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(54) **BOAT TRANSPORTING ARRANGEMENT**

GERÄT ZUM TRANSPORTIEREN EINES SCHIFFES

SYSTEME DE TRANSPORT DE BATEAUX

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Description

Field of invention

[0001] The present invention relates generally to a boat transporting arrangement and then more particularly to a boat transporting arrangement of the kind that includes a frame construction having related wheels or wheel pairs and side-related pillar-like supports or corresponding supports, and one or more carrier straps or corresponding devices disposed between the supports, wherein said supports are adapted to keep the hull of a boat suspended on the carrier straps.

[0002] The present invention has been conceived with the intention of considerably facilitating the transportation of boats from or out of a water environment and to or in a water environment, where the boat can be transported along a sloping plane and up to a more horizontal plane, and where the boat can also be transported along a relatively uneven surface.

[0003] Although the basic concept of the invention can be applied for transporting boats of widely varying displacements, it has, however, been developed to enable boats that have a displacement of above 200 tonnes, for instance between 200 tonnes and up to 2000 tonnes, to be transported in a much easier way than was previously possible.

Description of the background art

[0004] Several different designs of boat transporting arrangements constructed as a single flexurally rigid unit are known to the art.

[0005] Because the present invention relates primarily to a boat transporting arrangement adapted for boats that have a displacement in excess of 200 tonnes, only the prior art relating to such boat transporting arrangements will be described.

[0006] Boat transporting arrangements of the kind relevant to the invention and adapted for the aforesaid application are also earlier known in a number of different embodiments. One earlier known arrangement is comprised of a highly flexurally rigid frame construction whose lower part has a U-configuration formed by horizontally disposed support beams which are placed at right angles to each other, with four or more side-related vertical pillar-like supports or corresponding supports fastened to the horizontal support beams, and one or more carrier straps or the like associated with the supports so as to enable the hull of a boat to be suspended on said carrier straps.

[0007] In respect of this application, the frame construction is highly flexurally rigid and very heavy, when heavy loads act on the horizontal support beams.

[0008] The horizontal beams are attached to a plurality of wheels which are dimensioned to take-up the forces exerted by said frame construction and the loads generated by the boat, and which are adapted to roll along a prepared and flattened surface, normally comprised of concrete slabs.

[0009] The frame construction also includes and carries a motor-driven hydraulic pump arrangement which functions to drive the boat transporting arrangement along said surface and also to shorten or lengthen one or more of the carrier straps or the like disposed between the beams and therewith enable the boat to be kept suspended in the frame construction during transportation.

Summary of the invention

Technical problems

[0010] When taking into consideration the technical deliberations that a person skilled in this particular technical field must undertake in order to provide a solution to one or more technical problems, it is necessary initially to realise the measures and/or the sequence of measures that shall be undertaken and to choose the means required to this end. On this basis, it will be seen that the technical problems listed below are relevant in implementing the invention.

[0011] When considering the background art, as described above, it will be seen that a technical problem resides in providing a boat transporting arrangement for the aforesaid application with which provisions are made for simplifying and sectioning the boat transporting arrangement.

[0012] A related technical problem resides in providing a boat transporting arrangement that comprises a number of sections which can be readily transported on transport vehicles and which can readily be coupled together to function as a complete boat transporting arrangement.

[0013] Another technical problem resides in realising the significance of and the advantages associated with dividing a flexurally rigid frame construction into a number of individual sections or individual units that can be readily coupled together at a location used for taking-up or launching a boat.

[0014] Another technical problem resides in the provision of a boat transporting arrangement in which chosen individual units can be driven separately and in which the lengths of the carrier straps and their ability to take-up load can be adjusted in response to changes in the position (or attitude) of the arrangement relative to the underlying support surface.

[0015] Another technical problem is one enabling the frame construction to be comprised of a number of individual units, e.g. an even number, said units being at least generally identical with one another

[0016] Another technical problem is one of realising the significance of allowing at least four of said units to be coupled together, where units on one side can be coupled via one or more spacer arms, rods, bars or the like.

[0017] Another technical problem resides in realising the significance of and the advantages associated with allowing the coupling of said spacer arm with a first unit and coupling of said spacer arm with a second unit to provide flexural movement that has an essentially horizontal line of flexure.

[0018] Another technical problem is one of realising the significance of and the advantages associated with the creation of conditions with the aid of simple means such that two spacer arms between side-related units can be orientated at a unit-adapted horizontal distance apart.

[0019] It will also be seen in this respect that a technical problem also resides in realising the significance of allowing the length of the spacer arm to be chosen in relation to the length of said unit.

[0020] It will also be seen that a technical problem resides in realising the significance of and the advantages associated with allowing two mutually parallel and side-related units to be coupled together to form a flexurally rigid section or unit array, through the medium of one or two transversally extending beams.

[0021] Another technical problem is one of realising the significance of and the advantages associated with adapting one transversal beam for connecting together the front parts and/or the centre parts of the two parallel units.

[0022] It will also be seen that a technical problem resides in realising the significance of and the advantages associated with adapting the second transversal beam for joining together end-parts, a front and/or a back end-part, in respect of the aforesaid array formed by two mutually adjacent units.

[0023] A technical problem also resides in providing each separate unit of said arrangement with an even number of pillar-like supports, such as two or four supports, where measures can be taken to place the vertical rotational axes of said supports centrally in relation to the unit.

[0024] It will also be seen that a technical problem resides in realising the significance of and the advantages associated with creating conditions such that each unit can be provided with four pillar-like supports with two vertical axes of rotation placed centrally in relation to the unit and two vertical axes of rotation placed distal relative to said unit and end-related thereto.

[0025] It will also be seen that a technical problem resides in realising the significance of and the advantages associated with enabling respective supports to be placed immediately above a wheel-carrying axle.

[0026] A technical problem also resides in realising the significance of and the advantages associated with allowing chosen units to be comprised of a frame construction to which at least two boggy-suspended wheel pairs are attached, and also to enable said construction to be readily complemented so that at least four boggy-suspended wheel pairs can be attached to the frame construction two-and-two.

[0027] In addition, it will be seen that a technical problem is one of readily complementing the frame construction so as to enable double boggy-suspended wheel pairs, at least four such wheel pairs, to be attached to said frame construction two-and-two.

[0028] Another technical problem resides in realising the significance of and the advantages associated with enabling an even number of frame constructions with associated boggy-suspended wheel pairs, such as four such constructions, to be coupled together.

[0029] Another technical problem resides in providing, with simple means, conditions which stabilise individual units and which enable said units to be moved along an underlying supportive surface that has at least minor irregularities without said units tipping over.

[0030] In respect of this latter application, a technical problem also resides in referring to the use of unit-related pillar-like supports, where centrally positioned supports belonging to a unit may each consist of an hydraulic piston-cylinder device, with all unit-related supports being coupled together hydraulically and controlled by a control unit.

[0031] Another technical problem resides in creating, with the aid of simple means, conditions that enable the distance between two mutually coupled, parallel-related units to be adjusted to a value pertinent to, or at least related to, the width of the hull of the boat being transported, through the medium of one or more transversal beams.

[0032] Another technical problem is one of realising the significance of and the advantages associated with allowing said transversal beam(s) to be positioned at the same height, or at least essentially at the same height, from an underlying supportive surface as the wheel axles.

[0033] Another technical problem is one of realising the significance of and the advantages associated with providing two separate units, one on each side of the boat hull, with an own motor-driven hydraulic pump with control unit, and by positioning each further unit on the same side of the hull and connecting said units to the unit to which the hydraulic pump is assigned, so as to enable all of the units allotted to this one side can be controlled and/or driven hydraulically.

[0034] It is particularly proposed that each unit shall be provided with means for turning the wheels, e.g. in the form of one or more hydraulic motors.

Solution

[0035] The present invention takes as its starting point a boat transporting arrangement adapted for the transportation of boats having a displacement in excess of 200 tonnes, along an underlying surface from a position in which the boat floats in water to a land site, or vice versa, where said arrangement uses a frame construction with wheels related thereto and pillar-like supports which are positioned relative to the sides of the hull of

said boat, and which includes one or more carrier straps or like devices disposed between the supports and adapted for holding said hull suspended on said straps even during transportation of the boat, by allowing said carrier straps to conform to the outer configuration of said hull.

[0036] With the intention of solving one or more of the aforesaid technical problems, it is proposed in accordance with the invention that said frame construction shall comprise a number of individual units, at least three and preferably four units, and that units which are placed on one side of the boat shall be coupled together through the medium of one or more spacer arms or like means, and that coupling of the spacer arm to a first unit and coupling of the spacer arm to a second unit will provide flexural movement that has a horizontal line of flexure.

[0037] By way of further embodiments that lie within the scope of the inventive concept, it is proposed that two spacer arms are orientated at a small horizontal distance apart and therewith form between the individual units on said one side of the boat a connection that is flexurally rigid in the horizontal plane.

[0038] It is also proposed in accordance with the invention that the length of the spacer arms is adaptable so as to correspond to 30-80% of the length of the units.

[0039] It is also proposed that two mutually parallel units can be connected to each other through the medium of one or more, such as two, transversal beams such as to form a co-acting unit array which is flexurally rigid to a certain degree.

[0040] One of the transversal beams may be adapted to co-act with the front parts or middle parts of the two mutually adjacent units, while a second transverse beam may be adapted to connect the front and/or the rear end-parts of the two mutually adjacent and mutually parallel units.

[0041] It is also proposed in accordance with the invention that each unit shall be provided, beneficially, with an even number of pillar-like supports whose vertical axes of rotation can be faced centrally relative to the unit through the medium of its respective arm.

[0042] It is also proposed that each unit may, beneficially, be provided with four such supports, with two vertical axes of rotation placed centrally relative to the unit and two vertical axes of rotation placed distal relative to said unit.

[0043] It is also proposed in accordance with the invention that respective supports can be placed immediately above a wheel axle, via the frame construction.

[0044] It is particularly proposed in accordance with the invention that each unit is comprised of an own frame construction to which at least two boggy-suspended wheel pairs are attached and which can be readily complemented so as to enable at least four boggy-suspended wheel pairs to be attached to said frame construction, two-and-two.

[0045] It also lies within the scope of the invention to attach double boggy-suspended wheel pairs, at least four such wheel pairs, two-and-two.

[0046] It is also proposed that an even number of frame constructions, such as four frame constructions, shall be coupled together so as to enable the use of at least four carrier straps, the bearing capacity of which can be adjusted by adjusting the length of the carrier straps and/or the length of said pillar-like supports.

[0047] It is proposed in accordance with the invention that the pillar-like supports of a unit may each conveniently be comprised of an hydraulic piston-cylinder device where all such devices are coupled together hydraulically via requisite coupling elements and control units.

[0048] It is also proposed that the distance between two mutually coupled and parallel units can be adjusted via said one or more transverse beams so as to enable said distance to correspond to the width of the hull of the boat being transported, at least approximately.

[0049] It is also proposed in accordance with the invention that the two transverse beams are positioned at the same height from an underlying support surface as the wheel axles.

[0050] It is particularly proposed that one unit on each side of the boat hull is provided with an own motor-driven hydraulic pump with control unit, and that each further unit on said side is connected hydraulically to the unit that includes said hydraulic pump.

[0051] This enables each unit to be provided with means for rotating the wheels, whereby the wheels on one side of the hull and wheel pairs on the other side of said hull can be controlled separately and/or driven separately.

Advantages

[0052] Those advantages that are particularly characteristic of an inventive boat transporting arrangement that has features significant to the present invention reside in the provision of conditions which enable a number of individual, readily transported units including coupling spacer frames or rods to be mutually coupled to form a complete boat transporting arrangement that is capable of supporting a boat of large displacement and with which the boat hull can be transported up along a sloping surface to a flat surface, or vice versa, even when the underlying surface is uneven.

[0053] The primary characteristic features of a boat transporting arrangement according to the present invention will be apparent from the characterising clause of the following claim 1.

Brief description of the drawings

[0054] Two alternative boat transporting arrangements having characteristic features significant of the present invention will now be described in more detail with reference to the accompanying drawings, in which

Figure 1 is a perspective side view of a boat being transported by means of an inventive boat transporting arrangement that has features associated with a first alternative;

Figure 2 is a perspective side view of the boat transporting arrangement shown in figure 1, in a slightly larger scale;

Figure 3 is a side view that illustrates the principle of a second alternative boat transporting arrangement adapted for boats that have a larger displacement that the boat shown in figure 1;

Figure 4 is a front view of the arrangement shown in figure 3; and

Figure 5 is a vertical view of the arrangement shown in figure 3.

Description of embodiments at present preferred

[0055] A boat transporting arrangement that has features characteristic of the present invention has been referenced 1 in figure 1.

[0056] The arrangement 1 is shown to support a boat B which shall be moved on wheels along an underlying supportive surface 2.

The underlying surface 2 in figure 1 is shown to consist of a flattened, sloping part 2a, where said slope faces upwards from a water environment 3, and a flat part 2b, where the boat can be transported on wheels along the flat underlying surface or part 2b.

[0057] The boat transporting arrangement 1 is comprised of a number of units which form a frame construction, with unit-related wheels and side-related pillar-like supports and one or more carrier straps or like devices disposed between said pillar-like supports and adapted to hold the boat B and the boat hull B1 suspended during transportation of the boat, among other things.

[0058] According to the present invention, the requisite frame construction shall be divided to consist of a number of individual units, illustrated as a first side-related unit 11 and a second side-related unit 22.

[0059] A complete arrangement 1 requires at least two front parallel-related units 11, 11' and at least one rear unit. The illustrated embodiment includes two rear parallel-related units 22, 22'.

[0060] In this respect, it is necessary to couple together the side-related units 11, 22, and 11', 22' via one or more spacer arms 31 or the like, such as to obtain a U-shaped configuration.

[0061] Coupling 31a of the spacer arm 31 to the first unit 11 and coupling 31 b of the spacer arm 31 to the second unit 22 is adapted to provide flexural movement with flexing lines 31a', 31 b' orientated horizontally or at least essentially horizontally.

[0062] This enables the individual units of the arrangement 1 to pass from a sloping surface 2a to a more horizontal surface 2b and to keep the boat B in the stable state shown in figure 1, by adjusting the length of the carrier straps and/or by adjusting the vertical extension of the pillar-like supports. This adjustment is made possible by the fact that all supports are co-ordinated hydraulically to generate the same lifting force. This shall at least apply to the parallel-related units.

[0063] The use of two parallel-related spacer arm 31, according to figure 5, between side-orientated units and at a unit-adapted horizontal distance apart, provides an attachment of the units 11 and 22 which is rotationally rigid in the horizontal plane.

[0064] Practical experiences have indicated that the length of the spacer arm 31 should be adapted to correspond to 30-80% of the total length of the unit 11 and/or the unit 22. It is particularly proposed that the length of said arms 31 will correspond to 40-60% of the total unit length.

[0065] As shown more clearly in figure 2, two parallel-orientated units 11, 11', one on each side of the boat hull, are coupled together mechanically through the medium of one or more, preferably two, transverse beams or bars referenced 41, 42 in figure 5.

[0066] The first alternative according to figures 1 and 2 and the second alternative according to figures 3-5 are identical in this respect.

[0067] One beam 41 is conveniently adapted to connect together the midway parts of the two mutually adjacent units 11, 11' in a flexurally rigid fashion. The other beam 42 may conveniently be adapted to connect together the front and/or rear end-parts of the two mutually adjacent units 11, 11'.

[0068] As will be seen from the drawing, the other transversal beam 42 is applied to the rear parts of the units 11, 11'.

[0069] There is nothing to prevent the front parts of the units 11, 11' from being coupled together solely by one transfer beam, so as to form thereby a pronounced U-shape. (This option is not shown in the figures).

[0070] Each unit 11, 11' and 22, 22' shall be provided conveniently with an even number of pillar-like supports. The supports 11a, 12a on one side of the boat B are co-ordinated so that their vertical pivot axes 11c, 12c will be positioned centrally in relation to the unit 11.

[0071] The unit 11 of figure 2 carries a front pillar-like support 11 a which forms a pivotal shaft or rotational shaft 11c, through the medium of an arm 11b and a sleeve, said shaft extending through the sleeve.

[0072] The unit 11 is also provided with a rear support 12a which is rotatable about a shaft 12c via an arm 12b and a sleeve.

[0073] The shafts 11c and 12c, where insignificant forces act, are thereby placed centrally in relation to the unit 11.

[0074] Consequently, the co-ordinated array of units 11, 11' shown in figure 2 includes four pillar-like supports with their rotational axes positioned centrally.

[0075] Each of the units 22 and 22' include two such supports with respective rotational axes positioned centrally relative to said units.

[0076] As will be seen from figures 3-5, when the unit 11 is provided with four pillar-like supports, the two rotational shafts 11 c, 12c for said two supports will be positioned centrally relative to the unit, while two further rotational shafts 13c, 14c are positioned distal relative to the unit, through the medium of the arm 13b, 14b.

[0077] With respect to the support in this latter embodiment, enable said support to be placed immediately above a wheel axle by means of the arms 13b, 14b.

[0078] The unit 11, which is identified as being representative of the remaining units 11', 22, 22', is comprised of a frame construction to which at least two boggy-suspended wheel pairs 110 and 120 are attached. The wheel pairs 110 and 120 can be swung by means not shown.

[0079] The wheel pair 110 is comprised of two outer wheels 110a and 110b, and the wheel pair 120 is comprised of two outer wheels 120a and 120b.

[0080] The wheel pair constructions can be considered the same for all wheel pairs, and hence only the wheel pair 110 will be described in detail.

[0081] In one embodiment, at least four boggy-suspended wheel pairs can be attached to the frame construction, two-and-two, said wheel pairs comprising the outer wheel pair 110a and 110b and the inner wheel pair 110c and 110d, as apparent from figure 2.

[0082] As will be apparent from figures 4 and 5, double boggy-suspended wheel pairs, at least four pairs, are attached to the frame construction two-and-two, said wheel pairs comprising the outer wheel pair 110a, 110b; an inner wheel pair 110c, 110d; a further inner wheel pair 110e, 110f and the innermost wheel pair 110g, 110h.

[0083] In the case of the figure 4 embodiment, the wheel pair arrangement 110a-110h may have a total width of up to and slightly more than 3 metres with centrally positioned unit-associated supports, such as the support 11a. However, the supports may be allowed to pivot to one side from the central position shown in figure 4 through a distance of up to 1.0 metre, normally about 0.5 metre.

[0084] Figure 5 shows an even number of frame constructions and individual units 11, 11', 22, 22', such as four, mutually coupled to form a U-shaped configuration through the medium of one or more transverse beams 41, 42 and parallel-coupled rods or bars 31, 31c and 31' and 31c'.

[0085] Supports 11 a, 12a belonging to a unit 11 may consist of an arrangement of hydraulic piston-cylinder devices that are connected together hydraulically through the medium of a control unit (not shown) that includes activating means. It is particularly proposed that the pillar-like supports of parallel-related units 11, 11' and 22, 22' respectively will be adapted to take-up the same forces originating from the boat B.

[0086] Pillar-like supports belonging to different series-related units 11, 22 and 11', 22' respectively may also be adapted to take-up the same forces originating from the boat B.

[0087] The horizontal distance between two mutually coupled units 11, 11' can be adjusted through the medium of said one or more transverse beams 41, 42 so as to enable the horizontal distance between the supports to be adjusted to the width of the hull. This adjustment can be affected to some extent, by rotating the supports about their vertical axes.

[0088] The transverse beams 41 and 42 used are orientated at the same height, or essentially at the same height, from an underlying surface 2 as the wheel axles.

[0089] The units 11, 11', one on each side of the boat hull B1, are provided with an own motor-driven hydraulic pump with control unit 11e, 11e', wherewith each further unit 22 on the same side may be coupled hydraulically to the unit 11 that includes the hydraulic pump (via hoses, not shown).

[0090] Each unit includes means, such as 11d, for activating rotation of the wheels, said means being of a known kind and therefore not described in more detail in this document.

[0091] Figure 2 shows the construction in which respective units 11 are provided with two pillar-like supports 11 a, 12a which are normally positioned centrally so that only the unit 11 can be moved along the underlying surface 2 without being coupled to remaining units.

[0092] Figure 3 shows an alternative embodiment in which the unit 11 has been provided with four centrally positioned pillar-like supports 11a, 12a and 13a and 14a, each of said supports being rotatably attached in the unit 11, as earlier described.

[0093] The pillar-like supports are so connected to the hydraulic system that the load-receiving strap is able to constantly provide the same lifting force with regard to the boat, regardless of whether or not the frame parts and the units lie in the same plane and extend along the same line, but define an angle in the horizontal and/or vertical direction.

[0094] It will be understood that the invention is not restricted to the aforedescribed and illustrated exemplifying embodiments and that modifications can be made within the scope of the inventive concept as illustrated in the accompanying claims.

Claims

1. A boat transporting arrangement that utilises a frame construction, wheels related to said frame construction and side-related pillar-like supports, and one or more carrying straps or like devices disposed between said supports and functioning to hold a boat hull, **characterized in that** said frame construction is comprised of a number of individual units; **in that** said units are coupled together; and **in that** coupling of a first unit to a second unit provides flexural movement in a horizontal flexure line.

2. An arrangement according to claim 1, **characterized in that** the arrangement includes at least one spacer arm, and preferably two spacer arms which are spaced horizontally apart.

3. An arrangement according to claim 2, **characterized in that** the length of the spacer arm corresponds to 30-80% of the length of a unit.

4. An arrangement according to claim 1, **characterized in that** two parallel-orientated units are coupled together through the medium of one or two transverse beams.

5. An arrangement according to claim 4, **characterized in that** one beam is adapted to connect together the front parts or centre parts of two mutually adjacent units.

6. An arrangement according to claim 5, **characterized in that** the other beam is adapted to connect together other parts of two mutually adjacent units.

7. An arrangement according to claim 1, **characterized in that** each unit includes at least two pillar-like supports whose rotational axes are placed centrally in relation to the unit.

8. An arrangement according to claim 7, **characterized in that** each unit includes four pillar-like supports with two rotational axes placed centrally relative to the unit and two rotational axes placed distal to the unit.

9. An arrangement according to claim 1, **characterized in that** respective pillar-like supports are positioned immediately above a wheel axle.

10. An arrangement according to claim 1, **characterized in that** the unit is comprised of a frame construction to which at least two boggy-suspended and pivotal wheel pairs are attached.

11. An arrangement according to claim 1 or claim 10, **characterized in that** at least four boggy-suspended wheel pairs are attached two-and-two to the frame construction.

12. An arrangement according to claim 1 or claim 11, **characterized in that** double boggy-suspended wheel pairs, at least four such wheel pairs are attached two-and-two to the frame construction.

13. An arrangement according to claim 12, **characterized in that** an even number of frame constructions, such as four frame constructions, are coupled together to form a U-configuration.

14. An arrangement according to claim 1, **characterized in that** the pillar-like supports of a unit are comprised of hydraulic piston-cylinder devices that are coupled together hydraulically.

15. An arrangement according to claim 1 or claim 4, **characterized in that** the distance between two mutually coupled units can be adjusted through the medium of said one or more transverse beams.

16. An arrangement according to claim 1, 4 or 16, **characterized in that** the transverse beams are positioned at the same height from an underlying supportive surface as the wheel axles.

17. An arrangement according to claim 1, **characterized in that** a unit, on each side of the boat, includes an own motor-driven hydraulic pump with control unit; and **in that** each further unit on the same side is coupled hydraulically to the unit provided with said hydraulic pump.

18. An arrangement according to claim 1, **characterized in that** each unit includes means for activating rotation of the wheels.

19. An arrangement according to claim 14 or claim 17, **characterized in that** pillar-like supports belonging to parallel-related units are coupled together hydraulically.

20. An arrangement according to claim 14 or claim 17, **characterized in that** pillar-like supports belonging to series-related units are coupled together hydraulically.

Patentansprüche

1. Vorrichtung zum Transportieren eines Schiffes, welche eine Rahmenkonstruktion, mit der Rahmenkonstruktion sowie mit seitlich daran befestigten säulenartigen Stützen verbundene Räder, und einen oder mehrere zwischen den Stützen angeordnete Tragegurte oder ähnliche Vorrichtungen, die zum Festhalten eines Schiffsrumpfes ausgelegt sind, verwendet, **dadurch gekennzeichnet, dass** sich die Rahmenkonstruktion aus einer Reihe einzelner Einheiten zusammensetzt; dass die Einheiten miteinander verbunden sind; und dass die Verbindung einer ersten Einheit mit einer zweiten Einheit eine Biegebewegung in einer horizontalen Biegelinie liefert.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Vorrichtung mindestens einen Abstandsarm aufweist, und vorzugsweise zwei Abstandsarme, die horizontal beabstandet voneinan-

der angeordnet sind.

3. Vorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die Länge des Abstandsarms 30 bis 80 % der Länge einer Einheit entspricht.

4. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** zwei parallel ausgerichtete Einheiten mit Hilfe eines oder zweier Querbalken miteinander verbunden sind.

5. Vorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** ein Balken so ausgelegt ist, dass er die Vorder- oder Mittelabschnitte zweier aneinander angrenzender Einheiten miteinander verbindet.

6. Vorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** der andere Balken so ausgelegt ist, dass er andere Abschnitte zweier aneinander angrenzender Einheiten miteinander verbindet.

7. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** jede Einheit mindestens zwei säulenartige Stützen aufweist, deren Drehachsen mittig in Bezug auf die Einheit angeordnet sind.

8. Vorrichtung nach Anspruch 7, **dadurch gekennzeichnet, dass** jede Einheit vier säulenartige Stützen mit zwei Drehachsen aufweist, die relativ zur Einheit mittig angeordnet sind, und zwei Drehachsen, die in Entfernung zur Einheit angeordnet sind.

9. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** jeweilige säulenartige Stützen unmittelbar oberhalb einer Radachse angeordnet sind.

10. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** sich die Einheit aus einer Rahmenkonstruktion zusammensetzt, an welcher mindestens zwei an einem Fahrgestell aufgehängte und schwenkbare Räderpaare befestigt sind.

11. Vorrichtung nach Anspruch 1 oder Anspruch 10, **dadurch gekennzeichnet, dass** mindestens vier am Fahrgestell aufgehängte Räderpaare jeweils paarweise an der Rahmenkonstruktion befestigt sind.

12. Vorrichtung nach Anspruch 1 oder Anspruch 11, **gekennzeichnet durch** zweifach am Fahrgestell aufgehängte Räderpaare, wobei mindestens vier derartige Räderpaare jeweils paarweise an der Rahmenkonstruktion befestigt sind.

13. Vorrichtung nach Anspruch 12, **dadurch gekennzeichnet, dass** eine gerade Anzahl von Rahmenkonstruktionen, wie beispielsweise vier Rahmenkonstruktionen, zur Bildung einer U-Konfiguration miteinander verbunden sind.

14. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** sich die säulenartigen Stützen einer Einheit aus hydraulischen Kolben-Zylinder-Vorrichtungen zusammensetzen, die hydraulisch miteinander verbunden sind.

15. Vorrichtung nach Anspruch 1 oder 4, **dadurch gekennzeichnet, dass** der Abstand zwischen zwei miteinander verbundenen Einheiten über das Hilfsmittel des einen oder der mehreren Querbalken eingestellt werden kann.

16. Vorrichtung nach Anspruch 1, 4 oder 16, **dadurch gekennzeichnet, dass** die Querbalken von einer darunter befindlichen Stützoberfläche aus auf der selben Höhe angeordnet sind wie die Radachsen.

17. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** eine Einheit, auf jeder Seite des Schiffs, eine eigene motorgetriebene hydraulische Pumpe mit einer Steuereinheit einschließt; und dass jede weitere Einheit auf der selben Seite hydraulisch mit der die hydraulische Pumpe aufweisenden Einheit verbunden ist.

18. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** jede Einheit Vorrichtungen zum Betätigen der Drehung der Räder aufweist.

19. Vorrichtung nach Anspruch 14 oder 17, **dadurch gekennzeichnet, dass** die säulenartigen Stützen, welche zu parallel angebrachten Einheiten gehören, hydraulisch miteinander verbunden sind.

20. Vorrichtung nach Anspruch 14 oder Anspruch 17, **dadurch gekennzeichnet, dass** die säulenartigen Stützen, welche zu in Reihe angebrachten Einheiten gehören, hydraulisch miteinander verbunden sind.

Revendications

1. Dispositif de transport de navire qui utilise une construction en bâti, des roues reliées à ladite construction en bâti et des supports semblables à des piliers reliés aux côtés, et une ou plusieurs sangles porteuses ou dispositifs de ce genre placées entre lesdits supports et fonctionnant pour maintenir une coque de navire, **caractérisé en ce que** ladite construction en bâti comprend un certain nombre d'unités individuelles ; **en ce que** lesdites unités sont couplées ensemble ; et **en ce que** le couplage d'une première unité à une deuxième unité assure un mouvement de flexion sur une ligne de flexion horizontale.

2. Dispositif selon la revendication 1, **caractérisé en ce que** le dispositif comprend au moins un bras d'écartement, et de préférence deux bras d'écartement qui sont espacés l'un de l'autre horizontalement.

3. Dispositif selon la revendication 2, **caractérisé en ce que** la longueur du bras d'écartement correspond à 30-80% de la longueur d'une unité.

4. Dispositif selon la revendication 1, **caractérisé en ce que** deux unités orientées parallèlement sont couplées ensemble par l'intermédiaire d'une ou deux poutres transversales.

5. Dispositif selon la revendication 4, **caractérisé en ce que** qu'une poutre est adaptée pour raccorder ensemble les parties frontales ou les parties centrales de deux unités adjacentes.

6. Dispositif selon la revendication 5, **caractérisé en ce que** l'autre poutre est adaptée pour raccorder d'autres parties de deux unités adjacentes.

7. Dispositif selon la revendication 1, **caractérisé en ce que** chaque unité comprend au moins deux supports semblables à des piliers dont les axes de rotation sont placés au centre par rapport à l'unité.

8. Dispositif selon la revendication 7, **caractérisé en ce que** chaque unité comprend quatre supports semblables à des piliers avec deux axes de rotation placés au centre par rapport à l'unité et deux axes de rotation placés à distance de l'unité.

9. Dispositif selon la revendication 1, **caractérisé en ce que** des supports respectifs semblables à des piliers sont positionnés juste au-dessus d'un axe de roue.

10. Dispositif selon la revendication 1, **caractérisé en ce que** l'unité est constituée d'une construction en bâti à laquelle sont fixées au moins deux paires de roues pivotantes suspendues par des bogies.

11. Dispositif selon la revendication 1 ou la revendication 10, **caractérisé en ce qu'**au moins quatre paires de roues suspendues par des bogies sont fixées deux par deux à la construction en bâti.

12. Dispositif selon la revendication 1 ou la revendication 11, **caractérisé en ce que** des doubles paires de roues suspendues par des bogies, au moins quatre telles paires de roues, sont fixées deux par deux à la construction en bâti.

13. Dispositif selon la revendication 12, **caractérisé en ce qu'**un nombre pair de constructions en bâti, par exemple quatre constructions en bâti, sont couplées ensemble pour former une configuration en U.

14. Dispositif selon la revendication 1, **caractérisé en ce que** les supports semblables à des piliers d'une unité sont constitués de dispositifs hydrauliques à pistons et cylindres qui sont couplés ensemble hydrauliquement.

15. Dispositif selon la revendication 1 ou la revendication 4, **caractérisé en ce que** la distance entre deux unités couplées ensemble peut être ajustée par l'intermédiaire desdites une ou plusieurs poutres transversales.

16. Dispositif selon la revendication 1, 4 ou 16, **caractérisé en ce que** les poutres transversales sont positionnées à la même hauteur à partir d'une surface de support sous-jacente que les axes des roues.

17. Dispositif selon la revendication 1, **caractérisé en ce qu'**une unité de chaque côté du navire comprend sa propre moto-pompe hydraulique avec une unité de commande ; et **en ce que** chaque autre unité du même côté est couplée hydrautiquement à l'unité équipée de ladite pompe hydraulique.

18. Dispositif selon la revendication 1, **caractérisé en ce que** chaque unité comprend des moyens pour activer la rotation des roues.

19. Dispositif selon la revendication 14 ou la revendication 17, **caractérisé en ce que** les supports semblables à des piliers appartenant à des unités reliées en parallèle sont couplés ensemble hydrauliquement.

20. Dispositif selon la revendication 14 ou la revendication 17, **caractérisé en ce que** les supports semblables à des piliers appartenant à des unités reliées en série sont couplés ensemble hydrauliquement.

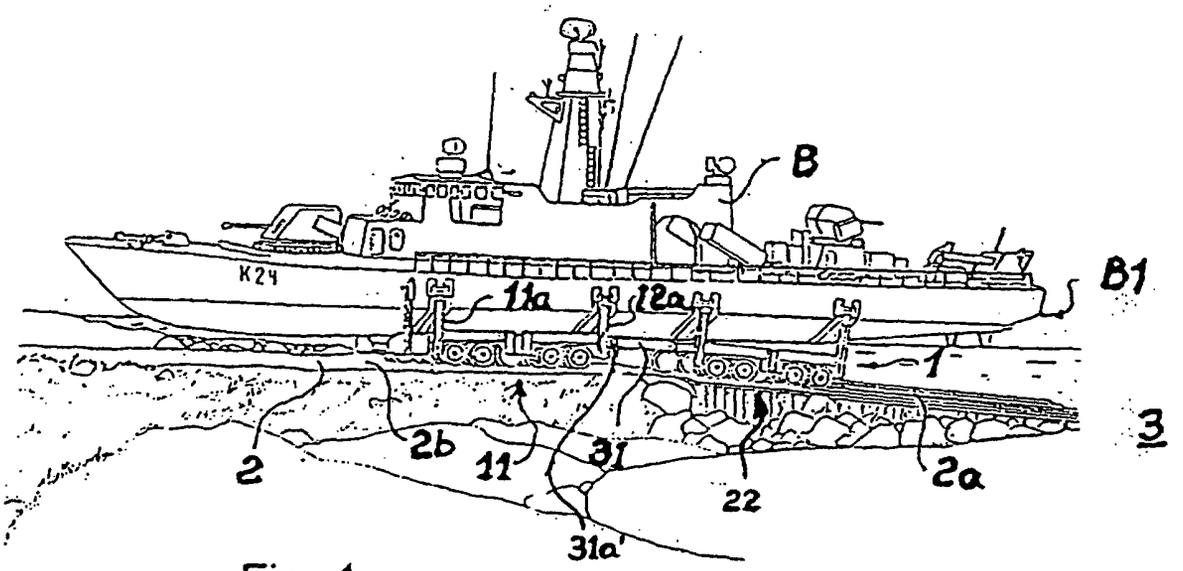

B
B1
11a
12a
1
3
2
2b
11
31
22
2a
31a'

Fig. 1

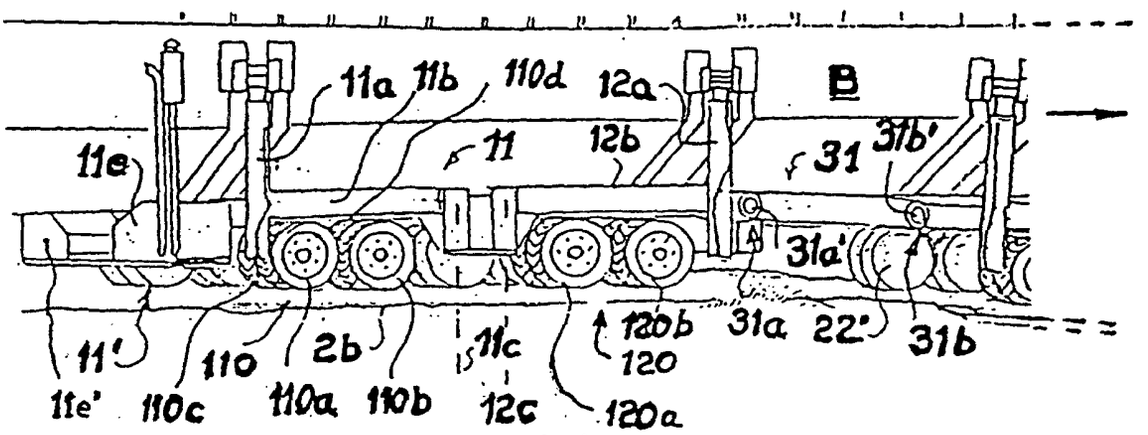
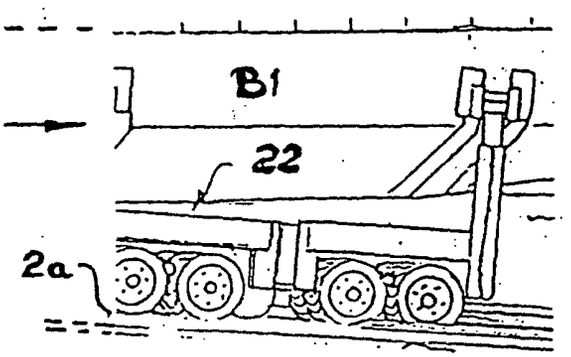

11a
11b
110d
12a
B
11e
11
12b
31
31b'
31a'
11'
110
2b
11c
120b
31a
22'
31b
120
11e'
110c
110a
110b
12c
120a

Fig. 2


B1
22
2a

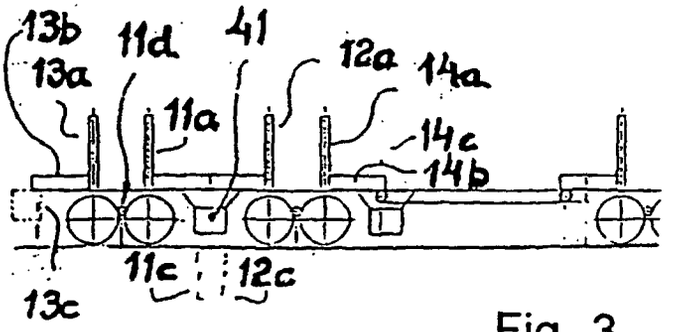


Fig. 3

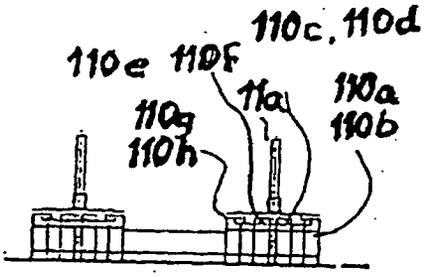


Fig. 4

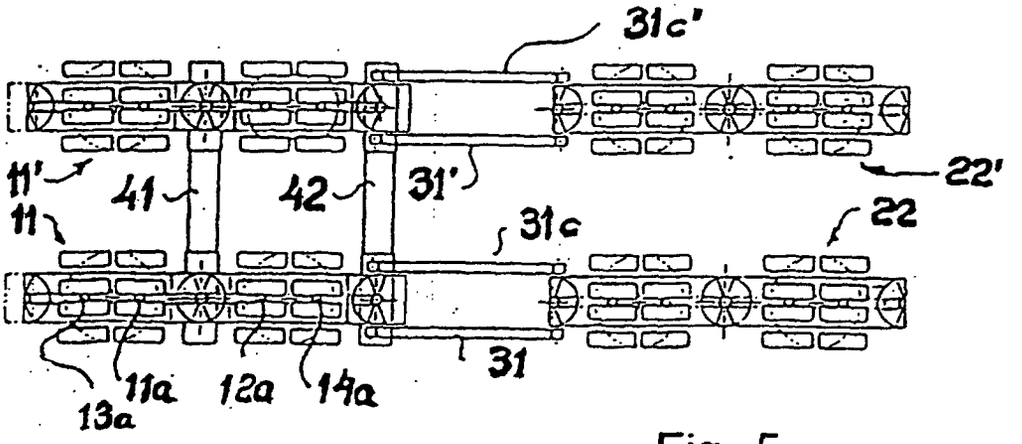


Fig. 5