multipurpose trailer 100 comprising
a chassis 102 forming a load carrying structure of the trailer 100,
a sheet element 104 supported by the chassis 102,
wherein the multipurpose trailer 100 comprises at least one upper seat attachment 112 and at least one lower seat attachment 114 to which the removable seat 200 is configured to be secured. The method 1000 comprising the steps of:
setting 1002 the multipurpose trailer 100 in a seat attachment state. The seat attachment state may correspond to the folded state elaborated on in the foregoing and illustrated in Figure 9, where the chassis 102 is moved out of its use state. As such, the

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method 1000 may comprise at least partially folding the chassis 102 of the multipurpose trailer 100.

The method 1000 further comprises attaching 1004 the at least one removable seat 200 to at least one upper seat attachment 112 and to at least one lower seat attachment 114. The attaching 1004 the at least one removable seat 200 may comprise threading at least one upper connector 212 on the removable seat 200 through a corresponding upper seat attachment 112 and threading at least one lower connector 214 on the removable seat 200 through a corresponding lower seat attachment 114.

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The attaching 1004 the at least one removable seat 200 may alternatively, in relation to the embodiment illustrated at least in Figures 14-18, comprise threading at least one upper seat attachment 112 through a corresponding connector 212 and threading at least one lower seat attachment 114 through a corresponding lower connector 214.

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The method 1000 further comprises setting 1006 the multipurpose trailer 100 in a removable seat securing state whereby the at least one removable seat 200 is secured to the multipurpose trailer 200. The setting 1006 of the multipurpose trailer 100 in a removable seat securing state may comprise at least partially unfolding the chassis 102 into a use state of the multipurpose trailer 100, as is illustrated in Figure 8. The setting 1006 of the multipurpose trailer 100 in a removable seat securing state may comprise increasing the distance D5 between the at least one upper seat attachment 112 and at least one lower seat attachment 114 such that a pretensioning force is placed on the at least one removable seat 200. The setting 1006 of the multipurpose trailer 100 in a removable seat securing state may comprise moving the folding hinge 118 from an at least partially folded position into an unfolded position, as illustrated in Figure 8.

It is to be understood that the present invention is not limited to the embodiments described above and illustrated in the drawings; rather, the skilled person will recognize that many changes and modifications may be made within the scope of the appended claims.

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CLAIMS

1. A multipurpose trailer (100) for carrying at least one person, wherein said trailer (100) comprises:
- 5 a chassis (102) forming a load carrying structure of the multipurpose trailer (100),
 a sheet element (104) supported by the chassis (102),
 a removeable seat (200), wherein the multipurpose trailer (100) is configured for attachment of the removeable seat (200) in at least two transverse positions of which one is a central position in relation to a transverse direction (T) of the multipurpose trailer (100).
- 10
2. The multipurpose trailer (100) according to claim 1, wherein the multipurpose trailer (100) comprises at least one upper seat attachment (112) and at least one lower seat attachment (114) to which the removable seat (200) is configured to be secured.
- 15
3. The multipurpose trailer (100) according to claim 1 or 2, wherein the multipurpose trailer (100) comprises at least one upper seat attachment (112) and at least one lower seat attachment (114) to which the removable seat (200) is configured to be secured, wherein a distance (D5) between the at least one upper seat attachment (112) and the at least one lower seat attachment (114) varies depending on folding state of the chassis
- 20 (102).
4. The multipurpose trailer (100) according to claim 3, wherein the distance (D5) between the at least one upper seat attachment (112) and the at least one lower seat attachment (114) is larger in a use state than in a folded state of the multipurpose trailer (100).
- 25
5. The multipurpose trailer (100) according to any one of the preceding claims, wherein the multipurpose trailer (100) comprises at least one upper seat attachment (112) and at least one lower seat attachment (114) to which the removable seat (200) is configured to be secured and wherein the chassis (102) comprises a folding hinge (118) arranged
- 30 between the at least one upper seat attachment (112) and the at least one lower seat attachment (114).
6. The multipurpose trailer (100) according to any one of the preceding claims, wherein the multipurpose trailer (100) comprises at least two pairs of upper seat attachment (112)
- 35 and at least two pairs of lower seat attachment (114)s being aligned in the transverse

direction (T) of the multipurpose trailer (100) and to which the removable seat (200) is configured to be secured.

7. The multipurpose trailer (100) according to any one of claims 2 to 6, wherein the
5 multipurpose trailer (100) further comprises a plurality of straps (108) configured to be secured to a buckle (110) for connection to a harness (202) of the removable seat (200), wherein one strap (108) is arranged intermediately in the transverse direction (T) of the trailer (100) between every two upper seat attachment (112) and/or lower seat attachments (114).
- 10 8. The multipurpose trailer (100) according to any one of claims 2 to 7, wherein the removable seat (200) comprises at least one upper connector (212) and at least one lower connector (214), the at least one upper connector (212) being configured to be attached a respective upper seat attachment (112) and the at least one lower connector (214) being configured to be attached to a respective lower seat attachment (114).
- 15 9. The multipurpose trailer (100) according to any one of claim 2 to 8, wherein each seat attachment (112, 114) comprises a securing portion (124) configured to be threaded through an attachment opening (216) in a respective connector (212, 214).
- 20 10. The multipurpose trailer (100) according to claim 9, wherein the each seat attachment (112, 114) comprises a stem portion (122) forming the attachment between the securing portion (124) and the multipurpose trailer (100) and wherein the securing portion (124) is arranged at an angle in relation to the stem portion (122).
- 25 11. The multipurpose trailer (100) according to claim 8 or 9, wherein the securing portion (124) comprises a reinforcing element (128) configured to increase the rigidity of the securing portion (124).
12. The multipurpose trailer (100) according to any one of the preceding claims, wherein the multipurpose trailer (100) comprises a reclinable backrest (116a, 116b) and wherein
30 the at least removeable seat (200) is configured to follow the reclining of the backrest (116a, 116b).
13. A method (1000) for securing a removable seat (200) to a multipurpose trailer (100), the multipurpose trailer (100) comprising
35 a chassis (102) forming a load carrying structure of the trailer (100),

a sheet element (104) supported by the chassis (102),
wherein the multipurpose trailer (100) comprises at least one upper seat attachment (112) and at least one lower seat attachment (114) to which the removable seat (200) is configured to be secured, the method (1000) comprising the steps of:

5 setting (1002) the multipurpose trailer (100) in a seat attachment state,
 attaching (1004) the at least one removable seat (200) to at least one upper seat attachment (112) and to at least one lower seat attachment (114),
 setting (1006) the multipurpose trailer (100) in a removable seat (200) securing state whereby the at least one removable seat (200) is secured to the multipurpose trailer

10 (100).

14. The method (1000) according to claim 13, wherein attaching (1004) the at least one removable seat (200) comprises threading at least one seat attachment (112) through a corresponding upper connector (112) and threading at least one lower seat attachment

15 (114) through a corresponding lower connector (214).

15. The method (1000) according to claim 13 or 14, wherein setting (1006) the multipurpose trailer (100) in a seat attachment state comprises at least partially folding the chassis (102) of the multipurpose trailer (100) and wherein setting (1006) the

20 multipurpose trailer (100) in a removable seat (200) securing state comprises at least partially unfolding the chassis (102) into a use state of the multipurpose trailer (100).

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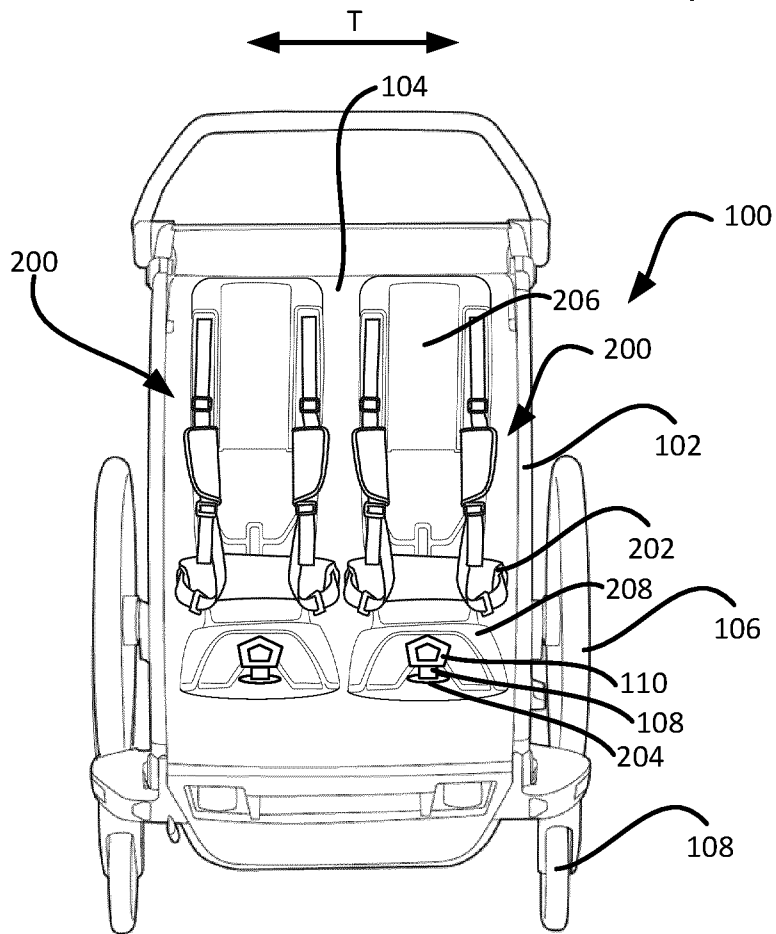


Fig. 1

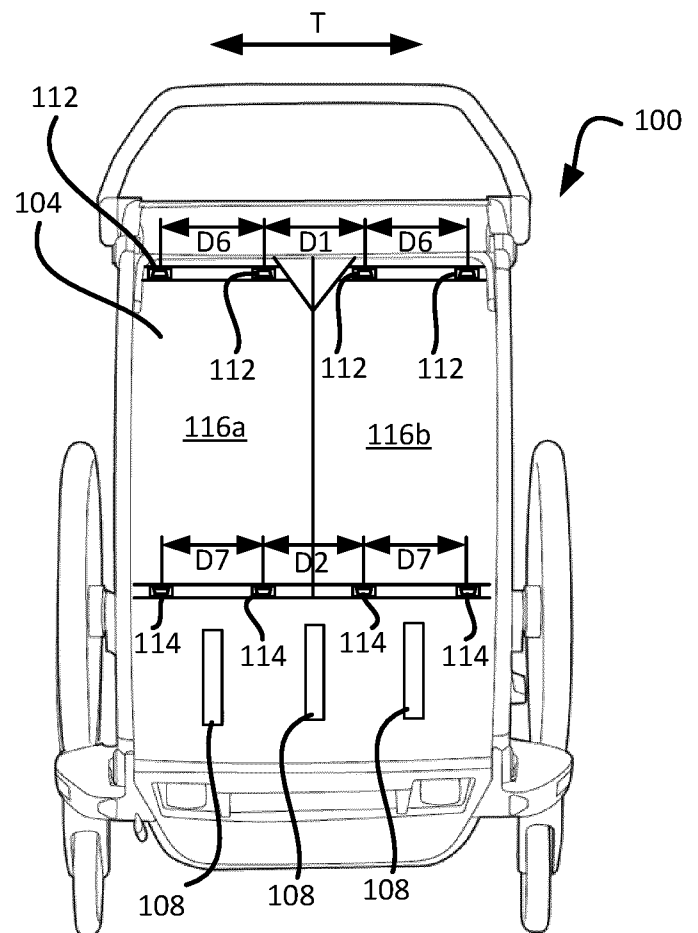


Fig. 2

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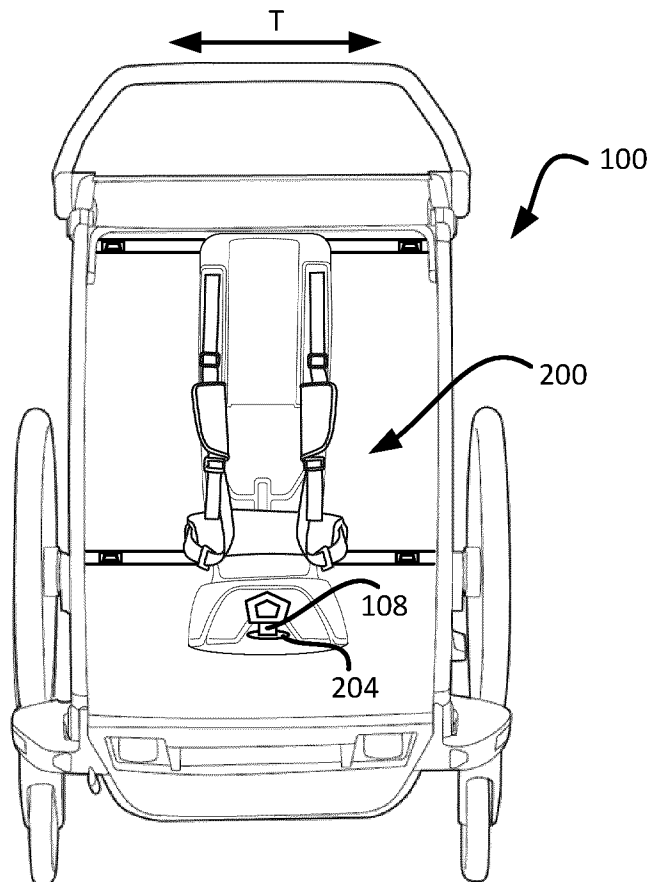


Fig. 3

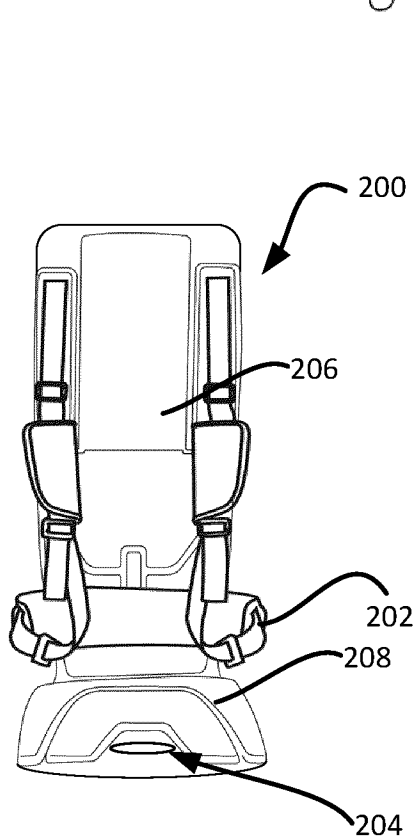


Fig. 4

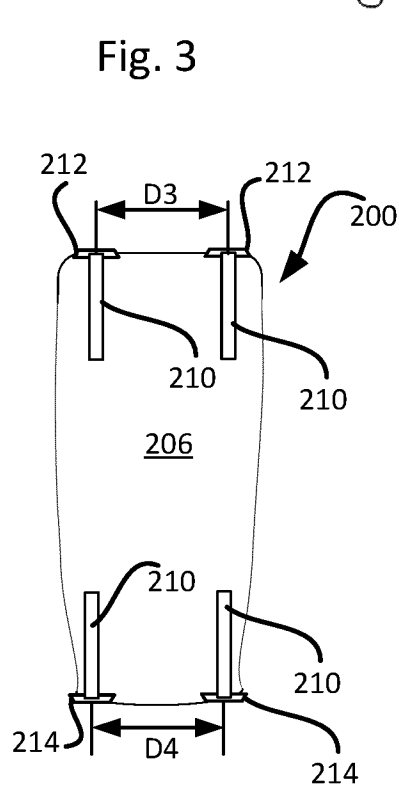


Fig. 5

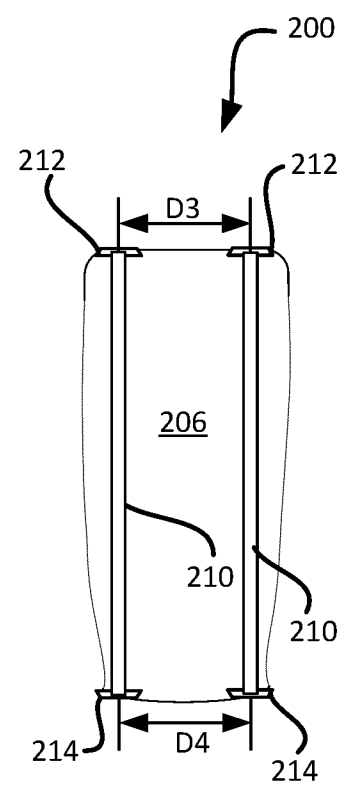


Fig. 6

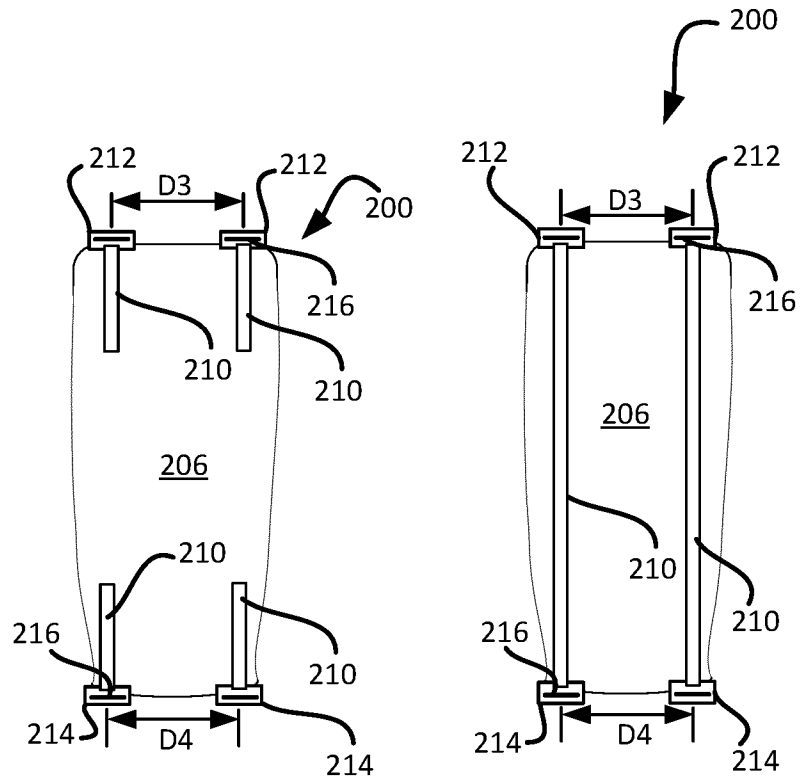


Fig. 7

Fig. 8

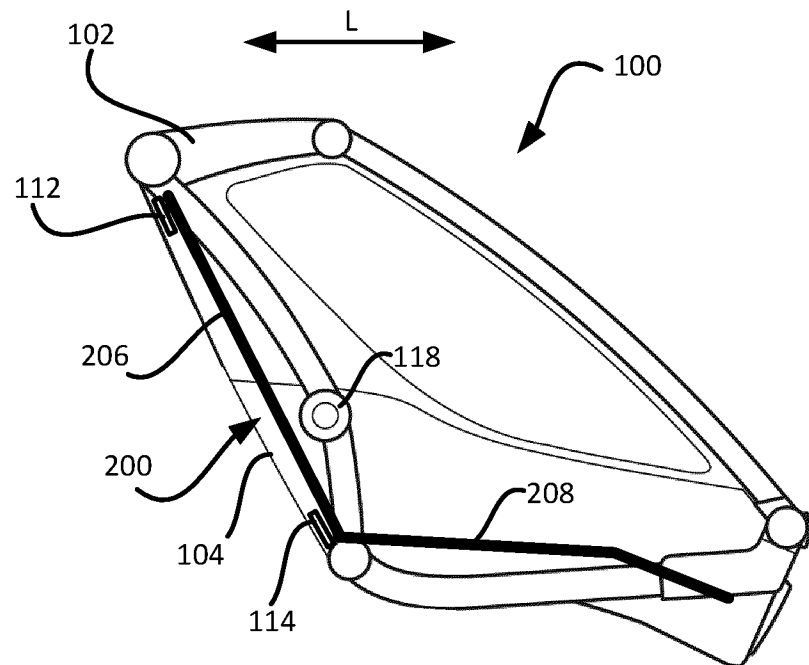
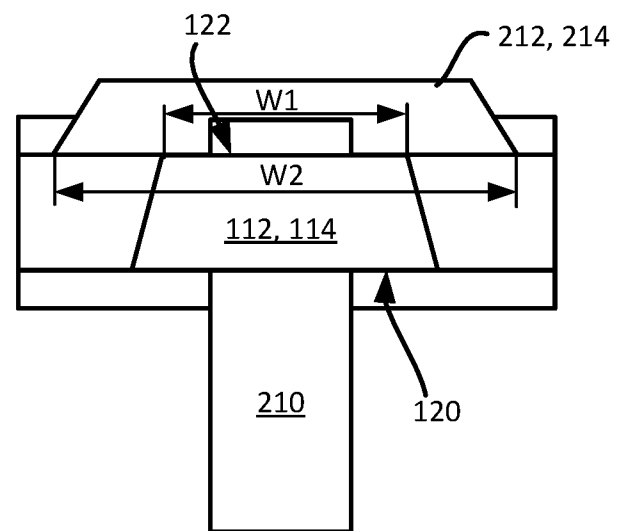
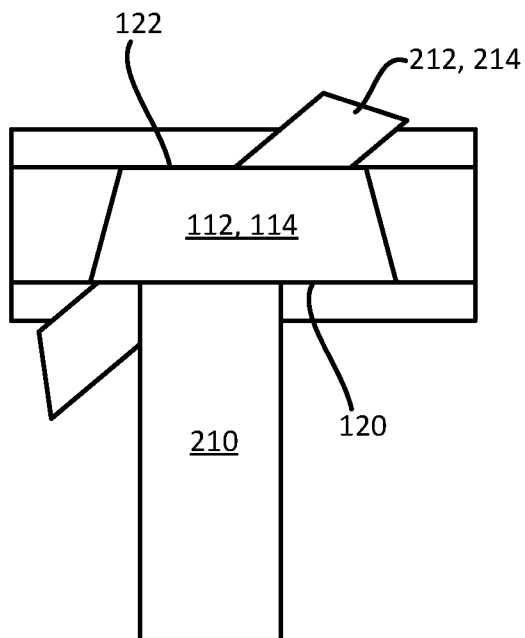
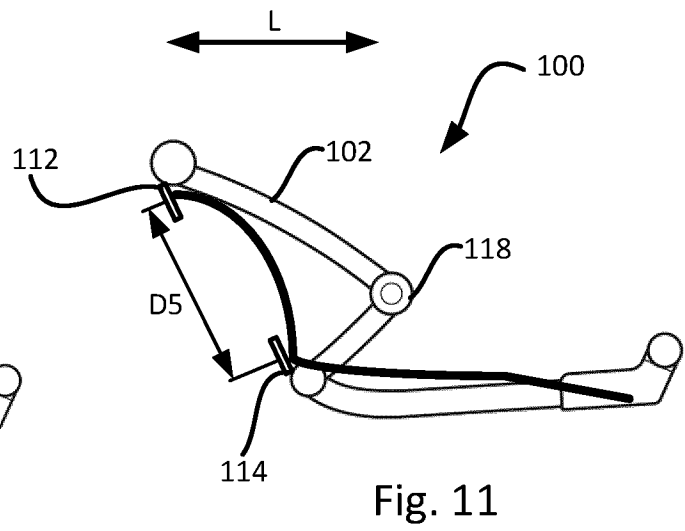
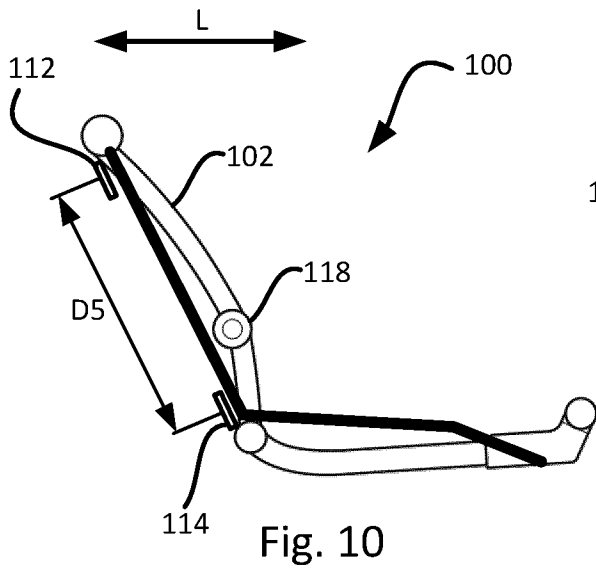


Fig. 9



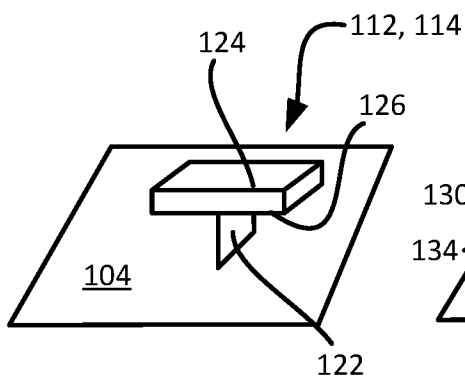


Fig. 14

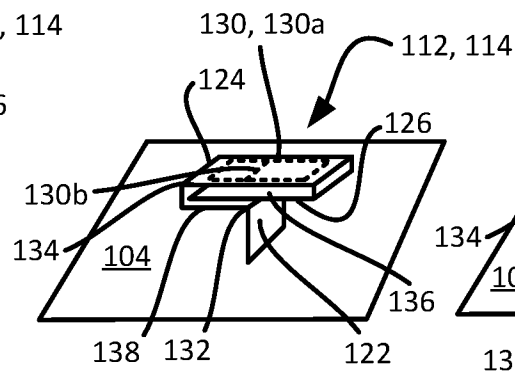


Fig. 15

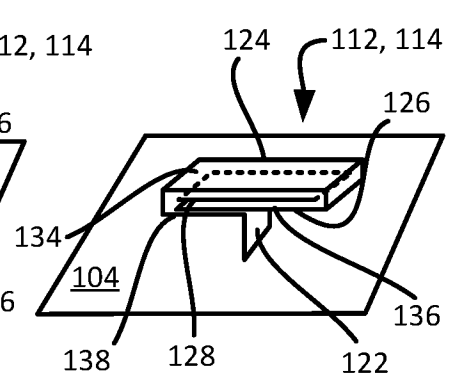


Fig. 16

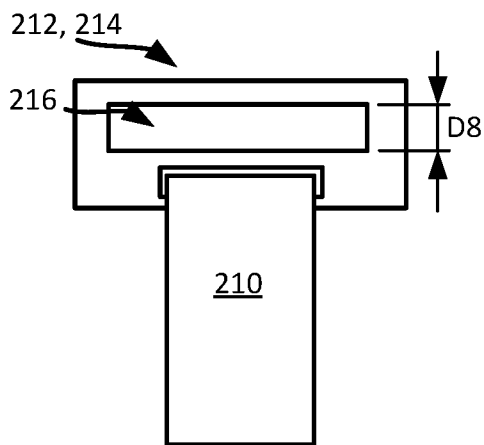


Fig. 17

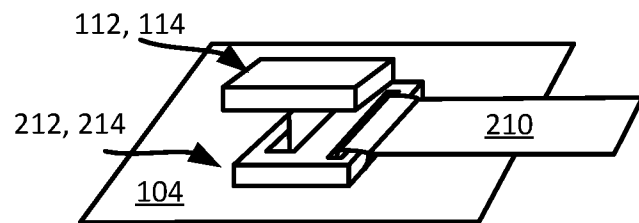


Fig. 18

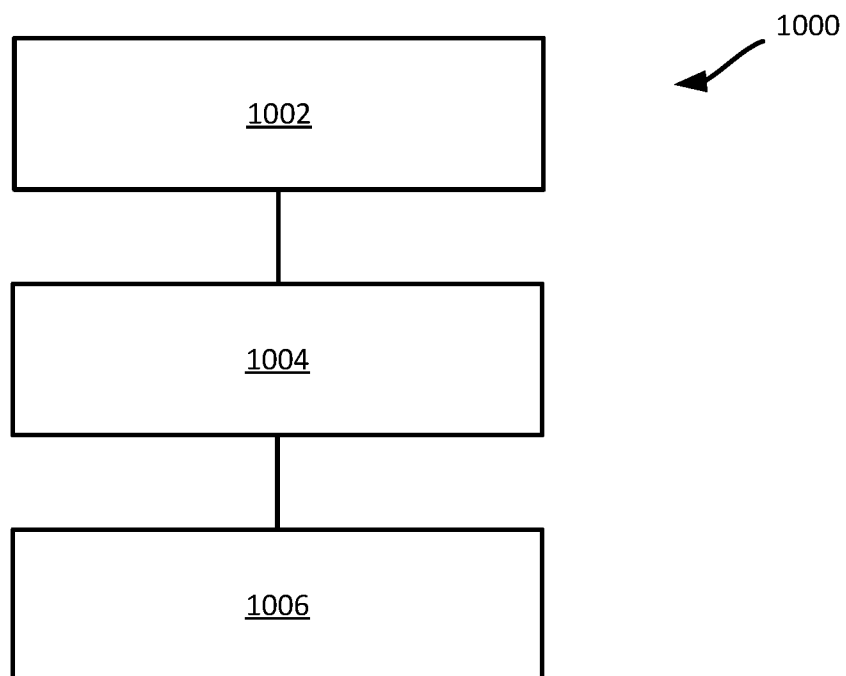


Fig. 19

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2023/060642

A. CLASSIFICATION OF SUBJECT MATTER INV. B62B7/00 B62B7/12 B62B7/10 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) B62B B60N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 20 2012 004462 U1 (KINDERCAR GMBH [DE]) 11 July 2012 (2012-07-11) paragraph [0028] - paragraph [0032]; figures 1-5 -----	1-12
X	GB 2 193 692 A (BURGOYNE DAVID ALICK) 17 February 1988 (1988-02-17) page 1, line 41 - line 87; figures 1, 2 -----	1, 2, 5-7
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X	CA 2 084 101 A1 (BRITTON DANIEL W [CA]) 31 May 1994 (1994-05-31) page 8 - page 10; figures 1, 3, 7, 8 ----- -/--	13-15
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
29 June 2023		10/08/2023
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Wochinz, Reinmar

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2023/060642

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

International application No

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