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(54) Title: A HEIGHT-ADJUSTABLE DESKTOP STAND

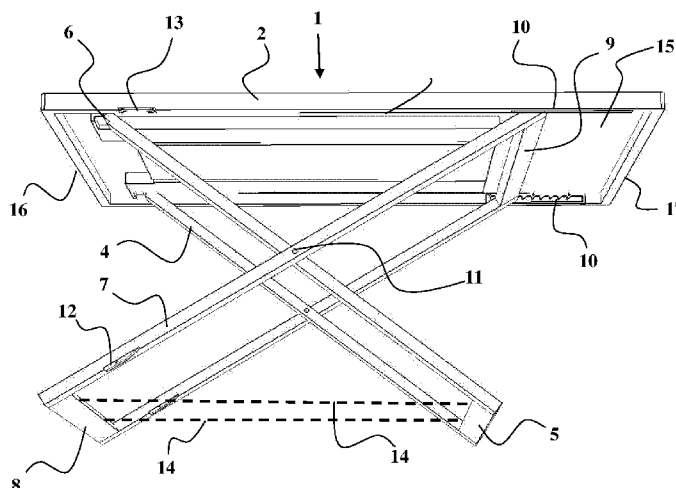


Fig.2

(57) Abstract: The present invention relates to a height adjustable desktop stand. The height adjustable desktop stand comprises: a platform (2); a first and a second leg element (4, 7) pivotally connected to each other forming a configuration as a pair of scissors, wherein the first leg element (4) at a first end (6) thereof is pivotally connected to the platform (2), and wherein the second leg element (7) at a first end (9) thereof is adapted to be connected to the platform (2) via a locking arrangement (10) having a plurality of locking positions; and a spring element (14; 18; 24) connected between on the one hand the second leg element (7) and on the other hand the first leg element (4) or the platform (2) and being adapted to force the first end (9) of the second leg element (7) in a direction towards the first end (6) of the first leg element (4).

A HEIGHT-ADJUSTABLE DESKTOP STAND

Technical field

The present invention relates to a height adjustable desktop stand.

5 Background

An ergonomic environment is intended to maximize productivity by reducing operator fatigue, discomfort and health issues. More and more people realize the risks involved with sitting down behind a desk for longer periods of time. The static position of sitting down can lead to back and neck
10 pains as well as mental tiredness and an increased risk for so-called "sitting diseases."

By standing up behind the desk, the above mentioned risks can be reduced. Standing up also leads to more calories burned with more energy and better focus as a result. The optimal way for a healthy working practice is
15 to vary working positions between standing up and sitting down.

Most height-adjustable work spaces come as complete desks that are too expensive for the ordinary user. Unfortunately, there are few good options for desktop stands that are height-adjustable while being cheap and easy to use. There is also a need for mobility and being able to stand and work where
20 there is only an ordinary desk available.

Summary of the invention

In view of the above, it is an object of the present invention to solve at least one of the problems mentioned above.

25 In particular, according to a first aspect a height-adjustable desktop stand is provided. The height adjustable desktop comprises: a desktop, a first and a second leg element pivotally connected to each other forming a configuration as a pair of scissors, wherein the first leg element at a first end thereof is pivotally connected to the desktop, and wherein the second leg
30 element at a first end thereof is adapted to be connected to the desktop via a locking arrangement having a plurality of locking positions, and a spring

element connected between on the one hand the second leg element and on the other hand the first leg element or the desktop and being adapted to force the first end of the second leg element in a direction towards the first end of the first leg element.

5 The height-adjustable desktop stand may be used in many different situations. It is possible to adjust the height of the desktop with a relatively light use of force even though the desktop is weighed down by for example a computer. Meanwhile the locking arrangement ensures that the desktop stays at a desirable working height. The height-adjustable desktop stand may in its
10 fully folded position easily be moved between different use-places and takes up little space when storing. The height-adjustable desktop stand provide the user to be able to work both while standing up and sitting down without the need of removing devices and or other things placed on the platform. An ergonomic sitting position is enabled by the flatness of the desktop stand
15 when it is in the bottom position.

Each of the plurality of locking positions may correspond to a specific height of the height adjustable desktop stand.

The spring element may on the one hand be connected at a second end of the first leg element and on the other hand at a second end of the
20 second leg element. By doing so, the load is lightened, making it easier to adjust the height of the desktop.

In order to form the plurality of the locking positions, the locking arrangement may comprise a toothed rack comprising a plurality of teeth. The second leg element may comprise an engager arranged to engage with
25 different teeth of the toothed rack.

The teeth of the toothed rack may be shark-fin shaped.

The space between the teeth of the toothed rack may further be U-shaped.

A further scope of applicability of the present invention will become
30 apparent from the detailed description given below. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the scope of

the invention will become apparent to those skilled in the art from this detailed description.

Hence, it is to be understood that this invention is not limited to the particular component parts of the device described or steps of the methods described as such device and method may vary. It is also to be understood that the terminology used herein is for purpose of describing particular embodiments only, and is not intended to be limiting. It must be noted that, as used in the specification and the appended claim, the articles "a," "an," "the," and "said" are intended to mean that there are one or more of the elements unless the context clearly dictates otherwise. Thus, for example, reference to "a unit" or "the unit" may include several devices, and the like. Furthermore, the words "comprising", "including", "containing" and similar wordings does not exclude other elements or steps.

15 Brief Description of the Drawings

The above and other aspects of the present invention will now be described in more detail, with reference to appended drawings showing embodiments of the invention. The figures should not be considered limiting the invention to the specific embodiment; instead they are used for explaining and understanding the invention.

As illustrated in the figures, the sizes of layers and regions are exaggerated for illustrative purposes and, thus, are provided to illustrate the general structures of embodiments of the present invention. Like reference numerals refer to like elements throughout.

25 Fig. 1 illustrates a side view of a height-adjustable desktop stand.

Fig. 2 illustrates a perspective view of the height-adjustable desktop stand according to Fig. 1

Fig. 3 illustrates a view from below of an alternative height-adjustable desktop stand.

30 Fig. 4 illustrates a perspective view of yet an alternative height-adjustable desktop stand.

Detailed description

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which currently preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided for thoroughness and completeness, and to fully convey the scope of the invention to the skilled person.

Figs 1 and 2 illustrate a height-adjustable desktop stand 1. As shown in Fig. 1 the height-adjustable desktop stand 1 may be placed on a surface 23. The surface 23 may e.g. be a desktop of a desk or table. The height-adjustable desktop stand 1 comprises a platform 2, and a pair of leg elements 4, 7.

The pair of leg elements 4, 7, comprises a first leg element 4 and a second leg element 7. The first and second leg elements 4, 7 are pivotally connected to each other at a pivoting joint 11. Hence, the first and second leg elements 4, 7 are forming a configuration as a pair of scissors. The first leg element 4 is at a first end 6 thereof pivotally connected to the platform 2. The second leg element 7 is at a first end 9 thereof adapted to be connected to the platform 2 via a locking arrangement 10. The locking arrangement 10 is having a plurality of locking positions. The locking arrangement 10 comprises a toothed rack comprising a plurality of teeth. Each teeth in the toothed rack corresponds to one of the locking positions of the locking arrangement 10. An engager of the second leg element 7 is arranged to engage the teeth of the toothed rack in order to set the locking arrangement 10 in a specific locking position. The engager is arranged at the first 9 end of the second leg element 7.

The height-adjustable desktop stand 1 is adjustable in height by setting the positioning of the engager in the locking arrangement 10. A plane can be defined between the first end 6 of the first leg element 4 and the first end 9 of the second leg element 7. The plane is parallel with the platform 2. When lifting a first end 17 of the platform 2, the teeth of the toothed rack in the locking arrangement 10 are elevated from the engager. The engager is then

free to move in a rail beneath the teeth. The locking arrangement 10 is located at the first end 17 of the platform 2. By moving the platform 2 perpendicular in relation to the plane, the height is adjusted. That is, the platform is moved in the vertical direction in relation to the surface 23.

- 5 Depending on the weight of objects on top of the platform 2, different forces may be required to be applied in order to adjust the height of the platform 2. When the platform 2 is positioned at a desired height, the first end 17 of the platform 2 is lowered. Lowering the first end 17 of the platform 2 makes the engager to engage with the tooth rack. This places the engager in one of the
- 10 plurality of locking positions of the locking arrangement 10. The engager is an element arranged to engage with the teeth of the toothed rack. Non-limiting examples of engagers are a dowel or a peg.

Hence, the height-adjustable desktop stand 1 may be lifted and/or lowered to a desired lateral height. This is done by a user holding her hands

15 at the first end 17 and a second end 16 of the platform 2. By manipulating the first end 17 of the platform 2 the user may remove the engager from a locking position of the locking arrangement 10 and thereafter move the platform 2 up and/or down to a desired level of height. Well at the desired level of height the user manipulates the first end 17 of the platform 2 again such that the

20 engager engage with the locking arrangement 10 for locking the height-adjustable desktop stand 1 at the desired level of height.

In one embodiment, the teeth of the toothed rack in the locking arrangement 10 may have a shark-fin shaped profile. A shark-fin profile is understood to comprise a 90 degree or more angle between the tooth and the

25 base of the toothed rack on one side of the tooth, and an angle of 90 degrees or less between said tooth and base of the toothed rack on the other side of the tooth.

By having shark-fin shaped profile, the engager is more securely positioned in the locking position. By having a rounded shape on one side of

30 the tooth, the engager can move easily in one direction under the teeth of the toothed rack 10.

In another embodiment, the space between the teeth of the toothed rack may have a U-shaped profile. A U-shaped space between the teeth of

the toothed rack ensures a safe locking of the engager to the teeth of the toothed rack.

In one embodiment, illustrated in Fig.2, the leg elements 4, 7 may comprise two leg pairs. At a second end 5, 8 of the corresponding leg
5 element 4, 7 the two leg pairs may be connected by one or more stays. The stays may be positioned at any given position inside a leg pair. The stay may be designed to affect the friction against the surface 23. The second end of the first leg element 4 and the second end of the second leg element 7 may be designed to have an increased friction against the surface 23. The friction
10 between the leg elements 4, 7 and the surface 23 affects the lateral force required to push the desktop down. The friction between the leg elements 4, 7 and the surface 23 also affects the force of which the leg elements 4, 7 are being pulled together, as described below.

In another embodiment at least one of the elements 4, 7 may comprise
15 a slab or a board.

A person skilled in the art could think of other shapes and combinations of leg element to further control the properties of the leg elements with regards to stability and strength, for example by including a truss like structure and by using various materials.

20 The height-adjustable desktop stand 1 further comprises a spring element. In the in Figs 1 and 2 shown embodiment the spring element 14 is on the one hand connected at the second end 5 of the first leg element 4 and on the other hand at the second end 8 of the second leg element 7. However, as will be illustrated in connection with Figs 3 and 4, other configurations of
25 spring elements may also be applicable.

The spring element 14 of the embodiment of Fig. 2 is connected between on the one hand the second leg element 7 and on the other hand the first leg element 4. Further, the spring element 14 is adapted to force the first end 9 of the second leg element 7 in a direction towards the first end 6 of the
30 first leg element 4.

The height-adjustable desktop strand 1 may be pushed down to its lowest position. At his position the height-adjustable desktop stand is fully folded. A fully folded height-adjustable desktop stand can be stored away

without taking up much space. Moreover, A fully folded height-adjustable desktop stand is ergonomical to use when sitting down.

In one embodiment, the platform 2 may be designed to offer the leg elements 4, 7 a cavity 15. The cavity 15 reduces the volume of the height-adjustable desktop stand when fully folded. By this a compact design is achieved in the fully folded position. This allow for maintaining good ergonomics when a user of the height-adjustable desktop strand 1 is working in a sitting down position. Additionally, the compact design is also aesthetically pleasing.

The leg elements 4, 7 may be locked in the lowest position by a locking mechanism. The locking mechanism comprises a first and a second locking element 12, 13. The first and a second locking element 12, 13 are arranged to mate with each other. The first locking element is arranged at one of the first and second leg element 4, 7. The second locking element is arranged at the platform 2.

As discussed above, the leg elements 4, 7 may comprise two leg pairs. The two leg pairs may be connected by stays. Further, the spring element 14 may connect one stay of the first leg element to the stay of the second leg element.

The person skilled in the art realizes that the present invention by no means is limited to the embodiments described above. On the contrary, many modifications and variations are possible within the scope of the appended claims.

For example, the spring element 14 may comprise an elastic material (e.g. rubber bands), a spiral spring or a gas spring.

Moreover, the area of the platform 2 may be varied. Especially the area of the platform 2 may be arranged such that a big enough working surface may be achieved.

Furthermore, as illustrated in Fig. 3, the spring element may be embodied as a spring element 18 connected between on the one hand the second leg element 7 and on the other hand the platform 2. The spring element 18 may be arranged in a cavity 22 of the platform 2. It is understood that the platform 2 does not need to be equipped with a cavity for the spring

element 18. The spring element 18 is arranged to be connected to the second leg element 7 by acting on the second leg element 7 at an interaction point 19a between the spring element 18 and the second leg element 7. The spring element 18 is arranged to be connected to platform 2 at a connection portion 19b. The spring element 18 is adapted to force the first end 9 of the second leg element 7 in a direction towards the first end 6 of the first leg element 4. This is illustrated by the arrow 21. The spring element 18 may be embodied as an elastic material (e.g. rubber bands), a spiral spring or a gas spring.

Moreover, as illustrated in Fig. 4, the spring element may be embodied as a torsion spring 24. The torsion spring 24 is arranged in connection with the pivoting joint 11.

It is to be understood that the height-adjustable desktop stand 1 may comprise one or a plurality of the different types of spring elements being discussed above. For example, in Fig. 4 the height-adjustable desktop stand 1 comprises both a spring element 18 connected between on the one hand the second leg element 7 and on the other hand the platform 2 and a torsion spring 24 is arranged in connection with the pivoting joint 11. In the shown embodiments the height-adjustable desktop stand 1 comprises a rectangular platform 2. However, it is contemplated that the platform 2 may have other shapes, such as quadratic, ellipsoidal, circular, etc.

Moreover, the platform 2 may be provided with a rim. The rim may be arranged for preventing items from fall off the platform 2.

Additionally, variations to the disclosed embodiments can be understood and effected by the skilled person in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims.

CLAIMS

1. A height adjustable desktop stand, comprising:
 - a platform (2);
 - a first and a second leg element (4, 7) pivotally connected to each
 - 5 other forming a configuration as a pair of scissors
 - wherein the first leg element (4) at a first end (6) thereof is
 - pivotally connected to the platform (2), and
 - wherein the second leg element (7) at a first end (9) thereof is
 - adapted to be connected to the platform (2) via a locking
 - 10 arrangement (10) having a plurality of locking positions; and
 - a spring element (14; 18; 24) connected between on the one hand the
 - second leg element (7) and on the other hand the first leg element (4) or the
 - platform (2) and being adapted to force the first end (9) of the second leg
 - element (7) in a direction towards the first end (6) of the first leg element (4).
 - 15
2. The height adjustable desktop stand according to claim 1, wherein each of
- the plurality of locking positions corresponds to a specific height of the height
- adjustable desktop stand.
- 20 3. The height adjustable desktop stand according to claim 1 or 2, wherein the
- spring element (14) is on the one hand connected at a second end (5) of the
- first leg element (4) and on the other hand at a second end (8) of the second
- leg element (7).
- 25 4. The height adjustable desktop stand according to any one of claims 1 to 3,
- wherein, in order to form the plurality of the locking positions, the locking
- arrangement (10) comprises a toothed rack comprising a plurality of teeth,
- and the second leg element (7) comprises an engager arranged to engage
- with different teeth of the toothed rack.
- 30 5. The height adjustable desktop stand according to claim 4, wherein the
- teeth of the toothed rack are shark-fin shaped.

6. The height adjustable desktop stand according to claim 4, wherein the space between the teeth of the toothed rack is U-shaped.

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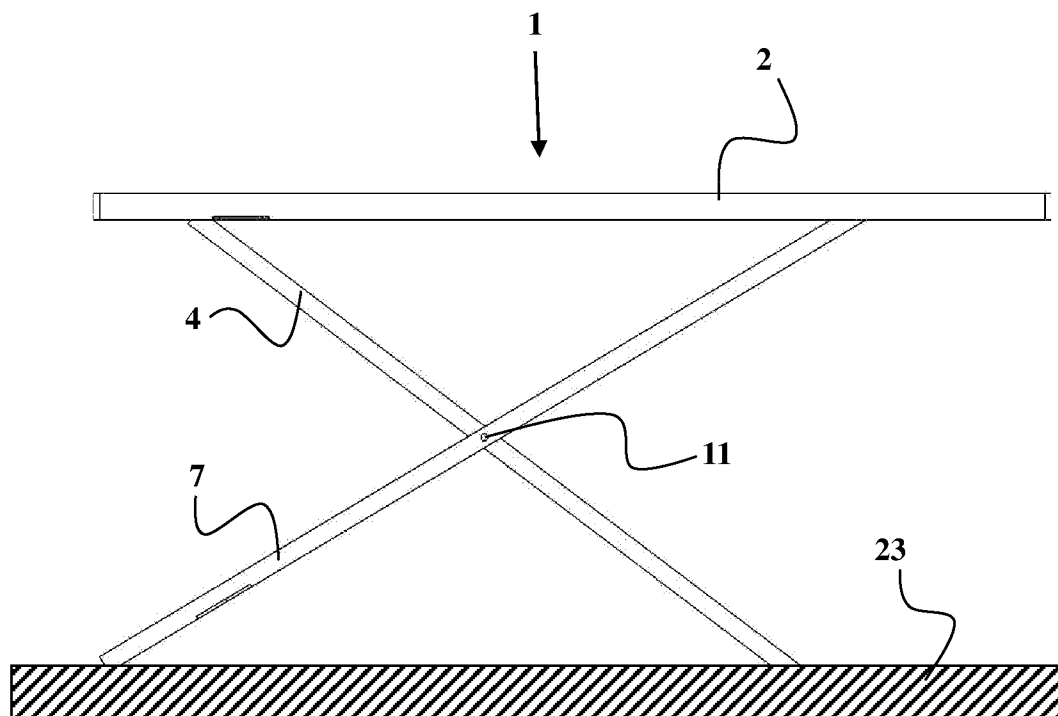


Fig.1

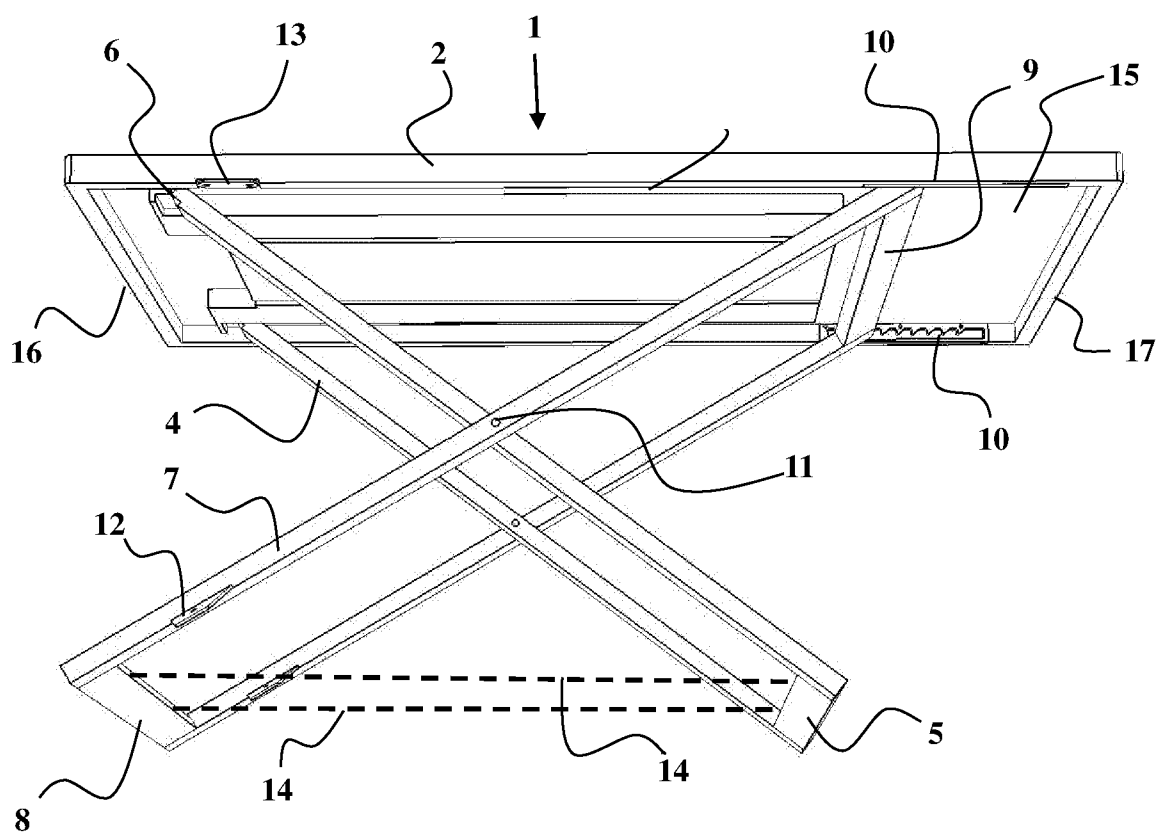
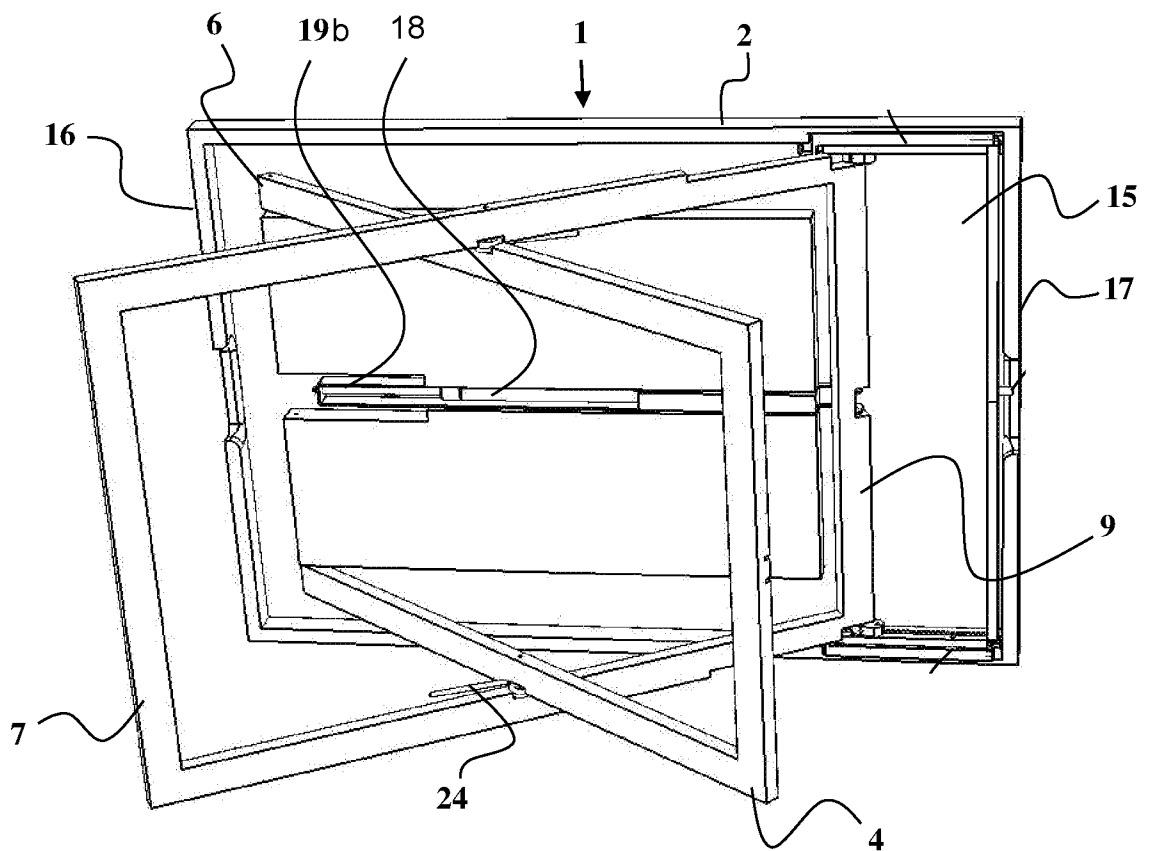
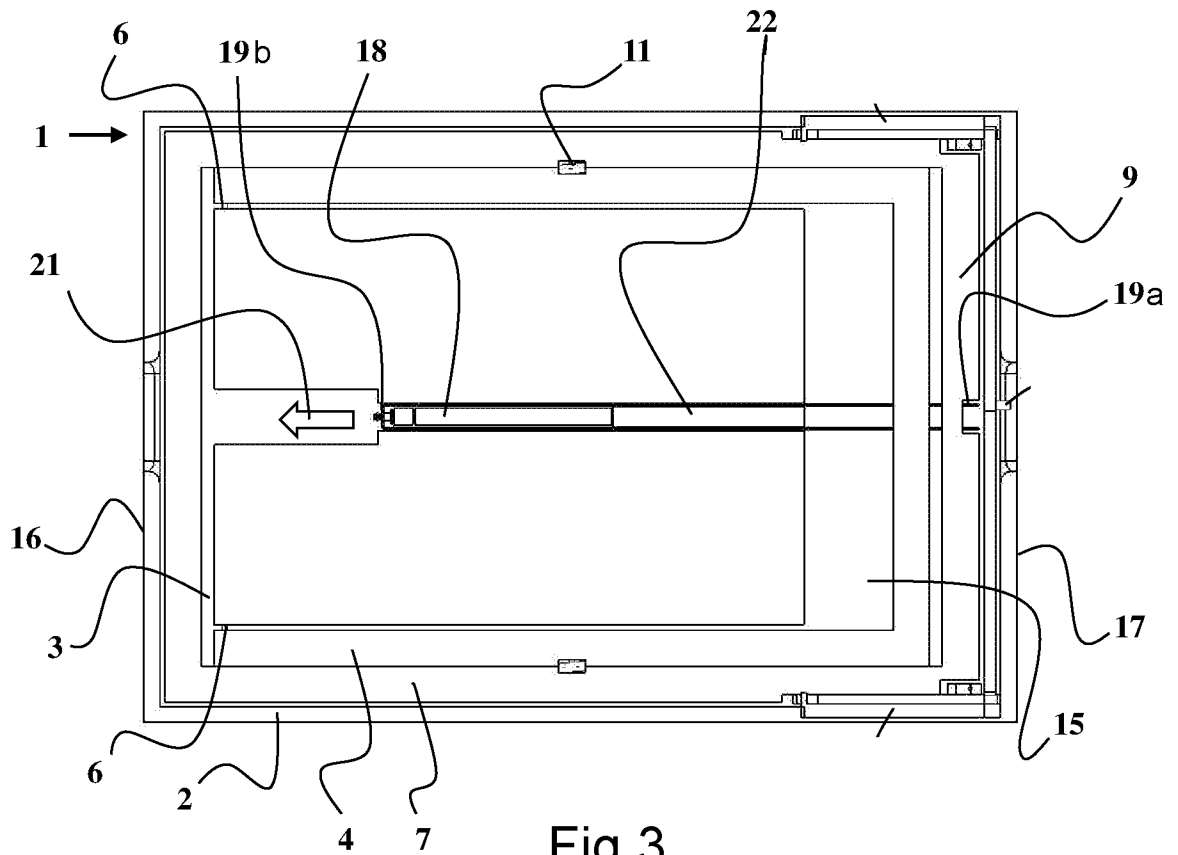


Fig.2

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2016/050539

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A47B, A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3094948 A (CLOW GEORGE F), 25 June 1963 (1963-06-25); abstract; column 3, line 25 - column 3, line 33; figures --	1-6
X	US 4032103 A (EHRICHS WARREN A), 28 June 1977 (1977-06-28); abstract; figures --	1-6
A	US 5588377 A (FAHMIAN HAL), 31 December 1996 (1996-12-31); column 3, line 55 - column 3, line 65 --	1-6
A	US 3245366 A (MARTIN FOX), 12 April 1966 (1966-04-12); figures --	1-6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2016/050539

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 7246784 B1 (LOPEZ HECTOR), 24 July 2007 (2007-07-24); abstract; figures -- -----	1-6

Continuation of: second sheet

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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US	3094948 A	25/06/1963	NONE
US	4032103 A	28/06/1977	NONE
US	5588377 A	31/12/1996	NONE
US	3245366 A	12/04/1966	NONE
US	7246784 B1	24/07/2007	NONE