(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 540 953 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.01.2013 Bulletin 2013/01

(51) Int Cl.:
E06C 7/16 *(2006.01)*

(21) Application number: **12004825.1**

(22) Date of filing: **27.06.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **28.06.2011 IT RM20110114**

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(54) **Board device to operate safely on ladders**

(57) A board device (1) to operate safely on stairs, particularly for ladders, comprising:
- a supporting frame (3) provided with hooks (4) for clamping to at least one step (5) of a stair (2), and
- a pair of footboards (6) placed side by side and arranged to be turned over with respect to said supporting frame

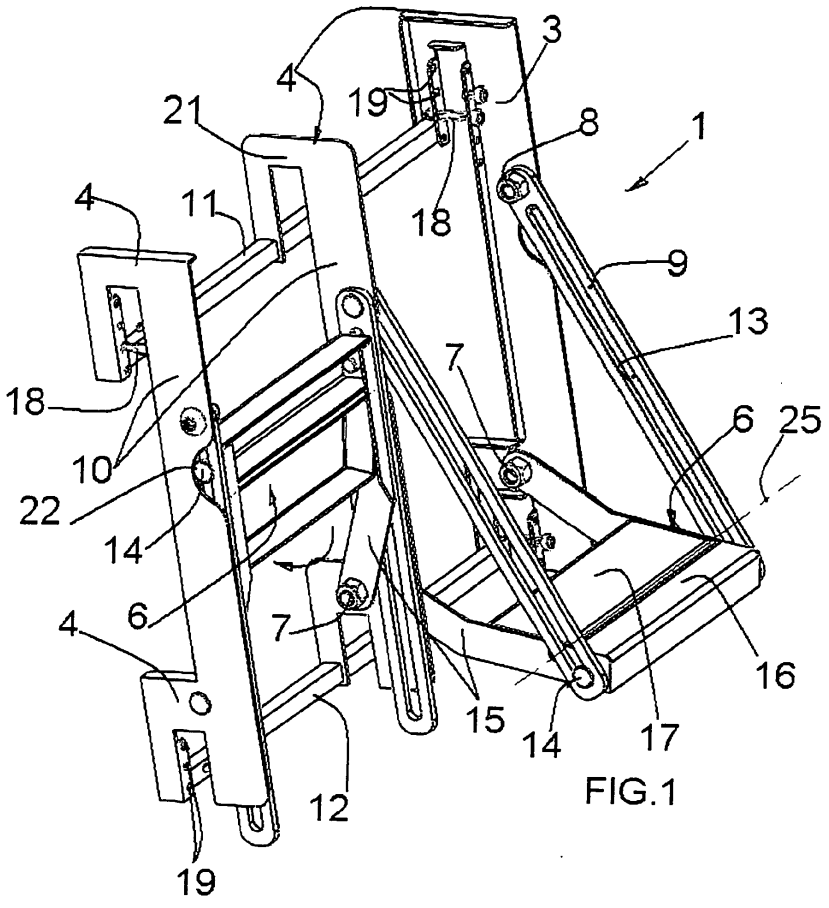

FIG.1

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Description

Technical Field

[0001] The present invention relates to board device to operate safely on stairs, fixed and portable stairs, particularly for ladders.

[0002] Principally, the present invention relates to a platform applicable to different types and sizes of ladders, for example leaning ladders used for building maintenance (power lines, facades preservation, or other).

Background art

[0003] At the state of the art, there are known stairs provided with footboards or platforms, with a fixed structure. These kinds of devices oblige the operator, who is climbing on the ladder, to pass over the footboard of the ladder.

[0004] This is due to the fact that these platforms protrude from the natural ascent line of the stairs because of their fixed form, and they therefore represent a major obstacle for workers.

[0005] In fact, it is required for the operator to bend his body back, to avoid bumping into the platform with his knees, increasing the risk of falling during a phase which is already difficult itself.

Disclosure of the invention

[0006] The object of the present invention is to eliminate the drawbacks noted above in known types of devices to operate on stairs, fixed and portable stairs, in particular on ladders, which can permit to secure an operator which is climbing on a ladder, stair or similar, and maneuver at a certain height which is dangerous forfalling.

[0007] This aim and these and other objectives which will become better apparent hereinafter, are achieved by a board device to operate safely on stairs, particularly for ladders, comprising:

- a supporting frame provided with hooks for clamping to at least one step of a stair, and
- a pair of footboards placed side by side and arranged to be turned over with respect to said supporting frame in order that each one of the footboards passes independently from a closed configuration to an open operating configuration.

Brief description of the drawings

[0008] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of the board device to operate safely on stairs, particularly for ladders, illustrated only by way of non-limitative example with the aid of the accompanying drawings wherein:

Figure 1 represents a portion of the board device in operating configuration, in perspective view;

Figure 2 represents, in a perspective view, a portion of the device of the preceding Figure, applied to a ladder, in the initial closed configuration;

Figure 3 shows a portion of the device in semi-open position;

Figure 4 shows a portion of the device, completely opened, in the final configuration.

Ways of carrying out the Invention

[0009] With reference to the figures, a board device to operate safely on stairs, particularly for ladders, according to the invention, is generally designated by the reference numeral 1.

[0010] One of the features of the device 1 is that it comprises a supporting frame 3 provided with hooks 4 for clamping to at least one step 5 of a stair 2, and a pair of footboards 6 placed side by side and arranged to be turned over with respect to developing direction of the supporting frame 3, in order that each one of the footboards is able to pass from a closed configuration to an open operating configuration, one independently from the other.

[0011] The device pair of footboards 6 are connected to the frame 3 by means of rotational fulcrums distribution: pivots 7 and rotation hinges 8.

[0012] In particular, the frame 3 comprises uprights 10 made for example of metal foils and provided, at the upper and lower extremities, of series of hooks 4. The hooks are arranged to be connected with two corresponding steps 5 of the stair 2 and to be linked with respective crosspieces 11 and 12.

[0013] Preferably, the crosspieces 11 and 12 are adjustable in length and the distance between the two series of hooks 4 is also adjustable in order to mount precisely the device 1 on stairs with different widths and which comprise steps placed at different distances.

[0014] Moreover, in correspondence of the hooks 4 may be provided for anti-unthreading pins 18, for example metal split pins, inserted in a stable manner through holes 19 in order to close the step 5 inside of the hook 4.

[0015] Preferably, there are provided additional holes 19 in order to adjust the distance between the pins 18 and the hooks 4, by means of a transverse crosspiece 21, depending on the size of the step 5, and thus it may be avoided the option of an excessive possibility of movement of the step inside of the hooks 4.

[0016] In addition, it may be provided a threaded pressure screw 24 which passes through one of the holes 19 and intended to be mounted in compression against the step 5 for increasing the stability of the support of the device 1.

[0017] In a preferred embodiment, the depth of the hooks 4, or the length of the transverse crosspiece 21,

may also be adjustable to adapt the hook 4 in steps of different sizes.

[0018] According to the present invention, the two footboards 6 comprise, at one end, first rigid rods 15 which are arranged to be rotated about pivots 7 mounted on the supporting frame 3. The footboards 6 comprise also, at the opposite end, second slotted rods 9 which are hinged at rotation hinges 8 of said supporting frame 3 and which are arranged to slide, into a slot 13 of the second slotted rod 9, with respect to a pin 14. The pin 14 is integrally connected to the footboards 6.

[0019] Preferably, the footboards 6 comprise a first rigid part 16 and a movable driving part 17. This part 17 is articulated, with respect to the first part 16, about an axis 25, in order to oscillate toward the inner side of the stair (see the direction of arrow in Fig. 1).

[0020] Advantageously, according to this solution, the part 17 allows the insertion of a foot of the operator during the climb and to gain spontaneously the position of alignment with the fixed section 16 when the device is in action. Thus, the risk that an operator may fall is further reduced, while the useable surface for foot placement remains the same, as it will be better specified below.

[0021] In use, once the frame 3 is adjusted according to the size of the scale 2, it is attached to the steps 5 by means of the hooks 4, which are then closed by means of the anti-unthreading pins 18. In the initial configuration, the device 1 is contained within the overall dimensions defined by the legs 23 of the ladder 2 (Fig. 2).

[0022] Advantageously, the footboards 6 have cross dimensions such as to be completely inside the space defined by the uprights 10 of the frame 3, possibly provided with notches 22 to allow the complete closure of the footboards 6 and to compensate for the excess in width due to the pins 14 of the footboards.

[0023] With the device in the configuration of Figure 1, the operator can climb the ladder and pass without any difficulty the point of installation of the device, with the possibility to rest feet on step 5 of the lower connection.

[0024] As mentioned above, this maneuver is particularly facilitated by the conformation of the movable section 17 of the footboards 6.

[0025] To break down the footboards, the operator must only raise one of two feet up, firmly remaining into abutment with the other foot and then pull down one of the two footboards as shown in Figure 3.

[0026] At this point, it will be sufficient to place only one foot on the lower footboard and safely perform the same maneuver pulling down the second footboard to obtain the open configuration of Figure 4.

[0027] From what has been described above it is therefore evident that the invention achieves the proposed aim and objectives and, in particular, the fact is stressed that the board device to operate safely on stairs, particularly for ladders, practically eliminates the risk of falls due to tripping on the footboard, because climbing the stair with the footboard in the closed configuration the operator can overpass the footboard itself in a normal manner, resting his feet on the steps of the ladder. At this point the operator can turn over the footboard using just one foot positioning the device in the operating configuration.

[0028] In this configuration, the operator is able to rest his feet on both the footboards and to operate, in safety and comfort, at the desired level of the stair.

[0029] In a preferred embodiment, the device is made of bent and welded metal foil, but it is understood that all the details may further be replaced by other technically equivalent elements.

[0030] In practice, the materials used, as well as the dimensions, may any, according to requirements.

[0031] Moreover, the employment of means easily available commercially and the usage of common materials make the device economically competitive.

[0032] Although the disclosed embodiments have been fully described with reference to the accompanying drawings, it is to be noted that various changes and modifications will become apparent to those skilled in the art. Such changes and modifications are to be understood as being included within the scope of the disclosed embodiments as defined by the appended claims

[0033] The disclosure in Italian Patent Applications No. RM2011U000114 from which this application claims priority are incorporated herein by reference.

[0034] Where technical features mentioned in any claim are followed by reference numbers, those reference numbers have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference numbers do not have any limiting effect on the interpretation of each element identified by way of example by such reference numbers.

Claims

1. A board device to operate safely on stairs, particularly for ladders, comprising:

   - a supporting frame (3) provided with hooks (4) for clamping to at least one step (5) of a stair (2), and
   - a pair of footboards (6) placed side by side and arranged to be turned over with respect to said supporting frame (3) in order that each one of said footboards (6) passes independently from a closed configuration to an open operating configuration.

2. The board device according to claim 1, wherein said supporting frame (3) is provided with two series of said hooks (4) arranged to be connected to two corresponding steps (5) of the stair (2) and connected by respective crosspieces (11, 12) .

3. The board device according to claim 1 or 2, wherein the distance between said two series of hooks (4) and/or the length of said crosspieces (11, 12) are

adjustable in order to permit the installation of the board device (1) itself in stairs of different sizes.

4. The board device according to one of the preceding claims, wherein said footboards (6) are articulated with respect to the uprights (10) of said supporting frame (3), in the closed configuration said footboards (6) being contained within the overall dimensions defined by said uprights (10).

5. The board device according to one of the preceding claims, wherein said hooks (4) are provided with anti-unthreading pins (18).

6. The board device according to claim 5, wherein said anti-unthreading pins (18) are arranged to be mounted at an adjustable distance from said hooks (4) by means of a transverse crosspiece (21), in order to close any steps (5) of different sizes inside said hook (4).

7. The board device according to one of the preceding claims, wherein said hooks (4) are provided with at least one pressure screw (24) intended to be screwed, by means of compression, against said step (5) to increase the stability of support of the board device (1) towards said stair (2).

8. The board device according to one of the preceding claims, wherein the depth of said hooks (4), or the length of said transverse crosspiece (21), is adjustable to fit the hook (4) with steps of different sizes.

9. The board device according to one of the preceding claims, wherein said footboards (6) comprise, at one end, first rigid rods (15) which are arranged to be rotated about pivots (7) mounted on said supporting frame (3) and, at the opposite end, comprise second slotted rods (9) which are hinged at rotation hinges (8) of said supporting frame (3) and which re arranged to slide, into a slot (13) of said second slotted rod (9), with respect to a pin (14), said pin (14) being integrally connected with said footboards (6).

10. The board device according to one of the preceding claims, wherein said footboards (6) are provided with a movable driving part (17) in order to facilitate the insertion of a foot of the operator during the climbing and the support of the foot on said step (5), in said closed configuration.

11. The board device according to one of the preceding claims, wherein said uprights (10) are provided with notches (22) in order to lodge the excess width of said pins (14) of said footboards (6).

12. The board device according to one of the preceding claims, **characterized by** the fact that it is made of bent and welded metal foil.

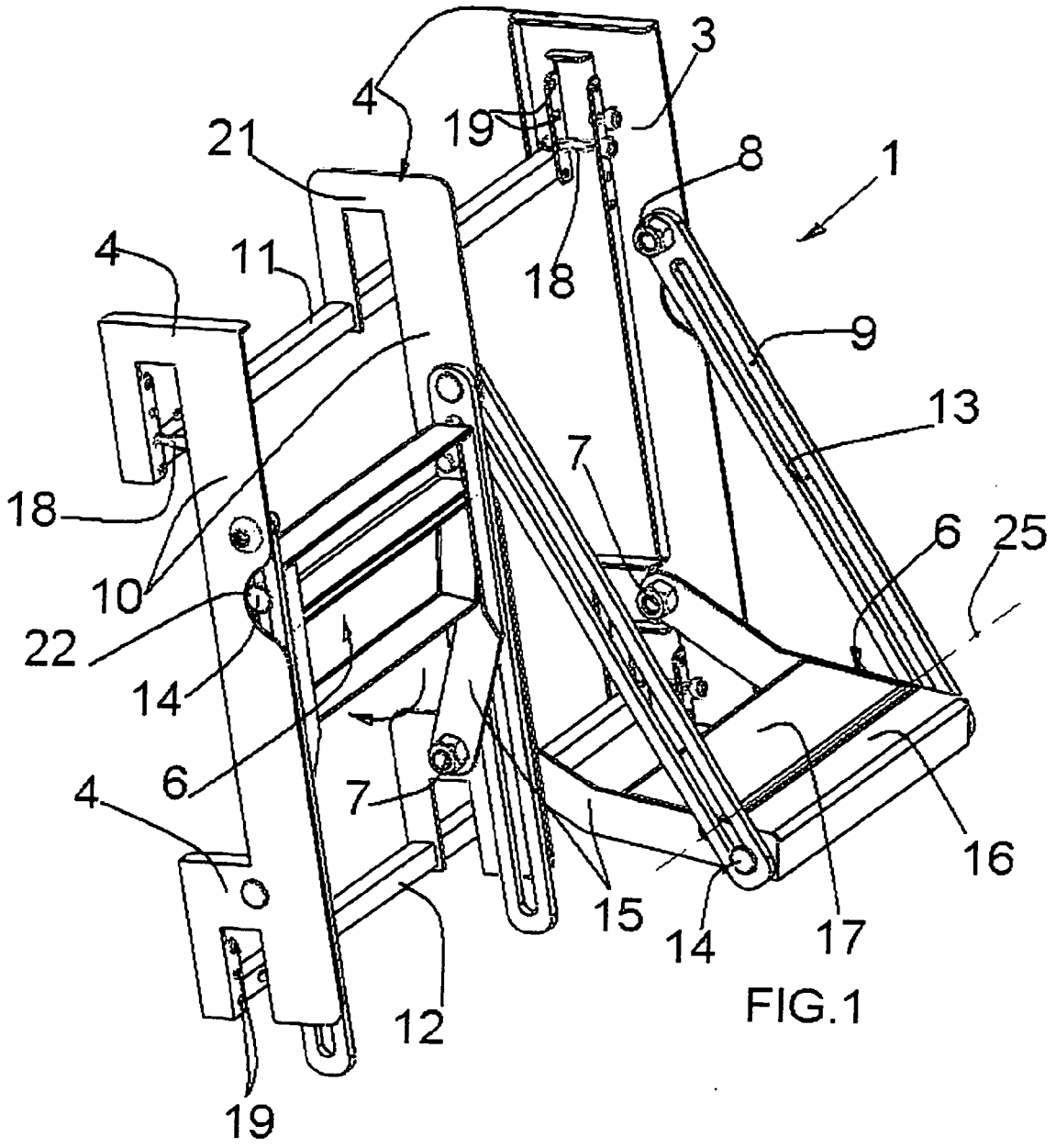

FIG.1

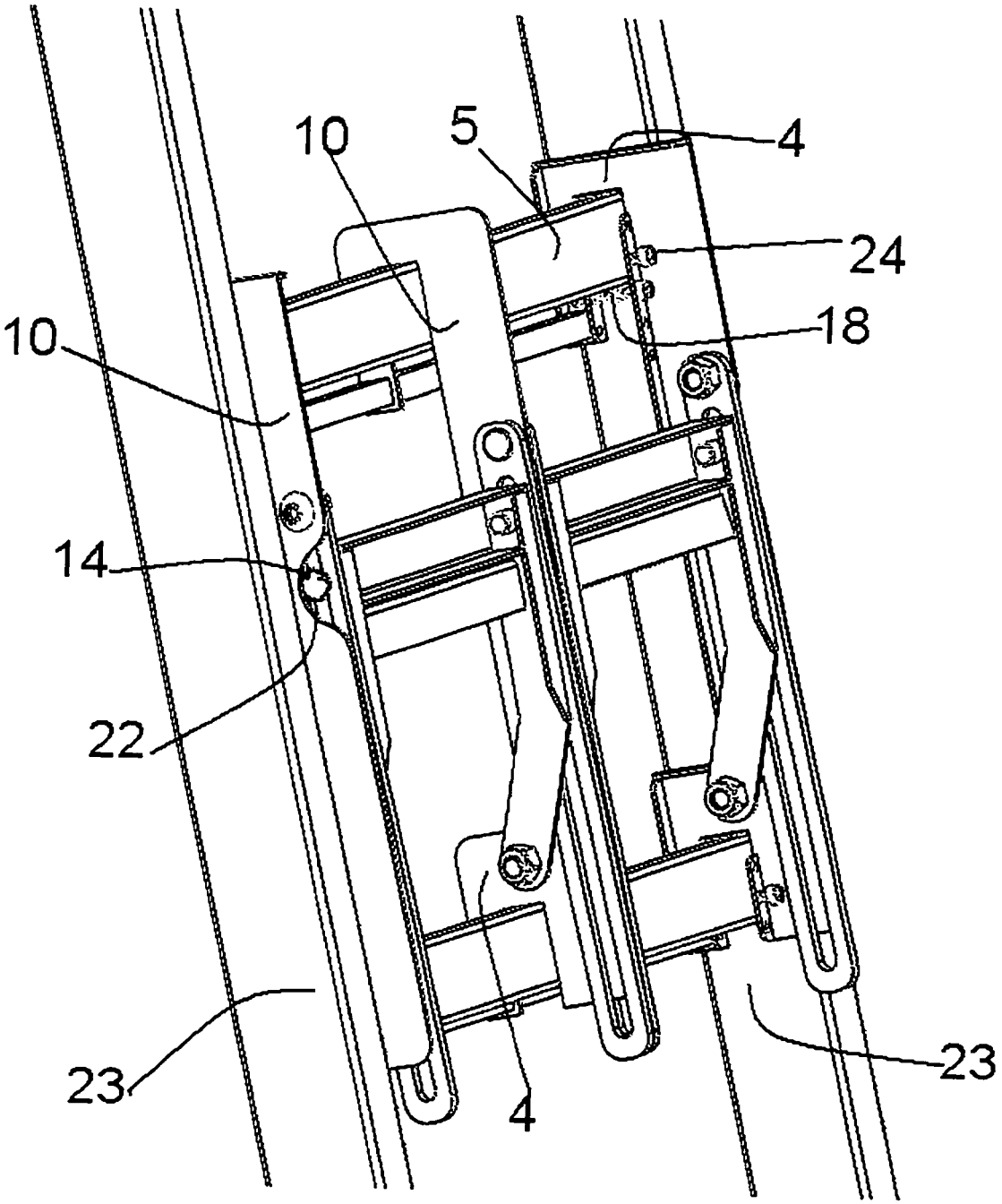

FIG.2

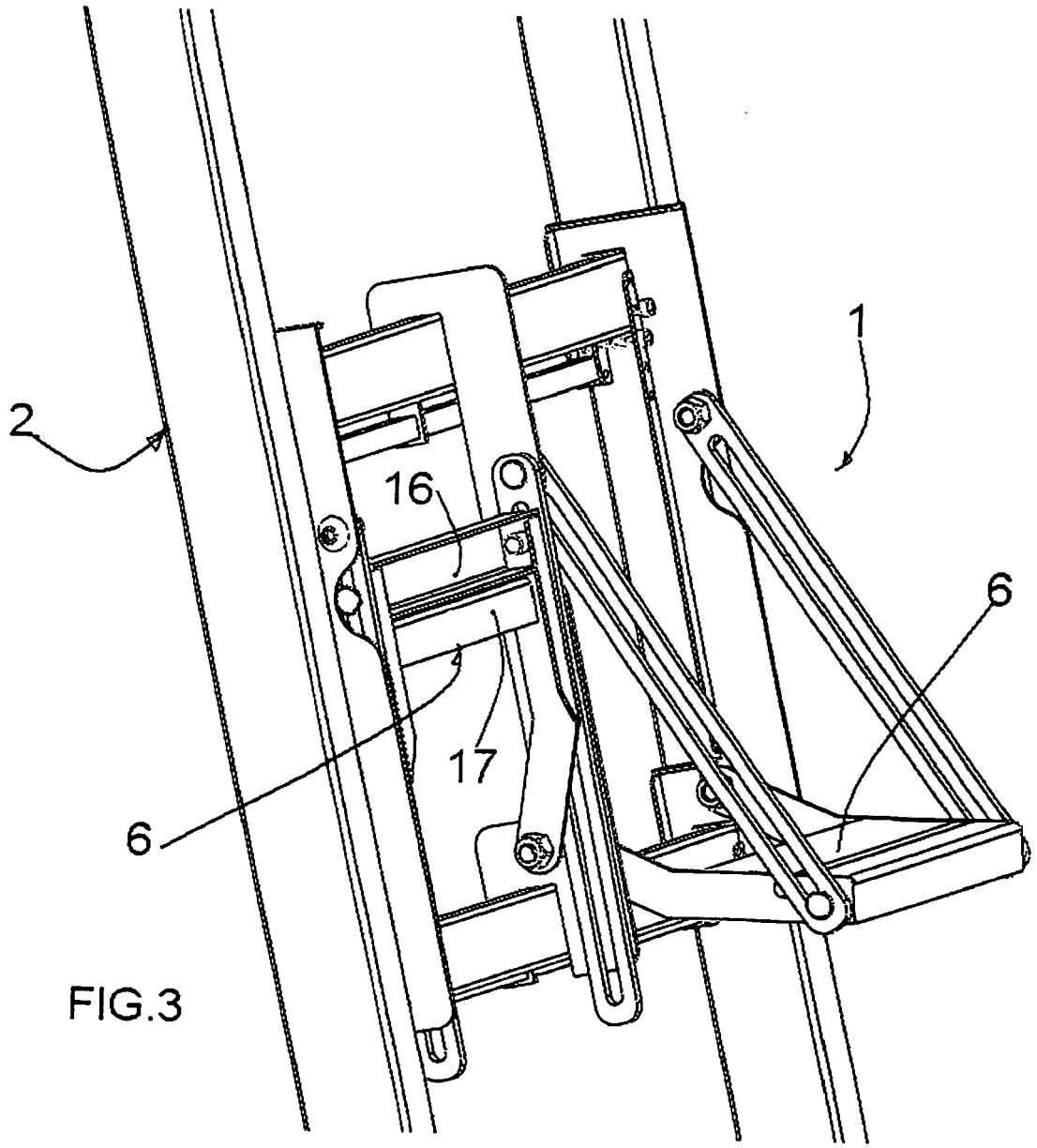

FIG.3

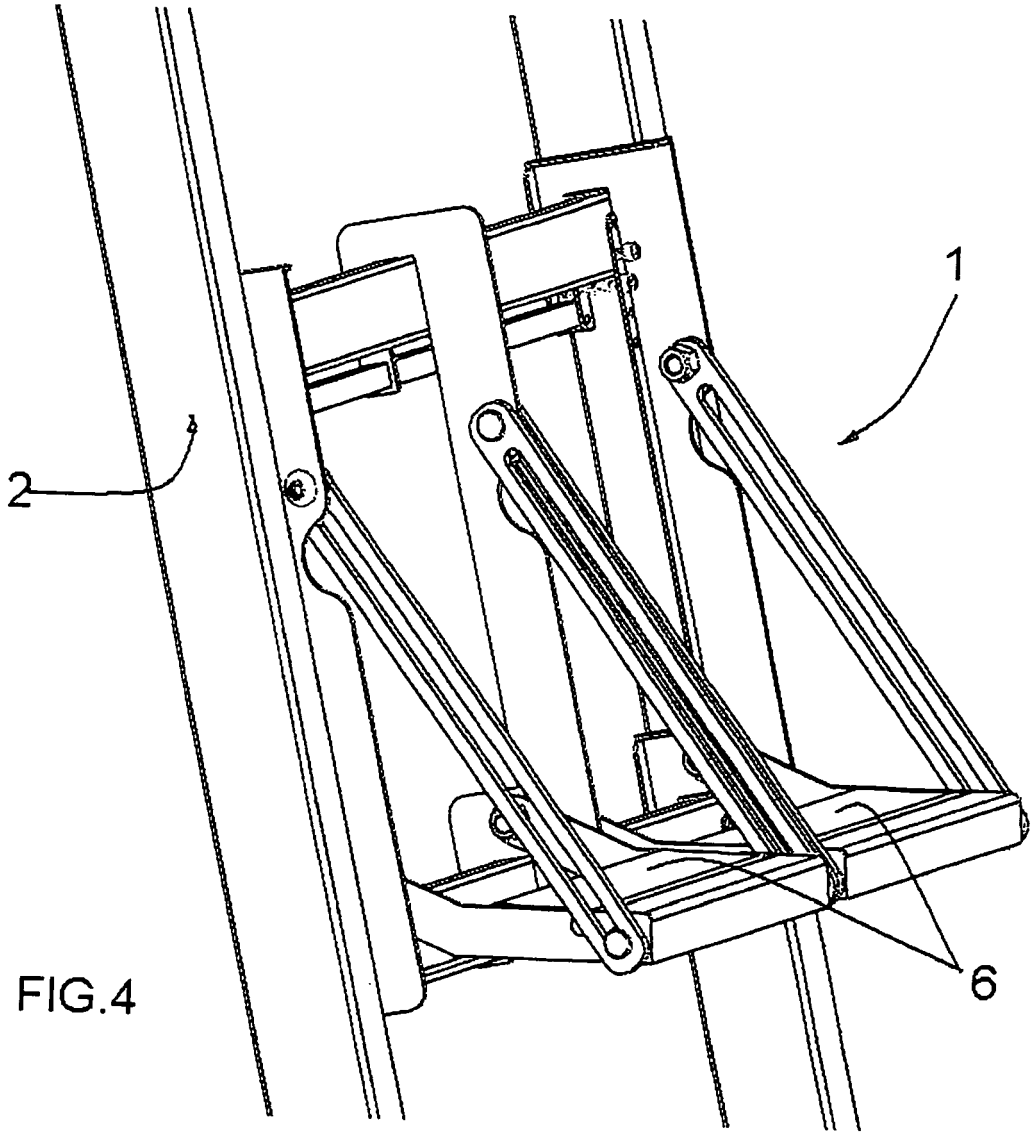

FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 12 00 4825

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 7 845 469 B1 (BUTLER DAVID C [US] ET AL) 7 December 2010 (2010-12-07) * figures 2, 4 * * column 1, line 33 - line 42 * * column 7, line 62 * * column 7, line 64 - line 65 *	1-3,5-8, 10,12	INV. E06C7/16
A	US 6 109 392 A (MERRICK HARRY G [US]) 29 August 2000 (2000-08-29)	1-12	
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TECHNICAL FIELDS SEARCHED (IPC)

E06C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 October 2012	Tryfonas, N

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 12 00 4825

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09-10-2012

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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