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(54) Moving gangway for boats with vertical movement

(57) A moving gangway (1) for a boat comprises at least one gangway element (2, 3), defining a passage surface (P) for the transit of persons, and a support structure (10), which can be assembled fixedly to the boat. The gangway element is assembled to the support struc-

ture in such a way as to be able to move. The gangway comprises connection levers (21, 22, 23, 24) which can connect the gangway element to the support structure in such a way that the gangway element can move along a translational path (V) substantially perpendicular to the passage surface.

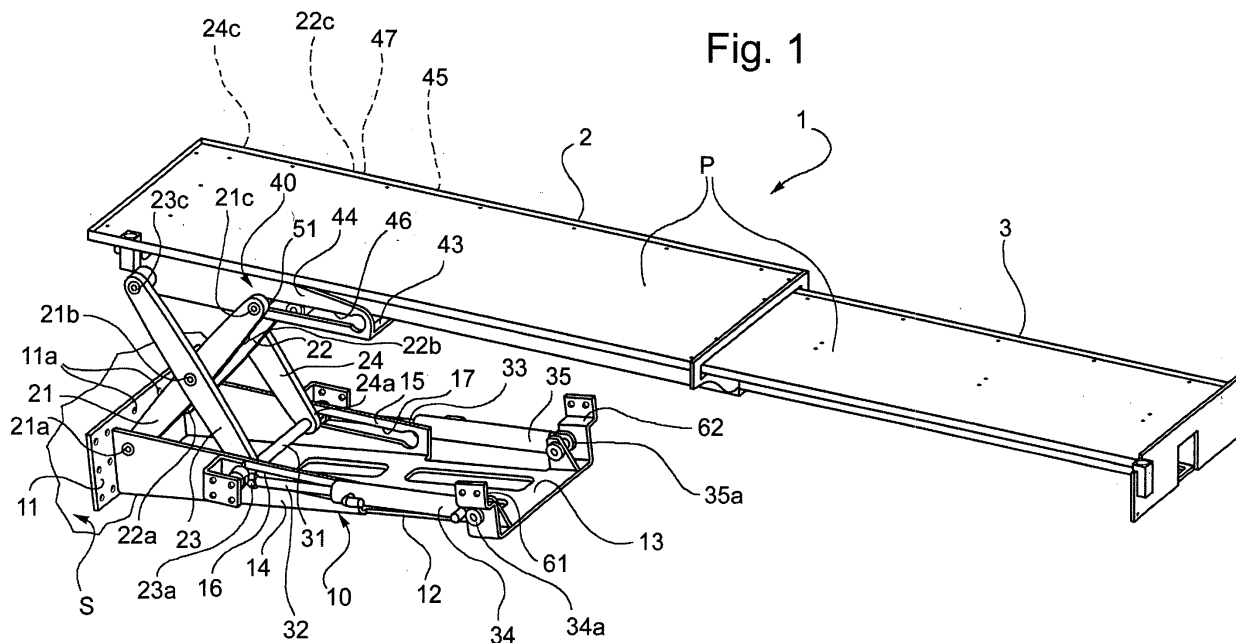


Fig. 1

Description

[0001] The present invention relates to a moving gangway for a boat, comprising at least one gangway element, defining a passage surface for the transit of persons, and support means, which can be assembled fixedly to said boat and to which said gangway element is movably assembled.

[0002] Conventional automated gangways are generally pivoted at one end to the body of the boat and have a control system, generally hydraulic, which can lower or raise them via one or more hydraulic cylinders controlled by a control unit actuated by an operator, so as to rest the other end of the gangway on the structure to which the boat is moored, for example a jetty.

[0003] The moving gangway according to the invention is characterized in that it comprises connection means for connecting said gangway element to said support means in such a way that said gangway element can move along a translational path substantially perpendicular to said passage surface.

[0004] Particular embodiments of the invention are defined in the dependent claims.

[0005] A preferred but non-limiting embodiment of the invention will now be described with reference to the attached drawings, in which:

- Figure 1 is a perspective view of a gangway for a boat according to the invention; and
- Figure 2 is a partial view in side elevation of the gangway of Figure 1.

[0006] With reference to the figures, these show a gangway 1 according to the invention which can be assembled to a boat S, comprising one or more elongate gangway elements 2, 3 which define a surface P for the passage of persons between the boat S (a portion of which is shown in the figures) and a mooring structure, for example a jetty (not shown). In the present description, the terms proximal and distal are used with reference to the point of assembly of the gangway 1 to the boat S.

[0007] In the example shown, the proximal and distal gangway elements 2, 3 are arranged in such a way as to form a telescopic structure which can extend in the known manner to reach a predefined maximum length of extension. In particular, the proximal gangway element 2 has a box-like structure into which the distal gangway element 3 can slide. To this end, inside the box-like element 2 a fluid-actuated cylinder 4 is mounted, whose bottom end is pivoted at 5 to the body of the box-like element 2 and whose rod (not shown) is secured to the distal gangway element 3. Naturally, this arrangement is only an example, the invention also being suitable for a gangway with a single gangway element.

[0008] The gangway 1 also comprises a stationary support structure 10, comprising a flange portion 11 which can be fixed at a predefined point on the boat S, for example by means of bolts 11a, and a projecting por-

tion 12 extending substantially perpendicularly to said flange portion 11. The projecting portion 12 of the support structure 10 has a base wall 13 from whose opposite sides extend, in a substantially vertical direction, side walls or wings 14 and 15. The side walls 14 and 15 are also connected to the flange portion 11 of the support structure 10. The side walls 14 and 15 have through slots, 16 and 17 respectively, made in them, these slots running substantially perpendicularly to the flange portion 11.

[0009] The lower end of a lever 21, 22, respectively is pivoted to the proximal end of each side wall 14, 15, at the pivot points 21a and 22a. Each lever 21, 22 is also pivoted to a lever 23, 24, respectively, at a pivot point 21b and 22b. The lower ends of the levers 23 and 24 are pivoted to a pin 31, at opposite ends of said pin, at the pivot points 23a and 24a, respectively. The pin 31 runs transversely to the direction of extension of the support structure 10 and its opposite ends pass through the slots 16 and 17, respectively. The free end of rods 32 and 33, respectively, of fluid-actuated cylinders 34 and 35 are pivoted to the portions of the pin 31 which project laterally outwards from the side walls 14 and 15. The cylinders 34 and 35 are also pivoted at the bottom to the distal end of the support structure 10, at pivot points 34a and 35a respectively.

[0010] A moving support structure 40 is arranged above the stationary support structure 10, the proximal gangway element 2 being assembled to said moving support structure. This support structure 40 has a base wall 43, from whose opposite sides extend, in a substantially vertical direction, side walls or wings 44 and 45 (the wall 45 is not visible in the figures). The side walls 44 and 45 have respective through slots 46 and 47 made in them (the slot 47 is not visible in the figures), these slots running parallel to the slots 16 and 17 in the stationary support structure 10. The upper ends of the levers 23, 24, respectively, are pivoted to the proximal end of each side wall 44, 45, at the pivot points 23c and 24c (the pivot point 24c is not visible in the figures). The upper ends of the levers 21 and 22 are pivoted to a pin 51, at opposite ends of this pin, at pivot points 21c and 22c, respectively (the pivot point 22c is not visible in the figures). The pin 51 runs transversely to the direction of extension of the support structure 40 and its opposite ends pass through the slots 46 and 47, respectively.

[0011] The levers 21, 22 and 23, 24 are the same length between their opposite end pivot points, and their intermediate pivot points 21b and 22b are located half way along their length. The overall structure of the gangway 1 is also substantially symmetrical with respect to a vertical plane passing through the centre line of the gangway 1. The slots 16, 17, 46, 47 are aligned with the pivot points 21a, 22a, 23c and 24c, respectively, while the pivot points 23a, 24a, 21c, 22c can move in translation along the slots 16, 17, 46 and 47, respectively. In this way, the levers 21, 22 and 23, 24 perform overall a pantograph-type movement, commanded by the cylinders 34 and 35, in which the moving support structure 40 can move in

translation in a vertical direction, marked V in Figure 2, i.e. perpendicular to the passage surface P. The extension of the slots thus determines the vertical path of the moving support structure 40. The distal ends of the slots are arranged at a distance from the pivot points with which they are each aligned in such a way as to allow the gangway element 2 to be lowered until it comes to rest on stops 61, 62 provided on the stationary support structure 10.

[0012] Preferably, the gangway 1 described herein can also perform another kind of movement. Specifically, the proximal gangway element 2 is pivoted, at 71, to the moving support structure 40 in such a way that it can rotate in a vertical plane parallel to the direction of extension of the gangway 1, in the direction indicated by the arrow R. The tilting movement of the gangway element 2 with respect to the moving support structure 40 is commanded in the known manner by a fluid-actuated cylinder 80, whose rod 81 is pivoted at its free end to the proximal element 2 of the gangway 1, at 82. The bottom end of the cylinder 80 is pivoted to a bracket 85 fixed to the moving support structure 40.

[0013] It is understood that the embodiment described herein is to be interpreted as an exemplary embodiment of the invention; the invention can however be modified in terms of the form and arrangement of parts, and constructional and operational details. In particular, the vertical movement could be achieved using means other than the pantograph configuration described above, or the gangway according to the invention could be capable of additional rotational movement in a horizontal plane, for example by providing it with a turntable, in accordance with the many possible variants deemed appropriate by those skilled in the art.

Claims

1. Moving gangway (1) for a boat, comprising at least one gangway element (2, 3), defining a passage surface (P) for the transit of persons, and support means (10), which can be assembled fixedly to said boat and to which said gangway element is movably assembled, **characterized in that** it comprises connection means (21, 22, 23, 24) for connecting said gangway element to said support means in such a way that said gangway element can move along a translational path (V) substantially perpendicular to said passage surface.
2. Gangway according to Claim 1 in which said connection means are located between said support means and said gangway element.
3. Gangway according to Claim 2 in which said connection means are arranged in such a way as to be able to perform a pantograph-type movement.
4. Gangway according to Claim 3 in which said connection means comprise, on each side of said gangway element, a pair of levers (21, 22, 23, 24), in which each pair comprises two levers pivoted together at the centre and each having an end pivot point (21a, 22a, 23c, 24c) which is fixed with respect to one of said gangway elements and support means and an end pivot point (21c, 22c, 23a, 24a) which can move in translation in a guide (16, 17, 46, 47) which is fixed with respect to one of said gangway elements and support means.
5. Gangway according to one of the preceding claims, comprising a pair of gangway elements (2, 3), one of which is arranged so as to be able to move longitudinally with respect to the other.
6. Gangway according to one of the preceding claims, in which moving support means (40) are located between said connection means and said gangway element, said gangway element being pivoted to the moving support means in such a way as to be able to perform a tilting movement (R).
7. Gangway according to Claim 6 in which said gangway element is also assembled in such a way as to be able to swivel in a plane parallel to said passage surface.

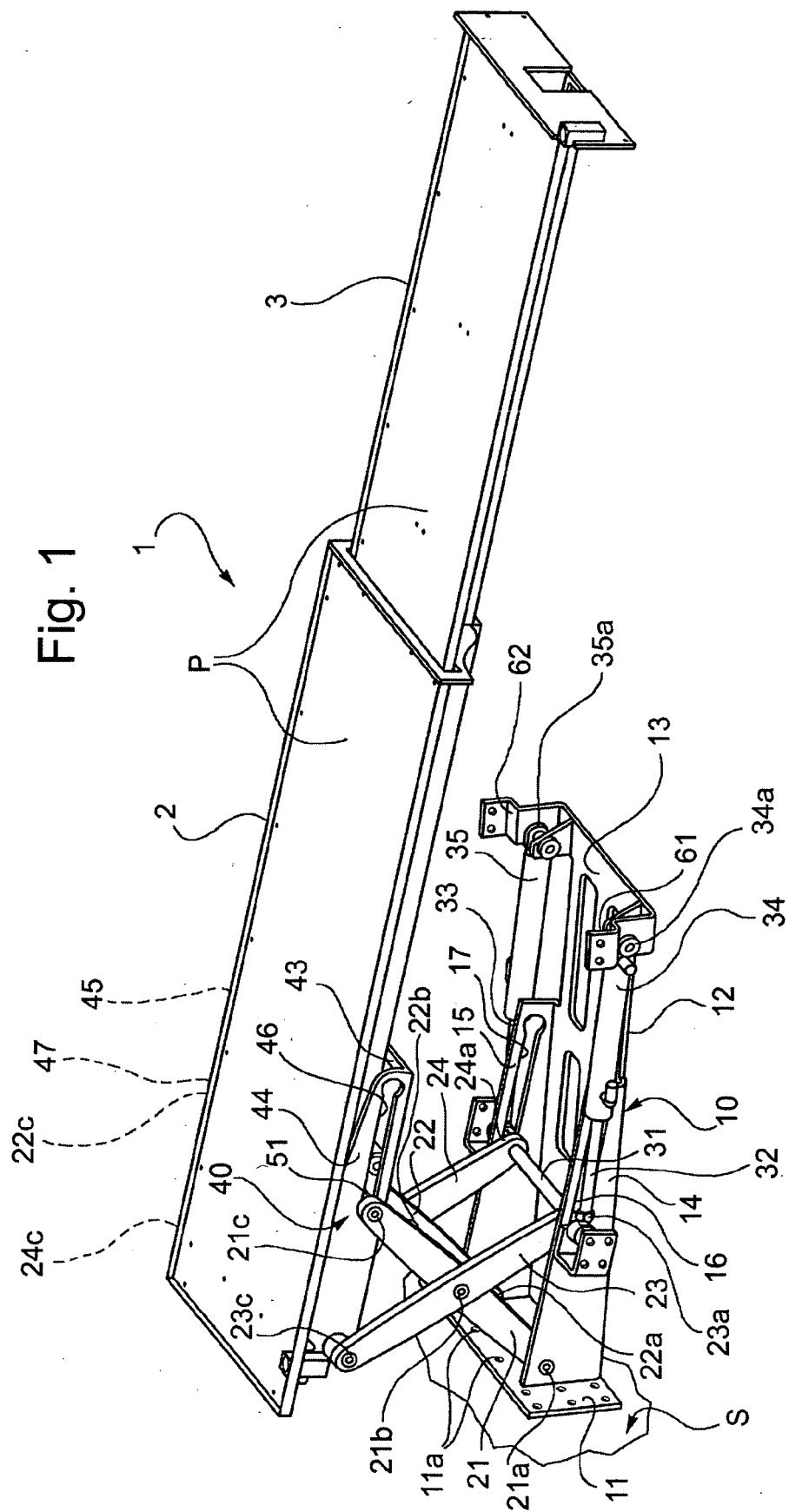
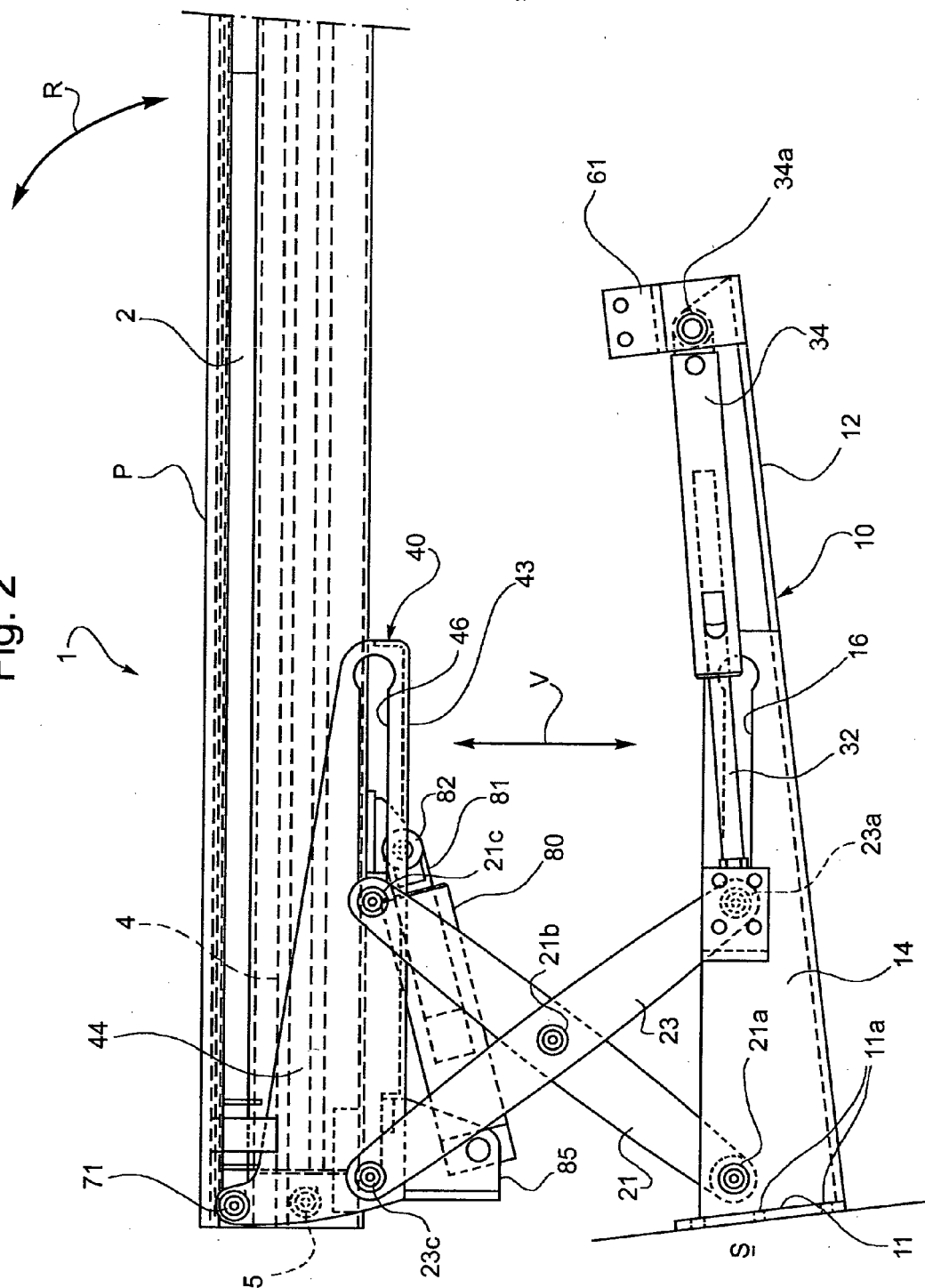


Fig. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5302

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 October 2005	Examiner DE SENA HERNANDORENA
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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