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(54) **Safety device**

(57) Safety device, which is intended for temporarily fastening a person by means of a safety harness (12) and a safety line (11) at a part of a scaffold construction comprising, amongst others, vertical scaffold elements

(2) which are provided with flanges (8) with openings (9), characterized in that between the free extremity of said safety line (11) and the scaffold construction (1), a support (10) is provided to which said safety line (11) can be connected.

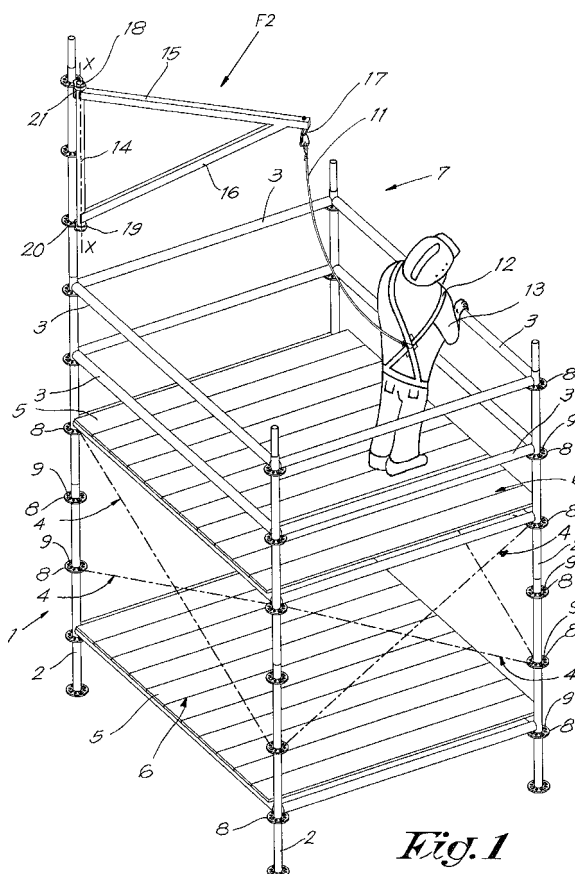


Fig. 1

EP 1 267 014 A1

Description

[0001] The present invention relates to a safety device, such as it can be applied during mounting works, and more particularly when mounting scaffolds, on one hand, and when working on such scaffolds, on the other hand.

[0002] It is known that scaffolds, more particularly tubular scaffolds, are built up by attaching horizontal tubes between vertical tubes, by means of clamping parts, by sliding into each other or such in order to obtain, together with the application of so-called cross connections, a solid construction upon which one can work in order to erect other constructions, buildings or other elements, and/or to work on said constructions etc., for example, during renovations, repair works etc.

[0003] At different heights of such scaffold construction, subsequently working floors are provided on which the scaffold workers and/or the workers working at or on such construction can move.

[0004] During the erection of such scaffolds as well as during the use of such scaffolds for erecting, cleaning, repairing etc. adjacent constructions, the scaffold mounting staff and/or workers are obliged to connect themselves to the scaffold by means of a safety harness with a safety line in order to limit, in the case of a fall, such fall to the length of the safety line.

[0005] To this aim, the safety harness which encases the worker is fastened to a scaffold element by means of a safety line with a length of, for example, 1 meter, and possibly by means of a hook or the like.

[0006] The aforementioned, however, has as a consequence that the worker concerned has a restricted freedom of movement of approximately 1 meter in respect to the fixation point of the safety line, such that, if he wants to move on, he will have to unfasten the safety line and will have to re-fasten it at another location.

[0007] The present invention relates to a safety device whereby the worker is offered a freedom of movement which clearly is larger than it has been possible up to now, but whereby the maximum safety is maintained, in consideration of the fact that the safety line also will have a length of only 1 meter.

[0008] When this safety device, for example, has a length of 1 meter, the worker will be able to move at the working floor over a distance with a radius of two meters, seen from the fixation point of the safety device, whereby the safety remains as high as before.

[0009] The device according to the invention which shows the aforementioned and other advantages and which is intended for temporarily fastening a person to a part of a scaffold construction by means of a safety harness and a safety line, to this aim substantially consists of a support which is provided between the free extremity of said safety line and the actual scaffold construction to which said safety line is connected.

[0010] Preferably, said support will be hingeably connected to the scaffold construction in order to guarantee

a maximum movement of the person to be safeguarded.

[0011] With the intention of better showing the characteristics of the invention, hereafter, as an example without any limitative character, a preferred form of embodiment of a safety device according to the invention is described, with reference to the accompanying drawings, wherein:

figure 1 in perspective represents a building scaffold whereby a safety device according to the invention is applied;

figure 2, at a larger scale, represents the part indicated by F2 in figure 1;

figure 3 represents a plan view of figure 1, with the indication of the accessible working zones.

[0012] In figure 1, a scaffold 1 is represented which, according to a known embodiment, is constructed of a number of tubular vertical scaffold elements 2 and tubular horizontal scaffold elements 3, of which some vertical scaffold elements 2 are connected to each other by means of cross connections 4, and on which, at certain heights, boards 5 are provided which form a working floor 6.

[0013] In this case, the working floor 6 is bordered by a number of additional horizontal scaffold elements 3 which together form a balustrade 7.

[0014] As usual in scaffolding, the vertical scaffold elements 2, at certain levels, are provided with ring-shaped flanges 8 which are fixed at the vertical scaffold elements at suitable mutual interspaces and whereby a number of openings 9 is provided in these flanges 8.

[0015] The horizontal scaffold elements 3 and the cross connections 4 can be anchored in a known manner in the openings 9 of these flanges 8, by means of complementary fixation means at the extremities of these scaffold elements 3 and cross connections 4.

[0016] In the form of embodiment represented in the drawings, the safety device according to the invention comprises a support 10, formed as a frame to which a safety line 11 of a safety harness 12 of a worker 13 can be fastened, whereby this support 10 is freely pivotable around a vertical pivoting axis X-X.

[0017] In this form of embodiment, the support 10 consists of a round tube 14 which is installed vertically and at which two transversely directed profiles 15 and 16 are fixed, which, for example, are formed by a square tube, whereby these two profiles are connected to each other at their free extremities and whereby the profile 15 preferably will be installed horizontally.

[0018] At the height where the two profiles 15-16 are connected to each other, an eyelet 17 can be fixed at a distance from the pivoting axis X-X in order to allow the fastening of the safety line 11 in a simple manner.

[0019] The length of the round tube 14 is somewhat larger than the core distance of two flanges 8 of one and the same vertical scaffold element 2.

[0020] In the round tube 14, a second round tube 18

is provided in a freely pivotable manner, the extremities of which latter tube protrude from the tube 14 at opposite sides.

[0021] At these protruding extremities of the tube 18, transverse protrusions 19 are provided, the interspace of which is equal to the length of the tube 14.

[0022] At the free extremity 20 of each radial protrusion 19, a downwardly directed vertical pin is fixed, a longer pin 21 at the top and a shorter pin 22 at the bottom, respectively.

[0023] The pins 21-22 are provided in their mutual prolongation and have a cross-section, the shape of which is complementary to the shape of the openings 9 of the flanges 8 of the vertical scaffold elements 2.

[0024] The use of the device according to the invention is very simple and as follows.

[0025] When erecting a scaffold 1, the safety device is provided, with the pins 21-22 directed downward, in the openings 9 of the flanges 8 of a vertical scaffold element 2 protruding above the working floor 6, whereby the difference in length of the pins 21-22 facilitates providing the safety device.

[0026] Thus, the eyelet 17 is at a certain height in respect to the working floor 6, and usually above the head of a worker 13.

[0027] As the worker 13 arrives on the working floor 6 in order to perform works at that location, he fastens the safety line 11 of his safety harness 12 to the eyelet 17 of the safety device, such that he is secured from that moment on, and, with a possible fall, his falling distance will be limited by the length of the safety line 11.

[0028] When the worker 13 moves around on the working floor 6, the support 10 can turn along with his movements, whereby the eyelet 17 can describe a circular arc above the working floor 6.

[0029] Thus, the worker 13 has the advantage of a maximum freedom of movement within a radius 22 around the pivoting axis X-X of the support 10.

[0030] The length of this radius 22 is determined by the length of a smaller radius 23 within which the worker 13 can move around the eyelet 17 of the safety device, enlarged by the distance of the eyelet 17 in respect to the pivoting axis X-X.

[0031] As a consequence, when using a safety device according to the invention, the freedom of movement is much larger than with the classical way of falling prevention, whereby the worker 13, for a same level of falling prevention, will see his freedom of movement restricted to a much smaller radius 24 around a connection point at the location of a vertical scaffold element 2.

[0032] Due to the complementary shape of the cross-section of the pins 21-22 in respect to the openings 9 in the flanges 8, it is prevented that the pins 21-22 pivot in the openings 9, as a result of which they would undergo a wear and tear at the location of these flanges 8 and as a result of which the carrying strength of these pins 21-22 would diminish and, as a consequence, an unsafe situation might be created.

[0033] In a particular form of embodiment of the invention, for example, the accidental lifting of the support 10 out of the openings 9 of the flanges 8 might be prevented by providing an additional safety system, for example, by providing, in one of the pins 21-22, a transverse bore opening in which a removable safety pin, a padlock or such might be provided.

[0034] According to another form of embodiment of the invention, the free extremities of the pins 21-22 can be realized conically, as a result of which the pins 21-22 can be easier directed into the openings 9 of the flanges 8 when mounting the safety device at the scaffold 1.

[0035] Although, in the described embodiment an eyelet 17 is provided for fastening the safety line 11, it is clear that the safety line 11, with one and the same result, can be fastened directly to the support 10, more particularly at the profile 16.

[0036] The present invention is in no way limited to the form of embodiment described as an example and represented in the accompanying figures, however, such safety device can be realized in different forms and dimensions, without leaving the scope of the invention.

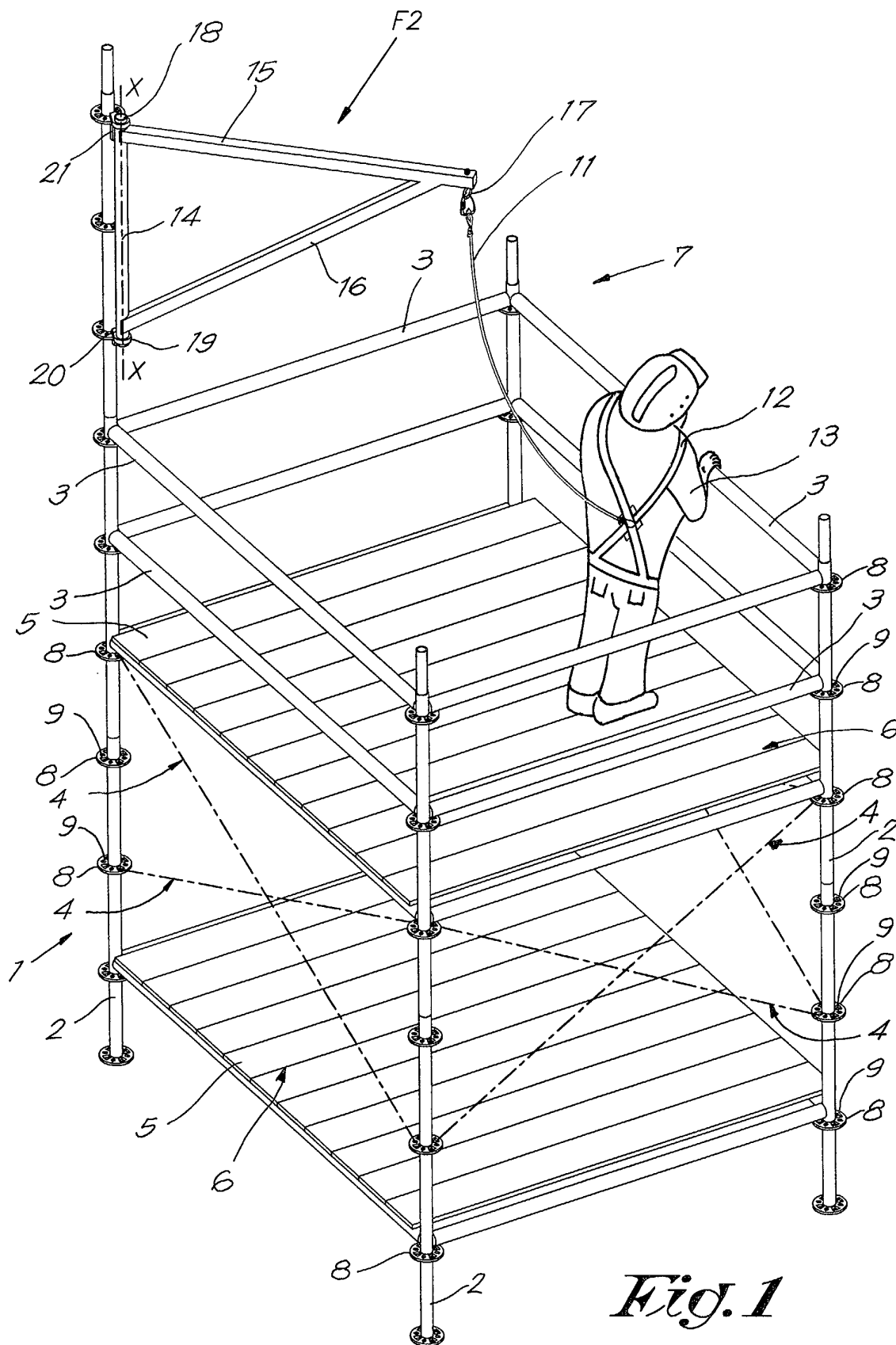
Claims

1. Safety device, which is intended for temporarily fastening a person by means of a safety harness (12) and a safety line (11) at a part of a scaffold construction comprising, amongst others, vertical scaffold elements (2) which are provided with flanges (8) with openings (9), **characterized in that** between the free extremity of said safety line (11) and the scaffold construction (1), a support (10) is provided to which said safety line (11) can be connected.
2. Safety device according to claim 1, **characterized in that** the support (10) is freely hingeable around a vertical axis X-X.
3. Safety device according to claim 1, **characterized in that** the support (10) consists of a vertical tube (14), upon which at least one transversely directed profile (15) is attached.
4. Safety device according to claim 3, **characterized in that** the vertical tube (14) is connected to said transversely directed profile (15) by a second profile (16).
5. Safety device according to claim 3, **characterized in that** the transversely directed profile (15) is fixed perpendicularly to an extremity of the vertical tube (14), whereas the transversely directed profile (16) is fixed at the second extremity of the vertical tube (16), on one hand, and at the free extremity of the transverse profile (16), on the other hand.

6. Safety device according to claim 3, 4, or 5, **characterized in that** the vertical tube (14) is a round tube which is provided freely pivotable over a second round tube (18). 5
7. Safety device according to claim 6, **characterized in that** at each extremity of the second round tube (18), a vertical pin (21-22) is fixed, whereby these pins (21-22) are situated in each other's prolongation and whereby each pin (21-22) fits into an opening (9) of a flange (8) of a scaffold element (2). 10
8. Safety device according to claim 7, **characterized in that** each pin (21-22) is fixed on a protrusion (19) which in its turn is fixed onto the vertical tube (18). 15
9. Safety device according to claim 7, **characterized in that** each pin (21-22) has a cross-section which is complementary to the shape of the opening (9) in said flanges (8). 20
10. Safety device according to any of the claims 7, 8 or 9, **characterized in that** the free extremities of the pins (21-22) are realized conically. 25
11. Safety device according to any of the claims 7 to 13, **characterized in that** the pin (21) has a larger length than the length of the pin (22).
12. Safety device according to any of the claims 7 to 10, **characterized in that** in at least one pin (21 or 22), an additional safety element is provided. 30
13. Safety device according to claim 12, **characterized in that** at least one of the pins (21 or 22) is provided with a transverse bore opening in which a removable safety pin, a padlock or the like can be provided and whereby this safety pin, padlock or the like are fixed at the safety device by means of a chain. 35 40
14. Safety device according to any of the preceding claims, **characterized in that** the support (10), at a distance to the vertical axis X-X, comprises an eyelet (17). 45

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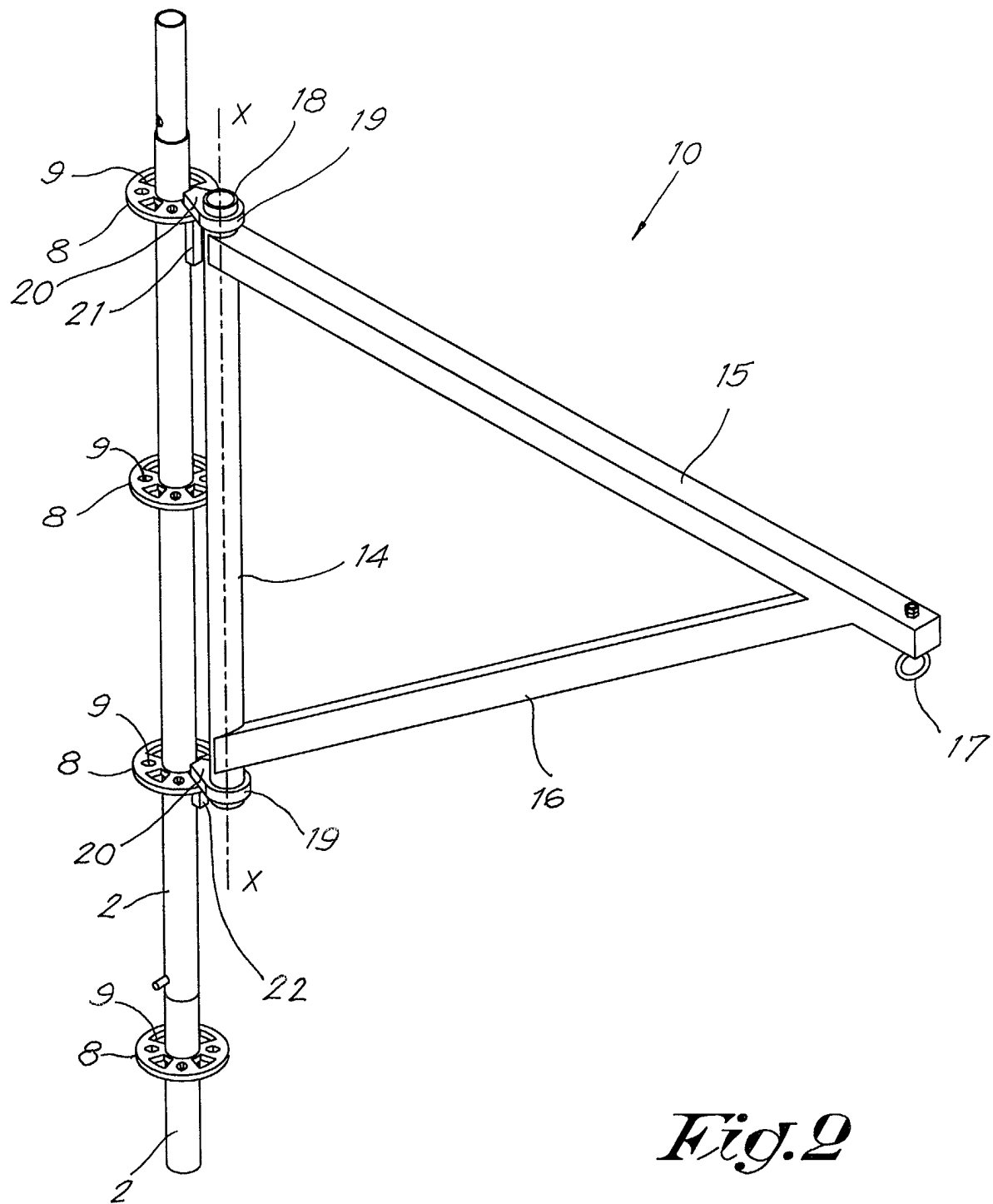


Fig. 2

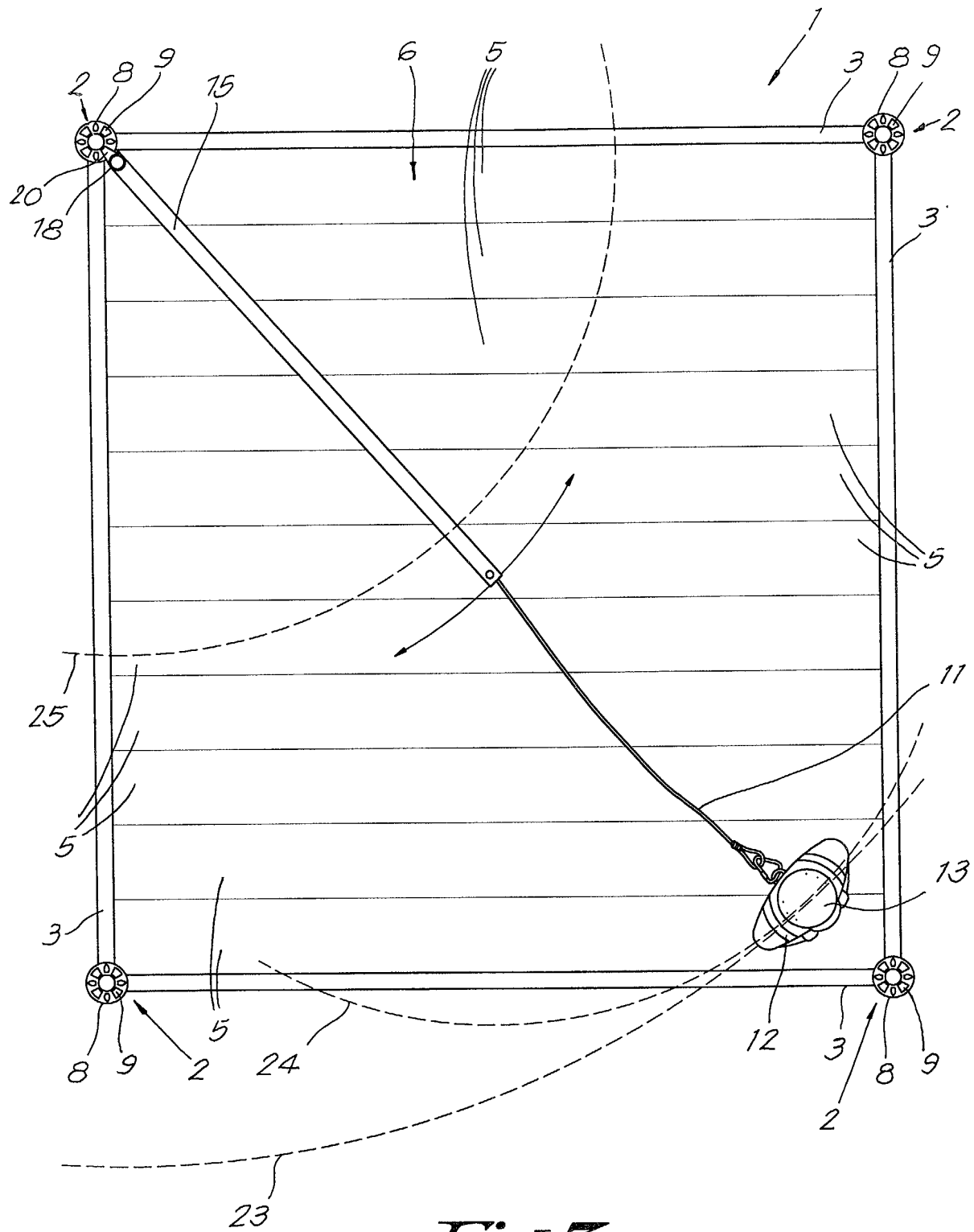


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 02 07 7215

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		10 September 2002	Andlauer, D
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