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(54) **BOAT GANGWAY**

(57) Described is gangway (100) for the embarkation and disembarkation of persons on and from a boat, having a modular structure comprising a first section (101), which can be fixed to a boat and open at one end (111) thereof to allow the access to an internal cavity (90), a second section (102), fixed to the first section (101) and having sliding guides (120), a third section (103) slidingly movable along the guides (120) of the second section (102), characterized in comprising a movement system having a spiral nut (1) fixed to the third section (103), a worm screw (2), constrained to slide through the nut (1) and fixed, through a Cardan joint (3), to a rotating shaft (42) driven by a motor (4), so that a rotation of said shaft (42) causes a sliding of the third section (103) along the guides (120) and along a main direction (X), coinciding with the axis of the worm screw (2), so that the gangway (100) can move between a retracted configuration and an extended configuration.

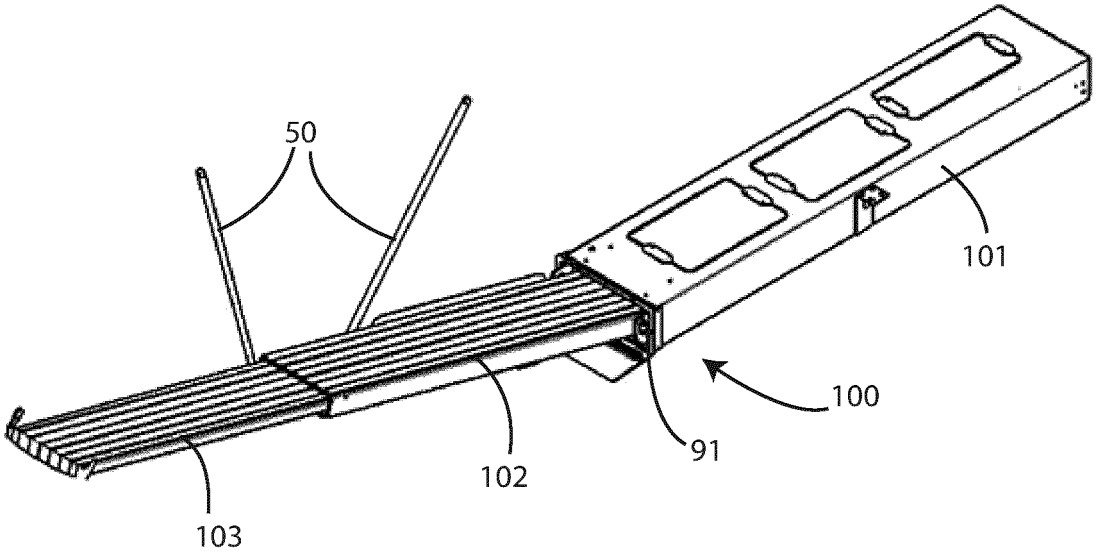

Fig. 3

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Description

[0001] This invention relates to a gangway for pleasure boats or harbour craft.

[0002] More specifically, the invention relates to a gangway, for example installable on the sides of pleasure boats, and conceived to be mobile and extendable, so as to be able to pass from a retracted or rest configuration to an extended or use configuration, and vice versa, by means of a telescopic mechanism.

[0003] Gangways are known in the nautical sector which can be externally associated with pleasure boats or cruise ships of the mobile and tipping type, applied to the boats by means of conventional type moving devices (actuators, pistons, chains, etc.).

[0004] Normally the gangways are hooked to the boat and are extended when it is necessary to embark any passengers, in order to pass to a configuration of use starting from a configuration of rest, and vice versa.

[0005] When not in use, some types of gangways must be manually disassembled in order to be relocated in a separate area, so that they do not hinder the manoeuvres of the boat and the movements of the crew on board it.

[0006] One of the main problems of prior art gangways is represented by their excessive overall size, especially during those situations in which they are not used, for example when the vessel is underway, or when it is at anchor in port and there is no need to embark passengers.

[0007] The problem of the overall size becomes all the more relevant as the size of the gangways increases.

[0008] For the practical needs of the end user, in fact, it is not at all convenient to make gangways with dimensions greater than a certain limit, especially since their length can represent a problem when these have to be stowed away.

[0009] Furthermore, as mentioned, some types of gangways are permanently fixed to the boats, and are moved between the rest configuration and the configuration of use by suitable devices and moving systems.

[0010] Such systems can cause some drawbacks to the operation of the gangways, especially in relation to their reliability and maintenance.

[0011] In fact, the aggressive environmental conditions of marine and/or lake environments (high humidity and possible presence of salts), together with the large number of mechanical components usually necessary for the realization of the mechanisms, make the moving systems particularly susceptible to failures and malfunctions.

[0012] A further drawback of prior art movement systems concerns the excessive use inside them of hydraulic actuators and apparatuses in general, which represent the alternative currently preferred in the sector.

[0013] However, problems relating to water pollution that these systems can cause have long been known, following the release of quantities of oils and/or lubricating products which, although small, continue extensively over time.

[0014] The main aim of the invention is therefore to provide a gangway for boats which solves the above-mentioned drawbacks.

[0015] In particular, an aim of the invention is to provide a gangway for boats equipped with a movement system that is simple to construct and reliable with respect to the prior art.

[0016] Another aim of the invention is to provide a gangway with reduced overall dimensions, especially when this is not in use.

[0017] A further aim of the invention is to provide a gangway for boats having a substantially zero environmental impact.

[0018] Not least, an aim of the invention is that of providing a gangway which is easy and economical to make and use, by virtue of the advantages achieved.

[0019] These and other aims are achieved by a gangway for boats according to claim 1; further details and technical characteristics of the invention are contained in the attached dependent claims.

[0020] The invention will now be described by way of non-limiting example according to some of its preferred embodiments, with the aid of the attached figures, wherein:

Figure 1 is a perspective view of the gangway according to the invention in a first configuration of use;

Figure 2 is a partially sectional view of the system for movement of the gangway, in the configuration shown in Figure 1;

Figure 3 is a perspective view of the gangway according to the invention during the passage into a rest configuration;

Figure 4 is a partially sectional view of the system for movement of the gangway, in the configuration shown in Figure 3;

Figure 5 is a perspective view of the gangway according to the invention in a further configuration of use;

Figure 6 is a partially sectional view of the system for movement of the gangway, in the configuration shown in Figure 5.

Figures 1 and 2 show a view of the gangway 100 and its moving system in the extended configuration of use.

[0021] The gangway 100 is constructed according to a modular structure, comprising three main sections.

[0022] A first section 101, which can be fixed to a boat (not shown) through plates 10, defines a cavity 90 inside it.

[0023] The cavity 90 communicates with the external environment through a first open end 111 of the first section 101; the first end 111 faces the outboard of the boat, and has a door 91 which can be opened or closed as required.

[0024] The space identified by the cavity 90 has the

function of housing a second section 102 and a third section 103 of the gangway 100.

[0025] In detail, the second section 102 is fixed in a second end 112 thereof to a support structure 200, which is movable slidably inside the cavity 90 along a main direction, in this case a horizontal direction.

[0026] The fixing of the second section 102 to the support structure 200 is obtained by means of a hinge 210, around which the second section 102 itself can rotate according to a predetermined angle.

[0027] The second end 112 is also open, communicating with the cavity 90 of the first section 101.

[0028] The second section 102 has an inverted U profile having two lateral guides 120, so as to define an underlying space in which the third section 103 can slide along the guides 120 themselves.

[0029] The movement of the third section 103 occurs through a third open end 113 of the second section 102 itself.

[0030] The three sections 101, 102, 103 are therefore connected to each other to form a telescopic structure.

[0031] The sliding movement of the third section 103 through the opening 113 of the second section 102 is regulated by a movement system comprising at least:

a spiral nut 1;
a worm screw 2;
a Cardan joint 3;
a motor 4.

[0032] The spiral nut 1 is fixed to the third section 103, and is slidingly constrained to the worm screw 2.

[0033] The worm screw 2 is in turn constrained to the Cardan joint 3, specifically to its first fork 31.

[0034] Optionally, there may be a reducer 41, supporting the electric motor 4, which is connected to the first fork 31 by means of a shaft 42, integral with the second fork 32 of the Cardan joint 3 itself; the two forks 31, 32 are connected to each other by a cross journal 33.

[0035] Operationally, the nut 1, the screw 2 and the joint 3 constitute a kinematic chain connecting between the motor 4 and the third section 103 of the gangway 100.

[0036] The motor 4, when activated, causes the rotation of the shaft 42, which in turn rotates the screw 2 through the Cardan joint 3.

[0037] The rotation of the screw 2 causes the sliding on the relative outer surface of the spiral nut 1, along a direction X coinciding with the axis of the screw 2 itself.

[0038] According to the embodiment shown and described, the clockwise rotation of the screw 2 generates a translation of the third section 103 towards the joint 3, so that it falls inside the second section 102, bringing the gangway 100 into the retracted or rest configuration.

[0039] Conversely, a counterclockwise rotation of the shaft 42 will cause the extension of the third section 103, bringing the gangway 100 into the extended or use configuration.

[0040] Advantageously, when the third section 103 is completely retracted into the space below the second section 102, the support structure 200 can be made to slide inside the cavity 90 of the first section 101, substantially in such a way as to eliminate the overall dimensions of the entire structure when not in use.

[0041] In addition to the functions described so far, the presence of the hinge 210 advantageously allows the gangway 100 to be inclined according to a greater or lesser angle with respect to the horizontal, in such a way as to be able to accommodate any unevenness of docks or landing surfaces not perfectly aligned with the first section 101 (as shown in Figures 3 and 5).

[0042] The presence of the Cardan joint 3 ensures that the sliding of the third section 103 is not compromised when the sections 102 and 103 are inclined and the X axis is misaligned with respect to the axis of rotation of the shaft 42 (as shown in Figures 4 and 6).

[0043] Optionally, the gangway 100 can comprise stanchions 50 positioned on one or both of its sides, for fixing any handrails.

[0044] The invention as it is conceived is susceptible to numerous modifications and variants, all falling within the scope of protection of the appended claims.

[0045] Further, all the details can be replaced by other technically-equivalent elements.

[0046] In practice, the materials used, as well as the contingent shapes and dimensions, can be varied according to the contingent requirements and the background art.

[0047] Where the constructional and technical features mentioned in the following claims are followed by signs or reference numbers, the signs or reference numbers have been used only with the aim of increasing the intelligibility of the claims themselves and, consequently, they do not constitute in any way a limitation to the interpretation of each element identified, purely by way of example, by the signs or reference numerals.

Claims

1. Gangway (100) for the embarkation and disembarkation of persons on and from a boat, having a modular structure including

   a first section (101), which is fixable to a boat,
   a second section (102), fixed to the first section (101) and having sliding guides (120),
   a third section (103) slidably movable along the guides (120) of the second section (102),
   characterized in comprising
   a moving system having
   a spiral nut (1) attached to the third section (103),
   a worm screw (2), constrained to slide through the nut (1) and fastened, by means of a cardan joint (3), to a rotating shaft (42) driven by
   a motor (4), so that a rotation of said shaft (42) causes the third section (103) to slide along the

guides (120) and along a main direction (X), coinciding with the worm screw (2) axis, so that the gangway (100) can move between a retracted configuration and an extended configuration.

2. Gangway (100) according to claim 1, **characterized in that** said second section (102) is fixed to said first section (101) by means of a hinge (210), so that it can rotate according to a predetermined angle.

3. Gangway (100) according to claim 2, **characterized in that** said first section (101) is open at one end (111) to allow access to an internal cavity (90), and includes a support structure (200) slidably movable inside the cavity (90) and fixed to said second section (102) by means of the hinge (210), so that said second section (102) can translate inside the cavity (90).

4. Gangway (100) according to claim 2, **characterized in** comprising a panel (91) at the first end (111) of said first section (101) to allow or prevent access to said cavity (90).

5. Gangway (100) according to any of the previous claims, **characterized in that** said moving system includes a gearbox (41) connected to the motor (4) and to the shaft (42).

6. Gangway (100) according to any of the previous claims, **characterized in that** said first section (101) can be fastened to a boat by means of plates (10).

7. Gangway (100) according to any of the previous claims, **characterized in** including stanchions (50) for fixing a handrail to the gangway (100).

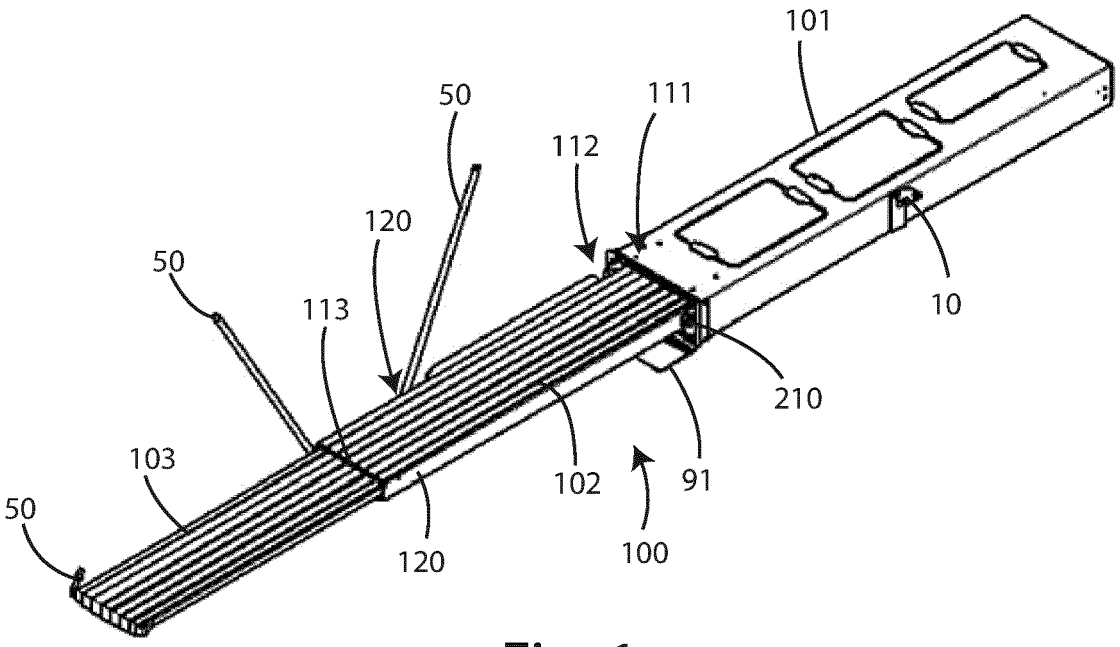
101
50
111
112
120
50
113
10
210
103
102
91
50
120
100

Fig. 1

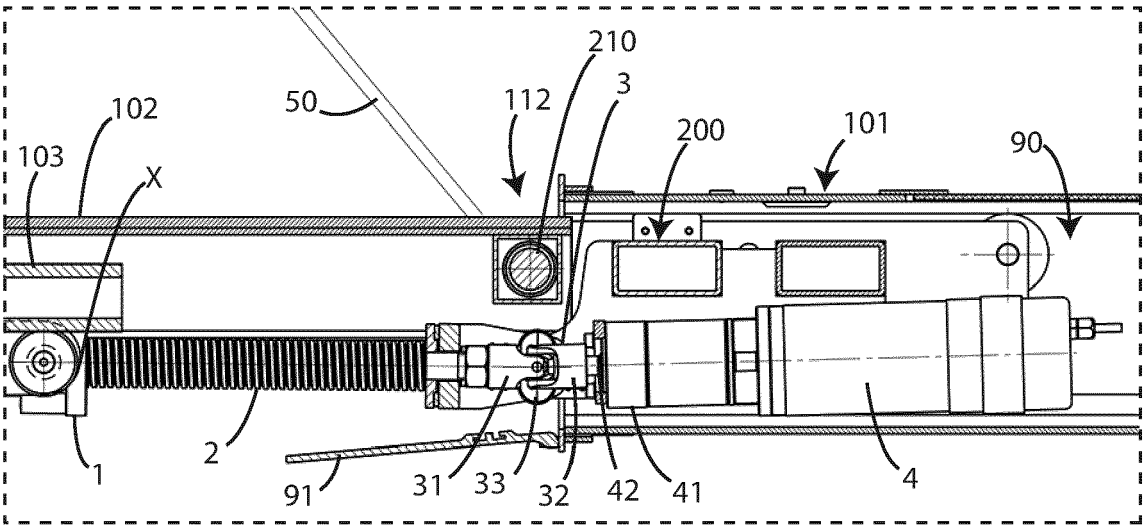
210
102
50
112
3
200
101
90
103
X
2
1
91
31
33
32
42
41
4

Fig. 2

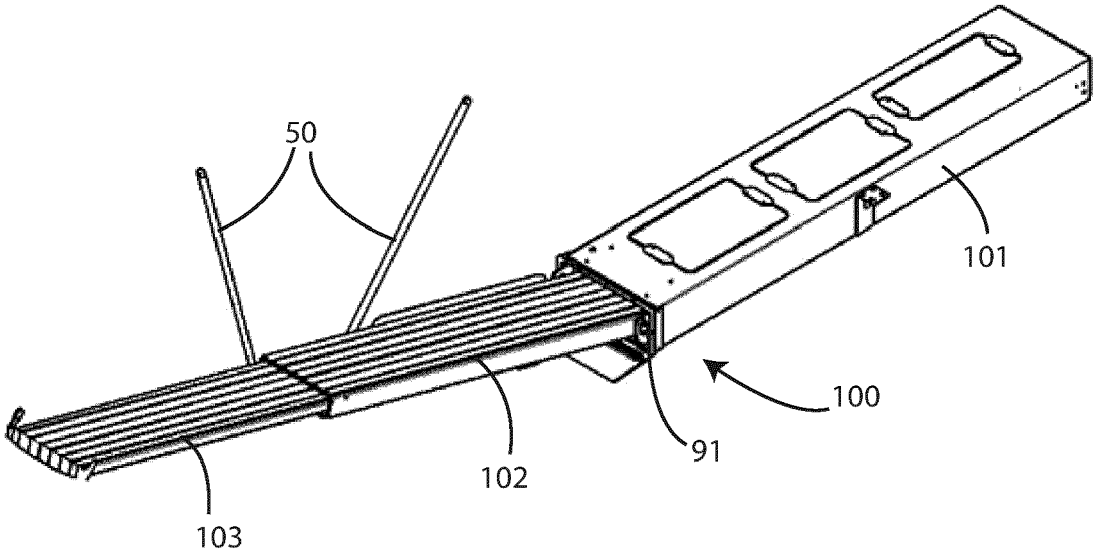

Fig. 3

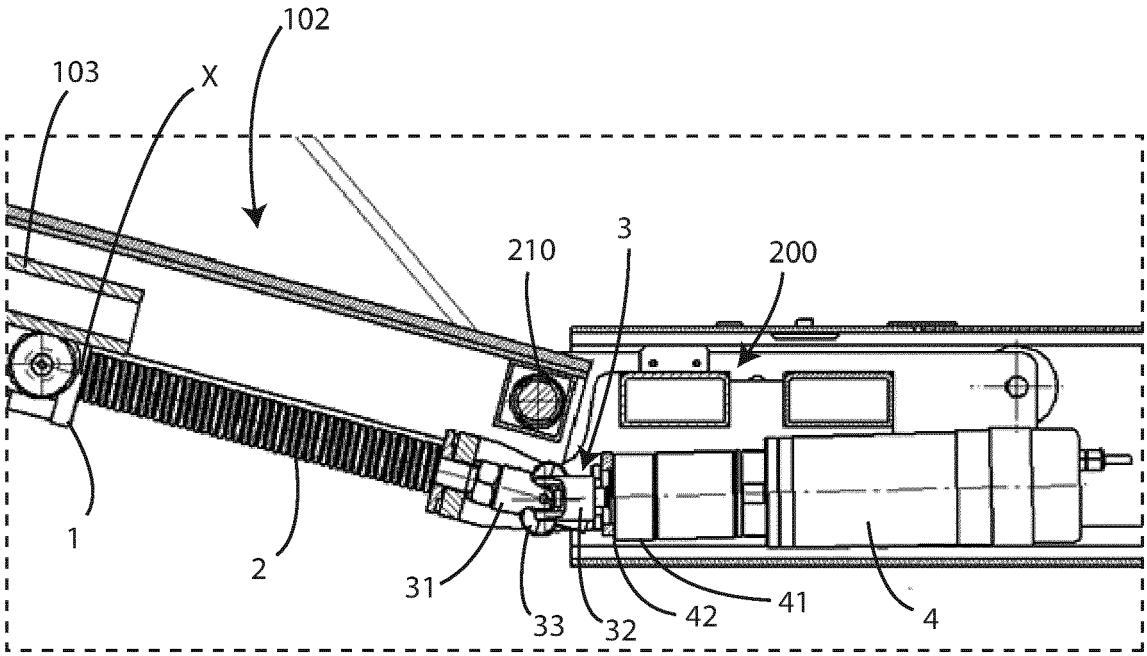

Fig. 4

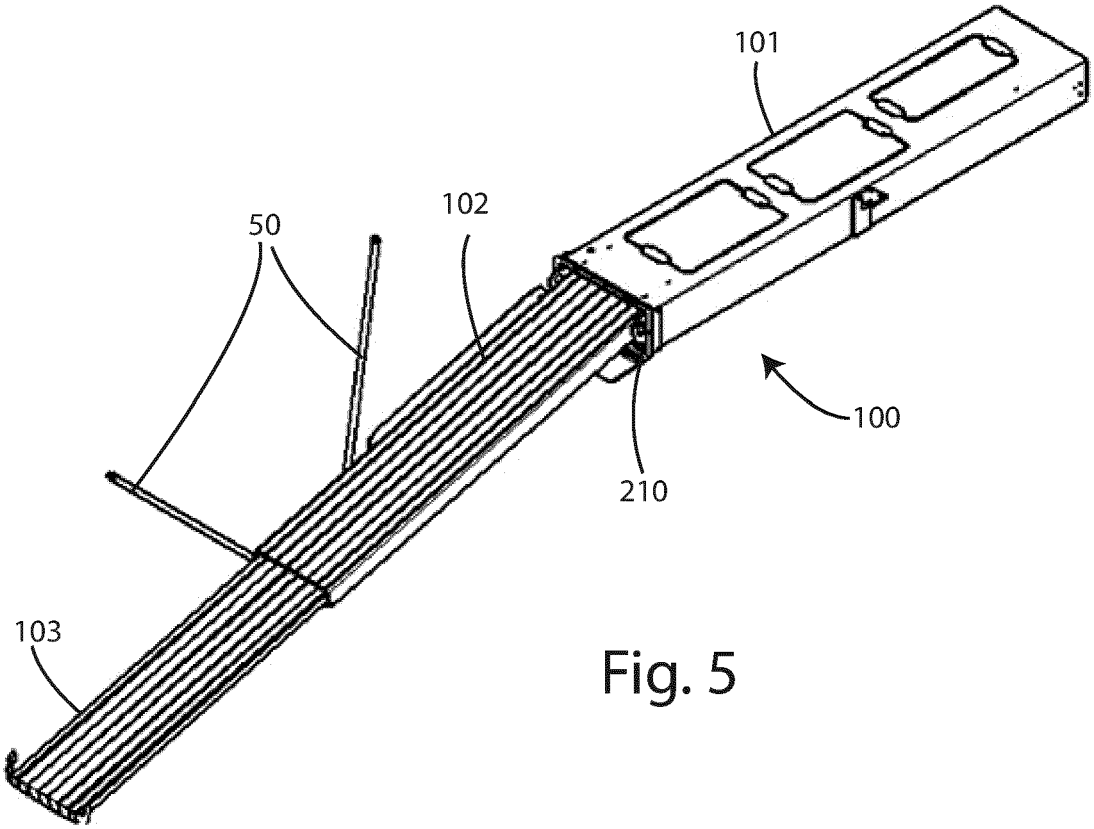

Fig. 5

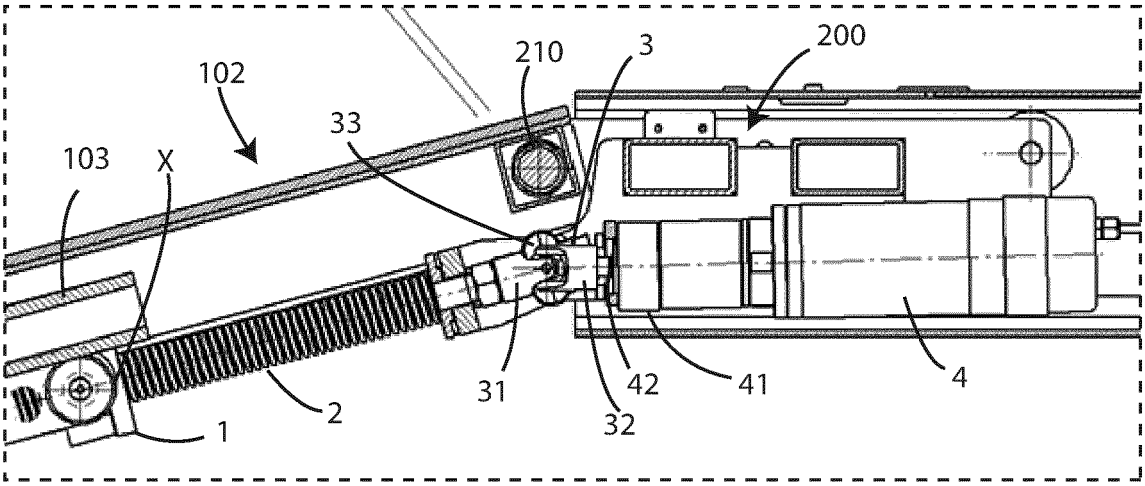

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 21 20 3059

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

B63B

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 March 2022	Freire Gomez, Jon

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03-03-2022

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