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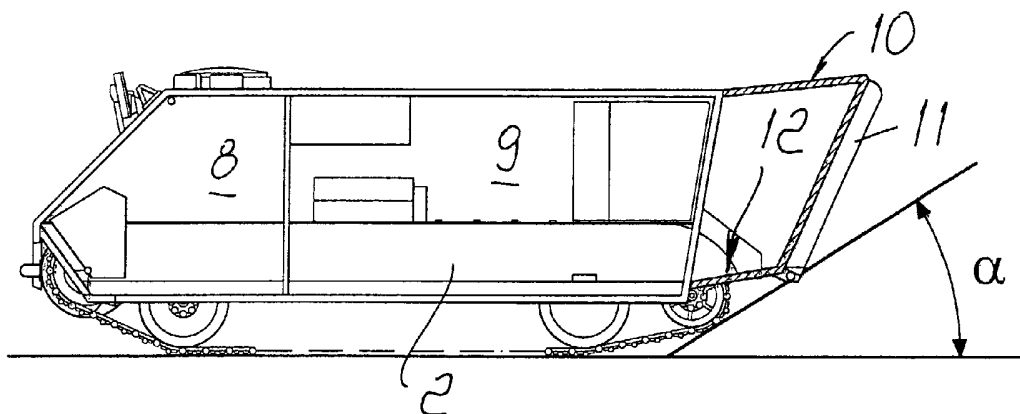
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(54) Title: AUXILIARY STRUCTURE PARTICULARLY FOR INCREASING THE CARRYING CAPACITY OF MULTIPURPOSE TRACKED VEHICLES



(57) Abstract: An auxiliary structure for increasing the carrying capacity of tracked vehicles comprising a box-like extension (10), the so-called bay, which protrudes on the rear side of the superstructure (7), to which it is firmly anchored with detachable or permanent couplings (bolting, welding or , hinging), the extension (10), to which the tilt-down rear door (11) for accessing the internal carrying space (9) is pivoted, having a deck (12) that is limited by a transverse straight segment at that connects points (P1-p2) where straight lines (rt) that are tangent to the rear wheels (6) for guiding the tracks (4), which form with the ground (S) a preset angle of attack (alpha) as defined above, meet the deck (12).

AUXILIARY STRUCTURE PARTICULARLY FOR INCREASING THE CARRYING CAPACITY OF MULTIPURPOSE TRACKED VEHICLES.

Technical Field

The present invention relates to an auxiliary structure particularly for
5 increasing the carrying capacity of vehicles typically intended for military
and civil protection applications.

Background Art

As is known, vehicle for example designated M113 and derivatives are
multipurpose tracked vehicles designed for military applications and
10 essentially for carrying troops but are also suitable for civil-protection uses
and especially for carrying and evacuating people affected by natural
calamities such as floods, earthquakes and the like. These vehicles
substantially have a hull-like structure with watertight characteristics that
allow the vehicle to wade across watercourses and stretches of water or
15 swampy land by resting on the underlying ground, and a superstructure for
accommodating people and/or equipment loads that is constituted by a single
cabin of the van-like type, in which there is a driver's compartment and a
space useful for accommodating said people and/or items to be carried.

In such M113 vehicles and their derivatives, the dimensions of the
20 superstructure are limited to those of the hull and in particular the axial
extension of the superstructure does not protrude beyond the space occupied
by the rear wheels that guide the tracks in order to avoid any reduction, due
to interference with the ground, of the so-called angle of attack of the
vehicle, i.e., the angle formed with respect to the horizontal plane by a ramp
25 of preset inclination that can be negotiated by said vehicle.

This limitation of the axial dimension of course has a negative effect on
the carrying capacity and on the convenience, comfort and usability of the
transportation space, which are sometimes already compromised by the
presence of housings for protecting mechanical parts that protrude into such
30 superstructure.

Disclosure of the Invention

The aim of the present invention is to obviate this drawback by providing an auxiliary structure that on the one hand is suitable to increase significantly the carrying capacity of the vehicle, which can accommodate
5 up to four more people arranged in facing pairs, and on the other hand does not compromise at all the travel characteristics of the vehicle and in particular does not force unwanted reductions in the angle of attack defined above.

This is achieved, according to the invention, with an auxiliary structure
10 for increasing the carrying capacity of multipurpose tracked vehicles of the specified type, having the specific characteristics defined in the appended claims.

Substantially, the auxiliary structure is constituted by a box-like extension, known as bay, which protrudes on the rear side of the original
15 superstructure and is firmly anchored thereto by way of detachable or permanent couplings (bolting or welding). Such extension is provided with a tilt-down rear door for accessing the internal transportation space and has a deck that is preferably at least partially inclined and is in any case limited by the segment of a transverse straight line that connects the points where the
20 straight lines that are tangent to the rear track guiding wheels and form said preset angle of attack with respect to the ground, meet said deck.

Brief Description of the Drawings

Further characteristics and advantages of the auxiliary structure according to the present invention will become better apparent from the following
25 detailed description and with reference to the accompanying drawings, wherein:

Figure 1 is a partially sectional schematic side elevation view of a multipurpose tracked vehicle of the M113 type with the auxiliary structure according to the invention;

30 Figure 1a is a rear elevation view of the vehicle of Figure 1;

Figure 1b is a detailed exploded perspective view of the auxiliary structure according to the invention;

Figure 2 is a top plan view of the vehicle of Figure 1, showing in detail the improved carrying capacity of the vehicle arising from the use of the
5 auxiliary structure according to the invention;

Figures 3, 4 and 5 are side elevation views, similar to Figure 1, of different embodiments of the auxiliary structure according to the invention;

Figure 6 is a top plan view of Figure 5.

Ways of carrying out the Invention

10 Initially with reference to Figures 1 and 2, the reference numeral 1 generally designates a multipurpose tracked vehicle, for example of the known type designated M113, conceived essentially for military applications and specifically for carrying troops but also usable advantageously for civil protection applications. The tracked vehicle 1 is originally constituted
15 substantially by a supporting chassis 2 that is structured like a watertight hull and is provided with sets of wheels 3 for supporting and guiding corresponding tracks 4, each of which is moved by a respective driving sprocket 5 and is guided by a free wheel 6. An optionally armored superstructure 7 is associated with the hull 2, is meant to accommodate
20 people P and/or equipment loads, and is constituted by a single van-type cabin, in which there is a driver's compartment 8 and a useful space 9 for accommodating said people and/or items to be carried, said cabin being closed by a rear door.

According to the invention, the present auxiliary structure, generally
25 designated by the reference numeral 10, is connected to the rear side of the original superstructure 7, particularly in order to increase the carrying capacity and after removing an existing tilt-down access door 11. The auxiliary structure is substantially constituted by a box-like extension, the so-called bay, which protrudes on the rear side of the superstructure 7, to
30 which it is firmly anchored with detachable or permanent couplings (bolting,

welding or hinging). The extension 10, to which the tilt-down rear door 11 for accessing the internal carrying space 9 is pivoted, has a deck 12 that is limited by a transverse straight segment st that connects points p1-p2 where straight lines rt that are tangent to the rear wheels 6 for guiding the tracks 4, which form with the ground S a preset angle of attack "alpha" as defined above, meet the deck 12.

The length H of the extension 10 can vary in terms of length-width height. For extensions having a greater length H, the angle of attack "alpha" can be defined, as shown clearly by the drawings, within broad limits by tilting appropriately upward the entire deck 12 (Figure 1) or by tilting upward at least part 12a of the deck, as shown in the embodiment of Figure 3. In both cases, in order to keep unchanged the increase in carrying capacity, which amounts to four additional people (and/or items) as shown in Figure 2, the upper wall 10a of the extension 10 is also inclined correspondingly upward so that the internal volume of said extension is in any case substantially constant.

For shorter extensions (H= approximately 500 mm), the deck 12 and the upper wall 10a can be kept horizontal as shown in Figure 4 even with significant angles of attack "alpha" (20-25°), or inclined as shown in Figure 5, with consequent increases in the angle "alpha" between 20 and 25%. In both cases, the increase in carrying capacity is equal to two additional persons, as clearly shown in the schematic view of Figure 6.

The effects of the present model of course also cover models that achieve equal utility by using the same innovative concept.

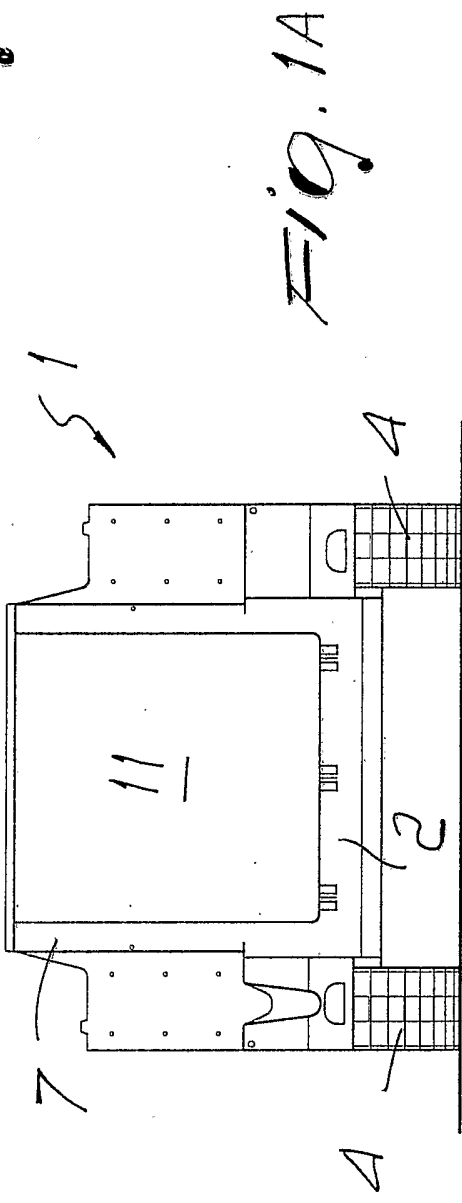
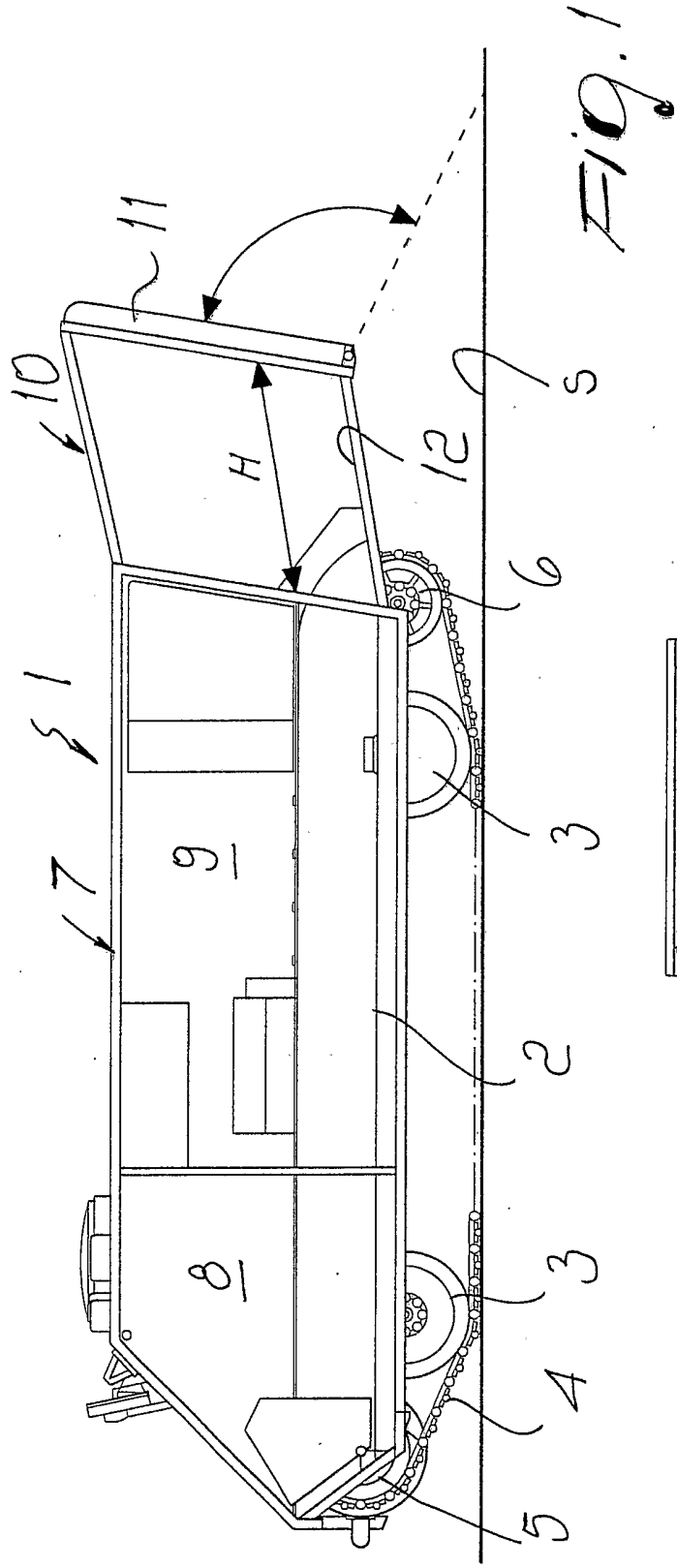
In particular, the increase in volume that arises from the application of the auxiliary structure 10 according to the present invention can be used to accommodate an auxiliary marine power plant for high speeds, which is particularly useful when the vehicle is further equipped with auxiliary flotation devices.

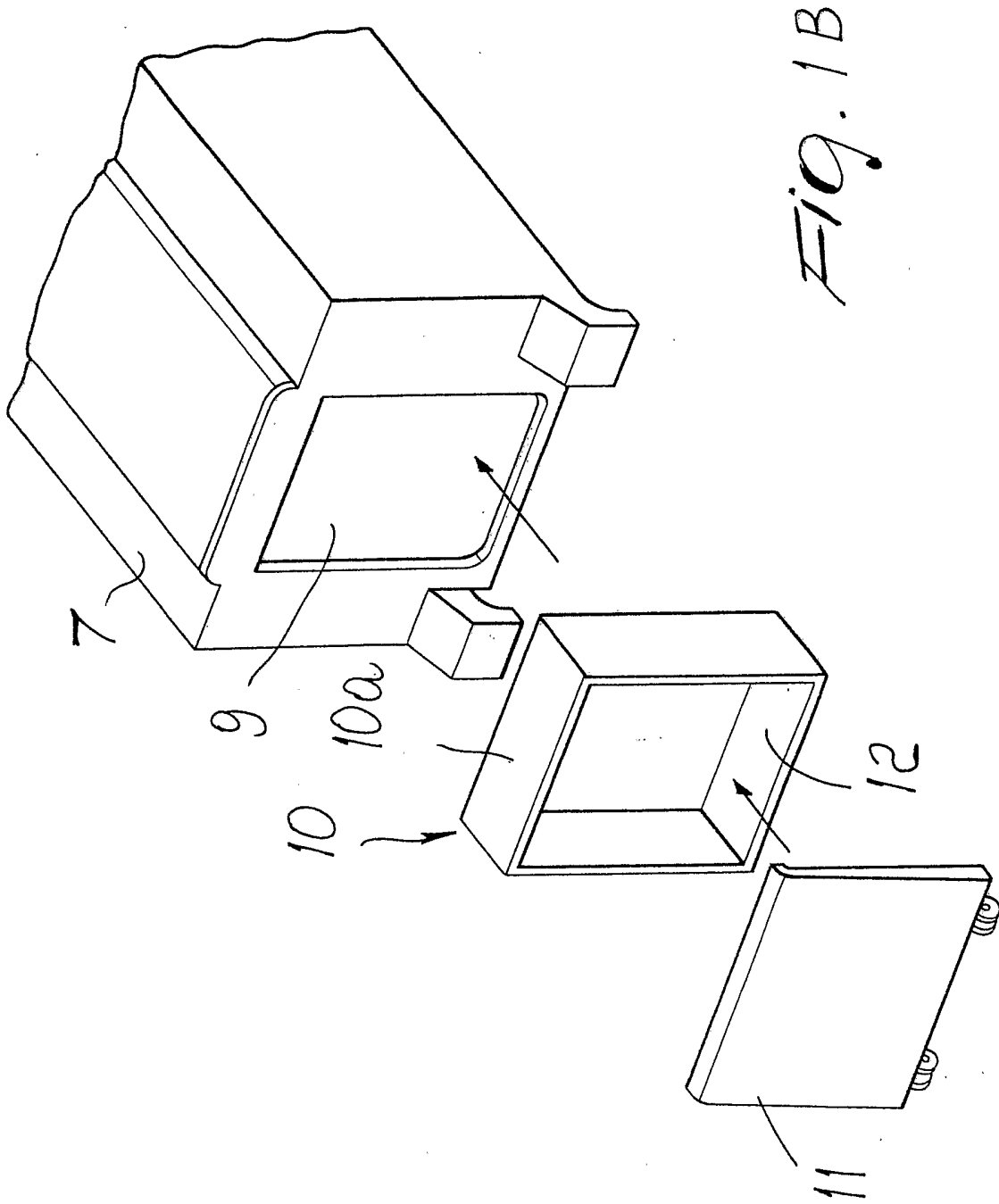
The disclosures in Italian Utility Model Application No. TO2001U000128

from which this application claims priority are incorporated herein by reference.

CLAIMS

1. An auxiliary structure, particularly for increasing the carrying capacity of tracked vehicles, comprising a chassis (2) constituted by a watertight hull and a cabin-like superstructure (7) that delimits a useful space (9) for
5 accommodating people and/or items to be carried, characterized in that it is constituted by a box-like extension (10), the so-called bay, which protrudes on the rear side of the superstructure (7), to which it is firmly anchored with detachable or permanent couplings (bolting, welding or hinging), the extension (10), to which the tilt-down rear door (11) for accessing the
10 internal carrying space (9) is pivoted, having a deck (12) that is limited by a transverse straight segment st that connects points (p1-p2) where straight lines (rt) that are tangent to the rear wheels (6) for guiding the tracks (4), which form with the ground (S) a preset angle of attack (α) as defined above, meet the deck (12).
- 15 2. The auxiliary structure according to claim 1, characterized in that said deck (12) of the box-like extension (10) has a variable length.
3. The auxiliary structure according to claim 1, characterized in that said box-like extension (10) is applied to the hull and bolted to said original superstructure (7).
- 20 4. The auxiliary structure according to claim 1, characterized in that said box-like extension (10) is applied to the hull and welded to said original superstructure (7).
5. The auxiliary structure according to claim 1, characterized in that said deck (12) is at least partially inclined upward so as to increase
25 correspondingly said angle of attack (α).
6. The auxiliary structure according to claim 4, characterized in that the upper wall (10a) of said extension (10), which lies opposite the inclined deck (12), is correspondingly inclined upward so that the internal volume of said extension is substantially constant.





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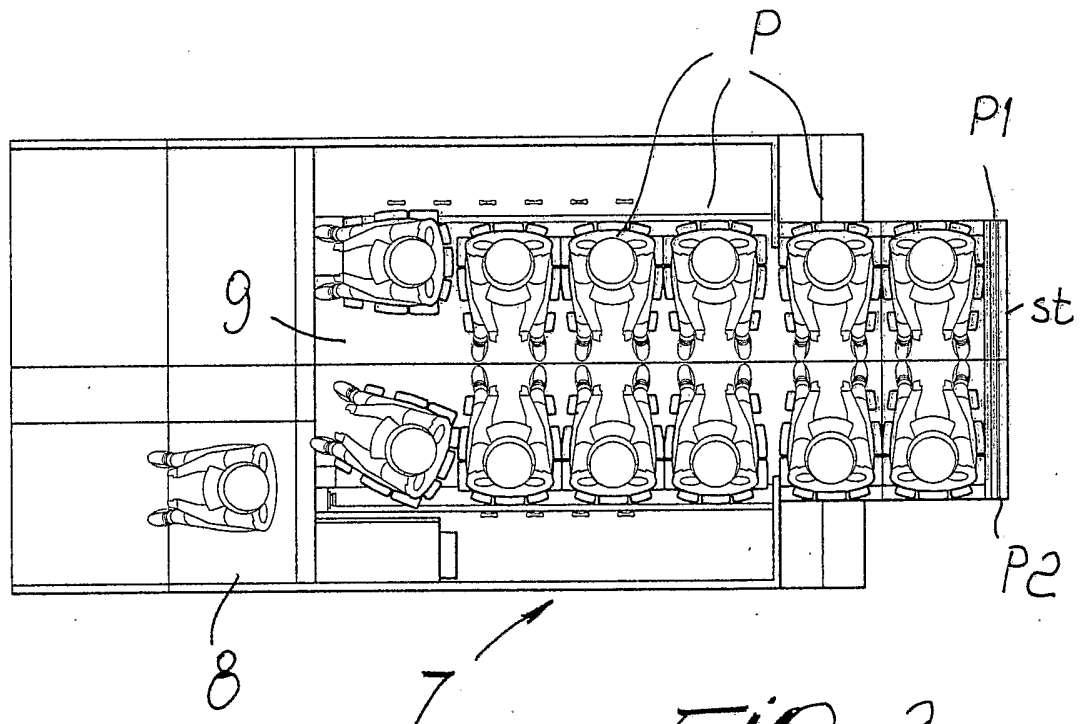


Fig. 2

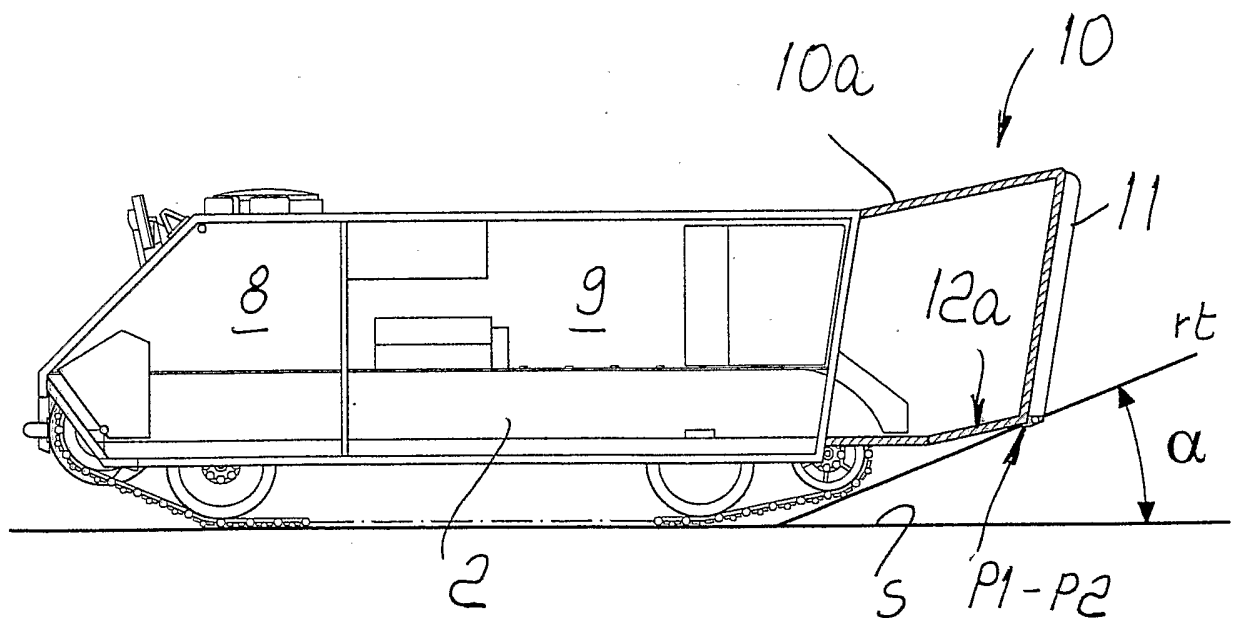


Fig. 3

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