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

(11) EP 1 078 590 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
28.02.2001 Bulletin 2001/09

(51) Int. Cl.[7]: **A47F 9/00**, A47B 9/00

(21) Application number: **00202928.8**

(22) Date of filing: **22.08.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **26.08.1999 NL 1012912**

(71) Applicant: **Tissot B.V.**
8170 AC Vaassen (NL)

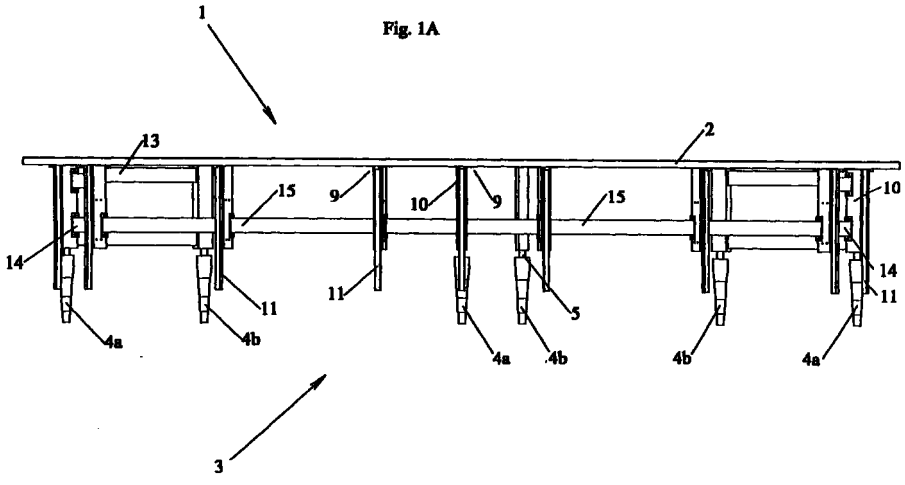
(72) Inventors:
- **van der Laan, Rolf**
  6826 NW Arnhem (NL)
- **Werkhoven, Jan**
  7313 ED Apeldoorn (NL)
- **Reinders, Chris**
  8261 GS Kampen (NL)

(54) Height adjustable counter

(57) The invention relates to a counter (1), comprising a frame (3) on which a work surface is mounted, which frame is supported by a number of legs (4), characterized in that the counter comprises means for height adjustment of at least the work surface.

The invention also relates to a top-mount element (22) for a height-adjustable counter, for instance a counter according to the invention, which top-mount element comprises at least one leg (24) on which a work surface (23) is mounted, which element leg protrudes through an opening in the counter work surface such that the counter work surface and the element leg are slidable relative to each other.

Fig. 1A



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Description

[0001] The present invention relates to a counter, comprising a frame on which a work surface is mounted, which frame is supported by a number of legs.

[0002] Such a counter is known in practice. An example hereof is: a reception desk in a business premises or a hotel lobby. Another example is a display counter in a shop-premises.

[0003] The known counter generally forms a workplace for different people who, depending on the situation, can for instance carry out their activities behind the counter simultaneously or according to alternating work schedules. When purchased, the known counter is adapted as far as possible to the situation on-site. These modifications are limited to adapting the appearance of the counter to the already existing interior setting. The workplace is also arranged as optimally as possible by selecting a suitable form for the counter.

[0004] A significant drawback of the known counter remains however that it is not adjustable to the physical size of the people working there. In the most favourable situation the dimensions of the counter are adapted to the size of the average person who will work behind it. In practice however, this means that the counter forms an ergonomically responsible workplace for practically none of the staff in question.

[0005] The invention has for its object to provide a counter of the type stated in the preamble which obviates this drawback.

[0006] For this purpose the counter according to the invention has the feature that the counter comprises means for height adjustment of at least the work surface.

[0007] According to an elegant preferred embodiment the means are adapted for height adjustment of the frame. In advantageous manner all counter components mounted on the frame, such as cabinets and drawer blocks, can hereby also be adjusted to the correct height in one operation.

[0008] According to a further preferred embodiment the means comprise a number of hydraulic cylinders which are movable from a rest position, in which the counter is situated in the lowest position, to an adjustable operational position, in which the counter is situated in an adjustable, higher position, and vice versa. The application of hydraulic cylinders ensures that the height adjustment of the generally heavy counter can be carried out by anyone in rapid, safe and reliable manner.

[0009] For further stabilization of the counter the cylinders support on at least a number of the legs. The cylinders preferably run substantially in the line of the legs. In a very sturdy embodiment the number of hydraulic cylinders corresponds with the number of legs of the counter.

[0010] According to a further attractive embodiment the hydraulic cylinders are concealed from view by accommodating thereof in a number of hollow elongate elements of the frame running substantially in height direction. In a practical development hereof each cylinder engages on the respective element in which it is accommodated.

[0011] According to a further embodiment of the counter, one or more of the elements forms a connecting element for connecting further elongate elements which form part of the frame and run substantially in lengthwise direction thereof. With a suitable choice of the length of the further elements the counter according to the invention can be manufactured in any desired form, for instance as a part of a circle or in S-shape.

[0012] A stabilizing element can further be added to one or more of the elements, which stabilizing element preferably runs substantially parallel to the element. In a relatively light embodiment the further elements and/or the stabilizing elements are hollow.

[0013] The invention further relates to a top-mount element for a height-adjustable counter, for instance a counter according to the invention, which top-mount element comprises at least one leg on which a work surface is mounted, which element leg protrudes with some clearance through an opening in the counter work surface such that the counter work surface and the element leg are slidable relative to each other. The top-mount element is for the convenience of third parties who are being helped at the counter and can for instance serve as writing surface. The chosen height of the top-mount element is fixed and is independent of the adjusted working height of the counter.

[0014] In an elegant embodiment means are arranged at the position of the opening in the counter work surface to guide the sliding of the counter work surface along the element leg. The means preferably comprise a slide bearing.

[0015] The invention will now be discussed in more detail with reference to the drawings, in which

Figure 1A shows a schematic front view of a preferred embodiment of a counter according to the invention in the lowest position, partly in cross-section with broken away front panel;

Figure 1B shows the counter according to figure 1A in the highest position;

Figure 1C shows a schematic top view of the counter according to figures 1A and 1B with broken-away work surface;

Figure 2A shows the counter according to figure 1A with front panel;

Figure 2B shows the counter according to figure 1B with front panel;

Figure 2C shows the counter according to figure 1C provided with further counter components and finishing;

Figure 3A shows in more detail a part of the counter according to the preferred embodiment shown in the foregoing figures;

Figure 3B shows in more detail another part of the

counter according to the preferred embodiment shown in the foregoing figures;

Figure 4A is a schematic front view of a top-mount element according to the invention which is arranged on the shown preferred embodiment of the counter according to the invention; and

Figure 4B shows the top-mount element according to figure 4A in schematic top view and partly broken-away.

[0016] Figure 1A shows a schematic front view of a preferred embodiment of a counter 1 according to the invention in the lowest position. Figure 1B shows the counter of figure 1A in the highest position. Both figures are partly in cross-section. For the sake of clarity the front panel of the counter is removed so that the construction is clearly visible.

[0017] It is noted that in the context of the present invention the term counter must be understood to mean: a workplace for one or more persons with a reception function, at which staff speak to and assist third parties.

[0018] Counter 1 comprises a work surface 2 arranged on a frame 3. Frame 3 is supported by legs 4, consisting of front legs 4a and rear legs 4b.

[0019] Mounted on each leg 4 in the shown preferred embodiment is a hydraulically operable cylinder 5 which runs in the line of the relevant leg. The cylinders are further each partially received in hollow, elongate elements 10, which form part of frame 3 and which run substantially in height direction of counter 1. In the shown preferred embodiment the elements are formed by hollow tubes. Each of the hollow tubes 10 is provided on the end thereof with a flange 9 with which work surface 2 is mounted on frame 3.

[0020] Frame 3 also comprises further, preferably hollow, elongate elements, respectively 14 and 15, of mutually different length which run in lengthwise direction. These are mutually connected by means of hollow tubes 10, which also function as connecting elements. This is elucidated in more detail hereinafter with reference to figures 3A and 3B.

[0021] Further added to hollow tubes 10 are stabilizing elements 11 which serve to support the height adjustment. Stabilizing elements 11 are preferably hollow tubes which are fixed to tubes 10 and run parallel thereto. (See figures 3A and 3B for more details.)

[0022] It is noted that the elongate elements 10, 14 and 15 as well as stabilizing elements 11 can have any desired suitable cross-section, such as round or square.

[0023] In the shown preferred embodiment cylinders 5 support on one side on one of the legs 4 and on the other side they engage on one of the hollow tubes 10. By sliding the hydraulic cylinders in and out the height of frame 3, and therewith of work surface 2, can be adjusted as desired relative to legs 4. For this purpose cylinders 5 are connected to a hydraulic pump 7 by means of hydraulic liquid lines 6. This is shown in figure 1C, which shows a schematic top view of counter 1 without work surface 2. The hydraulic system can be operated by means of an electrical control 8 and is commercially available as such.

[0024] By pressing a button the cylinders 5 are movable from the rest position (shown in figure 1A), in which counter 1 is situated in the lowest position, to an adjustable operational position, in which the counter is situated in an adjustable, higher position, and vice versa. For the purpose of illustration figure 1B shows counter 1 in its highest position.

[0025] Research has shown that the maximum difference in the ergonomically correct working height of a work surface at which sedentary work is carried out amounts to about 15 cm for most adults in the Netherlands. The counter according to the invention will be adjustable over at least this height.

[0026] The counter according to the invention can be finished in aesthetic manner by arranging a front panel 19 of choice. This is shown in figures 2A and 2B, in which a schematic front view of the counter is shown in further finished form.

[0027] Figure 2C shows a schematic top view of counter 1 in this further finished form. The technical system is concealed from the view of the user by means of partitions 17, 18 and 21. In addition, further counter components 20, such as cabinets or drawer blocks, are mounted on frame 3. The most important advantage hereof is that the counter components are height-adjustable simultaneously with the frame by means of one and the same operation.

[0028] For the sake of completeness it is noted that the further tubular elements on the sides of counter 1 are preferably connected non-releasably to the relevant connecting elements, for instance by means of welded connections, and therefore form a so-called end frame 13.

[0029] Figure 3A shows the mounting of the cylinders in more detail. Shown clearly is that cylinder 5 supports on one side on leg 4. On the other side cylinder 5 engages on hollow tube 10, to which it is fixed by means of screws 12. Stabilizing element 11 is mounted on tube 10 to guide cylinder 5 during the height adjustment.

[0030] Figure 3B shows the configuration of figure 3A in top view. The different functions of tube 10 are shown clearly herein. Tube 10 serves to partially enclose cylinder 5 and thereby has a technical (guide) function as well as an aesthetic function. In addition, tube 10 also serves as connecting element for the further tubular elements (in this case 15) by means of nut and bolt connections 16.

[0031] Figure 4A shows a preferred embodiment of a top-mount element 22 according to the invention in a schematic front view. Figure 4B shows top-mount element 22 in a schematic top view. Top-mount element 22 comprises a work surface 23 which is supported by two legs 24. The right-hand leg protrudes with a certain clearance through an opening in working surface 2 of counter 1. Means are preferably arranged in this open-

ing for guiding work surface 2 along the relevant leg during height adjustment of the counter. Many different means can be used for this purpose. An example hereof is a slide bearing 25.

[0032] In the shown preferred embodiment the working height of the counter can be adjusted independently of the top-mount element. In the shown embodiment the top-mount element has a fixed height. This is not a requirement however.

[0033] It is noted that it is anticipated that the counter according to the invention will find most application in an environment where sedentary work is carried out at the counter instead of standing work, since the differences in the ergonomically correct working height between sedentary people are greater than between people who stand. The counter according to the invention is nevertheless also extremely useful in situations where work is mainly carried out standing behind the counter.

[0034] Finally, the invention is expressly not limited to the shown and described preferred embodiments, but generally extends to any embodiment which falls within the scope of the appended claims as seen in the light of the foregoing description and drawings.

Claims

1. Counter, comprising a frame on which a work surface is mounted, which frame is supported by a number of legs, **characterized in that** the counter comprises means for height adjustment of at least the work surface.

2. Counter as claimed in claim 1, wherein the means are adapted for height adjustment of the frame.

3. Counter as claimed in claim 1 or 2, wherein the means comprise a number of hydraulic cylinders which are movable between a rest position, in which the counter is situated in the lowest position, and an adjustable operational position, in which the counter is situated in an adjustable, higher position.

4. Counter as claimed in claim 3, wherein the cylinders support on at least a number of the legs.

5. Counter as claimed in claim 3 or 4, wherein the cylinders run substantially in the line of the legs.

6. Counter as claimed in claim 3, 4 or 5, wherein the number of cylinders corresponds with the number of legs.

7. Counter as claimed in claim 3, 4, 5 or 6, wherein the frame comprises a number of hollow elongate elements running substantially in height direction in which the hydraulic cylinders are at least partially accommodated.

8. Counter as claimed in claim 7, wherein each cylinder engages on the respective element in which it is accommodated.

9. Counter as claimed in claim 7 or 8, wherein one or more of the elements forms a connecting element for connecting further elongate elements which form part of the frame and run substantially in lengthwise direction thereof.

10. Counter as claimed in claim 9, wherein a stabilizing element is added to one or more of the elements.

11. Counter as claimed in claim 10, wherein the stabilizing element runs substantially parallel to the element.

12. Counter as claimed in claim 9, 10 or 11, wherein the further elements and/or the stabilizing elements are hollow.

13. Counter as claimed in any of the foregoing claims, wherein further counter components, such as cabinets and drawer blocks, are mounted on the frame.

14. Top-mount element for a height-adjustable counter, for instance a counter as claimed in any of the foregoing claims, which top-mount element comprises at least one leg on which a work surface is mounted, which element leg protrudes through an opening in the counter work surface such that the counter work surface and the element leg are slidable relative to each other.

15. Top-mount element as claimed in claim 14, wherein means are arranged at the position of the opening in the counter work surface to guide the sliding of the counter work surface along the element leg.

16. Top-mount element as claimed in claim 15, wherein the means comprise a slide bearing.

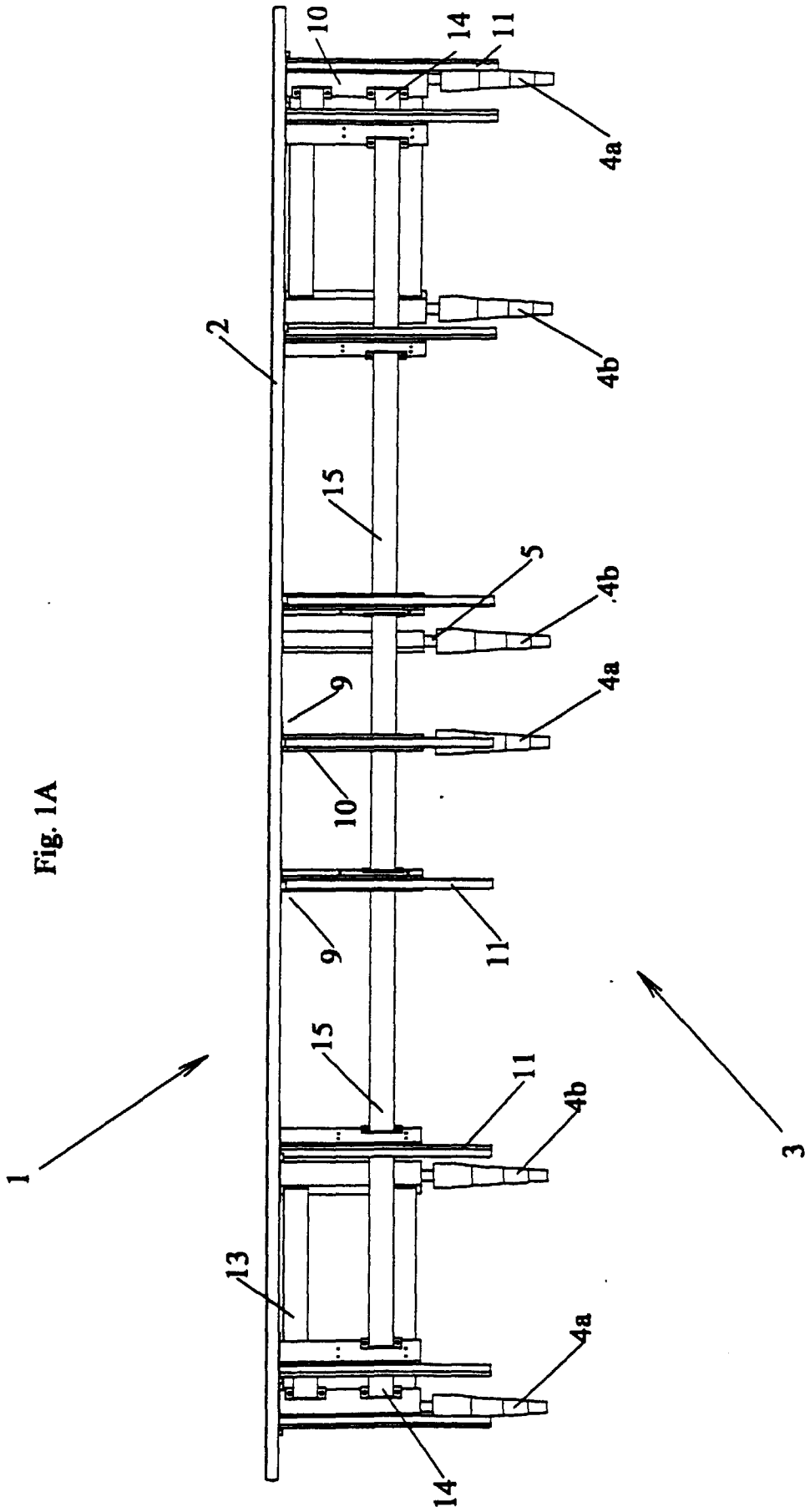


Fig. 1A

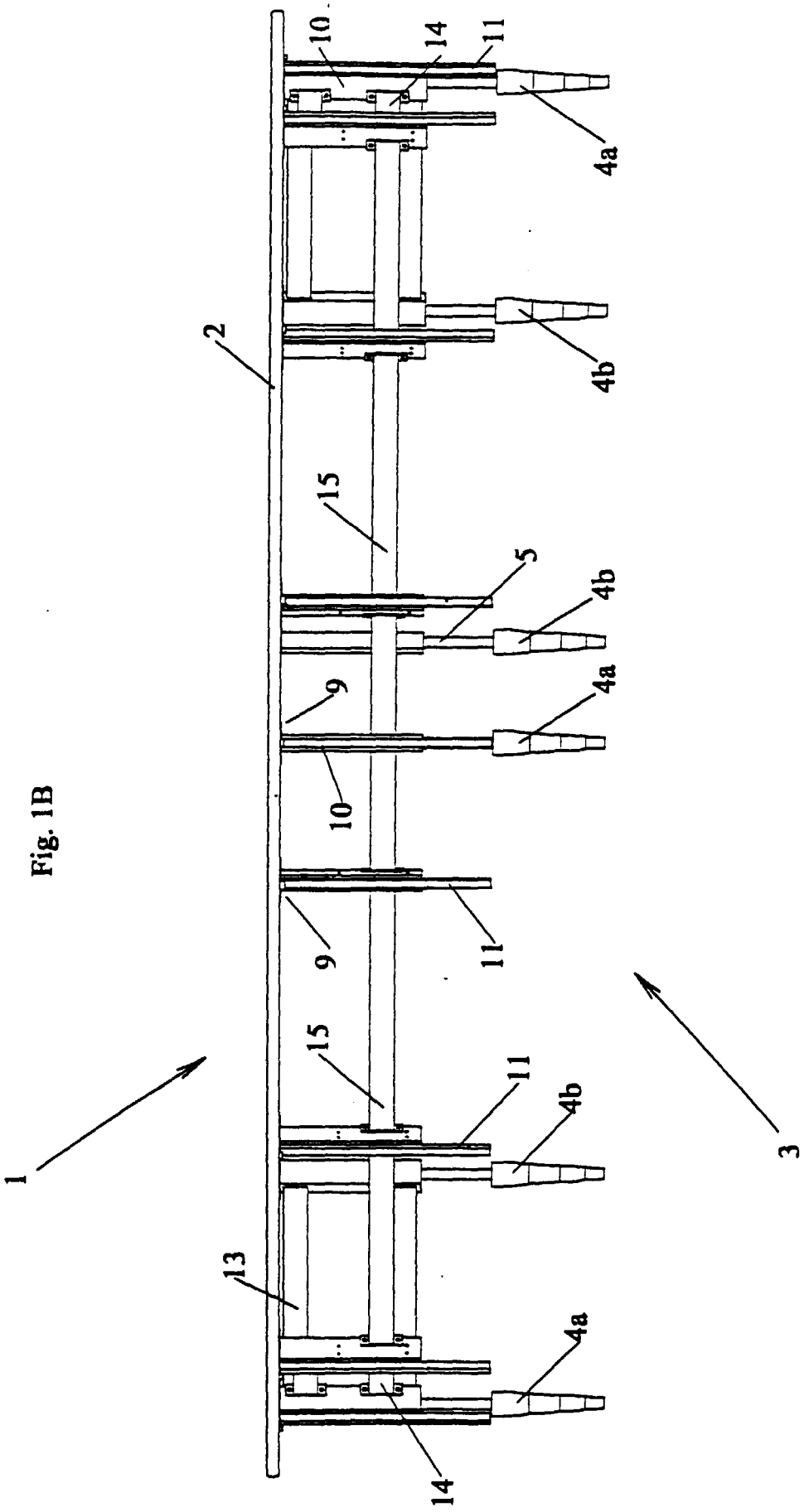


Fig. 1B

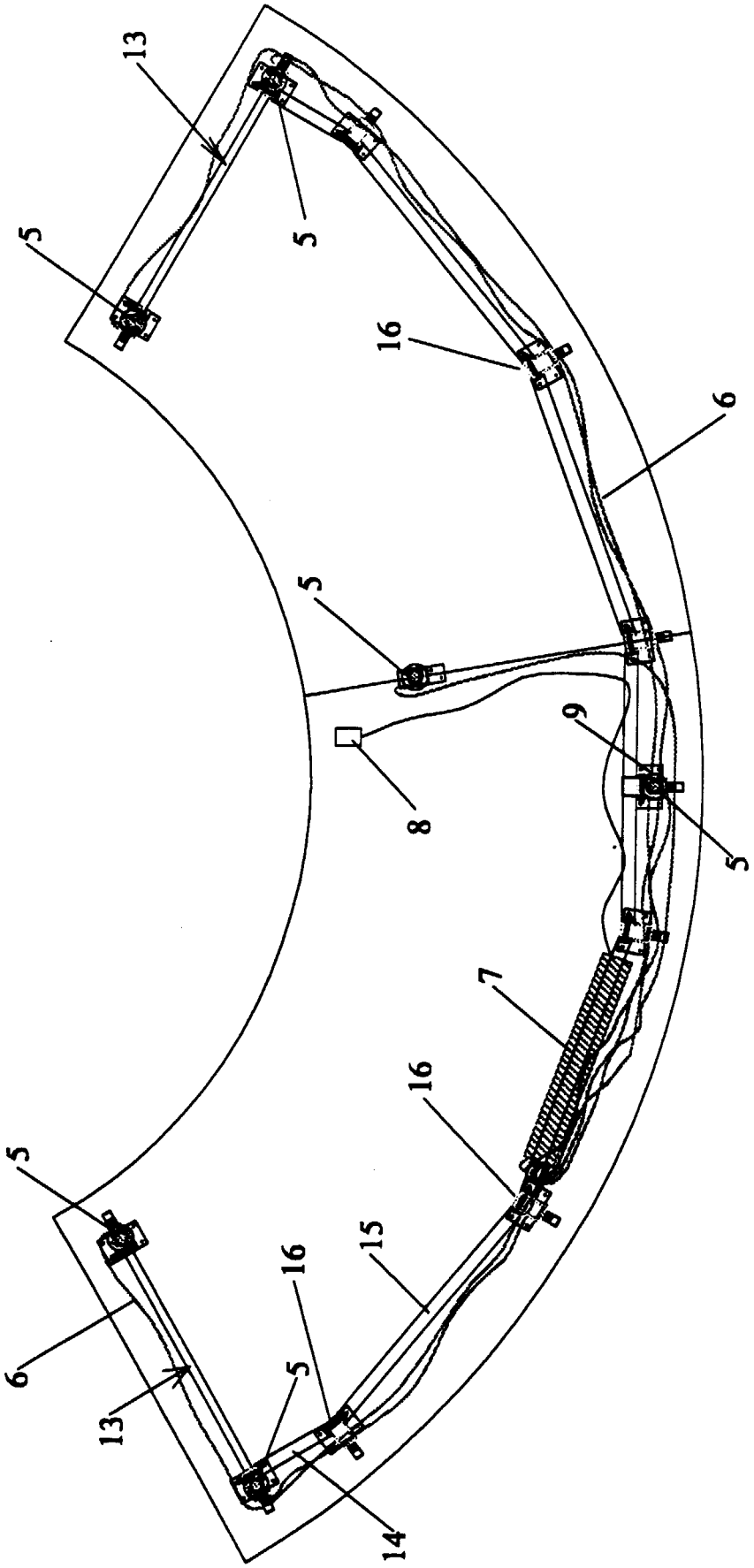
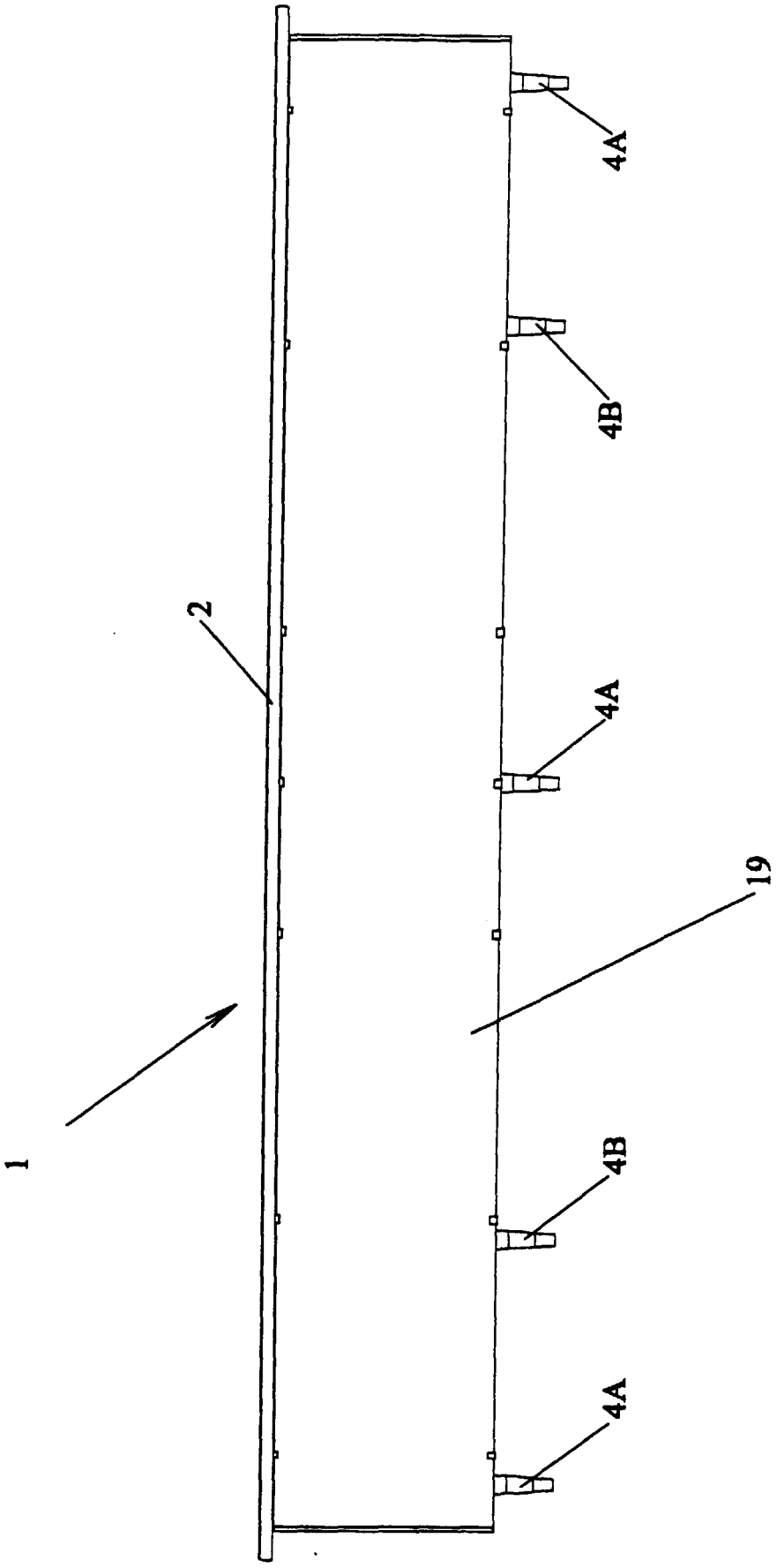


Fig. 1C

Fig. 2A



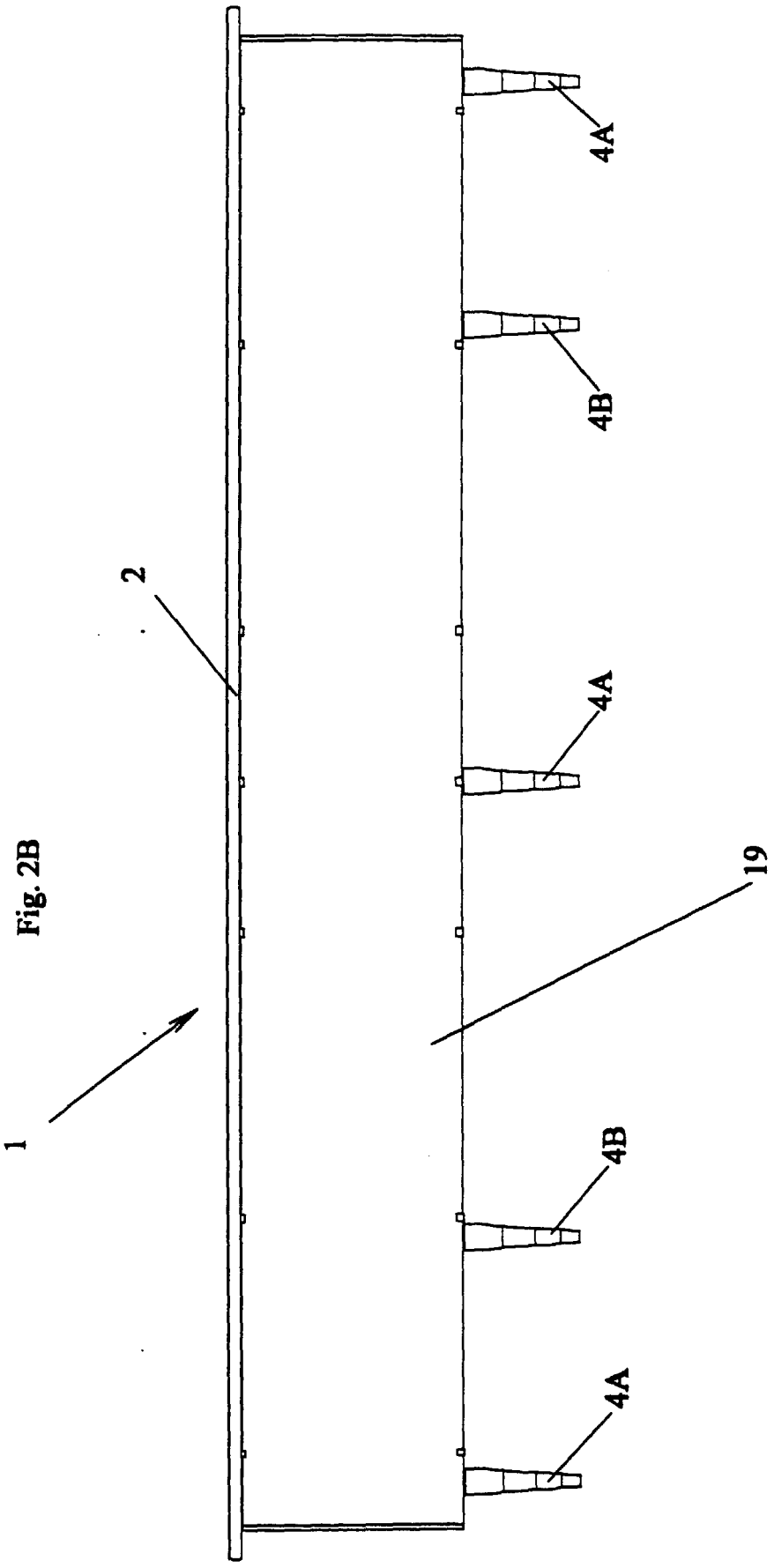


Fig. 2B

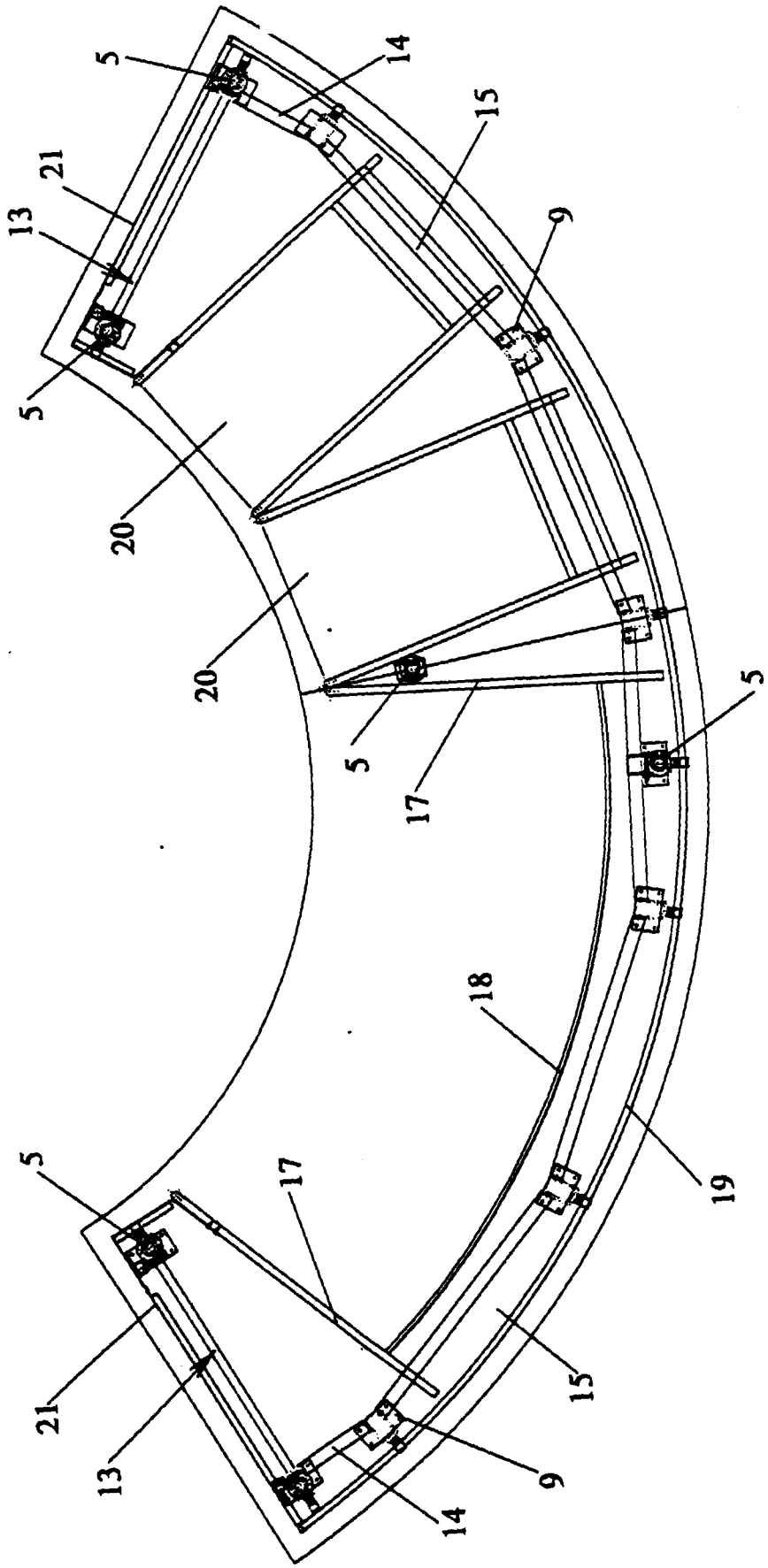
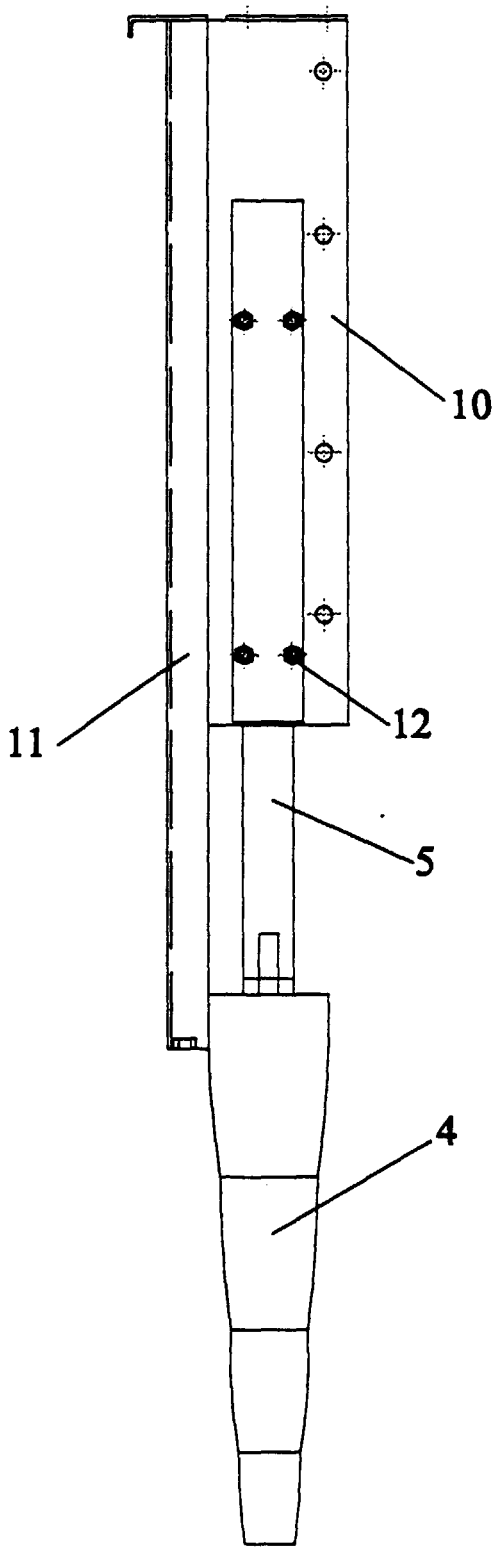


Fig. 2C

Fig. 3A



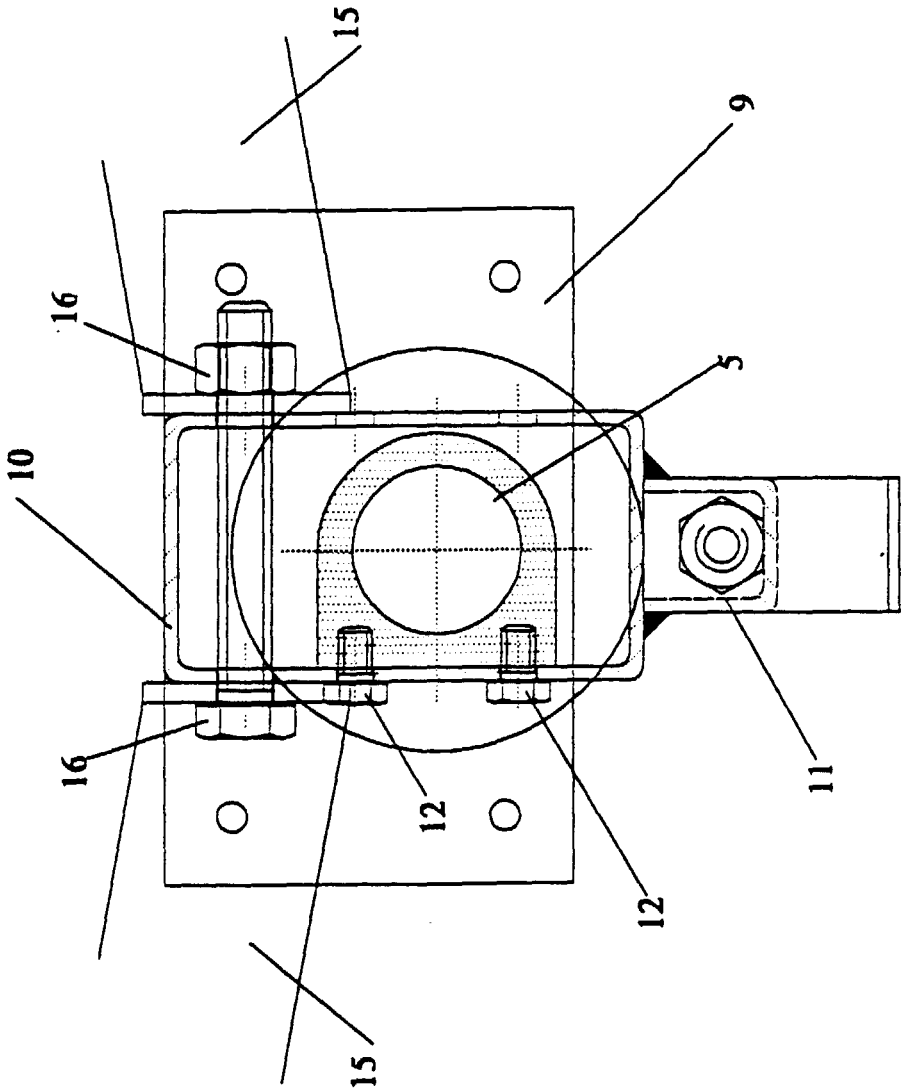


Fig. 3B

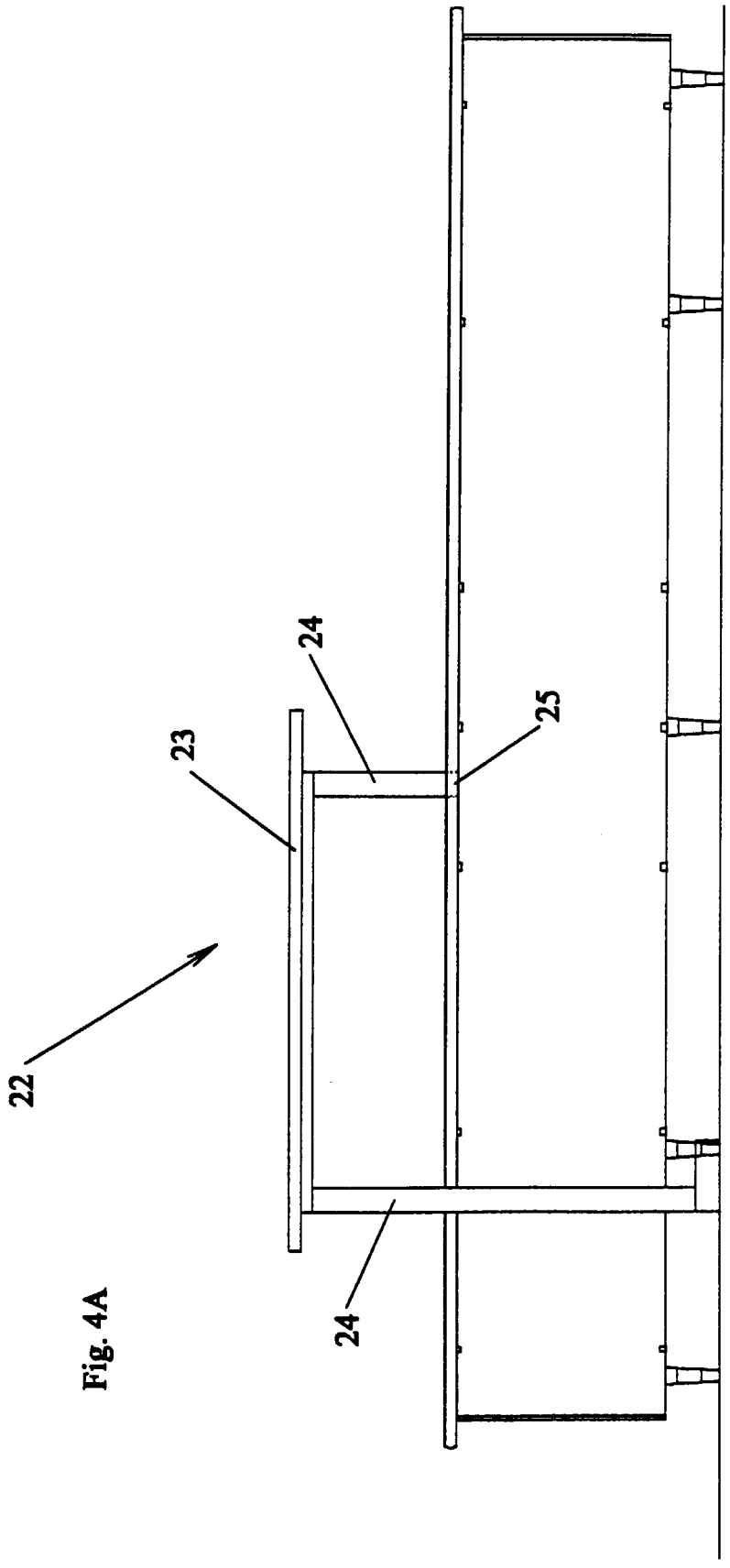


Fig. 4A

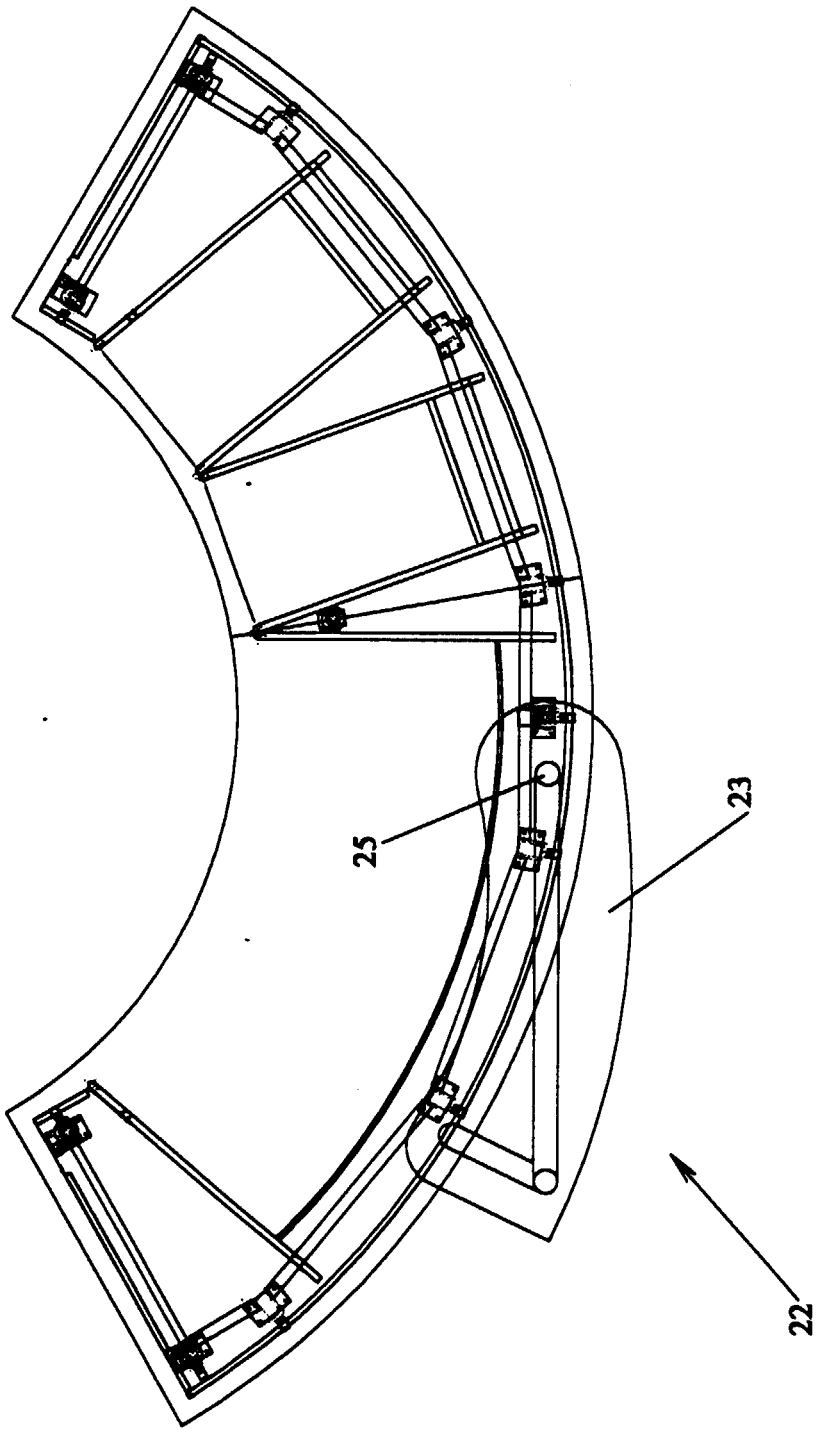


Fig. 4B

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 20 2928

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 297 02 912 U (FEHLBAUM & CO) 3 April 1997 (1997-04-03)	1,2	A47F9/00 A47B9/00
A	* page 4, line 14 - page 7, line 7; figures 1,2 *	13	
A	EP 0 458 776 A (SVOBODA ENTWICKLUNG) 27 November 1991 (1991-11-27) * abstract; figures 1,2 *	1,2, 14-16	
A	US 4 714 025 A (WALLIN PER OLOV T ET AL) 22 December 1987 (1987-12-22) * abstract; figure 1 *	1-9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7) A47F A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28 November 2000	Pineau, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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